Products 2016

Motors and Gearboxes

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ACOPOSmotor

Motor-mounted drive system

The ACOPOSmulti has always been an extremely modular drive system, and it was the next logical step to merge inverters with the motor to create 8DI ACOPOSmotor modules that can deliver power directly where it is needed. Not only does this allow configurable modules to become easily connected mechatronic devices, it also frees up valuable floor space and simplifies commissioning.

Table of contents

System features

Compact and safe

ACOPOSmotor modules combine the following components in a single compact unit:

- Servo drive
- Servo motor as an energy transducer
- Built-in position sensor

ACOPOSmotor modules deliver maximum performance through the use of advanced power component technology that minimizes power loss as well as a motor series optimized for motion applications. Available in two different sizes, ACOPOSmotor modules cover the entire spectrum with a torque range of 2.2 to 17 Nm and a power range of 0.6 kW to 2.3 kW. For applications that demand more power, an optional fan component can be added at any time to boost performance considerably.

Decentralized and flexible

In terms of topology, the ACOPOSmotor module can be integrated into a simple line or tree structure. In a line structure, node numbers are assigned automatically, but if a manual setting is required – to leave room for options or expansions, for example – this can be done without opening the housing.
The connection to the drive system is made using a hybrid connector that includes all power and signal lines needed for the operation of the ACOPOSmotor module as well as those required by the POWERLINK network.
Highly effective IP65 protection allows ACOPOSmotor modules to be mounted directly on the machine. The control cabinet then only has to contain the power supply, high-powered inverter modules and other necessary electromechanical components. This makes it much easier to implement modular machine architectures and optional machine functions since they can be easily connected – with the requisite dimensioning of the power supply – to the machine's main line using hybrid cables.
Also ideal for modular machine engineering is the ability to connect X67 modules directly to ACOPOSmotor modules, something that paves the way for implementing machine modules as completely self-sufficient and testable production units.

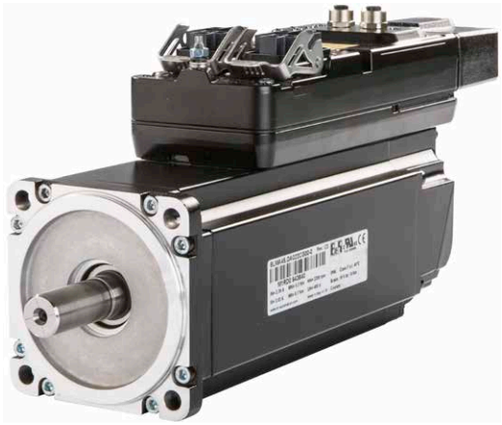
Homogeneous and compatible

ACOPOSmotor modules provide the well-known functionality of the ACOPOSmulti drive family and can therefore be completely integrated into a drive solution.

Cooling

8DI ACOPOSmotor modules are self-cooling and have a long, slim design. The modules must be installed on the cooling surface (flange).

ACOPOSmotor SafeMOTION



B&R's well-established safety solution – consisting of X20 SafeIO modules, SafeLOGIC controllers and the SafeDESIGNER toolset in Automation Studio – is rounded off by ACOPOSmulti inverter modules and ACOPOSmotor modules featuring B&R's integrated safety technology: SafeMOTION. All B&R "Integrated Safety Technology" products are optimized to work together, delivering elegant applications at extremely low cost levels.
ACOPOSmotor SafeMOTION modules are available with an integrated EnDat 2.2 encoder system.

openSAFETY sets technical standards
Although there are many new approaches to safe fieldbus systems, most of them are restricted by proprietary standards and sluggish response times. The B&R safety system – including its ACOPOSmotor SafeMOTION modules – takes a different approach by implementing openSAFETY across the board. This approach allows integrated safety functions such as Safely Limited Speed to be activated directly over the network instead of having to wire these types of safety-related signals to the drive.

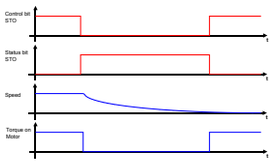
Information is collected directly from its source via safe digital inputs and outputs before being distributed to the respective sensors and actuators – in this case, the drive with integrated safety functions – via a safe CPU, the SafeLOGIC controller. Connecting over a POWERLINK network makes it easy to achieve the best possible communication between the SafeLOGIC controller and the standard controller for non safety-related program engineering.

Short cycle times
Cycle times of 800 µs are achieved on ACOPOSmotor SafeMOTION modules while still satisfying SIL 3 requirements.

Modular, expandable system
Because not all drives and axes in a production machine are safety-related, ACOPOSmotor modules are offered both with or without integrated safety functionality (SafeMOTION). This makes it possible to combine safe and non-safe axes in an application as needed.

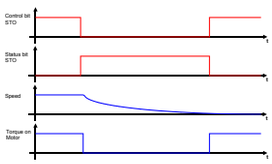
ACOPOSmotor safety functions

STO - Safe Torque Off



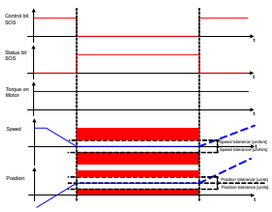
Safe Torque Off is the status in which the drive motor is no longer supplied with power (i.e. no torque and force being generated). The power supply to the drive is safely cut off by activating safe pulse disabling in a secure manner. Because the drive is no longer able to generate torque, it is impossible for any potentially dangerous movements to occur.
STO is made available to SafeLOGIC as an integrated safety function and can therefore be requested directly over the network, eliminating the need for external wiring.
The STO safety function provides the foundation for all other safety functions. As the implementation of the closed-circuit principle, it is applied every time an error occurs.

STO1 - Safe Torque Off, single channel



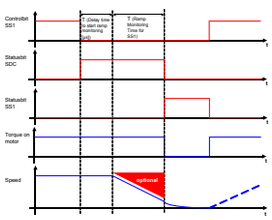
The STO1 safety function works in the same way as STO. The sole difference is that either only the HighSide or only the Low-Side IGBTs are cut off depending on the configuration.

SOS - Safe Operating Stop



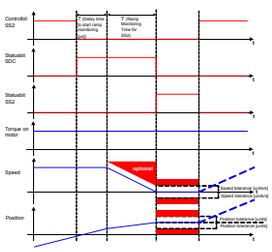
Safe Operating Stop (SOS) is the state in which the drive is monitored for coming to a safe stop. The drive is supplied with power and can therefore generate torque and force. All control functions between the electronic controller and the drive motor are active. The axis standstill is monitored using a configurable standstill tolerance window. Both the position as well as the speed are monitored. In order to collect the speed and position data in a safe manner, a suitable safety encoder is required. If the standstill monitoring limits are violated, safe pulse disabling is activated immediately and the drive switches to an error state that must be acknowledged.

SS1 - Safe Stop 1



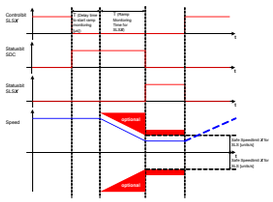
The Safe Stop 1 (SS1) safety function monitors a motor as it transitions from motion to standstill. When completely decelerated, safe pulse disabling is activated to cut off all torque and power to the drive. Depending on the requirements for the safety function, it is possible to monitor either only the deceleration time or the deceleration ramp. If the monitoring limits are violated during deceleration, safe pulse disabling is activated immediately and an error state requiring acknowledgment is triggered. One advantage of monitoring the deceleration ramp is that it reduces the assumed remaining distance to standstill when an error occurs.

SS2 - Safe Stop 2



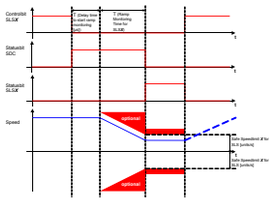
During Safe Stop 2 (SS2), transition of a moving motor to stop is monitored for safety. The drive must then be kept at standstill by the standard application. As with SOS, this standstill is monitored by the SafeMOTION module according to the configured standstill tolerance window.
As with SS1, it is possible to monitor either only the deceleration time or also the deceleration ramp depending on the requirements of the safety function. If a violation is detected during ramp monitoring or the subsequent standstill monitoring, safe pulse disabling is activated immediately and an error state requiring acknowledgment is triggered.

SLS - Safe Limited Speed



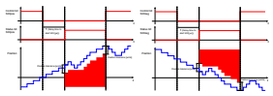
The SLS safety function monitors the drive to make sure that the configurable limits for speed are not exceeded. It is also possible to monitor deceleration until the limit is reached if needed by the application. Depending on requirements, deceleration ramp monitoring can be configured to either only monitor the deceleration period or to monitor the deceleration ramp as well. If a violation is detected during deceleration or when monitoring the limit speed, safe pulse disabling is activated immediately and an error state requiring acknowledgment is triggered.

SMS - Safe Maximum Speed



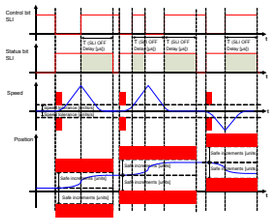
The difference between SMS and SLS is that SMS cannot be actively requested. It is either enabled or disabled by the configuration. When enabled, the current speed is constantly monitored against a defined limit. If the limit is exceeded, safe pulse disabling is activated immediately and an acknowledgeable error state is triggered.

SDI - Safe Direction



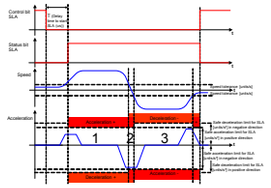
The SDI safety function monitors the defined direction of movement. If the interval is violated, safe pulse disabling is activated immediately and an acknowledgeable error state is triggered. Either the positive or negative direction can be monitored.
The safe direction function can be enabled in parallel with other safety functions.
For example, SLS can be limited to a certain direction.

SLI - Safely Limited Interval



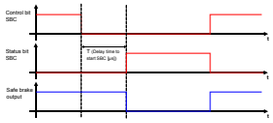
With the SLI safety function, the movement is monitored for a defined number of increments.
The safe axis must be at a standstill when this function is enabled. A position window is then generated that is safety-monitored. This position window depends on the configured safe interval.
If the interval is violated, safe pulse disabling is activated immediately and an acknowledgeable error state is triggered.

SLA - Safely Limited Acceleration/Deceleration



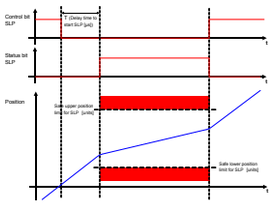
The SLA safety function is used to monitor the acceleration or deceleration with respect to defined maximum limits.
The limits for acceleration and deceleration are monitored in the positive direction of movement.
The configured limits are monitored after the configured time has expired. This delay time compensates for the different runtimes of the standard and safety applications.

SBC - Safe Brake Control



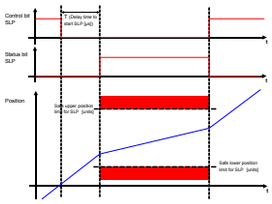
Safe Brake Control (SBC) sends a safe output signal to control an external brake. The SBC integrated safety function can be requested either explicitly via SafeLOGIC or when a module error occurs.

SLP - Safe Limited Position



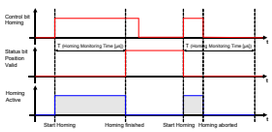
The purpose of the SLP safety function is to monitor a specified position window.
Parameters can be used to configure the lower and upper positioning limits of the monitoring range. When the position limit is approached, the monitored speed limit is calculated in such a way that the drive will come to a full stop before the positioning limit is reached using the configured deceleration ramp parameter.

SMP - Safe Maximum Position



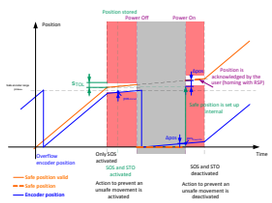
The difference between SMP (Safe Maximum Position) and SLP is that SMP cannot be actively requested. It is either enabled or disabled by the configuration.
When enabled, the current position is constantly monitored against a defined position window. The SMP safety function only works with homed axes since it requires a safe absolute position.
As with the SLP safety function, the SMP function also monitors a position-dependent speed limit in addition to the position in order to minimize the remaining distance if the position window is exceeded.

Safe Homing



The Safe Homing function provides a way to establish a reference between the encoder position and the machine position.
Depending on the homing mode, it may be necessary for the drive to perform a homing procedure. A homing procedure requires the control functions between the electronic controller and the drive motor to be active. Other safety functions might have to be selected in order to prevent a hazardous state during the homing procedure.

RSP - Remanent Safe Position



With the RSP safety function, after the safe position has been homed once to the machine position, the homed safe position does not have to be homed again after a power off/on cycle.
It is only possible to store valid position data after a controlled standstill of the drive. The standstill must therefore be ensured. It must also be ensured that no power is supplied to the drive while the data is being saved so that it is not possible for the drive to move. These requirements are met when using the STO and SOS safety functions.

Order key

8DI	c	d	e	.	ff	ggg	h	i	0	0	-	1

Size (see "Size")
Valid values: **3,4,5**

Length (see "Length")
Valid values: **3,4,5**

Safety technology (see "Safety technology")
Valid values: **0, S**

Encoder system (see "Encoder system")

For motor size 3:
D8...inductive, EnDat 2.2 single-turn FS, 19-bit
D9...inductive, EnDat 2.2 FS, 12-bit

For motor sizes 4 and 5

DA...inductive, EnDat 2.2 single-turn FS, 12-bit
DB...inductive, EnDat 2.2 multi-turn FS, 12-bit

Nominal speed (see "Nominal speed")
ggg...Nominal speed/100, e.g. 015 corresponds to a nominal speed of 1500 rpm

Electronics options (see "Electronics options")

Motor options (see "Motor options")

Motor version Assigned automatically

Other motor options must be arranged with B&R.

Size (c)

8DI ACOPOSmotor modules are available in three different sizes (3, 4 and 5). They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the ACOPOSmotor module.

Length (d)

8DI ACOPOSmotor modules are available in three different sizes. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number.

	Available sizes		
Length	**3**	**4**	**5**
3	Yes	No	No
4	Yes	Yes	Yes
5	No	Yes	Yes
6	No	Yes	Yes

Safety technology (e)

8DI ACOPOSmotor modules are delivered with wired safety technology or SafeMOTION EnDat 2.2. as a standard feature.

Name	Note	Code for order key
Wired safety technology	---	0
SafeMOTION EnDat 2.2	---	S

The following table lists the safety functions integrated in ACOPOSmotor SafeMOTION modules as well as the safety levels that can be achieved when they are used:

	EN ISO 13849-1	EN 61508 / EN 62061	Safe encoder evaluation necessary
Safety function	**EnDat 2.2**		
Safe Torque Off (STO)	PLe / CAT 4	SIL 3	No
Safe Torque Off One Channel (STO1)	PLd / CAT 3	SIL 2	No
Safe Operating Stop (SOS)	PLd / CAT 3	SIL 2	Yes
Safe Stop 1 (SS1)	Time-based monitoring: PLd / CAT 3 Ramp-based monitoring: PLd / CAT 3	Time-based monitoring: SIL 2 Ramp-based monitoring: SIL 2	Time-based monitoring: No Ramp-based monitoring: Yes
Safe Stop 2 (SS2)	PLd / CAT 3	SIL 2	Yes
Safely Limited Speed (SLS)	PLd / CAT 3	SIL 2	Yes
Safe Maximum Speed (SMS)	PLd / CAT 3	SIL 2	Yes
Safe Direction (SDI)	PLd / CAT 3	SIL 2	Yes
Safely Limited Increment (SLI)	PLd / CAT 3	SIL 2	Yes
Safely Limited Acceleration (SLA)	PLd / CAT 3	SIL 2	Yes
Safe Brake Control (SBC)	PLd / CAT 3	SIL 2	No
Safely Limited Position (SLP)	PLd / CAT 3	SIL 2	Yes
Safe Maximum Position (SMP)	PLd / CAT 3	SIL 2	Yes
Safe Homing	PLd / CAT 3	SIL 2	Yes
Remanent Safe Position (RSP)	PLd / CAT 3	SIL 2	Yes

Encoder system (ff)

EnDat 2.2 encoder

General information

Digital drive systems and position control loops require fast and highly secure transfer of data obtained from position measuring instruments. In addition, other data such as drive-specific characteristics, correction tables, etc. should also be available. To ensure a high level of system security, measuring instruments must be integrated in routines for detecting errors and be able to perform diagnostics.

The EnDat interface from HEIDENHAIN is a digital, bidirectional interface for measuring instruments. It is able to output position values from incremental and absolute measuring instruments and can also read and update information on the measuring instrument or store new data there. Because it relies on serial data transfer, only 4 signal lines are needed. Data is transferred synchronously to the clock signal defined by the subsequent electronics. The type of transfer used (e.g. for position values, parameters, diagnostics, etc.) is selected using mode commands sent to the measuring instrument by the subsequent electronics.

As a serial interface, EnDat 2.2 is also suitable for safety-related applications up to SIL 3.

Technical data

Name				
Order code (ff)	D8	D9	DA	DB
Can be used with	Size 3	Size 3	Motor sizes 4 and 5	Motor sizes 4 and 5
Encoder type	EnDat single-turn functional safety	EnDat multi-turn functional safety	EnDat single-turn functional safety	EnDat multi-turn functional safety
Operating principle	Inductive			
EnDat protocol	EnDat 2.2			
Position values per revolution	524 288 (19-bit)			
Distinguishable revolutions	---	4096 (12-bit)	---	4096 (12-bit)
Precision	±120"		±65"	
Vibration during operation 55 to 2000 Hz	Stator: ≤400 m/s², rotor: ≤600 m/s² (EN 60068-2-6)[1)]		Stator: ≤200 m/s², rotor: ≤600 m/s² (IEC 60068-2-6)[2)]	
Shock during operation Duration 6 ms	≤2.000 m/s² (EN 60068-2-27)			
Manufacturer's website	Dr. Johannes Heidenhain GmbH www.heidenhain.de			
Manufacturer's product ID	ECI 1119	EQI 1131	ECI 1319	EQI 1331

[1)] Valid according to the standard at room temperature;
10 to 55 Hz, constant path, 4.9 mm peak to peak
10 to 55 Hz, constant lift, 4.9 mm peak to peak
10 to 55 Hz, constant amplitude, 4.9 mm peak to peak

[2)] In accordance with the standard at room temperature; the following values apply at a working temperature up to 100°C: ≤300 m/s², up to 115°C: ≤150 m/s²;
10 to 55 Hz, constant path, 4.9 mm peak to peak
10 to 55 Hz, constant lift, 4.9 mm peak to peak
10 to 55 Hz, constant amplitude, 4.9 mm peak to peak

Nominal speed (ggg)

The nominal speed is listed as part of the model number in the form of a 3-digit code (ggg). This code represents the nominal speed divided by 100.

	Available nominal speeds n_N [rpm]				
Size	**2200 (code for order key: 022)**			**4500 (code for order key: 045)**	
3	No	No	No	Yes	Yes
4	Yes	Yes	Yes	No	No
5	Yes	Yes	Yes	No	No
Length	**4**	**5**	**6**	**3**	**4**

Electronics options (h)

8DI ACOPOSmotor modules are available with optional external connections:
- One additional POWERLINK connection
- Two 24 VDC outputs for supplying external components (e.g. X67 modules)
- Two trigger inputs

The respective execution of the module is listed in the form of a 1-digit code (h) as part of the model number.

POWERLINK	24 VDC outputs (2x)	Trigger inputs (2x)	Code for order key
No	No	No	0
Yes	Yes	Yes	7

Motor options (i)

8DI ACOPOSmotor modules are available with the following features depending on size and length:
- With or without an oil seal
- With or without a holding brake
- With a smooth or keyed shaft

The respective combination of motor options is listed in the form of a 1-digit code (i) as part of the model number.

Holding brake	Keyed shaft	Oil seal	Code for order key
No	No	No	0
		Yes	1
	Yes	No	2
		Yes	3
Yes	No	No	4
		Yes	5
	Yes	No	6
		Yes	7

Oil seal

All 8DI ACOPOSmotor modules are available with an optional Form A oil seal in accordance with DIN 3760.
When equipped with an oil seal, 8DI ACOPOSmotor modules have IP65 protection in accordance with EN 60034-5.
Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

Holding brake

All 8DI ACOPOSmotor modules can be delivered with a holding brake. It is installed directly behind the A flange on the module and is used to hold the motor shaft when no power is applied to the servo motor.
The holding brake is a spring-loaded brake. Based on principle, this type of holding brake exhibits a minimal amount of backlash.
This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle). Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Name	ACOPOSmotor module size		
	3	4	5
Holding torque M_{Br} [Nm]	3.2	9	18
Connected load P_{on} [W]	12	15	18
Supply current I_{on} [A]	0.5	0.9	1.3
Supply voltage U_{on} [V]	24 VDC +20% / -25%	24 VDC +20% / -25%	24 VDC +20% / -25%
Activation delay t_{on} [ms]	29	40	50
Release delay t_{off} [ms]	19	7	10
Moment of inertia J_{Br} [kgcm²]	0.38	0.54	1.66
Mass m_{Br} [kg]	0.3	0.46	0.9

Design of the shaft end

8DI ACOPOSmotor module shafts comply with the DIN 748 standard and are available in a smooth or keyed design.

Smooth shaft end

A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end

A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.

The keyways for 8DI ACOPOSmotor modules conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with DIN ISO 8821.

The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Version

ACOPOSmotor module versions are assigned automatically.

8ZDFB fan kits

8DI ACOPOSmotor modules can be equipped with an optional size-dependent fan kit that considerably improves the modules' nominal values.

The fan kit is mounted on the back of the 8DI ACOPOSmotor module, with 24 VDC supplied to the fan kit either externally or via the X31 connector on the ACOPOSmotor module (8DIcde.ffggg**7**i00-1).

Size	Corresponding fan kit
4	8ZDFB4000000.000-0
5	8ZDFB5000000.000-0

Load capacity of the shaft end and bearings

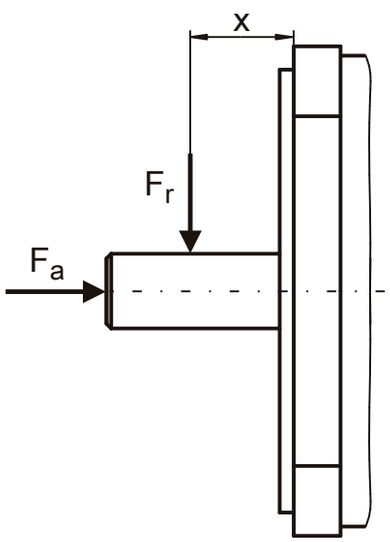
8DI ACOPOSmotor modules are equipped with grooved ball bearings that are sealed and lubricated on both sides. Radial and axial forces (F_r, F_a) applied to the shaft end during operation and installation must be within the specifications listed below. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.
The axial forces F_a permitted during the installation of pinion gears, couplings, etc. depend on the size of the ACOPOSmotor module and can be found in the following table:

Size	Permissible axial force F_a [N]
	Standard bearing
3	1400
4	2300
5	2500

Radial force
The radial force F_r on the shaft end is a function of the loads during installation (e.g. belt tension on pulleys) and operation (e.g. load torque on the pinion). The maximum radial force F_r depends on the shaft end type, bearing type, average speed, the position where the radial force is applied and the desired service life of the bearings.

Axial force, shift in shaft position caused by axial force
The axial force F_a on the shaft end is a function of the loads during installation (e.g. stress caused by mounting) and operation (e.g. thrust caused by slanted tooth pinions). The maximum axial force F_a depends on the bearing type and desired service life of the bearings. The fixed bearing is secured on the A flange with a retaining ring. The floating bearing is preloaded on the B flange with a spring in the direction of the A flange. Axial forces in the direction of the B flange can cause the spring bias to be overcome, which shifts the shaft by the amount of axial backlash in the bearing (approx. 0.1 - 0.2 mm). This shift can cause problems on ACOPOSmotor modules with holding brakes or ACOPOSmotor modules with EnDat encoders (D8, D9, DA and DB). As a result, no axial force is permitted in the direction of the B flange when using these ACOPOSmotor modules.
Axial loads are not permitted on shaft ends of ACOPOSmotor modules with holding brakes. It is especially important to prevent axial forces in the direction of the B flange since these forces can cause the brake to fail!
Determining the permitted values of F_r and F_a
Information for determining permissible values of F_r and F_a can be found in the technical data for the respective ACOPOSmotor modules. Permissible values are based on a bearing service life of 20,000 h (bearing service life calculation based on DIN ISO 281).

Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

ACOPOSmotor with gearbox

ACOPOSmotor modules can also be delivered with a gearbox.
This is not possible for ACOPOSmotor SafeMOTION modules!

ACOPOSmotor assembly

1st character = Motor series	2nd character = Motor size
V= 8DI**3**	**3**
L = 8DI**4**, 8DI**5**	**4, 5**

Example:
8GP40-080--005S2 contains the extension "V3" for an **8DI3**: 8GP40-080--005S2**V3**
8GP40-080--005S2 contains the extension "L4" for an **8DI4**: 8GP40-080--005S2**L4**
8GP40-080--005S2 contains the extension "L5" for an **8DI5**: 8GP40-080--005S2**L5**

Motor/Gearbox combinations, angular gearboxes

		Angular gearboxes			
Gearbox series	**Size**	**Gear ratio**	**8DI3**	**8DI4**	**8DI5**
8GA40	080		Yes	Yes	---
	120		---	Yes	Yes
8GA45	089		Yes	Yes	---
	121		---	Yes	Yes
8GA50	090		Yes	Yes	---
	120		---	Yes	Yes
8GA60	070		Yes	Yes	---
	090	4-10	Yes	Yes	Yes
	090	9.12-100	Yes	Yes	---
	115		Yes	Yes	Yes
	142		Yes	Yes	Yes
8GA75	070		Yes	Yes	---
	090		Yes	Yes	Yes
	115		Yes	Yes	Yes
	142		Yes	Yes	Yes

Motor/Gearbox combinations, gearboxes with output flange

		Gearboxes with output flange			
Gearbox series	**Size**	**Gear ratio**	**8DI3**	**8DI4**	**8DI5**
8GF40	064		Yes	Yes	---
	090		Yes	Yes	Yes
	110		---	Yes	Yes
8GF60	064		Yes	Yes	---
	090	4-10	Yes	Yes	Yes
	090	9.12-100	Yes	Yes	---
	110	4-10	---	Yes	Yes
	110	9.12-100	Yes	Yes	Yes
	140		---	Yes	Yes
	200	4-10	---	---	Yes
	200	9.12-100	---	---	---
8GF70	064		Yes	Yes	---
	090	4-10	Yes	Yes	Yes
	090	9.12-100	Yes	Yes	---
	110		Yes	Yes	Yes
	140	4-10	---	Yes	Yes
	140	9.12-100	Yes	Yes	Yes
	200	4-10	---	---	Yes
	200	9.12-100	---	Yes	Yes

Motor/Gearbox combinations, gearboxes with output shaft

			Planetary gearbox with output shaft		
Gearbox series	**Size**	**Gear ratio**	**8DI3**	**8DI4**	**8DI5**
8GP30	080		Yes	Yes	---
	120		---	Yes	Yes
8GP40	060		Yes	Yes	---
	080		Yes	Yes	Yes
	120		---	Yes	Yes
8GP45	067		Yes	Yes	---
	089		Yes	Yes	Yes
	121		---	Yes	Yes
8GP50	070		Yes	Yes	---
	090		Yes	Yes	Yes
	120		---	Yes	Yes
	155		Yes	Yes	Yes
8GP55	060		Yes	Yes	---
	080		Yes	Yes	Yes
	120		---	Yes	Yes
8GP60	070		Yes	Yes	---
	090		Yes	Yes	Yes
	115		Yes	Yes	Yes
	142		---	Yes	Yes
	190		---	---	Yes
8GP70	070		Yes	Yes	---
	090	4-10	Yes	Yes	Yes
	090	9.12-100	Yes	Yes	---
	115		Yes	Yes	Yes
	14	4-10	---	Yes	Yes
	142	9.12-100	Yes	Yes	Yes
	190	4-10	---	---	Yes
	190	9.12-100	---	Yes	Yes

Technical data

Technical data for all modules – General

General information	
Module type	ACOPOSmotor module
Certification c-UL-us	Yes
Thermal characteristics	
Methods of cooling in accordance with EN 60034-6 (IC code) Standard With 8ZBDF fan kit installed	 Self-cooled; no separate surface cooling (IC4A0A0) Externally-cooled; surface cooling with independent cooling module attached (IC4A0A6)
Insulation class in accordance with EN 60034-1	F
Thermal motor protection in accordance with EN 60034-11	Maximum winding temperature 155°C (limited to 140°C using software)
Operating conditions	
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Installation at elevations above sea level Nominal Maximum [1)]	0 to 500 m 4000 m
Reduction of the nominal current and stall current at installation elevations over 500 m above sea level	10% per 1000 m
Reduction of the continuous power at installation elevations over 500 m above sea level	10% per 1000 m
Degree of pollution in accordance with EN 60664-1	2 (non-conductive pollution)
Overvoltage category in accordance with IEC 60364-4-443:1999	III
EN 60529 protection[2)]	Without optional oil seal: IP64 With optional oil seal: IP65 With 8ZDFB fan kit installed: IP24
Environmental conditions	
Temperature Operation Nominal Maximum Storage Transport Max. flange temperature	5 to 40°C 55°C [3)] -25 to 55°C -25 to 70°C 65°C
Relative humidity Operation Storage Transport	5 to 85%, non-condensing 5 to 95%, non-condensing Max. 95% at 40°C
Mechanical characteristics	
Motor coating	Water-based paint, RAL 2005 flat
Inverter coating	Electrophoretic deposition (EPD), black
Vibration severity in accordance with EN 60034-14	Vibration severity grade A [4)]
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281
Shaft end in accordance with DIN 748	Form E
Oil seal in accordance with DIN 3760	Form A
Key and keyway in accordance with DIN 6885-1	Keyway form N1; key form A
Balancing the shaft in accordance with DIN ISO 8821	Half-key arrangement
Mounting flange in accordance with DIN 42948	Form A
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R

[1)] Continuous operation at elevations ranging from 500 m to 4000 m above sea level is possible (taking the specified continuous current reductions into consideration). Requirements that go above and beyond this must be arranged with B&R.

[2)] The specified level of protection is only fulfilled if all connectors on the module that are not being used are closed with suitable caps or covers. Suitable caps and covers are available as optional accessories (X67AC0M08, X67AC0M12, 8CXC000.0000-00). When delivered, the module is rated at IP20.

[3)] Continuous operation at ambient temperatures ranging from 40°C to max. 55°C is possible (taking the continuous current reductions into consideration), but this will result in a shorter service life.

[4)] Vibration severity grade B on request.

Technical data for all modules - Inverters

DC bus connection	
Voltage Nominal	750 VDC
Continuous power consumption [1]	$(P_N / 0.97) + P_{IM}$
DC bus capacitance	15.3 µF
Design	19-pin hybrid connector [2]
Cable length Maximum	10 m [3]
24 VDC supply	
Input voltage	24 VDC +20% / -25%
Input capacitance	120 µF
Max. power consumption	10 W + $P_{holding\ brake}$ + $P_{24\ VDC\ Out\ 1}$ [0 ... 96 W] + $P_{24\ VDC\ Out\ 2}$ [0 ... 12 W]
Design	19-pin hybrid connector [2]
Cable length Maximum	10 m [3]
24 VDC Out 1	
Output voltage	Depends on the 24 VDC supply
Continuous current	Max. 4 A
Reduction of continuous current depending on the ambient temperature	0.13 A/K (from 40°C)
Protection	Electronic
Design 24 VDC, COM	Female M8 connector
24 VDC Out 2	
Output voltage	Depends on the 24 VDC supply
Continuous current	Max. 0.5 A
Protection	Electronic
Design 24 VDC, COM	Female M12 connector
Motor connection	
Max. output frequency	598 Hz [4]
Nominal switching frequency	5 kHz
Possible switching frequencies [5]	5 / 10 / 20 kHz
Motor holding brake connection	
Quantity	1
Max. switching frequency	0.5 Hz
Response threshold for undervoltage monitoring	24 VDC -25%
$P_{HoldingBrake}$	Max. 18 W
Fieldbus	
Type	POWERLINK (V1/V2) 100 Base-T (ANSI/IEE 802.3)
Design	Internal 3x hub, 2x 19-pin hybrid connector, 1x female M12 connector
Cable length	Max. 100 m between two stations (segment length) [6]
Transfer rate	100 Mbit/s
Enable inputs	
Quantity	2
Wiring	Sink
Electrical isolation Input - Inverter module Input - Input	Yes Yes
Input voltage Nominal Maximum	24 VDC 30 VDC
Input current at nominal voltage	80 mA

Enable inputs

Switching threshold	
Low	<5 V
High	>15 V
Switching delay at nominal input voltage Enable 1 -> 0, PWM off	12 ms
Enable 0 -> 1, ready for PWM	1 ms
Modulation compared to ground potential	Max. ±38 V
Design	19-pin male hybrid connector

Trigger inputs

Quantity	2
Wiring	Sink
Electrical isolation	
Input - Inverter module	No
Input - Input	No
Input voltage	
Nominal	24 VDC
Maximum	30 VDC
Switching threshold	
Low	<5 V
High	>15 V
Input current at nominal voltage	5 mA
Switching delay	
Rising edge	In preparation
Falling edge	In preparation
Modulation compared to ground potential	Max. ±38 V
Design	Female M12 connector

[1] Valid in the following conditions: 750 VDC DC bus voltage, 5 kHz switching frequency, 40°C ambient temperature, installation elevation <500 m above sea level, no derating due to cooling type.

P_N ... Nominal power of the motor (see motor data for the respective ACOPOSmotor module).

P_{IM} ... Continuous power consumption of the inverter (depending on the module size) – in preparation.

[2] The maximum current load of the hybrid connector interfaces for the DC bus connector / 24 VDC power supply is 20 A. This value is reduced by 0.67 A/K at ambient temperatures >40°C.
It is important to note that the 19-pin hybrid connector is designed for max. 5 connection cycles.

[3] Please contact B&R when using cable lengths >10 m.

[4] The module's electrical output frequency (SCTRL_SPEED_ACT * MOTOR_POLEPAIRS) is monitored to protect against dual use in accordance with EC regulation 428/2009 | 3A225. If the electrical output frequency of the module exceeds the limit value of 598 Hz uninterrupted for more than 0.5 s, then the current movement is aborted and error 6060 is output (Power element: Limit speed exceeded).

[5] B&R recommends operating the module at its nominal switching frequency. Operating the module at a higher switching frequency for application-specific reasons reduces the continuous current and increases the CPU load.

[6] Limited to 10 m when using hybrid cables.

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous current is reduced when the motor is at a complete standstill.
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake
Moment of inertia of brake	J_{Br}	kgcm²	Moment of inertia for the built-in holding brake
Brake mass	m_{Br}	kg	Weight of the built-in holding brake
Brake holding torque	M_{Br}	Nm	Minimum torque required to hold the rotor when the brake is activated
Installed load	P_{on}	W	Installed load for the built-in holding brake
Installed current	I_{on}	A	Installed current for the built-in holding brake
Connection voltage	U_{on}	V	Operating voltage for the built-in holding brake
Activation delay	t_{on}	ms	Delay time required for the holding torque of the brake to be established after the operating voltage has been removed from the holding brake
Release delay	t_{off}	ms	Delay time required until the holding torque of the holding brake is reduced by 90% (the brake is released) after operating voltage has been returned to the holding brake

Product overview

ACOPOSmotor modules

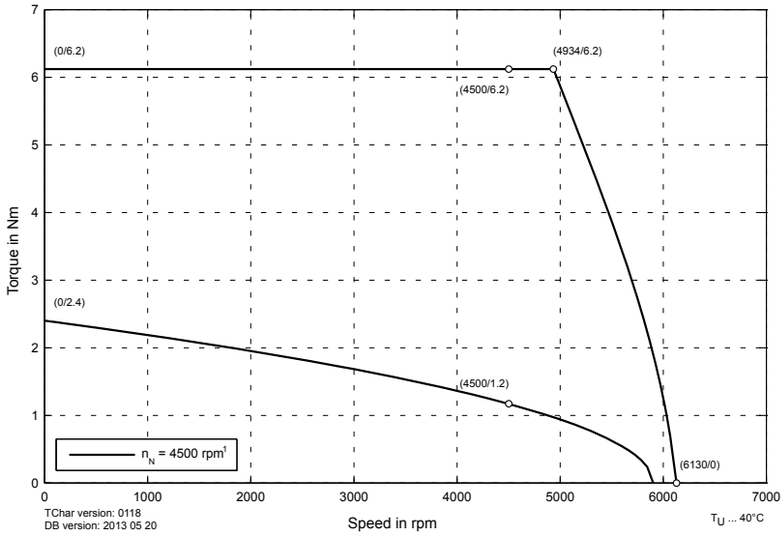
Accessories

Size 3

Technical data

	8DI330.ff045hi00-1	8DI33S.ff045hi00-1	8DI340.ff045hi00-1	8DI34S.ff045hi00-1
Motor				
Nominal speed n_N [rpm]	4500			
Number of pole pairs	4			
Nominal torque M_n [Nm]	1.17		1.52	
Nominal power P_N [W]	551		716	
Nominal current I_N [A]	1.08		1.39	
Stall torque M_0 [Nm]	2.4		2.86	
Stall current I_0 [A]	2.22		2.62	
Maximum torque M_{max} [Nm]	6.12		9.81	
Maximum current I_{max} [A]	5.67		9	
Maximum speed n_{max} [rpm]	6600			
Torque constant K_T [Nm/A]	1.08		1.09	
Voltage constant K_E [V/1000 rpm]	65.97			
Stator resistance R_{2ph} [Ω]	4.81		3.9	
Stator inductance L_{2ph} [mH]	19.81		16.5	
Thermal time constant t_{therm} [min]	34		38	
Moment of inertia J [kgcm^2]	0.95		1.2	
Weight without brake m [kg]	4.7		5.6	

Speed-torque characteristics at DC bus voltage of 560 VDC



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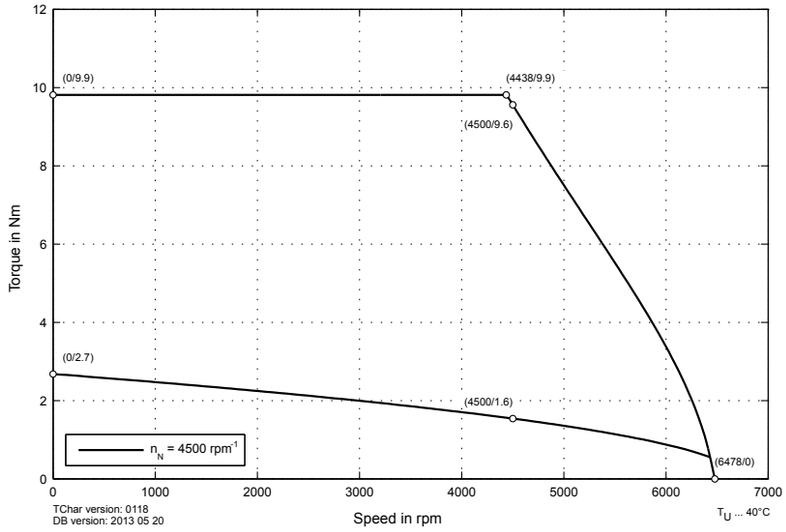
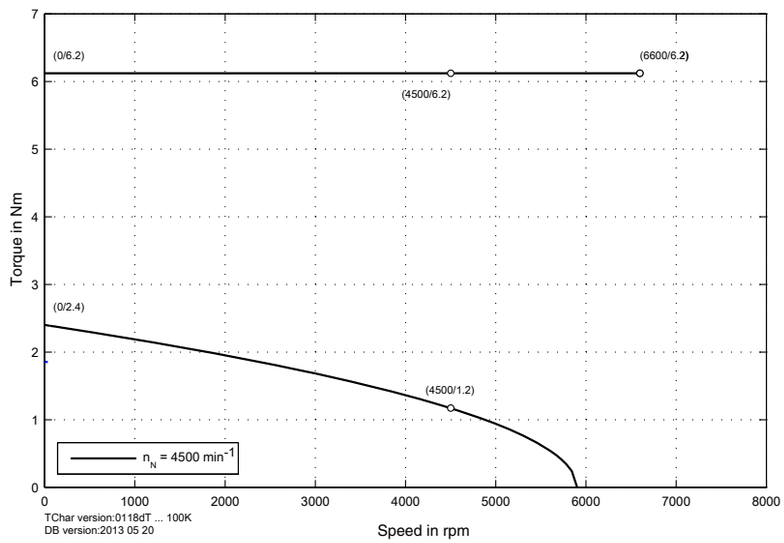


8DI340.ffggghi00-1

Speed-torque characteristics at DC bus voltage of 750 VDC



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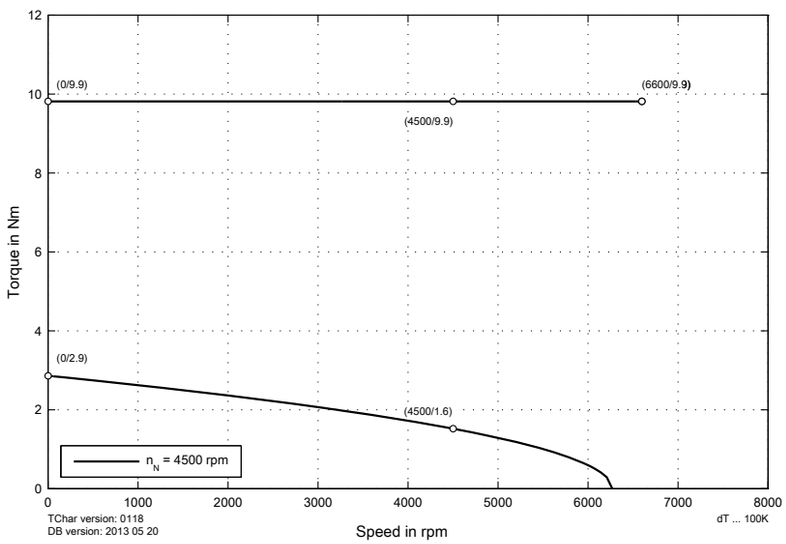

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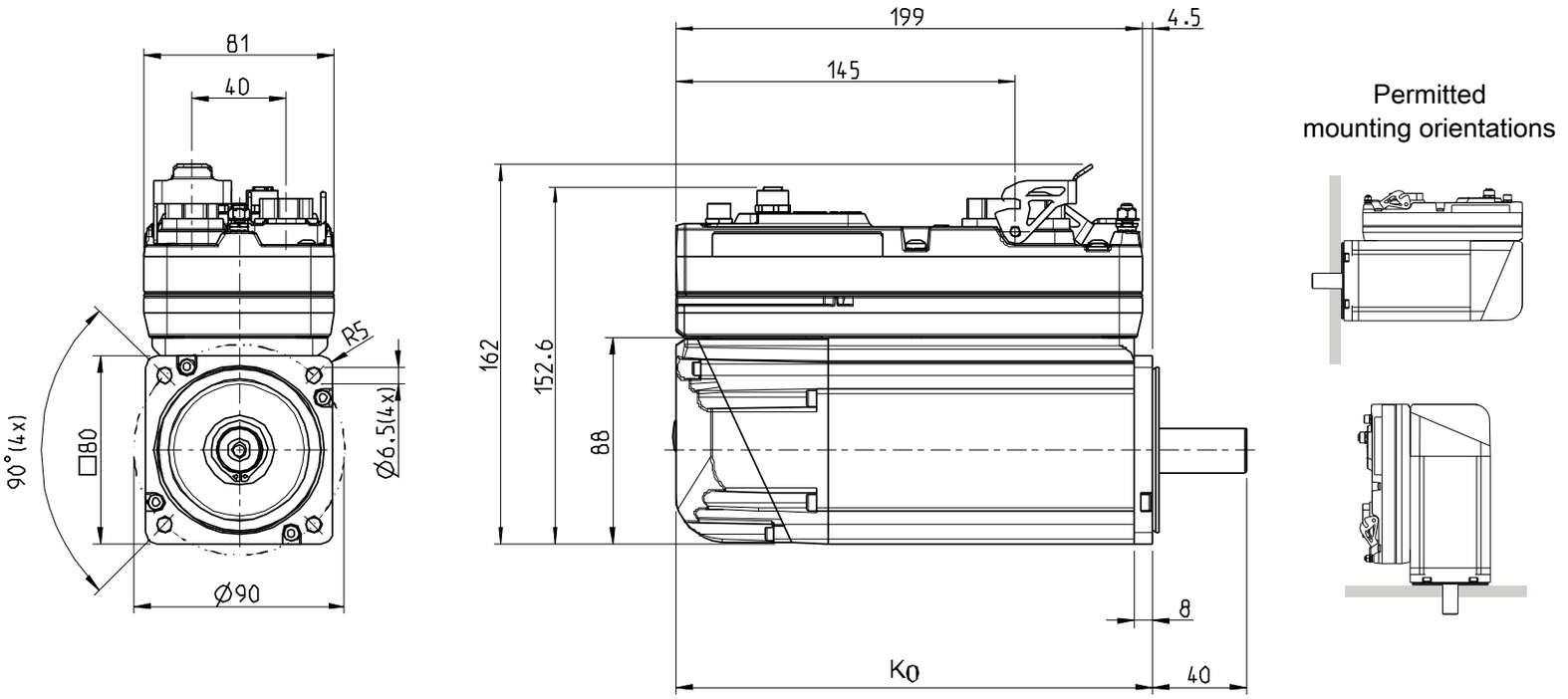
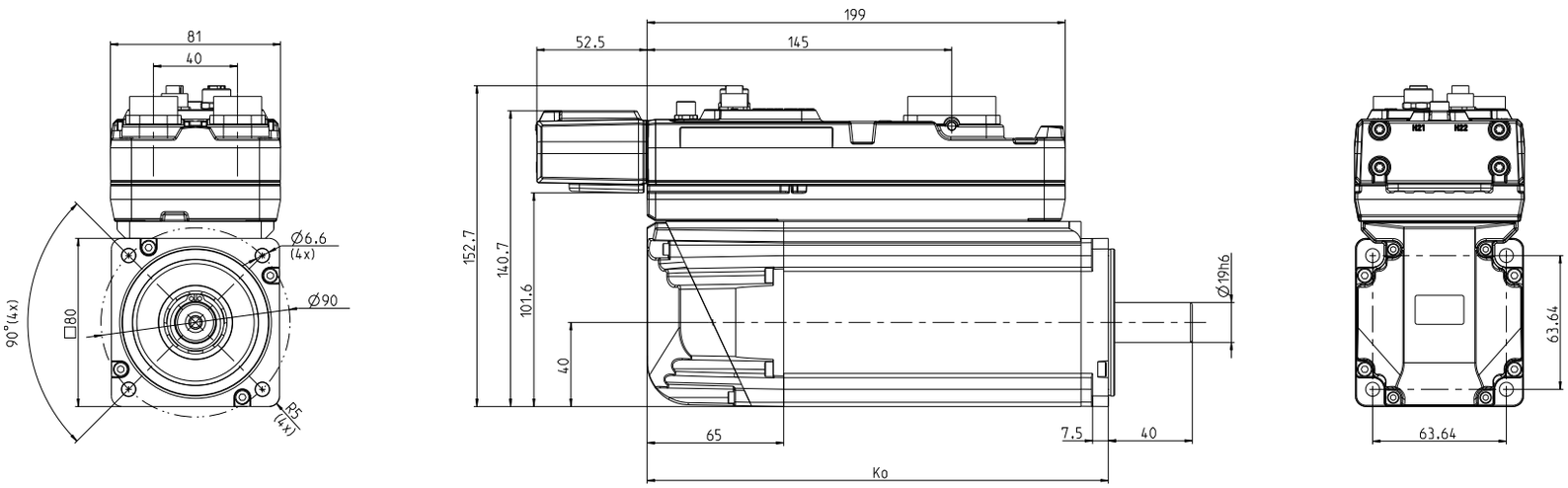
Size 3

ACOPOSmotor



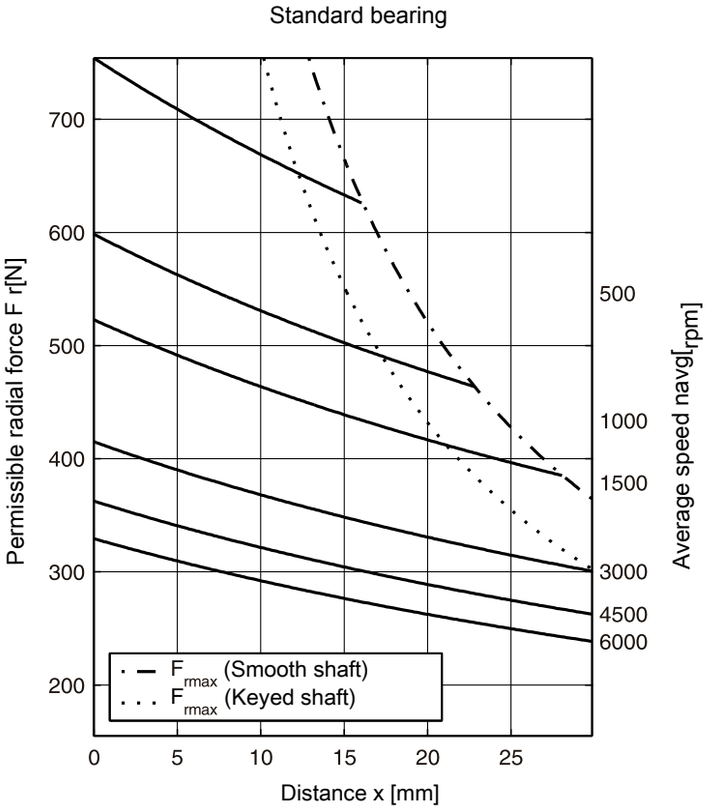
ACOPOSmotor SafeMOTION



		Extension of K_0 depending on motor option [mm]	
ACOPOSmotor module	**Length K_0 [mm]**	**Holding brake**	**Oil seal**
8DI33x.xxxxxxxxx-x	203.5	27	5
8DI34x.xxxxxxxxx-x	214.5	31	5

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



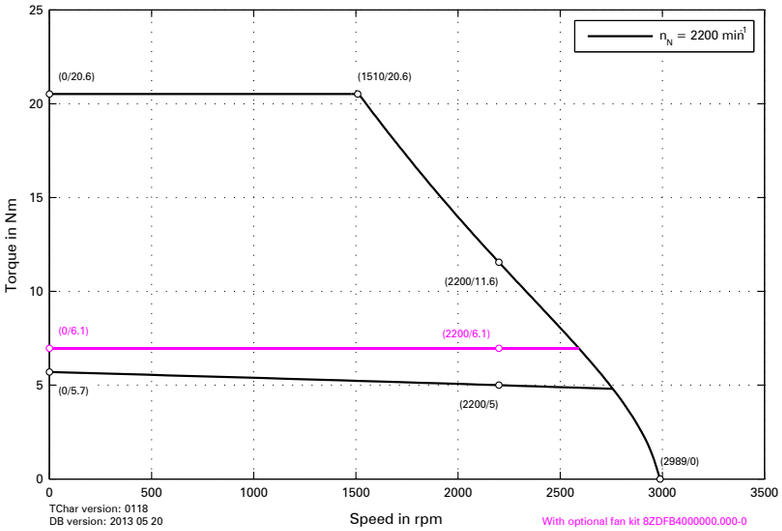
Maximum axial force: Famax = 66 N

Size 4

Technical data

	8DI440.ff022hi00-1	8DI44S.ff022hi00-1	8DI450.ff022hi00-1	8DI45S.ff022hi00-1	8DI460.ff022hi00-1	8DI46S.ff022hi00-1
Motor						
Nominal speed n_N [rpm]	2200					
Number of pole pairs	5					
Nominal torque M_n [Nm]	5		5.1		5.2	
Nominal power P_N [W]	1037		1175		1198	
Nominal current I_N [A]	2.26		2.4		2.35	
Stall torque M_0 [Nm]	5.7		6.7		7.7	
Stall current I_0 [A]	2.57		3.02		3.49	
Maximum torque M_{max} [Nm]	20.5		27.4		31.1	
Maximum current I_{max} [A]	14.46		19.29		21	
Maximum speed n_{max} [rpm]	12000					
Torque constant K_T [Nm/A]	2.22					
Voltage constant K_E [V/1000 rpm]	134.04					
Stator resistance R_{2ph} [Ω]	6.24		4.32		3.61	
Stator inductance L_{2ph} [mH]	44.8		41		32	
Electrical time constant t_{el} [ms]	In preparation		9.49		8.86	
Thermal time constant t_{therm} [min]	30		35		40	
Moment of inertia J [kgcm^2]	2.73		3.58		4.39	
Weight without brake m [kg]	5.26		6.7		8.1	

Speed-torque characteristics at DC bus voltage of 560 VDC



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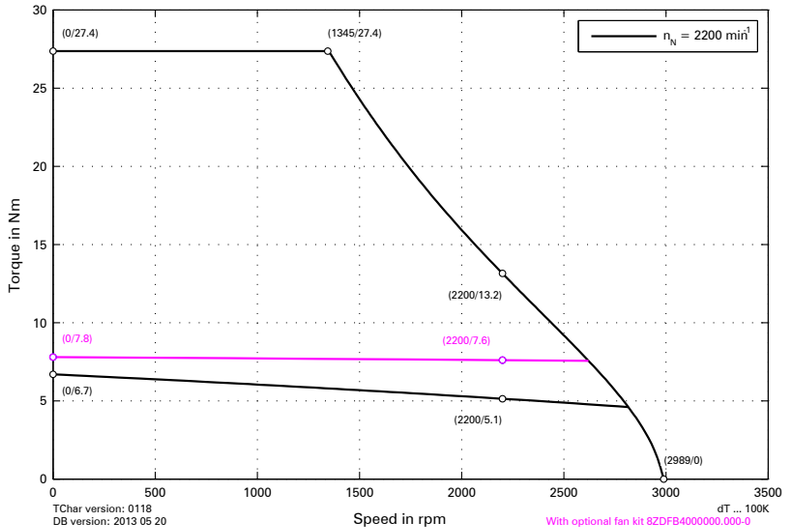
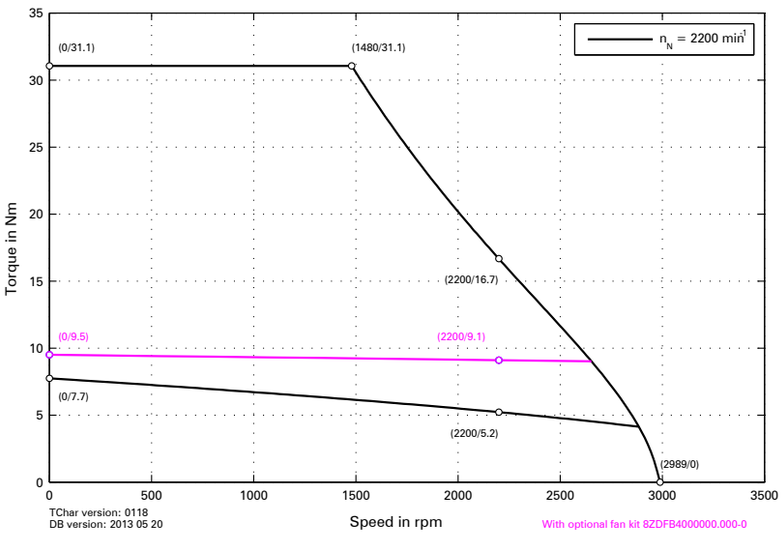
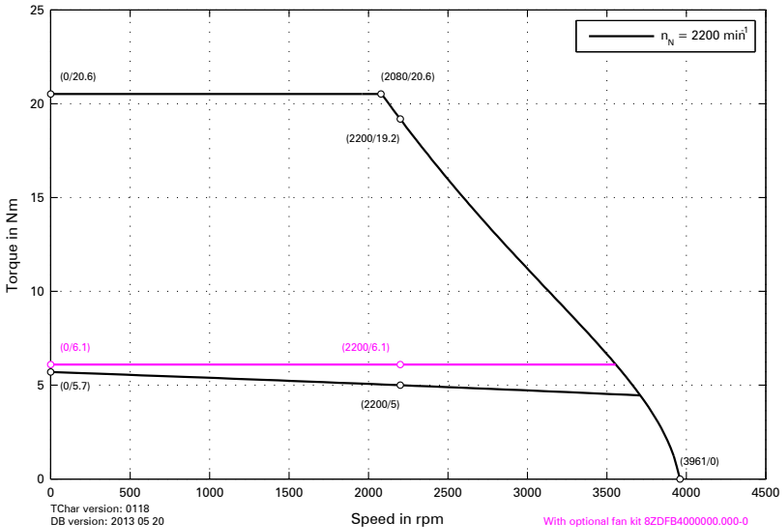


8DI450.ffggghi00-1



8DI460.ffggghi00-1

Speed-torque characteristics at DC bus voltage of 750 VDC



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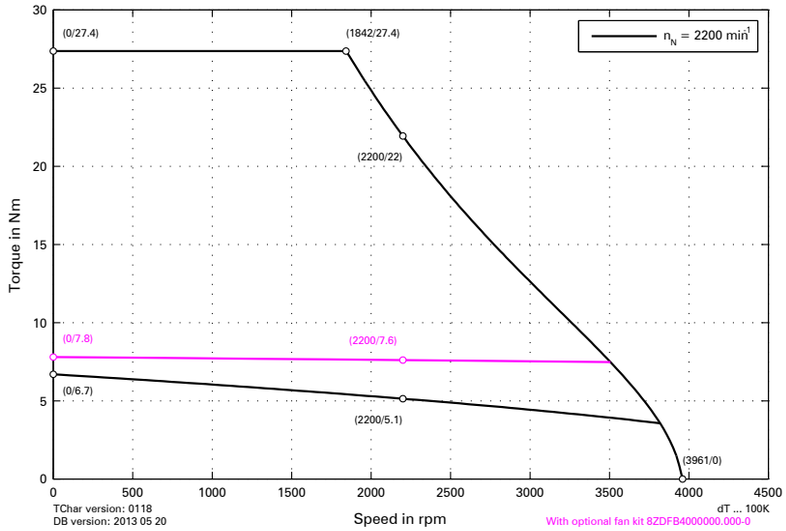

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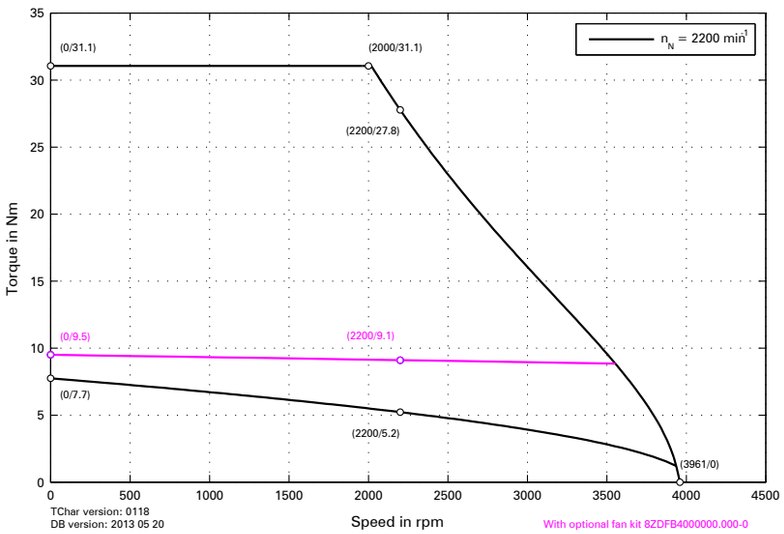

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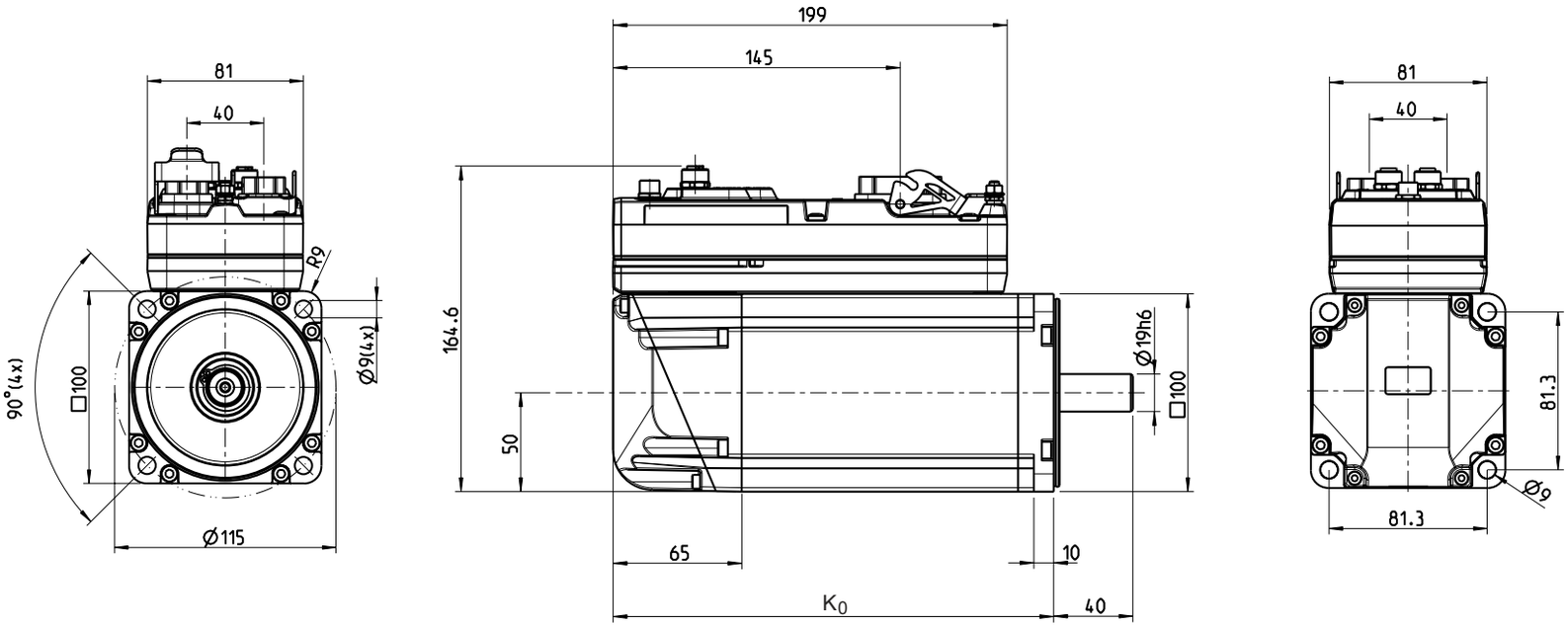
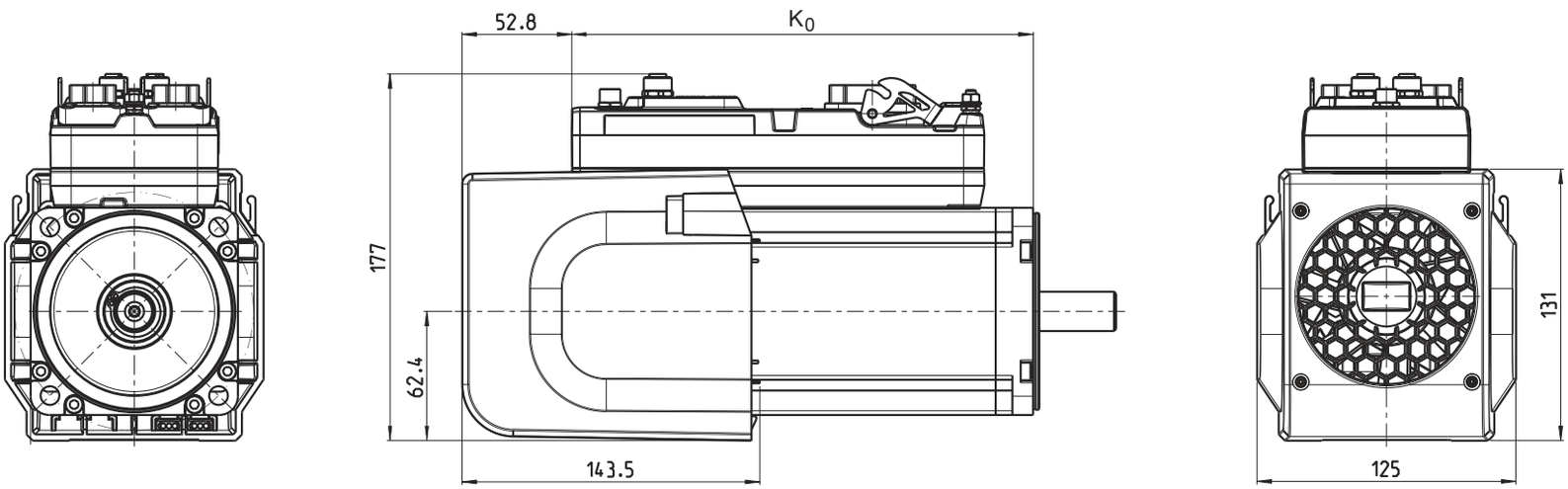
ACOPOSmotor

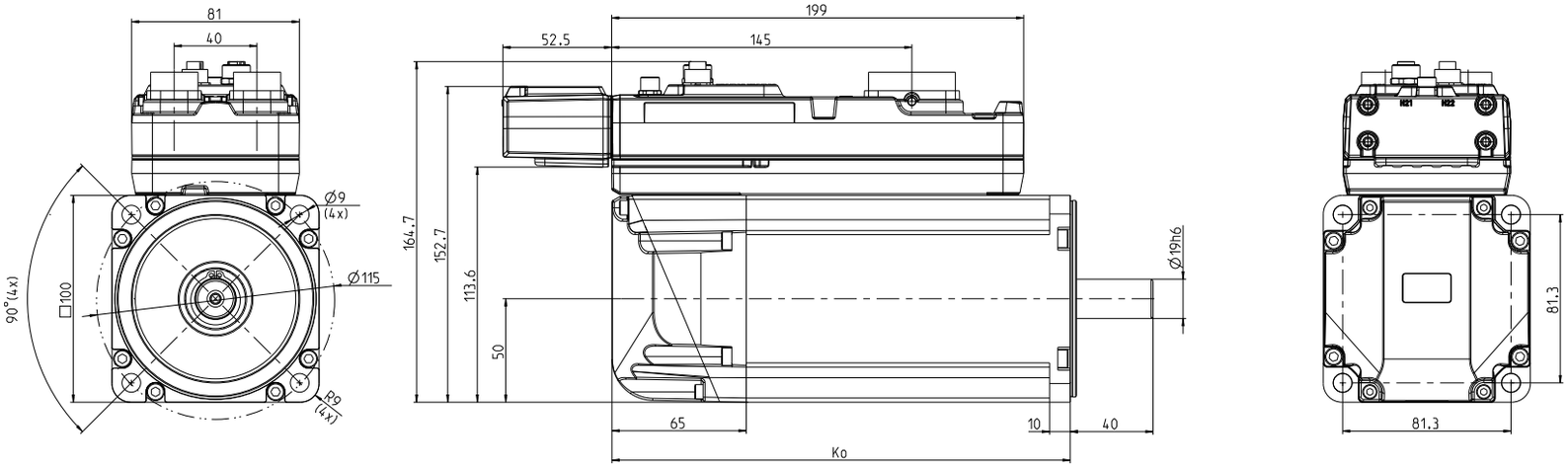


With optional fan kit 8ZDFB4000000.000-0

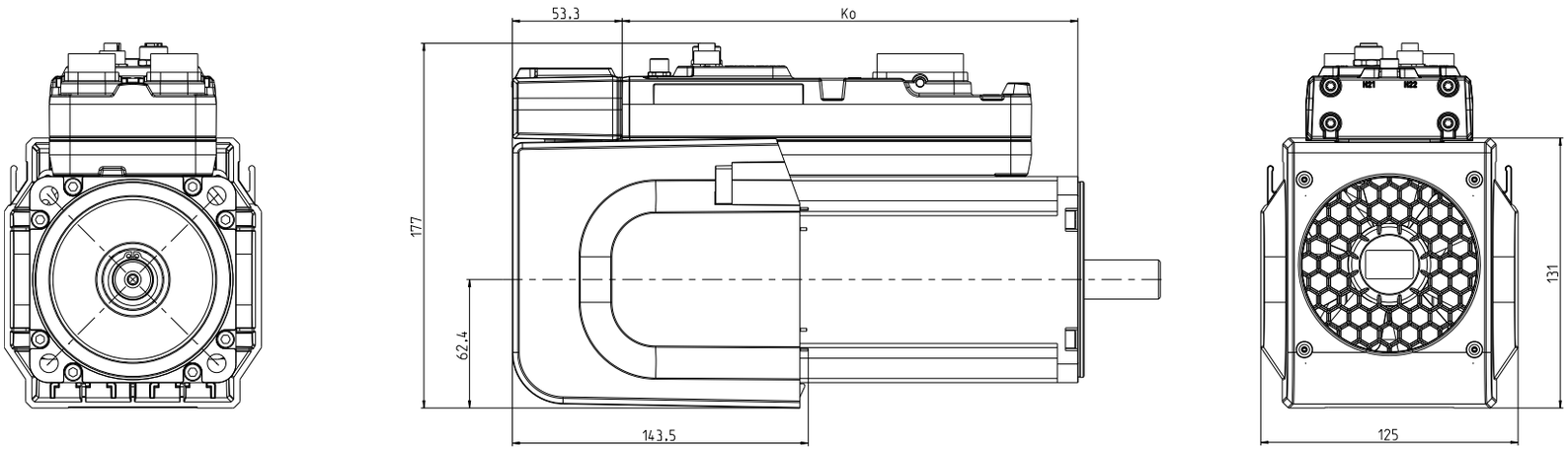


Size 4

ACOPOSmotor SafeMOTION



With optional fan kit 8ZDFB4000000.000-0

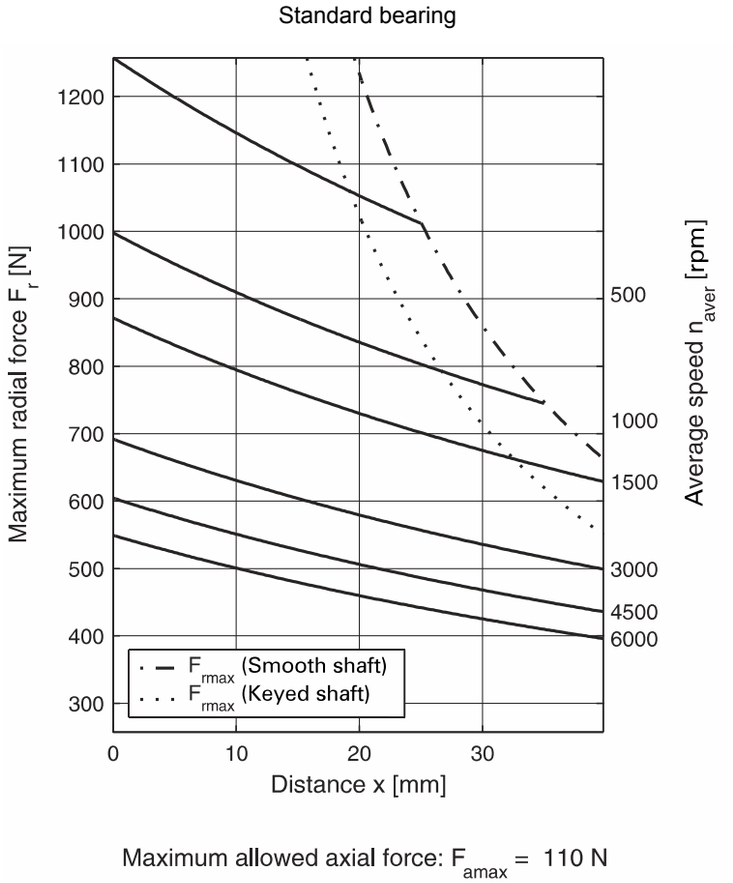


Extension of K_0 depending on motor option [mm]

Model number	K_0	Holding brake	Oil seal
8DI44x.Dxggghi00-1	222.5	32	---
8DI45x.Dxggghi00-1	246.5	32	---
8DI46x.Dxggghi00-1	266.5	32	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



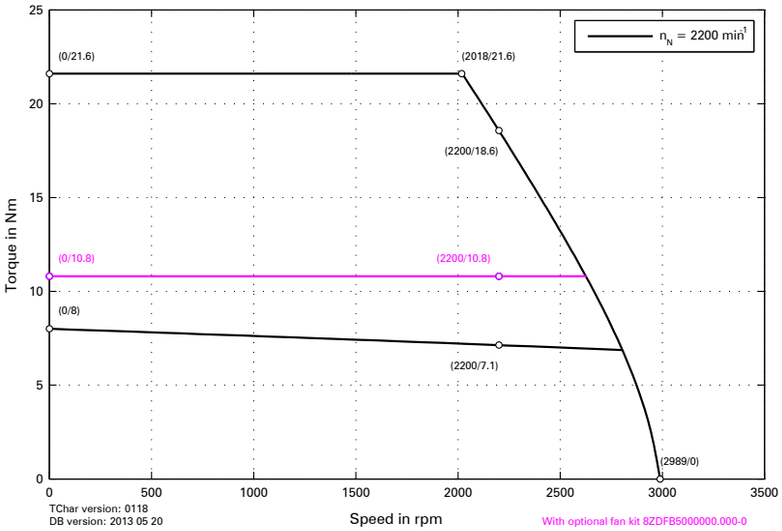
Maximum allowed axial force: F_{amax} = 110 N

Size 5

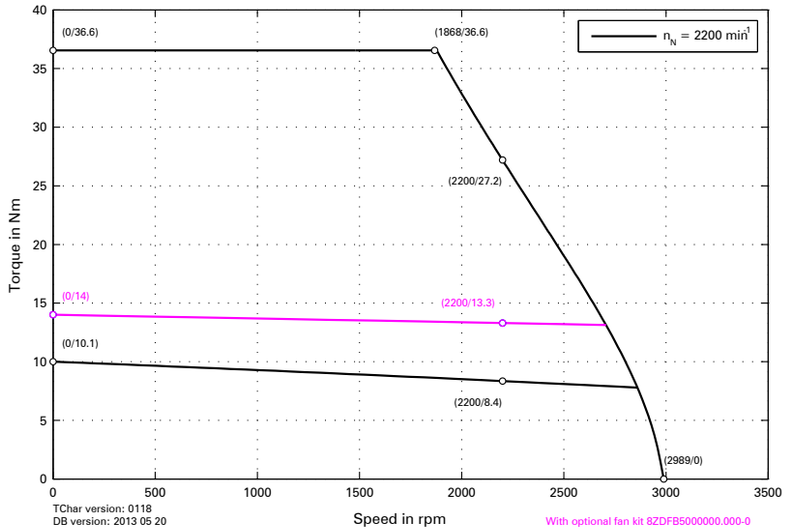
Technical data

	8DI540.ff022hi00-1	8DI54S.ff022hi00-1	8DI550.ff022hi00-1	8DI55S.ff022hi00-1	8DI560.ff022hi00-1	8DI56S.ff022hi00-1
Motor						
Nominal speed n_N [rpm]	2200					
Number of pole pairs	4					
Nominal torque M_n [Nm]	7.1		8.4		10	
Nominal power P_N [W]	1636		1935		2304	
Nominal current I_N [A]	3.2		3.79		4.51	
Stall torque M_0 [Nm]	8		10		12	
Stall current I_0 [A]	3.61		4.51		5.42	
Maximum torque M_{max} [Nm]	21.6		36.5		46.6	
Maximum current I_{max} [A]	14.9		21			
Maximum speed n_{max} [rpm]	9000					
Torque constant K_T [Nm/A]	2.22					
Voltage constant K_E [V/1000 rpm]	134.04					
Stator resistance R_{2ph} [Ω]	3.44		2.265		1.51	
Stator inductance L_{2ph} [mH]	34.5		24.29		17.6	
Electrical time constant t_{el} [ms]	10		10.724		In preparation	
Thermal time constant t_{therm} [min]	37		40		48	
Moment of inertia J [kgcm^2]	6.04		8.19		10	
Weight without brake m [kg]	11.46		13.29		16.4	

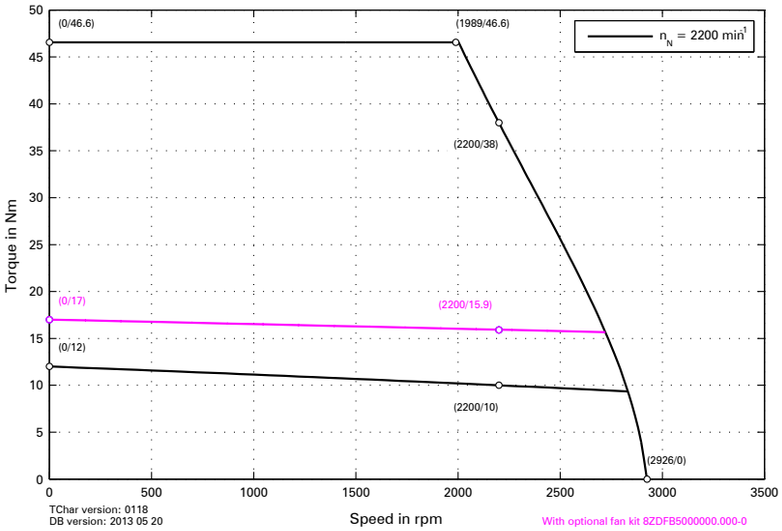
Speed-torque characteristics at DC bus voltage of 560 VDC



8DI540.ffggghi00-1

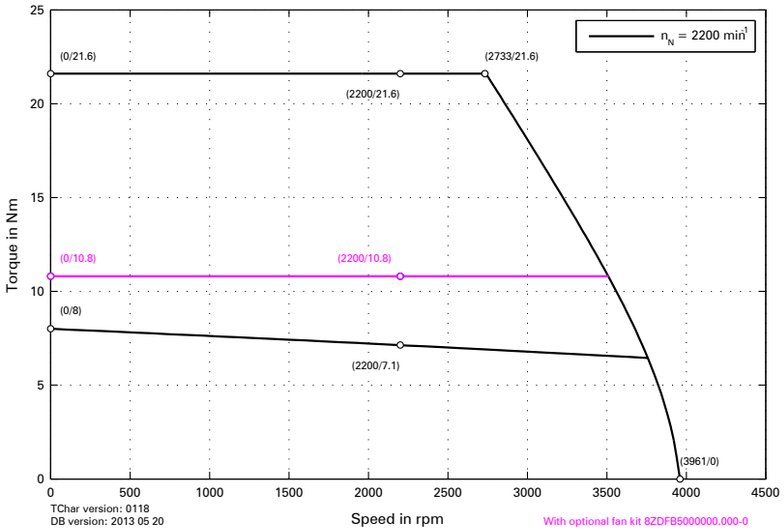


8DI550.ffggghi00-1

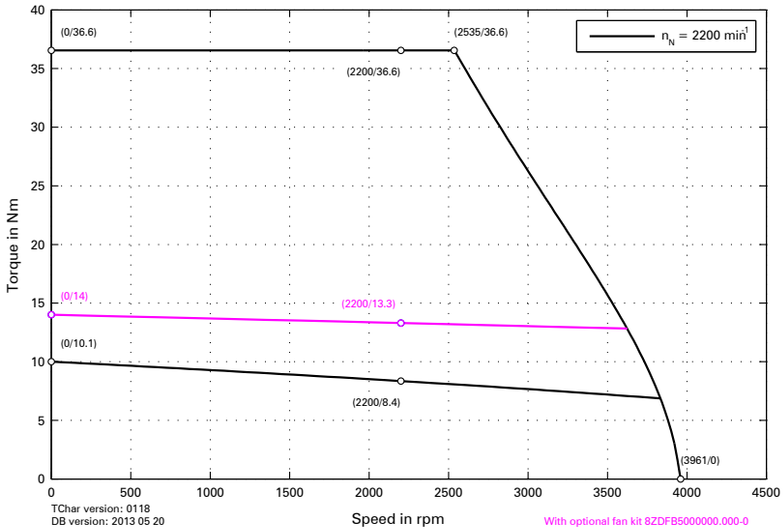


8DI560.ffggghi00-1

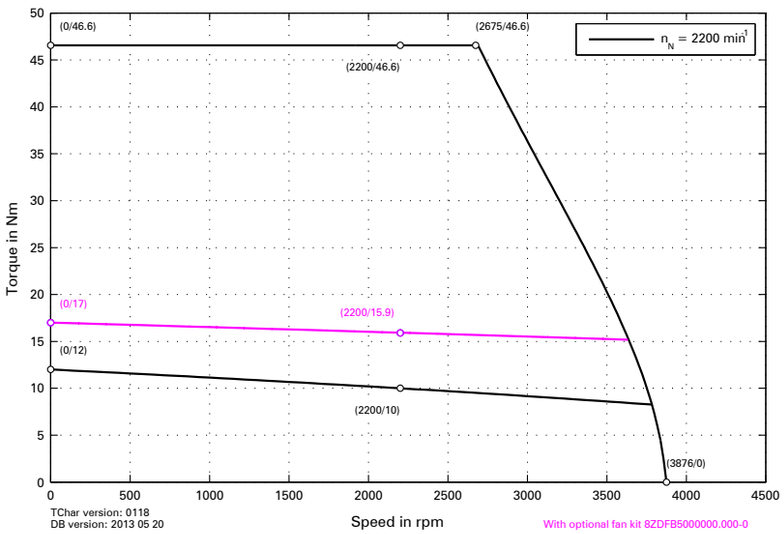
Speed-torque characteristics at DC bus voltage of 750 VDC



8DI540.ffggghi00-1

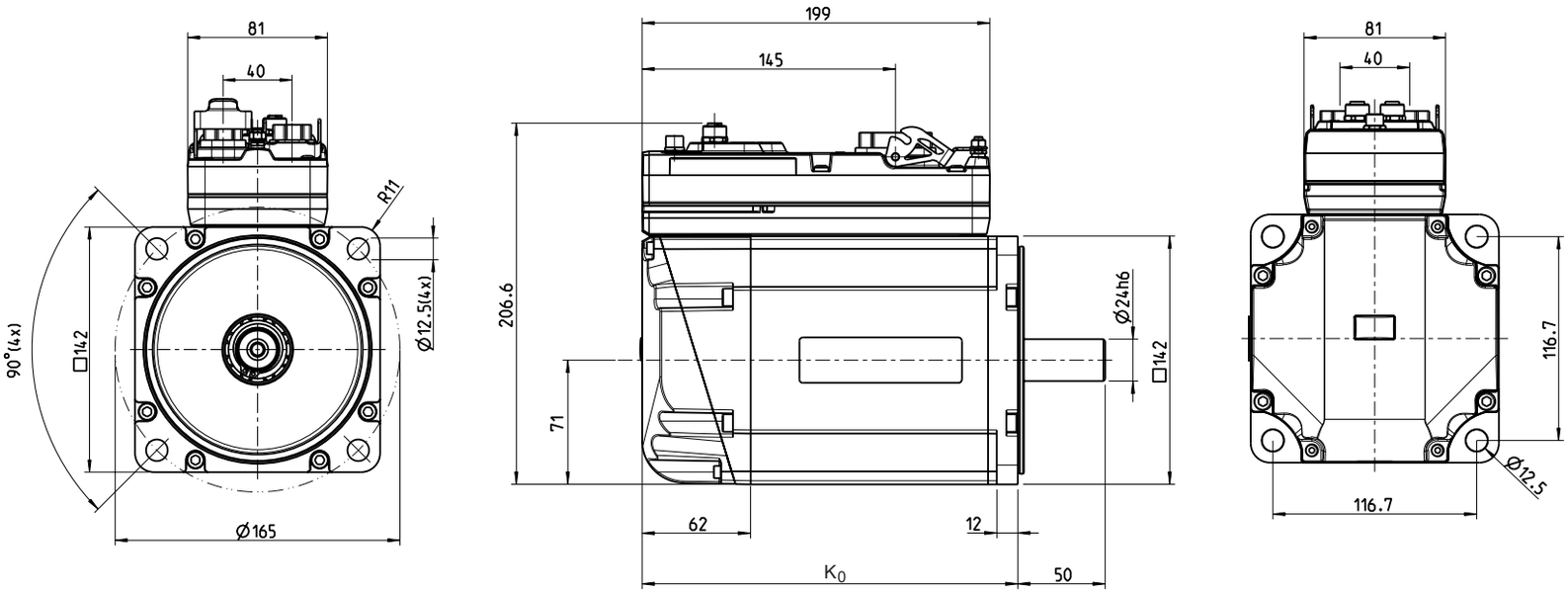


8DI550.ffggghi00-1

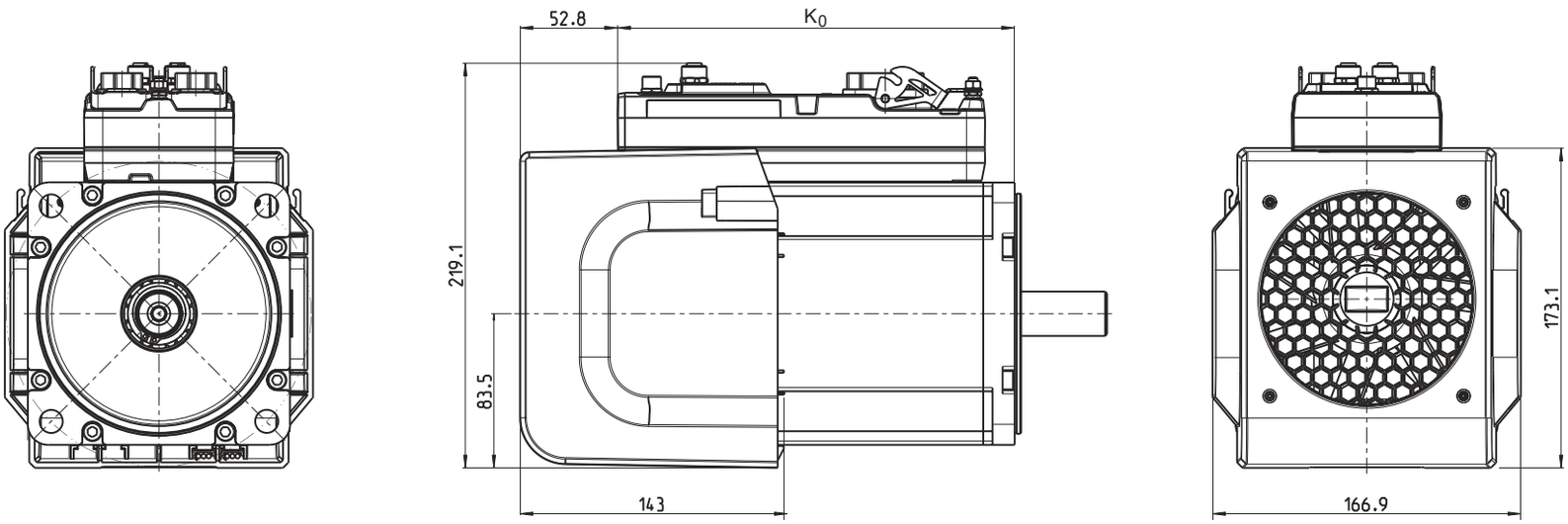


8DI560.ffggghi00-1

ACOPOSmotor

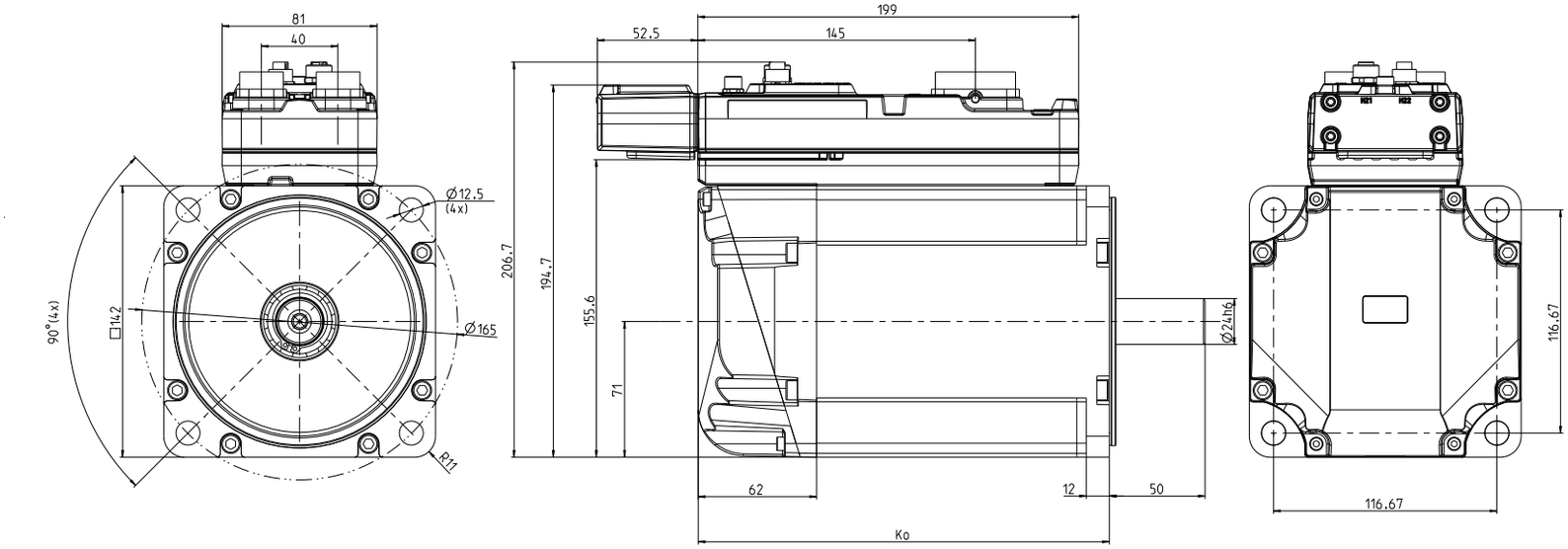


With optional fan kit 8ZDFB5000000.000-0

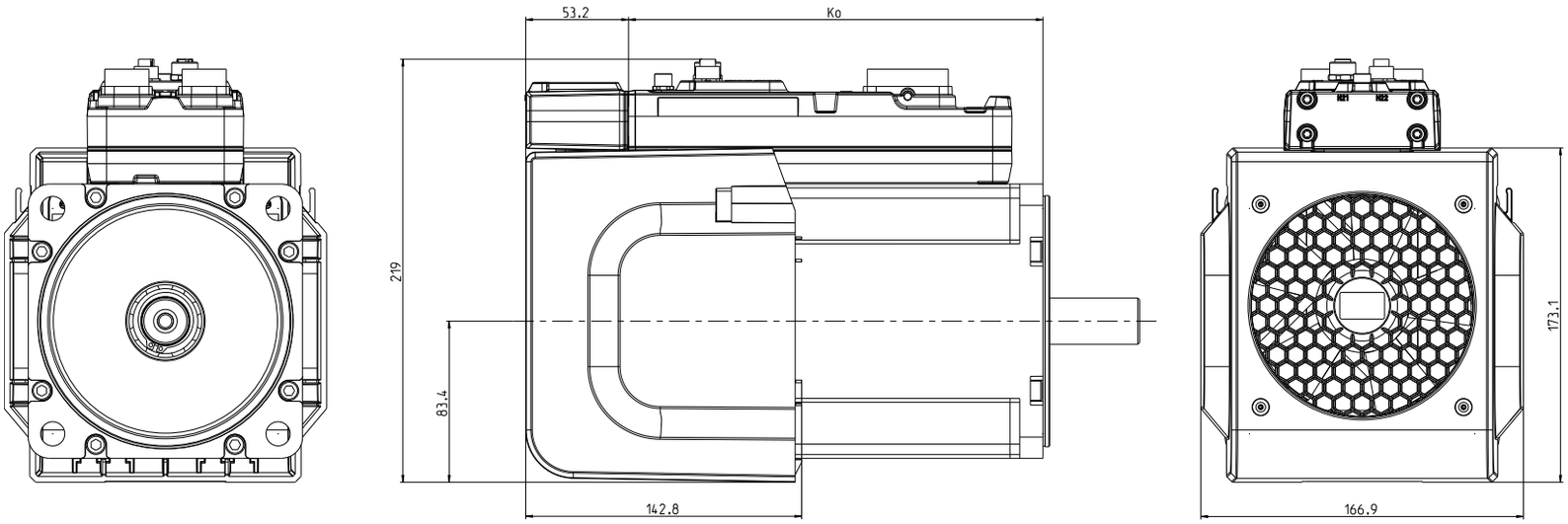


Size 5

ACOPOSmotor SafeMOTION



With optional fan kit 8ZDFB5000000.000-0

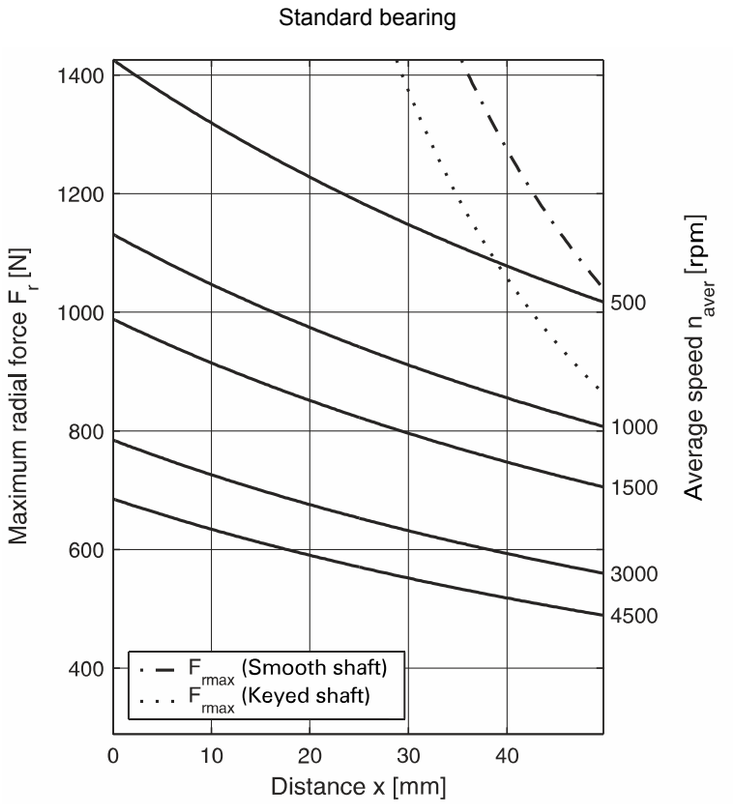


Extension of K_0 depending on motor option [mm]

Model number	K_0	Holding brake	Oil seal
8DI54x.Dxggghi00-1	215	35	---
8DI55x.Dxggghi00-1	240	30	---
8DI56x.Dxggghi00-1	265	30	---

Maximum shaft load

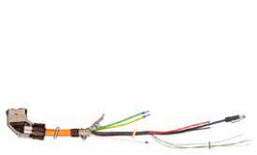
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



Maximum allowed axial force: F_{amax} = 124 N

8BVE / 8BVI connection cables

Technical data



	8CCH0005.11120-0	8CCH0007.11120-0	8CCH0010.11120-0
General information			
Listed	UL AWM Style 20234, 80°C, 1000 V as well as CSA C22.2 No. 210.2 I/II A/B, FT1		
Certification			
CE	Yes		
cULus	Yes		
Cable construction			
Power lines			
Quantity	5		
Wire colors	Black, red, green, white, yellow/green		
Design	Tinned copper stranded wire		
Diameter	2.5 mm²		
Shield	No		
Signal lines			
Quantity	4		
Wire colors	Pink, blue, violet, gray		
Design	Tinned copper stranded wire		
Diameter	0.75 mm²		
Shield	No		
Data lines			
Quantity	4		
Wire colors	Orange, white, yellow, blue		
Design	Tinned copper stranded wire		
Diameter	0.34 mm²		
Shield	Yes		
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film		
Outer sheathing			
Material	PUR		
Connector			
Type	15-pin female hybrid connector		
Additional connectors	POWERLINK RJ45 male connector		
EN 60529 protection	IP65		
Electrical characteristics			
Operating voltage	Power lines: ≤1000 V Signal lines: ≤1000 V Data lines: ≤100 V		
Current load	In preparation		

Technical data

	8CCH0005.11120-0	8CCH0007.11120-0	8CCH0010.11120-0
Mechanical characteristics			
Dimensions			
Length	5 m	7 m	10 m
Diameter		14.6 mm ±0.4 mm	
Flex radius			
Single bend		>40 mm	
Moving		≥140 mm	
Drag chain data			
Acceleration		<4 m/s²	
Flex cycles		≥5,000,000	
Speed		≤4 m/s	
Weight	1.95 kg	2.74 kg	3.72 kg

Technical data

	8CCH0001.11110-0	8CCH0002.11110-0	8CCH0003.11110-0	8CCH0004.11110-0	8CCH0005.11110-0	8CCH0010.11110-0
General information						
Listed	UL AWM Style 20234, 80°C, 1000 V as well as CSA C22.2 No. 210.2 I/II A/B, FT1					
Certification						
CE	Yes					
cULus	Yes					
Cable construction						
Power lines						
Quantity	5					
Wire colors	Black, red, green, white, yellow/green					
Design	Tinned copper stranded wire					
Diameter	2.5 mm²					
Shield	No					
Signal lines						
Quantity	4					
Wire colors	Pink, blue, violet, gray					
Design	Tinned copper stranded wire					
Diameter	0.75 mm²					
Shield	No					
Data lines						
Quantity	4					
Wire colors	Orange, white, yellow, blue					
Design	Tinned copper stranded wire					
Diameter	0.34 mm²					
Shield	Yes					
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film					
Outer sheathing						
Material	PUR					
Connector						
Type	15-pin female hybrid connector					
EN 60529 protection	IP65					
Electrical characteristics						
Operating voltage	Power lines: ≤1000 V Signal lines: ≤1000 V Data lines: ≤100 V					
Current load	In preparation					

Technical data

	8CCH0001.11110-0	8CCH0002.11110-0	8CCH0003.11110-0	8CCH0004.11110-0	8CCH0005.11110-0	8CCH0010.11110-0
Mechanical characteristics						
Dimensions						
Length	1 m	2 m	3 m	4 m	5 m	10 m
Diameter	14.6 mm ±0.4 mm					
Flex radius						
Single bend	>40 mm					
Moving	≥140 mm					
Drag chain data						
Acceleration	<4 m/s²					
Flex cycles	≥5,000,000					
Speed	≤4 m/s					
Weight	0.82 kg	1.1 kg	1.55 kg	1.73 kg	2 kg	3.8 kg

Hybrid cables, 1x plug insert 180° rotated

Technical data

	8CCH0001.11130-1	8CCH0002.11130-1	8CCH0003.11130-1	8CCH0004.11130-1	8CCH0005.11130-1
General information					
Cable cross section	5x 2.5 mm² + 4x 0.75 mm² + 2x 2x 0.34 mm² / 1.55- 100 LI				
Short description	Connector insert in hybrid connector rotated 180° degrees				
Listed	UL AWM Style 20234, 80°C, 1000 V as well as CSA C22.2 No. 210.2 I/II A/B, FT1				
Certification					
CE	Yes				
cULus	Yes				
Cable construction					
Power lines					
Quantity	5				
Wire insulation	Special thermoplastic material				
Wire colors	Black, red, green, white, yellow/green				
Design	Tinned copper stranded wire				
Diameter	2.5 mm²				
Shield	No				
Stranding	No				
Signal lines					
Quantity	4				
Wire insulation	Special thermoplastic material				
Wire colors	Pink, blue, violet, gray				
Design	Tinned copper stranded wire				
Diameter	0.75 mm²				
Shield	No				
Stranding	No				
Data lines					
Quantity	4				
Wire insulation	Special thermoplastic material				
Wire colors	Orange, white, yellow, blue				
Design	Tinned copper stranded wire				
Diameter	0.34 mm²				
Shield	Yes				
Stranding	Yes				
Cable stranding	With filler elements and foil banding				
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film				
Outer sheathing					
Material	PUR				
Labeling	In preparation				
Connector					
Type	15-pin female hybrid connector				
Connection cycles	>50				
Contacts	15				
EN 60529 protection	IP65				

Technical data

	8CCH0001.11130-1	8CCH0002.11130-1	8CCH0003.11130-1	8CCH0004.11130-1	8CCH0005.11130-1
Electrical characteristics					
Operating voltage	Power lines: ≤1000 V Signal lines: ≤1000 V Data lines: ≤100 V				
Current load	In preparation				
Conductor resistance					
Power lines	≤0.008 Ω	≤0.02 Ω		≤0.03 Ω	≤0.04 Ω
Signal lines	≤0.03 Ω	≤0.05 Ω	≤0.08 Ω	≤0.1 Ω	≤0.13 Ω
Data lines	≤0.06 Ω	≤0.11 Ω	≤0.17 Ω	≤0.22 Ω	≤0.28 Ω
Insulation resistance	>500 GΩ	>250 GΩ	>166.67 GΩ	>125 GΩ	>100 GΩ
Mechanical characteristics					
Dimensions					
Length	1 m	2 m	3 m	4 m	5 m
Diameter	14.6 mm ±0.4 mm				
Flex radius					
Single bend	>40 mm				
Moving	≥140 mm				
Weight	0.79 kg	1.11 kg	1.44 kg	1.73 kg	2 kg

Hybrid cables, 2x plug insert 180° rotated

Technical data

	8CCH0001.11230-1	8CCH0002.11230-1	8CCH0003.11230-1	8CCH0004.11230-1	8CCH0005.11230-1
General information					
Cable cross section	5x 2.5 mm² + 4x 0.75 mm² + 2x 2x 0.34 mm² / 1.55- 100 LI				
Short description	Connector insert in both hybrid connectors rotated 180° degrees				
Listed	UL AWM Style 20234, 80°C, 1000 V as well as CSA C22.2 No. 210.2 I/II A/B, FT1				
Certification					
CE	Yes				
cULus	Yes				
Cable construction					
Power lines					
Quantity	5				
Wire insulation	Special thermoplastic material				
Wire colors	Black, red, green, white, yellow/green				
Design	Tinned copper stranded wire				
Diameter	2.5 mm²				
Shield	No				
Stranding	No				
Signal lines					
Quantity	4				
Wire insulation	Special thermoplastic material				
Wire colors	Pink, blue, violet, gray				
Design	Tinned copper stranded wire				
Diameter	0.75 mm²				
Shield	No				
Stranding	No				
Data lines					
Quantity	4				
Wire insulation	Special thermoplastic material				
Wire colors	Orange, white, yellow, blue				
Design	Tinned copper stranded wire				
Diameter	0.34 mm²				
Shield	Yes				
Stranding	Yes				
Cable stranding	With filler elements and foil banding				
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film				
Outer sheathing					
Material	PUR				
Labeling	In preparation				
Connector					
Type	15-pin female hybrid connector				
Connection cycles	>50				
Contacts	15				
EN 60529 protection	IP65				

Technical data

	8CCH0001.11230-1	8CCH0002.11230-1	8CCH0003.11230-1	8CCH0004.11230-1	8CCH0005.11230-1
Electrical characteristics					
Operating voltage	Power lines: ≤1000 V Signal lines: ≤1000 V Data lines: ≤100 V				
Current load	In preparation				
Conductor resistance					
Power lines	≤0.008 Ω	≤0.02 Ω		≤0.03 Ω	≤0.04 Ω
Signal lines	≤0.03 Ω	≤0.05 Ω	≤0.08 Ω	≤0.1 Ω	≤0.13 Ω
Data lines	≤0.06 Ω	≤0.11 Ω	≤0.17 Ω	≤0.22 Ω	≤0.28 Ω
Insulation resistance	>500 GΩ	>250 GΩ	>166.67 GΩ	>125 GΩ	>100 GΩ
Mechanical characteristics					
Dimensions					
Length	1 m	2 m	3 m	4 m	5 m
Diameter	14.6 mm ±0.4 mm				
Flex radius					
Single bend	>40 mm				
Moving	≥140 mm				
Weight	0.82 kg	1.1 kg	1.55 kg	1.73 kg	2 kg

8CXC000.0000-00

General information	
Short description	Accessory set: 1x slot cover for male hybrid connector
Certification	
CE	Yes
Mechanical characteristics	
Weight	24 g

X67AC0M08, X67AC0M12

General information	X67AC0M08	X67AC0M12
Note	Package of 50 pcs.	
Connection	M8	M12
Short description	X67 M8 threaded caps, 50 pcs.	X67 M12 threaded caps, 50 pcs.

8ZDFB4000000.000-0, 8ZDFB5000000.000-0

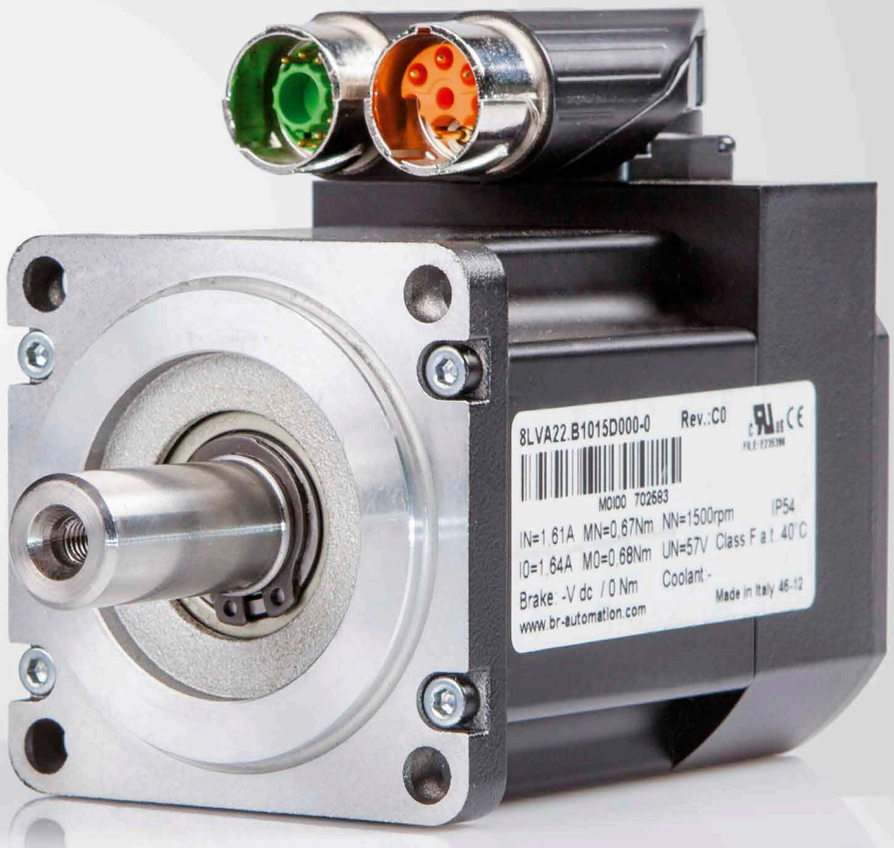
General information	8ZDFB4000000.000-0	8ZDFB5000000.000-0
Short description	ACOPOSmotor fan kit for 8DI4xx modules	ACOPOSmotor fan kit for 8DI5xx modules
24 VDC supply	**8ZDFB4000000.000-0**	**8ZDFB5000000.000-0**
Input voltage	24 VDC +10% / -50%	
Max. power consumption	5.5 W	7.4 W
Design	M8 4-pin male connector, 90° angled	
Operating conditions	**8ZDFB4000000.000-0**	**8ZDFB5000000.000-0**
EN 60529 protection	IP24	
Environmental conditions	**8ZDFB4000000.000-0**	**8ZDFB5000000.000-0**
Temperature		
Operation		
Nominal	5 to 40°C	
Maximum	55°C	
Relative humidity		
Operation	15 to 90%, non-condensing	
Mechanical characteristics	**8ZDFB4000000.000-0**	**8ZDFB5000000.000-0**
Volume flow	2.486 m³/min	3.256 m³/min
Operating noise	47 dB(A)	
Service life		
At 40°C	80,000 h	75,000 h
Dimensions		
Width	125 mm	167 mm
Height	131 mm	173.1 mm
Depth	143.5 mm	143 mm
Weight	In preparation	

8LVA three-phase synchronous motors

Dynamic compact motors

The most advanced machine concepts demand excellent dynamics and performance within the smallest amount of space possible. 8LVA three-phase synchronous motors from B&R were specially developed for these applications and provide users with the highest level of freedom in machine design by delivering maximum power density.

Table of contents


8LVA22.B1015D000-0 Rev.:C0
MO100 702683
IN=1.61A MN=0.67Nm NN=1500rpm IP54
I0=1.64A M0=0.68Nm UN=57V Class F a t 40°C
Brake -V dc / 0 Nm Coolant -
www.br-automation.com
Made in Italy 46-12

System features

8LVA - Compact servo technology

The 8LVA motor series is the perfect choice when it comes to installing servo motors in extremely tight spaces. Equipped with either a resolver or digital EnDat 2.2 interface, these motors can meet the absolute highest demands. With their low moment of inertia, motors in the 8LVA series are designed to be highly dynamic and are distinguished by their outstanding intrinsic acceleration characteristics. Additional noteworthy features include low cogging and a high overload capability. These motors have IP54 protection standard but are also available with IP65 protection. They can optionally be equipped with a holding brake. Designed for use with ACOPOSmicro servo drives, these motors offer extremely high performance and are some of the most compact on the market. 8LVA servo motors are recommended for a wide range of applications and provide an optimal price/performance ratio in the power range up to 1 kW.

Smooth surface

The special construction of the surface of the 8LVA synchronous motor series allows them to be used in applications for the food and beverage industry. Depressions where liquid can collect were deliberately avoided.

8LVA highlights

- Ultra compact and highly dynamic
- High overload capability and low cogging
- Power range up to 1 kW for 80 VDC and 320 VDC DC bus voltage
- Multiturn encoder with the same length
- Self-locking connector system
- Robust, industrial connectors with optimum EMC shielding
- 300° swivel double angular connector
- Available with optional gearbox or direct attachment of gearbox (8LVB)

Connection type

The innovative connection system developed for this compact servo motor series only requires a small amount of space for cabling while still providing maximum flexibility. The 300° range of rotation allows connections to be made in an extremely flexible manner. Fast and tool-free mounting with self-locking quick-release (springtec®) ensures simple and secure connections for power and encoder cables. The metal housing of the connector provides optimal EMC shielding for the highest level of operational safety. This ensures secure connections even in the most adverse conditions.

Encoder technology

B&R offers a choice between a resolver for standard applications and absolute encoder with EnDat 2.2 interface.
The ultra compact encoder with a length of less than 13 mm is multi-turn capable and has a battery backup system.
With 262,144 (2^{18}) position values per revolution and 65,536 (2^{16}) distinct revolutions, the encoder provides excellent resolution in an extremely compact design.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Cooling types

Cooling type A
8LVA servo motors are self-cooling and have a long, slim design. The motors must be installed on the cooling surface (flange).

Sizes

The 8LVA servo motor series is available in three different sizes (1, 2, 3). They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Overview

Cooling type	Available sizes		
	1	2	3
A	Yes	Yes	Yes

Lengths

The 8LVA servo motor series is available in two different lengths. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number.

Overview

Length	Available sizes		
	1	2	3
2	---	Yes	---
3	Yes	Yes	Yes

Design of the shaft end

All servo motor shafts in this series comply with the DIN 748 standard and are available in a smooth or keyed design depending on the motor's size.

Smooth shaft end
A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end
A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.
The keyways for the servo motors in this series conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with DIN ISO 8821. The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Load capacity of the shaft end and bearings

8LV servo motors are equipped with grooved ball bearings that are sealed on both sides and lubricated. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Encoder systems

The 8LV servo motors are available with EnDat encoders and also with resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Resolver

General information

RE-15-1-J04 resolvers are used in the servo motors.

Technical data

Name	Order code (ee)
	R0
Precision	10 angular minutes
Vibration during operation 10 < f ≤ 500 Hz	≤500 m/s²
Shock during operation Duration 11 ms	≤10,000 m/s²

EnDat 2.2 encoder

General information

Digital drive systems and position control loops require fast and highly secure transfer of data obtained from position measuring instruments. In addition, other data such as drive-specific characteristics, correction tables, etc. should also be available. To ensure a high level of system security, measuring instruments must be integrated in routines for detecting errors and be able to perform diagnostics.
The EnDat interface from HEIDENHAIN is a digital, bidirectional interface for measuring instruments. It is able to output position values from incremental and absolute measuring instruments and can also read and update information on the measuring instrument or store new data there. Because it relies on serial data transfer, only 4 signal lines are needed. Data is transferred synchronously to the clock signal defined by the subsequent electronics. The type of transfer used (e.g. for position values, parameters, diagnostics, etc.) is selected using mode commands sent to the measuring instrument by the subsequent electronics.

Technical data

Name	Order code (ee)
	B1
Encoder type	EnDat multi-turn (battery-backed)
Operating principle	Inductive
EnDat protocol	EnDat 2.2
Distinguishable revolutions	65,536 (2^{16})
Position values per revolution	262,144 (18-bit)
Precision	±120"
Vibration during operation, 55 to 2000 Hz	≤300 m/s² (IEC 60 068-2-6)
Shock during operation, 6 ms duration	≤1000 m/s² (IEC 60 068-2-27)
Manufacturer's website	Dr. Johannes Heidenhain GmbH www.heidenhain.de
Manufacturer's product ID	EBI1135

Nominal speed

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). This code represents the nominal speed divided by 100 at 80 VDC operation. It begins with zero. The code "030" corresponds to a speed of 300 rpm. The respective combination of other motor options is listed in the form of a 2-digit code (ff) as part of the model number.

Overview

Size	Available nominal speeds n_N [rpm] at 80 VDC operation		
	1500	**2100**	**3000**
1	Yes	---	Yes
2	Yes	---	Yes
3	Yes	Yes	---

Holding brake

Servo motors in the 8LV series can be delivered with a holding brake. It is used to hold the motor shaft when no power is applied to the servo motor.

Operating principle

The holding brake is controlled by the ACOPOSmicro servo drive. It uses permanent magnets that are demagnetized when 24 VDC is applied to a magnet winding. This releases the brake.
This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle).
Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Technical data for the standard holding brake

Name	Motor size		
	1	**2**	**3**
Holding torque M_{Br} [Nm]	0.35	2.2	3.2
Connected load P_{on} [W]	8	8.4	13.4
Maximum speed nmax [rpm]	6000	12000	12000
Supply current I_{on} [A]	0.33	0.35	0.56
Supply voltage U_{on} [V]	24 VDC +6% / -10%	24 VDC +6% / -10%	24 VDC +6% / -10%
Moment of inertia J_{Br} [kgcm²]	0.013	0.07	0.38
Mass m_{Br} [kg]	0.1	0.16	0.29

Oil seal

The 8LV servo motors in sizes 2 and 3 are available with an optional Form A oil seal in accordance with DIN 3760. When equipped with an oil seal, the motors have IP65 protection in accordance with EN 60034-5.
Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

Motor options

Servo motors from the 8LV series are available in different variants depending on the customer's requirements:

- With various nominal speeds
- With or without an oil seal
- With or without a holding brake
- With a smooth or keyed shaft

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table:

Motor option				
Connection direction	**Oil seal**	**Holding brake**	**Shaft end**	**Code for the order key (ff)**
Angled (swivel connector)	No	No	Smooth	D0
	No	No	Keyed	D1[1)]
	No	Yes	Smooth	D2
	No	Yes	Keyed	D3[1)]
	Yes	No	Smooth	D6
	Yes	No	Keyed	D7[1)]
	Yes	Yes	Smooth	D8
	Yes	Yes	Keyed	D9[1)]

1) Not available for size 1.

Order Key

8LV	b	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (see section "cooling types")
A...Self cooled

Sizes (see section "Sizes")
Valid values:**1,2,3**

Lengths (See section "Lengths")
Valid values: **2,3**

Encoder system (See section "Motor encoder systems")
R0...Resolver
B1...Endat 2.2 Multi-turn, 16 - lines

Nominal speed (See section "Nominal speed")
nnn...Nominal speed/100, e.g. 015 corresponds to a nominal speed of 1500 rpm

Motor options (See section "Motor options")

Special motor options (See section "Special motor options")
00...No special motor options

Motor version: Valid value: **0** (value assigned automatically and cannot be chosen freely)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A three-phase synchronous motor of type **8LVA22** with a nominal speed of 3000 rpm has been selected for an application. The motor should be equipped with a holding brake, a keyed shaft and an EnDat encoder.
The (ee) code for the encoder system is **B1**.

The (nnn) code for a nominal speed of 3000 rpm is **030**.

The (ff) code for the other options is **D3**.

The model number for the required motor is **8LVA22.B1030D300-0.**

Example order 2

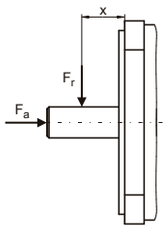
A three-phase synchronous motor of type **8LVA33** with a nominal speed of 1500 rpm has been selected for an application. The motor should be equipped without a holding brake, with a smooth shaft and a resolver encoder. The motor should also be equipped with a oil seal.
The code (ee) for the encoder system is **R0**.

The code (nnn) for a nominal speed of 1500 rpm is **015**.

The (ff) code for the other options is **D6**.

The model number for the required motor is **8LVA33.R0015D600-0.**

Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors).
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia	J	kgcm²	Moment of inertia for a motor without a holding brake
Mass	m	kg	Weight of a motor without a holding brake

General motor data

General information	Cooling type A
C-UR-US listed	Yes
Electrical characteristics	
DC bus voltage on the ACOPOSmicro	80 VDC [1]
Connection type	Male Y-TEC connector from Intercontec
Thermal characteristics	
Insulation class in accordance with EN 60034-1	F
Methods of cooling in accordance with EN 60034-6 (IC code)	Self-cooling, no separate surface cooling (IC4A0A0)
Thermal motor protection in accordance with EN 60034-11	Size 1: No, motor sizes 2 and 3: KTY 83-110 Maximum winding temperature is 155°C (limited by the thermal motor protection in the ACOPOS-micro drive system to 110°C with EnDat feedback and 130°C with resolver feedback)
Mechanical characteristics	
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281
Shaft end in accordance with DIN 748	Form E
Oil seal in accordance with DIN 3760	Form A
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway
Shaft balancing according to ISO 1940/1, G6.3	Half-key arrangement
Mounting flange	IEC 72-1
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R
Coating Color	Water-based coating RAL 9005 flat
Operating conditions	
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation
Ambient temperature during operation	-15°C to +40°C
Relative humidity during operation	5 to 95%, non-condensing
Reduction of the nominal current and stall current at temperatures above 40°C	5% per 5°C
Maximum ambient temperature during operation	+50°C [2]
Reduction of the nominal current and stall current at installation elevations Starting at 1000 m above sea level	10% per 1000 m
Maximum installation elevation	2000 m [3]
Maximum flange temperature	65°C
EN 60034-5 protection (IP code) With optional oil seal	IP54 IP65 [4]
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Storage and transport conditions	
Storage temperature	-20 to +60°C
Relative humidity during storage	Max. 90%, non-condensing
Transport temperature	-20 to +60°C
Relative humidity during transport	Max. 90%, non-condensing

1) Permitted DC bus voltage on the ACOPOS single-phase: 320 VDC.

2) Continuous operation of the servo motors at ambient temperatures from +40°C to max. +50°C is possible but results in a shorter lifespan.

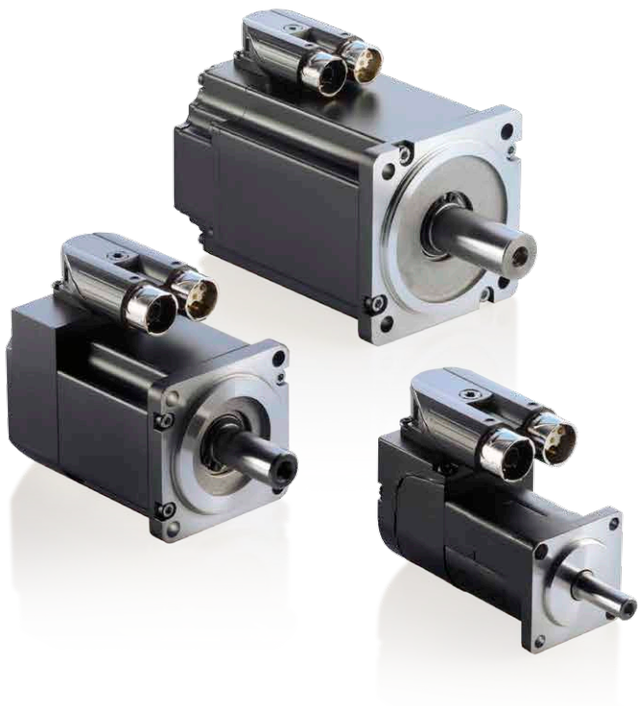
3) Requirements that go above and beyond this must be arranged with B&R.

4) Only for sizes 2 and 3!

8LVA standard motors

8LVA standard motors

The 8LV series includes a selection of sizes and options that represent preferred types (standard motors), which are available with optimized delivery times. These standard motors offer considerably faster delivery and an unbeatable price/performance ratio for servo motors featuring high-precision inductive encoders in a single-cable design or with a resolver, with or without a keyed shaft. If necessary, these motors can be ready on short notice and dispatched using express delivery. The standard motor types are listed below.



Technical data

	8LVA13.B1030D000-0	8LVA13.B1030D200-0	8LVA23.B1030D000-0	8LVA23.B1030D200-0	8LVA33.B1021D000-0	8LVA33.B1021D200-0
Motor						
Nominal speed n_N [rpm]	3000	3000	3000	3000	2100	2100
Number of pole pairs	4					
Nominal torque M_n [Nm]	0.32	0.32	1.3	1.3	2.45	2.45
Nominal power P_N [W]	101	101	408	408	539	539
Nominal current I_N [A]	1.4	1.4	5.8	5.8	7.3	7.3
Stall torque M_0 [Nm]	0.36	0.36	1.35	1.35	2.6	2.6
Stall current I_0 [A]	1.6	1.6	6	6	7.9	7.9
Maximum torque M_{max} [Nm]	1	1	4	4	7.2	7.2
Maximum current I_{max} [A]	5.2	5.2	20.7	20.7	26	26
Maximum speed n_{max} [rpm]	6600					
Torque constant K_T [Nm/A]	0.23	0.23	0.23	0.23	0.33	0.33
Voltage constant K_E [V/1000 rpm]	13.61	13.61	13.61	13.61	19.9	19.9
Stator resistance R_{2ph} [Ω]	5.8	5.8	0.83	0.83	0.503	0.503
Stator inductance L_{2ph} [mH]	10.2	10.2	2	2	2	2
Electrical time constant t_{el} [ms]	1.76	1.76	2.41	2.41	3.98	3.98
Thermal time constant t_{therm} [min]	15	15	38	38	34	34
Moment of inertia J [kgcm^2]	0.03	0.03	0.26	0.26	0.95	0.95
Weight without brake m [kg]	0.6	0.6	1.45	1.45	2.45	2.45
Holding brake						
Holding torque of the brake M_{Br} [Nm]	0.35	0.35	2.2	2.2	3.2	3.2
Weight of brake [kg]	0.1	0.1	0.16	0.16	0.29	0.29
Moment of inertia for the brake J_{Br} [kgcm^2]	0.013	0.013	0.12	0.12	0.38	0.38
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1022	1022	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0055	0055	0110	0110
Cross section for B&R motor cables [mm^2]	1.5					
Connector type	Y-Tec					
Connector size	1.0					

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

Technical data

	8LVA13.ee015ffgg-0	8LVA13.ee030ffgg-0	8LVA22.ee015ffgg-0	8LVA22.ee030ffgg-0	8LVA23.ee015ffgg-0	8LVA23.ee030ffgg-0	8LVA33.ee015ffgg-0	8LVA33.ee021ffgg-0
Motor								
Nominal speed n_N [rpm]	1500	3000	1500	3000	1500	3000	1500	2100
Number of pole pairs	4							
Nominal torque M_n [Nm]	0.34	0.32	0.67	0.65	1.33	1.3	2.5	2.45
Nominal power P_N [W]	53	101	105	204	209	408	393	539
Nominal current I_N [A]	0.8	1.4	1.61	2.9	3.2	5.8	6	7.3
Stall torque M_0 [Nm]	0.4	0.4	0.7	0.7	1.4	1.4	2.6	2.6
Stall current I_0 [A]	0.9	1.6	1.6	3	3.2	6	6.3	7.9
Maximum torque M_{max} [Nm]	1	1	2	2	4	4	7.2	7.2
Maximum current I_{max} [A]	2.8	5.2	5.6	10.3	11.2	20.7	20.4	26
Maximum speed n_{max} [rpm]	6600							
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.1	13.6	25.1	13.6	25.1	13.6	25.1	19.9
Stator resistance R_{2ph} [Ω]	17.4	5.8	6.02	2	2.6	0.83	0.81	0.5
Stator inductance L_{2ph} [mH]	30.7	10.2	12.2	4.1	6.3	2	3.3	2
Electrical time constant t_{el} [ms]	1.76	1.76	2.03	2.05	2.42	2.41	4.08	3.98
Thermal time constant t_{therm} [min]	15	15	35	35	38	38	34	34
Moment of inertia J [kgcm^2]	0.03	0.03	0.14	0.14	0.26	0.26	0.95	0.95
Weight without brake m [kg]	0.6	0.6	1.03	1.03	1.39	1.39	2.45	2.45
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0.35	0.35	2.2	2.2	2.2	2.2	3.2	3.2
Weight of brake [kg]	0.1	0.1	0.16	0.16	0.16	0.16	0.29	0.29
Moment of inertia for the brake J_{Br} [kgcm^2]	0.013	0.013	0.12	0.12	0.12	0.12	0.38	0.38
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1010.50	1010.50	1016.50	1016.50	-	-	-
ACOPOSmulti inverter module 8BVIxxxx...	-							
ACOPOSmicro inverter module 80VD100Px.xxxx-01	C022, C02X							
Cross section for B&R motor cables [mm^2]	0.75							
Connector type	Y-Tec							
Connector size	1.0							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

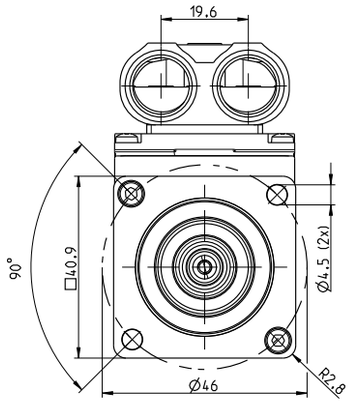
Technical data

	8LVA13.ee015ffgg-0	8LVA13.ee030ffgg-0
Motor		
Nominal speed n_N [rpm]	1500	3000
Number of pole pairs	4	
Nominal torque M_n [Nm]	0.34	0.32
Nominal power P_N [W]	53	101
Nominal current I_N [A]	0.8	1.4
Stall torque M_0 [Nm]	0.4	
Stall current I_0 [A]	0.9	1.6
Maximum torque M_{max} [Nm]	1	
Maximum current I_{max} [A]	2.8	5.2
Maximum speed n_{max} [rpm]	6600	
Torque constant K_T [Nm/A]	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.1	13.6
Stator resistance R_{2ph} [Ω]	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2
Electrical time constant t_{el} [ms]	1.76	
Thermal time constant t_{therm} [min]	15	
Moment of inertia J [kgcm^2]	0.03	
Weight without brake m [kg]	0.6	
Holding brake		
Holding torque of the brake M_{Br} [Nm]	0.35	
Weight of brake [kg]	0.1	
Moment of inertia for the brake J_{Br} [kgcm^2]	0.013	
Recommendations		
ACOPOS servo drive 8Vxxxx.xx...	1010.50	
ACOPOSmulti inverter module 8BVIxxxx...	-	
ACOPOSmicro inverter module 80VD100Px.xxxx-01	C022, C02X	
Cross section for B&R motor cables [mm^2]	0.75	
Connector type	Y-Tec	
Connector size	1.0	

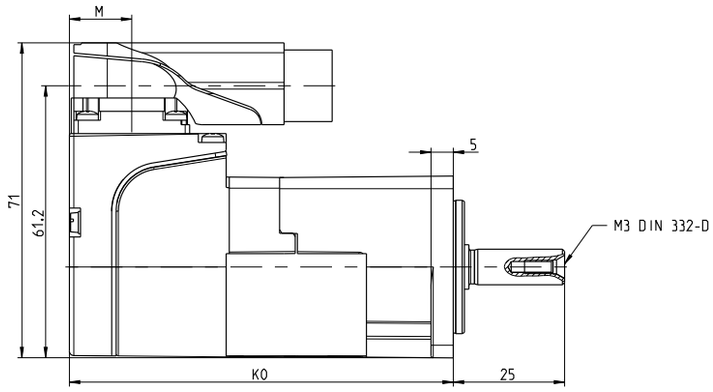
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).

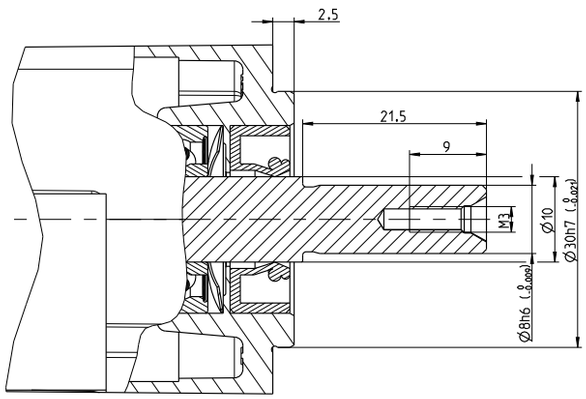
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).



A flange detail
Standard bearing

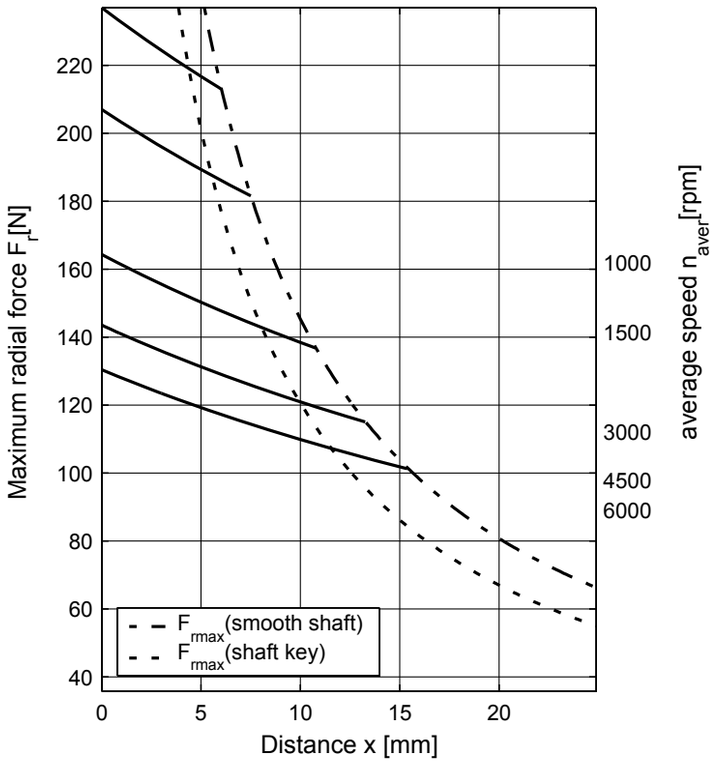




EnDat feedback / Resolver feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8LVA13.eennnffgg-0	79.5	14	28	7

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



maximum allowed axial force: F_{amax} = 22 N

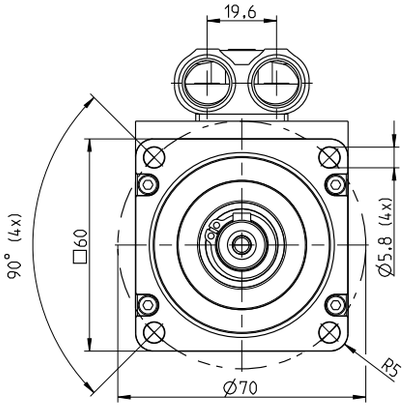
Technical data

	8LVA22.ee015ffgg-0	8LVA22.ee030ffgg-0	8LVA23.ee015ffgg-0	8LVA23.ee030ffgg-0
Motor				
Nominal speed n_N [rpm]	1500	3000	1500	3000
Number of pole pairs	4			
Nominal torque M_n [Nm]	0.67	0.65	1.33	1.3
Nominal power P_N [W]	105	204	209	408
Nominal current I_N [A]	1.61	2.9	3.2	5.8
Stall torque M_0 [Nm]	0.7	0.7	1.4	1.4
Stall current I_0 [A]	1.6	3	3.2	6
Maximum torque M_{max} [Nm]	2	2	4	4
Maximum current I_{max} [A]	5.6	10.3	11.2	20.7
Maximum speed n_{max} [rpm]	6600			
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.1	13.6	25.1	13.6
Stator resistance R_{2ph} [Ω]	6.02	2	2.6	0.83
Stator inductance L_{2ph} [mH]	12.2	4.1	6.3	2
Electrical time constant t_{el} [ms]	2.03	2.05	2.42	2.41
Thermal time constant t_{therm} [min]	35	35	38	38
Moment of inertia J [kgcm^2]	0.14	0.14	0.26	0.26
Weight without brake m [kg]	1.03	1.03	1.39	1.39
Holding brake				
Holding torque of the brake M_{Br} [Nm]	2.2			
Weight of brake [kg]	0.16			
Moment of inertia for the brake J_{Br} [kgcm^2]	0.12			
Recommendations				
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1016.50	-
ACOPOSmulti inverter module 8BVIxxxx...	-			
ACOPOSmicro inverter module 80VD100Px.xxxx-01	C022, C02X			
Cross section for B&R motor cables [mm^2]	0.75			
Connector type	Y-Tec			
Connector size	1.0			

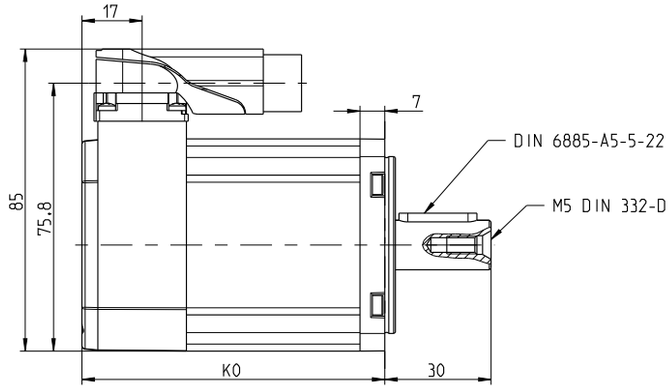
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).

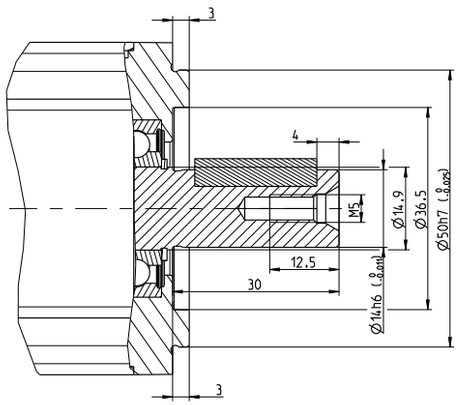
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).



A flange detail
Standard bearing



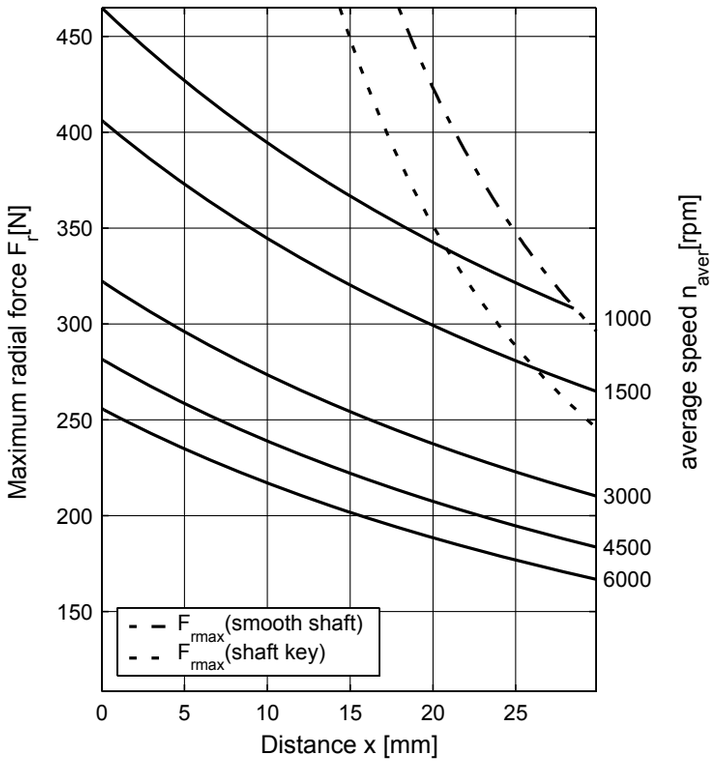


EnDat feedback / Resolver feedback

			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8LVA22.eennnffgg-0	85.5	17	33.5	7
8LVA23.eennnffgg-0	106	17	33.5	7

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



maximum allowed axial force: F_{amax} = 42 N

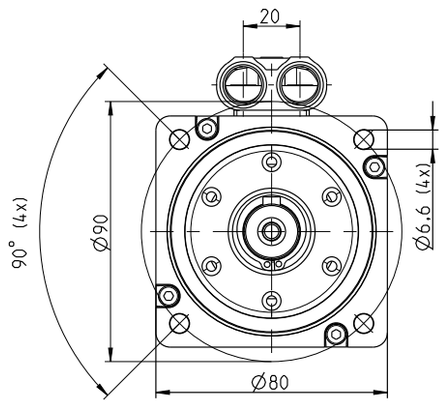
Technical data

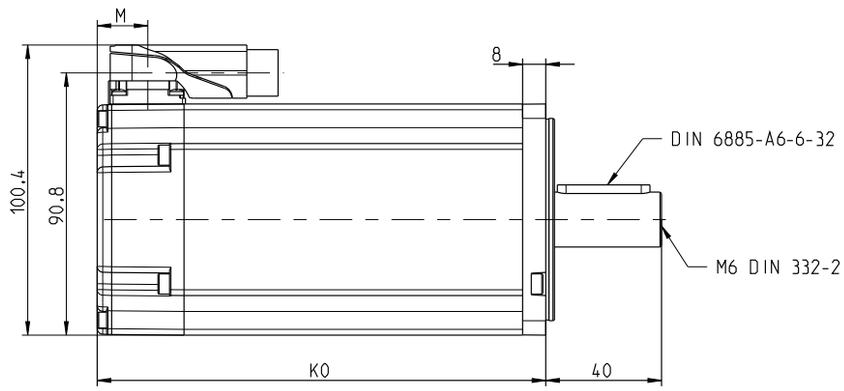
	8LVA33.ee015ffgg-0	8LVA33.ee021ffgg-0
Motor		
Nominal speed n_N [rpm]	1500	2100
Number of pole pairs	4	
Nominal torque M_n [Nm]	2.5	2.45
Nominal power P_N [W]	393	539
Nominal current I_N [A]	6	7.3
Stall torque M_0 [Nm]	2.6	
Stall current I_0 [A]	6.3	7.9
Maximum torque M_{max} [Nm]	7.2	
Maximum current I_{max} [A]	20.4	26
Maximum speed n_{max} [rpm]	6600	
Torque constant K_T [Nm/A]	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.1	19.9
Stator resistance R_{2ph} [Ω]	0.81	0.5
Stator inductance L_{2ph} [mH]	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98
Thermal time constant t_{therm} [min]	34	
Moment of inertia J [kgcm^2]	0.95	
Weight without brake m [kg]	2.45	
Holding brake		
Holding torque of the brake M_{Br} [Nm]	3.2	
Weight of brake [kg]	0.29	
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38	
Recommendations		
ACOPOS servo drive 8Vxxxx.xx...	-	
ACOPOSmulti inverter module 8BVIxxxx...	-	
ACOPOSmicro inverter module 80VD100Px.xxxx-01	C022, C02X	
Cross section for B&R motor cables [mm^2]	0.75	
Connector type	Y-Tec	
Connector size	1.0	

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).

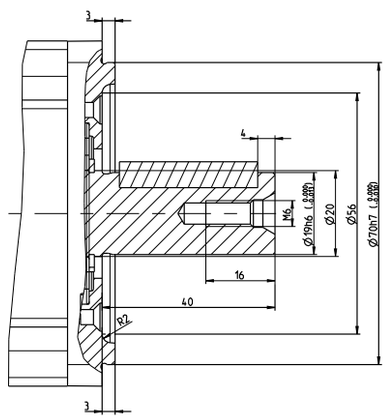
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).





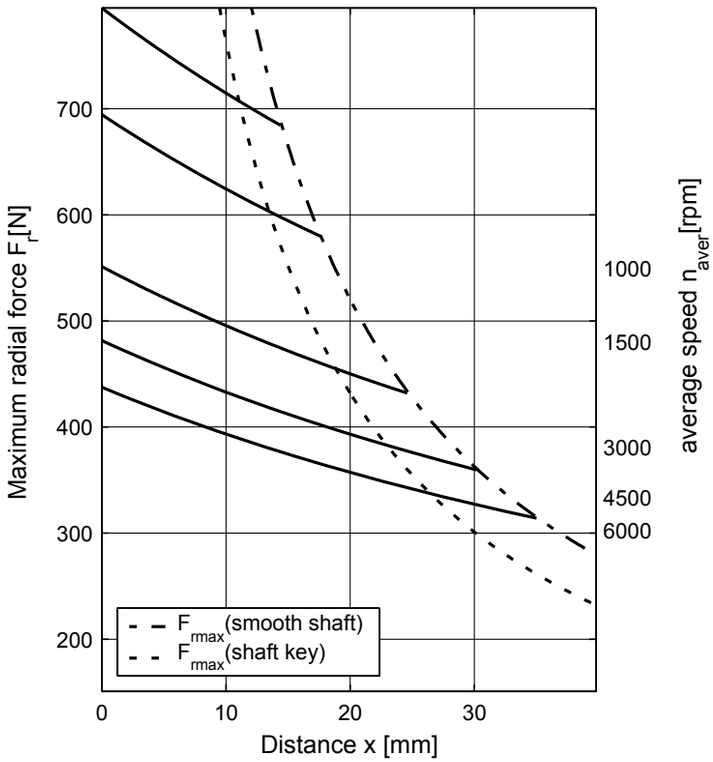
A flange detail
Standard bearing



EnDat feedback / Resolver feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8LVA33.eennnffgg-0	119	17.5	36	5

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



maximum allowed axial force: F_{amax} = 75 N

8LVB gear motors

Highest power density in the smallest installation space

The compact, lightweight and highly dynamic 8LVB servo gear motor perfectly complements the 8LV servo motor range. The 8LVB motor with direct-mount gearbox integrates all mechanical and electrical components in the smallest space possible. This makes this series optimally suited when the highest demands on dynamics and torque need to be met in the smallest spatial areas.

Table of contents


8LVB22.B1015F000-0
Rev..C0
IN=1,81A MN=0,67Nm NN=1500rpm
I0=1,84A M0=0,68Nm UN=57V
Brake -V dc / 0 Nm
Coolant:-
www.br-automation.com

System features

8LVB motor with direct-mount gearbox

Directly mounting gearboxes on the servo motors reduces weight, saves space and decreases moving mass. Equipped with either a resolver or a highly advanced EnDat 2.2 interface, these motor assemblies are ready to meet the highest demands. With their low moment of inertia, motor/gearbox combinations from the 8LVB series are designed to be highly dynamic and are characterized by excellent self-acceleration properties. As standard, these combinations come equipped with IP54 protection. By providing the highest performance in the smallest amount of space, they are among the most compact systems on the market. 8LVB motor/gearbox combinations are recommended for a wide range of applications and provide an optimum price/performance ratio in power ranges up to 1 kW.
In the 8GM series (M - gearboxes mounted directly on the motor), there is the option of choosing between standard gearbox series 8GM40 and 8GM50. The 8GM50 series is optimized to handle increased radial and axial forces. Gearboxes in the standard series are single-stage for gear ratios i = 3, 4, 5, 8 and 10 with a backlash <8–15 arcminutes. In addition, these gearboxes are also available with a two-stage design with an optional smooth shaft.

Smooth surface

The special construction of the surface of the 8LVA synchronous motor series allows them to be used in applications for the food and beverage industry. Depressions where liquid can collect were deliberately avoided.

Highlights

- The integrated design reduces weight, saves space and decreases moving mass
- Highly dynamic drives with low moment of inertia
- High torque in the smallest amount of space possible
- High degree of positioning precision due to the high-resolution absolute encoder system and low level of backlash
- Maximum power density
- Complete integration in the B&R system environment
- Power range up to 1 kW for 80 VDC and 320 VDC DC bus voltage
- Multiturn encoder with the same length
- Robust industrial connectors with optimum EMC shielding
- Fast and easy locking of the connector

Connection type

The innovative connection system developed for this compact servo motor series only requires a small amount of space for cabling while still providing maximum flexibility. The 300° range of rotation allows connections to be made in an extremely flexible manner.
Fast and tool-free mounting with self-locking quick-release (springtec®) ensures simple and secure connections for power and encoder cables.
Together with this universal connector system, the new 8LVB series offers IP54 protection for applications in a wide range of automation areas. This ensures secure connections even in adverse conditions.
The metal housing of the connector provides optimal EMC shielding for the highest level of operational safety.
Order code (n**n**) for angled male connector: W

8LVB connection types – Highlights

- 300° swivel double angular connector
- Quick-release self-locking connector system
- Robust, industrial connectors with optimum EMC shielding
- Robust metal housing

Encoder technology

B&R offers a choice between a resolver for standard applications and absolute encoder with EnDat 2.2 interface.
The ultra compact encoder with a length of less than 13 mm is multi-turn capable and has a battery backup system.
With 262,144 (2^{18}) position values per revolution and 65,536 (2^{16}) distinct revolutions, the encoder provides excellent resolution in an extremely compact design.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Options for motor/gearbox combinations

We deliver 8LVB series motor/gearbox combinations as follows:

- With various nominal speeds
- With or without a motor holding brake
- With single-speed or 2-speed gearboxes
- With various gear ratios
- With a smooth output shaft or a keyed shaft (standard)

Cooling / construction type

The 8LVB motor/gearbox combinations are self-cooling and extremely compact due to motor/gearbox direct mounting.

Sizes

The 8LVB motor/gearbox combination is available in three different sizes (1, 2, 3). They have different dimensions and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Overview

Cooling / construction type	Available sizes		
	1	2	3
B	Yes	Yes	Yes

Lengths

The motor integrated in the 8LVB motor/gearbox combination is available in 2 different lengths. They have different power ratings with identical flange dimensions. The various lengths are differentiated by a number (d) in the order key.

Overview

Length	Available sizes		
	1	2	3
2	---	Yes	---
3	Yes	Yes	Yes

Encoder systems

The 8LV servo motors are available with EnDat encoders and also with resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Resolver

General information

RE-15-1-J04 resolvers are used in the servo motors.

Technical data

Name	Order code (ee)
	R0
Precision	10 angular minutes
Vibration during operation 10 < f ≤ 500 Hz	≤500 m/s²
Shock during operation Duration 11 ms	≤10,000 m/s²

EnDat 2.2 encoder

General information

Digital drive systems and position control loops require fast and highly secure transfer of data obtained from position measuring instruments. In addition, other data such as drive-specific characteristics, correction tables, etc. should also be available. To ensure a high level of system security, measuring instruments must be integrated in routines for detecting errors and be able to perform diagnostics.
The EnDat interface from HEIDENHAIN is a digital, bidirectional interface for measuring instruments. It is able to output position values from incremental and absolute measuring instruments and can also read and update information on the measuring instrument or store new data there. Because it relies on serial data transfer, only 4 signal lines are needed. Data is transferred synchronously to the clock signal defined by the subsequent electronics. The type of transfer used (e.g. for position values, parameters, diagnostics, etc.) is selected using mode commands sent to the measuring instrument by the subsequent electronics.

Technical data

Name	Order code (ee)
	B1
Encoder type	EnDat multi-turn (battery-backed)
Operating principle	Inductive
EnDat protocol	EnDat 2.2
Distinguishable revolutions	65,536 (2^{16})
Position values per revolution	262,144 (18-bit)
Precision	±120"
Vibration during operation, 55 to 2000 Hz	≤300 m/s² (IEC 60 068-2-6)
Shock during operation, 6 ms duration	≤1000 m/s² (IEC 60 068-2-27)
Manufacturer's website	Dr. Johannes Heidenhain GmbH www.heidenhain.de
Manufacturer's product ID	EBI1135

Available ratios

Planetary gearboxes for direct motor mounting – Order code (iii)

Gearbox series	1-stage	2-stage
8GM40	003, 004, 005, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100
8GM50	003, 004, 005, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100

Design of the shaft end

The motor/gearbox combinations from the 8LVB series can be delivered with a smooth shaft or a keyed shaft.

Smooth shaft end

A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end

A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.

The keyways for the servo motors in the 8LVB series conform to keyway form N1 in accordance with DIN 6885-1. The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Holding brake

Servo motors in the 8LV series can be delivered with a holding brake. It is used to hold the motor shaft when no power is applied to the servo motor.

Operating principle

The holding brake is controlled by the ACOPOSmicro servo drive. It uses permanent magnets that are demagnetized when 24 VDC is applied to a magnet winding. This releases the brake.

This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle).

Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Technical data for the standard holding brake

Name	Motor size		
	1	**2**	**3**
Holding torque M_{Br} [Nm]	0.35	2.2	3.2
Connected load P_{on} [W]	8	8.4	13.4
Maximum speed nmax [rpm]	6000	12000	12000
Supply current I_{on} [A]	0.33	0.35	0.56
Supply voltage U_{on} [V]	24 VDC +6% / -10%	24 VDC +6% / -10%	24 VDC +6% / -10%
Moment of inertia J_{Br} [kgcm²]	0.013	0.07	0.38
Mass m_{Br} [kg]	0.1	0.16	0.29

Nominal speed

The nominal speed of the motor is specified as the speed class in the order key (**n**n). Speed class is broken up into steps of 500 [rpm] and begins at 80 VDC operation at A = 500 [rpm]. The nominal speed of 2100 [rpm] is represented as class D = 2000 [rpm].

Overview

Size	Available nominal speeds n_N [rpm] at 80 VDC operation		
	1500 = Speed class C	**2100 = Speed class D**	**3000 = Speed class F**
1	Yes	---	Yes
2	Yes	---	Yes
3	Yes	Yes	---

Overview of available motor/gearbox combinations

	8GM40			8GM50		
Gearbox size	**40**	**60**	**80**	**50**	**70**	**90**
Motor						
8LVB13 n = 1500 rpm	Yes	-	-	Yes	-	-
8LVB13 n = 1500 rpm with brake	Yes	-	-	Yes	-	-
8LVB13 n = 3000 rpm	Yes	-	-	Yes	-	-
8LVB13 n = 3000 rpm with brake	Yes	-	-	Yes	-	-
8LVB22 n = 1500 rpm	-	Yes	-	-	Yes	-
8LVB22 n = 1500 rpm with brake	-	Yes	-	-	Yes	-
8LVB22 n = 3000 rpm	-	Yes	-	-	Yes	-
8LVB22 n = 3000 rpm with brake	-	Yes	-	-	Yes	-
8LVB23 n = 1500 rpm	-	Yes	-	-	Yes	-
8LVB23 n = 1500 rpm with brake	-	Yes	-	-	Yes	-
8LVB23 n = 3000 rpm	-	Yes	-	-	Yes	-
8LVB23 n = 3000 rpm with brake	-	Yes	-	-	Yes	-
8LVB33 n = 1500 rpm	-	-	Yes	-	-	Yes
8LVB33 n = 1500 rpm with brake	-	-	Yes	-	-	Yes
8LVB33 n = 2100 rpm	-	-	Yes	-	-	Yes
8LVB33 n = 2100 rpm with brake	-	-	Yes	-	-	Yes

Determining the order code for device options

The respective code for the device options can be found in the following table:

Gearbox series	**Connection type**	**Motor option**	**Output**	
8GM40	**Connection direction**	**Holding brake**	**Shaft end**	**Code for order key (jj)**
	Angled (swivel connector)	No	Smooth	S0
	Angled (swivel connector)	No	Keyed	S1
	Angled (swivel connector)	Yes	Smooth	S4
	Angled (swivel connector)	Yes	Keyed	S5
Gearbox series	**Connection type**	**Motor option**	**Output**	
8GM50	**Connection direction**	**Holding brake**	**Shaft end**	**Code for order key (jj)**
	Angled (swivel connector)	No	Smooth	L0
	Angled (swivel connector)	No	Keyed	L1
	Angled (swivel connector)	Yes	Smooth	L4
	Angled (swivel connector)	Yes	Keyed	L5

Order key

8LV	b	c	d	.	ee	iii	jj	nn	ll

Cooling type/ construction (See section "Cooling types")

B...Motor / gearbox directmounting, selfcooled

Sizes (See section "Sizes")

Valid values: **1,2,3**

Lengths (See section "Lengths")

valid values: **2,3**

Encoder system (See section "Motor encoder systems")

R0...Resolver
B1...Endat 2.2 multi-turn, 16 - lines

Gear ratios and number of stages (See section "Available ratios")

iii...z.B. 003 corresponds to a gear ratio of i = 3

Valid vaues e.g.: **003, 012, 100**

Gear box series with motor option and shaft end (See: "Determining the order code for device options")

Valid values (examples): **S4, L1**

Nominal speed / connection type (see section "Nominal speed"/ "Connection type")

Speed classes: C = 1500 , D = 2000 (corresponds to 2100 rpm) , F = 3000

Connectin type: angled swivel connector: W

Valid values: **CW, DW, FW**

Special options

00...No special options

Additional motor options or special motor options must be arranged with B&R

Example order 1

A servo gear motor of type **8LVB 13** with a nominal speed of 1500 rpmwas selected for an application. The motor should be equipped with a holding brake and an EnDat encoder. The gearbox should have a gear ratio of i = 010 and the shaft end should have a shaft key. (current option for 8LVB connectors: W angled, swivel connector)
The code for the encoder system (ee) is B1.
The code for the gear ratio (iii) is 010.
The code for standard gearboxes with a keyed output shaft is S5.
The code for the motor brake is: 5 (already included in S5!).
The code for nominal speed (n**n**) 1500 rpm is C.
The code for the angled male connector (n**n**) is W.

The model number for the required motor/gearbox combination is: **8LVB13.B1010S5CW00.**

Example order 2

A servo gear motor of type **8LVB 33** with a nominal speed of 2100 rpmwas selected for an application. The motor should not be equipped with a holding brake. It should have a resolver. The gearbox should have a gear ratio of i = 020 and a smooth shaft. The 8GM50 gearbox was selected. (current option for 8LVB connectors: W angled, swivel connector)
The code for the encoder system (ee) is R0.
The code for the gear ratio (iii) is 020.
The code for the 8GM50 with a smooth output shaft is L0.
The code for the option with no motor brake is: 0 (already included in L0!).
The code for the nominal speed (n**n**) 2100 rpm is D (2100 rpm is assigned to speed class D = 2000 rpm).
The code for the angled male connector (n**n**) is W.

The model number for the required motor/gearbox combination is: **8LVB33.R0020L0DW00.**

General data for the motor/gearbox combination

General information	Cooling type A
C-UR-US listed	Yes
Electrical characteristics	
DC bus voltage on the ACOPOSmicro	80 VDC [1]
Connection type	Male Y-TEC connector from Intercontec
Thermal properties and operating conditions	
Thermal motor protection in accordance with EN 60034-11	Size 1: No, motor sizes 2 and 3: KTY 83-110, operation of the motor according to the 60K characteristic curve
Operating temperature range of the motor	-15°C to +40°C
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation
EN 60034-5 protection (IP code)	IP54
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Mechanical characteristics	
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R

[1] Permitted DC bus voltage on the ACOPOS single-phase: 320VDC

Limiting the output torque of the motor to M_{KN}

For certain motor/gearbox combinations, it is necessary to **limit the output torque of the motor in the application** in order to avoid exceeding the mechanical limits of the gearbox (S1 operation, according to 60K motor characteristic curve). The limit values are listed in the individual technical data records!

Limiting the peak torque of the motor to M_{Kmax}

For certain motor/gearbox combinations, it is necessary to **limit the peak torque of the motor in the application** in order to avoid exceeding the mechanical limits of the gearbox. The limit values are specified for the fatigue strength of the gearbox. The limit values are listed in the individual technical data records!

8LVB13-8GM40

Technical data

	8LVB13.ee003SjCn00	8LVB13.ee003SjFn00	8LVB13.ee004SjCn00	8LVB13.ee004SjFn00	8LVB13.ee005SjCn00	8LVB13.ee005SjFn00	8LVB13.ee008SjCn00	8LVB13.ee008SjFn00	8LVB13.ee010SjCn00	8LVB13.ee010SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	4.5	4.5	6	6	6	6	4.5	4.5	3.5	3.5
Max. output torque T_{2max} [Nm]	7	7	10	10	10	10	7	7	5.5	5.5
E-stop torque T_{2stop} [Nm]	-	-	12	12	-	-	9	9	7	7
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	15									
Torsional rigidity C_{t21} [Nm/arcmin]	1									
Max. radial force Fr_{max} [N] for 30,000 h	160									
Max. radial force Fr_{max} [N] for 20,000 h	200									
Max. axial force Fa_{max} [N] for 30,000 h	160									
Max. axial force Fa_{max} [N] for 20,000 h	200									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.027	0.027	0.01	0.01	0.008	0.008	0.006	0.006	0.005	0.005
Shared values										
Max. permitted output torque M_{KN} [Nm]	0.836	0.836	1.12	1.12	1.39	1.39	2.23	2.23	2.79	2.79
Max. permitted peak torque M_{Kmax} [Nm]	3	3	4	4	5	5	5	5	5	5

Technical data

	8LVB13.ee003SjCn00	8LVB13.ee003SjFn00	8LVB13.ee004SjCn00	8LVB13.ee004SjFn00	8LVB13.ee005SjCn00	8LVB13.ee005SjFn00	8LVB13.ee008SjCn00	8LVB13.ee008SjFn00	8LVB13.ee010SjCn00	8LVB13.ee010SjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.25									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB13-8GM40

Technical data

	8LVB13.ee009SjCn00	8LVB13.ee009SjFn00	8LVB13.ee012SjCn00	8LVB13.ee012SjFn00	8LVB13.ee015SjCn00	8LVB13.ee015SjFn00	8LVB13.ee016SjCn00	8LVB13.ee016SjFn00	8LVB13.ee020SjCn00	8LVB13.ee020SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	16.5	16.5	20	20	18	18	20	20	20	20
Max. output torque T_{2max} [Nm]	27	27	32	32	30	30	32	32	32	32
E-stop torque T_{2stop} [Nm]	33	33	-	-	36	36	40	40	40	40
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	19									
Torsional rigidity C_{t21} [Nm/arcmin]	1.1									
Max. radial force Fr_{max} [N] for 30,000 h	160									
Max. radial force Fr_{max} [N] for 20,000 h	200									
Max. axial force Fa_{max} [N] for 30,000 h	160									
Max. axial force Fa_{max} [N] for 20,000 h	200									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.026	0.026	0.025	0.025	0.019	0.019	0.01	0.01	0.008	0.008
Shared values										
Max. permitted output torque M_{KN} [Nm]	2.51	2.51	3.35	3.35	4.18	4.18	4.46	4.46	5.58	5.58
Max. permitted peak torque M_{Kmax} [Nm]	9	9	12	12	15	15	16	16	20	20

Technical data

	8LVB13.ee009SjCn00	8LVB13.ee009SjFn00	8LVB13.ee012SjCn00	8LVB13.ee012SjFn00	8LVB13.ee015SjCn00	8LVB13.ee015SjFn00	8LVB13.ee016SjCn00	8LVB13.ee016SjFn00	8LVB13.ee020SjCn00	8LVB13.ee020SjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.35									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB13-8GM40

Technical data

	8LVB13.ee025SjCn00	8LVB13.ee025SjFn00	8LVB13.ee032SjCn00	8LVB13.ee032SjFn00	8LVB13.ee040SjCn00	8LVB13.ee040SjFn00	8LVB13.ee064SjCn00	8LVB13.ee064SjFn00	8LVB13.ee100SjCn00	8LVB13.ee100SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	18	18	20	20	18	18	7.5	7.5	5	5
Max. output torque T_{2max} [Nm]	30	30	32	32	29	29	12	12	8	8
E-stop torque T_{2stop} [Nm]	-	-	-	-	36	36	15	15	10	10
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	19									
Torsional rigidity C_{t21} [Nm/arcmin]	1.1									
Max. radial force Fr_{max} [N] for 30,000 h	160									
Max. radial force Fr_{max} [N] for 20,000 h	200									
Max. axial force Fa_{max} [N] for 30,000 h	160									
Max. axial force Fa_{max} [N] for 20,000 h	200									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.008	0.008	0.006	0.006	0.005	0.005	0.005	0.005	0.006	0.006
Shared values										
Max. permitted output torque M_{KN} [Nm]	6.97	6.97	8.92	8.92	11.15	11.15	7.5	7.5	5	5
Max. permitted peak torque M_{Kmax} [Nm]	18	18	20	20	18	18	7.5	7.5	5	5

Technical data

	8LVB13.ee025SjCn00	8LVB13.ee025SjFn00	8LVB13.ee032SjCn00	8LVB13.ee032SjFn00	8LVB13.ee040SjCn00	8LVB13.ee040SjFn00	8LVB13.ee064SjCn00	8LVB13.ee064SjFn00	8LVB13.ee100SjCn00	8LVB13.ee100SjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.35									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

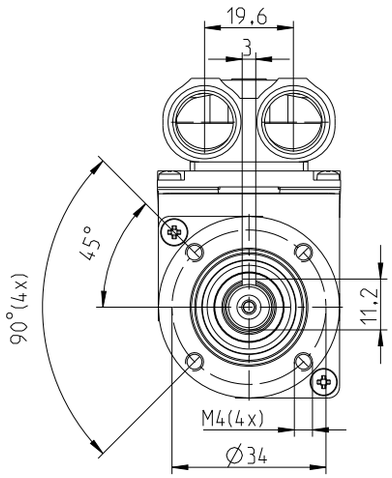
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

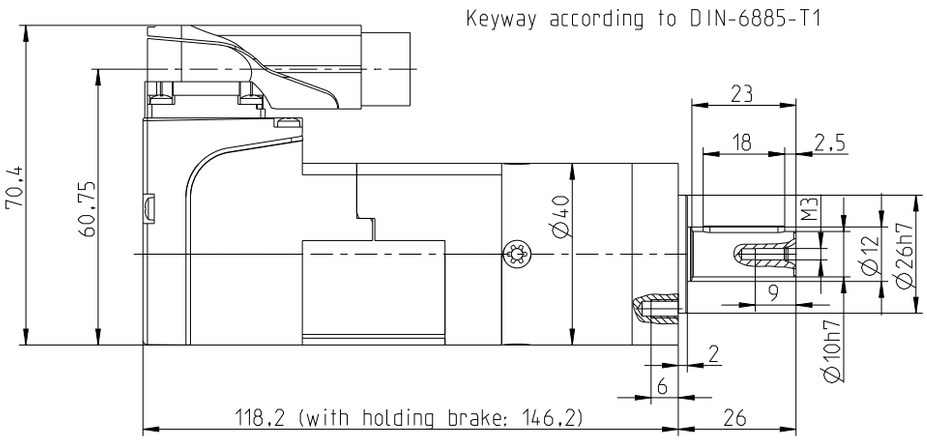
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

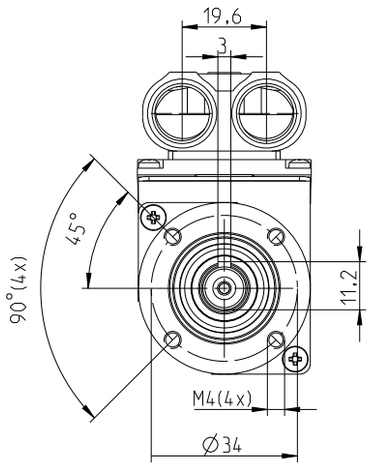
8LVB13-8GM40

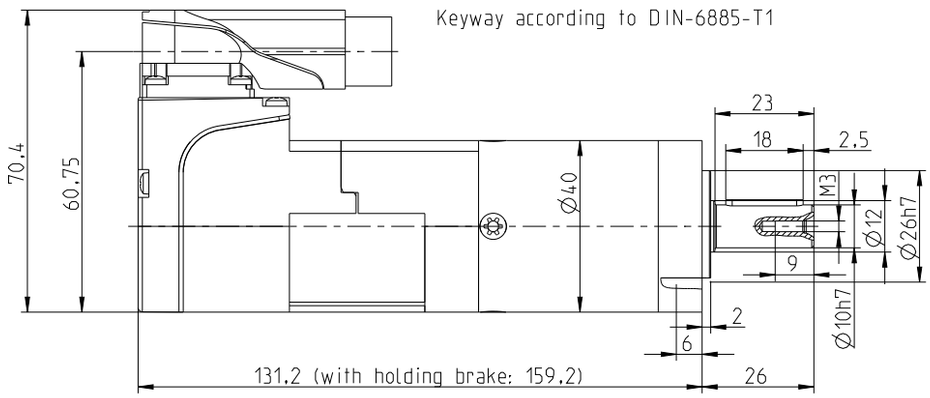
1-stage gear



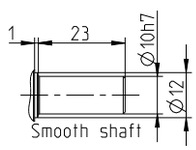


2-stage gear





Alternative drive shaft options



8LVB13-8GM50

Technical data

	8LVB13.ee003LjCn00	8LVB13.ee003LjFn00	8LVB13.ee004LjCn00	8LVB13.ee004LjFn00	8LVB13.ee005LjCn00	8LVB13.ee005LjFn00	8LVB13.ee008LjCn00	8LVB13.ee008LjFn00	8LVB13.ee010LjCn00	8LVB13.ee010LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	4.5	4.5	6	6	6	6	5	5	5	5
Max. output torque T_{2max} [Nm]	7	7	10	10	10	10	8	8	8	8
E-stop torque T_{2stop} [Nm]	9	9	12	12	12	12	10	10	10	10
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	15									
Torsional rigidity C_{t21} [Nm/arcmin]	1									
Max. radial force Fr_{max} [N] for 30,000 h	600									
Max. radial force Fr_{max} [N] for 20,000 h	700									
Max. axial force Fa_{max} [N] for 30,000 h	800									
Max. axial force Fa_{max} [N] for 20,000 h	1000									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.027	0.027	0.01	0.01	0.008	0.008	0.006	0.006	0.005	0.005
Shared values										
Max. permitted output torque M_{KN} [Nm]	0.836	0.836	1.12	1.12	1.39	1.39	2.23	2.23	2.79	2.78
Max. permitted peak torque M_{Kmax} [Nm]	3	3	4	4	5	5	5	5	8	8

Technical data

	8LVB13.ee003LjCn00	8LVB13.ee003LjFn00	8LVB13.ee004LjCn00	8LVB13.ee004LjFn00	8LVB13.ee005LjCn00	8LVB13.ee005LjFn00	8LVB13.ee008LjCn00	8LVB13.ee008LjFn00	8LVB13.ee010LjCn00	8LVB13.ee010LjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.6									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB13-8GM50

Technical data

	8LVB13.ee009LjCn00	8LVB13.ee009LjFn00	8LVB13.ee012LjCn00	8LVB13.ee012LjFn00	8LVB13.ee015LjCn00	8LVB13.ee015LjFn00	8LVB13.ee016LjCn00	8LVB13.ee016SjFn00	8LVB13.ee020LjCn00	8LVB13.ee020LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	12	12	15	15	13	13	15	20	15	15
Max. output torque T_{2max} [Nm]	19	19	24	24	21	21	24	32	24	24
E-stop torque T_{2stop} [Nm]	24	24	30	30	26	26	30	40	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	19									
Torsional rigidity C_{t21} [Nm/arcmin]	1.1									
Max. radial force Fr_{max} [N] for 30,000 h	600	600	600	600	600	600	600	160	600	600
Max. radial force Fr_{max} [N] for 20,000 h	700	700	700	700	700	700	700	200	700	700
Max. axial force Fa_{max} [N] for 30,000 h	800	800	800	800	800	800	800	160	800	800
Max. axial force Fa_{max} [N] for 20,000 h	1000	1000	1000	1000	1000	1000	1000	200	1000	1000
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.026	0.026	0.025	0.025	0.019	0.019	0.01	0.01	0.008	0.008
Shared values										
Max. permitted output torque M_{KN} [Nm]	2.51	2.51	3.35	3.35	4.18	4.18	4.46	4.46	5.58	5.58
Max. permitted peak torque M_{Kmax} [Nm]	9	9	12	12	13	13	15	16	15	15

Technical data

	8LVB13.ee009LjCn00	8LVB13.ee009LjFn00	8LVB13.ee012LjCn00	8LVB13.ee012LjFn00	8LVB13.ee015LjCn00	8LVB13.ee015LjFn00	8LVB13.ee016LjCn00	8LVB13.ee016SjFn00	8LVB13.ee020LjCn00	8LVB13.ee020LjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.35	0.8	0.8
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB13-8GM50

Technical data

	8LVB13.ee025LjCn00	8LVB13.ee025LjFn00	8LVB13.ee032LjCn00	8LVB13.ee032LjFn00	8LVB13.ee040LjCn00	8LVB13.ee040LjFn00	8LVB13.ee064LjCn00	8LVB13.ee064LjFn00	8LVB13.ee100LjCn00	8LVB13.ee100LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32	0.34	0.32
Nominal current I_N [A]	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4	0.8	1.4
Stall torque M_0 [Nm]	0.36									
Stall current I_0 [A]	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6	0.9	1.6
Maximum torque M_{max} [Nm]	1									
Maximum current I_{max} [A]	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2	2.8	5.2
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8	17.4	5.8
Stator inductance L_{2ph} [mH]	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2	30.7	10.2
Electrical time constant t_{el} [ms]	1.76									
Thermal time constant t_{therm} [min]	15									
Moment of inertia J [$kgcm^2$]	0.03									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0.35									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.013									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	13	13	15	15	13	13	7.5	7.5	5	5
Max. output torque T_{2max} [Nm]	21	21	24	24	21	21	12	12	8	8
E-stop torque T_{2stop} [Nm]	26	26	30	30	26	26	15	15	10	10
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000									
Max. backlash J_t [arcmin]	19									
Torsional rigidity C_{t21} [Nm/arcmin]	1.1									
Max. radial force Fr_{max} [N] for 30,000 h	600									
Max. radial force Fr_{max} [N] for 20,000 h	700									
Max. axial force Fa_{max} [N] for 30,000 h	800									
Max. axial force Fa_{max} [N] for 20,000 h	1000									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.008	0.008	0.006	0.006	0.005	0.005	0.005	0.005	0.006	0.006
Shared values										
Max. permitted output torque M_{KN} [Nm]	6.97	6.97	8.92	8.92	11.15	11.15	7.5	7.5	5	5
Max. permitted peak torque M_{Kmax} [Nm]	13	13	15	15	13	13	7.5	7.5	5	5

Technical data

	8LVB13.ee025LjCn00	8LVB13.ee025LjFn00	8LVB13.ee032LjCn00	8LVB13.ee032LjFn00	8LVB13.ee040LjCn00	8LVB13.ee040LjFn00	8LVB13.ee064LjCn00	8LVB13.ee064LjFn00	8LVB13.ee100LjCn00	8LVB13.ee100LjFn00
Weight of the motor (without brake) [kg]	0.6									
Weight of brake [kg]	0.1									
Weight of the gearbox [kg]	0.8									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50	1010.00	1010.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

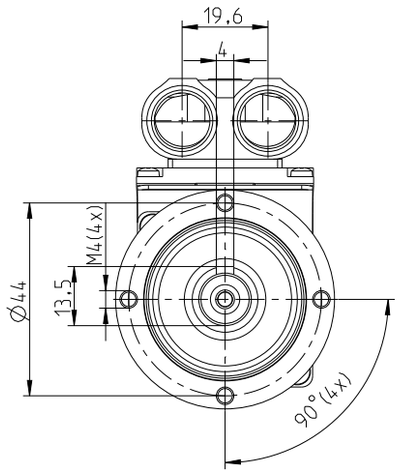
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

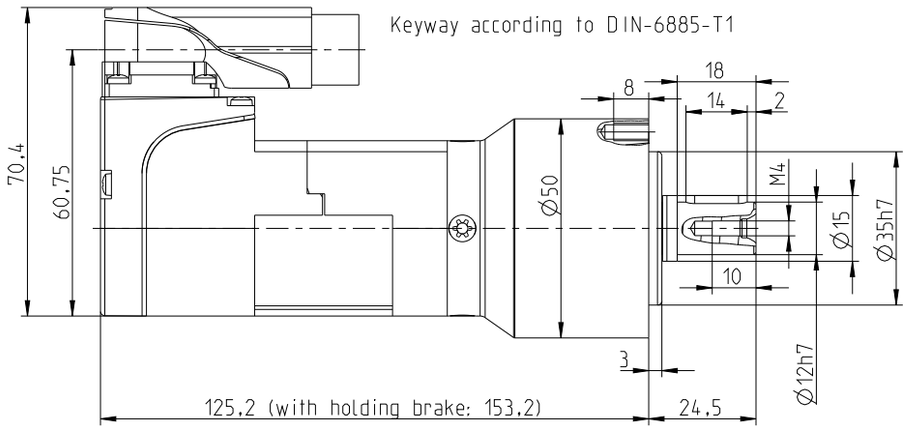
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

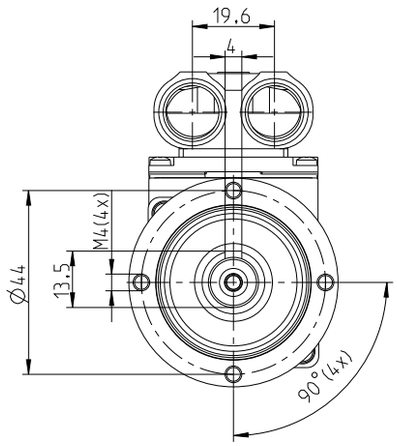
8LVB13-8GM50

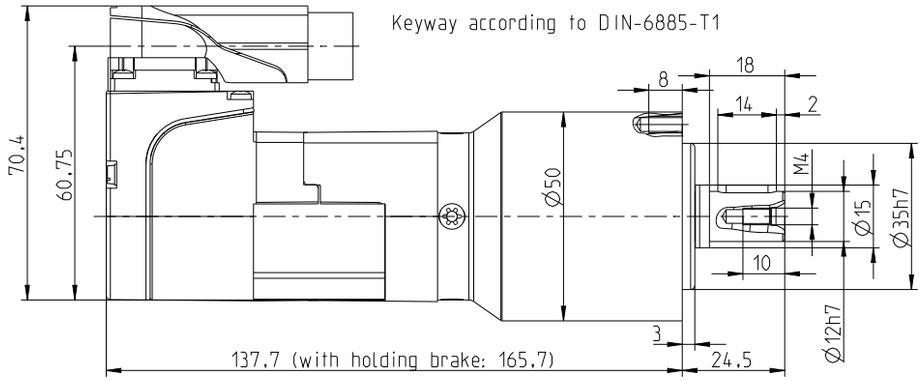
1-stage gear





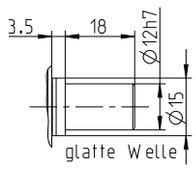
2-stage gear





Alternative drive shaft options

Smooth shaft



8LVB22-8GM40

Technical data

	8LVB22.ee003SjCn00	8LVB22.ee003SjFn00	8LVB22.ee004SjCn00	8LVB22.ee004SjFn00	8LVB22.ee005SjCn00	8LVB22.ee005SjFn00	8LVB22.ee008SjCn00	8LVB22.ee008SjFn00	8LVB22.ee010SjCn00	8LVB22.ee010SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]	0.68									
Stall current I_0 [A]	1.64	3	1.64	3	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]	2									
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]	35									
Moment of inertia J [$kgcm^2$]	0.14									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	12	12	16	16	16	16	15	15	12	12
Max. output torque T_{2max} [Nm]	20	20	26	26	26	26	24	24	19	19
E-stop torque T_{2stop} [Nm]	-	-	32	32	-	-	30	30	24	24
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4450	4450	4500	4500	4500	4500	4500	4500	4500	4500
Max. backlash J_t [arcmin]	12	12	10	10	12	12	10	10	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.3									
Max. radial force Fr_{max} [N] for 30,000 h	340									
Max. radial force Fr_{max} [N] for 20,000 h	400									
Max. axial force Fa_{max} [N] for 30,000 h	450									
Max. axial force Fa_{max} [N] for 20,000 h	500									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.119	0.119	0.047	0.047	0.036	0.036	0.025	0.025	0.02	0.02
Shared values										
Max. permitted output torque M_{KN} [Nm]	1.58	1.58	2.11	2.11	2.63	2.63	4.21	4.21	5.27	5.27
Max. permitted peak torque M_{Kmax} [Nm]	6	6	8	8	10	10	15	15	15	15

Technical data

	8LVB22.ee003SjCn00	8LVB22.ee003SjFn00	8LVB22.ee004SjCn00	8LVB22.ee004SjFn00	8LVB22.ee005SjCn00	8LVB22.ee005SjFn00	8LVB22.ee008SjCn00	8LVB22.ee008SjFn00	8LVB22.ee010SjCn00	8LVB22.ee010SjFn00
Weight of the motor (without brake) [kg]	1.05									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	0.6									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB22-8GM40

Technical data

	8LVB22.ee009SjCn00	8LVB22.ee009SjFn00	8LVB22.ee012SjCn00	8LVB22.ee012SjFn00	8LVB22.ee015SjCn00	8LVB22.ee015SjFn00	8LVB22.ee016SjCn00	8LVB22.ee016SjFn00	8LVB22.ee020SjCn00	8LVB22.ee020SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]	0.68									
Stall current I_0 [A]	1.64	3	1.64	3	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]	2									
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]	35									
Moment of inertia J [$kgcm^2$]	0.14									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	44									
Max. output torque T_{2max} [Nm]	71									
E-stop torque T_{2stop} [Nm]	88									
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500									
Max. backlash J_t [arcmin]	12									
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	340									
Max. radial force Fr_{max} [N] for 20,000 h	400									
Max. axial force Fa_{max} [N] for 30,000 h	450									
Max. axial force Fa_{max} [N] for 20,000 h	500									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.115	0.115	0.111	0.111	0.035	0.035	0.042	0.042	0.033	0.033
Shared values										
Max. permitted output torque M_{KN} [Nm]	4.74	4.74	6.32	6.32	7.9	7.9	8.43	8.43	10.53	10.53
Max. permitted peak torque M_{Kmax} [Nm]	18	18	24	24	30	30	32	32	40	40

Technical data

	8LVB22.ee009SjCn00	8LVB22.ee009SjFn00	8LVB22.ee012SjCn00	8LVB22.ee012SjFn00	8LVB22.ee015SjCn00	8LVB22.ee015SjFn00	8LVB22.ee016SjCn00	8LVB22.ee016SjFn00	8LVB22.ee020SjCn00	8LVB22.ee020SjFn00
Weight of the motor (without brake) [kg]	1.05									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	0.8									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB22-8GM40

Technical data

	8LVB22.ee025SjCn00	8LVB22.ee025SjFn00	8LVB22.ee032SjCn00	8LVB22.ee032SjFn00	8LVB22.ee040SjCn00	8LVB22.ee040SjFn00	8LVB22.ee064SjCn00	8LVB22.ee064SjFn00	8LVB22.ee100SjCn00	8LVB22.ee100SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]	0.68									
Stall current I_0 [A]	1.64	3	1.64	3	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]	2									
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]	35									
Moment of inertia J [$kgcm^2$]	0.14									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	40	40	44	44	40	40	18	18	15	15
Max. output torque T_{2max} [Nm]	64	64	71	71	64	64	30	30	24	24
E-stop torque T_{2stop} [Nm]	-	-	88	88	80	80	36	36	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500									
Max. backlash J_t [arcmin]	15	15	12	12	12	12	12	12	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	340									
Max. radial force Fr_{max} [N] for 20,000 h	400									
Max. axial force Fa_{max} [N] for 30,000 h	450									
Max. axial force Fa_{max} [N] for 20,000 h	500									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.035	0.035	0.024	0.024	0.024	0.024	0.024	0.024	0.02	0.02
Shared values										
Max. permitted output torque M_{KN} [Nm]	13.17	13.17	16.9	16.9	21.1	21.1	18	18	15	15
Max. permitted peak torque M_{Kmax} [Nm]	40	40	44	44	40	40	18	18	15	15

Technical data

	8LVB22.ee025SjCn00	8LVB22.ee025SjFn00	8LVB22.ee032SjCn00	8LVB22.ee032SjFn00	8LVB22.ee040SjCn00	8LVB22.ee040SjFn00	8LVB22.ee064SjCn00	8LVB22.ee064SjFn00	8LVB22.ee100SjCn00	8LVB22.ee100SjFn00
Weight of the motor (without brake) [kg]	1.05									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	0.8									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

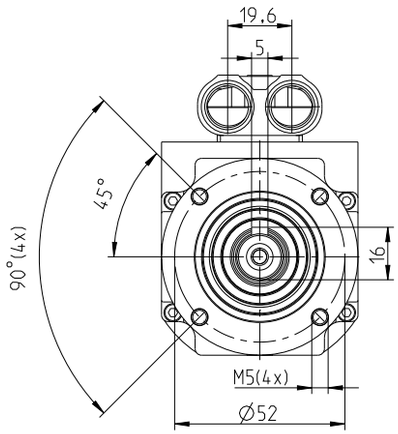
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

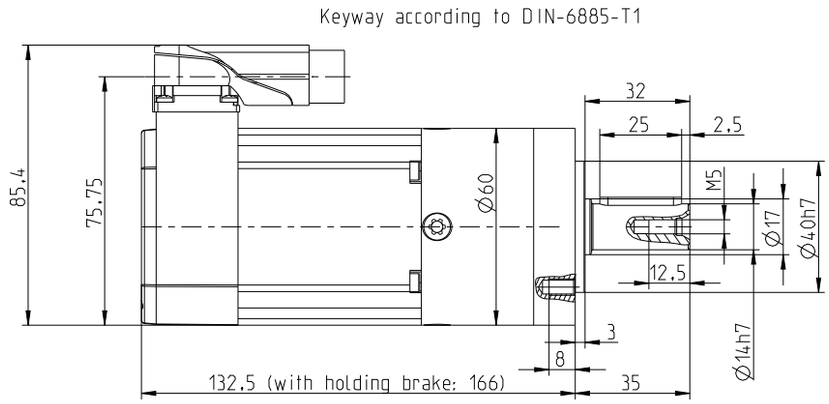
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

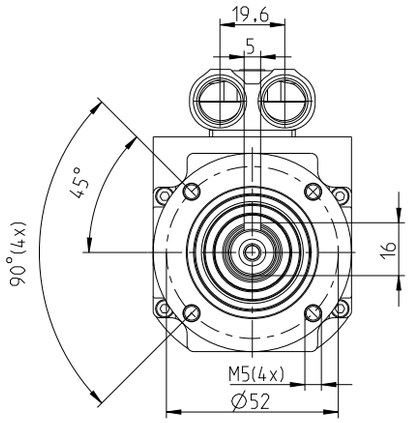
8LVB22-8GM40

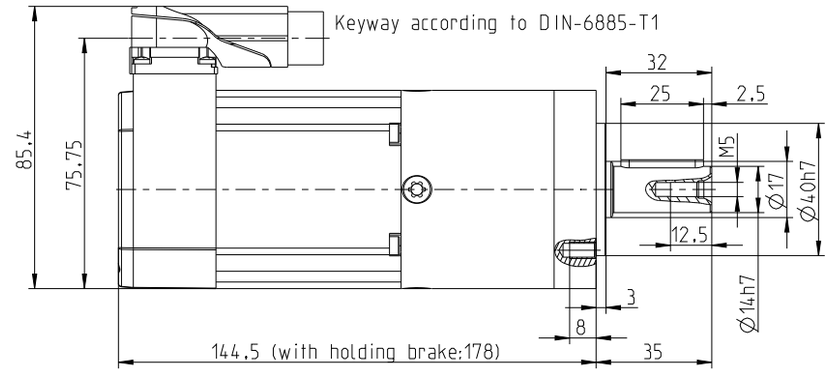
1-stage gear



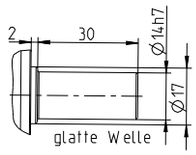


2-stage gear





Alternative drive shaft options



8LVB22-8GM50

Technical data

	8LVB22.ee003LjCn00	8LVB22.ee003LjFn00	8LVB22.ee004LjCn00	8LVB22.ee004LjFn00	8LVB22.ee005LjCn00	8LVB22.ee005LjFn00	8LVB22.ee008LjCn00	8LVB22.ee008LjFn00	8LVB22.ee010LjCn00	8LVB22.ee010LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]	0.68									
Stall current I_0 [A]	1.64	3	1.64	3	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]	2									
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]	35									
Moment of inertia J [$kgcm^2$]	0.14									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	12	12	16	16	16	16	15	15	15	15
Max. output torque T_{2max} [Nm]	19	19	26	26	26	26	24	24	24	24
E-stop torque T_{2stop} [Nm]	24	24	32	32	32	32	30	30	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4100	4100	4500	4500	4500	4500	4500	4500	4500	4500
Max. backlash J_t [arcmin]	10									
Torsional rigidity C_{t21} [Nm/arcmin]	2.3									
Max. radial force Fr_{max} [N] for 30,000 h	900									
Max. radial force Fr_{max} [N] for 20,000 h	1050									
Max. axial force Fa_{max} [N] for 30,000 h	1000									
Max. axial force Fa_{max} [N] for 20,000 h	1350									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.141	0.141	0.06	0.06	0.044	0.044	0.028	0.028	0.022	0.022
Shared values										
Max. permitted output torque M_{KN} [Nm]	1.58	1.58	2.11	2.11	2.63	2.63	4.21	4.21	5.27	5.27
Max. permitted peak torque M_{Kmax} [Nm]	6	6	8	8	10	10	15	15	15	15

Technical data

	8LVB22.ee003LjCn00	8LVB22.ee003LjFn00	8LVB22.ee004LjCn00	8LVB22.ee004LjFn00	8LVB22.ee005LjCn00	8LVB22.ee005LjFn00	8LVB22.ee008LjCn00	8LVB22.ee008LjFn00	8LVB22.ee010LjCn00	8LVB22.ee010LjFn00
Weight of the motor (without brake) [kg]	1.05									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	1.2									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB22-8GM50

Technical data

	8LVB22.ee009LjCn00	8LVB22.ee009LjFn00	8LVB22.ee012LjCn00	8LVB22.ee012LjFn00	8LVB22.ee015LjCn00	8LVB22.ee015SjCn00	8LVB22.ee015SjFn00	8LVB22.ee016LjCn00	8LVB22.ee016LjFn00	8LVB22.ee020LjCn00	8LVB22.ee020LjFn00
Motor											
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	1500	3000	1500	3000	1500	3000
Number of pole pairs						4					
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]						0.68					
Stall current I_0 [A]	1.64	3	1.64	3	1.64	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]						2					
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]						6600					
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]						35					
Moment of inertia J [$kgcm^2$]						0.14					
Holding brake											
Holding torque of the brake M_{Br} [Nm]						2.2					
Moment of inertia for the brake J_{Br} [$kgcm^2$]						0.12					
Gearbox											
Number of gear stages						2					
Gear ratio i	9	9	12	12	15	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	33	33	33	33	33	44	44	33	33	33	33
Max. output torque T_{2max} [Nm]	53	53	53	53	53	71	71	53	53	53	53
E-stop torque T_{2stop} [Nm]	66	66	66	66	66	88	88	66	66	66	66
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1						4500					
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1						4500					
Max. backlash J_t [arcmin]						12					
Torsional rigidity C_{t21} [Nm/arcmin]						2.5					
Max. radial force Fr_{max} [N] for 30,000 h	900	900	900	900	900	340	340	900	900	900	900
Max. radial force Fr_{max} [N] for 20,000 h	1050	1050	1050	1050	1050	400	400	1050	1050	1050	1050
Max. axial force Fa_{max} [N] for 30,000 h	1000	1000	1000	1000	1000	450	450	1000	1000	1000	1000
Max. axial force Fa_{max} [N] for 20,000 h	1350	1350	1350	1350	1350	500	500	1350	1350	1350	1350
Operating noise L_{PA} [dB(A)]						58					
Efficiency at full load η [%]						94					
Moment of inertia J_1 [$kgcm^2$]	0.117	0.117	0.112	0.112	0.036	0.035	0.035	0.043	0.043	0.034	0.034
Shared values											
Max. permitted output torque M_{KN} [Nm]	4.74	4.74	6.32	6.32	7.9	7.9	7.9	8.43	8.43	10.53	10.53
Max. permitted peak torque M_{Kmax} [Nm]	18	18	24	24	30	30	30	32	32	33	33

Technical data

	8LVB22.ee009LjCn00	8LVB22.ee009LjFn00	8LVB22.ee012LjCn00	8LVB22.ee012LjFn00	8LVB22.ee015LjCn00	8LVB22.ee015SjCn00	8LVB22.ee015SjFn00	8LVB22.ee016LjCn00	8LVB22.ee016LjFn00	8LVB22.ee020LjCn00	8LVB22.ee020LjFn00
Weight of the motor (without brake) [kg]						1.05					
Weight of brake [kg]						0.16					
Weight of the gearbox [kg]	1.5	1.5	1.5	1.5	1.5	0.8	0.8	1.5	1.5	1.5	1.5
Recommendations											
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...						-					
Cross section for B&R motor cables [mm^2]						0.75					
Connector type						Y-Tec					
Connector size						1.0					

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB22-8GM50

Technical data

	8LVB22.ee025LjCn00	8LVB22.ee025LjFn00	8LVB22.ee032LjCn00	8LVB22.ee032LjFn00	8LVB22.ee040LjCn00	8LVB22.ee040LjFn00	8LVB22.ee064LjCn00	8LVB22.ee064LjFn00	8LVB22.ee100LjCn00	8LVB22.ee100LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65	0.67	0.65
Nominal current I_N [A]	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9	1.61	2.9
Stall torque M_0 [Nm]	0.68									
Stall current I_0 [A]	1.64	3	1.64	3	1.64	3	1.64	3	1.64	3
Maximum torque M_{max} [Nm]	2									
Maximum current I_{max} [A]	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3	5.6	10.3
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	6.02	2	6.02	2	6.02	2	6.02	2	6.02	2
Stator inductance L_{2ph} [mH]	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1	12.2	4.1
Electrical time constant t_{el} [ms]	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05	2.03	2.05
Thermal time constant t_{therm} [min]	35									
Moment of inertia J [$kgcm^2$]	0.14									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	30	30	33	33	30	30	18	18	15	15
Max. output torque T_{2max} [Nm]	48	48	53	53	48	48	29	29	24	24
E-stop torque T_{2stop} [Nm]	60	60	66	66	-	-	-	-	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500	4500	4500	4500	4000	4000	4000	4000	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500	4500	4500	4500	4000	4000	4000	4000	4500	4500
Max. backlash J_t [arcmin]	12	12	12	12	15	15	15	15	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	900									
Max. radial force Fr_{max} [N] for 20,000 h	1050									
Max. axial force Fa_{max} [N] for 30,000 h	1000									
Max. axial force Fa_{max} [N] for 20,000 h	1350									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.035	0.035	0.024	0.024	0.024	0.024	0.024	0.024	0.02	0.02
Shared values										
Max. permitted output torque M_{KN} [Nm]	13.17	13.17	16.9	16.9	21.1	21.1	18	18	15	15
Max. permitted peak torque M_{Kmax} [Nm]	30	30	33	33	30	30	18	18	15	15

Technical data

	8LVB22.ee025LjCn00	8LVB22.ee025LjFn00	8LVB22.ee032LjCn00	8LVB22.ee032LjFn00	8LVB22.ee040LjCn00	8LVB22.ee040LjFn00	8LVB22.ee064LjCn00	8LVB22.ee064LjFn00	8LVB22.ee100LjCn00	8LVB22.ee100LjFn00
Weight of the motor (without brake) [kg]	1.05									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	1.5									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50	1010.50	1016.50
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

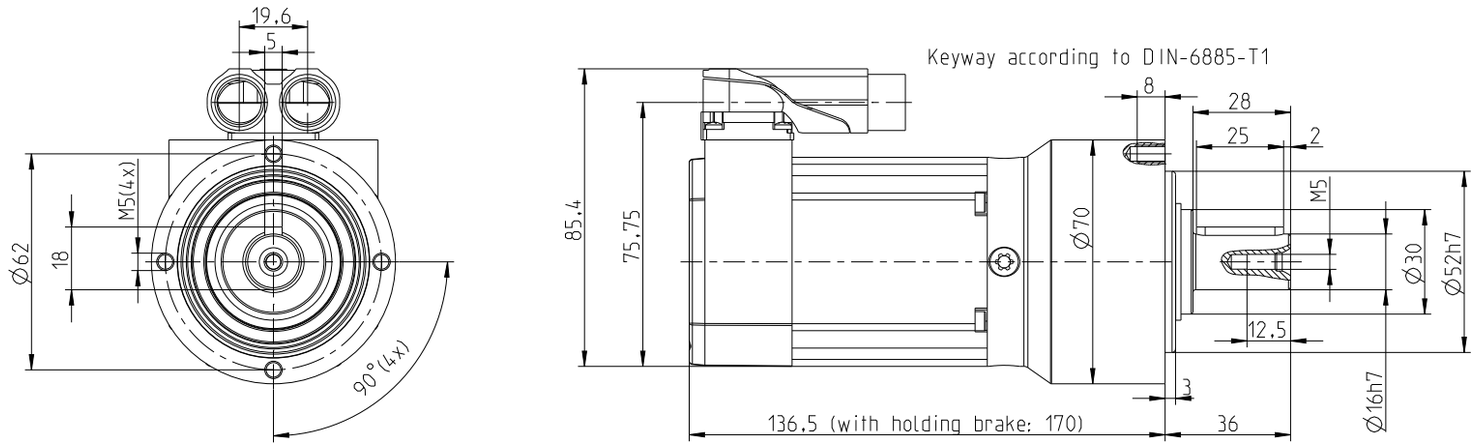
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

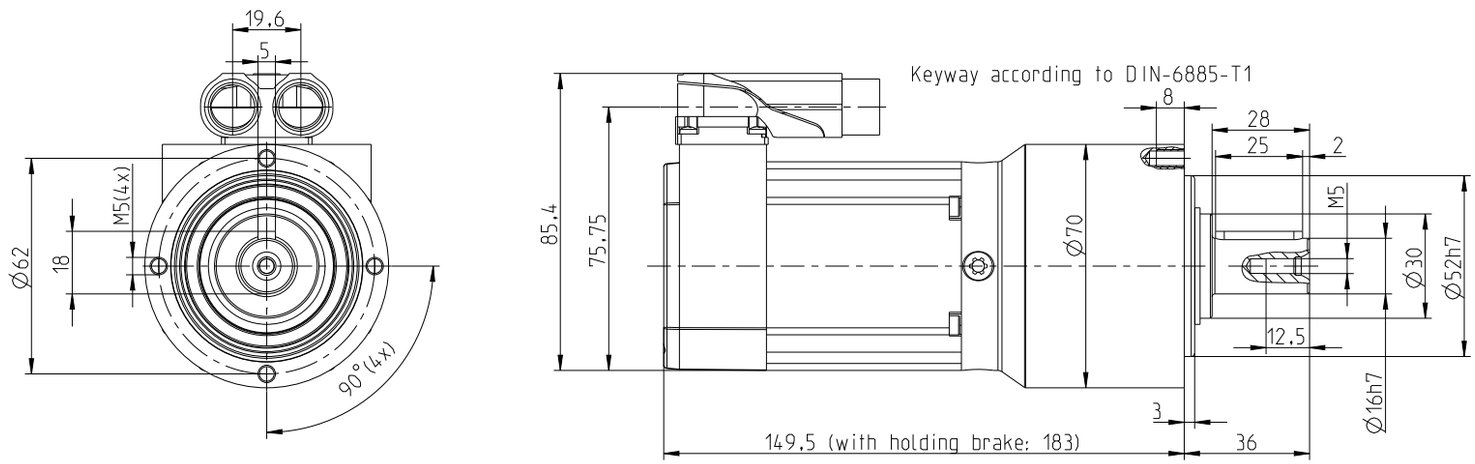
NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB22-8GM50

1-stage gear

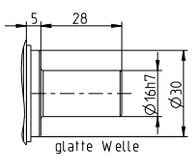


2-stage gear



Alternative drive shaft options

Smooth shaft



8LVB23-8GM40

Technical data

	8LVB23.ee003SjCn00	8LVB23.ee003SjFn00	8LVB23.ee004SjCn00	8LVB23.ee004SjFn00	8LVB23.ee005SjCn00	8LVB23.ee005SjFn00	8LVB23.ee008SjCn00	8LVB23.ee008SjFn00	8LVB23.ee010SjCn00	8LVB23.ee010SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35									
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4									
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [$kgcm^2$]	0.26									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	12	12	16	16	16	16	15	15	12	12
Max. output torque T_{2max} [Nm]	20	20	26	26	26	26	24	24	19	19
E-stop torque T_{2stop} [Nm]	-	-	32	32	-	-	30	30	24	24
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4450	4450	4500	4500	4500	4500	4500	4500	4500	4500
Max. backlash J_t [arcmin]	12	12	10	10	12	12	10	10	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.3									
Max. radial force Fr_{max} [N] for 30,000 h	340									
Max. radial force Fr_{max} [N] for 20,000 h	400									
Max. axial force Fa_{max} [N] for 30,000 h	450									
Max. axial force Fa_{max} [N] for 20,000 h	500									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.119	0.119	0.047	0.047	0.036	0.036	0.025	0.025	0.02	0.02
Shared values										
Max. permitted output torque M_{KN} [Nm]	3.14	3.14	4.18	4.18	5.23	5.23	8.4	8.4	10.46	10.46
Max. permitted peak torque M_{Kmax} [Nm]	12	12	16	16	16	16	15	15	15	15

Technical data

	8LVB23.ee003SjCn00	8LVB23.ee003SjFn00	8LVB23.ee004SjCn00	8LVB23.ee004SjFn00	8LVB23.ee005SjCn00	8LVB23.ee005SjFn00	8LVB23.ee008SjCn00	8LVB23.ee008SjFn00	8LVB23.ee010SjCn00	8LVB23.ee010SjFn00
Weight of the motor (without brake) [kg]	1.45									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	0.6									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	1016.50	-	1016.50	-	-	-	-	-
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB23-8GM40

Technical data

	8LVB23.ee009SjCn00	8LVB23.ee009SjFn00	8LVB23.ee012SjCn00	8LVB23.ee012SjFn00	8LVB23.ee015SjCn00	8LVB23.ee015SjFn00	8LVB23.ee016SjCn00	8LVB23.ee016SjFn00	8LVB23.ee020SjCn00	8LVB23.ee020SjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35									
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4									
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [$kgcm^2$]	0.26									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	44									
Max. output torque T_{2max} [Nm]	71									
E-stop torque T_{2stop} [Nm]	88									
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500									
Max. backlash J_t [arcmin]	12									
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	340									
Max. radial force Fr_{max} [N] for 20,000 h	400									
Max. axial force Fa_{max} [N] for 30,000 h	450									
Max. axial force Fa_{max} [N] for 20,000 h	500									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.115	0.115	0.111	0.111	0.035	0.035	0.042	0.042	0.033	0.033
Shared values										
Max. permitted output torque M_{KN} [Nm]	9.41	9.41	12.5	12.5	15.7	15.7	16.7	16.7	20.9	20.9
Max. permitted peak torque M_{Kmax} [Nm]	32	32	44	44	44	44	44	44	44	44

Technical data

	8LVB23.ee009SjCn00	8LVB23.ee009SjFn00	8LVB23.ee012SjCn00	8LVB23.ee012SjFn00	8LVB23.ee015SjCn00	8LVB23.ee015SjFn00	8LVB23.ee016SjCn00	8LVB23.ee016SjFn00	8LVB23.ee020SjCn00	8LVB23.ee020SjFn00
Weight of the motor (without brake) [kg]	1.45									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	0.8									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	1016.50	-	1016.50	-	1016.50	-	1016.50	-
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB23-8GM40

Technical data

	8LVB23.ee025SjCn00	8LVB23.ee025SjFn00	8LVB23.ee040SjCn00	8LVB23.ee040SjFn00	8LVB23.ee064SjCn00	8LVB23.ee064SjFn00	8LVB23.ee100SjCn00	8LVB23.ee100SjFn00
Motor								
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4							
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35							
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4							
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600							
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38							
Moment of inertia J [$kgcm^2$]	0.26							
Holding brake								
Holding torque of the brake M_{Br} [Nm]	2.2							
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12							
Gearbox								
Number of gear stages	2							
Gear ratio i	25	25	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	40	40	40	40	18	18	15	15
Max. output torque T_{2max} [Nm]	64	64	64	64	30	30	24	24
E-stop torque T_{2stop} [Nm]	-	-	80	80	36	-	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500							
Max. backlash J_t [arcmin]	15	15	12	12	12	15	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.5							
Max. radial force Fr_{max} [N] for 30,000 h	340							
Max. radial force Fr_{max} [N] for 20,000 h	400							
Max. axial force Fa_{max} [N] for 30,000 h	450							
Max. axial force Fa_{max} [N] for 20,000 h	500							
Operating noise L_{PA} [dB(A)]	58							
Efficiency at full load η [%]	94							
Moment of inertia J_1 [$kgcm^2$]	0.035	0.035	0.024	0.024	0.024	0.024	0.02	0.02
Shared values								
Max. permitted output torque M_{KN} [Nm]	26.1	26.1	40	40	18	18	15	15
Max. permitted peak torque M_{Kmax} [Nm]	40	40	40	40	18	18	15	15

Technical data

	8LVB23.ee025SjCn00	8LVB23.ee025SjFn00	8LVB23.ee040SjCn00	8LVB23.ee040SjFn00	8LVB23.ee064SjCn00	8LVB23.ee064SjFn00	8LVB23.ee100SjCn00	8LVB23.ee100SjFn00
Weight of the motor (without brake) [kg]	1.45							
Weight of brake [kg]	0.16							
Weight of the gearbox [kg]	0.8							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	-	-	-	-	-	-
ACOPOSmulti inverter module 8BVIxxxx...	-							
Cross section for B&R motor cables [mm^2]	0.75							
Connector type	Y-Tec							
Connector size	1.0							

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

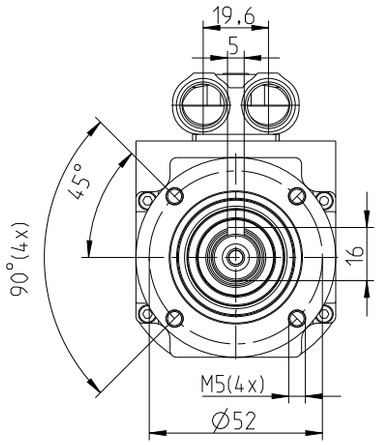
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

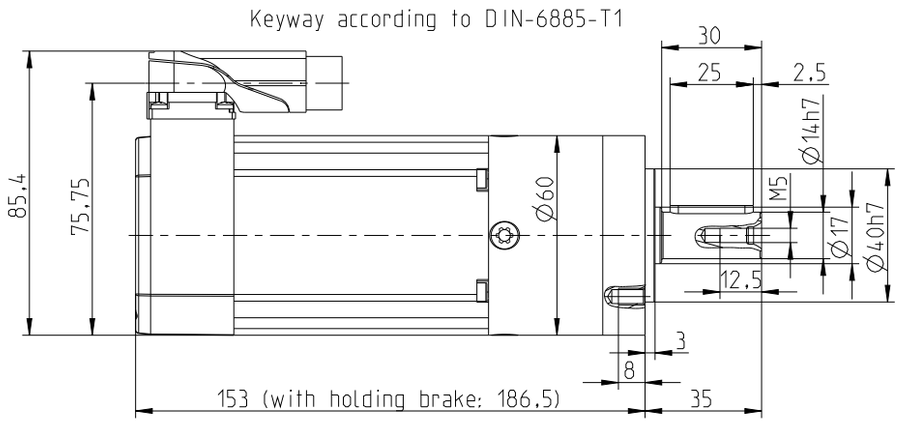
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

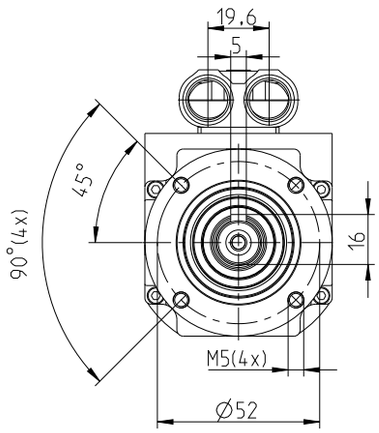
8LVB23-8GM40

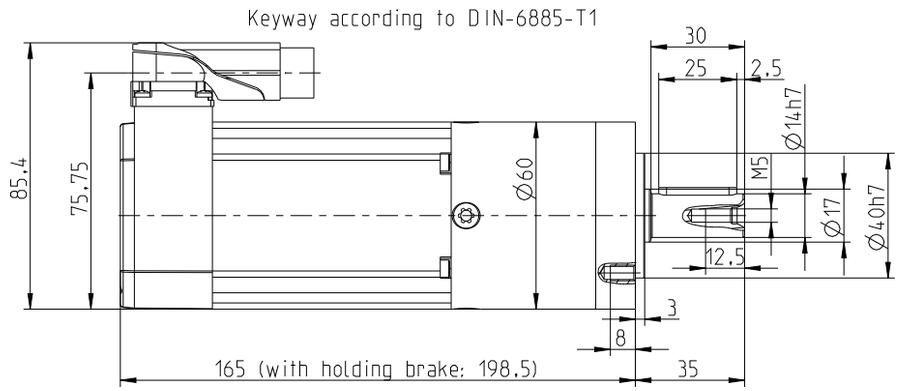
1-stage gear



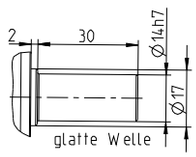


2-stage gear





Alternative drive shaft options



8LVB23-8GM50

Technical data

	8LVB23.ee003LjCn00	8LVB23.ee003LjFn00	8LVB23.ee004LjCn00	8LVB23.ee004LjFn00	8LVB23.ee005LjCn00	8LVB23.ee005LjFn00	8LVB23.ee008LjCn00	8LVB23.ee008LjFn00	8LVB23.ee010LjCn00	8LVB23.ee010LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35									
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4									
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [$kgcm^2$]	0.26									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	12	12	16	16	16	16	15	15	15	15
Max. output torque T_{2max} [Nm]	19	19	26	26	26	26	24	24	25	24
E-stop torque T_{2stop} [Nm]	24	24	32	32	32	32	30	30	-	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500	4500	4500	4500	4500	4500	4500	4500	4000	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4100	4100	4500	4500	4500	4500	4500	4500	4000	4500
Max. backlash J_t [arcmin]	10	10	10	10	10	10	10	10	12	10
Torsional rigidity C_{t21} [Nm/arcmin]	2.3									
Max. radial force Fr_{max} [N] for 30,000 h	900									
Max. radial force Fr_{max} [N] for 20,000 h	1050									
Max. axial force Fa_{max} [N] for 30,000 h	1000									
Max. axial force Fa_{max} [N] for 20,000 h	1350									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.141	0.141	0.06	0.06	0.044	0.044	0.028	0.028	0.022	0.022
Shared values										
Max. permitted output torque M_{KN} [Nm]	3.14	3.14	4.18	4.18	5.23	5.23	8.4	8.4	10.46	10.46
Max. permitted peak torque M_{Kmax} [Nm]	12	12	16	16	16	16	15	15	15	15

Technical data

	8LVB23.ee003LjCn00	8LVB23.ee003LjFn00	8LVB23.ee004LjCn00	8LVB23.ee004LjFn00	8LVB23.ee005LjCn00	8LVB23.ee005LjFn00	8LVB23.ee008LjCn00	8LVB23.ee008LjFn00	8LVB23.ee010LjCn00	8LVB23.ee010LjFn00
Weight of the motor (without brake) [kg]	1.45									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	1.2									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	1016.50	-	1016.50	-	-	-	1016.50	-
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB23-8GM50

Technical data

	8LVB23.ee009LjCn00	8LVB23.ee009LjFn00	8LVB23.ee012LjCn00	8LVB23.ee012LjFn00	8LVB23.ee015LjCn00	8LVB23.ee015LjFn00	8LVB23.ee016LjCn00	8LVB23.ee016LjFn00	8LVB23.ee020LjCn00	8LVB23.ee020LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35									
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4									
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [$kgcm^2$]	0.26									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	33									
Max. output torque T_{2max} [Nm]	53									
E-stop torque T_{2stop} [Nm]	66	66	66	66	-	66	66	66	66	66
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500	4500	4500	4500	4000	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500	4500	4500	4500	4000	4500	4500	4500	4500	4500
Max. backlash J_t [arcmin]	12	12	12	12	15	12	12	12	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	900									
Max. radial force Fr_{max} [N] for 20,000 h	1050									
Max. axial force Fa_{max} [N] for 30,000 h	1000									
Max. axial force Fa_{max} [N] for 20,000 h	1350									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.117	0.117	0.112	0.112	0.036	0.036	0.043	0.043	0.034	0.034
Shared values										
Max. permitted output torque M_{KN} [Nm]	9.41	9.41	12.5	12.5	15.7	15.7	16.7	16.7	20.9	-
Max. permitted peak torque M_{Kmax} [Nm]	33	33	33	33	33	33	33	33	33	-

Technical data

	8LVB23.ee009LjCn00	8LVB23.ee009LjFn00	8LVB23.ee012LjCn00	8LVB23.ee012LjFn00	8LVB23.ee015LjCn00	8LVB23.ee015LjFn00	8LVB23.ee016LjCn00	8LVB23.ee016LjFn00	8LVB23.ee020LjCn00	8LVB23.ee020LjFn00
Weight of the motor (without brake) [kg]	1.45									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	1.5									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	1016.50	-	1016.50	-	1016.50	-	1016.50	-
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB23-8GM50

Technical data

	8LVB23.ee025LjCn00	8LVB23.ee025LjFn00	8LVB23.ee032LjCn00	8LVB23.ee032LjFn00	8LVB23.ee040LjCn00	8LVB23.ee040LjFn00	8LVB23.ee064LjCn00	8LVB23.ee064LjFn00	8LVB23.ee100LjCn00	8LVB23.ee100LjFn00
Motor										
Nominal speed n_N [min^{-1}]	1500	3000	1500	3000	1500	3000	1500	3000	1500	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3	1.33	1.3
Nominal current I_N [A]	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8	3.2	5.8
Stall torque M_0 [Nm]	1.35									
Stall current I_0 [A]	3.25	6	3.25	6	3.25	6	3.25	6	3.25	6
Maximum torque M_{max} [Nm]	4									
Maximum current I_{max} [A]	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7	11.2	20.7
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23	0.42	0.23
Voltage constant K_E [V/1000 rpm]	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61	25.13	13.61
Stator resistance R_{2ph} [Ω]	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83	2.6	0.83
Stator inductance L_{2ph} [mH]	6.3	2	6.3	2	6.3	2	6.3	2	6.3	2
Electrical time constant t_{el} [ms]	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41	2.42	2.41
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [$kgcm^2$]	0.26									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.12									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	30	30	33	33	30	30	18	18	15	15
Max. output torque T_{2max} [Nm]	48	48	53	53	48	48	29	29	24	24
E-stop torque T_{2stop} [Nm]	60	60	66	66	-	-	-	-	30	30
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500	4500	4500	4500	4000	4000	4000	4000	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500	4500	4500	4500	4000	4000	4000	4000	4500	4500
Max. backlash J_t [arcmin]	12	12	12	12	15	15	15	15	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	2.5									
Max. radial force Fr_{max} [N] for 30,000 h	900									
Max. radial force Fr_{max} [N] for 20,000 h	1050									
Max. axial force Fa_{max} [N] for 30,000 h	1000									
Max. axial force Fa_{max} [N] for 20,000 h	1350									
Operating noise L_{PA} [dB(A)]	58									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.035	0.035	0.024	0.024	0.024	0.024	0.024	0.024	0.02	0.02
Shared values										
Max. permitted output torque M_{KN} [Nm]	26.1	26.1	33	33	30	30	18	-	15	-
Max. permitted peak torque M_{Kmax} [Nm]	30	30	33	33	30	30	18	-	15	-

Technical data

	8LVB23.ee025LjCn00	8LVB23.ee025LjFn00	8LVB23.ee032LjCn00	8LVB23.ee032LjFn00	8LVB23.ee040LjCn00	8LVB23.ee040LjFn00	8LVB23.ee064LjCn00	8LVB23.ee064LjFn00	8LVB23.ee100LjCn00	8LVB23.ee100LjFn00
Weight of the motor (without brake) [kg]	1.45									
Weight of brake [kg]	0.16									
Weight of the gearbox [kg]	1.5									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016.50	-	-	-	-	-	-	-	-	-
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	0.75									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

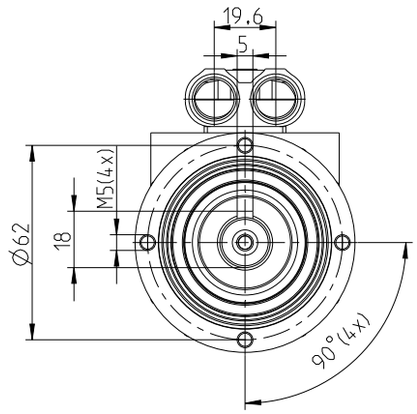
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

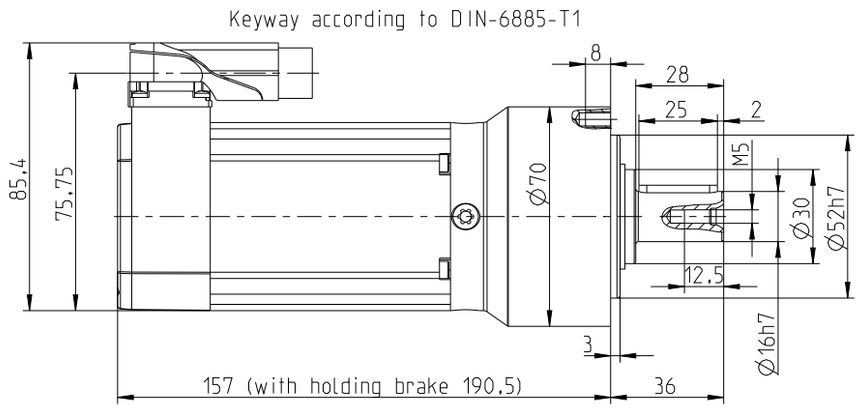
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

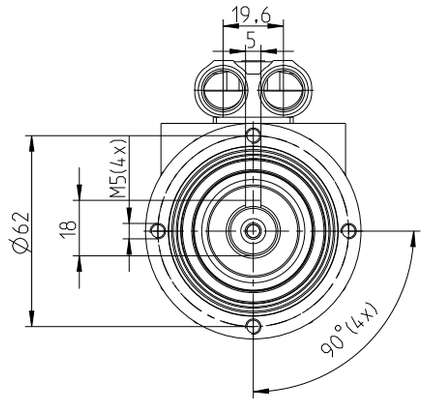
8LVB23-8GM50

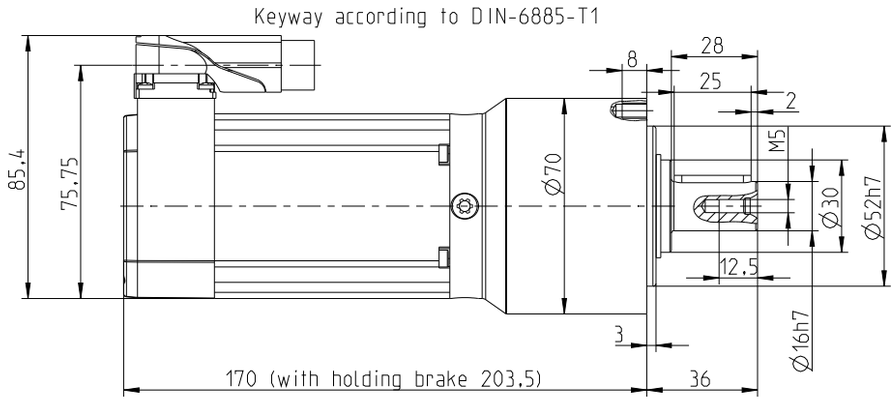
1-stage gear





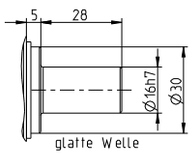
2-stage gear





Alternative drive shaft options

Smooth shaft



8LVB33-8GM40

Technical data

	8LVB33.ee003SjCn00	8LVB33.ee003SjDn00	8LVB33.ee004SjCn00	8LVB33.ee004SjDn00	8LVB33.ee005SjCn00	8LVB33.ee005SjDn00	8LVB33.ee008SjCn00	8LVB33.ee008SjDn00	8LVB33.ee010SjCn00	8LVB33.ee010SjDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	40	40	50	50	50	50	50	50	33	33
Max. output torque T_{2max} [Nm]	64	64	80	80	80	80	80	80	53	53
E-stop torque T_{2stop} [Nm]	80	80	100	100	100	100	100	100	66	66
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3150	3150	2900	2900	3600	3600	4000	4000	4000	4000
Max. backlash J_t [arcmin]	7	7	7	7	7	7	7	7	8	8
Torsional rigidity C_{t21} [Nm/arcmin]	6									
Max. radial force Fr_{max} [N] for 30,000 h	650									
Max. radial force Fr_{max} [N] for 20,000 h	750									
Max. axial force Fa_{max} [N] for 30,000 h	900									
Max. axial force Fa_{max} [N] for 20,000 h	1000									
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.661	0.661	0.243	0.243	0.196	0.196	0.148	0.148	0.1	0.1
Shared values										
Max. permitted output torque M_{KN} [Nm]	6	6	8.1	8.1	10.1	10.1	16.1	16.1	20.1	20.1
Max. permitted peak torque M_{Kmax} [Nm]	21.6	21.6	28.8	28.8	36	36	50	50	38	38

Technical data

	8LVB33.ee003SjCn00	8LVB33.ee003SjDn00	8LVB33.ee004SjCn00	8LVB33.ee004SjDn00	8LVB33.ee005SjCn00	8LVB33.ee005SjDn00	8LVB33.ee008SjCn00	8LVB33.ee008SjDn00	8LVB33.ee010SjCn00	8LVB33.ee010SjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	1.3									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB33-8GM40

Technical data

	8LVB33.ee009SjCn00	8LVB33.ee009SjDn00	8LVB33.ee012SjCn00	8LVB33.ee012SjDn00	8LVB33.ee015SjCn00	8LVB33.ee015SjDn00	8LVB33.ee016LjCn00	8LVB33.ee016SjDn00	8LVB33.ee020SjCn00	8LVB33.ee020SjDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	130	130	120	120	110	110	90	120	120	120
Max. output torque T_{2max} [Nm]	208	208	192	192	176	176	144	192	192	192
E-stop torque T_{2stop} [Nm]	260	260	240	240	220	220	180	-	240	240
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3550	3550	4000	4000	4000	4000	4000	4000	4000	4000
Max. backlash J_t [arcmin]	9	9	9	9	9	9	9	12	9	9
Torsional rigidity C_{t21} [Nm/arcmin]	6.5									
Max. radial force Fr_{max} [N] for 30,000 h	650	650	650	650	650	650	1300	650	650	650
Max. radial force Fr_{max} [N] for 20,000 h	750	750	750	750	750	750	1500	750	750	750
Max. axial force Fa_{max} [N] for 30,000 h	900	900	900	900	900	900	1500	900	900	900
Max. axial force Fa_{max} [N] for 20,000 h	1000	1000	1000	1000	1000	1000	2000	1000	1000	1000
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.631	0.631	0.611	0.611	0.601	0.601	0.223	0.223	0.186	0.186
Shared values										
Max. permitted output torque M_{KN} [Nm]	18.1	18.1	24.2	24.2	30.2	30.2	32.2	33.2	40.3	40.3
Max. permitted peak torque M_{Kmax} [Nm]	64.8	64.8	86.4	86.4	108	108	90	115.2	120	120

Technical data

	8LVB33.ee009SjCn00	8LVB33.ee009SjDn00	8LVB33.ee012SjCn00	8LVB33.ee012SjDn00	8LVB33.ee015SjCn00	8LVB33.ee015SjDn00	8LVB33.ee016LjCn00	8LVB33.ee016SjDn00	8LVB33.ee020SjCn00	8LVB33.ee020SjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	1.8	1.8	1.8	1.8	1.8	1.8	2.9	1.8	1.8	1.8
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB33-8GM40

Technical data

	8LVB33.ee025SjCn00	8LVB33.ee025SjDn00	8LVB33.ee032SjCn00	8LVB33.ee032SjDn00	8LVB33.ee040SjCn00	8LVB33.ee040SjDn00	8LVB33.ee064SjCn00	8LVB33.ee064SjDn00	8LVB33.ee100SjCn00	8LVB33.ee100SjDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	110	110	120	120	110	110	50	50	38	38
Max. output torque T_{2max} [Nm]	176	176	192	192	176	176	80	80	61	61
E-stop torque T_{2stop} [Nm]	-	-	240	240	-	-	100	100	-	-
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000									
Max. backlash J_t [arcmin]	12	12	9	9	12	12	9	9	12	12
Torsional rigidity C_{t21} [Nm/arcmin]	6.5									
Max. radial force Fr_{max} [N] for 30,000 h	650									
Max. radial force Fr_{max} [N] for 20,000 h	750									
Max. axial force Fa_{max} [N] for 30,000 h	900									
Max. axial force Fa_{max} [N] for 20,000 h	1000									
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.186	0.186	0.148	0.148	0.148	0.148	0.148	0.148	0.1	0.1
Shared values										
Max. permitted output torque M_{KN} [Nm]	50.3	50.3	64.4	64.4	80.5	80.5	50	50	38	38
Max. permitted peak torque M_{Kmax} [Nm]	110	110	120	120	110	110	50	50	38	38

Technical data

	8LVB33.ee025SjCn00	8LVB33.ee025SjDn00	8LVB33.ee032SjCn00	8LVB33.ee032SjDn00	8LVB33.ee040SjCn00	8LVB33.ee040SjDn00	8LVB33.ee064SjCn00	8LVB33.ee064SjDn00	8LVB33.ee100SjCn00	8LVB33.ee100SjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	1.8									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

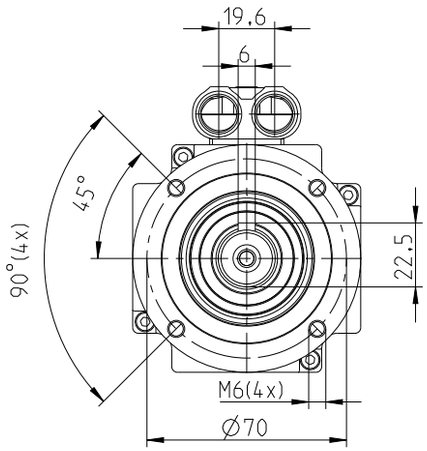
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

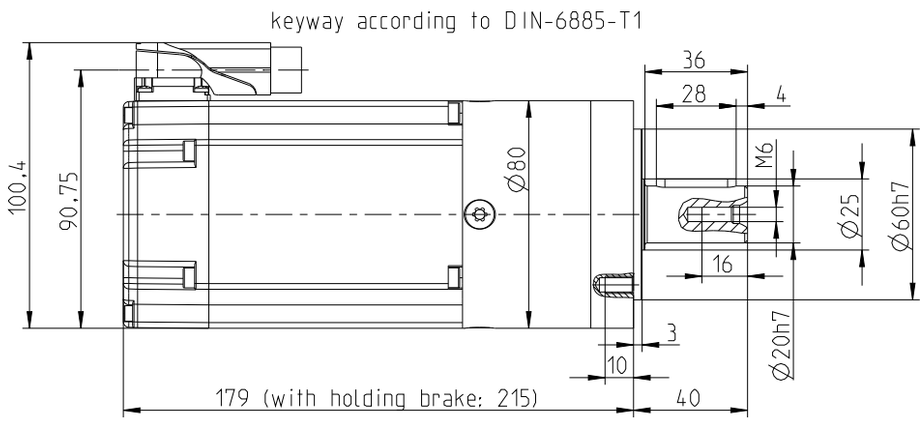
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

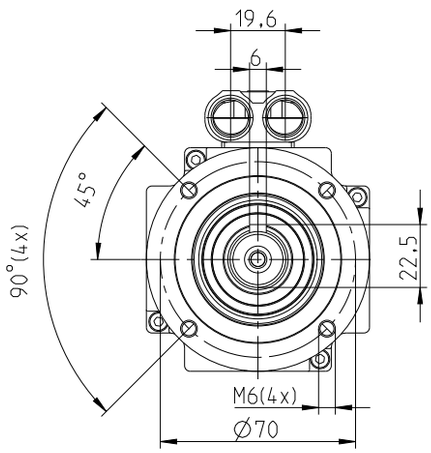
8LVB33-8GM40

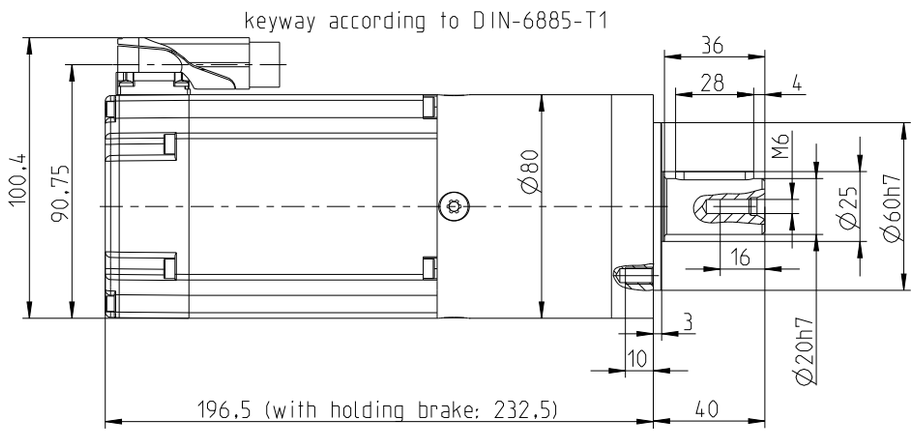
1-stage gear



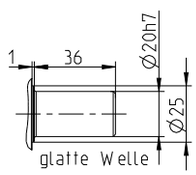


2-stage gear





Alternative drive shaft options



8LVB33-8GM50

Technical data

	8LVB33.ee003LjCn00	8LVB33.ee003LjDn00	8LVB33.ee004LjCn00	8LVB33.ee004LjDn00	8LVB33.ee005LjCn00	8LVB33.ee005LjDn00	8LVB33.ee008LjCn00	8LVB33.ee008LjDn00	8LVB33.ee010LjCn00	8LVB33.ee010LjDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	1									
Gear ratio i	3	3	4	4	5	5	8	8	10	10
Nominal output torque T_{2N} [Nm]	40	40	50	50	50	50	50	50	38	38
Max. output torque T_{2max} [Nm]	64	64	80	80	80	80	80	80	61	61
E-stop torque T_{2stop} [Nm]	80	80	100	100	100	100	-	-	-	76
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3850	3850	4000	4000	4000	4000	3500	3500	3500	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2600	2600	3000	3000	3900	3900	3500	3500	3500	4000
Max. backlash J_t [arcmin]	7	7	7	7	7	7	8	8	8	7
Torsional rigidity C_{t21} [Nm/arcmin]	6									
Max. radial force Fr_{max} [N] for 30,000 h	1300									
Max. radial force Fr_{max} [N] for 20,000 h	1500									
Max. axial force Fa_{max} [N] for 30,000 h	1500									
Max. axial force Fa_{max} [N] for 20,000 h	2000									
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	96									
Moment of inertia J_1 [$kgcm^2$]	0.711	0.711	0.293	0.293	0.226	0.226	0.158	0.158	0.11	0.11
Shared values										
Max. permitted output torque M_{KN} [Nm]	6	6	8.1	8.1	10.1	10.1	16.1	16.1	20.1	-
Max. permitted peak torque M_{Kmax} [Nm]	21.6	21.6	28.8	28.8	36	36	50	50	38	-

Technical data

	8LVB33.ee003LjCn00	8LVB33.ee003LjDn00	8LVB33.ee004LjCn00	8LVB33.ee004LjDn00	8LVB33.ee005LjCn00	8LVB33.ee005LjDn00	8LVB33.ee008LjCn00	8LVB33.ee008LjDn00	8LVB33.ee010LjCn00	8LVB33.ee010LjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	2.2									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB33-8GM50

Technical data

	8LVB33.ee009LJCn00	8LVB33.ee009LJDn00	8LVB33.ee012LJCn00	8LVB33.ee012LJDn00	8LVB33.ee015LJCn00	8LVB33.ee015LJDn00	8LVB33.ee016LJCn00	8LVB33.ee016LJDn00	8LVB33.ee020LJCn00	8LVB33.ee020LJDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	2									
Gear ratio i	9	9	12	12	15	15	16	16	20	20
Nominal output torque T_{2N} [Nm]	97	97	90	90	82	82	90	90	90	90
Max. output torque T_{2max} [Nm]	155	155	144	144	131	131	144	144	144	144
E-stop torque T_{2stop} [Nm]	194	194	180	180	164	164	180	180	180	180
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000									
Max. backlash J_t [arcmin]	9									
Torsional rigidity C_{t21} [Nm/arcmin]	6.5									
Max. radial force Fr_{max} [N] for 30,000 h	1300									
Max. radial force Fr_{max} [N] for 20,000 h	1500									
Max. axial force Fa_{max} [N] for 30,000 h	1500									
Max. axial force Fa_{max} [N] for 20,000 h	2000									
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.641	0.641	0.621	0.621	0.601	0.601	0.223	0.223	0.186	0.186
Shared values										
Max. permitted output torque M_{KN} [Nm]	18.1	18.1	24.2	24.2	30.2	30.2	32.2	32.2	40.3	40.3
Max. permitted peak torque M_{Kmax} [Nm]	64.8	64.8	86.4	86.4	82	82	90	90	90	90

Technical data

	8LVB33.ee009LjCn00	8LVB33.ee009LjDn00	8LVB33.ee012LjCn00	8LVB33.ee012LjDn00	8LVB33.ee015LjCn00	8LVB33.ee015LjDn00	8LVB33.ee016LjCn00	8LVB33.ee016LjDn00	8LVB33.ee020LjCn00	8LVB33.ee020LjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	2.9									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

8LVB33-8GM50

Technical data

	8LVB33.ee025LJCn00	8LVB33.ee025LJDn00	8LVB33.ee032LJCn00	8LVB33.ee032LJDn00	8LVB33.ee040LJCn00	8LVB33.ee040LJDn00	8LVB33.ee064LJCn00	8LVB33.ee064LJDn00	8LVB33.ee100LJCn00	8LVB33.ee100LJDn00
Motor										
Nominal speed n_N [min^{-1}]	1500	2100	1500	2100	1500	2100	1500	2100	1500	2100
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45	2.5	2.45
Nominal current I_N [A]	6	7.3	6	7.3	6	7.3	6	7.3	6	7.3
Stall torque M_0 [Nm]	2.6									
Stall current I_0 [A]	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9	6.3	7.9
Maximum torque M_{max} [Nm]	7.2									
Maximum current I_{max} [A]	20.4	26	20.4	26	20.4	26	20.4	26	20.4	26
Maximum speed n_{max} [rpm]	6600									
Torque constant K_T [Nm/A]	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33	0.42	0.33
Voltage constant K_E [V/1000 rpm]	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9	25.13	19.9
Stator resistance R_{2ph} [Ω]	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503	0.808	0.503
Stator inductance L_{2ph} [mH]	3.3	2	3.3	2	3.3	2	3.3	2	3.3	2
Electrical time constant t_{el} [ms]	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98	4.08	3.98
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [$kgcm^2$]	0.95									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	3.2									
Moment of inertia for the brake J_{Br} [$kgcm^2$]	0.38									
Gearbox										
Number of gear stages	2									
Gear ratio i	25	25	32	32	40	40	64	64	100	100
Nominal output torque T_{2N} [Nm]	82	82	90	90	82	82	50	50	38	38
Max. output torque T_{2max} [Nm]	131	131	144	144	131	131	80	80	61	61
E-stop torque T_{2stop} [Nm]	164	164	180	180	164	164	100	100	76	76
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000									
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000									
Max. backlash J_t [arcmin]	9									
Torsional rigidity C_{t21} [Nm/arcmin]	6.5									
Max. radial force Fr_{max} [N] for 30,000 h	1300									
Max. radial force Fr_{max} [N] for 20,000 h	1500									
Max. axial force Fa_{max} [N] for 30,000 h	1500									
Max. axial force Fa_{max} [N] for 20,000 h	2000									
Operating noise L_{PA} [dB(A)]	60									
Efficiency at full load η [%]	94									
Moment of inertia J_1 [$kgcm^2$]	0.186	0.186	0.148	0.148	0.148	0.148	0.148	0.148	0.1	0.1
Shared values										
Max. permitted output torque M_{KN} [Nm]	50.3	50.3	64.4	64.4	80.5	80.5	50	50	38	38
Max. permitted peak torque M_{Kmax} [Nm]	82	82	90	90	82	82	50	50	38	38

Technical data

	8LVB33.ee025LjCn00	8LVB33.ee025LjDn00	8LVB33.ee032LjCn00	8LVB33.ee032LjDn00	8LVB33.ee040LjCn00	8LVB33.ee040LjDn00	8LVB33.ee064LjCn00	8LVB33.ee064LjDn00	8LVB33.ee100LjCn00	8LVB33.ee100LjDn00
Weight of the motor (without brake) [kg]	2.45									
Weight of brake [kg]	0.29									
Weight of the gearbox [kg]	2.9									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	-									
ACOPOSmulti inverter module 8BVIxxxx...	-									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	Y-Tec									
Connector size	1.0									

NOTE M_{KN}: Permissible torque for continuous operation of the device at speed n_N (S1 motor operation)

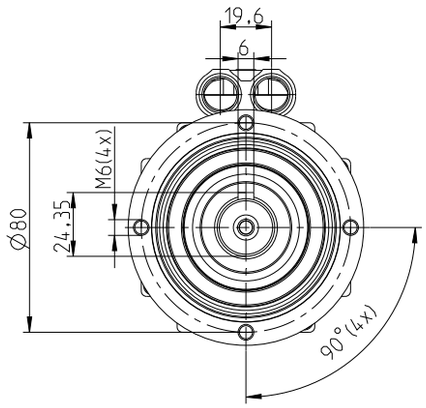
NOTE M_{Kmax}: Maximum permissible continuous torque of the device.

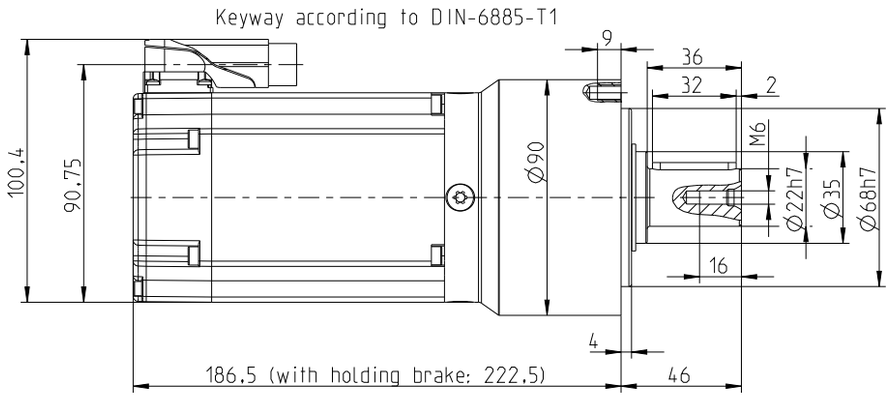
NOTE – Missing ACOPOS specification: The DC bus voltage must be reduced in order to operate this device with an ACOPOS drive (max. 325 VDC).
NOTE – ACOPOSmulti: Operating this device with ACOPOSmulti inverter module is not possible due to the high DC bus voltage when powered from the mains.

NOTE – Cables: Suitable cables are listed in the "ACOPOSmicro servo drives" chapter (Volume 1).

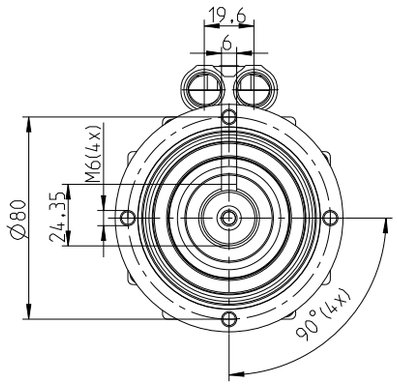
8LVB33-8GM50

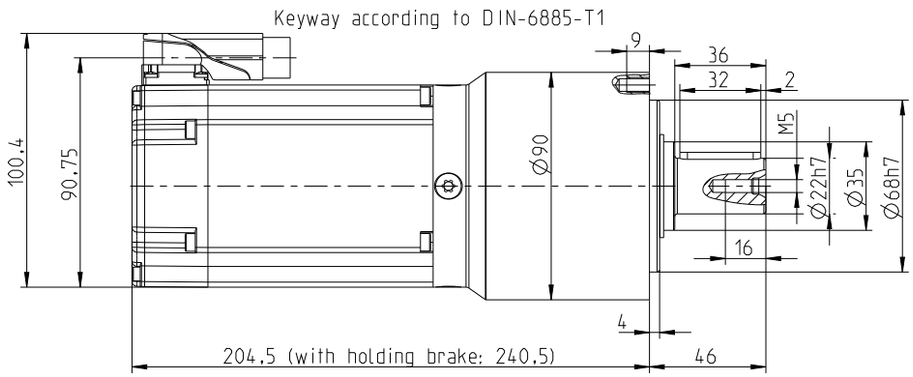
1-stage gear





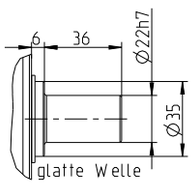
2-stage gear





Alternative drive shaft options

Smooth shaft



8LS three-phase synchronous motors

Dynamic precision motors

Modern machine concepts require mechatronic solutions. The AC servo motor series from B&R provides ways for the user to further optimize production and service processes.

Table of contents

System features

8LS three-phase synchronous motors

B&R's 8LS three-phase synchronous motors have been specially developed for use in high-performance applications. They are now being used to produce consumer goods and products in the plastic, packaging, metal, food and beverage industries and then palletize them with material handling systems. To have a complete solution from a single source, not only do you need the right components, you need them tailored to the application at hand. The large selection of available 8LS three-phase synchronous motors makes it possible to easily meet conditions such as reducing the variety of parts, guaranteeing ease of service and maintaining minimum requirements on space.

An optimum selection of power transmission technology is the perfect way to round off a successful machine design. To help you get there, B&R's specialists at offices all around the world are there to share their expertise in the area of mechatronics. B&R automation components: where mechanics, electronics, technology and innovation converge with optimum efficiency.

Powerful and dynamic

Production machines with high clock rates demand dynamic motors. Systems with large moving masses require not only a high nominal speed, but also an extremely low moment of inertia.
With their long and sleek form, 8LSC motors are ideally suited for this type of application. In addition, conventional air cooling ensures easy integration into any system.

Feedback systems specified to meet your needs

8LS three-phase synchronous motors are available with different encoder systems. As standard, they come equipped with Heidenhain EnDat encoders. Depending on the needs of the application, customers can select between normal and high-resolution encoders. Both types are also available as multiturn encoders. They allow operation without requiring homing procedures or additional measurement systems on the workpiece. The absolute encoder functions without a battery and is therefore absolutely maintenance-free. For machines with lower precision and speed requirements, the 8LS three-phase synchronous motors are also available with resolvers.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Future-proof connections

The uniform connection technology, the pre-assembled cables and the embedded parameter chip allow "plug and play" operation of the power transmission system. The angled connectors can be swiveled for maximum cabling flexibility. Thanks to the digital signal transmission, B&R's innovative and sturdy single-cable solution (hybrid motor cables) can be used, which combines servo feedback and power for streamlined installation. The winding insulation of motors with an attachment cable and servo drive from B&R are tested extensively in accordance with IEC TS 60034-25 limit curves and are certified by the TÜV in the area of safety technology.
In the case of motors with a hybrid connector, the temperature signal is not transmitted via two separate lines as before. Instead, it is transmitted digitally via the encoder interface.
The following conditions must be met by the drives in order to operate a motor with a hybrid connector:

- For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
- For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be set to Version 2.48.0 or higher; the Safety Release must be Version 1.9 or higher
- For all drives: the operating system (NC version) must be set to Version 2.42.2 or higher

NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

B&R 8LS servo motors – Advantages for your application:

- Compact sizes result in low weight and optimal power density
- Single-cable solution (hybrid) available
- Easier construction
- Fast axes thanks to impressive dynamic properties
- Universal application thanks to overload capability
- Good controllability thanks to optimized torque rippling
- Encoders for functional safety available
- Fan-cooling or self-cooling models
- Extremely easy to service
- Low costs

Cooling types

Cooling type A

8LS three-phase synchronous motors with cooling type A are self-cooling and have a long, slim design. The motors must be installed on the cooling surface (flange).

Cooling type C

8LS three-phase synchronous motors with cooling type C are based on motors with cooling type A. They are separately cooled and the only difference is a fan module mounted in the area of the B-side bearing.
The motors must be installed on the cooling surface (flange). The fan module increases the nominal torque (M_N), nominal current (I_N), stall torque (M_0) and stall current (I_0) by 30% as compared to the respective motors with cooling type A.

Cooling type E

8LS three-phase synchronous motors with cooling type liquid-cooled A-flange.
These are available in sizes 4, 6 and 8 upon request.

Sizes

8LS three-phase synchronous motors are available in seven different sizes (2 through 8). They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.
Type E is only available upon request.

Overview

Cooling type	Available sizes						
	2	3	4	5	6	7	8
A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C	-	-	Yes	Yes	Yes	Yes	Yes
E	-	-	Yes	-	Yes	-	Yes

Lengths

8LS three-phase synchronous motors are available in up to eight different lengths. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number. Since type E is only available upon request, only A and C are listed here.

Type A and C – Overview

Length	Available sizes						
	2	3	4	5	6	7	8
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	-	Yes	-	Yes	-	Yes	-
8	-	-	-	-	-	Yes	-
A	-	-	-	Yes[1)]	-	-	-
B	-	-	-	Yes[1)]	-	-	-
C	-	-	-	Yes[1)]	-	-	-

[1)] Only for cooling type C

Motor encoder systems

8LS three-phase synchronous motors are available with EnDat encoders as well as resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Analog and digital transfer

The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

For the advanced, fully digital EnDat 2.2 protocol, the positions are generated directly in the encoder and communicated serially with the drive system. This method is very robust against disturbances and is even certified for safety applications.

Safety-related position measurement systems

In machine and system manufacturing, the topic of safety is becoming more and more important. This is mirrored in legislation and stricter safety criteria in national and international standards. Most importantly, stricter requirements serve to protect personnel, but they also increasingly serve to protect property and the environment. The goal of functional safety is to minimize or eliminate dangerous situations that can occur in machines and systems either with or without operational errors. This is generally achieved by implementing redundant systems. Moving axes in safety-oriented applications require position information in order to be able to carry out their corresponding safety functions. Different system configurations can be implemented to get independent position values. One possibility is using two measuring instruments per axis. To keep costs down, the aim is often to create a solution with only one position measuring instrument. Until now, analog measuring instruments with sine/cosine signals were used for this purpose. The encoder manufacturer Heidenhain – as the first manufacturer with the purely serial EnDat 2.2 protocol for safety position measurement systems – offers a serial single-encoder solution in accordance with IEC 61 508 SIL2. All the advantages of serial data transfer – such as cost optimization, diagnostics possibilities, automatic commissioning and high-speed generation of position values – can now benefit safety applications as well.
100% inspection during production and additional measures during final testing ensure errors have not occurred related to shaft and coupling connections on rotary encoders when using motors with S encoders (in accordance with EN ISO 13849-2). There are also a number of safety functions that are already possible with D encoders.
Information regarding the area of application and the procedure for setting up various safety functions can be found in the "ACOPOSmulti SafeMOTION" user's manual. (Model number: MAACPMSAFEMC-GER ACOPOSmulti SafeMOTION or in the Downloads section of our website)

EnDat 2.1 and EnDat 2.2 encoders - Technical data

Inductive encoder for motor size 2

Encoder type / Order code	E8	E9	D8	D9	S8	S9
Operating principle	Inductive					
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	32		Digital pos. in the encoder			
Resolution [bits single-turn / bits multi-turn]	18/0	18/12	19/0	19/12	19/0	19/12
Precision ["]	280		120			
Switching frequency ≥ [kHz]	6		Digital pos. in the encoder			
Vibration during operation - Stator Max [m/s2]	200		400			
Vibration during operation - Rotor Max [m/s2]	200		600			
Shock during operation Max [m/s^2]	1000		2000			
Manufacturer's product ID	ECI 1118	EQI 1130	ECI 1119 FS	EQI 1131 FS	ECI 1119 FS	EQI 1131 FS
Manufacturer's website	www.heidenhain.de					

Optical encoder for motor size 2

Encoder type / Order code	E4	E5	D4	D5	S4	S5
Operating principle	Optical					
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	512		Digital pos. in the encoder			
Resolution [bits single-turn / bits multi-turn]	13/0	13/12	25/0	25/12	25/0	25/12
Precision ["]	60	60	20			
Switching frequency ≥ [kHz]	190		Digital pos. in the encoder			
Vibration during operation - Stator Max [m/s2]	200					
Vibration during operation - Rotor Max [m/s2]	200					
Shock during operation Max [m/s^2]	1000					
Manufacturer's product ID	ECN 1113	EQN 1125	ECN 1123 FS	EQN 1135 FS	ECN 1123 FS	EQN1135 FS
Manufacturer's website	www.heidenhain.de					

Inductive encoder for motor sizes 3 - 8, with the exception of 8LSC5A/B/C!

Encoder type / Order code	EA	EB	DA	DB	SA	SB
Operating principle	Inductive					
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	32		Digital pos. in the encoder			
Resolution [bits single-turn / bits multi-turn]	19/0	19/12	19/0	19/12	19/0	19/12
Precision ["]	180		65			
Switching frequency ≥ [kHz]	6		Digital pos. in the encoder			
Vibration during operation - Stator Max [m/s2]	200		400			
Vibration during operation - Rotor Max [m/s2]	200		600			
Shock during operation Max [m/s^2]	2000		2000			
Manufacturer's product ID	ECI 1319	EQI 1331	ECI 1319 FS	EQI 1331 FS	ECI 1319 FS	EQI 1331 FS
Manufacturer's website	www.heidenhain.de					

Optical encoder for motor sizes 3 - 8

Encoder type / Order code	E0	E1	D0	D1	S0	S1
Operating principle	Optical					
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	512		Digital pos. in the encoder			
Resolution [bits single-turn / bits multi-turn]	13/0	13/12	25/0	25/12	25/0	25/12
Precision ["]	60		20			
Switching frequency ≥ [kHz]	130		Digital pos. in the encoder			
Vibration during operation - Stator Max [m/s2]	300					
Vibration during operation - Rotor Max [m/s2]	300					
Shock during operation Max [m/s^2]	2000					
Manufacturer's product ID	ECN 1313	EQN 1325	ECN 1325 FS	EQN 1135 FS	ECN 1325 FS	EQN 1135 FS
Manufacturer's website	www.heidenhain.de					

NOTE: Motors with "S encoders" (functional safety) cannot be combined with gearboxes!
NOTE: S encoders are currently not available for 8LASC5A/B/C motors.

Resolvers

General information

"R0" resolvers are still used with the following motors:

- 8LSA2, Version 3
- 8LSC5A/B/C, Version 0

For all other 8LSA motors size 3 and higher and 8LSC motors, "R2" resolvers are used.

Technical data

Name	Order code (ee)	
	R0	**R2**
Precision [']	10	6
Vibration during operation [m/s^2]	10 < f ≤ 500 Hz: ≤196	55 < f ≤ 2000 Hz: <500
Shock during operation [m/s^2] Duration 11 ms	≤981	≤1000

Motor options

8LS three-phase synchronous motors can be delivered with various options depending on the cooling type, size and length:

- With various nominal speeds
- With or without an oil seal
- With or without a holding brake
- With reinforced brake
- With a smooth or keyed shaft
- With reinforced bearings
- With two different connection directions (two cables)
- Now also with single-cable (hybrid) solution

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). This code represents the nominal speed divided by 100. The respective combination of other motor options is listed as part of the model number in the form of a 2-digit code (ff).

Nominal speed

8LS three-phase synchronous motors are available with up to six different nominal speeds depending on the size and length.

Cooling type A - Overview

Size	Available nominal speeds n_N [rpm]																											
	1500			2000		2200					3000						4500					6000						
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Yes	Yes	---	Yes	Yes	Yes	Yes	---		
3	---	---	---	---	---	---	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
4	---	---	---	---	---	---	Yes	---	Yes	---	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	---		
5	---	Yes	Yes	---	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	---	---	---	---	---		
6	---	---	---	---	---	---	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	---	---	Yes	Yes	---	---	---	---	---	---	---	---		
7	Yes	Yes	---	---	---	---	Yes	Yes	---	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	---	---	---	---	---	---	---	---		
8	Yes	Yes	---	Yes	Yes	Yes	Yes	---	---	---	Yes	Yes	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
Length	**5**	**6**	**7**	**5**	**6**	**3**	**4**	**5**	**6**	**7**	**3**	**4**	**5**	**6**	**7**	**8**	**3**	**4**	**5**	**6**	**7**	**3**	**4**	**5**	**6**	**7**		

Cooling type C - Overview

Size	Available nominal speeds n_N [rpm]																															
	1500			2000	2200								3000								4500								6000			
4	---	---	---	---	---	---	Yes	---	Yes	---	---	---	---	Yes	Yes	Yes	Yes	---	---	---	---	---	Yes	Yes	Yes	Yes	---	---	---	---	Yes	Yes	Yes	Yes
5	---	---	---	---	---	---	Yes	Yes	---	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	---	---	---	---
6	Yes	---	---	---	---	---	Yes	Yes	Yes	---	---	---	---	Yes	Yes	Yes	Yes	---	---	---	---	---	Yes	Yes	Yes	Yes	---	---	---	---	---	---	---	---
7	---	---	Yes	---	---	Yes	Yes	---	---	---	---	---	---	Yes	Yes	Yes	Yes	Yes	Yes	---	---	---	Yes	Yes	---	---	---	---	---	---	---	---	---
8	---	Yes	Yes	Yes	Yes	Yes	---	---	---	---	---	---	---	Yes	Yes	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Length	**4**	**5**	**6**	**5**	**6**	**3**	**4**	**5**	**6**	**7**	**A**	**B**	**C**	**3**	**4**	**5**	**6**	**7**	**8**	**A**	**B**	**C**	**3**	**4**	**5**	**6**	**7**	**A**	**B**	**C**	**3**	**4**	**5**	**6**

Holding brake

All 8LS three-phase synchronous motors can be delivered with a holding brake. It is installed directly behind the A flange on the motor and is used to hold the motor shaft when no power is applied to the servo motor.

Operating principle

The holding brake is a spring-loaded brake and is controlled by the ACOPOS servo drive or an ACOPOSmulti inverter module. Based on principle, this type of holding brake exhibits a minimal amount of backlash.
This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle). Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Technical data for the standard holding brake

Name	Motor size						
	2	3	4	5	6	7	8
Holding torque M_{Br} [Nm]	2.2	4	8	15	32	32	130
Connected load P_{on} [W]	8.2	13.4	18.0	24.0	26.0	26.0	50.0
Supply current I_{on} [A]	0.35	0.56	0.75	1.0	1.08	1.08	2.08
Supply voltage U_{on} [V]	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Moment of inertia J_{Br} [kgcm²]	0.12	0.38	0.54	1.66	5.85	5.85	53.0
Mass m_{Br} [kg]	0.19	0.29	0.46	0.9	1.6	1.6	5.35

Heavy Duty Brake

8LS three-phase synchronous motors in sizes 4 - 7 that have normal A-side bearings can be delivered with a reinforced holding brake. Combining a "reinforced A-side bearing" with a reinforced brake is **not possible**!

Technical data – Reinforced holding brake

Name	Motor size				
	3	4	5	6	7
Holding torque M_{Br} [Nm]	9	15	60	60	80
Connected load P_{on} [W]	15	18.0	25.0	25.0	36.5
Supply current I_{on} [A]	0.63	0.75	1.04	1.04	1.52
Supply voltage U_{on} [V] DC	24	24	24	24	24 VDC
Moment of inertia J_{Br} [kgcm²]	0.55	1.35	14.7	14.7	27.0
Mass m_{Br} [kg]	0.52	0.98	3.23	3.23	4.4

The technical data for the **special brake** with special option "reinforced A-bearing" can be found in the "Special motor options" section.

Connection directions

8LS three-phase synchronous motors are available with the connection direction "straight (top)" or with swiveling angled connectors (conventional two-cable or hybrid single-cable solution).

Oil seal

All 8LS three-phase synchronous motors are available with an optional Form A oil seal according to DIN 3760.
When equipped with an oil seal, the motors have IP65 protection in accordance with EN 60034-5.

Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

For this reason, mounting a gearbox on motors with an oil seal is not permitted!

Design of the shaft end

All 8LS three-phase synchronous motor shafts conform to DIN 748. They are available with a smooth or keyed shaft.

Smooth shaft end
A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end
A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.
The keyways for 8LS three-phase synchronous motors conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with DIN ISO 8821.
The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table. Important: The combination **"reinforced holding brake"** with special motor option **"reinforced A-side bearing"** is **not** possible!
Motors with reinforced bearings **cannot** be combined with gearboxes!
For technical reasons, a standard brake and a reinforced brake are not available for the 8LSA5C.

Motor option

Connectiondirection	Oil seal	Holding brake	Shaft end	Code for the order key (ff)
Straight (top connector)	No	No	Smooth	C0
			Keyed	C1
		Normal	Smooth	C2
			Keyed	C3
		Reinforced	Smooth	C4
			Keyed	C5
	Yes	No	Smooth	C6
			Keyed	C7
		Normal	Smooth	C8
			Keyed	C9
		Reinforced	Smooth	CA
			Keyed	CB
Angled, swivel connector	No	No	Smooth	D0
			Keyed	D1
		Normal	Smooth	D2
			Keyed	D3
		Reinforced	Smooth	D4
			Keyed	D5
	Yes	No	Smooth	D6
			Keyed	D7
		Normal	Smooth	D8
			Keyed	D9
		Reinforced	Smooth	DA
			Keyed	DB
Angled single-cable solution (hybrid), swivel connector	**No**	**No**	**Smooth**	**S0**
			Keyed	**S1**
		Normal	**Smooth**	**S2**
			Keyed	**S3**
		Reinforced	**Smooth**	**S4**
			Keyed	**S5**
	Yes	**No**	**Smooth**	**S6**
			Keyed	**S7**
		Normal	**Smooth**	**S8**
			Keyed	**S9**
		Reinforced	**Smooth**	**SA**
			Keyed	**SB**

The single-cable solution (hybrid) can only be used for motors with connector size 1.0.Important: The single-cable solution is fundamentally possible up to size 65. For larger sizes please consult the table.

Connector size table (built-in connector on motor) for single-cable solution

Motor code	Size	SCS	Motor code	Size	SCS	Motor code	Size	SCS
8LSA66.ee015ffgg-3	1	Yes	8LSA73.ee045ffgg-3	**1.5**	**No**	8LSC74.ee045ffgg-3	**1.5**	**No**
8LSC66.ee015ffgg-3	1	Yes	8LSC73.ee045ffgg-3	**1.5**	**No**	8LSA75.ee015ffgg-3	1	Yes
8LSA66.ee022ffgg-3	1	Yes	8LSA74.ee015ffgg-3	1	Yes	8LSA75.ee020ffgg-3	1	Yes
8LSC66.ee022ffgg-3	1	Yes	8LSA74.ee020ffgg-3	1	Yes	8LSA75.ee022ffgg-3	1	Yes
8LSA66.ee030ffgg-3	1	Yes	8LSC74.ee020ffgg-3	1	Yes	**8LSA75.ee030ffgg-3**	**1**	**Yes**
8LSC66.ee030ffgg-3	1	Yes	8LSA74.ee022ffgg-3	1	Yes	**8LSC75.ee030ffgg-3**	**1.5**	**No**
8LSA66.ee045ffgg-3	**1.5**	**No**	8LSC74.ee022ffgg-3	1	Yes	8LSA76.ee015ffgg-3	**1.5**	**No**
8LSC66.ee045ffgg-3	**1.5**	**No**	8LSA74.ee030ffgg-3	1	Yes	8LSA76.ee030ffgg-3	**1.5**	**No**
8LSA73.ee030ffgg-3	1	Yes	8LSC74.ee030ffgg-3	1	Yes	8LSC76.ee030ffgg-3	**1.5**	**No**
8LSC73.ee030ffgg-3	1	Yes	8LSA74.ee045ffgg-3	**1.5**	**No**			

All other lengths for size 7 and all size 8 motors are equipped with a built-in connector size 1.5, and are therefore not suitable for the single-cable (hybrid) solution.

Load capacity of the shaft end and bearings

8LS three-phase synchronous motors are equipped with grooved ball bearings that are sealed on both sides and lubricated. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Special motor options

8LS three-phase synchronous motors can be delivered with special motor option "Reinforced A-side bearing" depending on the cooling type, size and length: Other special motor options must be arranged with B&R.
The special motor option is listed as part of the model number in the form of a 2-digit code (gg).

Reinforced A-side bearing

8LS motors with special motor option "Reinforced A-side bearing" can handle increased radial and axial forces (F_r , F_a) on the end of the shaft. Information for determining permissible values of F_r and F_a can be found in the respective motor data.
Motors with special motor option "Reinforced A-side bearing" have increased values (in relation to motors with standard bearings) for the dimensions of the motor shaft, including the total length. The exact dimensions can be found in the motor data in the respective technical data.

Determining the order code for special motor options (gg)

Special brake for "Reinforced A-side bearing" option

8LS three-phase synchronous motors in sizes 4 - 8 are available with Reinforced A-side bearings. A special brake is required for the reinforced bearings and can be ordered.

Technical data – Special holding brake for Reinforced A-side bearings

Name	Motor size				
	4	5	6	7	8
Holding torque M_{Br} [Nm]	8	28	28	28	120
Connected load P_{on} [W]	16	26	26	26	50
Supply current I_{on} [A]	0.67	1.08	1.08	1.08	1.51
Supply voltage U_{on} [V]	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Moment of inertia J_{Br} [kgcm²]	1.84	10.2	10.2	10.2	58.9
Mass m_{Br} [kg]	1.55	2.1	2.1	2.1	6

Overview of valid combinations with special motor option "Reinforced A-side bearing"

Combinations without a brake

Options (ff)	Connectiondirection	Oil seal	Holding-brake	Shaft end	Reinforced A-side bearing 8LSA (gg) = (04)	Reinforced A-side bearing 8LSC (gg) = (11)
C0	Straight (top connector)	No	-	Smooth	Yes	Yes
C1			-	Keyed	Yes	Yes
C6		Yes	-	Smooth	Yes	Yes
C7			-	Keyed	Yes	Yes
D0	Angled (swivel connector)	No	-	Smooth	Yes	Yes
D1			-	Keyed	Yes	Yes
D6		Yes	-	Smooth	Yes	Yes
D7			-	Keyed	Yes	Yes
S0	Angled single-cable solution (hybrid), swivel connector	No	-	Smooth	Yes	Yes
S1			-	Keyed	Yes	Yes
S6		Yes	-	Smooth	Yes	Yes
S7			-	Keyed	Yes	Yes

Combinations with special brake for reinforced A-side bearings

Options (ff)	Connectiondirection	Oil seal	Holding-brake	Shaft end	Reinforced A-side bearing8LSA (gg) =(04)	Reinforced A-side bearing8LSC (gg) = (11)
CC	Straight (top connector)	No	Special	Smooth	Yes	Yes
CD			Special	Keyed	Yes	Yes
CE		Yes	Special	Smooth	Yes	Yes
CF			Special	Keyed	Yes	Yes
DC	Angled (swivel connector)	No	Special	Smooth	Yes	Yes
DD			Special	Keyed	Yes	Yes
DE		Yes	Special	Smooth	Yes	Yes
DF			Special	Keyed	Yes	Yes
SC	Angled single-cable solution (hybrid), swivel connector	No	Special	Smooth	Yes	Yes
SD			Special	Keyed	Yes	Yes
SE		Yes	Special	Smooth	Yes	Yes
SF			Special	Keyed	Yes	Yes

Example order: Motor with reinforced A-side bearing - without brake

For an 8LSA55 with D0 encoder with the connection type "single-cable solution, angled (swivel connector)", the following selection is made: no brake, no oil seal, with shaft key. Motor option (ff) = **S1**. A reinforced A-side bearing is also needed. Special motor option (gg) for 8LS**A** = **04**.
The order code is: **8LSA55.D0030S104-3**
For an 8LSC55 with D0 encoder with the connection type "single-cable solution, angled (swivel connector)", the following selection is made: no brake, no oil seal, with shaft key. Motor option (ff) = **D1**. A reinforced A-side bearing is also needed. Special motor option (gg) for 8LS**C** = **11**.
The order code is: **8LSC55.D0030S111-3**

Example order: Motor with reinforced A-side bearing - with special brake

For an 8LSA55 with E0 encoder and connection direction angled (swivel connector), a reinforced A-side bearing is needed. Special motor option (gg) for 8LS**A** = **04**. The following selection is still made: Special brake, no oil seal, with shaft key. Motor option (ff) = **DD**
The order code is: **8LSA55.E0030DD04-3**
For an 8LSC55 with E0 encoder and connection direction angled (swivel connector), a reinforced A-side bearing is needed. Special motor option (gg) for 8LS**C** = **11**. The following selection is made: no brake, no oil seal, with shaft key. Motor option (ff) = **DD .**
The order code is: **8LSC55.E0030DD11-3**

Technical data – Fan modules

Overview

The fan components used depend on the size.

Fan	for motor		
	8LSC4	**8LSC5 and 8LSC6**	**8LSC7 and 8LSC8**
Manufacturer Internet address	ebm-papst www.ebmpapst.com	ebm-papst www.ebmpapst.com	ebm-papst www.ebmpapst.com
Manufacturer's product ID Operating voltage 24 VDC	4184 NXH	7114 N	6424 M

Technical data

General information	24 VDC fan		
Manufacturer's product ID	4184 NXH	7114 N	6424 M
C-UR-US listed	Yes	Yes	Yes
Fan type	DC fan with electronically commutated external rotor motor	DC fan with electronically commutated external rotor motor	DC fan with electronically commutated external rotor motor
Rotor bearings	Ball bearings	Ball bearings	Ball bearings
Protection	IP20	IP20	IP20
Nominal voltage	24 VDC +16% / -50%	24 VDC +25% / -50%	24 VDC +33% / -50%
Power consumption	11 W	12 W	12 W
Overload protection	Protected against blocking and overloading by PTC resistor; Partially impedance protected	Protected against blocking and overloading by PTC resistor; Partially impedance protected	
Temperature range	-30 ... +70°C	-25 ... +72°C	-20 ... +55°C
Operating noise	57 dB(A)	53 dB(A)	52 dB(A)
Service life At 40°C At max. permissible temperature	70,000 h 35,000 h	80,000 h 37,500 h	80,000 h 37,500 h

Order Key

8LS	b	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (see section "cooling types")
A...self cooling
C...forced cooling (fan) **E** ...liquid cooled A-flange (o.r.)

Sizes (see section "sizes") valid values: **2,3,4,5,6,7,8**

Lengths (see section "lengths") valid values: **2,3,4,5,6,7,8**

Encoder system (see section "motor encoder systems")

Size 2 motors
R0...Resolver (all versions)
E4...opt. EnDat 2.1 single-turn, 512 -lines
E5...opt. EnDat 2.1 multi-turn, 512 - lines
E8...ind. EnDat 2.1 single-turn, 16 -lines
E9...ind. EnDat 2.1 multi-turn, 16 - lines
D4...opt. EnDat 2.2 single-turn, 23 bit
D5...opt. EnDat 2.2 multi-turn, 23 bit
S4...opt. EnDat 2.2 single-turn, 23 bit, FS
S5...opt. EnDat 2.2 multi-turn, 23 bit, FS
D8...ind. EnDat 2.2 single-turn, 19 bit
D9...ind. EnDat 2.2 multi-turn, 19 bit
S8...ind. EnDat 2.2 single-turn, 19 bit, FS
S9...ind. EnDat 2.2 multi-turn, 19 bit,FS

Size 3-8 motors except 8LSC5A/B/C!
R2...Resolver (Version 3)
EA...ind. EnDat 2.1 single-turn, 32 - lines
EB...ind. EnDat 2.1 multi-turn, 32 - lines
DA...ind. EnDat 2.2 single-turn, 32 - lines
DB...ind. EnDat 2.2 multi-turn, 32 - lines
SA...ind. EnDat 2.2 single-turn, 32 - lines, FS
SB...ind. EnDat 2.2 multi-turn, 32 - lines, FS

for 8LSC5A/B/C Version 0
R0...Resolver

Size 3-8 motors (all)
E0...opt. EnDat 2.1 single-turn, 512 - lines
E1...opt. EnDat 2.1 multi-turn, 512 - lines
D0...opt. EnDat 2.2 single-turn, 31 bit
D1...opt. EnDat 2.2 multi-turn, 31 bit
S0...opt. EnDat 2.2 single-turn, 31 bit, FS
S1...opt. EnDat 2.2 multi-turn, 31 bit, FS

Rated speed (see sections "Motor options / Determining the order code")
nnn...rated speed/100, e.g. 015 equals a rated speed of 1500 rpm

Motor options (see section "Motor options")

Special motor options (see section "Special motor options")
Cooling type A
00...no special motor options
04...reinforced A side bearing

Cooling type C
00...special motor option 220V fan
05...no special motor options, standard fan 24V
11...reinforced A side bearing, standard fan 24V (motor sizes 4-8 only!)

Cooling type E
on request

Motor version: valid values: **0,3** (value is preset and can not be chosen on own discretion)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A three-phase synchronous motor of type **8LSA45** with a nominal speed of 3000 rpm was selected for an application. Because of the construction, the cables can only be connected on the top of the motor ("top" connection direction). The motor should also be equipped with a holding brake, a keyed shaft and a 32-line EnDat single-turn encoder.
The code (ee) for the encoder system is **EA**.

The (nnn) code for a nominal speed of 3000 rpm is **030**.

The code (ff) for the other options (oil seal, holding brake, keyed shaft and connection direction) is **C3**.

The model number for the required motor is **8LSA45.EA030C300-3.**

Example order 2

A three-phase synchronous motor of type **8LSA56** with a nominal speed of 4500 rpm was selected for an application. Because of the construction, the cables can only be connected on the back of the motor (swivel connectors). The motor should also be equipped with a holding brake, a smooth shaft, an oil seal and a 32-line EnDat multi-turn encoder.

The code (ee) for the encoder system is **EB**.

The code (nnn) for a nominal speed of 4500 rpm is **045**.

The code (ff) for the other options (oil seal, holding brake, smooth shaft end and connection direction) is **D8**.

The model number for the required motor is **8LSA56.EB045D800-3.**

General motor data

General information	Cooling / construction type A	Cooling / construction type C
C-UR-US listed	Yes	Yes
Electrical characteristics		
Mains input voltage on servo drive	3x 400 VAC ... 3x 480 VAC ±10%	3x 400 VAC ... 3x 480 VAC ±10%
Connection type - Conventional Power connection Encoder connection	speedtec circular connector from Intercontec Size 1 and 1.5 Size 1	speedtec circular connector from Intercontec Size 1 and 1.5 Size 1
Connection type - Single-cable (hybrid) solution	htec circular connector from Intercontec, size 1	htec circular connector from Intercontec, size 1
Thermal characteristics		
Class of the insulation system in accordance with EN 60034-1	F	F
Methods of cooling in accordance with EN 60034-6 (IC code)	Self-cooling, no separate surface cooling (IC4A0A0)	Externally-cooled; surface cooling with independent cooling module attached (IC4A0A6)
Thermal motor protection in accordance with EN 60034-11	Maximum winding temperature is 155°C (limited by the thermal motor protection in the ACOPOS servo drive or in the ACOPOS-multi drive system to 110°C with EnDat feedback and 130°C with resolver feedback)	Maximum winding temperature is 155°C (limited by the thermal motor protection in the ACOPOS servo drive or in the ACOPOS-multi drive system to 110°C with EnDat feedback and 130°C with resolver feedback)
Mechanical characteristics		
Vibration severity in accordance with EN 60034-14	Vibration severity grade R[1)]	Vibration severity grade R[1)]
Bearing service life calculation	DIN ISO 281	DIN ISO 281
Center hole according to DIN 332	Form F	Form F
Eye bolt according to DIN 580	For size 8	For size 8
Shaft end in accordance with DIN 748 [2)]	Form E	Form E
Oil seal in accordance with DIN 3760	Form A	Form A
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway	Form A shaft keys, form N1 keyway
Balancing the shaft in accordance with DIN ISO 8821	Half-key arrangement	Half-key arrangement
Mounting flange in accordance with DIN 42948	Form A	Form A
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R	Tolerance R
Coating Name Color	Water-based coating 98160 *IDROLIN/E SM SEMIOPACO NERO RAL 9005-C.452 RAL 9005 flat; shaft end and flange front metallic glossy	Water-based coating 98160 *IDROLIN/E SM SEMIOPACO NERO RAL 9005-C.452 RAL 9005 flat; shaft end and flange front metallic glossy
Operating conditions		
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation	S1 - Continuous operation
Ambient temperature during operation	-15°C to +40°C	-15°C to +40°C
Reduction of the nominal current and stall current at temperatures above 40°C	10% per 10°C	10% per 10°C
Maximum ambient temperature during operation	+55°C [3)]	+55°C [3)]
Reduction of the nominal current and stall current at installation elevations over 1000 m above sea level	10% per 1000 m	10% per 1000 m
Maximum installation elevation	2000 m [4)]	2000 m [4)]
Maximum flange temperature	65°C	65°C
EN 60034-5 protection (IP code) With optional oil seal (DIN 3760)	IP64 IP65	IP64, fan IP20 IP65, fan IP20
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Storage and transport conditions		
Storage temperature	-20 to +60°C	-20 to +60°C
Relative humidity during storage	Max. 90%, non-condensing	Max. 90%, non-condensing
Transport temperature	-20 to +60°C	-20 to +60°C
Relative humidity during transport	Max. 90%, non-condensing	Max. 90%, non-condensing

1) Valid for all motors with a shaft height of more than 56 mm.

2) Except size 2, regular and reinforced bearing in sizes 5, 7 and 8

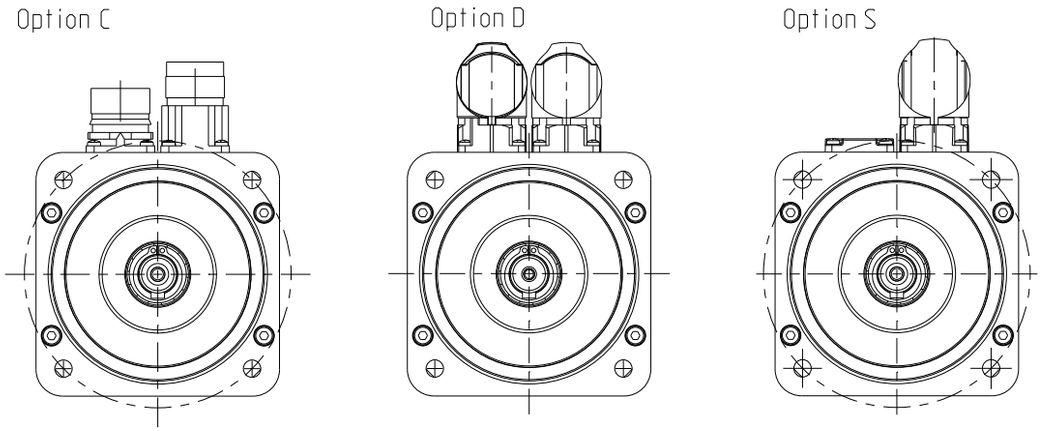
3) Continuous operation of the servo motors at ambient temperatures from +40°C to max. +55°C is possible but results in a shorter lifespan.

4) Requirements that go above and beyond this must be arranged with B&R.

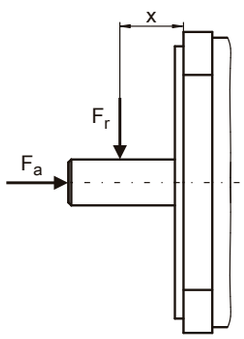
Terminology and formula symbols

Connection direction

- Option "C": straight built-in connector, one each for power and signal
- Option "D": angled swivel built-in connector, one each for power and signal
- Option "S": Single-cable solution with hybrid built-in connector for both power and signal



Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

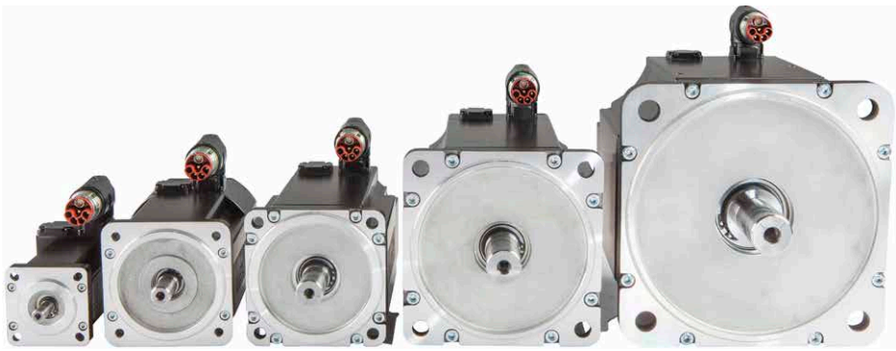
Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors).
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake
Moment of inertia of brake	J_{Br}	kgcm²	Moment of inertia for the built-in holding brake
Brake mass	m_{Br}	kg	Weight of the built-in holding brake
Brake holding torque	M_{Br}	Nm	Minimum torque required to hold the rotor when the brake is activated
Installed load	P_{on}	W	Installed load for the built-in holding brake
Installed current	I_{on}	A	Installed current for the built-in holding brake
Connection voltage	U_{on}	V	Operating voltage for the built-in holding brake
Activation delay	t_{on}	ms	Delay time required for the holding torque of the brake to be established after the operating voltage has been removed from the holding brake
Release delay	t_{off}	ms	Delay time required until the holding torque of the holding brake is reduced by 90% (the brake is released) after operating voltage has been returned to the holding brake

8LS standard motors

8LS standard motors

The 8LS series includes a wide selection of sizes and options that represent preferred types (standard motors), which are available with optimized delivery times. These standard motors offer considerably faster delivery and an unbeatable price/performance ratio for servo motors featuring high-precision inductive encoders in a single-cable design or with a resolver, with or without a keyed shaft. If necessary, they can be ready on short notice and dispatched using express delivery. The standard motor types are listed below.



Technical data

	8LSA25.R0060D000-3	8LSA25.R0060D100-3	8LSA25.R0060D200-3	8LSA25.R0060D300-3	8LSA25.D8060S000-3	8LSA25.D8060S100-3	8LSA25.D8060S200-3	8LSA25.D8060S300-3	8LSA25.D9060S000-3	8LSA25.D9060S100-3	8LSA25.D9060S200-3
Motor											
Nominal speed n_N [rpm]						6000					
Number of pole pairs						4					
Nominal torque M_n [Nm]						0.52					
Nominal power P_N [W]						327					
Nominal current I_N [A]						0.71					
Stall torque M_0 [Nm]						0.6					
Stall current I_0 [A]						0.82					
Maximum torque M_{max} [Nm]						2.4					
Maximum current I_{max} [A]						3.7					
Maximum speed n_{max} [rpm]						9000					
Torque constant K_T [Nm/A]						0.73					
Voltage constant K_E [V/1000 rpm]						43.98					
Stator resistance R_{2ph} [Ω]	34.6	34.63	34.6	34.63	34.63	34.63	34.63	34.63	34.63	34.63	34.63
Stator inductance L_{2ph} [mH]						49.6					
Electrical time constant t_{el} [ms]	1.6	1.4	1.6	1.4	1.4	1.4	1.4	1.401	1.4	1.4	1.4
Thermal time constant t_{therm} [min]						20					
Moment of inertia J [kgcm^2]						0.16					
Weight without brake m [kg]	1.41	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Holding brake											
Holding torque of the brake M_{Br} [Nm]	0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Weight of brake [kg]	-	0.45	-	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Moment of inertia for the brake J_{Br} [kgcm^2]	0	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Recommendations											
ACOPOS servo drive 8Vxxxx.xx...						1010					
ACOPOSmulti inverter module 8BVIxxxx...						0014					
Cross section for B&R motor cables [mm^2]						1.5					
Connector type						speedtec					
Connector size						1.0					

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA35.R2030D000-3	8LSA35.R2030D100-3	8LSA35.R2030D200-3	8LSA35.R2030D300-3	8LSA35.R2060D000-3	8LSA35.R2060D100-3	8LSA35.R2060D200-3	8LSA35.R2060D300-3	8LSA35.DA030S000-3	8LSA35.DA030S100-3
Motor										
Nominal speed n_N [rpm]	3000	3000	3000	3000	6000	6000	6000	6000	3000	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.1	2.1	2.1	2.1	1.6	1.6	1.6	1.6	2.1	2.1
Nominal power P_N [W]	660	660	660	660	1005	1005	1005	1005	660	660
Nominal current I_N [A]	1.4	1.4	1.4	1.4	2.2	2.2	2.2	2.2	1.4	1.4
Stall torque M_0 [Nm]	2.3									
Stall current I_0 [A]	1.6	1.6	1.6	1.6	3.2	3.2	3.2	3.2	1.6	1.6
Maximum torque M_{max} [Nm]	9.2									
Maximum current I_{max} [A]	6.8	6.8	6.8	6.8	13.6	13.6	13.6	13.6	6.8	6.8
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.45	1.45	1.45	1.45	0.73	0.73	0.73	0.73	1.45	1.45
Voltage constant K_E [V/1000 rpm]	87.96	87.96	87.96	87.96	43.98	43.98	43.98	43.98	87.96	87.96
Stator resistance R_{2ph} [Ω]	12.22	12.22	12.22	12.22	3.02	3.02	3.02	3.02	12.22	12.22
Stator inductance L_{2ph} [mH]	63	63	63	63	15.6	15.6	15.6	15.6	63	63
Electrical time constant t_{el} [ms]	5.2	5.2	5.2	5.2	5.1	5.1	5.1	5.1	5.201	5.2
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [kgcm^2]	0.9									
Weight without brake m [kg]	4.4									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0	4	4	4	0	4	4	4	4	4
Weight of brake [kg]	1.09									
Moment of inertia for the brake J_{Br} [kgcm^2]	-	0.38	0.38	0.38	-	0.38	0.38	0.38	0.38	0.38
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016	1016	1016	1016	1045	1045	1045	1045	1016	1016
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0028	0028	0055	0055	0055	0055	0028	0028
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA35.DA030S200-3	8LSA35.DA030S300-3	8LSA35.DA060S000-3	8LSA35.DA060S100-3	8LSA35.DA060S200-3	8LSA35.DA060S300-3	8LSA35.DB030S000-3	8LSA35.DB030S100-3	8LSA35.DB030S200-3	8LSA35.DB030S300-3
Motor										
Nominal speed n_N [rpm]	3000	3000	6000	6000	6000	6000	3000	3000	3000	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	2.1	2.1	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1
Nominal power P_N [W]	660	660	1005	1005	1005	1005	660	660	660	660
Nominal current I_N [A]	1.4	1.4	2.2	2.2	2.2	2.2	1.4	1.4	1.4	1.4
Stall torque M_0 [Nm]	2.3									
Stall current I_0 [A]	1.6	1.6	3.2	3.2	3.2	3.2	1.6	1.6	1.6	1.6
Maximum torque M_{max} [Nm]	9.2									
Maximum current I_{max} [A]	6.8	6.8	13.6	13.6	13.6	13.6	6.8	6.8	6.8	6.8
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.45	1.45	0.73	0.73	0.73	0.73	1.45	1.45	1.45	1.45
Voltage constant K_E [V/1000 rpm]	87.96	87.96	43.98	43.98	43.98	43.98	87.96	87.96	87.96	87.96
Stator resistance R_{2ph} [Ω]	12.22	12.22	3.02	3.02	3.02	3.02	12.22	12.22	12.22	12.22
Stator inductance L_{2ph} [mH]	63	63	15.6	15.6	15.6	15.6	63	63	63	63
Electrical time constant t_{el} [ms]	5.2	5.2	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2
Thermal time constant t_{therm} [min]	34									
Moment of inertia J [kgcm^2]	0.9									
Weight without brake m [kg]	4.4									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4									
Weight of brake [kg]	1.09									
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016	1016	1045	1045	1045	1045	1016	1016	1016	1016
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0055	0055	0055	0055	0028	0028	0028	0028
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA35.DB060S000-3	8LSA35.DB060S100-3	8LSA35.DB060S200-3	8LSA35.DB060S300-3	8LSA35.EA030D000-3	8LSA35.EA030D200-0	8LSA35.EA060D000-3	8LSA35.EA060D200-3	8LSA35.EB030D000-3	8LSA35.EB030D200-3
Motor										
Nominal speed n_N [rpm]	6000	6000	6000	6000	3000	3000	6000	6000	3000	3000
Number of pole pairs	4	4	4	4	4	2	4	4	4	4
Nominal torque M_n [Nm]	1.6	1.6	1.6	1.6	2.1	2.1	1.6	1.6	2.1	2.1
Nominal power P_N [W]	1005	1005	1005	1005	660	660	1005	1005	660	660
Nominal current I_N [A]	2.2	2.2	2.2	2.2	1.4	1.44	2.2	2.2	1.4	1.4
Stall torque M_0 [Nm]	2.3									
Stall current I_0 [A]	3.2	3.2	3.2	3.2	1.6	1.6	3.2	3.2	1.6	1.6
Maximum torque M_{max} [Nm]	9.2									
Maximum current I_{max} [A]	13.6	13.6	13.6	13.6	6.8	6.8	13.6	13.6	6.8	6.8
Maximum speed n_{max} [rpm]	9000	9000	9000	9000	9000	12000	9000	9000	9000	9000
Torque constant K_T [Nm/A]	0.73	0.73	0.73	0.73	1.45	1.46	0.73	0.73	1.45	1.45
Voltage constant K_E [V/1000 rpm]	43.98	43.98	43.98	43.98	87.96	88	43.98	43.98	87.96	87.96
Stator resistance R_{2ph} [Ω]	3.02	3.02	3.02	3.02	12.22	19.5	3.02	3.02	12.22	12.2
Stator inductance L_{2ph} [mH]	15.6	15.6	15.6	15.6	63	51.5	15.6	15.6	63	63
Electrical time constant t_{el} [ms]	5.1	5.1	5.1	5.1	5.2	2.66	5.1	5.1	5.2	5.2
Thermal time constant t_{therm} [min]	34	34	34	34	34	38	34	34	34	34
Moment of inertia J [kgcm^2]	0.9									
Weight without brake m [kg]	4.4	4.4	4.4	4.4	4.4	3.66	4.4	4.4	4.4	4.4
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4	4	4	4	4	4	4	4	4	0
Weight of brake [kg]	1.09	1.09	1.09	1.09	1.09	0.29	1.09	1.09	1.09	-
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1045	1045	1016	1022	1045	1045	1016	1016
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0055	0055	0028	0014	0055	0055	0028	0028
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA35.EB060D000-3	8LSA35.EB060D200-3	8LSA37.R2030D000-3	8LSA37.R2030D100-3	8LSA37.R2030D200-3	8LSA37.R2030D300-3	8LSA37.R2060D000-3	8LSA37.R2060D100-3	8LSA37.R2060D200-3	8LSA37.R2060D300-3
Motor										
Nominal speed n_N [rpm]	6000	6000	3000	3000	3000	3000	6000	6000	6000	6000
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.6	1.6	3.4	3.4	3.4	3.4	2	2	2	2
Nominal power P_N [W]	1005	1005	-	1068	-	1068	-	1257	-	1257
Nominal current I_N [A]	2.2	2.2	2.3	2.3	2.3	2.3	2.7	2.7	2.7	2.7
Stall torque M_0 [Nm]	2.3	2.3	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Stall current I_0 [A]	3.2	3.2	2.5	2.5	2.5	2.5	4.9	4.9	4.9	4.9
Maximum torque M_{max} [Nm]	9.2	9.2	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
Maximum current I_{max} [A]	13.6	13.6	10.6	10.6	10.6	10.6	21.2	21.2	21.2	21.2
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	0.73	0.73	1.45	1.45	1.45	1.45	0.73	0.73	0.73	0.73
Voltage constant K_E [V/1000 rpm]	43.98	43.98	87.96	87.96	87.96	87.96	43.98	43.98	43.98	43.98
Stator resistance R_{2ph} [Ω]	3.02	3.02	6.98	6.98	6.98	6.98	1.76	1.76	1.76	1.76
Stator inductance L_{2ph} [mH]	15.6	15.6	37.5	37.5	37.5	37.5	9.6	9.6	9.6	9.6
Electrical time constant t_{el} [ms]	5.1	5.1	-	5.4	-	5.4	5.5	5.5	5.5	5.5
Thermal time constant t_{therm} [min]	34	34	38	38	38	38	38	38	38	38
Moment of inertia J [kgcm^2]	0.9	0.9	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38
Weight without brake m [kg]	4.4	4.4	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4	4	0	4	4	4	0	4	4	4
Weight of brake [kg]	1.09	1.09	-	0.59	0.59	0.59	-	0.59	0.59	0.59
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38	0.38	-	0.38	0.38	0.38	0	0.38	0.38	0.38
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1045	1045	1045	1045	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0028	0028	0028	0028	0055	0055	0055	0055
Cross section for B&R motor cables [mm^2]	1.5	1.5	-	1.5	-	1.5	-	1.5	-	1.5
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA37.DA030S000-3	8LSA37.DA030S100-3	8LSA37.DA030S200-3	8LSA37.DA030S300-3	8LSA37.DA060S000-3	8LSA37.DA060S100-3	8LSA37.DA060S200-3	8LSA37.DA060S300-3	8LSA37.DB030S000-3	8LSA37.DB030S100-3
Motor										
Nominal speed n_N [rpm]	3000	3000	3000	3000	6000	6000	6000	6000	3000	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	3.4	3.4	3.4	3.4	2	2	2	2	3.4	3.4
Nominal power P_N [W]	1068	1068	1068	1068	2140	1257	1257	1257	1068	1068
Nominal current I_N [A]	2.3	2.3	2.3	2.3	2.7	2.7	2.7	2.7	2.3	2.3
Stall torque M_0 [Nm]	3.6									
Stall current I_0 [A]	2.5	2.5	2.5	2.5	4.9	4.9	4.9	4.9	2.5	2.5
Maximum torque M_{max} [Nm]	14.4									
Maximum current I_{max} [A]	10.6	10.6	10.6	10.6	21.2	21.2	21.2	21.2	10.6	10.6
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.45	1.45	1.45	1.45	0.73	0.73	0.73	0.73	1.45	1.45
Voltage constant K_E [V/1000 rpm]	87.96	87.96	87.96	87.96	43.98	43.98	43.98	43.98	87.96	87.96
Stator resistance R_{2ph} [Ω]	6.98	6.98	6.98	6.98	1.76	1.76	1.76	1.76	6.98	6.98
Stator inductance L_{2ph} [mH]	37.5	37.5	37.5	37.5	9.6	9.6	9.6	9.6	37.5	37.5
Electrical time constant t_{el} [ms]	5.4	5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.4	5.4
Thermal time constant t_{therm} [min]	38									
Moment of inertia J [kgcm^2]	1.38									
Weight without brake m [kg]	5.6									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4	4	4	4	0	4	4	4	4	4
Weight of brake [kg]	0.59	0.59	0.59	0.59	-	0.59	0.59	0.59	0.59	0.59
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38	0.38	0.38	0.38	-	0.38	0.38	0.38	0.38	0.38
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1045	1045	1090	1090	1090	1090	1045	1045
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0028	0028	0055	0055	0055	0055	0028	0028
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	-	1.5	1.5	1.5	1.5	1.5
Connector type	speedtec	speedtec	speedtec	speedtec	Hybrid connector	speedtec	speedtec	speedtec	speedtec	speedtec
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA37.DB030S200-3	8LSA37.DB030S300-3	8LSA37.DB060S000-3	8LSA37.DB060S100-3	8LSA37.DB060S200-3	8LSA37.DB060S300-3	8LSA44.R2030D000-3	8LSA44.R2030D100-3	8LSA44.R2030D200-3	8LSA44.R2030D300-3
Motor										
Nominal speed n_N [rpm]	3000	3000	6000	6000	6000	6000	3000	3000	3000	3000
Number of pole pairs	4	4	4	4	4	4	5	5	5	5
Nominal torque M_n [Nm]	3.4	3.4	2	2	2	2	4.62	4.62	4.62	4.62
Nominal power P_N [W]	1068	1068	1257	1257	1257	1257	1451	1451	1451	1451
Nominal current I_N [A]	2.3	2.3	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8
Stall torque M_0 [Nm]	3.6	3.6	3.6	3.6	3.6	3.6	6	6	6	6
Stall current I_0 [A]	2.5	2.5	4.9	4.9	4.9	4.9	3.7	3.7	3.7	3.7
Maximum torque M_{max} [Nm]	14.4	14.4	14.4	14.4	14.4	14.4	22.8	22.8	22.8	22.8
Maximum current I_{max} [A]	10.6	10.6	21.2	21.2	21.2	21.2	21.9	21.9	21.9	21.9
Maximum speed n_{max} [rpm]	9000	9000	9000	9000	9000	9000	12000	12000	12000	12000
Torque constant K_T [Nm/A]	1.45	1.45	0.73	0.73	0.73	0.73	1.63	1.63	1.63	1.63
Voltage constant K_E [V/1000 rpm]	87.96	87.96	43.98	43.98	43.98	43.98	98.4	98.4	98.4	98.4
Stator resistance R_{2ph} [Ω]	6.98	6.98	1.76	1.76	1.76	1.76	3.6	3.6	3.6	3.6
Stator inductance L_{2ph} [mH]	37.5	37.5	9.6	9.6	9.6	9.6	24	24	24	24
Electrical time constant t_{el} [ms]	5.4	5.4	5.5	5.5	5.5	5.5	6.7	6.7	6.7	6.7
Thermal time constant t_{therm} [min]	38	38	38	38	38	38	30	30	30	30
Moment of inertia J [kgcm^2]	1.38	1.38	1.38	1.38	1.38	1.38	2.7285	2.73	2.7285	2.73
Weight without brake m [kg]	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5.4	5.4	5.4
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4	4	4	4	4	4	0	8	8	8
Weight of brake [kg]	0.59	0.59	0.59	0.59	0.59	0.59	-	1	0.46	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38	0.38	0.38	0.38	0.38	0.38	-	0.54	0.54	0.54
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1090	1090	1090	1090	1045	1045	1045	1045
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0055	0055	0055	0055	0055	0055	0055	0055
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA44.R2060D000-3	8LSA44.R2060D100-3	8LSA44.R2060D200-3	8LSA44.R2060D300-3	8LSA44.DA030S000-3	8LSA44.DA030S100-3	8LSA44.DA030S200-3	8LSA44.DA030S300-3	8LSA44.DA060S000-3	8LSA44.DA060S100-3
Motor										
Nominal speed n_N [rpm]	6000	6000	6000	6000	3000	3000	3000	3000	6000	6000
Number of pole pairs	5									
Nominal torque M_n [Nm]	3	3	3	3	4.62	4.62	4.62	4.62	3	3
Nominal power P_N [W]	1885	1885	1885	1885	1451	1451	1451	1451	1885	1885
Nominal current I_N [A]	3.7	3.7	3.7	3.7	2.8	2.8	2.8	2.8	3.7	3.7
Stall torque M_0 [Nm]	6									
Stall current I_0 [A]	7.4	7.4	7.4	7.4	3.7	3.7	3.7	3.7	7.4	7.4
Maximum torque M_{max} [Nm]	22.8									
Maximum current I_{max} [A]	43.8	43.8	43.8	43.8	21.9	21.9	21.9	21.9	43.8	43.8
Maximum speed n_{max} [rpm]	12000									
Torque constant K_T [Nm/A]	0.81	0.81	0.81	0.81	1.63	1.63	1.63	1.63	0.81	0.81
Voltage constant K_E [V/1000 rpm]	49.2	49.2	49.2	49.2	98.4	98.4	98.4	98.4	49.2	49.2
Stator resistance R_{2ph} [Ω]	0.862	0.862	0.862	0.862	3.6	3.6	3.6	3.6	0.862	0.862
Stator inductance L_{2ph} [mH]	6.2	6.2	6.2	6.2	24	24	24	24	6.2	6.2
Electrical time constant t_{el} [ms]	7.2	7.2	7.2	7.2	6.7	6.7	6.7	6.7	7.2	7.2
Thermal time constant t_{therm} [min]	30									
Moment of inertia J [kgcm^2]	2.7285	2.73	2.7285	2.73	2.73	2.73	2.73	2.73	2.7285	2.73
Weight without brake m [kg]	5.4									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0	8	8	8	8	8	8	8	0	8
Weight of brake [kg]	-	1	0.46	1	1	1	1	1	-	1
Moment of inertia for the brake J_{Br} [kgcm^2]	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	-	0.54
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1090	1045	1045	1045	1045	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0110	0110	0055	0055	0055	0055	0110	0110
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec	speedtec	speedtec	speedtec	speedtec	speedtec	speedtec	speedtec	Hybrid connector	speedtec
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA44.DA060S200-3	8LSA44.DA060S300-3	8LSA44.DB030S000-3	8LSA44.DB030S100-3	8LSA44.DB030S200-3	8LSA44.DB030S300-3	8LSA44.DB060S000-3	8LSA44.DB060S100-3	8LSA44.DB060S200-3	8LSA44.DB060S300-3
Motor										
Nominal speed n_N [rpm]	6000	6000	3000	3000	3000	3000	6000	6000	6000	6000
Number of pole pairs	5									
Nominal torque M_n [Nm]	3	3	4.62	4.62	4.62	4.62	3	3	3	3
Nominal power P_N [W]	1885	1885	1451	1451	1451	1451	1885	1885	1885	1885
Nominal current I_N [A]	3.7	3.7	2.8	2.8	2.8	2.8	3.7	3.7	3.7	3.7
Stall torque M_0 [Nm]	6									
Stall current I_0 [A]	7.4	7.4	3.7	3.7	3.7	3.7	7.4	7.4	7.4	7.4
Maximum torque M_{max} [Nm]	22.8									
Maximum current I_{max} [A]	43.8	43.8	21.9	21.9	21.9	21.9	43.8	43.8	43.8	43.8
Maximum speed n_{max} [rpm]	12000									
Torque constant K_T [Nm/A]	0.81	0.81	1.63	1.63	1.63	1.63	0.81	0.81	0.81	0.81
Voltage constant K_E [V/1000 rpm]	49.2	49.2	98.4	98.4	98.4	98.4	49.2	49.2	49.2	49.2
Stator resistance R_{2ph} [Ω]	0.862	0.862	3.6	3.6	3.6	3.6	0.862	0.862	0.862	0.862
Stator inductance L_{2ph} [mH]	6.2	6.2	24	24	24	24	6.2	6.2	6.2	6.2
Electrical time constant t_{el} [ms]	7.2	7.2	6.7	6.7	6.701	6.7	7.2	7.2	7.2	7.2
Thermal time constant t_{therm} [min]	30									
Moment of inertia J [kgcm^2]	2.73									
Weight without brake m [kg]	5.4									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8									
Weight of brake [kg]	1									
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1045	1045	1045	1045	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0055	0055	0055	0055	0110	0110	0110	0110
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA44.EA030D000-3	8LSA44.EA030D200-3	8LSA44.EA060D000-3	8LSA44.EA060D200-3	8LSA44.EB030D000-3	8LSA44.EB030D200-3	8LSA44.EB060D000-3	8LSA44.EB060D200-3	8LSA46.R2030D000-3	8LSA46.R2030D100-3
Motor										
Nominal speed n_N [rpm]	3000	3000	6000	6000	3000	3000	6000	6000	3000	3000
Number of pole pairs	5									
Nominal torque M_n [Nm]	4.62	4.62	3	3	4.62	4.62	3	3	7.7	7.7
Nominal power P_N [W]	1451	1451	1885	1885	1451	1451	1885	1885	2419	2419
Nominal current I_N [A]	2.8	2.8	3.7	3.7	2.8	2.8	3.7	3.7	4.7	4.7
Stall torque M_0 [Nm]	6	6	6	6	6	6	6	6	10	10
Stall current I_0 [A]	3.7	3.7	7.4	7.4	3.7	3.7	7.4	7.4	6.1	6.1
Maximum torque M_{max} [Nm]	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	38	38
Maximum current I_{max} [A]	21.9	21.9	43.8	43.8	21.9	21.9	43.8	43.8	36.5	36.5
Maximum speed n_{max} [rpm]	12000									
Torque constant K_T [Nm/A]	1.63	1.63	0.81	0.81	1.63	1.63	0.81	0.81	1.63	1.63
Voltage constant K_E [V/1000 rpm]	98.4	98.4	49.2	49.2	98.4	98.4	49.2	49.2	98.4	98.4
Stator resistance R_{2ph} [Ω]	3.6	3.6	0.862	0.862	3.6	3.6	0.862	0.862	1.92	1.92
Stator inductance L_{2ph} [mH]	24	24	6.2	6.2	24	24	6.2	6.2	17.4375	17.44
Electrical time constant t_{el} [ms]	6.7	6.7	7.2	7.2	6.7	6.7	7.2	7.2	9.1	9.1
Thermal time constant t_{therm} [min]	30	30	30	30	30	30	30	30	40	40
Moment of inertia J [kgcm^2]	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	4.387	4.39
Weight without brake m [kg]	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	7.3	7.3
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	8	8	8	8	8	8	0	8
Weight of brake [kg]	1	1	1	1	1	1	1	1	-	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	-	0.54
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1090	1090	1045	1045	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0110	0110	0055	0055	0110	0110	0110	0110
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA46.R2030D200-3	8LSA46.R2030D300-3	8LSA46.R2060D000-3	8LSA46.R2060D100-3	8LSA46.R2060D200-3	8LSA46.R2060D300-3	8LSA46.DA030S000-3	8LSA46.DA030S100-3	8LSA46.DA030S200-3	8LSA46.DA030S300-3
Motor										
Nominal speed n_N [rpm]	3000	3000	6000	6000	6000	6000	3000	3000	3000	3000
Number of pole pairs	5									
Nominal torque M_n [Nm]	7.7	7.7	5	5	5	5	7.7	7.7	7.7	7.7
Nominal power P_N [W]	2419	2419	3142	3142	3142	3142	2419	2419	2419	2419
Nominal current I_N [A]	4.7	4.7	6.1	6.1	6.1	6.1	4.7	4.7	4.7	4.7
Stall torque M_0 [Nm]	10									
Stall current I_0 [A]	6.1	6.1	12.3	12.3	12.3	12.3	6.1	6.1	6.1	6.1
Maximum torque M_{max} [Nm]	38									
Maximum current I_{max} [A]	36.5	36.5	72.9	72.9	72.9	72.9	36.5	36.5	36.5	36.5
Maximum speed n_{max} [rpm]	12000									
Torque constant K_T [Nm/A]	1.63	1.63	0.81	0.81	0.81	0.81	1.63	1.63	1.63	1.63
Voltage constant K_E [V/1000 rpm]	98.4	98.4	49.2	49.2	49.2	49.2	98.4	98.4	98.4	98.4
Stator resistance R_{2ph} [Ω]	1.92	1.92	0.48	0.48	0.48	0.48	1.92	1.92	1.92	1.92
Stator inductance L_{2ph} [mH]	17.4375	17.44	4.36	4.36	4.36	4.36	17.44	17.44	17.44	17.44
Electrical time constant t_{el} [ms]	9.1									
Thermal time constant t_{therm} [min]	40									
Moment of inertia J [kgcm^2]	4.387	4.39	4.387	4.39	4.387	4.39	4.39	4.39	4.39	4.39
Weight without brake m [kg]	7.3									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	0	8	8	8	8	8	8	8
Weight of brake [kg]	0.46	1	-	1	-	1	1	1	1	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	-	0.54	-	0.54	0.54	0.54	0.54	0.54
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1180	1180	1180	1180	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0220	0220	0220	0220	0110	0110	0110	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	4	4	4	1.5	1.5	1.5	1.5
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA46.DA030S100-3	8LSA46.DA030S200-3	8LSA46.DA030S300-3	8LSA46.DA060S000-3	8LSA46.DB030S000-3	8LSA46.DB030S100-3	8LSA46.DB030S200-3	8LSA46.DB030S300-3	8LSA46.DB060S000-3	8LSA46.DB060S100-3
Motor										
Nominal speed n_N [rpm]	3000	3000	3000	6000	3000	3000	3000	3000	6000	6000
Number of pole pairs	5									
Nominal torque M_n [Nm]	7.7	7.7	7.7	5	7.7	7.7	7.7	7.7	5	5
Nominal power P_N [W]	2419	2419	2419	3142	2419	2419	2419	2419	3142	3142
Nominal current I_N [A]	4.7	4.7	4.7	6.1	4.7	4.7	4.7	4.7	6.1	6.1
Stall torque M_0 [Nm]	10									
Stall current I_0 [A]	6.1	6.1	6.1	12.3	6.1	6.1	6.1	6.1	12.3	12.3
Maximum torque M_{max} [Nm]	38									
Maximum current I_{max} [A]	36.5	36.5	36.5	72.9	36.5	36.5	36.5	36.5	72.9	72.9
Maximum speed n_{max} [rpm]	12000									
Torque constant K_T [Nm/A]	1.63	1.63	1.63	0.81	1.63	1.63	1.63	1.63	0.81	0.81
Voltage constant K_E [V/1000 rpm]	98.4	98.4	98.4	49.2	98.4	98.4	98.4	98.4	49.2	49.2
Stator resistance R_{2ph} [Ω]	1.92	1.92	1.92	0.48	1.92	1.92	1.92	1.92	0.48	0.48
Stator inductance L_{2ph} [mH]	17.44	17.44	17.44	4.36	17.44	17.44	17.44	17.44	4.36	4.36
Electrical time constant t_{el} [ms]	9.1									
Thermal time constant t_{therm} [min]	40									
Moment of inertia J [kgcm^2]	4.39	4.39	4.39	4.39	4.387	4.39	4.39	4.39	4.39	4.39
Weight without brake m [kg]	7.3									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	8	8	0	8	8	8	8	8
Weight of brake [kg]	1	1	1	1	0.46	1	1	1	1	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1180	1090	1090	1090	1090	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0110	0220	0110	0110	0110	0110	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	4	1.5	1.5	1.5	1.5	4	4
Connector type	speedtec	speedtec	speedtec	speedtec	Hybrid connector	speedtec	speedtec	speedtec	speedtec	speedtec
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA46.DB060S200-3	8LSA46.DB060S300-3	8LSA55.R2030D000-3	8LSA55.R2030D100-3	8LSA55.R2030D200-3	8LSA55.R2030D300-3	8LSA55.DA030S000-3	8LSA55.DA030S100-3	8LSA55.DA030S200-3	8LSA55.DA030S300-3
Motor										
Nominal speed n_N [rpm]	6000	6000	3000	3000	3000	3000	3000	3000	3000	3000
Number of pole pairs	5	5	4	4	4	4	4	4	4	4
Nominal torque M_n [Nm]	5	5	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
Nominal power P_N [W]	3142	3142	3644	3644	3644	3644	3644	3644	3644	3644
Nominal current I_N [A]	6.1	6.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Stall torque M_0 [Nm]	10	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Stall current I_0 [A]	12.3	12.3	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Maximum torque M_{max} [Nm]	38	38	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
Maximum current I_{max} [A]	72.9	72.9	33	33	33	33	33	33	33	33
Maximum speed n_{max} [rpm]	12000	12000	9000	9000	9000	9000	9000	9000	9000	9000
Torque constant K_T [Nm/A]	0.81	0.81	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
Voltage constant K_E [V/1000 rpm]	49.2	49.2	98.4	98.44	98.4	98.44	98.44	98.44	98.44	98.44
Stator resistance R_{2ph} [Ω]	0.48	0.48	1.127	1.127	1.127	1.127	1.127	1.127	1.127	1.127
Stator inductance L_{2ph} [mH]	4.36	4.36	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Electrical time constant t_{el} [ms]	9.1	9.1	11.09	11.1	11.09	11.1	11.1	11.1	11.1	11.1
Thermal time constant t_{therm} [min]	40									
Moment of inertia J [kgcm^2]	4.39	4.39	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19
Weight without brake m [kg]	7.3	7.3	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	0	15	15	15	15	15	15	15
Weight of brake [kg]	1	1	-	1.47	0.9	1.47	1.47	1.47	1.47	1.47
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	-	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1090	1090	1090	1090	1090	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0220	0220	0110	0110	0110	0110	0110	0110	0110	0110
Cross section for B&R motor cables [mm^2]	4	4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA55.DB030S000-3	8LSA55.DB030S100-3	8LSA55.DB030S200-3	8LSA55.DB030S300-3	8LSA55.EA030D000-3	8LSA55.EA030D200-3	8LSA55.EB030D000-3	8LSA55.EB030D200-3	8LSA57.R2030D000-3	8LSA57.R2030D100-3
Motor										
Nominal speed n_N [rpm]	3000									
Number of pole pairs	4									
Nominal torque M_n [Nm]	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	17.5	17.5
Nominal power P_N [W]	3644	3644	3644	3644	3644	3644	3644	3644	5498	5498
Nominal current I_N [A]	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.12	10.7	10.7
Stall torque M_0 [Nm]	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	20	20
Stall current I_0 [A]	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	12.3	12.3
Maximum torque M_{max} [Nm]	41.4	41.4	41.4	41.4	41.4	41.4	41.4	36	69	69
Maximum current I_{max} [A]	33	33	33	33	33	33	33	32.96	52.6	52.6
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.63									
Voltage constant K_E [V/1000 rpm]	98.4	98.44	98.4	98.44	98.44	98.44	98.44	98.4	98.4	98.44
Stator resistance R_{2ph} [Ω]	1.127	1.127	1.127	1.127	1.127	1.127	1.127	1.13	0.62	0.62
Stator inductance L_{2ph} [mH]	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	7.21	7.21
Electrical time constant t_{el} [ms]	11.09	11.1	8.8	11.1	11.1	11.1	11.1	11.09	11.32	11.6
Thermal time constant t_{therm} [min]	40	40	40	40	40	40	40	40	46	46
Moment of inertia J [kgcm^2]	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8	13.13	13.13
Weight without brake m [kg]	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	14.5	14.5
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0	15	15	15	15	15	15	15	0	15
Weight of brake [kg]	-	1.47	0.9	1.47	1.47	1.47	1.47	-	-	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]	0	1.66	1.66	1.66	1.66	1.66	1.66	-	-	1.66
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1090	1090	1090	1090	1090	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0110	0110	0110	0110	0110	0110	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	-	1.5	1.5	1.5	1.5	1.5	4	4
Connector type	Hybrid connector	speedtec	Hybrid connector	speedtec	speedtec	speedtec	speedtec	speedtec	speedtec	speedtec
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA57.R2030D200-3	8LSA57.R2030D300-3	8LSA57.DA030S000-3	8LSA57.DA030S100-3	8LSA57.DA030S200-3	8LSA57.DA030S300-3	8LSA57.DB030S000-3	8LSA57.DB030S100-3	8LSA57.DB030S200-3	8LSA57.DB030S300-3
Motor										
Nominal speed n_N [rpm]	3000									
Number of pole pairs	4									
Nominal torque M_n [Nm]	17.5									
Nominal power P_N [W]	5498									
Nominal current I_N [A]	10.7									
Stall torque M_0 [Nm]	20									
Stall current I_0 [A]	12.3									
Maximum torque M_{max} [Nm]	69									
Maximum current I_{max} [A]	52.6									
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.63									
Voltage constant K_E [V/1000 rpm]	98.4	98.44	98.44	98.44	98.44	98.44	98.44	98.44	98.44	98.44
Stator resistance R_{2ph} [Ω]	0.62									
Stator inductance L_{2ph} [mH]	7.21									
Electrical time constant t_{el} [ms]	10.2	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6
Thermal time constant t_{therm} [min]	46									
Moment of inertia J [kgcm^2]	13.13									
Weight without brake m [kg]	14.5									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	15	15	0	15	15	15	15	15	15	15
Weight of brake [kg]	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180									
ACOPOSmulti inverter module 8BVIxxxx...	0220									
Cross section for B&R motor cables [mm^2]	4									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA73.R2030D000-3	8LSA73.R2030D100-3	8LSA73.R2030D200-3	8LSA73.R2030D300-3	8LSA73.DA030S000-3	8LSA73.DA030S100-3	8LSA73.DA030S200-3	8LSA73.DA030S300-3	8LSA73.DB030S000-3	8LSA73.DB030S100-3
Motor										
Nominal speed n_N [rpm]	3000									
Number of pole pairs	5									
Nominal torque M_n [Nm]	20.5									
Nominal power P_N [W]	6283	6440	6283	6440	6440	6440	6440	6440	6440	6440
Nominal current I_N [A]	12.58									
Stall torque M_0 [Nm]	26									
Stall current I_0 [A]	15.95									
Maximum torque M_{max} [Nm]	107									
Maximum current I_{max} [A]	96.54									
Maximum speed n_{max} [rpm]	6000									
Torque constant K_T [Nm/A]	1.63									
Voltage constant K_E [V/1000 rpm]	98.43	98.44	98.43	98.44	98.44	98.44	98.44	98.44	98.44	98.44
Stator resistance R_{2ph} [Ω]	0.42									
Stator inductance L_{2ph} [mH]	6.5									
Electrical time constant t_{el} [ms]	15.5	15.48	15.5	15.48	15.48	15.48	15.48	15.48	15.48	15.48
Thermal time constant t_{therm} [min]	37									
Moment of inertia J [kgcm^2]	46									
Weight without brake m [kg]	20									
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0	32	47	47	32	32	47	47	32	47
Weight of brake [kg]	-	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Moment of inertia for the brake J_{Br} [kgcm^2]	-	5.85	32	32	5.85	5.85	32	32	5.85	32
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180									
ACOPOSmulti inverter module 8BVIxxxx...	0220									
Cross section for B&R motor cables [mm^2]	4	4	4	4	4	4	4	4	4	0
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA73.DB030S200-3	8LSA73.DB030S300-3	8LSA75.R2030D000-3	8LSA75.R2030D100-3	8LSA75.R2030D200-3	8LSA75.R2030D300-3	8LSA75.DA030S000-3	8LSA75.DA030S100-3	8LSA75.DA030S200-3	8LSA75.DA030S300-3
Motor										
Nominal speed n_N [rpm]	3000									
Number of pole pairs	5									
Nominal torque M_n [Nm]	20.5	20.5	30	30	30	30	30	30	30	30
Nominal power P_N [W]	6440	6440	9425	9425	9425	9425	9425	9425	9425	9425
Nominal current I_N [A]	12.58	12.58	18.4	18.41	18.4	18.41	18.41	18.41	18.41	18.41
Stall torque M_0 [Nm]	26	26	43	43	43	43	43	43	43	43
Stall current I_0 [A]	15.95	15.95	26.38	26.38	26.38	26.38	26.38	26.38	26.38	26.38
Maximum torque M_{max} [Nm]	107	107	187	187	187	187	187	187	187	187
Maximum current I_{max} [A]	96.54	96.54	168.71	168.71	168.71	168.71	168.71	168.71	168.71	168.71
Maximum speed n_{max} [rpm]	6000	6000	4500	4500	4500	4500	4500	4500	4500	4500
Torque constant K_T [Nm/A]	1.63									
Voltage constant K_E [V/1000 rpm]	98.44	98.44	98.43	98.44	98.43	98.44	98.44	98.44	98.44	98.44
Stator resistance R_{2ph} [Ω]	0.42	0.42	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Stator inductance L_{2ph} [mH]	6.5	6.5	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Electrical time constant t_{el} [ms]	15.48	15.48	18.6	18.57	18.6	18.57	18.57	18.57	18.57	18.57
Thermal time constant t_{therm} [min]	37	37	46	46	46	46	46	46	46	46
Moment of inertia J [kgcm^2]	46	46	74	74	74	74	74	74	74	74
Weight without brake m [kg]	20	20	28	28	28	28	28	28	28	28
Holding brake										
Holding torque of the brake M_{Br} [Nm]	47	47	0	32	47	47	32	32	47	47
Weight of brake [kg]	1.8	1.8	-	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Moment of inertia for the brake J_{Br} [kgcm^2]	32	32	-	5.85	32	32	5.85	5.85	32	32
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1320	1320	1320	1320	1320	1320	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...	0220	0220	0330	0330	0330	0330	0330	0330	0330	0330
Cross section for B&R motor cables [mm^2]	4	4	4	0	4	0	4	4	4	4
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA75.DB030S000-3	8LSA75.DB030S100-3	8LSA75.DB030S200-3	8LSA75.DB030S300-3
Motor				
Nominal speed n_N [rpm]	3000			
Number of pole pairs	5			
Nominal torque M_n [Nm]	30			
Nominal power P_N [W]	9425			
Nominal current I_N [A]	18.41			
Stall torque M_0 [Nm]	43			
Stall current I_0 [A]	26.38			
Maximum torque M_{max} [Nm]	187			
Maximum current I_{max} [A]	168.71			
Maximum speed n_{max} [rpm]	4500			
Torque constant K_T [Nm/A]	1.63			
Voltage constant K_E [V/1000 rpm]	98.44			
Stator resistance R_{2ph} [Ω]	0.21			
Stator inductance L_{2ph} [mH]	3.9			
Electrical time constant t_{el} [ms]	18.57	18.571	18.57	18.57
Thermal time constant t_{therm} [min]	46			
Moment of inertia J [kgcm^2]	74			
Weight without brake m [kg]	28			
Holding brake				
Holding torque of the brake M_{Br} [Nm]	32	32	47	47
Weight of brake [kg]	1.8			
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85	5.85	32	32
Recommendations				
ACOPOS servo drive 8Vxxxx.xx...	1320			
ACOPOSmulti inverter module 8BVIxxxx...	0330			
Cross section for B&R motor cables [mm^2]	4	0	4	4
Connector type	speedtec			
Connector size	1.0			

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA23.ee060ffgg-3	8LSA24.ee060ffgg-3	8LSA25.ee045ffgg-3	8LSA25.ee060ffgg-3	8LSA26.ee045ffgg-3	8LSA26.ee060ffgg-3	8LSA34.ee022ffgg-3	8LSA33.ee030ffgg-3	8LSA33.ee045ffgg-3	8LSA33.ee060ffgg-3
Motor										
Nominal speed n_N [rpm]	6000	6000	4500	6000	4500	6000	2200	3000	4500	6000
Number of pole pairs	4									
Nominal torque M_n [Nm]	0.17	0.35	0.54	0.52	0.72	0.69	1.44	0.7	0.67	0.6
Nominal power P_N [W]	107	220	254	327	339	434	332	220	316	377
Nominal current I_N [A]	0.23	0.48	0.56	0.71	0.8	0.95	0.72	0.48	0.69	0.82
Stall torque M_0 [Nm]	0.2	0.4	0.6	0.6	0.8	0.8	1.5	0.75	0.75	0.75
Stall current I_0 [A]	0.27	0.55	0.62	0.82	0.89	1.1	0.75	0.52	0.77	1.03
Maximum torque M_{max} [Nm]	0.8	1.6	2.4	2.4	3.2	3.2	6	3	3	3
Maximum current I_{max} [A]	1.25	2.5	2.77	3.7	4.05	5	3.2	2.2	3.3	4.4
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	0.73	0.73	0.97	0.73	0.9	0.73	1.99	1.45	0.97	0.73
Voltage constant K_E [V/1000 rpm]	43.98	43.98	58.64	43.98	54.45	43.98	120.43	87.96	58.64	43.98
Stator resistance R_{2ph} [Ω]	178.6	52.3	63.4	34.63	33.75	24.7	40.62	56.5	27.56	15.98
Stator inductance L_{2ph} [mH]	165	67.5	87.8	49.6	52.9	36.6	184.2	214	98.4	58.2
Electrical time constant t_{el} [ms]	0.9	1.3	1.4	1.4	1.6	1.5	4.5	3.8	3.6	3.6
Thermal time constant t_{therm} [min]	13	16	20	20	23	23	32	30	30	30
Moment of inertia J [kgcm^2]	0.07	0.12	0.16	0.16	0.2	0.2	0.65	0.4	0.4	0.4
Weight without brake m [kg]	0.9	1.1	1.3	1.3	1.5	1.5	3.8	3.2	3.2	3.2
Holding brake										
Holding torque of the brake M_{Br} [Nm]	2.2	2.2	2.2	2.2	2.2	2.2	4	4	4	4
Weight of brake [kg]	0.45	0.45	0.45	0.45	0.45	0.45	1.07	1.07	1.07	1.07
Moment of inertia for the brake J_{Br} [kgcm^2]	0.12	0.12	0.12	0.12	0.12	0.12	0.38	0.38	0.38	0.38
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1010	1010	1010	1010	1010	1016	1010	1010	1010	1016
ACOPOSmulti inverter module 8BVIxxxx...	0014									
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA34.ee030ffgg-3	8LSA34.ee045ffgg-3	8LSA34.ee060ffgg-3	8LSA35.ee022ffgg-3	8LSA35.ee030ffgg-3	8LSA35.ee045ffgg-3	8LSA35.ee060ffgg-3	8LSA36.ee022ffgg-3	8LSA36.ee030ffgg-3	8LSA36.ee045ffgg-3
Motor										
Nominal speed n_N [rpm]	3000	4500	6000	2200	3000	4500	6000	2200	3000	4500
Number of pole pairs	4									
Nominal torque M_n [Nm]	1.4	1.3	1	2.1	2.1	1.8	1.6	2.7	2.7	2.2
Nominal power P_N [W]	440	613	628	484	660	848	1005	622	848	1037
Nominal current I_N [A]	0.96	1.34	1.37	1.1	1.4	1.9	2.2	1.4	1.9	2.3
Stall torque M_0 [Nm]	1.5	1.5	1.5	2.3	2.3	2.3	2.3	3	3	3
Stall current I_0 [A]	1.03	1.55	2.06	1.2	1.6	2.4	3.2	1.5	2.1	3.1
Maximum torque M_{max} [Nm]	6	6	6	9.2	9.2	9.2	9.2	12	12	12
Maximum current I_{max} [A]	4.4	6.6	8.9	5	6.8	10.2	13.6	6.5	8.9	13.3
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.45	0.97	0.73	1.99	1.45	0.97	0.73	1.99	1.45	0.97
Voltage constant K_E [V/1000 rpm]	87.96	58.64	43.98	120.43	87.96	58.64	43.98	120.43	87.96	58.64
Stator resistance R_{2ph} [Ω]	22.83	9.35	5.08	24.26	12.22	6.16	3.02	15.18	8.18	3.73
Stator inductance L_{2ph} [mH]	102.3	43.7	23.86	119.9	63	29.7	15.6	83.4	44.91	20.3
Electrical time constant t_{el} [ms]	4.5	4.7	4.7	4.9	5.2	4.8	5.1	5.5	5.5	5.4
Thermal time constant t_{therm} [min]	32	32	32	34	34	34	34	36	36	36
Moment of inertia J [kgcm^2]	0.65	0.65	0.65	0.9	0.9	0.9	0.9	1.15	1.15	1.15
Weight without brake m [kg]	3.8	3.8	3.8	4.4	4.4	4.4	4.4	5	5	5
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4									
Weight of brake [kg]	1.07	1.07	1.07	1.09	1.09	1.09	1.09	1.07	1.07	1.07
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016	1022	1045	1016	1022	1045	1045	1022	1045	1045
ACOPOSmulti inverter module 8BVIxxxx...	0014	0028	0028	0014	0028	0028	0055	0028	0028	0055
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

8LSA product overview

Technical data

	8LSA36.ee060ffgg-3	8LSA37.ee030ffgg-3	8LSA37.ee045ffgg-3	8LSA37.ee060ffgg-3	8LSA43.ee030ffgg-3	8LSA43.ee045ffgg-3	8LSA43.ee060ffgg-3	8LSA44.ee022ffgg-3	8LSA44.ee030ffgg-3	8LSA44.ee045ffgg-3
Motor										
Nominal speed n_N [rpm]	6000	3000	4500	6000	3000	4500	6000	2200	3000	4500
Number of pole pairs	4	4	4	4	5	5	5	5	5	5
Nominal torque M_n [Nm]	1.8	3.4	2.7	2	3.1	2.7	2	5.2	4.62	3.6
Nominal power P_N [W]	1131	1068	1272	1257	974	1272	1257	1198	1451	1696
Nominal current I_N [A]	2.5	2.3	2.8	2.7	1.9	2.49	2.5	2.3	2.8	3.3
Stall torque M_0 [Nm]	3	3.6	3.6	3.6	4	4	4	6	6	6
Stall current I_0 [A]	4.1	2.5	3.7	4.9	2.5	3.7	4.9	2.7	3.7	5.5
Maximum torque M_{max} [Nm]	12	14.4	14.4	14.4	15.2	15.2	15.2	22.8	22.8	22.8
Maximum current I_{max} [A]	17.7	10.6	16	21.2	14.59	21.9	29.2	16.1	21.9	32.91
Maximum speed n_{max} [rpm]	9000	9000	9000	9000	12000	12000	12000	12000	12000	12000
Torque constant K_T [Nm/A]	0.73	1.45	0.97	0.73	1.63	1.08	0.81	2.22	1.63	1.08
Voltage constant K_E [V/1000 rpm]	43.98	87.96	58.64	43.98	98.4	64.93	49.2	134	98.4	64.93
Stator resistance R_{2ph} [Ω]	1.95	6.98	2.93	1.76	5.94	2.64	1.42	6.24	3.6	1.6
Stator inductance L_{2ph} [mH]	10.6	37.5	16.2	9.6	36.5	16.5	9.2	44.8	24	10.8
Electrical time constant t_{el} [ms]	5.5	5.4	5.5	5.5	6.1	6.3	6.5	7.2	6.7	6.8
Thermal time constant t_{therm} [min]	36	38	38	38	25	25	25	30	30	30
Moment of inertia J [kgcm^2]	1.15	1.38	1.38	1.38	1.87	1.87	1.87	2.73	2.73	2.73
Weight without brake m [kg]	5	5.6	5.6	5.6	4.5	4.5	4.5	5.4	5.4	5.4
Holding brake										
Holding torque of the brake M_{Br} [Nm]	4	4	4	4	8	8	8	8	8	8
Weight of brake [kg]	1.07	0.59	0.59	0.59	1	1	1	1	1	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38	0.38	0.38	0.38	0.54	0.54	0.54	0.54	0.54	0.54
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1045	1045	1090	1045	1045	1090	1045	1045	1090
ACOPOSmulti inverter module 8BVIxxxx...	0055	0028	0055	0055	0028	0055	0055	0055	0055	0110
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA44.ee060ffgg-3	8LSA45.ee030ffgg-3	8LSA45.ee045ffgg-3	8LSA45.ee060ffgg-3	8LSA46.ee022ffgg-3	8LSA46.ee030ffgg-3	8LSA46.ee045ffgg-3	8LSA46.ee060ffgg-3	8LSA53.ee022ffgg-3	8LSA53.ee030ffgg-3
Motor										
Nominal speed n_N [rpm]	6000	3000	4500	6000	2200	3000	4500	6000	2200	3000
Number of pole pairs	5	5	5	5	5	5	5	5	4	4
Nominal torque M_n [Nm]	3	6.16	4.8	4	8.7	7.7	6	5	4.2	4
Nominal power P_N [W]	1885	1935	2262	2513	2004	2419	2827	3142	968	1257
Nominal current I_N [A]	3.7	3.8	4.4	4.91	3.9	4.7	5.5	6.1	1.9	2.5
Stall torque M_0 [Nm]	6	8	8	8	10	10	10	10	4.5	4.5
Stall current I_0 [A]	7.4	4.9	7.4	9.8	4.5	6.1	9.2	12.3	2	2.8
Maximum torque M_{max} [Nm]	22.8	30.4	30.4	30.4	38	38	38	38	13.8	13.8
Maximum current I_{max} [A]	43.8	29.2	43.9	58.3	26.8	36.5	54.8	72.9	8	10.5
Maximum speed n_{max} [rpm]	12000	12000	12000	12000	12000	12000	12000	12000	9000	9000
Torque constant K_T [Nm/A]	0.81	1.63	1.08	0.81	2.22	1.63	1.08	0.81	2.22	1.63
Voltage constant K_E [V/1000 rpm]	49.2	98.4	64.93	49.2	134	98.4	64.93	49.2	134.04	98.44
Stator resistance R_{2ph} [Ω]	0.862	2.489	1.106	0.6	3.61	1.92	0.8	0.48	10.9	5.13
Stator inductance L_{2ph} [mH]	6.2	21.8	9.69	5.4	32	17.44	7.75	4.36	95.92	40.33
Electrical time constant t_{el} [ms]	7.2	8.8	8.8	9	8.9	9.1	9.7	9.1	8.8	7.9
Thermal time constant t_{therm} [min]	30	35	35	35	40	40	40	40	33	33
Moment of inertia J [kgcm^2]	2.73	3.58	3.58	3.58	4.39	4.39	4.39	4.39	3.62	3.62
Weight without brake m [kg]	5.4	6.5	6.5	6.5	7.3	7.3	7.3	7.3	6.2	6.2
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	8	8	8	8	8	8	15	15
Weight of brake [kg]	1	0.9	0.9	0.9	1	1	1	1	1.49	1.49
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.66	1.66
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1180	1090	1090	1180	1180	1022	1045
ACOPOSmulti inverter module 8BVIxxxx...	0110	0055	0110	0110	0055	0110	0110	0220	0028	0055
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	4	1.5	1.5	4	4	1.5	1.5
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA53.ee045ffgg-3	8LSA54.ee022ffgg-3	8LSA54.ee030ffgg-3	8LSA54.ee045ffgg-3	8LSA55.ee022ffgg-3	8LSA55.ee030ffgg-3	8LSA55.ee045ffgg-3	8LSA56.ee022ffgg-3	8LSA56.ee015ffgg-3	8LSA56.ee045ffgg-3
Motor										
Nominal speed n_N [rpm]	4500	2200	3000	4500	2200	3000	4500	2200	1500	4500
Number of pole pairs	4									
Nominal torque M_n [Nm]	3.9	7.8	7.7	7.3	11.8	11.6	9.5	14.4	15.2	12.7
Nominal power P_N [W]	1838	1797	2419	3440	2719	3644	4477	3318	2388	5985
Nominal current I_N [A]	3.6	3.5	4.7	6.7	5.3	7.1	8.7	6.5	4.7	11.6
Stall torque M_0 [Nm]	4.5	9	9	9	12.5	12.5	12.5	16	16	16
Stall current I_0 [A]	4.1	4.1	5.5	8.2	5.6	7.7	11.5	7.2	4.9	14.7
Maximum torque M_{max} [Nm]	13.8	27.6	27.6	27.6	41.4	41.4	41.4	55.2	55.2	55.2
Maximum current I_{max} [A]	16.5	15.4	20.9	33	23.6	33	47.3	30.8	21.8	65.9
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.09	2.22	1.63	1.09	2.22	1.63	1.09	2.22	3.25	1.09
Voltage constant K_E [V/1000 rpm]	65.97	134.04	98.44	65.97	134.04	98.44	65.97	134.04	196.87	65.97
Stator resistance R_{2ph} [Ω]	2.222	3.44	2.16	0.926	2.265	1.127	0.51	1.51	3.13	0.341
Stator inductance L_{2ph} [mH]	19.33	34.5	21.52	8.67	24.29	12.5	4.96	17.6	35.02	4.08
Electrical time constant t_{el} [ms]	8.7	10	10.6	10.9	10.7	11.1	9.7	11.6	11.2	12
Thermal time constant t_{therm} [min]	33	37	37	37	40	40	40	43	43	43
Moment of inertia J [kgcm^2]	3.62	6.04	6.04	6.04	8.19	8.19	8.19	10.66	10.66	10.66
Weight without brake m [kg]	6.2	8.5	8.5	8.5	10.4	10.4	10.4	13	13	13
Holding brake										
Holding torque of the brake M_{Br} [Nm]	15									
Weight of brake [kg]	1.49	1.43	1.43	1.43	1.47	1.47	1.47	1.44	1.44	1.44
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1180	1090	1090	1180	1090	1090	1180
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0110	0110	0110	0110	0220	0110	0055	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	4	1.5	1.5	4	1.5	0	4
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA56.ee030ffgg-3	8LSA56.ee045ffgg-3	8LSA57.ee015ffgg-3	8LSA57.ee022ffgg-3	8LSA57.ee030ffgg-3	8LSA57.ee045ffgg-3	8LSA63.ee030ffgg-3	8LSA63.ee045ffgg-3	8LSA64.ee022ffgg-3	8LSA64.ee030ffgg-3
Motor										
Nominal speed n_N [rpm]	3000	4500	1500	2200	3000	4500	3000	4500	2200	3000
Number of pole pairs	4									
Nominal torque M_n [Nm]	13.9	12.7	18.8	18	17.5	15	11.6	9.5	18	17.5
Nominal power P_N [W]	4367	5985	2953	4147	5498	7069	3644	4477	4147	5498
Nominal current I_N [A]	8.5	11.6	5.78	8.1	10.7	13.7	7.1	8.71	8.1	10.7
Stall torque M_0 [Nm]	16	16	20	20	20	20	12.5	12.5	20	20
Stall current I_0 [A]	9.8	14.7	6.15	9	12.3	18.3	7.7	11.5	9	12.3
Maximum torque M_{max} [Nm]	55.2	55.2	69	69	69	69	46.92	46.92	78.2	78.2
Maximum current I_{max} [A]	41.8	65.9	26.65	38.4	52.6	82.6	42.5	61	49.5	67.8
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.63	1.09	3.25	2.22	1.63	1.09	1.63	1.09	2.22	1.63
Voltage constant K_E [V/1000 rpm]	98.44	65.97	196.87	134.04	98.44	65.97	98.4	66	134	98.4
Stator resistance R_{2ph} [Ω]	0.75	0.341	2.627	1.13	0.62	0.29	1.127	0.51	1.13	0.62
Stator inductance L_{2ph} [mH]	8.16	4.08	29.57	13.17	7.21	3.2	12.5	5	13.17	7.21
Electrical time constant t_{el} [ms]	10.9	12	11.25	11.7	11.6	11	11.1	9.7	11.7	11.6
Thermal time constant t_{therm} [min]	43	43	46	46	46	46	42	42	45	45
Moment of inertia J [kgcm^2]	10.66	10.66	13.13	13.13	13.13	13.13	8.19	8.19	13.13	13.13
Weight without brake m [kg]	13	13	14.5	14.5	14.5	14.5	12.8	12.8	16.7	16.7
Holding brake										
Holding torque of the brake M_{Br} [Nm]	15	15	15	15	15	15	32	32	32	32
Weight of brake [kg]	1.44	1.44	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66	1.66	1.66	1.66	1.66	1.66	5.85	5.85	5.85	5.85
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1090	1180	1180	1320	1090	1180	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0110	0110	0220	0220	0110	0220	0110	0220
Cross section for B&R motor cables [mm^2]	4	4	0	4	4	4	1.5	4	4	4
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

8LSA product overview

Technical data

	8LSA64.ee045ffgg-3	8LSA65.ee022ffgg-3	8LSA65.ee030ffgg-3	8LSA66.ee022ffgg-3	8LSA66.ee030ffgg-3	8LSA73.ee030ffgg-3	8LSA73.ee045ffgg-3	8LSA74.ee022ffgg-3	8LSA74.ee045ffgg-3	8LSA74.ee030ffgg-3
Motor										
Nominal speed n_N [rpm]	4500	2200	3000	2200	3000	3000	4500	2200	4500	3000
Number of pole pairs	4	4	4	4	4	5	5	5	5	5
Nominal torque M_n [Nm]	15.1	22	21	24.5	23.5	20.5	16	27.5	18	25
Nominal power P_N [W]	7116	5068	6597	5644	7383	6440	7540	6336	8482	7854
Nominal current I_N [A]	13.8	9.9	12.9	11.1	14.4	12.577	14.679	12.387	16.514	15.337
Stall torque M_0 [Nm]	20	24	24	28	28	26	26	33	33	33
Stall current I_0 [A]	18.3	10.8	14.7	12.6	17.2	15.951	23.853	14.865	30	20.245
Maximum torque M_{max} [Nm]	78.2	97.92	97.92	114.24	114.24	107	107	150	150	150
Maximum current I_{max} [A]	106.5	64.31	90.9	74.41	103.49	96.54	144	99	202	135.33
Maximum speed n_{max} [rpm]	9000	9000	9000	9000	9000	6000	6000	6000	6000	6000
Torque constant K_T [Nm/A]	1.09	2.22	1.63	2.22	1.63	1.63	1.09	2.22	1.09	1.63
Voltage constant K_E [V/1000 rpm]	66	134	98.4	134	98.4	98.44	65.97	134.04	65.97	98.44
Stator resistance R_{2ph} [Ω]	0.285	0.94	0.484	0.72	0.382	0.42	0.19	0.54	0.13	0.28
Stator inductance L_{2ph} [mH]	3.21	10.9	6	10.4	4.87	6.5	2.9	9	2.2	4.9
Electrical time constant t_{el} [ms]	11.03	11.6	12.4	14.4	12.7	15.476	15.263	16.667	16.923	17.5
Thermal time constant t_{therm} [min]	45	48	48	52	52	37	37	41	41	41
Moment of inertia J [kgcm^2]	13.13	15.6	15.6	18.06	18.06	46	46	60	60	60
Weight without brake m [kg]	16.7	18.1	18.1	20.6	20.6	20	20	24	24	24
Holding brake										
Holding torque of the brake M_{Br} [Nm]	32									
Weight of brake [kg]	1.5	1.45	1.45	1.5	1.5	1.8	1.8	1.8	1.8	1.8
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1180	1180	1180	1180	1180	1320	1180	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...	0220	0220	0220	0220	0220	0220	0330	0220	0330	0330
Cross section for B&R motor cables [mm^2]	4	4	4	4	4	4	4	4	10	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA75.ee015ffgg-3	8LSA75.ee022ffgg-3	8LSA75.ee030ffgg-3	8LSA76.ee015ffgg-3	8LSA76.ee030ffgg-3	8LSA77.ee030ffgg-3	8LSA78.ee030ffgg-3	8LSA83.ee022ffgg-3	8LSA83.ee030ffgg-3	8LSA84.ee022ffgg-3
Motor										
Nominal speed n_N [rpm]	1500	2200	3000	1500	3000	3000	3000	2200	3000	2200
Number of pole pairs	5	5	5	5	5	5	5	3	3	3
Nominal torque M_n [Nm]	37	34	30	48.5	35	40	44	31	27	51.5
Nominal power P_N [W]	5812	7833	9425	7618	10996	12566	13823	7142	8482	11865
Nominal current I_N [A]	11.35	15.315	18.405	14.88	21.47	24.5	27	14	16.6	23.2
Stall torque M_0 [Nm]	43	43	43	60	60	73	85	40	40	69
Stall current I_0 [A]	13.19	19.369	26.38	18.4	36.8	44.8	52.1	18	24.5	31.1
Maximum torque M_{max} [Nm]	187	187	187	230	230	270	330	120	120	204
Maximum current I_{max} [A]	84	124	168.71	92.5	185	212	260	72.6	102	115.5
Maximum speed n_{max} [rpm]	4500	4500	4500	4500	4500	4500	4500	3600	3600	3600
Torque constant K_T [Nm/A]	3.26	2.22	1.63	3.26	1.63	1.63	1.63	2.22	1.63	2.22
Voltage constant K_E [V/1000 rpm]	196.87	134.04	98.44	196.87	98.43	98.4	98.4	134.04	98.44	134.04
Stator resistance R_{2ph} [Ω]	0.84	0.39	0.21	0.57	0.15	0.109	0.08	0.45	0.26	0.22
Stator inductance L_{2ph} [mH]	15.6	7.1	3.9	11.5	2.7	2.2	1.8	10.5	6.1	7.4
Electrical time constant t_{el} [ms]	17.7	17.5	18.571	17.85	18	18.2	22.5	23.3	23.5	33.6
Thermal time constant t_{therm} [min]	46	46	46	56	56	65	74	50	50	65
Moment of inertia J [kgcm^2]	74	74	74	102	102	130	158	65	65	114
Weight without brake m [kg]	28	28	28	36	36	44	52	43	43	61
Holding brake										
Holding torque of the brake M_{Br} [Nm]	32	32	32	32	32	32	32	130	130	130
Weight of brake [kg]	1.8	1.8	1.8	1.8	1.8	1.8	1.8	9	9	9
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85	5.85	5.85	5.85	5.85	5.85	5.85	53	53	53
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1320	1320	1640	1640	1640	1320	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0220	0220	0330	0220	0440	0660	0660	0220	0330	0440
Cross section for B&R motor cables [mm^2]	4	4	4	4	10	10	0	4	4	10
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSA84.ee030ffgg-3	8LSA85.ee015ffgg-3	8LSA85.ee020ffgg-3	8LSA86.ee015ffgg-3	8LSA86.ee020ffgg-3
Motor					
Nominal speed n_N [rpm]	3000	1500	2000	1500	2000
Number of pole pairs			3		
Nominal torque M_n [Nm]	48.4	77	72	97	85
Nominal power P_N [W]	15205	12095	15080	15237	17802
Nominal current I_N [A]	29.7	23.6	29.4	29.8	34.7
Stall torque M_0 [Nm]	69	94	94	115	115
Stall current I_0 [A]	42.3	28.9	38.4	35.3	46.9
Maximum torque M_{max} [Nm]	204	280	280	345	345
Maximum current I_{max} [A]	171	113	157	120	182
Maximum speed n_{max} [rpm]			3600		
Torque constant K_T [Nm/A]	1.63	3.26	2.45	3.26	2.45
Voltage constant K_E [V/1000 rpm]	98.44	196.87	147.65	196.87	147.65
Stator resistance R_{2ph} [Ω]	0.12	0.328	0.168	0.28	0.13
Stator inductance L_{2ph} [mH]	3.9	9.44	4.85	8.8	3.9
Electrical time constant t_{el} [ms]	32.5	28.5	28.9	31.4	30
Thermal time constant t_{therm} [min]	65	80	80	90	90
Moment of inertia J [kgcm^2]	114	150	150	192	192
Weight without brake m [kg]	61	75.5	75.5	89	89
Holding brake					
Holding torque of the brake M_{Br} [Nm]			130		
Weight of brake [kg]			9		
Moment of inertia for the brake J_{Br} [kgcm^2]			53		
Recommendations					
ACOPOS servo drive 8Vxxxx.xx...	1640	1320	1640	1640	1640
ACOPOSmulti inverter module 8BVIxxxx...	0660	0330	0440	0440	0660
Cross section for B&R motor cables [mm^2]	10	4	10	10	10
Connector type			speedtec		
Connector size			1.5		

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Technical data

	8LSA23.ee060ffgg-3	8LSA24.ee060ffgg-3	8LSA25.ee045ffgg-3	8LSA25.ee060ffgg-3	8LSA26.ee045ffgg-3	8LSA26.ee060ffgg-3
Motor						
Nominal speed n_N [rpm]	6000	6000	4500	6000	4500	6000
Number of pole pairs	4					
Nominal torque M_n [Nm]	0.17	0.35	0.54	0.52	0.72	0.69
Nominal power P_N [W]	107	220	254	327	339	434
Nominal current I_N [A]	0.23	0.48	0.56	0.71	0.8	0.95
Stall torque M_0 [Nm]	0.2	0.4	0.6	0.6	0.8	0.8
Stall current I_0 [A]	0.27	0.55	0.62	0.82	0.89	1.1
Maximum torque M_{max} [Nm]	0.8	1.6	2.4	2.4	3.2	3.2
Maximum current I_{max} [A]	1.25	2.5	2.77	3.7	4.05	5
Maximum speed n_{max} [rpm]	9000					
Torque constant K_T [Nm/A]	0.73	0.73	0.97	0.73	0.9	0.73
Voltage constant K_E [V/1000 rpm]	43.98	43.98	58.64	43.98	54.45	43.98
Stator resistance R_{2ph} [Ω]	178.6	52.3	63.4	34.63	33.75	24.7
Stator inductance L_{2ph} [mH]	165	67.5	87.8	49.6	52.9	36.6
Electrical time constant t_{el} [ms]	0.9	1.3	1.4	1.4	1.6	1.5
Thermal time constant t_{therm} [min]	13	16	20	20	23	23
Moment of inertia J [kgcm^2]	0.07	0.12	0.16	0.16	0.2	0.2
Weight without brake m [kg]	0.9	1.1	1.3	1.3	1.5	1.5
Holding brake						
Holding torque of the brake M_{Br} [Nm]	2.2					
Weight of brake [kg]	0.45					
Moment of inertia for the brake J_{Br} [kgcm^2]	0.12					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1010	1010	1010	1010	1010	1016
ACOPOSmulti inverter module 8BVIxxxx...	0014					
Cross section for B&R motor cables [mm^2]	1.5					
Connector type	speedtec					
Connector size	1.0					

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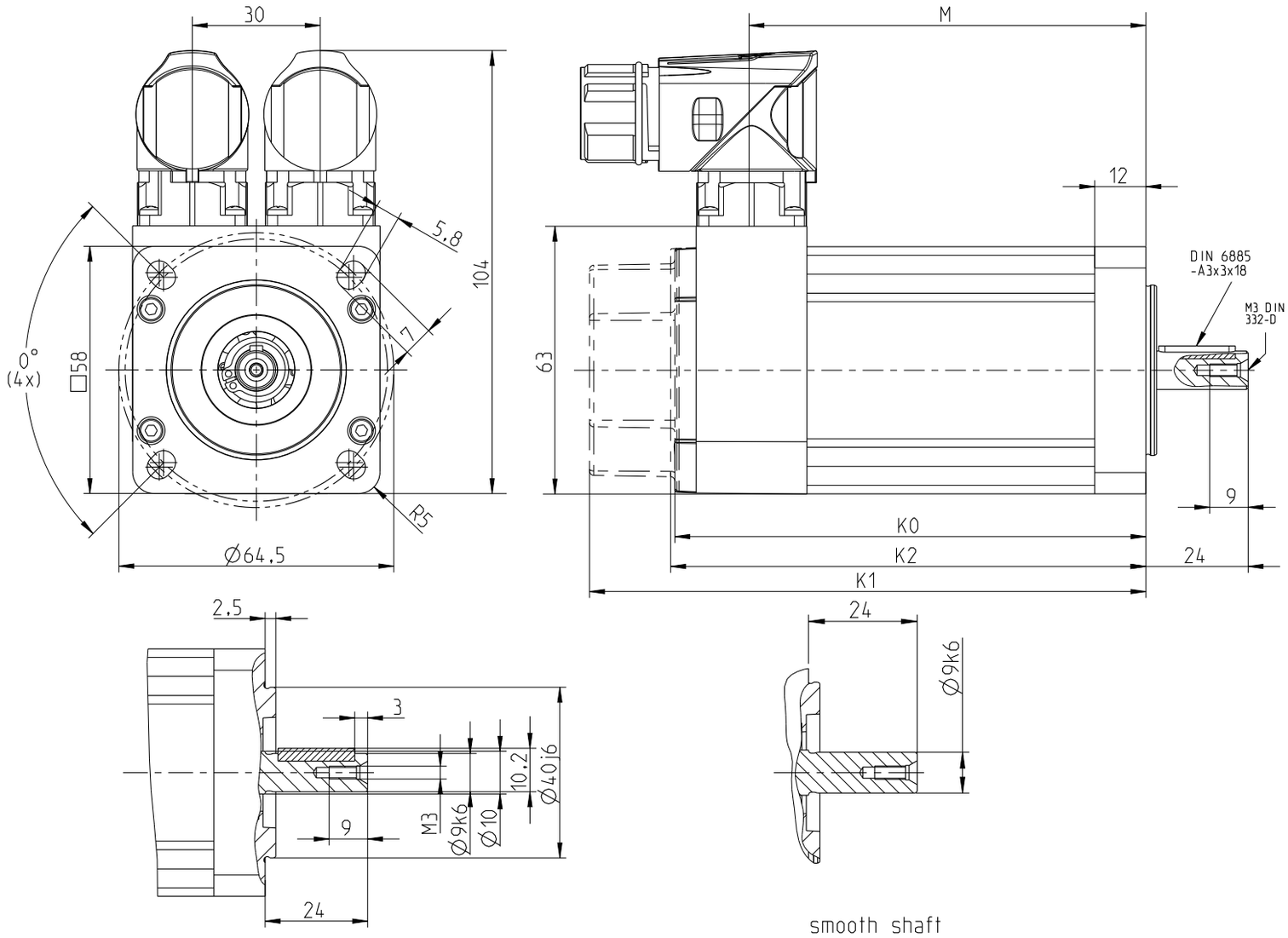


EnDat / resolver feedback

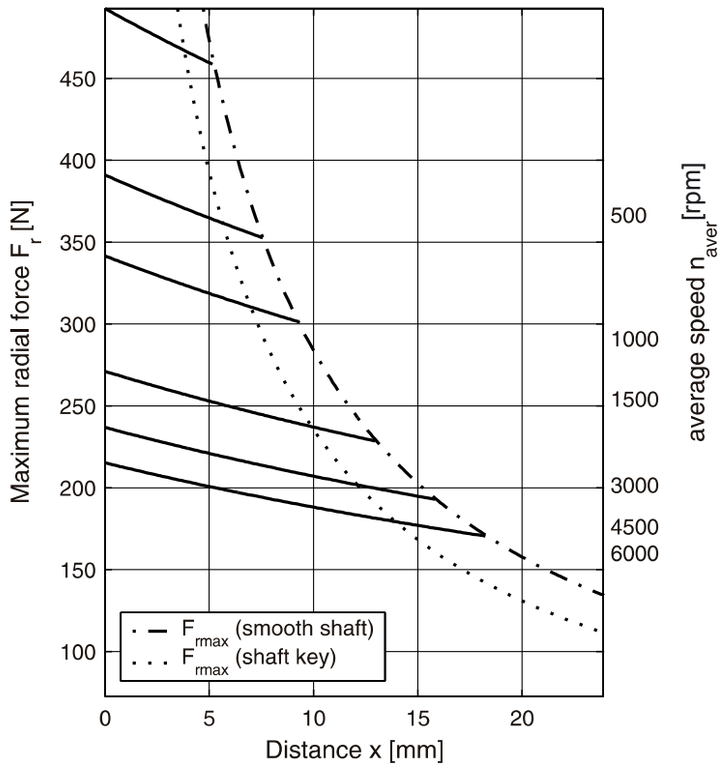
Extension of K_0, K_1, K_2 and M depending on the motor option [mm]

Model number	K_0	K_1	K_2	M	Holding brake	Oil seal
Encoder assignments	**R0**	**E4,E5,D4,D5,S4,S5,S8,S9**	**E8,E9**			
8LSA23.eennnffgg-3	91	111	92	73	24	7
8LSA24.eennnffgg-3	101	121	102	83	24	7
8LSA25.eennnffgg-3	111	131	112	93	24	7
8LSA26.eennnffgg-3	121	141	122	103	24	7

Important: Extension of encoder cover for certain encoders, see dimension "K_2"

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



maximum allowed axial force: F_{amax} = 44 N

Technical data

	8LSA33.ee030ffgg-3	8LSA33.ee045ffgg-3	8LSA33.ee060ffgg-3	8LSA34.ee022ffgg-3	8LSA34.ee030ffgg-3	8LSA34.ee045ffgg-3	8LSA34.ee060ffgg-3	8LSA35.ee022ffgg-3	8LSA35.ee030ffgg-3	8LSA35.ee045ffgg-3	8LSA35.ee060ffgg-3	8LSA36.ee022ffgg-3	8LSA36.ee030ffgg-3	8LSA36.ee045ffgg-3	8LSA36.ee060ffgg-3	8LSA37.ee030ffgg-3	8LSA37.ee045ffgg-3	8LSA37.ee060ffgg-3
Motor																		
Nominal speed n_N [rpm]	3000	4500	6000	2200	3000	4500	6000	2200	3000	4500	6000	2200	3000	4500	6000	3000	4500	6000
Number of pole pairs	4																	
Nominal torque M_n [Nm]	0.7	0.67	0.6	1.44	1.4	1.3	1	2.1	2.1	1.8	1.6	2.7	2.7	2.2	1.8	3.4	2.7	2
Nominal power P_N [W]	220	316	377	332	440	613	628	484	660	848	1005	622	848	1037	1131	1068	1272	1257
Nominal current I_N [A]	0.48	0.69	0.82	0.72	0.96	1.34	1.37	1.1	1.4	1.9	2.2	1.4	1.9	2.3	2.5	2.3	2.8	2.7
Stall torque M_0 [Nm]	0.75	0.75	0.75	1.5	1.5	1.5	1.5	2.3	2.3	2.3	2.3	3	3	3	3	3.6	3.6	3.6
Stall current I_0 [A]	0.52	0.77	1.03	0.75	1.03	1.55	2.06	1.2	1.6	2.4	3.2	1.5	2.1	3.1	4.1	2.5	3.7	4.9
Maximum torque M_{max} [Nm]	3	3	3	6	6	6	6	9.2	9.2	9.2	9.2	12	12	12	12	14.4	14.4	14.4
Maximum current I_{max} [A]	2.2	3.3	4.4	3.2	4.4	6.6	8.9	5	6.8	10.2	13.6	6.5	8.9	13.3	17.7	10.6	16	21.2
Maximum speed n_{max} [rpm]	9000																	
Torque constant K_T [Nm/A]	1.45	0.97	0.73	1.99	1.45	0.97	0.73	1.99	1.45	0.97	0.73	1.99	1.45	0.97	0.73	1.45	0.97	0.73
Voltage constant K_E [V/1000 rpm]	87.96	58.64	43.98	120.43	87.96	58.64	43.98	120.43	87.96	58.64	43.98	120.43	87.96	58.64	43.98	87.96	58.64	43.98
Stator resistance R_{2ph} [Ω]	56.5	27.56	15.98	40.62	22.83	9.35	5.08	24.26	12.22	6.16	3.02	15.18	8.18	3.73	1.95	6.98	2.93	1.76
Stator inductance L_{2ph} [mH]	214	98.4	58.2	184.2	102.3	43.7	23.86	119.9	63	29.7	15.6	83.4	44.91	20.3	10.6	37.5	16.2	9.6
Electrical time constant t_{el} [ms]	3.8	3.6	3.6	4.5	4.5	4.7	4.7	4.9	5.2	4.8	5.1	5.5	5.5	5.4	5.5	5.4	5.5	5.5
Thermal time constant t_{therm} [min]	30	30	30	32	32	32	32	34	34	34	34	36	36	36	36	38	38	38
Moment of inertia J [kgcm^2]	0.4	0.4	0.4	0.65	0.65	0.65	0.65	0.9	0.9	0.9	0.9	1.15	1.15	1.15	1.15	1.38	1.38	1.38
Weight without brake m [kg]	3.2	3.2	3.2	3.8	3.8	3.8	3.8	4.4	4.4	4.4	4.4	5	5	5	5	5.6	5.6	5.6
Holding brake																		
Holding torque of the brake M_{Br} [Nm]	4																	
Weight of brake [kg]	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.09	1.07	1.07	1.07	1.07	0.59	0.59	0.59
Moment of inertia for the brake J_{Br} [kgcm^2]	0.38																	
Recommendations																		
ACOPOS servo drive 8Vxxxx.xx...	1010	1010	1016	1010	1016	1022	1045	1016	1022	1045	1045	1022	1045	1045	1090	1045	1045	1090
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0014	0014	0014	0028	0028	0014	0028	0028	0055	0028	0028	0055	0055	0028	0055	0055
Cross section for B&R motor cables [mm^2]	1.5																	
Connector type	speedtec																	
Connector size	1.0																	

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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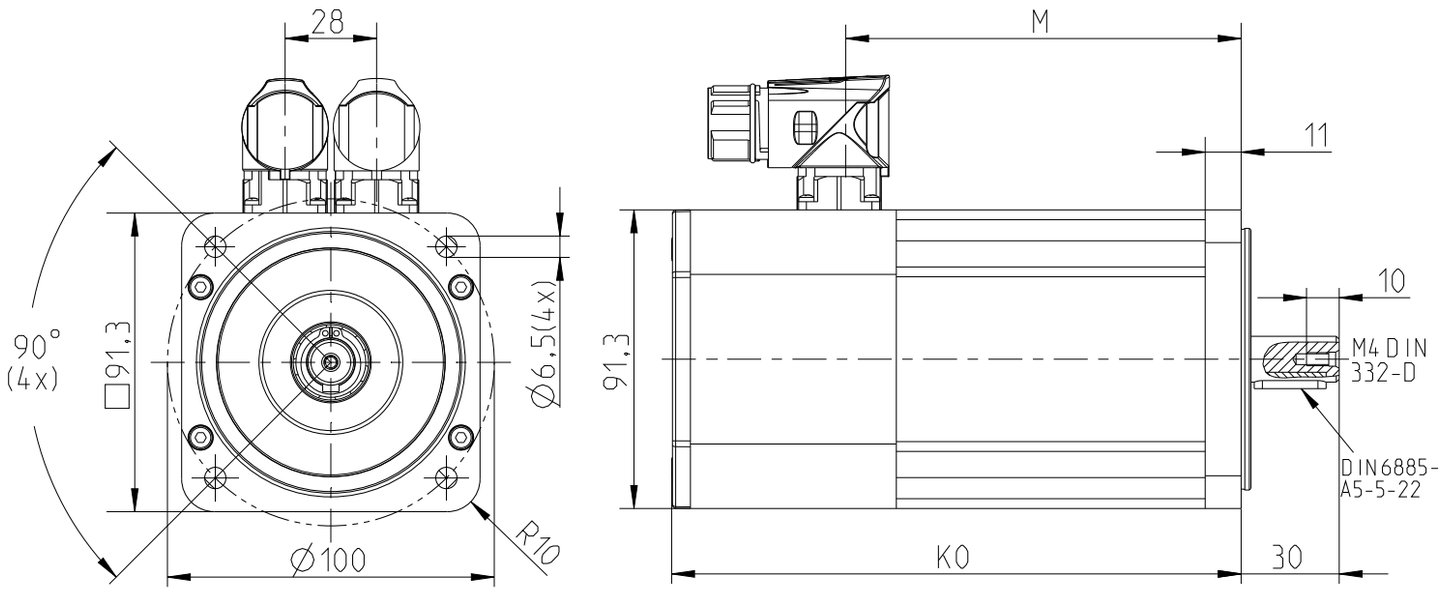
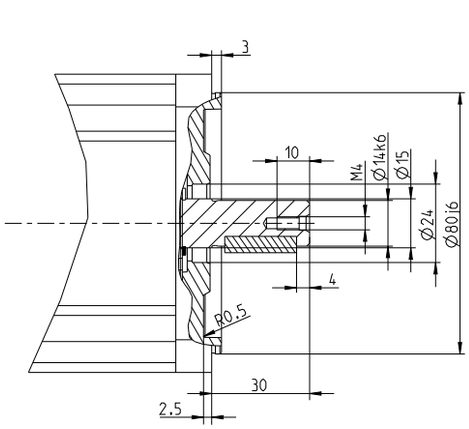
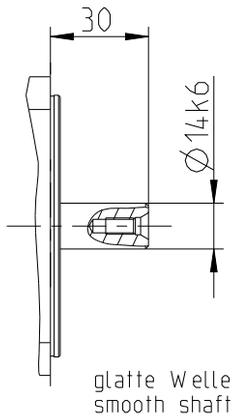




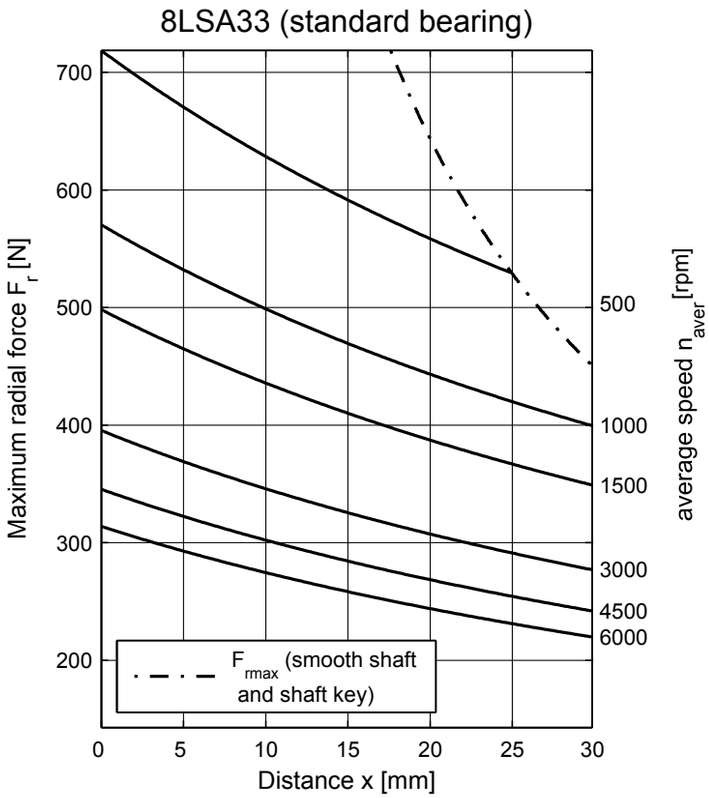


EnDat feedback			Extension of K_0 depending on motor option [mm]		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A-side bearing**
8LSA33.eennnffgg-0	161	32	45	---	---
8LSA34.eennnffgg-0	186	32	45	---	---
8LSA35.eennnffgg-0	211	32	45	---	---
8LSA36.eennnffgg-0	236	32	45	---	---

Resolver feedback			Extension of K_0 depending on motor option [mm]		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A-side bearing**
8LSA33.eennnffgg-0	112	14.5	45	---	---
8LSA34.eennnffgg-0	137	14.5	45	---	---
8LSA35.eennnffgg-0	162	14.5	45	---	---
8LSA36.eennnffgg-0	187	14.5	45	---	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

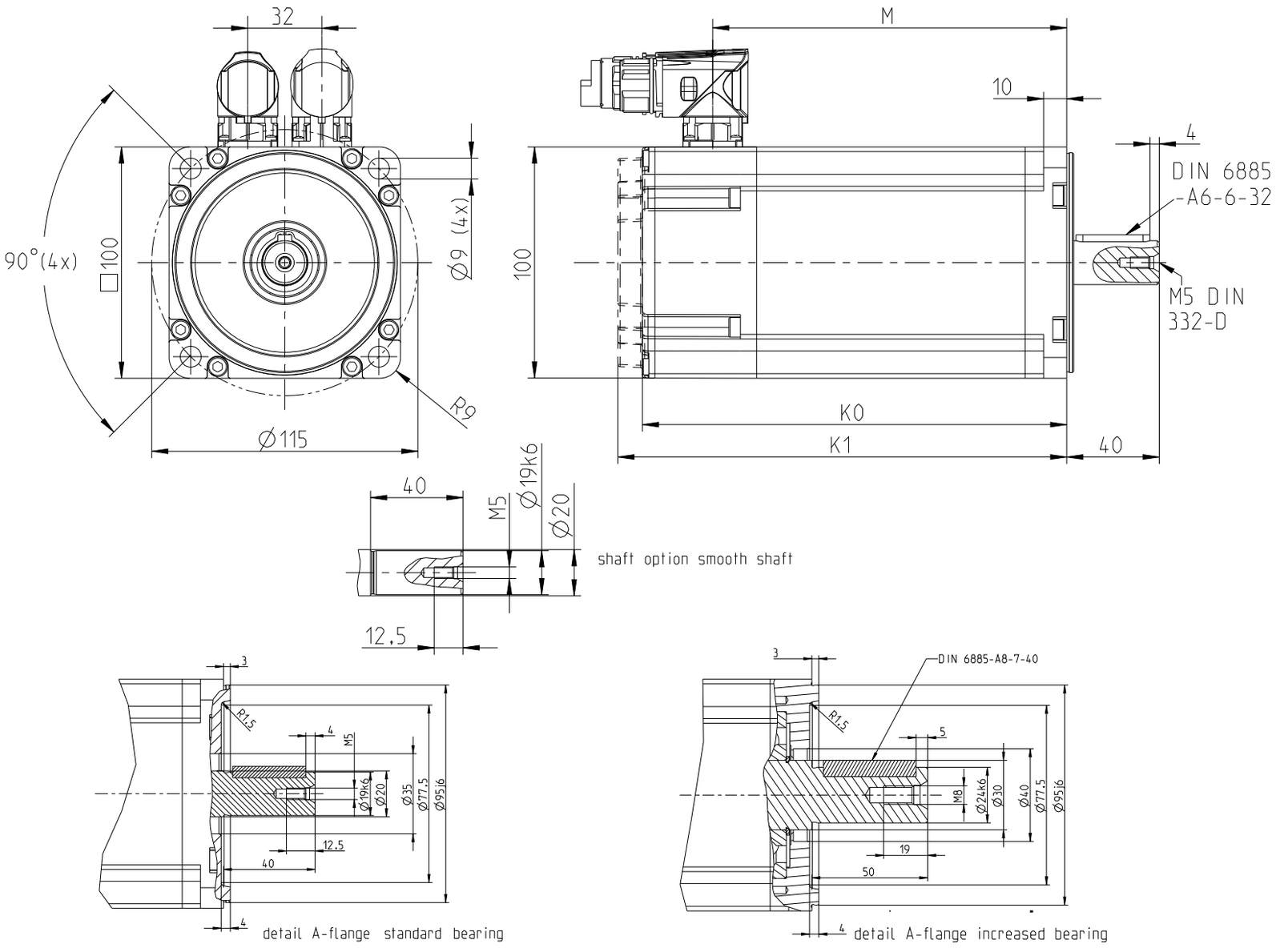


maximum allowed axial force: F_{amax} = 62 N

Technical data

	8LSA43.ee030ffgg-3	8LSA43.ee045ffgg-3	8LSA43.ee060ffgg-3	8LSA44.ee022ffgg-3	8LSA44.ee030ffgg-3	8LSA44.ee045ffgg-3	8LSA44.ee060ffgg-3	8LSA45.ee030ffgg-3	8LSA45.ee045ffgg-3	8LSA45.ee060ffgg-3	8LSA46.ee022ffgg-3	8LSA46.ee030ffgg-3	8LSA46.ee045ffgg-3	8LSA46.ee060ffgg-3
Motor														
Nominal speed n_N [rpm]	3000	4500	6000	2200	3000	4500	6000	3000	4500	6000	2200	3000	4500	6000
Number of pole pairs	5													
Nominal torque M_n [Nm]	3.1	2.7	2	5.2	4.62	3.6	3	6.16	4.8	4	8.7	7.7	6	5
Nominal power P_N [W]	974	1272	1257	1198	1451	1696	1885	1935	2262	2513	2004	2419	2827	3142
Nominal current I_N [A]	1.9	2.49	2.5	2.3	2.8	3.3	3.7	3.8	4.4	4.91	3.9	4.7	5.5	6.1
Stall torque M_0 [Nm]	4	4	4	6	6	6	6	8	8	8	10	10	10	10
Stall current I_0 [A]	2.5	3.7	4.9	2.7	3.7	5.5	7.4	4.9	7.4	9.8	4.5	6.1	9.2	12.3
Maximum torque M_{max} [Nm]	15.2	15.2	15.2	22.8	22.8	22.8	22.8	30.4	30.4	30.4	38	38	38	38
Maximum current I_{max} [A]	14.59	21.9	29.2	16.1	21.9	32.91	43.8	29.2	43.9	58.3	26.8	36.5	54.8	72.9
Maximum speed n_{max} [rpm]	12000													
Torque constant K_T [Nm/A]	1.63	1.08	0.81	2.22	1.63	1.08	0.81	1.63	1.08	0.81	2.22	1.63	1.08	0.81
Voltage constant K_E [V/1000 rpm]	98.4	64.93	49.2	134	98.4	64.93	49.2	98.4	64.93	49.2	134	98.4	64.93	49.2
Stator resistance R_{2ph} [Ω]	5.94	2.64	1.42	6.24	3.6	1.6	0.862	2.489	1.106	0.6	3.61	1.92	0.8	0.48
Stator inductance L_{2ph} [mH]	36.5	16.5	9.2	44.8	24	10.8	6.2	21.8	9.69	5.4	32	17.44	7.75	4.36
Electrical time constant t_{el} [ms]	6.1	6.3	6.5	7.2	6.7	6.8	7.2	8.8	8.8	9	8.9	9.1	9.7	9.1
Thermal time constant t_{therm} [min]	25	25	25	30	30	30	30	35	35	35	40	40	40	40
Moment of inertia J [kgcm^2]	1.87	1.87	1.87	2.73	2.73	2.73	2.73	3.58	3.58	3.58	4.39	4.39	4.39	4.39
Weight without brake m [kg]	4.5	4.5	4.5	5.4	5.4	5.4	5.4	6.5	6.5	6.5	7.3	7.3	7.3	7.3
Holding brake														
Holding torque of the brake M_{Br} [Nm]	8													
Weight of brake [kg]	1	1	1	1	1	1	1	0.9	0.9	0.9	1	1	1	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54													
Recommendations														
ACOPOS servo drive 8Vxxxx.xx...	1045	1045	1090	1045	1045	1090	1090	1090	1090	1180	1090	1090	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0055	0055	0055	0110	0110	0055	0110	0110	0055	0110	0110	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	4	1.5	1.5	4	4
Connector type	speedtec													
Connector size	1.0													

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.



EnDat / resolver feedback — **Extension of K_0, K_1 and M depending on the motor option [mm]**

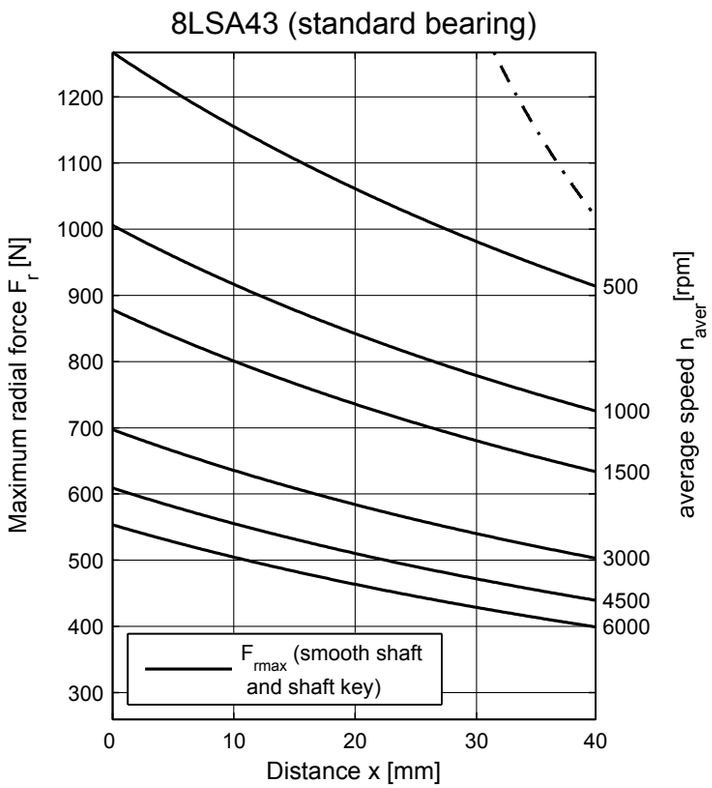
Encoder assignments	**DA,DB,EA,EB,SA,SB,R2**	**D0,D1,E0,E1,S0,S1**				
Model number	**K_0**	**K_1**	**M**	**Holding brake**	**Heavy-duty holding brake**	**Reinforced A-side bearing**
8LSA43.eennnffgg-3	163	174	133	32	37	15
8LSA44.eennnffgg-3	183	194	153	32	37	15
8LSA45.eennnffgg-3	207	218	177	32	37	15
8LSA46.eennnffgg-3	227	238	197	32	37	15

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

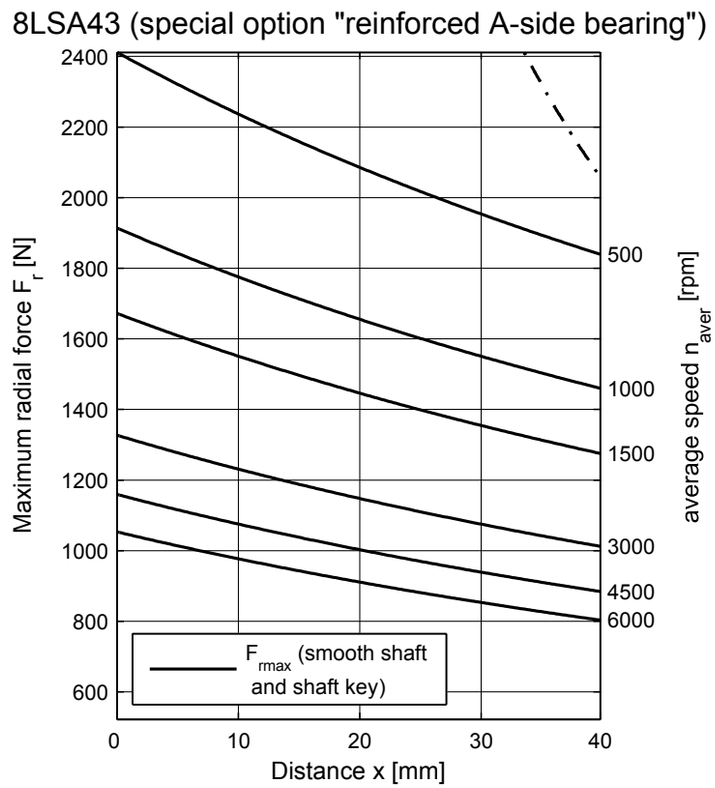
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 111 N

Special motor option "Reinforced A-side bearing"

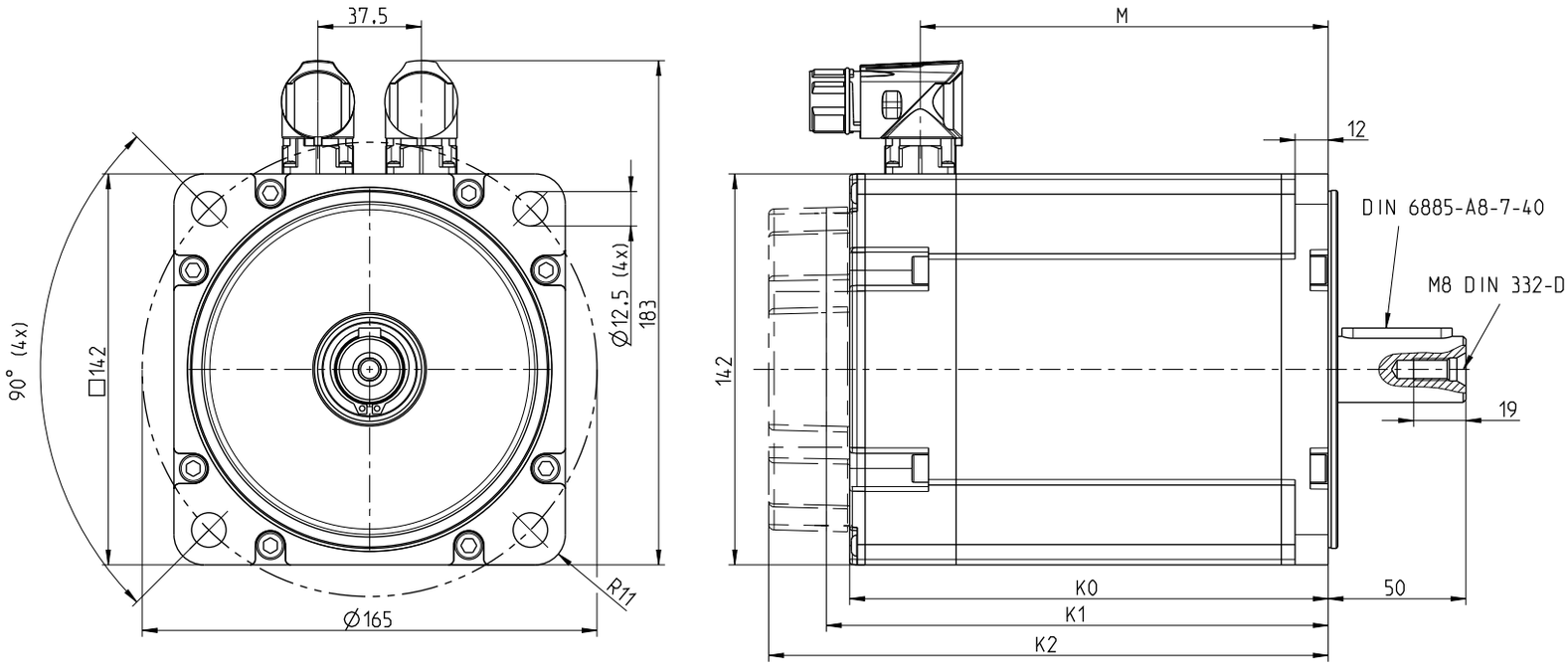


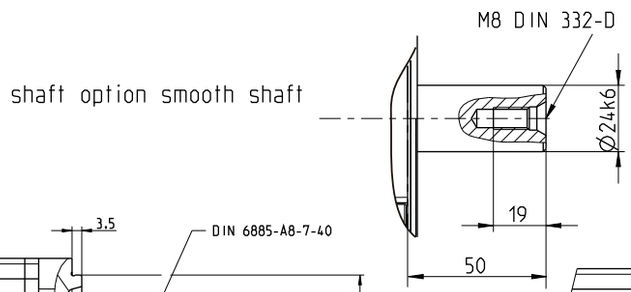
maximum allowed axial force: F_{amax} = 218 N

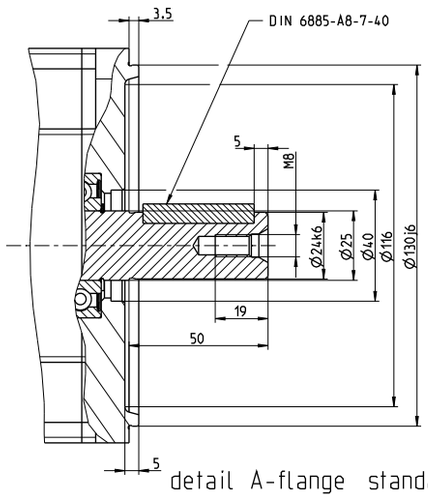
Technical data

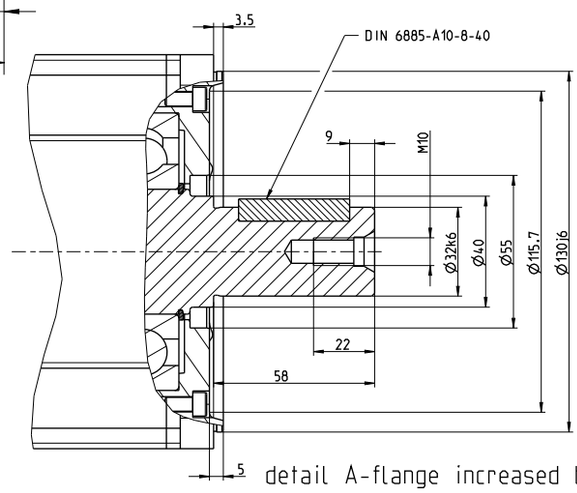
	8LSA53.ee022ffgg-3	8LSA53.ee030ffgg-3	8LSA53.ee045ffgg-3	8LSA54.ee020ffgg-3	8LSA54.ee030ffgg-3	8LSA54.ee045ffgg-3	8LSA55.ee022ffgg-3	8LSA55.ee030ffgg-3	8LSA55.ee045ffgg-3	8LSA56.ee015ffgg-3	8LSA56.ee022ffgg-3	8LSA56.ee030ffgg-3	8LSA56.ee045ffgg-3	8LSA57.ee015ffgg-3	8LSA57.ee022ffgg-3	8LSA57.ee030ffgg-3	8LSA57.ee045ffgg-3
Motor																	
Nominal speed n_N [rpm]	2200	3000	4500	2000	3000	4500	2200	3000	4500	1500	2200	3000	4500	1500	2200	3000	4500
Number of pole pairs									4								
Nominal torque M_n [Nm]	4.2	4	3.9	8.1	7.7	7.3	11.8	11.6	9.5	15.2	14.4	13.9	12.7	18.8	18	17.5	15
Nominal power P_N [W]	968	1257	1838	1696	2419	3440	2719	3644	4477	2388	3318	4367	5985	2953	4147	5498	7069
Nominal current I_N [A]	1.9	2.5	3.6	3.3	4.7	6.7	5.3	7.1	8.7	4.7	6.5	8.5	11.6	5.78	8.1	10.7	13.7
Stall torque M_0 [Nm]	4.5	4.5	4.5	9	9	9	12.5	12.5	12.5	16	16	16	16	20	20	20	20
Stall current I_0 [A]	2	2.8	4.1	3.7	5.5	8.2	5.6	7.7	11.5	4.9	7.2	9.8	14.7	6.15	9	12.3	18.3
Maximum torque M_{max} [Nm]	13.8	13.8	13.8	27.6	27.6	27.6	41.4	41.4	41.4	55.2	55.2	55.2	55.2	69	69	69	69
Maximum current I_{max} [A]	8	10.5	16.5	14.6	20.9	33	23.6	33	47.3	21.8	30.8	41.8	65.9	26.65	38.4	52.6	82.6
Maximum speed n_{max} [rpm]									9000								
Torque constant K_T [Nm/A]	2.22	1.63	1.09	2.44	1.63	1.09	2.22	1.63	1.09	3.25	2.22	1.63	1.09	3.25	2.22	1.63	1.09
Voltage constant K_E [V/1000 rpm]	134.04	98.44	65.97	147.65	98.44	65.97	134.04	98.44	65.97	196.87	134.04	98.44	65.97	196.87	134.04	98.44	65.97
Stator resistance R_{2ph} [Ω]	10.9	5.13	2.222	4.026	2.16	0.926	2.265	1.127	0.51	3.13	1.51	0.75	0.341	2.627	1.13	0.62	0.29
Stator inductance L_{2ph} [mH]	95.92	40.33	19.33	44.37	21.52	8.67	24.29	12.5	4.96	35.02	17.6	8.16	4.08	29.57	13.17	7.21	3.2
Electrical time constant t_{el} [ms]	8.8	7.9	8.7	11	10.6	10.9	10.7	11.1	9.7	11.2	11.6	10.9	12	11.25	11.7	11.6	11
Thermal time constant t_{therm} [min]	33	33	33	37	37	37	40	40	40	43	43	43	43	46	46	46	46
Moment of inertia J [kgcm^2]	3.62	3.62	3.62	6.04	6.04	6.04	8.19	8.19	8.19	10.66	10.66	10.66	10.66	13.13	13.13	13.13	13.13
Weight without brake m [kg]	6.2	6.2	6.2	8.5	8.5	8.5	10.4	10.4	10.4	13	13	13	13	14.5	14.5	14.5	14.5
Holding brake																	
Holding torque of the brake M_{Br} [Nm]									15								
Weight of brake [kg]	1.49	1.49	1.49	1.43	1.43	1.43	1.47	1.47	1.47	1.44	1.44	1.44	1.44	1.3	1.3	1.3	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]									1.66								
Recommendations																	
ACOPOS servo drive 8Vxxxx.xx...	1022	1045	1090	1045	1090	1180	1090	1090	1180	1090	1090	1180	1180	1090	1180	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0055	0055	0110	0110	0110	0110	0220	0055	0110	0110	0220	0110	0110	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4	1.5	1.5	4	0	1.5	4	4	0	4	4	4
Connector type									speedtec								
Connector size									1.0								

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.









EnDat / resolver feedback

Extension of K_0, K_1, K_2 and M depending on the motor option [mm]

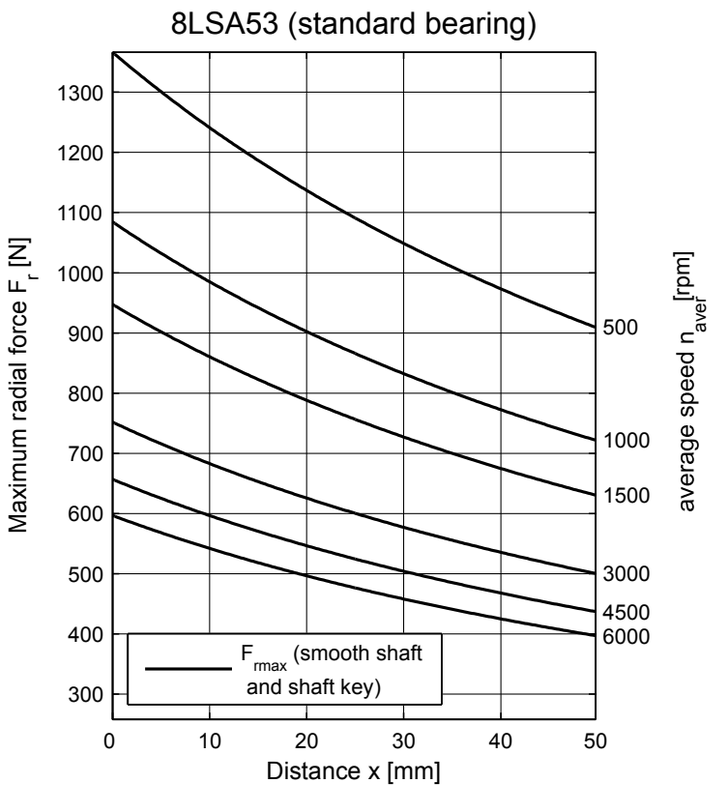
Encoder assignments	**DA,DB,SA,SB,R2**	**EA,EB**	**D0,D1,E0,E1,S0,S1**				
Model number	**K_0**	**K_1**	**K_2**	**M**	**Holding brake**	**Heavy Duty Brake**	**Reinforced A-side bearing**
8LSA53.eennnffgg-3	148	159	178	123	35	50	15
8LSA54.eennnffgg-3	173	184	203	148	35	50	10
8LSA55.eennnffgg-3	198	209	228	173	30	45	10
8LSA56.eennnffgg-3	223	234	253	198	30	45	5
8LSA57.eennnffgg-3	248	259	278	223	25	40	5

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

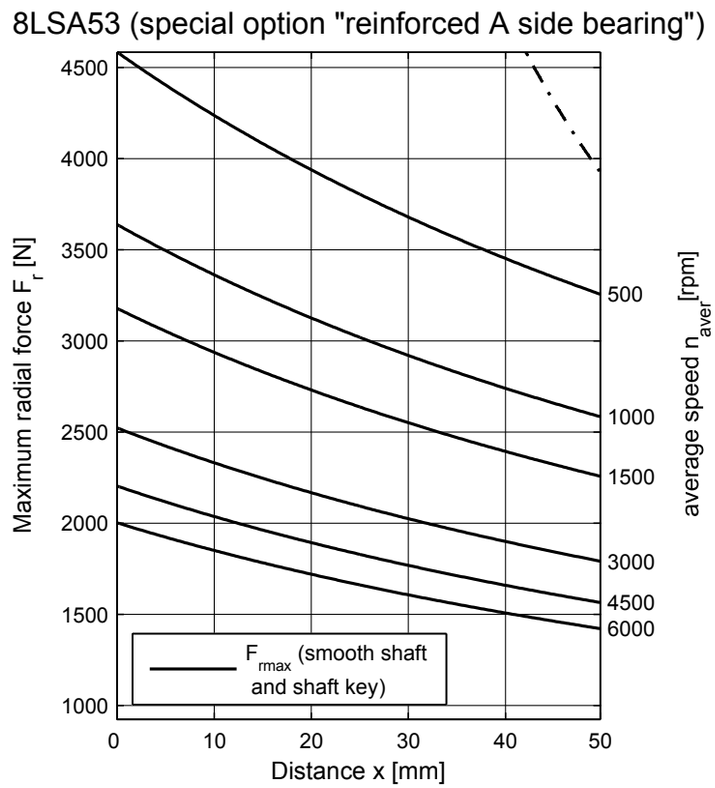
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 114 N

Special motor option "Reinforced A-side bearing"

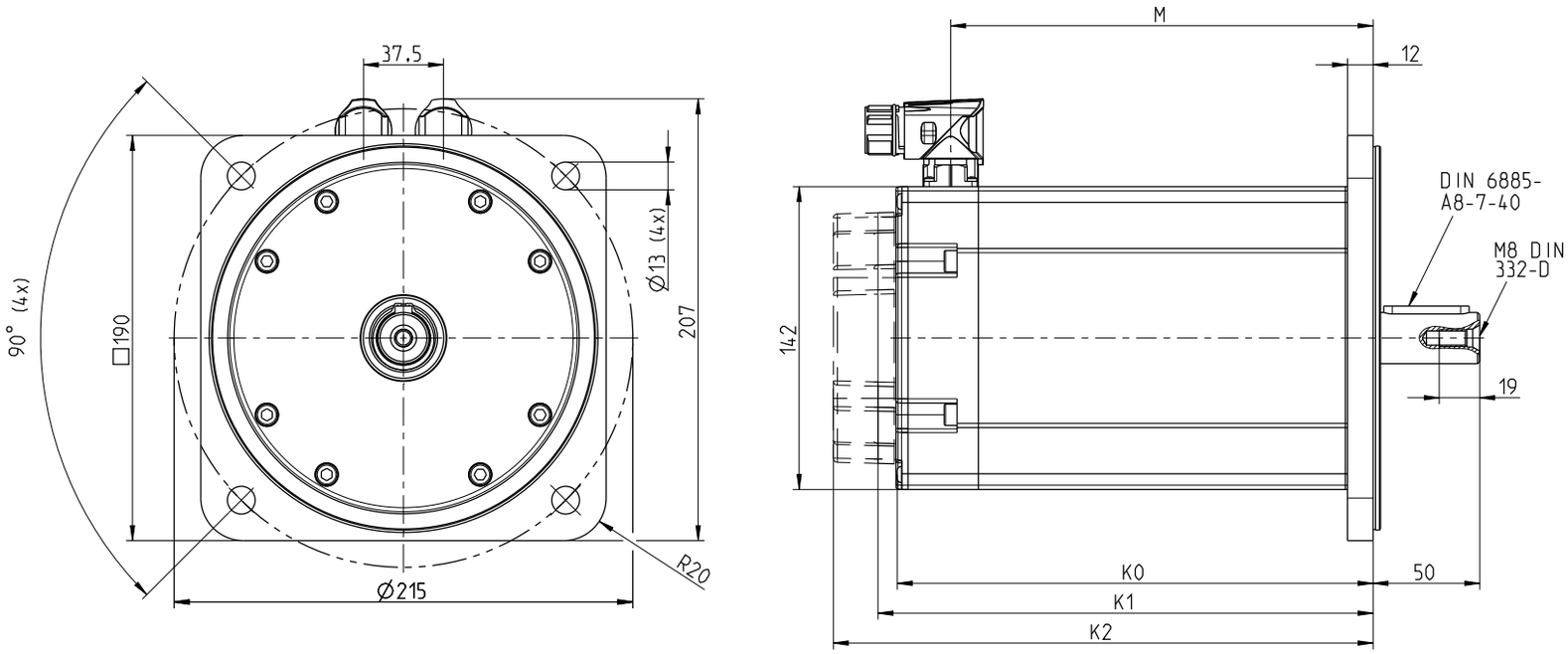


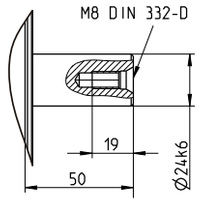
maximum allowed axial force: F_{amax} = 398 N

Technical data

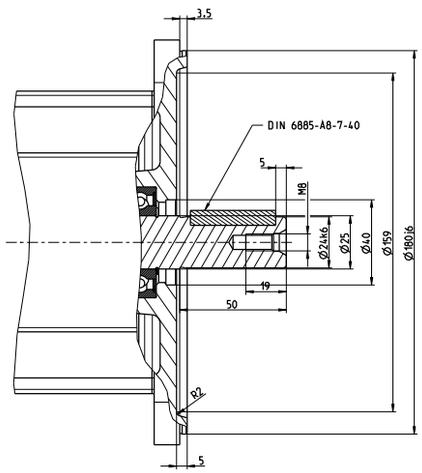
	8LSA63.ee022ffgg-3	8LSA63.ee030ffgg-3	8LSA63.ee045ffgg-3	8LSA64.ee022ffgg-3	8LSA64.ee030ffgg-3	8LSA64.ee045ffgg-3	8LSA65.ee022ffgg-3	8LSA65.ee030ffgg-3	8LSA65.ee045ffgg-3	8LSA66.ee022ffgg-3	8LSA66.ee030ffgg-3	8LSA66.ee045ffgg-3
Motor												
Nominal speed n_N [rpm]	2200	3000	4500	2200	3000	4500	2200	3000	4500	2200	3000	4500
Number of pole pairs	4											
Nominal torque M_n [Nm]	11.8	11.6	9.5	18	17.5	15.1	22	21	12.2	24.5	23.5	15
Nominal power P_N [W]	2719	3644	4477	4147	5498	7116	5068	6597	5749	5644	7383	7069
Nominal current I_N [A]	5.3	7.1	8.71	8.1	10.7	13.8	9.9	12.9	11.2	11.1	14.4	13.7
Stall torque M_0 [Nm]	12.5	12.5	12.5	20	20	20	24	24	24	28	28	28
Stall current I_0 [A]	5.6	7.7	11.5	9	12.3	18.3	10.8	14.7	22	12.6	17.2	25.7
Maximum torque M_{max} [Nm]	46.92	46.92	46.92	78.2	78.2	78.2	97.92	97.92	97.92	114.24	114.24	114.24
Maximum current I_{max} [A]	30.5	42.5	61	49.5	67.8	106.5	64.31	90.9	130.49	74.41	103.49	152.61
Maximum speed n_{max} [rpm]	9000											
Torque constant K_T [Nm/A]	2.22	1.63	1.09	2.22	1.63	1.09	2.22	1.63	1.09	2.22	1.63	1.09
Voltage constant K_E [V/1000 rpm]	134	98.4	66	134	98.4	66	134	98.4	66	134	98.4	66
Stator resistance R_{2ph} [Ω]	2.265	1.127	0.51	1.13	0.62	0.285	0.94	0.484	0.2	0.72	0.382	0.19
Stator inductance L_{2ph} [mH]	24.29	12.5	5	13.17	7.21	3.21	10.9	6	2.48	10.4	4.87	2.1
Electrical time constant t_{el} [ms]	10.7	11.1	9.7	11.7	11.6	11.03	11.6	12.4	12.4	14.4	12.7	11.1
Thermal time constant t_{therm} [min]	42	42	42	45	45	45	48	48	48	52	52	52
Moment of inertia J [kgcm^2]	8.19	8.19	8.19	13.13	13.13	13.13	15.6	15.6	15.6	18.06	18.06	18.06
Weight without brake m [kg]	12.8	12.8	12.8	16.7	16.7	16.7	18.1	18.1	18.1	20.6	20.6	20.6
Holding brake												
Holding torque of the brake M_{Br} [Nm]	32											
Weight of brake [kg]	1.5	1.5	1.5	1.5	1.5	1.5	1.45	1.45	1.45	1.5	1.5	1.5
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85											
Recommendations												
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1180	1180	1180	1320	1180	1180	1320	1180	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0220	0110	0220	0220	0220	0220	0330	0220	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	4	4	4	4	4	4	4	4	4
Connector type	speedtec											
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

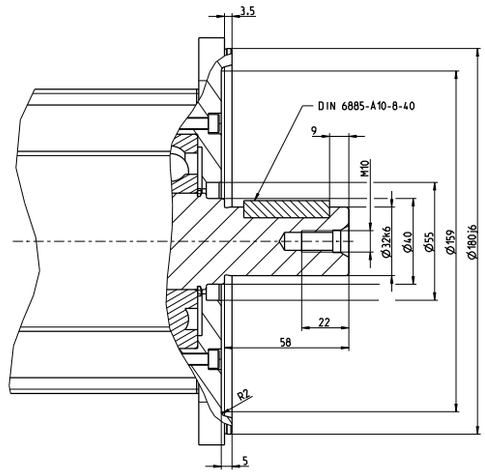




shaft option smooth shaft



detail A-flange standard bearing



detail A-flange increased bearing

EnDat / resolver feedback

Extension of K_0, K_1, K_2 and M depending on the motor option [mm]

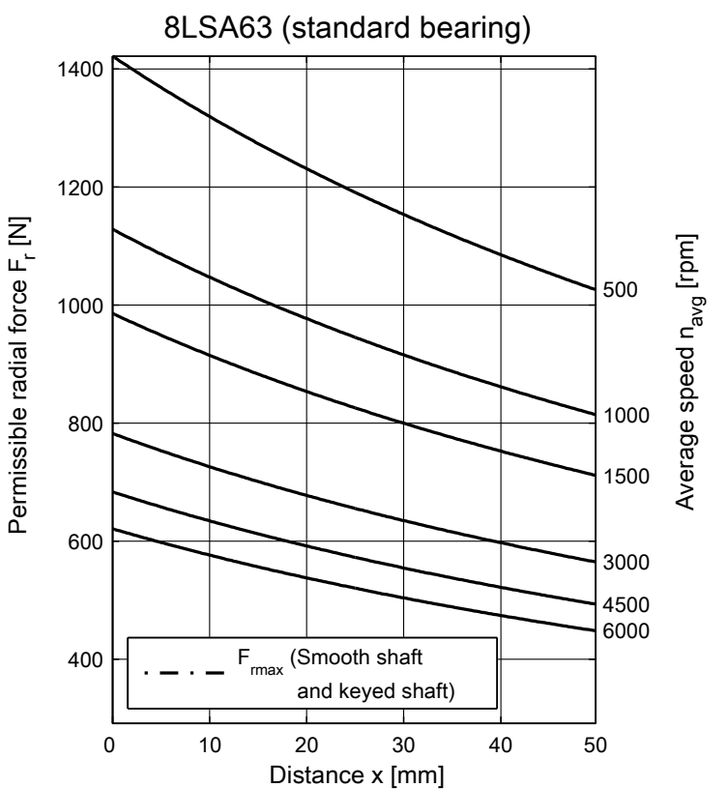
Encoder assignments	**DA,DB,SA,SB,R2**	**EA,EB**	**D0,D1,E0,E1,S0,S1**				
Model number	**K_0**	**K_1**	**K_2**	**M**	**Holding brake**	**Heavy-duty holding brake**	**Reinforced A-side bearing**
8LSA63.eennnffgg-3	178	189	208	153	60	70	28
8LSA64.eennnffgg-3	223	234	253	198	60	70	28
8LSA65.eennnffgg-3	246	257	276	221	60	70	28
8LSA66.eennnffgg-3	268	279	298	243	60	70	28
8LSA66.ee045ffgg-3, power connector size 1.5	283	294	313	250	60	70	28

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

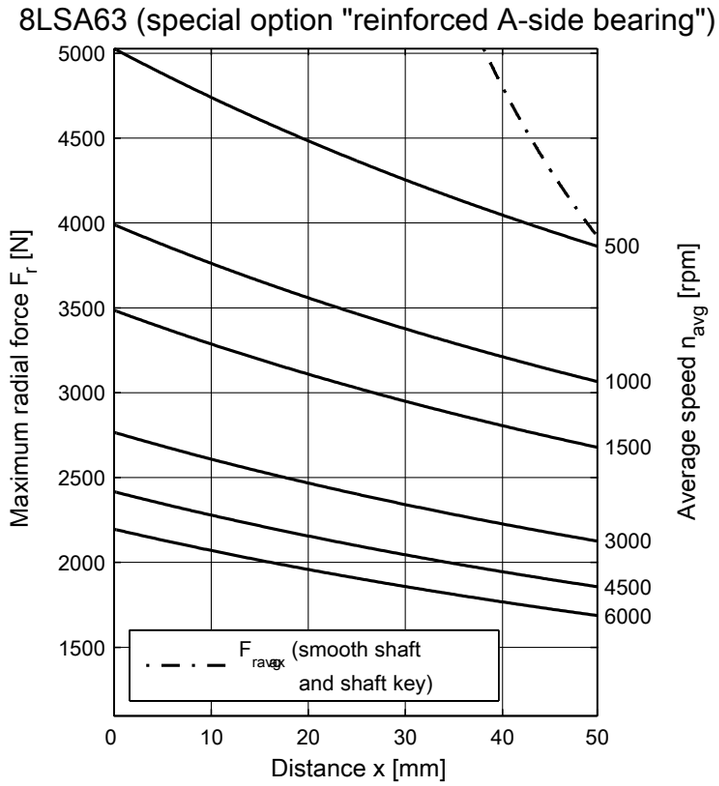
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



Maximum radial force: F_{amax} = 125 N

Special motor option "Reinforced A-side bearing"

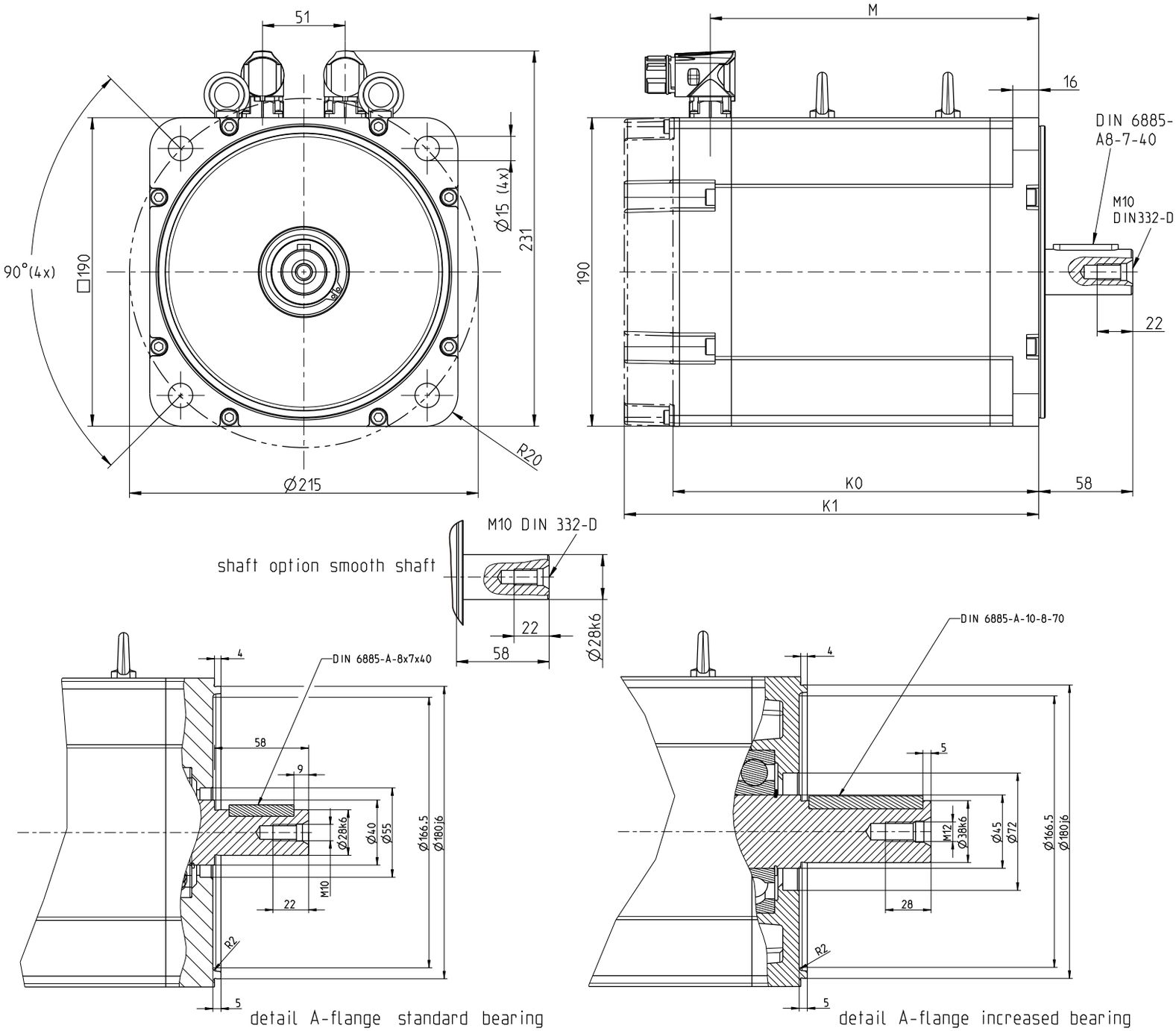


Maximum allowed axial force F_{amax} = 457 N

Technical data

	8LSA73.ee030ffgg-3	8LSA73.ee045ffgg-3	8LSA74.ee020ffgg-3	8LSA74.ee030ffgg-3	8LSA74.ee045ffgg-3	8LSA75.ee015ffgg-3	8LSA75.ee022ffgg-3	8LSA75.ee030ffgg-3	8LSA76.ee015ffgg-3	8LSA76.ee030ffgg-3	8LSA77.ee030ffgg-3	8LSA78.ee030ffgg-3
Motor												
Nominal speed n_N [rpm]	3000	4500	2000	3000	4500	1500	2200	3000	1500	3000	3000	3000
Number of pole pairs	5											
Nominal torque M_n [Nm]	20.5	16	28	25	18	37	34	30	48.5	35	40	44
Nominal power P_N [W]	6440	7540	5864	7854	8482	5812	7833	9425	7618	10996	12566	13823
Nominal current I_N [A]	12.577	14.679	11.475	15.337	16.514	11.35	15.315	18.405	14.88	21.47	24.5	27
Stall torque M_0 [Nm]	26	26	33	33	33	43	43	43	60	60	73	85
Stall current I_0 [A]	15.951	23.853	13.525	20.245	30	13.19	19.369	26.38	18.4	36.8	44.8	52.1
Maximum torque M_{max} [Nm]	107	107	150	150	150	187	187	187	230	230	270	330
Maximum current I_{max} [A]	96.54	144	90.4	135.33	202	84	124	168.71	92.5	185	212	260
Maximum speed n_{max} [rpm]	6000	6000	6000	6000	6000	4500	4500	4500	4500	4500	4500	4500
Torque constant K_T [Nm/A]	1.63	1.09	2.44	1.63	1.09	3.26	2.22	1.63	3.26	1.63	1.63	1.63
Voltage constant K_E [V/1000 rpm]	98.44	65.97	147.65	98.44	65.97	196.87	134.04	98.44	196.87	98.43	98.4	98.4
Stator resistance R_{2ph} [Ω]	0.42	0.19	0.63	0.28	0.13	0.84	0.39	0.21	0.57	0.15	0.109	0.08
Stator inductance L_{2ph} [mH]	6.5	2.9	10.9	4.9	2.2	15.6	7.1	3.9	11.5	2.7	2.2	1.8
Electrical time constant t_{el} [ms]	15.476	15.263	17.302	17.5	16.923	17.7	17.5	18.571	17.85	18	18.2	22.5
Thermal time constant t_{therm} [min]	37	37	41	41	41	46	46	46	56	56	65	74
Moment of inertia J [kgcm^2]	46	46	60	60	60	74	74	74	102	102	130	158
Weight without brake m [kg]	20	20	24	24	24	28	28	28	36	36	44	52
Holding brake												
Holding torque of the brake M_{Br} [Nm]	32											
Weight of brake [kg]	1.8											
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85											
Recommendations												
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1180	1320	1320	1180	1320	1320	1320	1640	1640	1640
ACOPOSmulti inverter module 8BVIxxxx...	0220	0330	0220	0330	0330	0220	0220	0330	0220	0440	0660	0660
Cross section for B&R motor cables [mm^2]	4	4	4	4	10	4	4	4	4	10	10	0
Connector type	speedtec											
Connector size	1.0	1.5	1.0	1.0	1.5	1.0	1.0	1.0	1.5	1.5	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.



EnDat / resolver feedback

Extension of K_0 and K_1 depending on the motor option [mm]

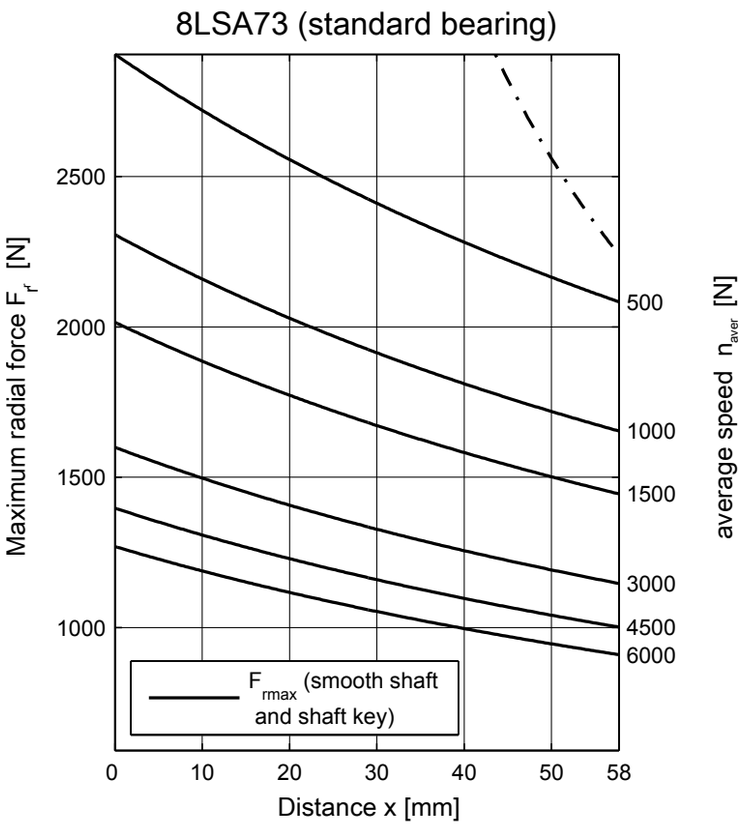
Encoder assignments	DA,DB,EA,EB,R2, SA,SB	D0,D1,E0,E1,S0,S1				
Model number	**K_0**	**K_1**	**M**	**Holding brake**	**Heavy-duty holding brake**	**Reinforced A-side bearing**
8LSA73.eennnffgg-3	205	233	180	37	54	10
8LSA73.ee045ffgg-3, power connector size 1.5			**On request**			
8LSA74.eennnffgg-3	228	256	203	37	54	10
8LSA74.ee045ffgg-3, power connector size 1.5	243.5	243.5	212	37	54	10
8LSA75.eennnffgg-3	250	278	225	37	54	10

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

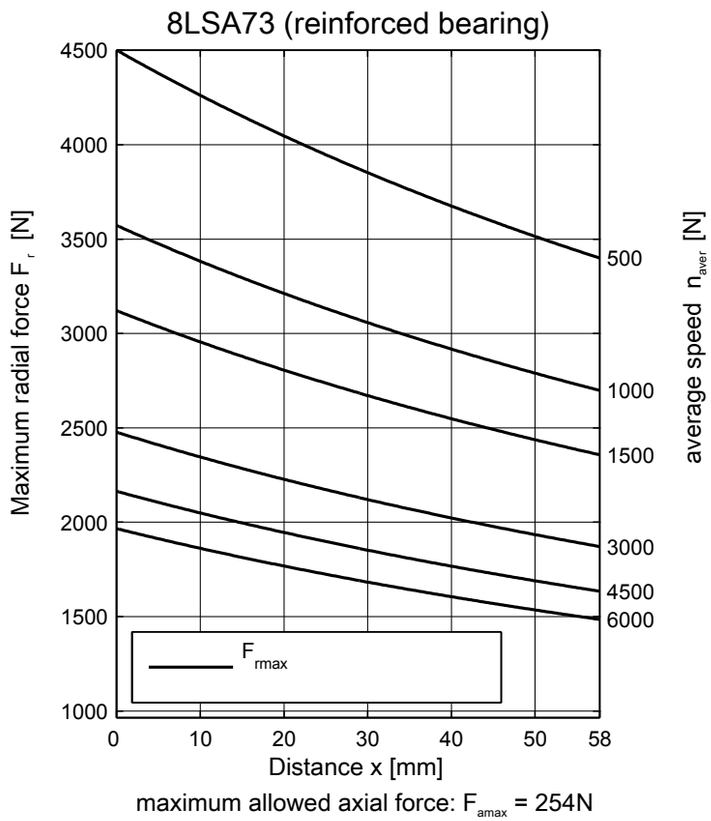
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing

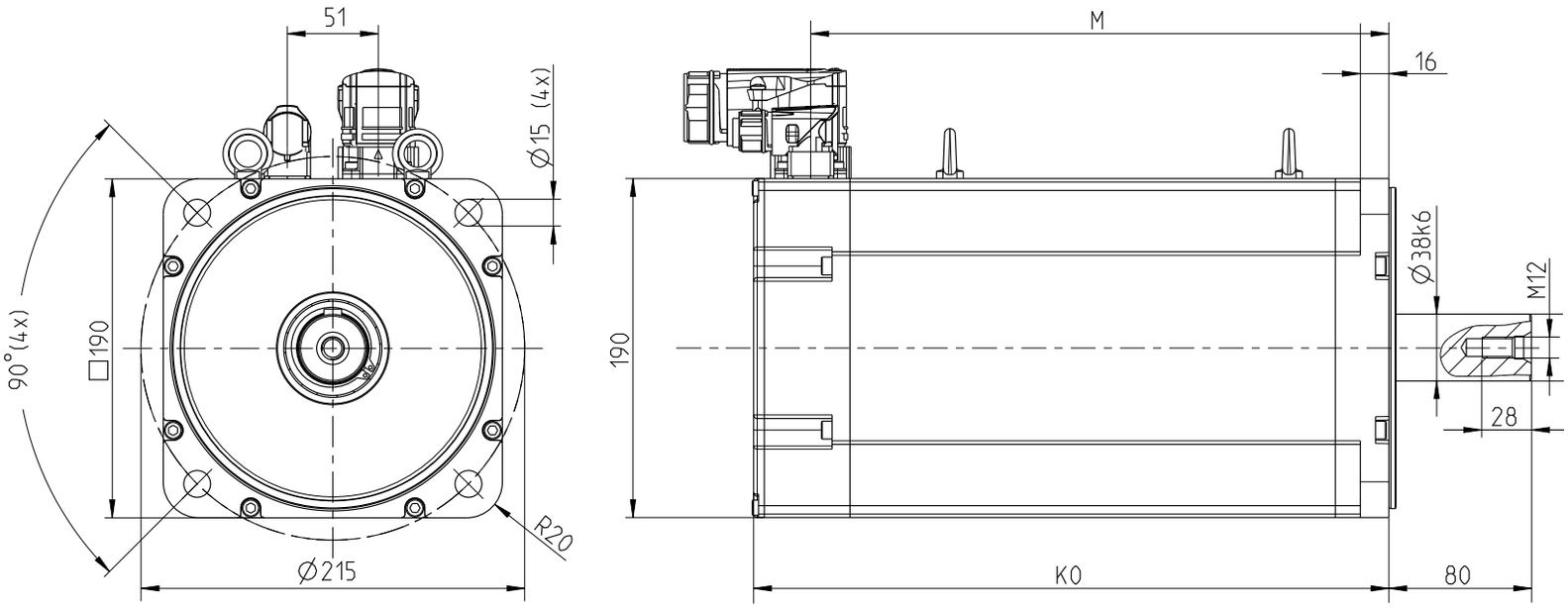


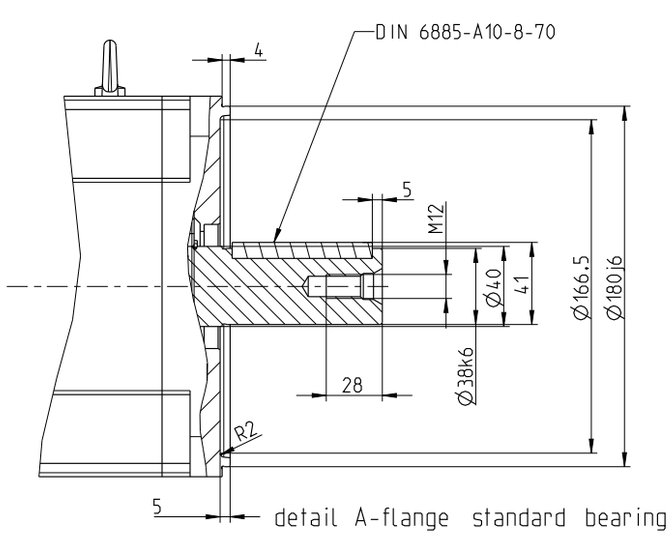
maximum allowed axial force: F_{amax} = 254N

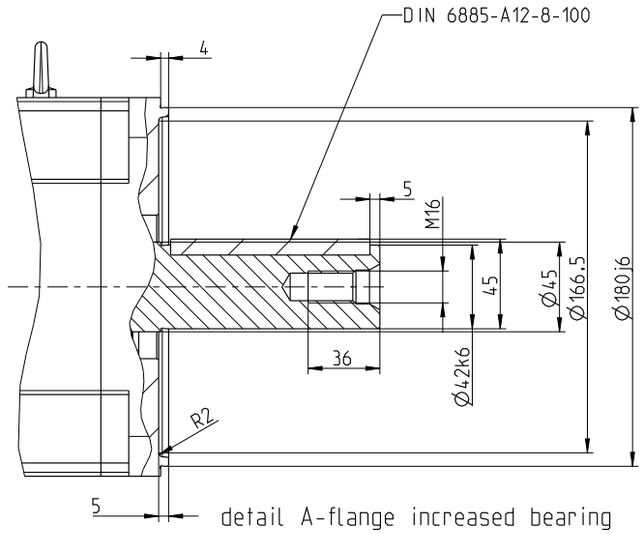
Special motor option "Reinforced A-side bearing"



maximum allowed axial force: F_{amax} = 254N







EnDat / resolver feedback

Extension of K_0 depending on motor option [mm]

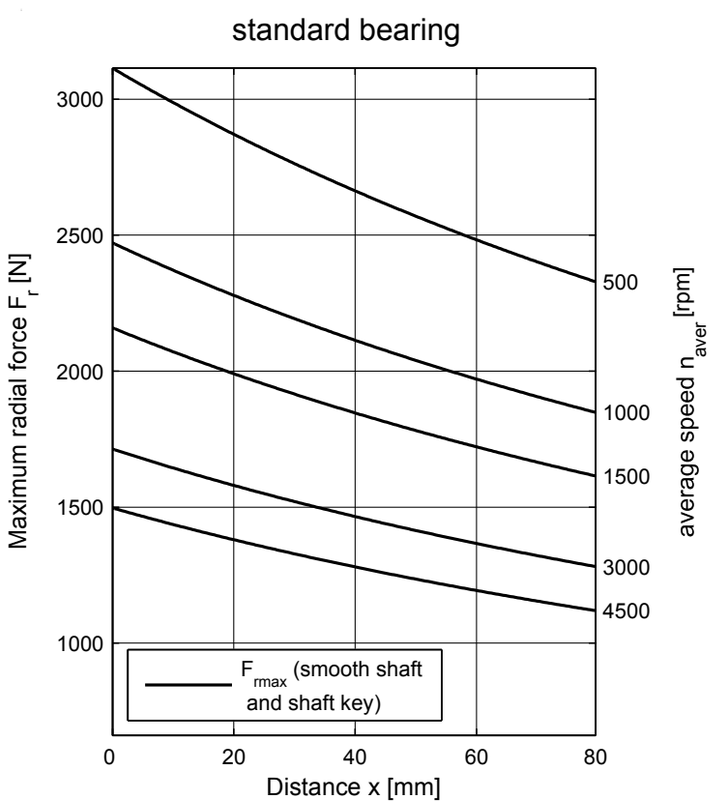
Model number	K_0	M	Holding brake	Heavy-duty holding brake	Special brake	Reinforced A-side bearing
8LSA76.eennnffgg-3	311	279	37	54	50	10
8LSA77.eennnffgg-3	356	324	37	54	50	10
8LSA78.eennnffgg-3	401	369	37	54	50	10

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

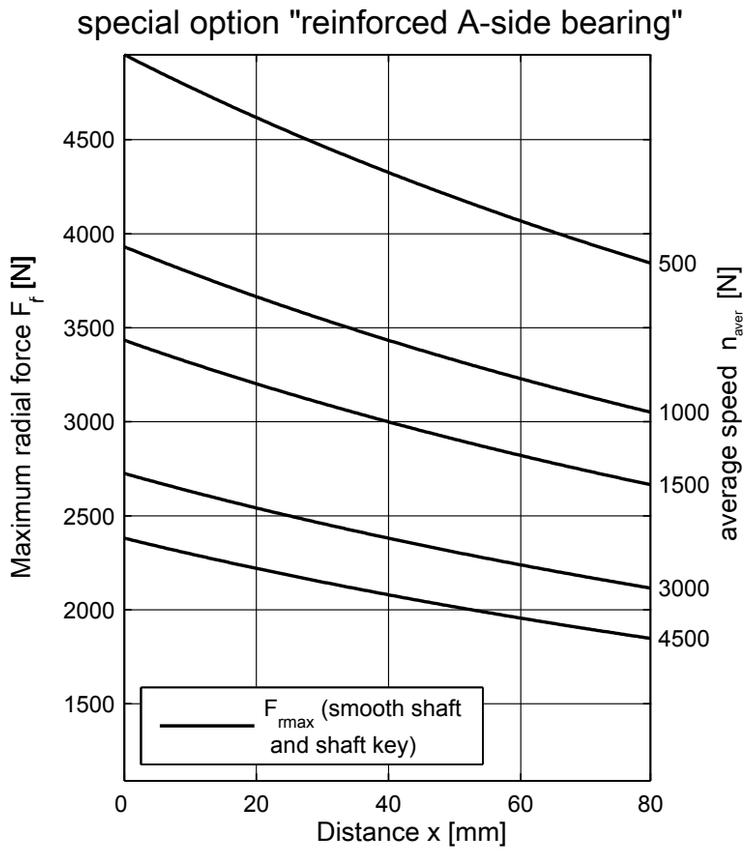
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 279 N

Special motor option "Reinforced A-side bearing"

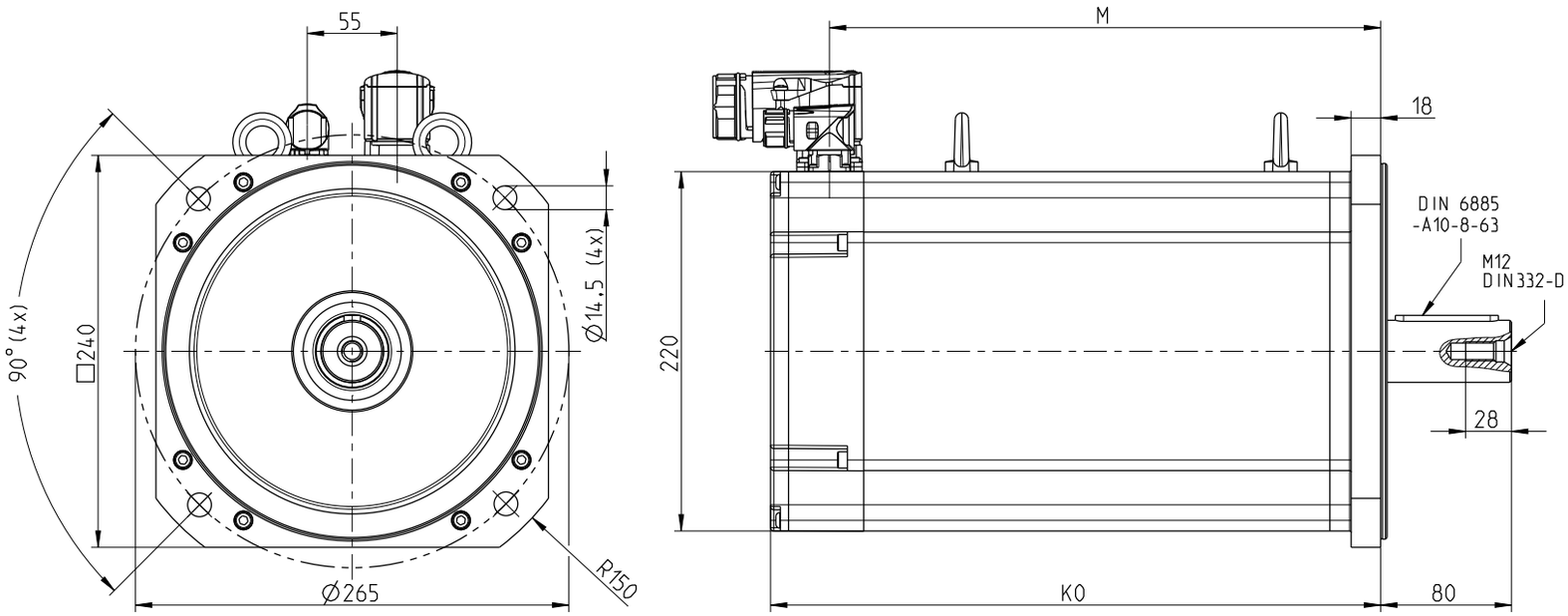


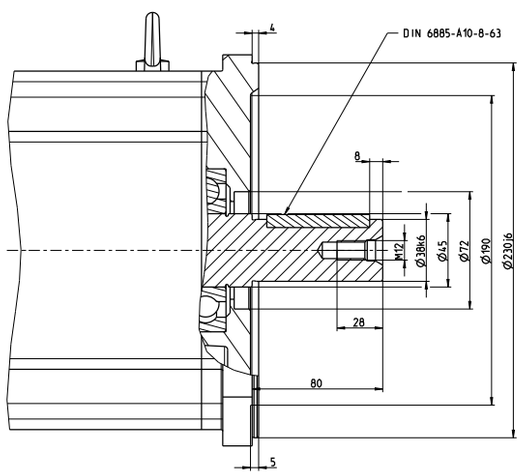
maximum allowed axial force: F_{amax} = 453N

Technical data

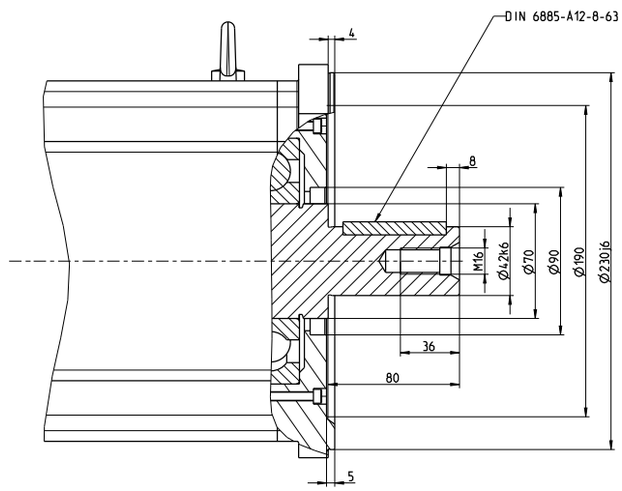
	8LSA83.ee022ffgg-3	8LSA83.ee030ffgg-3	8LSA84.ee022ffgg-3	8LSA84.ee030ffgg-3	8LSA85.ee015ffgg-3	8LSA85.ee020ffgg-3	8LSA86.ee015ffgg-3	8LSA86.ee020ffgg-3
Motor								
Nominal speed n_N [rpm]	2200	3000	2200	3000	1500	2000	1500	2000
Number of pole pairs	3							
Nominal torque M_n [Nm]	31	27	51.5	48.4	77	72	97	85
Nominal power P_N [W]	7142	8482	11865	15205	12095	15080	15237	17802
Nominal current I_N [A]	14	16.6	23.2	29.7	23.6	29.4	29.8	34.7
Stall torque M_0 [Nm]	40	40	69	69	94	94	115	115
Stall current I_0 [A]	18	24.5	31.1	42.3	28.9	38.4	35.3	46.9
Maximum torque M_{max} [Nm]	120	120	204	204	280	280	345	345
Maximum current I_{max} [A]	72.6	102	115.5	171	113	157	120	182
Maximum speed n_{max} [rpm]	3600							
Torque constant K_T [Nm/A]	2.22	1.63	2.22	1.63	3.26	2.45	3.26	2.45
Voltage constant K_E [V/1000 rpm]	134.04	98.44	134.04	98.44	196.87	147.65	196.87	147.65
Stator resistance R_{2ph} [Ω]	0.45	0.26	0.22	0.12	0.328	0.168	0.28	0.13
Stator inductance L_{2ph} [mH]	10.5	6.1	7.4	3.9	9.44	4.85	8.8	3.9
Electrical time constant t_{el} [ms]	23.3	23.5	33.6	32.5	28.5	28.9	31.4	30
Thermal time constant t_{therm} [min]	50	50	65	65	80	80	90	90
Moment of inertia J [kgcm^2]	65	65	114	114	150	150	192	192
Weight without brake m [kg]	43	43	61	61	75.5	75.5	89	89
Holding brake								
Holding torque of the brake M_{Br} [Nm]	130							
Weight of brake [kg]	9							
Moment of inertia for the brake J_{Br} [kgcm^2]	53							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1320	1320	1640	1640	1320	1640	1640	1640
ACOPOSmulti inverter module 8BVIxxxx...	0220	0330	0440	0660	0330	0440	0440	0660
Cross section for B&R motor cables [mm^2]	4	4	10	10	4	10	10	10
Connector type	speedtec							
Connector size	1.5							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.





detail A-flange standard bearing



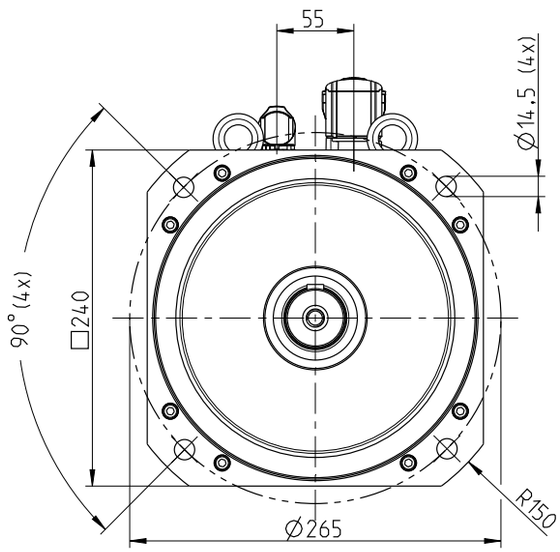
detail A-flange increased bearing

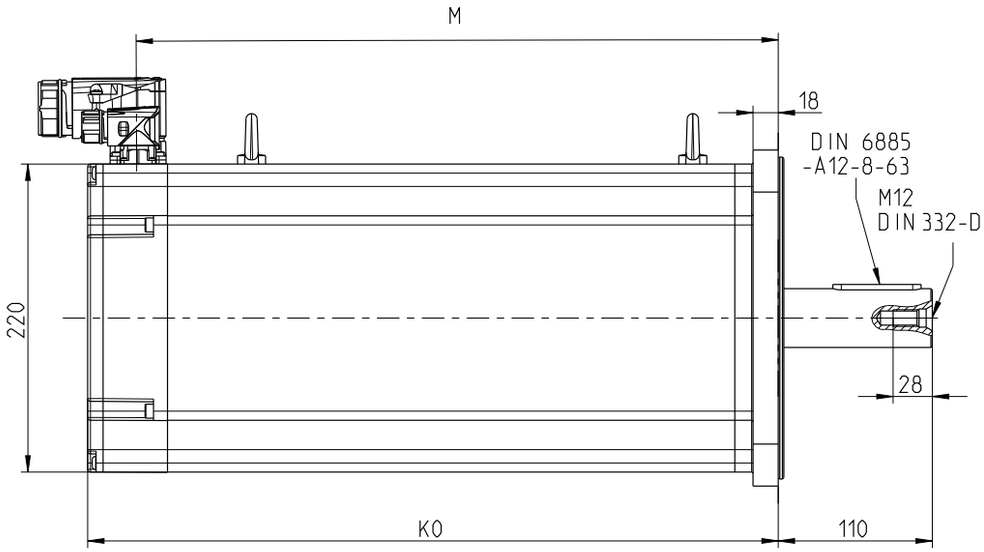
Optical EnDat feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake[1)]**	**Oil seal**	**Reinforced A-side bearing**
8LSA83.eennnffgg-3	321	62	50	---	16.5
8LSA84.eennnffgg-3	401	62	50	---	16.5

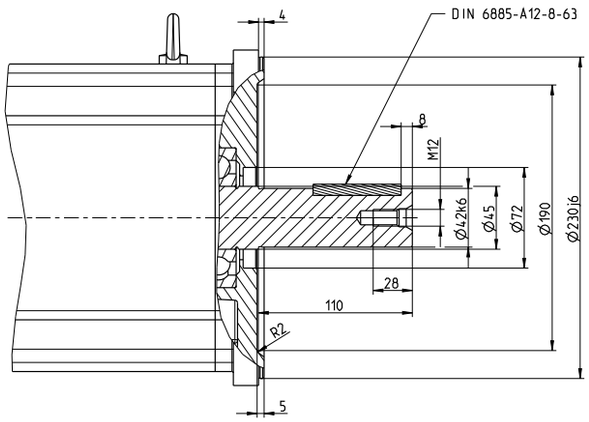
Inductive EnDat / resolver feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake[1)]**	**Oil seal**	**Reinforced A-side bearing**
8LSA83.eennnffgg-3	293	34	50	---	16.5
8LSA84.eennnffgg-3	373	34	50	---	16.5

[1)] The motor option "holding brake" cannot be ordered in combination with special motor option "Reinforced A-side bearing".

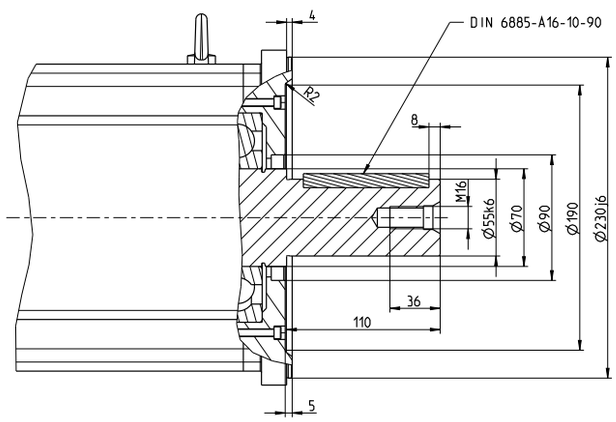
8LSA8







detail A-flange standard bearing



detail A-flange increased bearing

Optical EnDat feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake[1)]**	**Oil seal**	**Reinforced A-side bearing**
8LSA85.eennnffgg-3	461	62	50	---	16.5
8LSA86.eennnffgg-3	521	62	50	---	16.5

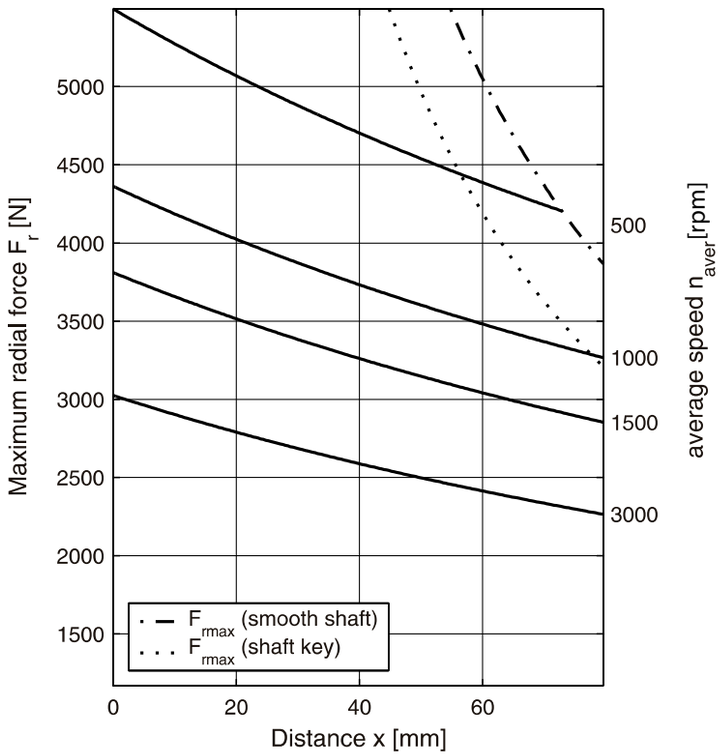
Inductive EnDat / resolver feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake[1)]**	**Oil seal**	**Reinforced A-side bearing**
8LSA85.eennnffgg-3	433	34	50	---	16.5
8LSA86.eennnffgg-3	493	34	50	---	16.5

1) The motor option "holding brake" cannot be ordered in combination with special motor option "Reinforced A-side bearing".

Maximum shaft load

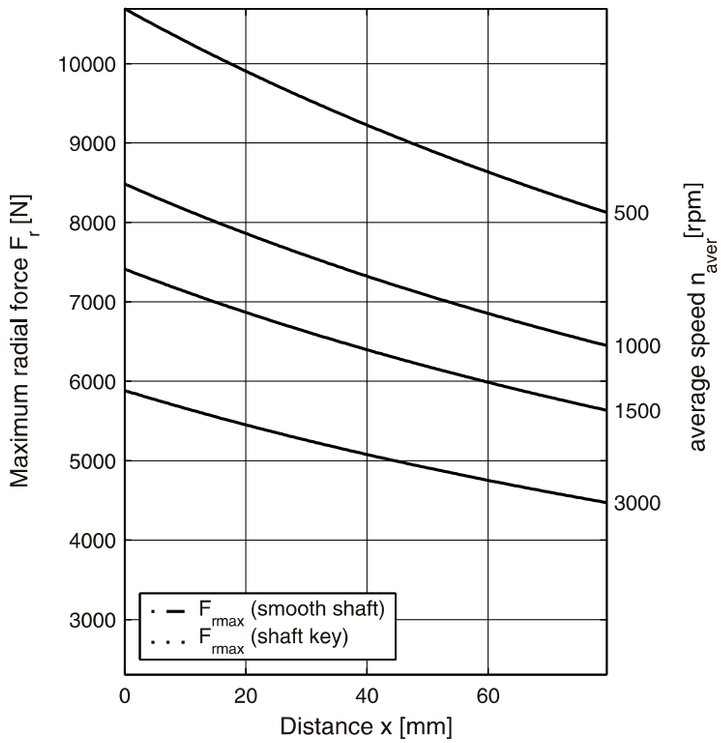
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 492 N

Special motor option "Reinforced A-side bearing"



maximum allowed axial force: F_{amax} = 966 N

Technical data

	8LSC44.ee030ffgg-3	8LSC44.ee045ffgg-3	8LSC44.ee060ffgg-3	8LSC45.ee045ffgg-3	8LSC45.ee030ffgg-3	8LSC45.ee060ffgg-3	8LSC46.ee045ffgg-3	8LSC46.ee030ffgg-3	8LSC53.ee030ffgg-3	8LSC53.ee045ffgg-3
Motor										
Nominal speed n_N [rpm]	3000	4500	6000	4500	3000	6000	4500	3000	3000	4500
Number of pole pairs	5	5	5	5	5	5	5	5	4	4
Nominal torque M_n [Nm]	6.01	4.68	3.9	6.24	8.01	5.2	7.8	10.01	5.2	5.07
Nominal power P_N [W]	1888	2205	2450	2941	2516	3267	3676	3145	1634	2389
Nominal current I_N [A]	3.69	4.3	4.79	5.8	4.9	6.39	7.2	6.1	3.19	4.6
Stall torque M_0 [Nm]	7.8	7.8	7.8	10.4	10.4	10.4	13	13	5.85	5.85
Stall current I_0 [A]	4.8	7.2	9.6	9.6	6.4	12.8	12	8	3.6	5.4
Maximum torque M_{max} [Nm]	22.8	22.8	22.8	30.4	30.4	30.4	38	38	13.8	13.8
Maximum current I_{max} [A]	21.9	32.91	43.8	43.9	29.2	58.3	54.8	36.5	10.5	16.5
Maximum speed n_{max} [rpm]	12000	12000	12000	12000	12000	12000	12000	12000	9000	9000
Torque constant K_T [Nm/A]	1.63	1.08	0.81	1.08	1.63	0.81	1.08	1.63	1.63	1.09
Voltage constant K_E [V/1000 rpm]	98.4	64.93	49.2	64.93	98.4	49.22	64.93	98.4	98.4	66
Stator resistance R_{2ph} [Ω]	3.6	1.6	0.862	1.106	2.489	0.6	0.8	1.92	5.13	2.222
Stator inductance L_{2ph} [mH]	24	10.8	6.2	9.69	21.8	5.4	7.75	17.44	40.33	19.33
Electrical time constant t_{el} [ms]	6.7	6.8	7.2	8.8	8.8	9	9.7	9.1	7.9	8.7
Thermal time constant t_{therm} [min]	30	30	30	35	35	35	40	40	33	33
Moment of inertia J [kgcm^2]	2.73	2.73	2.73	3.58	3.58	3.58	4.39	4.39	3.62	3.62
Weight without brake m [kg]	7	7	7	8.1	8.1	8.1	8.9	8.9	8.5	8.5
Holding brake										
Holding torque of the brake M_{Br} [Nm]	8	8	8	8	8	8	8	8	15	15
Weight of brake [kg]	1	1	1	0.9	0.9	0.9	1	1	1.49	1.49
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.66	1.66
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1180	1180	1090	1180	1180	1090	1045	1090
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0110	0110	0110	0220	0220	0110	0055	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	4	1.5	4	4	1.5	1.5	1.5
Connector type	speedtec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSC54.ee030ffgg-3	8LSC54.ee045ffgg-3	8LSC55.ee030ffgg-3	8LSC55.ee045ffgg-3	8LSC56.ee030ffgg-3	8LSC56.ee045ffgg-3	8LSC57.ee030ffgg-3	8LSC57.ee045ffgg-3	8LSC5A.ee030ffgg-0	8LSC5A.ee045ffgg-0
Motor										
Nominal speed n_N [rpm]	3000	4500	3000	4500	3000	4500	3000	4500	3000	4500
Number of pole pairs	4									
Nominal torque M_n [Nm]	10.01	9.49	15.08	12.35	18.07	16.51	22.75	19.5	26.4	20
Nominal power P_N [W]	3145	4472	4738	5820	5677	7780	7147	9189	8294	9425
Nominal current I_N [A]	6.1	8.7	9.3	11.3	11.1	15.1	14	17.9	16.2	18.9
Stall torque M_0 [Nm]	11.7	11.7	16.25	16.25	20.8	20.8	26	26	31	31
Stall current I_0 [A]	7.2	10.7	10	14.9	12.8	19.1	16	23.8	19	29.3
Maximum torque M_{max} [Nm]	27.6	27.6	41.4	41.4	55.2	55.2	69	69	64	64
Maximum current I_{max} [A]	20.9	33	33	47.29	41.8	65.9	52.6	82.61	47.21	72.7
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.63	1.09	1.63	1.09	1.63	1.09	1.63	1.09	1.63	1.06
Voltage constant K_E [V/1000 rpm]	98.4	66	98.4	66	98.4	66	98.4	66	98.4	63.9
Stator resistance R_{2ph} [Ω]	2.16	0.926	1.127	0.51	0.75	0.341	0.62	0.29	0.593	0.266
Stator inductance L_{2ph} [mH]	21.52	8.67	12.5	4.96	8.16	4.08	7.21	3.2	3.91	1.61
Electrical time constant t_{el} [ms]	10.6	10.9	11.1	9.7	10.9	12	11.6	11	6.6	6.1
Thermal time constant t_{therm} [min]	37	37	40	40	43	43	46	46	55	55
Moment of inertia J [kgcm^2]	6.04	6.04	8.19	8.19	10.66	10.66	13.13	13.13	12.7	12.7
Weight without brake m [kg]	10.8	10.8	12.7	12.7	15.3	15.3	16.8	16.8	23.8	23.8
Holding brake										
Holding torque of the brake M_{Br} [Nm]	15	15	15	15	32	32	15	15	15	15
Weight of brake [kg]	1.43	1.43	1.47	1.47	1.44	1.44	1.3	1.3	0.9	0.9
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66	1.66	1.66	1.66	5.85	5.85	1.66	1.66	1.66	1.66
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1180	1180	1180	1320	1180	1320	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0110	0220	0220	0220	0220	0330	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	4	4	4	4	4	4	4	4	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSC5B.ee030ffgg-0	8LSC5B.ee045ffgg-0	8LSC5C.ee030ffgg-0	8LSC5C.ee045ffgg-0	8LSC63.ee030ffgg-3	8LSC63.ee045ffgg-3	8LSC64.ee030ffgg-3	8LSC64.ee045ffgg-3	8LSC65.ee030ffgg-3	8LSC65.ee045ffgg-3
Motor										
Nominal speed n_N [rpm]	3000	4500	3000	4500	3000	4500	3000	4500	3000	4500
Number of pole pairs	4									
Nominal torque M_n [Nm]	42	32	58	44	15.08	12.35	22.75	19.63	27.3	15.86
Nominal power P_N [W]	13195	15080	18221	20735	4738	5820	7147	9250	8577	7474
Nominal current I_N [A]	25.5	29.3	35.6	41.6	9.3	11.3	14	17.99	16.8	14.5
Stall torque M_0 [Nm]	50	50	70	70	16.25	16.25	26	26	31.2	31.2
Stall current I_0 [A]	30.4	45.8	43	66.3	10	14.9	16	23.8	19.2	28.6
Maximum torque M_{max} [Nm]	107	107	150	150	46.92	46.92	78.2	78.2	97.92	97.92
Maximum current I_{max} [A]	78.14	117.8	110.6	170.51	42.5	61	67.8	106.5	90.9	130.49
Maximum speed n_{max} [rpm]	9000									
Torque constant K_T [Nm/A]	1.65	1.09	1.63	1.06	1.63	1.09	1.63	1.09	1.63	1.09
Voltage constant K_E [V/1000 rpm]	99.5	66	98.4	63.9	98.4	66	98.4	66	98.4	66
Stator resistance R_{2ph} [Ω]	0.31	0.14	0.203	0.093	1.127	0.51	0.62	0.285	0.484	0.2
Stator inductance L_{2ph} [mH]	2.44	1.01	1.76	0.82	12.5	5	7.21	3.21	6	2.48
Electrical time constant t_{el} [ms]	7.9	7.2	8.7	8.8	11.1	9.7	11.6	11.03	12.4	12.4
Thermal time constant t_{therm} [min]	60	60	65	65	42	42	45	45	48	48
Moment of inertia J [kgcm^2]	20.1	20.1	27.7	27.7	8.19	8.19	13.13	13.13	15.6	15.6
Weight without brake m [kg]	33	33	41	41	15.1	15.1	19	19	20.4	20.4
Holding brake										
Holding torque of the brake M_{Br} [Nm]	15	15	15	15	32	32	32	32	32	32
Weight of brake [kg]	0.9	0.9	0.9	0.9	1.5	1.5	1.5	1.5	1.45	1.45
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66	1.66	1.66	1.66	5.85	5.85	5.85	5.85	5.85	5.85
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	1180	1180	1180	1320	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...	0440	0660	0660	0880	0110	0220	0220	0330	0220	0330
Cross section for B&R motor cables [mm^2]	4	10	10	0	4	4	4	4	4	4
Connector type	speedtec									
Connector size	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSC66.ee030ffgg-3	8LSC66.ee045ffgg-3	8LSC73.ee030ffgg-3	8LSC73.ee045ffgg-3	8LSC74.ee030ffgg-3	8LSC74.ee045ffgg-3	8LSC75.ee030ffgg-3	8LSC76.ee015ffgg-3	8LSC83.ee015ffgg-3	8LSC83.ee030ffgg-3
Motor										
Nominal speed n_N [rpm]	3000	4500	3000	4500	3000	4500	3000	1500	1500	3000
Number of pole pairs	4	4	5	5	5	5	5	5	3	3
Nominal torque M_n [Nm]	30.55	19.5	26.8	21.5	34	24.6	41	66	45.5	35.1
Nominal power P_N [W]	9598	9189	8419	10132	10681	11592	12881	10367	7147	11027
Nominal current I_N [A]	18.8	17.9	16.442	19.725	20.859	22.569	25.153	20.25	14	21.5
Stall torque M_0 [Nm]	36.4	36.4	33.8	33	43	43	48.9	75	52	52
Stall current I_0 [A]	22.4	33.4	20.736	30	26.38	39.45	30	23	16	31.9
Maximum torque M_{max} [Nm]	114.24	114.24	107	107	150	150	187	230	120	120
Maximum current I_{max} [A]	103.49	152.61	96.54	144	135.33	202	168.71	92.5	50	102
Maximum speed n_{max} [rpm]	9000	9000	6000	6000	6000	6000	4500	4500	3600	3600
Torque constant K_T [Nm/A]	1.63	1.09	1.63	1.09	1.63	1.09	1.63	3.26	3.26	1.63
Voltage constant K_E [V/1000 rpm]	98.4	66	98.44	65.97	98.44	65.97	98.44	196.87	196.87	98.44
Stator resistance R_{2ph} [Ω]	0.382	0.19	0.42	0.19	0.28	0.13	0.21	0.57	0.95	0.26
Stator inductance L_{2ph} [mH]	4.87	2.1	6.5	2.9	4.9	2.2	3.9	11.5	18	6.1
Electrical time constant t_{el} [ms]	12.7	11.1	15.476	15.263	17.5	16.923	18.571	17.85	18.9	23.5
Thermal time constant t_{therm} [min]	52	52	37	37	41	41	46	56	50	50
Moment of inertia J [kgcm^2]	18.06	18.06	46	46	60	60	74	102	65	65
Weight without brake m [kg]	23	23	20	20	24	24	28	36	47.7	47.7
Holding brake										
Holding torque of the brake M_{Br} [Nm]	32	32	32	32	32	32	32	32	130	130
Weight of brake [kg]	1.4	1.4	1.8	1.8	1.8	1.8	1.8	1.8	9	9
Moment of inertia for the brake J_{Br} [kgcm^2]	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	53	53
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1320	1320	1320	1640	1320	1320	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0330	0440	0330	0330	0330	0440	0330	0330	0220	0440
Cross section for B&R motor cables [mm^2]	4	4	4	4	4	4	4	4	4	10
Connector type	speedtec									
Connector size	1.0	1.5	1.0	1.5	1.0	1.5	1.5	1.5	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSC84.ee015ffgg-3	8LSC84.ee030ffgg-3	8LSC85.ee015ffgg-3	8LSC85.ee020ffgg-3	8LSC86.ee015ffgg-3	8LSC86.ee020ffgg-3
Motor						
Nominal speed n_N [rpm]	1500	3000	1500	2000	1500	2000
Number of pole pairs	3					
Nominal torque M_n [Nm]	75.4	62.92	100.1	93.6	126.1	110.5
Nominal power P_N [W]	11844	19767	15724	19604	19808	23143
Nominal current I_N [A]	23.1	38.6	30.7	38.2	38.7	45.1
Stall torque M_0 [Nm]	89.7	89.7	122.2	122.2	149.5	149.5
Stall current I_0 [A]	27.5	55	37.5	49.9	45.9	61
Maximum torque M_{max} [Nm]	204	204	280	280	345	345
Maximum current I_{max} [A]	79	171	113	157	120	182
Maximum speed n_{max} [rpm]	3600					
Torque constant K_T [Nm/A]	3.26	1.63	3.26	2.45	3.26	2.45
Voltage constant K_E [V/1000 rpm]	196.87	98.44	196.87	147.65	196.87	147.65
Stator resistance R_{2ph} [Ω]	0.43	0.12	0.328	0.168	0.28	0.13
Stator inductance L_{2ph} [mH]	15.8	3.9	9.44	4.85	8.8	3.9
Electrical time constant t_{el} [ms]	36.7	32.5	28.5	28.9	31.4	30
Thermal time constant t_{therm} [min]	65	65	80	80	90	90
Moment of inertia J [kgcm^2]	114	114	150	150	192	192
Weight without brake m [kg]	65.7	65.7	80.2	80.2	93.7	93.7
Holding brake						
Holding torque of the brake M_{Br} [Nm]	130					
Weight of brake [kg]	9					
Moment of inertia for the brake J_{Br} [kgcm^2]	53					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	1640	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0440	0660	0660	0880
Cross section for B&R motor cables [mm^2]	4	10	10	10	10	0
Connector type	speedtec					
Connector size	1.5					

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LSC43.ee030ffgg-3	8LSC43.ee045ffgg-3	8LSC43.ee060ffgg-3	8LSC44.ee022ffgg-3	8LSC44.ee030ffgg-3	8LSC44.ee045ffgg-3	8LSC44.ee060ffgg-3	8LSC45.ee030ffgg-3	8LSC45.ee045ffgg-3	8LSC45.ee060ffgg-3	8LSC46.ee022ffgg-3	8LSC46.ee030ffgg-3	8LSC46.ee045ffgg-3	8LSC46.ee060ffgg-3
Motor														
Nominal speed n_N [rpm]	3000	4500	6000	2200	3000	4500	6000	3000	4500	6000	2200	3000	4500	6000
Number of pole pairs	5													
Nominal torque M_n [Nm]	4.03	3.51	2.6	6.76	6.01	4.68	3.9	8.01	6.24	5.2	11.31	10.01	7.8	6.5
Nominal power P_N [W]	1266	1654	1634	1557	1888	2205	2450	2516	2941	3267	2606	3145	3676	4084
Nominal current I_N [A]	2.5	3.2	3.19	3	3.69	4.3	4.79	4.9	5.8	6.39	5.1	6.1	7.2	8
Stall torque M_0 [Nm]	5.2	5.2	5.2	7.8	7.8	7.8	7.8	10.4	10.4	10.4	13	13	13	13
Stall current I_0 [A]	3.2	4.8	6.4	3.5	4.8	7.2	9.6	6.4	9.6	12.8	5.9	8	12	16
Maximum torque M_{max} [Nm]	15.2	15.2	15.2	22.8	22.8	22.8	22.8	30.4	30.4	30.4	38	38	38	38
Maximum current I_{max} [A]	14.59	21.9	29.2	16.1	21.9	32.91	43.8	29.2	43.9	58.3	26.8	36.5	54.8	72.9
Maximum speed n_{max} [rpm]	12000													
Torque constant K_T [Nm/A]	1.63	1.08	0.81	2.22	1.63	1.08	0.81	1.63	1.08	0.81	2.22	1.63	1.08	0.81
Voltage constant K_E [V/1000 rpm]	98.4	64.93	49.22	134	98.4	64.93	49.2	98.4	64.93	49.22	134	98.4	64.93	49.2
Stator resistance R_{2ph} [Ω]	5.94	2.64	1.42	6.24	3.6	1.6	0.862	2.489	1.106	0.6	3.61	1.92	0.8	0.48
Stator inductance L_{2ph} [mH]	36.5	16.5	9.2	44.8	24	10.8	6.2	21.8	9.69	5.4	32	17.44	7.75	4.36
Electrical time constant t_{el} [ms]	6.1	6.3	6.5	7.2	6.7	6.8	7.2	8.8	8.8	9	8.9	9.1	9.7	9.1
Thermal time constant t_{therm} [min]	25	25	25	30	30	30	30	35	35	35	40	40	40	40
Moment of inertia J [kgcm^2]	1.87	1.87	1.87	2.73	2.73	2.73	2.73	3.58	3.58	3.58	4.39	4.39	4.39	4.39
Weight without brake m [kg]	6.1	6.1	6.1	7	7	7	7	8.1	8.1	8.1	8.9	8.9	8.9	8.9
Holding brake														
Holding torque of the brake M_{Br} [Nm]	8													
Weight of brake [kg]	1	1	1	1	1	1	1	0.9	0.9	0.9	1	1	1	1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54													
Recommendations														
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1090	1045	1090	1090	1180	1090	1180	1180	1090	1090	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0110	0055	0055	0110	0110	0110	0110	0220	0110	0110	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	1.5	4	1.5	4	4	1.5	1.5	4	4
Connector type	speedtec													
Connector size	1.0													

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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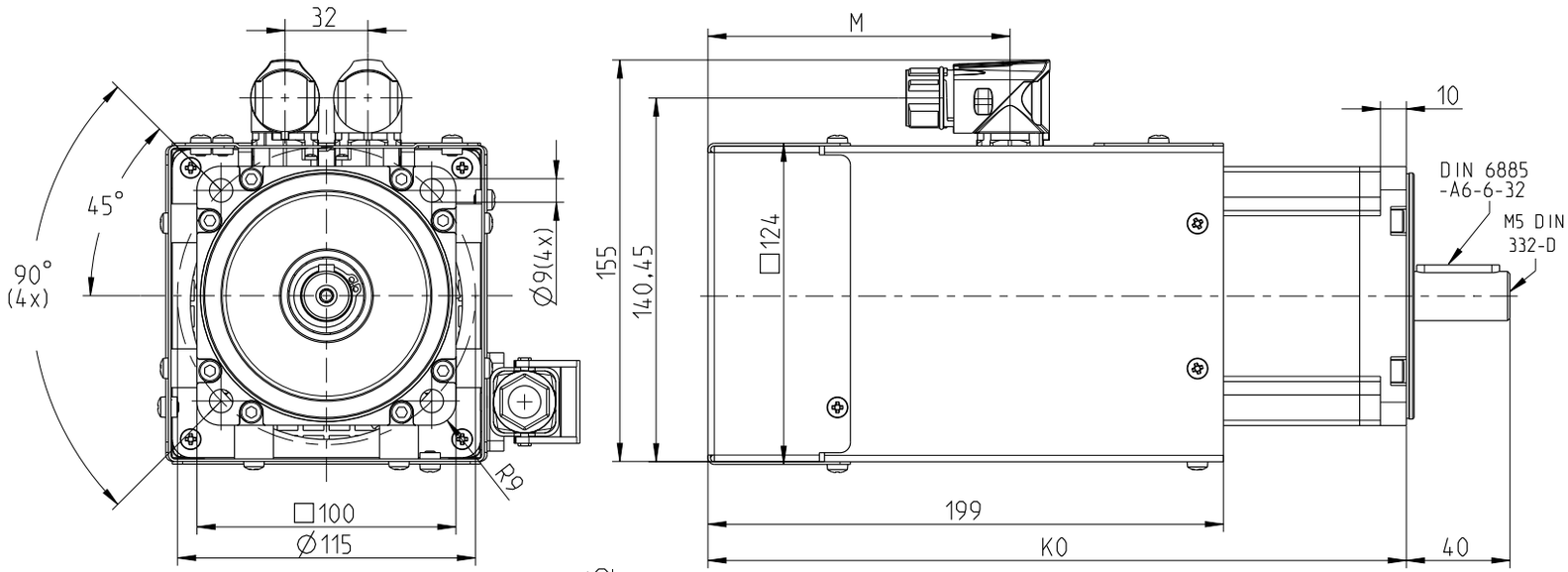
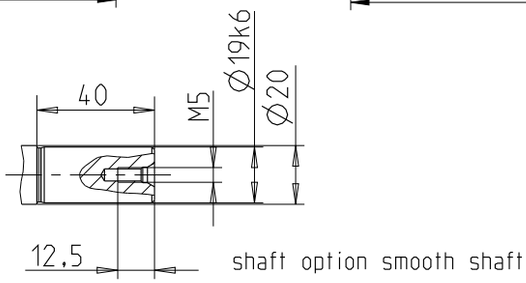
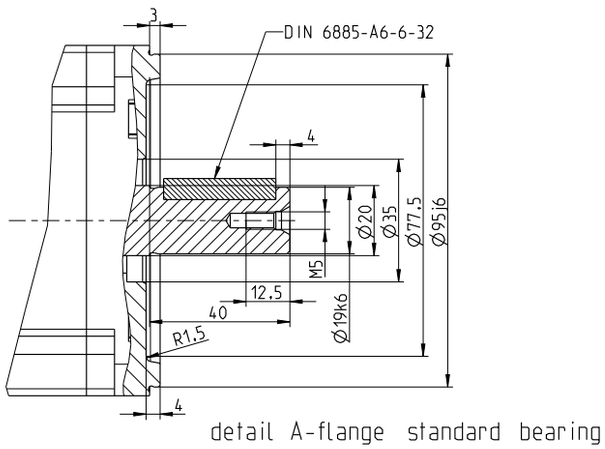
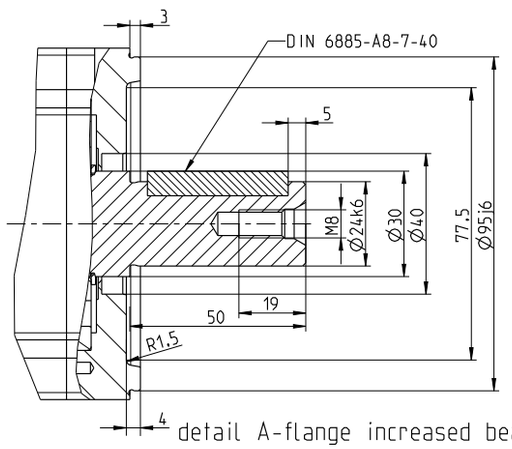








EnDat / resolver feedback

Extension of K_0, K_1 and M depending on the motor option [mm]

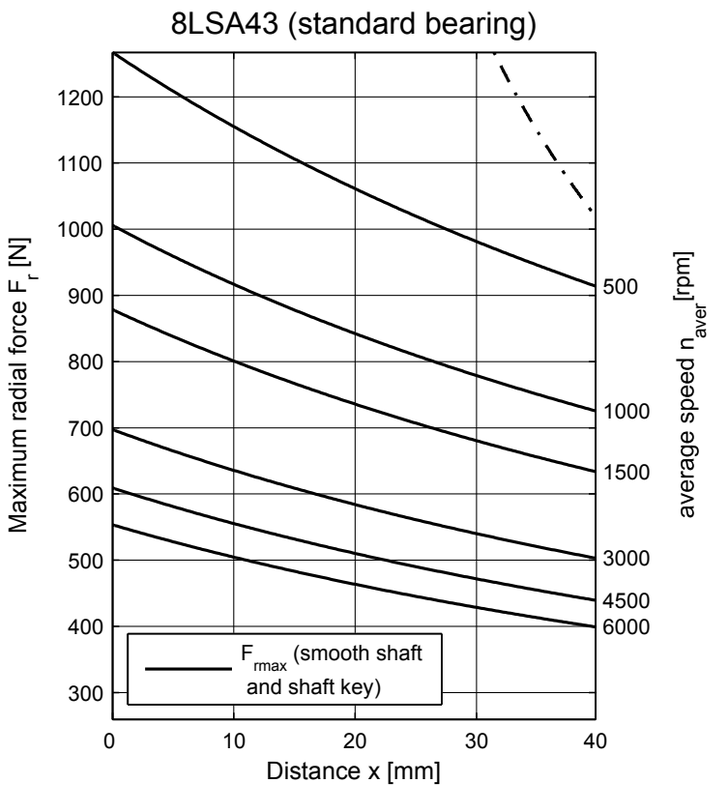
Model number	K	M	Holding brake	Heavy-duty holding brake	Reinforced A-side bearing
8LSC43.eennnffgg-3	250	117	32	37	15
8LSC44.eennnffgg-3	270	117	32	37	15
8LSC45.eennnffgg-3	294	117	32	37	15
8LSC46.eennnffgg-3	314	117	32	37	15

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

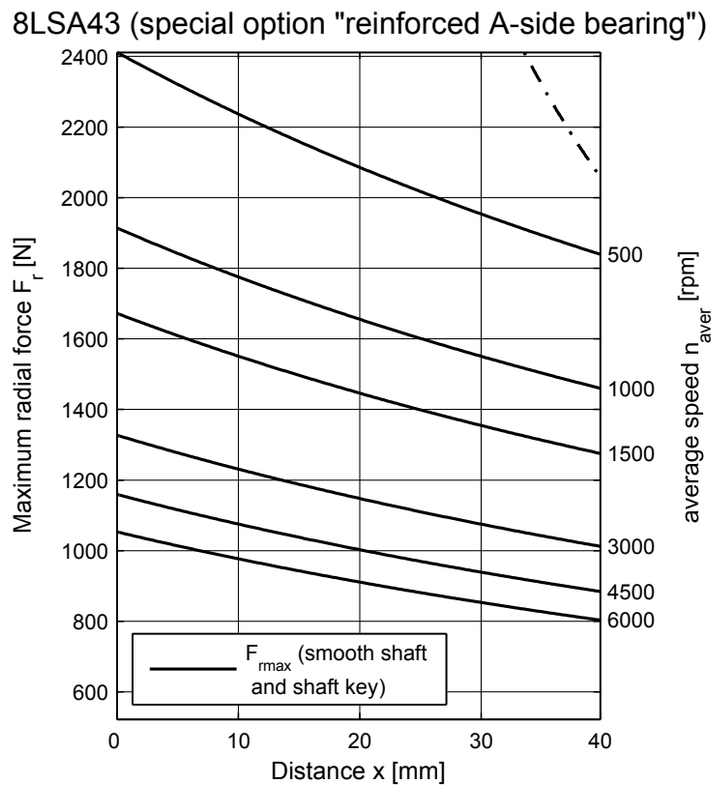
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 111 N

Special motor option "Reinforced A-side bearing"

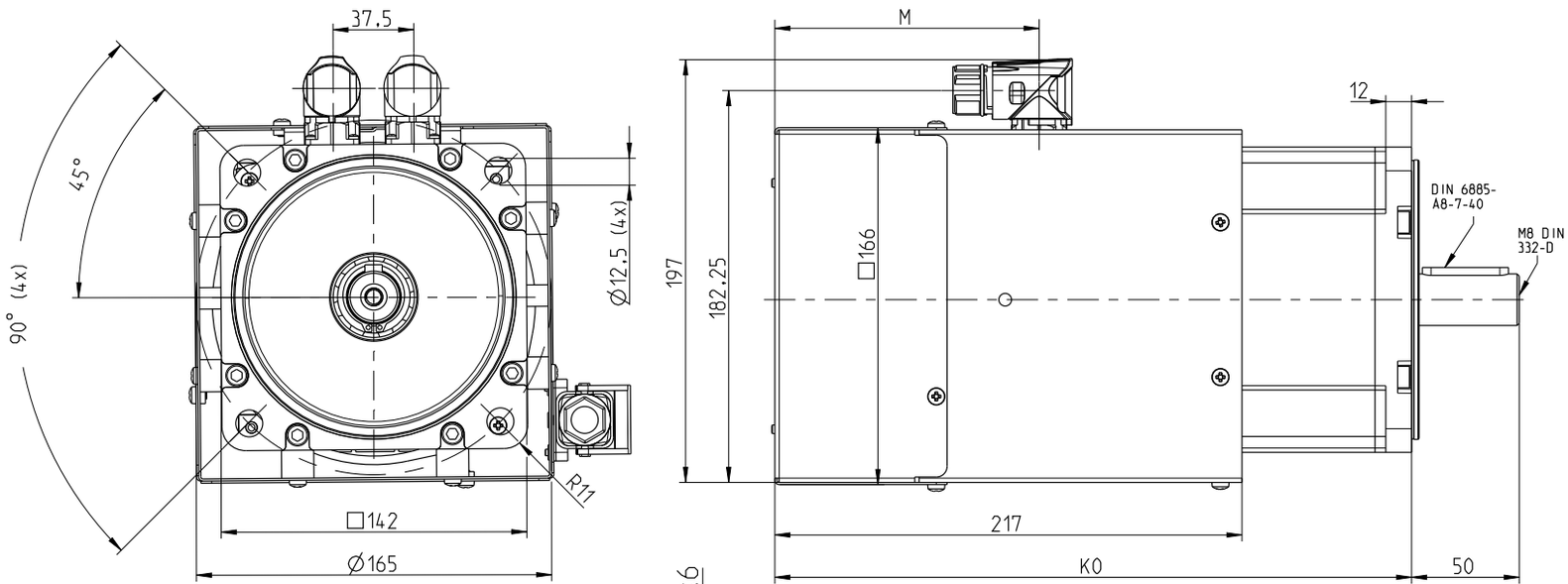


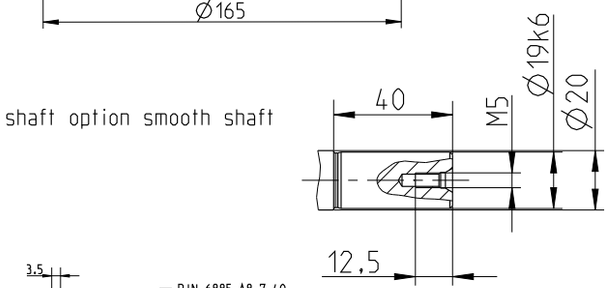
maximum allowed axial force: F_{amax} = 218 N

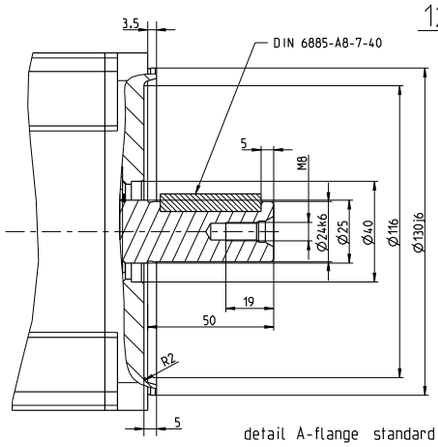
Technical data

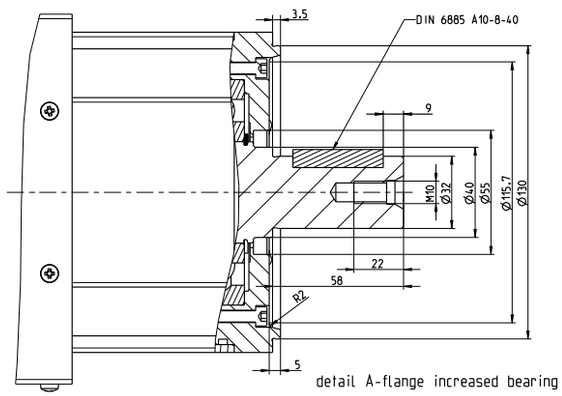
	8LSC53.ee030ffgg-3	8LSC53.ee045ffgg-3	8LSC54.ee022ffgg-3	8LSC54.ee030ffgg-3	8LSC54.ee045ffgg-3	8LSC55.ee022ffgg-3	8LSC55.ee030ffgg-3	8LSC55.ee045ffgg-3	8LSC56.ee022ffgg-3	8LSC56.ee030ffgg-3	8LSC56.ee045ffgg-3	8LSC57.ee030ffgg-3	8LSC57.ee045ffgg-3
Motor													
Nominal speed n_N [rpm]	3000	4500	2200	3000	4500	2200	3000	4500	2200	3000	4500	3000	4500
Number of pole pairs							4						
Nominal torque M_n [Nm]	5.2	5.07	10.14	10.01	9.49	15.34	15.08	12.35	18.72	18.07	16.51	22.75	19.5
Nominal power P_N [W]	1634	2389	2336	3145	4472	3534	4738	5820	4313	5677	7780	7147	9189
Nominal current I_N [A]	3.19	4.6	4.6	6.1	8.7	6.9	9.3	11.3	8.4	11.1	15.1	14	17.9
Stall torque M_0 [Nm]	5.85	5.85	11.7	11.7	11.7	16.25	16.25	16.25	20.8	20.8	20.8	26	26
Stall current I_0 [A]	3.6	5.4	5.3	7.2	10.7	7.3	10	14.9	9.4	12.8	19.1	16	23.8
Maximum torque M_{max} [Nm]	13.8	13.8	27.6	27.6	27.6	41.4	41.4	41.4	55.2	55.2	55.2	69	69
Maximum current I_{max} [A]	10.5	16.5	15.39	20.9	33	23.6	33	47.29	30.8	41.8	65.9	52.6	82.61
Maximum speed n_{max} [rpm]							9000						
Torque constant K_T [Nm/A]	1.63	1.09	2.22	1.63	1.09	2.22	1.63	1.09	2.22	1.63	1.09	1.63	1.09
Voltage constant K_E [V/1000 rpm]	98.4	66	134	98.4	66	134	98.4	66	134	98.4	66	98.4	66
Stator resistance R_{2ph} [Ω]	5.13	2.222	3.44	2.16	0.926	2.265	1.127	0.51	1.51	0.75	0.341	0.62	0.29
Stator inductance L_{2ph} [mH]	40.33	19.33	34.5	21.52	8.67	24.29	12.5	4.96	17.6	8.16	4.08	7.21	3.2
Electrical time constant t_{el} [ms]	7.9	8.7	10	10.6	10.9	10.7	11.1	9.7	11.6	10.9	12	11.6	11
Thermal time constant t_{therm} [min]	33	33	37	37	37	40	40	40	43	43	43	46	46
Moment of inertia J [kgcm^2]	3.62	3.62	6.04	6.04	6.04	8.19	8.19	8.19	10.66	10.66	10.66	13.13	13.13
Weight without brake m [kg]	8.5	8.5	10.8	10.8	10.8	12.7	12.7	12.7	15.3	15.3	15.3	16.8	16.8
Holding brake													
Holding torque of the brake M_{Br} [Nm]	15	15	15	15	15	15	15	15	32	32	32	15	15
Weight of brake [kg]	1.49	1.49	1.43	1.43	1.43	1.47	1.47	1.47	1.44	1.44	1.44	1.3	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	5.85	5.85	5.85	1.66	1.66
Recommendations													
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1090	1090	1180	1090	1180	1180	1180	1180	1320	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0110	0110	0220	0110	0110	0220	0110	0220	0220	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	4	1.5	4	4	4	4	4	4	4
Connector type							speedtec						
Connector size							1.0						

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.









EnDat / resolver feedback

Extension of K_0 and M depending on the motor option [mm]

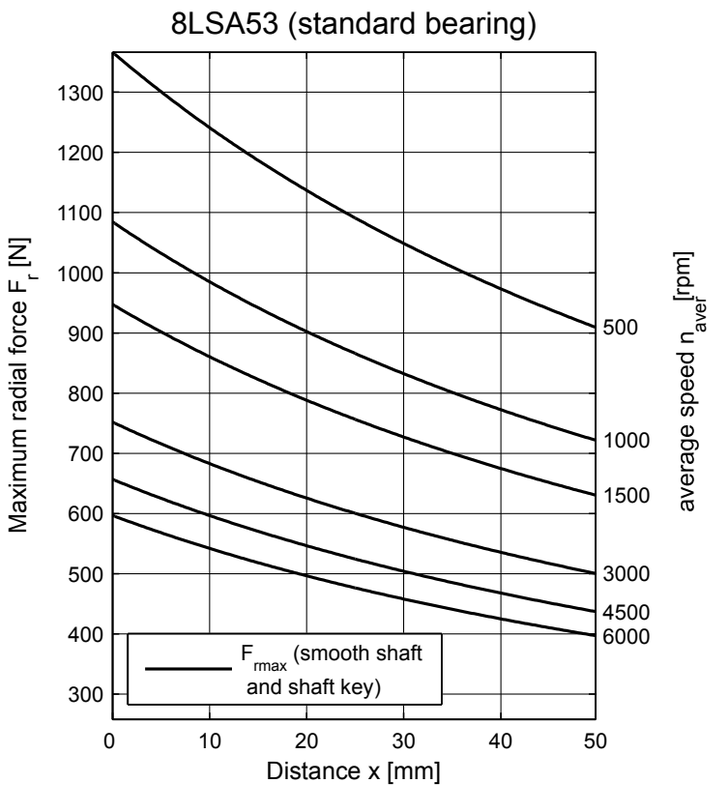
Model number	K_0	M	Holding brake	Heavy-duty holding brake	Reinforced A-side bearing
8LSC53.eennnffgg-3	246	123	35	50	15
8LSC54.eennnffgg-3	271	123	35	50	10
8LSC55.eennnffgg-3	296	123	30	45	10
8LSC56.eennnffgg-3	321	123	30	45	5
8LSC57.eennnffgg-3	346	123	25	40	5

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

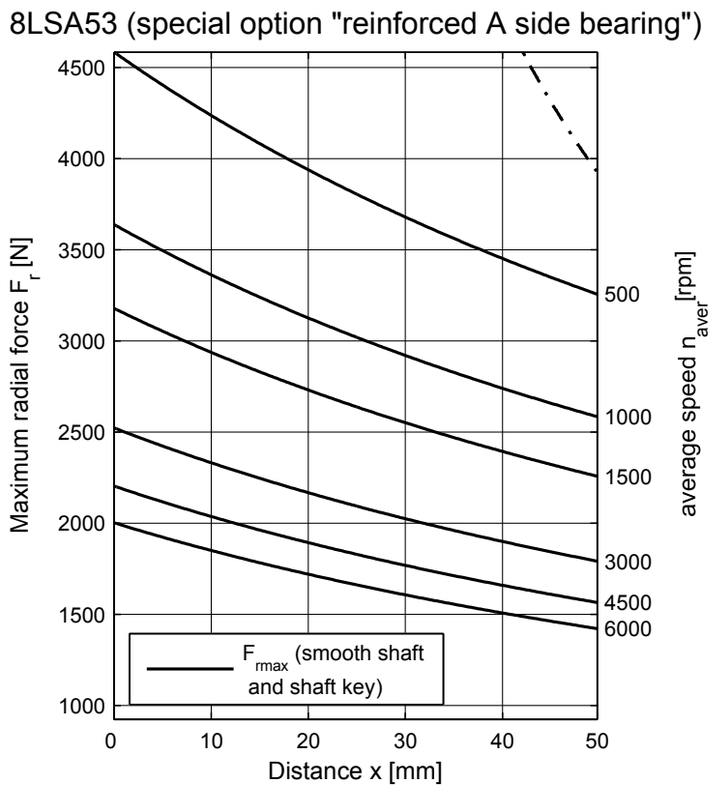
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 114 N

Special motor option "Reinforced A-side bearing"

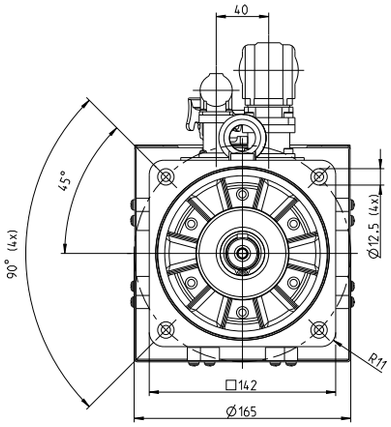


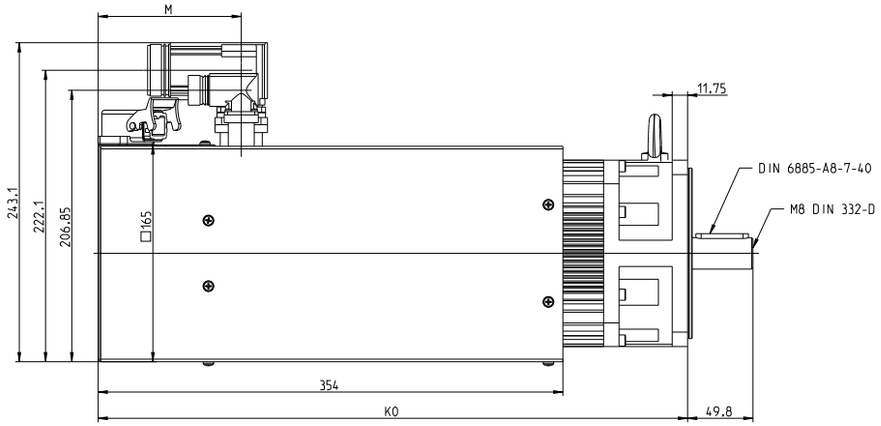
maximum allowed axial force: F_{amax} = 398 N

Technical data

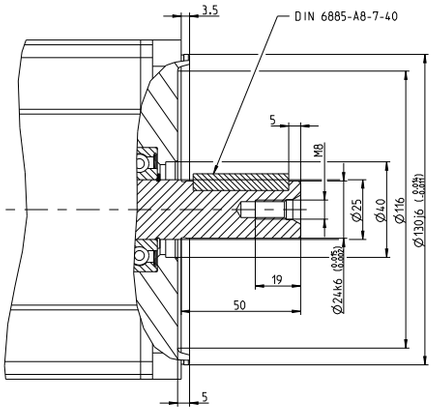
	8LSC5A.ee030ffgg-0	8LSC5A.ee045ffgg-0	8LSC5B.ee022ffgg-0	8LSC5B.ee030ffgg-0	8LSC5B.ee045ffgg-0	8LSC5C.ee022ffgg-0	8LSC5C.ee030ffgg-0	8LSC5C.ee045ffgg-0
Motor								
Nominal speed n_N [rpm]	3000	4500	2200	3000	4500	2200	3000	4500
Number of pole pairs	4							
Nominal torque M_n [Nm]	26.4	20	45.5	42	32	65	58	44
Nominal power P_N [W]	8294	9425	10482	13195	15080	14975	18221	20735
Nominal current I_N [A]	16.2	18.9	19.3	25.5	29.3	29.3	35.6	41.6
Stall torque M_0 [Nm]	31	31	50	50	50	70	70	70
Stall current I_0 [A]	19	29.3	21.7	30.4	45.8	31.6	43	66.3
Maximum torque M_{max} [Nm]	64	64	107	107	107	150	150	150
Maximum current I_{max} [A]	47.21	72.7	55.8	78.14	117.8	81.3	110.6	170.51
Maximum speed n_{max} [rpm]	9000							
Torque constant K_T [Nm/A]	1.63	1.06	2.3	1.65	1.09	2.22	1.63	1.06
Voltage constant K_E [V/1000 rpm]	98.4	63.9	139.3	99.5	66	134	98.4	63.9
Stator resistance R_{2ph} [Ω]	0.593	0.266	0.62	0.31	0.14	0.392	0.203	0.093
Stator inductance L_{2ph} [mH]	3.91	1.61	4.78	2.44	1.01	3.27	1.76	0.82
Electrical time constant t_{el} [ms]	6.6	6.1	7.7	7.9	7.2	8.3	8.7	8.8
Thermal time constant t_{therm} [min]	55	55	60	60	60	65	65	65
Moment of inertia J [kgcm^2]	12.7	12.7	20.1	20.1	20.1	27.7	27.7	27.7
Weight without brake m [kg]	23.8	23.8	33	33	33	41	41	41
Holding brake								
Holding torque of the brake M_{Br} [Nm]	15							
Weight of brake [kg]	0.9							
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1320	1320	1320	1320	1640	1640	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0220	0330	0330	0440	0660	0440	0660	0880
Cross section for B&R motor cables [mm^2]	4	4	4	4	10	10	10	0
Connector type	speedtec							
Connector size	1.0	1.5	1.0	1.5	1.5	1.5	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.





detail A-flange standard bearing 8LSC5A

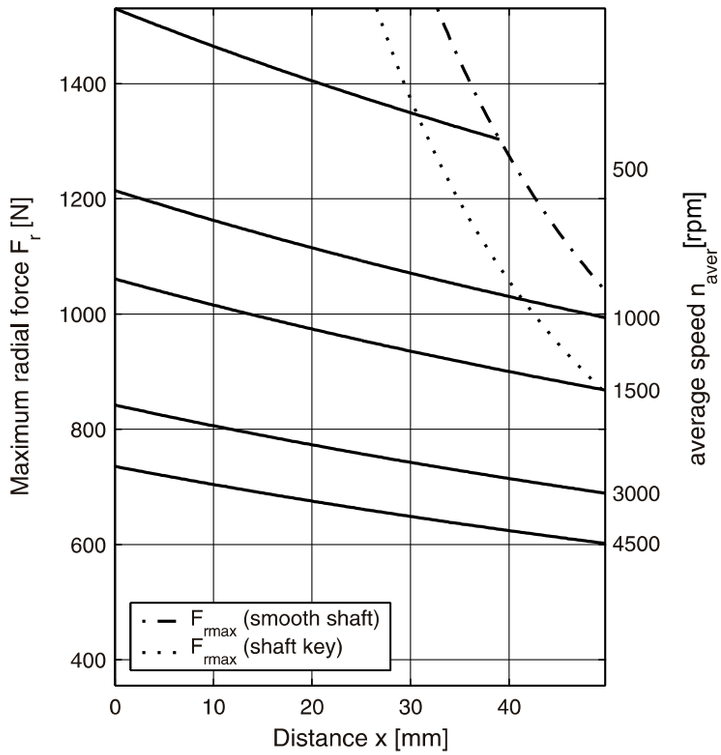


EnDat feedback / Resolver feedback			Extension of K_0 depending on motor option [mm]		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A-side bearing**
8LSC5A.eennnffgg-0	374	123	30	---	---
8LSC5B.eennnffgg-0	449	123	30	---	---
8LSC5C.eennnffgg-0	524	123	30	---	---

NOTE: Since the 8LSC5A shaft diameter is different from 8LSC5B and 8LSC5C, please request step files for detailed dimensions!

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

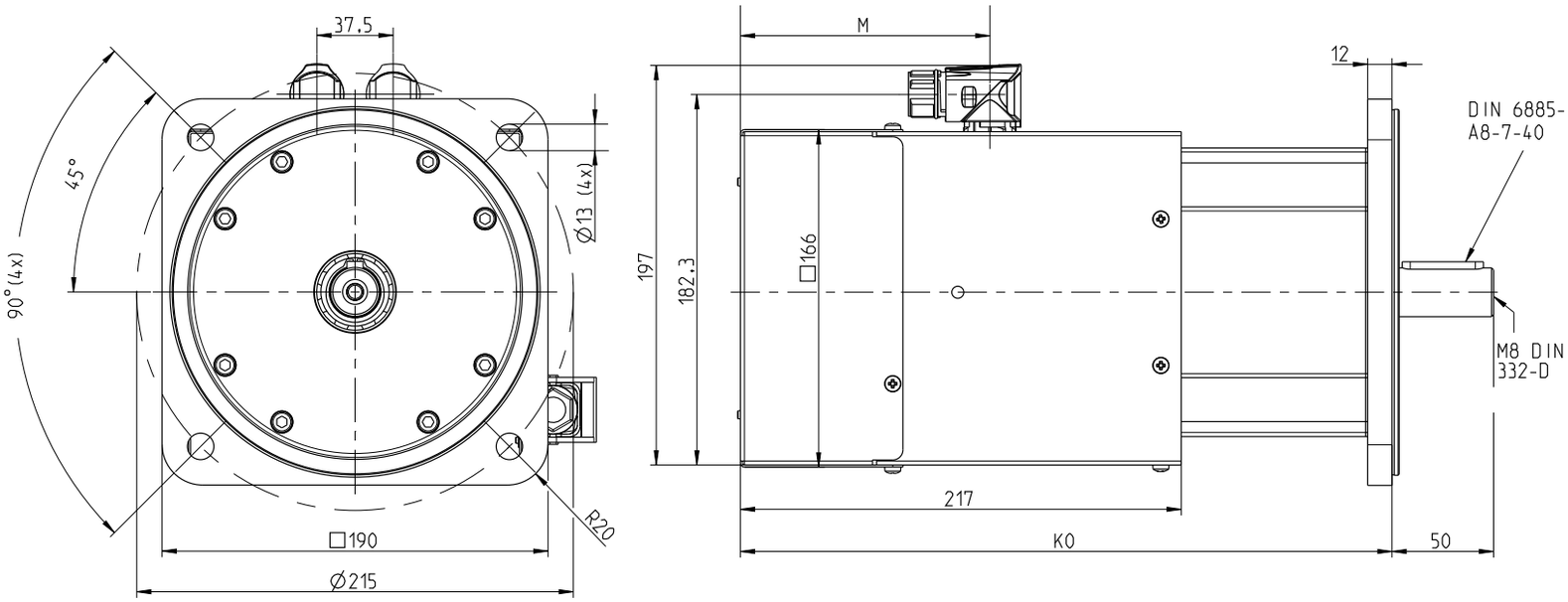


maximum allowed axial force: F_{amax} = 144 N

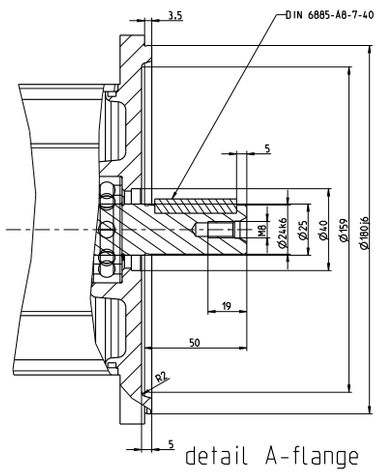
Technical data

	8LSC63.ee030ffgg-3	8LSC63.ee045ffgg-3	8LSC64.ee015ffgg-3	8LSC64.ee022ffgg-3	8LSC64.ee030ffgg-3	8LSC64.ee045ffgg-3	8LSC65.ee015ffgg-3	8LSC65.ee030ffgg-3	8LSC65.ee045ffgg-3	8LSC66.ee030ffgg-3	8LSC66.ee045ffgg-3
Motor											
Nominal speed n_N [rpm]	3000	4500	1500	2200	3000	4500	1500	3000	4500	3000	4500
Number of pole pairs						4					
Nominal torque M_n [Nm]	15.08	12.35	24.05	23.4	22.75	19.63	28.6	27.3	15.86	30.55	19.5
Nominal power P_N [W]	4738	5820	3778	5391	7147	9250	4492	8577	7474	9598	9189
Nominal current I_N [A]	9.3	11.3	7.39	10.6	14	17.99	8.8	16.8	14.5	18.8	17.9
Stall torque M_0 [Nm]	16.25	16.25	26	26	26	26	31.2	31.2	31.2	36.4	36.4
Stall current I_0 [A]	10	14.9	8	11.7	16	23.8	9.6	19.2	28.6	22.4	33.4
Maximum torque M_{max} [Nm]	46.92	46.92	78.2	78.2	78.2	78.2	97.92	97.92	97.92	114.24	114.24
Maximum current I_{max} [A]	42.5	61	33.9	49.5	67.8	106.5	44.6	90.9	130.49	103.49	152.61
Maximum speed n_{max} [rpm]						9000					
Torque constant K_T [Nm/A]	1.63	1.09	3.26	2.22	1.63	1.09	3.26	1.63	1.09	1.63	1.09
Voltage constant K_E [V/1000 rpm]	98.4	66	196.9	134	98.4	66	196.9	98.4	66	98.4	66
Stator resistance R_{2ph} [Ω]	1.127	0.51	2.541	1.13	0.62	0.285	2.016	0.484	0.2	0.382	0.19
Stator inductance L_{2ph} [mH]	12.5	5	31.64	13.17	7.21	3.21	24.98	6	2.48	4.87	2.1
Electrical time constant t_{el} [ms]	11.1	9.7	12.5	11.7	11.6	11.03	12.4	12.4	12.4	12.7	11.1
Thermal time constant t_{therm} [min]	42	42	45	45	45	45	48	48	48	52	52
Moment of inertia J [kgcm^2]	8.19	8.19	13.13	13.13	13.13	13.13	15.6	15.6	15.6	18.06	18.06
Weight without brake m [kg]	15.1	15.1	19	19	19	19	20.4	20.4	20.4	23	23
Holding brake											
Holding torque of the brake M_{Br} [Nm]						32					
Weight of brake [kg]	1.5	1.5	1.5	1.5	1.5	1.5	1.45	1.45	1.45	1.4	1.4
Moment of inertia for the brake J_{Br} [kgcm^2]						5.85					
Recommendations											
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1090	1180	1180	1320	1180	1320	1320	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0110	0220	0220	0330	0110	0220	0330	0330	0440
Cross section for B&R motor cables [mm^2]	4	4	1.5	4	4	4	4	4	4	4	4
Connector type						speedtec					
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5

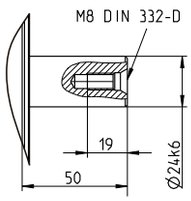
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

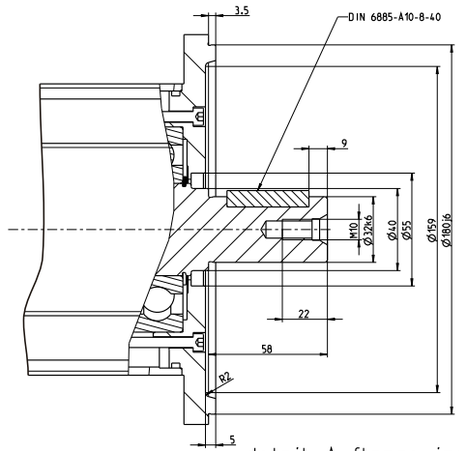


shaft option smooth shaft



detail A-flange standard bearing





detail A-flange increased bearing

EnDat / resolver feedback

Extension of K_0 and M depending on the motor option [mm]

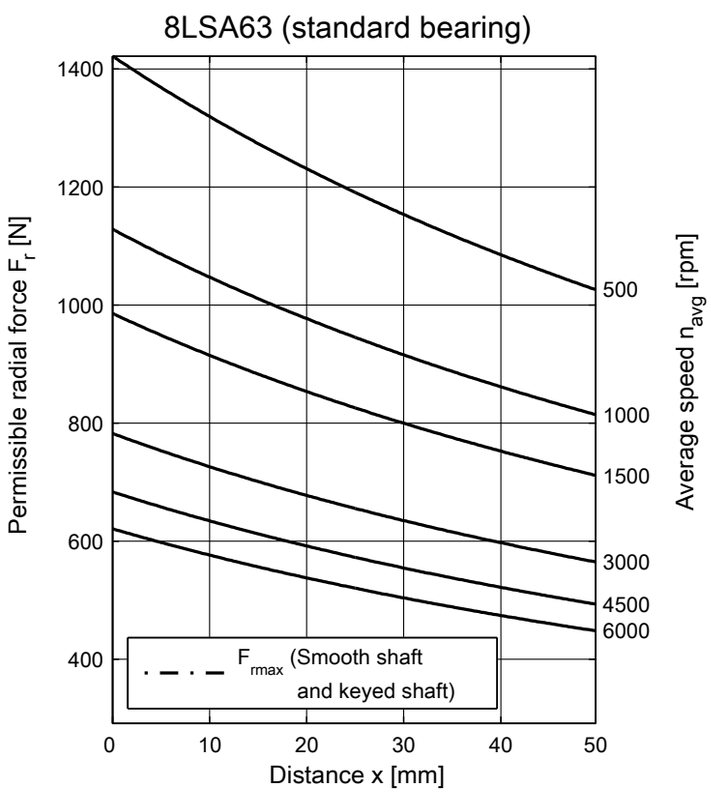
Model number	K_0	M	Holding brake	Heavy-duty holding brake	Reinforced A-side bearing
8LSC73.eennnffgg-3	318	137.8	37	54	10
8LSC73.ee045ffgg-3, power connector size 1.5			**On request**		
8LSC74.eennnffgg-3	340.5	137.8	37	54	10
8LSC74.ee045ffgg-3, power connector size 1.5	356.5	141.8	37	54	10
8LSC75.eennnffgg-3	363.0	137.8	37	54	10
8LSC75.ee045ffgg-3, power connector size 1.5			**On request**		

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

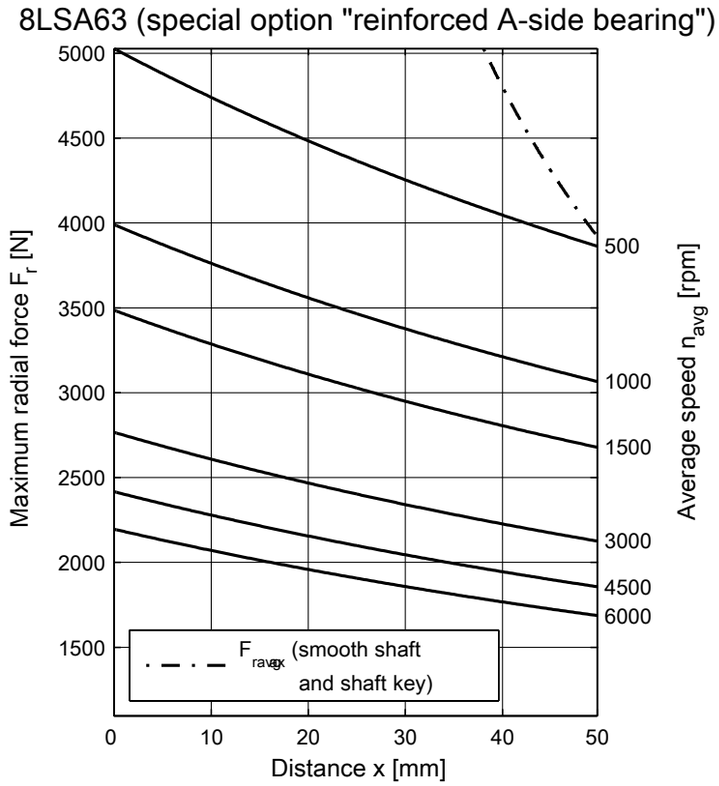
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



Maximum radial force: F_{amax} = 125 N

Special motor option "Reinforced A-side bearing"

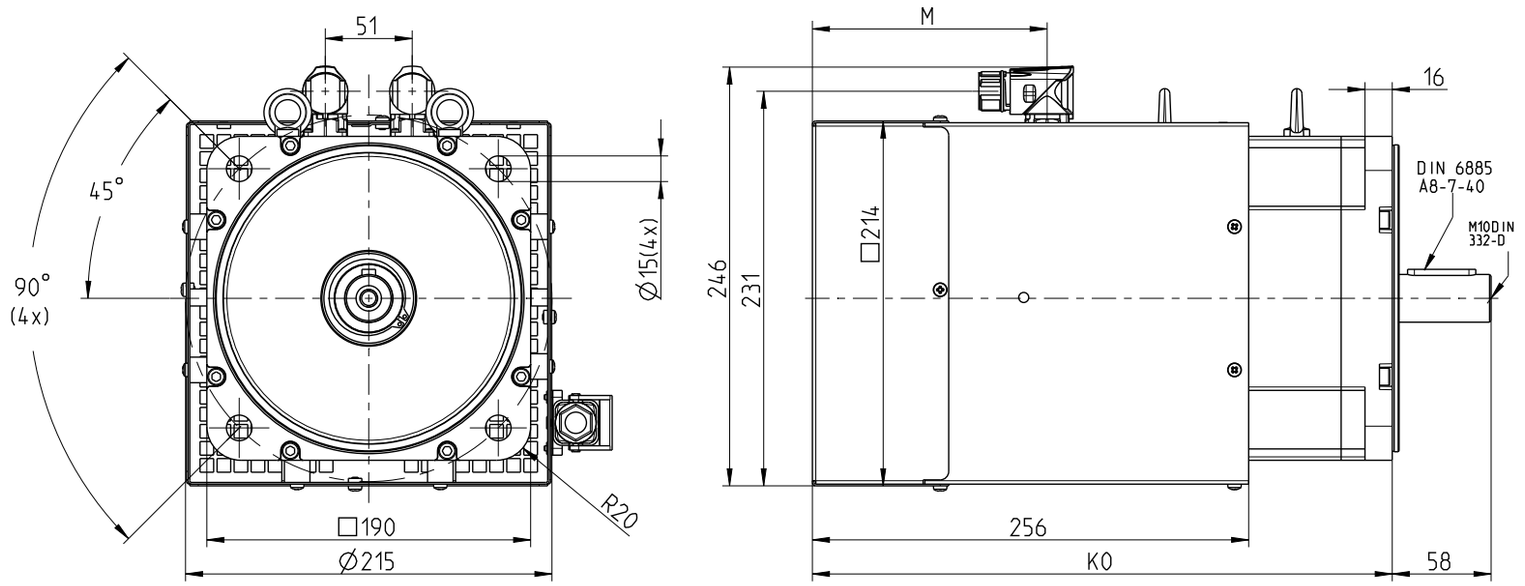


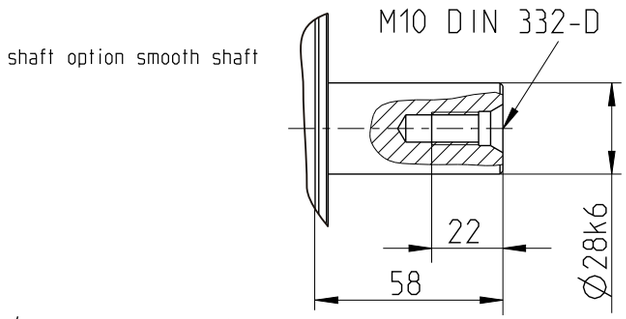
Maximum allowed axial force F_{amax} = 457 N

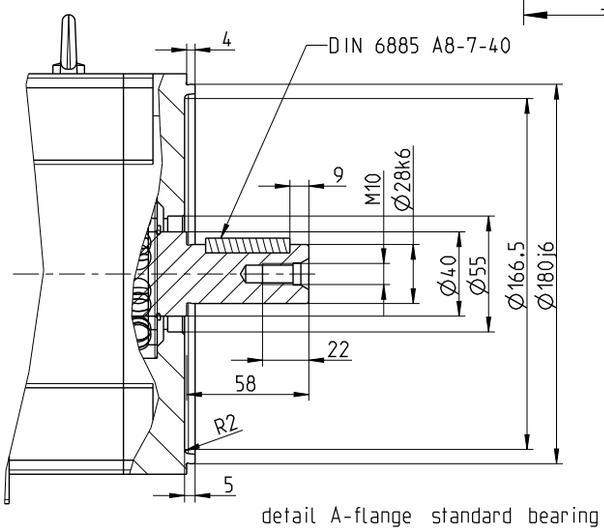
Technical data

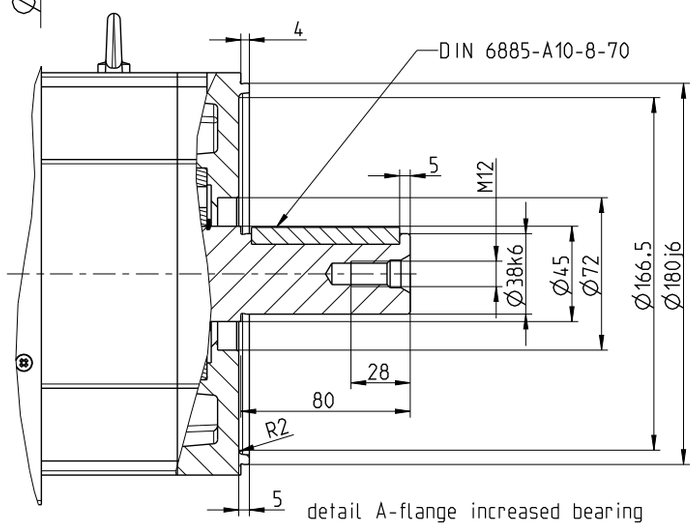
	8LSC73.ee022ffgg-3	8LSC73.ee030ffgg-3	8LSC73.ee045ffgg-3	8LSC74.ee022ffgg-3	8LSC74.ee030ffgg-3	8LSC74.ee045ffgg-3	8LSC75.ee030ffgg-3	8LSC76.ee015ffgg-3	8LSC76.ee030ffgg-3	8LSC77.ee030ffgg-3	8LSC78.ee030ffgg-3
Motor											
Nominal speed n_N [rpm]	2200	3000	4500	2200	3000	4500	3000	1500	3000	3000	3000
Number of pole pairs						5					
Nominal torque M_n [Nm]	28.5	26.8	21.5	36.8	34	24.6	41	66	47.3	53.6	59
Nominal power P_N [W]	6566	8419	10132	8478	10681	11592	12881	10367	14860	16839	18535
Nominal current I_N [A]	12.838	16.442	19.725	16.577	20.859	22.569	25.153	20.25	29	32.9	36.2
Stall torque M_0 [Nm]	33.8	33.8	33	43	43	43	48.9	75	75	91.2	104
Stall current I_0 [A]	15.225	20.736	30	19.369	26.38	39.45	30	23	46	56	63.8
Maximum torque M_{max} [Nm]	107	107	107	150	150	150	187	230	230	270	330
Maximum current I_{max} [A]	71	96.54	144	99	135.33	202	168.71	92.5	185	212	260
Maximum speed n_{max} [rpm]	6000	6000	6000	6000	6000	6000	4500	4500	4500	4500	4500
Torque constant K_T [Nm/A]	2.22	1.63	1.09	2.22	1.63	1.09	1.63	3.26	1.63	1.63	1.63
Voltage constant K_E [V/1000 rpm]	134.04	98.44	65.97	134.04	98.44	65.97	98.44	196.87	98.43	98.43	98.43
Stator resistance R_{2ph} [Ω]	0.72	0.42	0.19	0.54	0.28	0.13	0.21	0.57	0.15	0.11	0.08
Stator inductance L_{2ph} [mH]	12.3	6.5	2.9	9	4.9	2.2	3.9	11.5	2.7	2.2	1.8
Electrical time constant t_{el} [ms]	17.08	15.476	15.263	16.667	17.5	16.923	18.571	17.85	18	18.2	22.5
Thermal time constant t_{therm} [min]	37	37	37	41	41	41	46	56	56	65	74
Moment of inertia J [kgcm^2]	46	46	46	60	60	60	74	102	102	130	158
Weight without brake m [kg]	20	20	20	24	24	24	28	36	36	44	52
Holding brake											
Holding torque of the brake M_{Br} [Nm]						32					
Weight of brake [kg]						1.8					
Moment of inertia for the brake J_{Br} [kgcm^2]						5.85					
Recommendations											
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1320	1320	1320	1640	1320	1320	1640	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0220	0330	0330	0220	0330	0440	0330	0330	0660	0660	0880
Cross section for B&R motor cables [mm^2]	4	4	4	4	4	4	4	4	10	0	0
Connector type						speedtec					
Connector size	1.0	1.0	1.5	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.









EnDat / resolver feedback

Extension of K_0 and M depending on the motor option [mm]

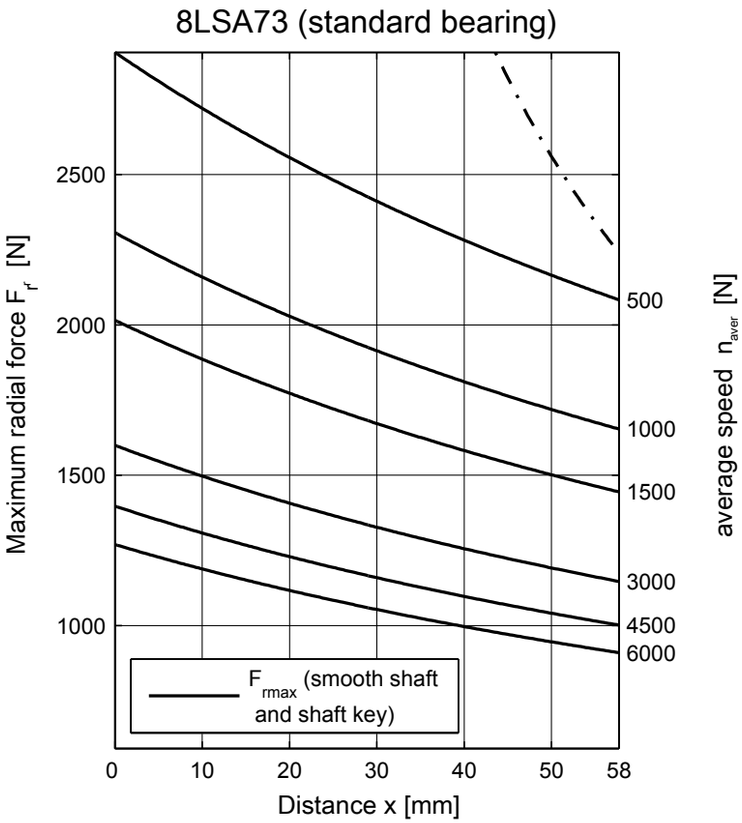
Model number	K_0	M	Holding brake	Heavy-duty holding brake	Reinforced A-side bearing
8LSC73.eennnffgg-3	318	137.8	37	54	10
8LSC73.ee045ffgg-3, power connector size 1.5			**On request**		
8LSC74.eennnffgg-3	340.5	137.8	37	54	10
8LSC74.ee045ffgg-3, power connector size 1.5	356.5	141.8	37	54	10
8LSC75.eennnffgg-3	363.0	137.8	37	54	10
8LSC75.ee045ffgg-3, power connector size 1.5			**On request**		

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

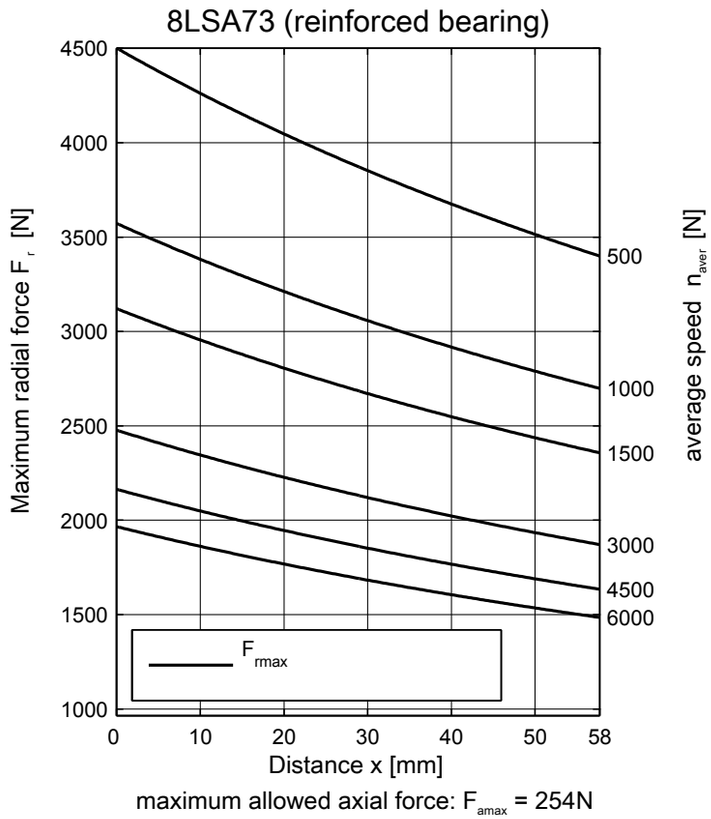
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing

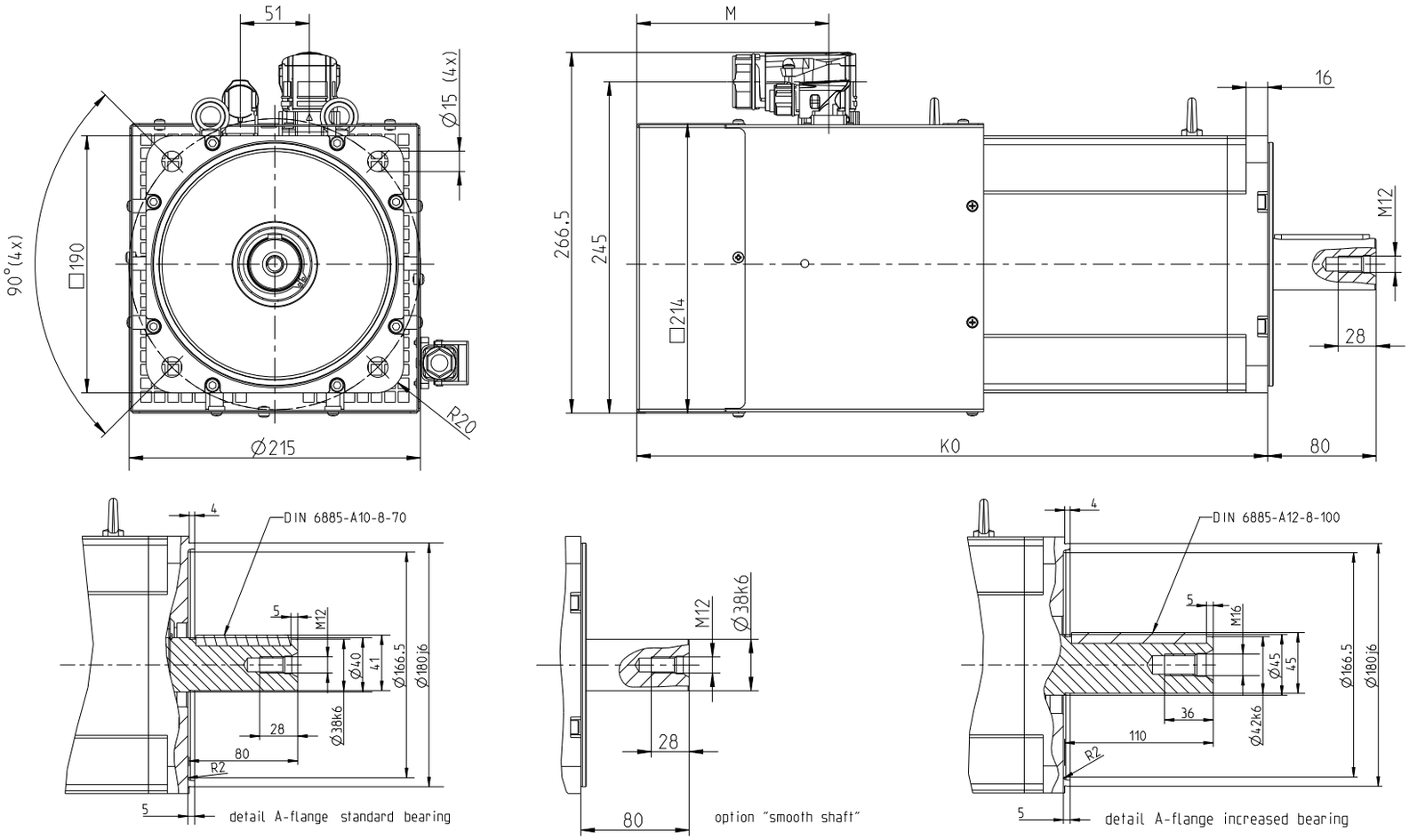


maximum allowed axial force: F_{amax} = 254N

Special motor option "Reinforced A-side bearing"



maximum allowed axial force: F_{amax} = 254N



EnDat / resolver feedback

Extension of K_0 and M depending on the motor option [mm]

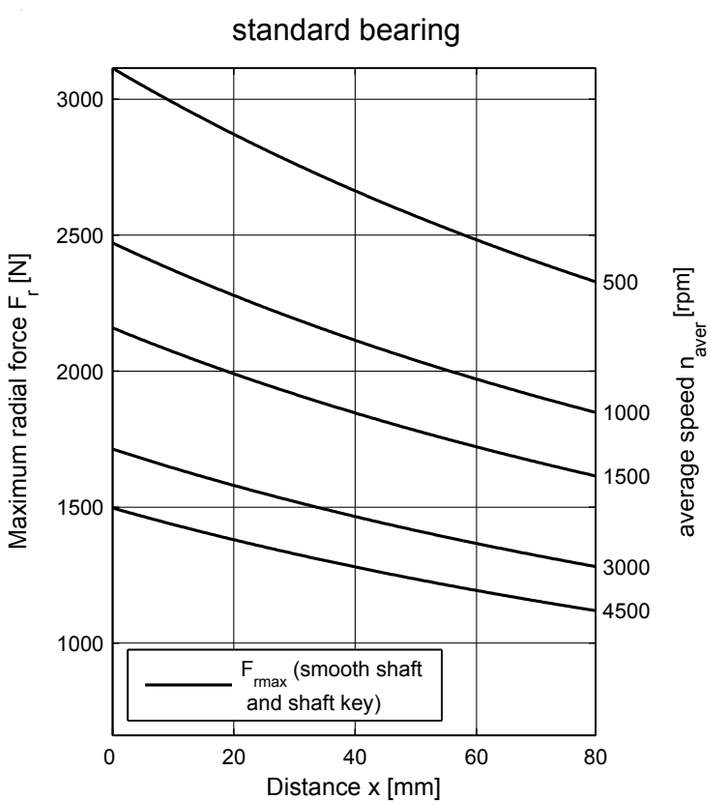
Model number	K_0	M	Holding brake	Heavy-duty holding brake	Reinforced A-side bearing
8LSC76.eennnffgg-3	421	142	37	54	10
8LSC77.eennnffgg-3	466	142	37	54	10
8LSC78.eennnffgg-3	511	142	37	54	10

Whether or not an oil seal is used has no effect on the length of the motor.

Maximum shaft load

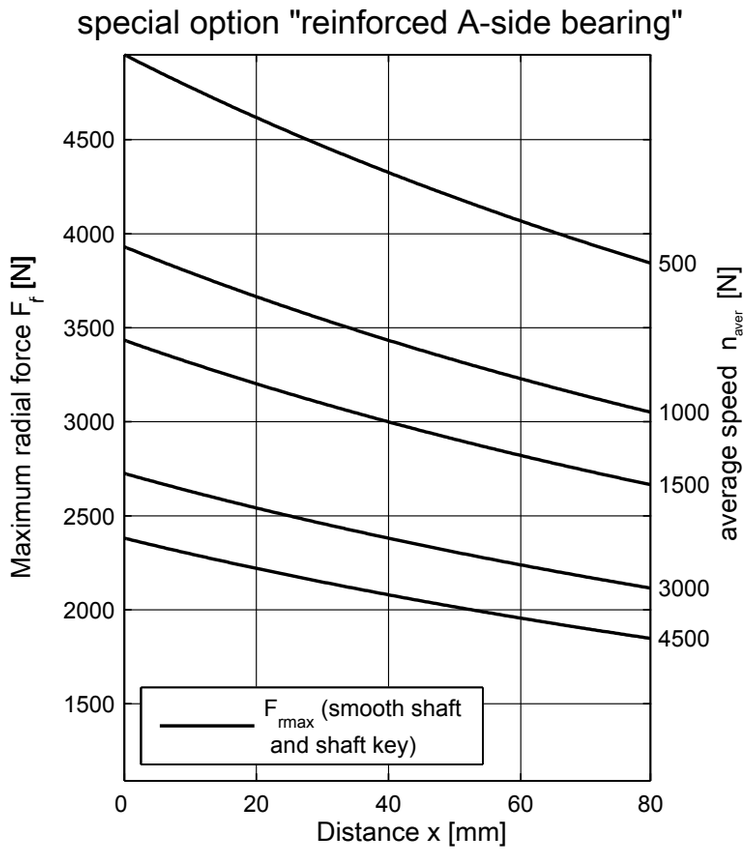
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



maximum allowed axial force: F_{amax} = 279 N

Special motor option "Reinforced A-side bearing"



maximum allowed axial force: F_{amax} = 453N

Technical data

	8LSC83.ee022ffgg-3	8LSC83.ee030ffgg-3	8LSC84.ee030ffgg-3	8LSC85.ee015ffgg-3	8LSC85.ee020ffgg-3	8LSC86.ee015ffgg-3	8LSC86.ee020ffgg-3
Motor							
Nominal speed n_N [rpm]	2200	3000	3000	1500	2000	1500	2000
Number of pole pairs				3			
Nominal torque M_n [Nm]	40.3	35.1	62.92	100.1	93.6	126.1	110.5
Nominal power P_N [W]	9284	11027	19767	15724	19604	19808	23143
Nominal current I_N [A]	18.2	21.5	38.6	30.7	38.2	38.7	45.1
Stall torque M_0 [Nm]	52	52	89.7	122.2	122.2	149.5	149.5
Stall current I_0 [A]	23.5	31.9	55	37.5	49.9	45.9	61
Maximum torque M_{max} [Nm]	120	120	204	280	280	345	345
Maximum current I_{max} [A]	72.6	102	171	113	157	120	182
Maximum speed n_{max} [rpm]				3600			
Torque constant K_T [Nm/A]	2.22	1.63	1.63	3.26	2.45	3.26	2.45
Voltage constant K_E [V/1000 rpm]	134.04	98.44	98.44	196.87	147.65	196.87	147.65
Stator resistance R_{2ph} [Ω]	0.45	0.26	0.12	0.328	0.168	0.28	0.13
Stator inductance L_{2ph} [mH]	10.5	6.1	3.9	9.44	4.85	8.8	3.9
Electrical time constant t_{el} [ms]	23.3	23.5	32.5	28.5	28.9	31.4	30
Thermal time constant t_{therm} [min]	50	50	65	80	80	90	90
Moment of inertia J [kgcm^2]	65	65	114	150	150	192	192
Weight without brake m [kg]	47.7	47.7	65.7	80.2	80.2	93.7	93.7
Holding brake							
Holding torque of the brake M_{Br} [Nm]				130			
Weight of brake [kg]				9			
Moment of inertia for the brake J_{Br} [kgcm^2]				53			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	1640	1640	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0440	0660	0440	0660	0660	0880
Cross section for B&R motor cables [mm^2]	4	10	10	10	10	10	0
Connector type				speedtec			
Connector size				1.5			

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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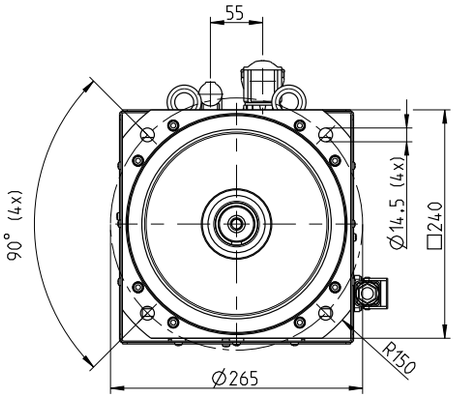
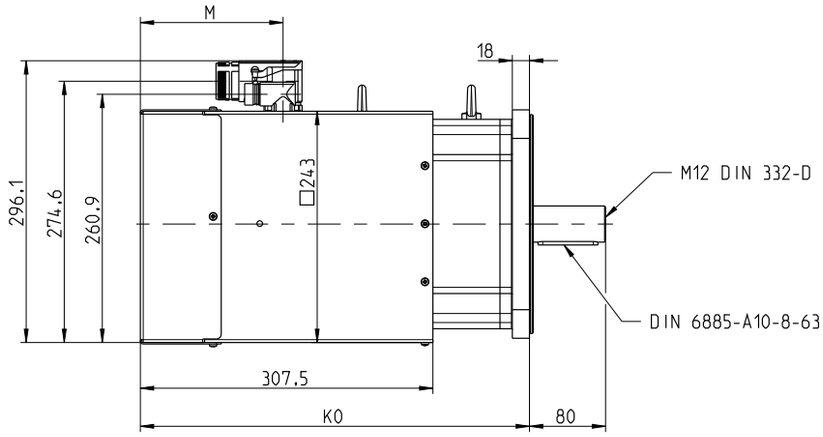
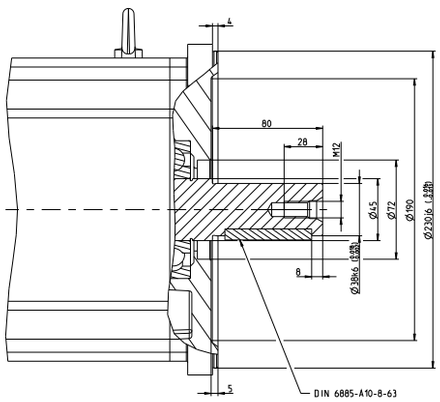
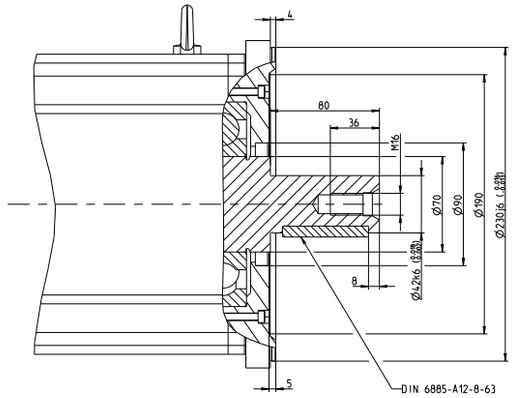






detail A-flange standard bearing



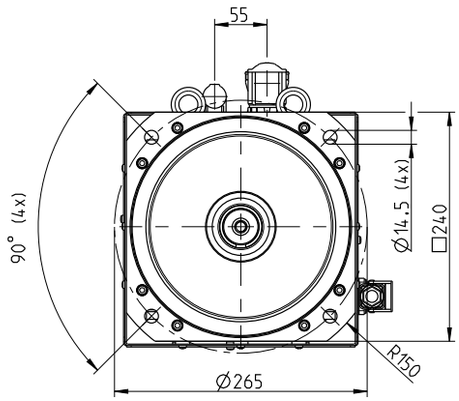
detail A-flange increased bearing

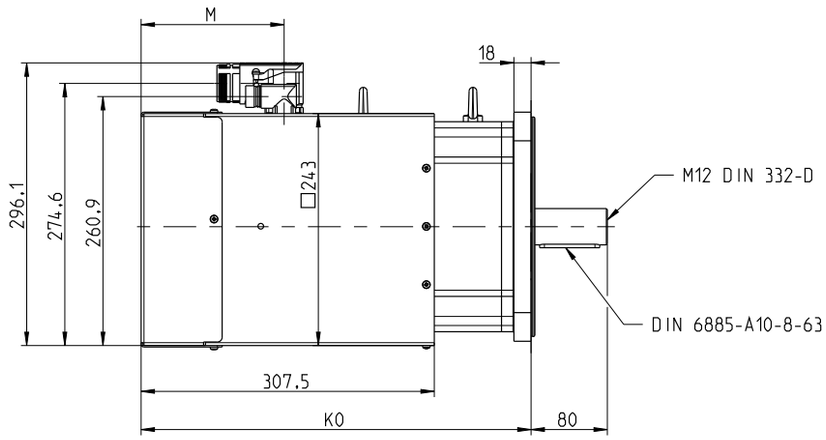
EnDat feedback / Resolver feedback

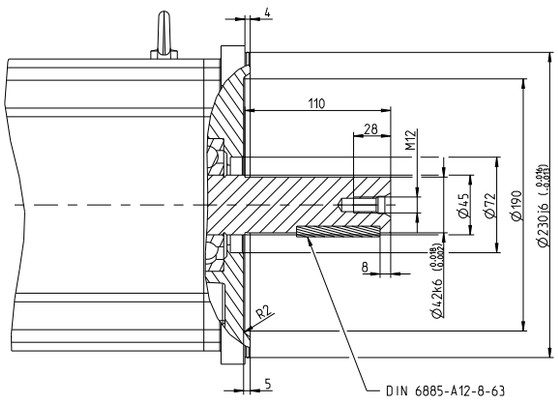
Extension of K_0 depending on motor option [mm]

Model number	K_0	M	Holding brake[1)]	Oil seal	Reinforced A-side bearing
8LSC83.eennnffgg-3	409	150	50	---	16.5
8LSC84.eennnffgg-3	489	150	50	---	16.5

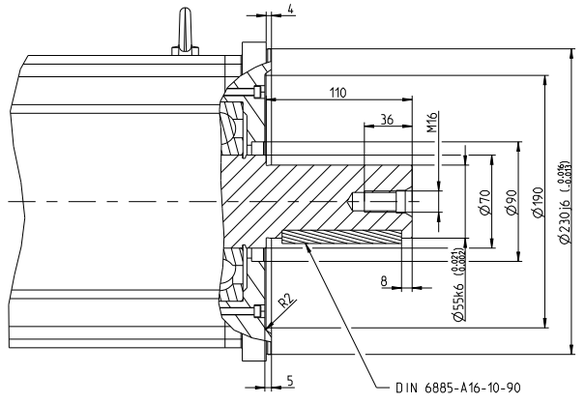
1) The motor option "holding brake" cannot be ordered in combination with special motor option "Reinforced A-side bearing".







detail A-flange standard bearing



detail A-flange increased bearing

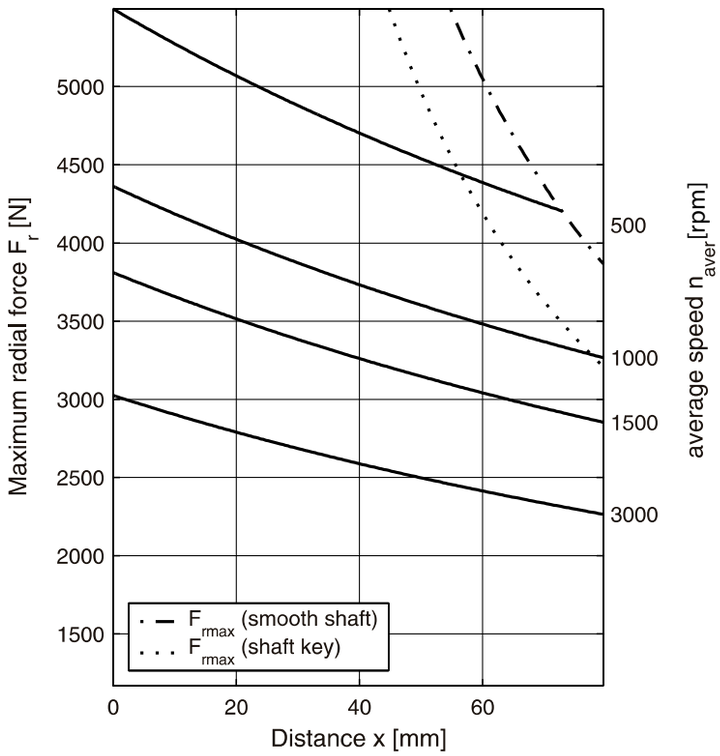
EnDat feedback / Resolver feedback			Extension of K_0 depending on motor option [mm]		
Model number	**K_0**	**M**	**Holding brake[1)]**	**Oil seal**	**Reinforced A-side bearing**
8LSC85.eennnffgg-3	549	150	50	---	16.5
8LSC86.eennnffgg-3	609	150	50	---	16.5

1) The motor option "holding brake" cannot be ordered in combination with special motor option "Reinforced A-side bearing".

Maximum shaft load

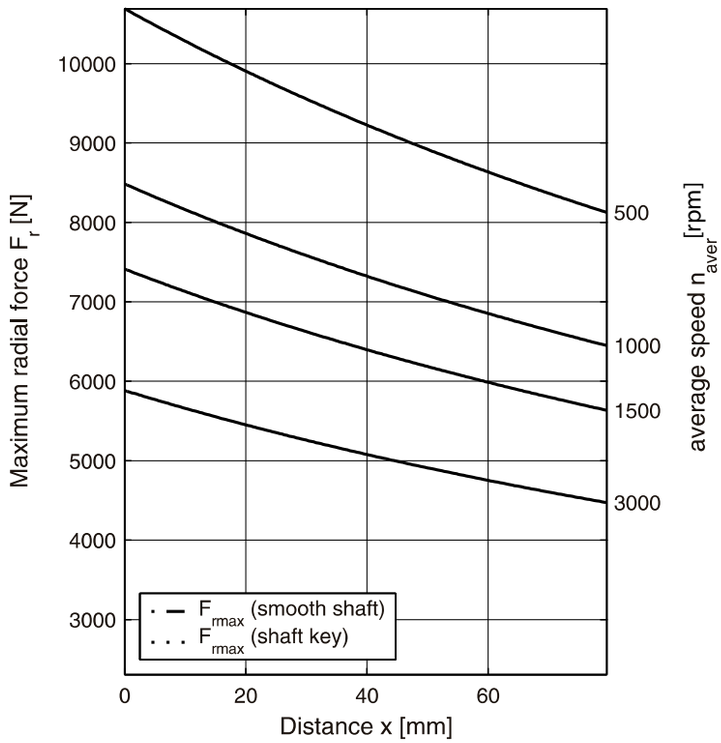
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing

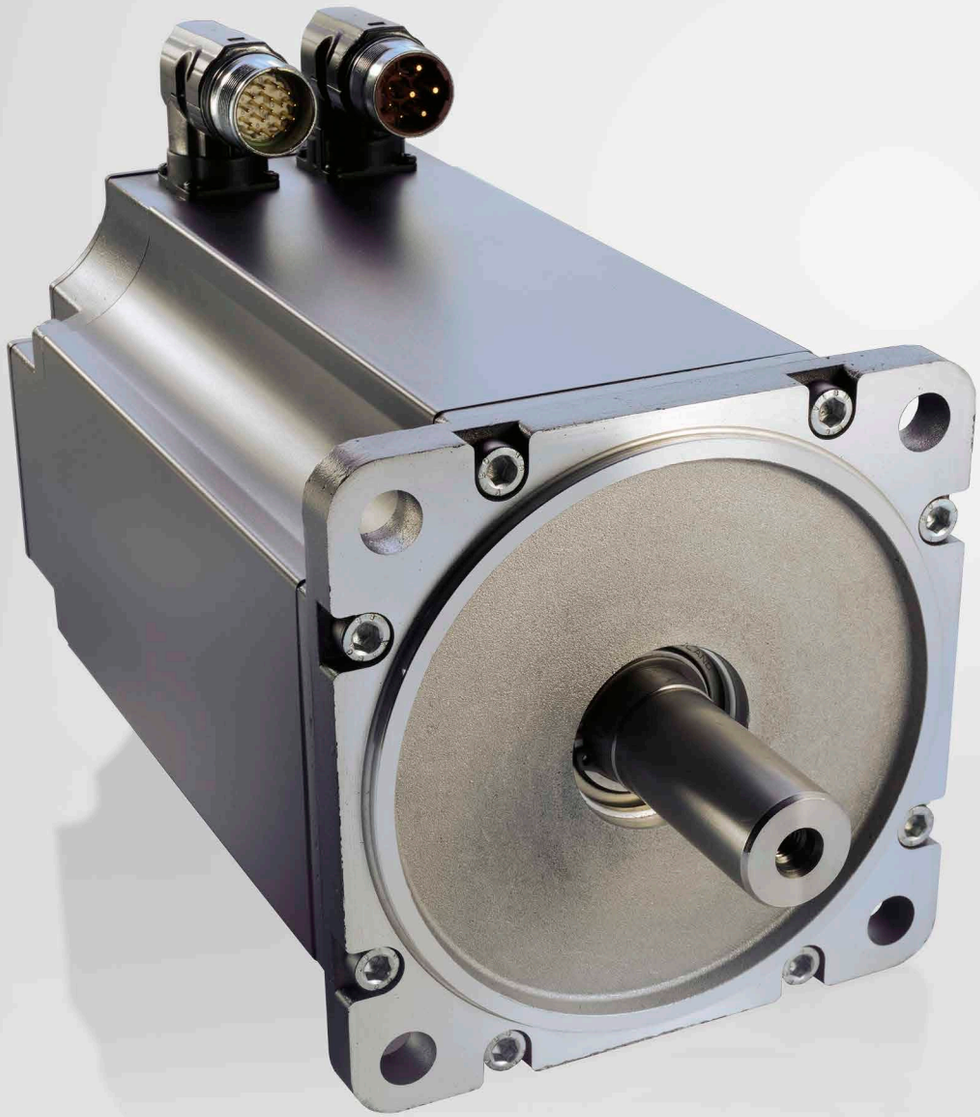


maximum allowed axial force: F_{amax} = 492 N

Special motor option "Reinforced A-side bearing"



maximum allowed axial force: F_{amax} = 966 N



8LSN three-phase synchronous motors

Motors with increased mass moment of inertia

8LSN three-phase synchronous motors have been specially developed for use in applications where a high mass moment of inertia is required, and they impressively round off the B&R motion control product range without compromises regarding size and positioning precision.

Table of contents

System features

8LSN three-phase synchronous motors

B&R's 8LSN three-phase synchronous motors have been specially developed for use in applications where a high mass moment of inertia is required. They are now being used to produce consumer goods and products in the plastic, packaging, metal, food and beverage industries and then palletize them with material handling systems. To have a complete solution from a single source, not only do you need the right components, you need them tailored to the application at hand. The broad selection of 8LSN high-inertia, three-phase synchronous motors makes it easy to satisfy fundamental requirements such as streamlined parts inventory, easy service and minimized footprint.

An optimum selection of power transmission technology is the perfect way to round off a successful machine design. To help you get there, B&R's specialists at offices all around the world are there to share their expertise in the area of mechatronics. B&R automation components: where mechanics, electronics, technology and innovation converge with optimum efficiency.

Feedback systems specified to meet your needs

8LSN three-phase synchronous motors are available with a selection of encoder systems. As standard, they come equipped with Heidenhain EnDat encoders. Depending on the needs of the application, customers can select between normal and high-resolution encoders. Both types are also available as multiturn encoders. They allow operation without requiring homing procedures or additional measurement systems on the workpiece. The absolute encoder functions without a battery and is therefore absolutely maintenance-free. For machines with lower precision and speed requirements, the 8LSN three-phase synchronous motors are also available with resolvers.

Connection type

The uniform connection technology, the pre-assembled cables and the embedded parameter chip allow "plug and play" operation of the power transmission system. The angled connectors can be swiveled, which provides the maximum amount of flexibility during cabling.

Smooth surface

The special surface design of the 8LSN three-phase synchronous motors allows them to be used in food and beverage applications. Depressions where liquid can collect were deliberately avoided.

Tailored to the application

B&R has successfully implemented many projects where the power transmission system was specially adapted to the requirements of the application. One example is the direct attachment of a toothed belt disc to a motor shaft. The use of bearings that withstand the high radial forces required by the construction allows the motor and timing belt to be easily installed. High-alloy steel is used to keep the shaft diameter small for trouble free mounting of small belt disks (in spite of heavy loads).

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Advantages of B&R servo motors for your application:

- Compact sizes result in low weight and optimal power density
- Easier construction
- High inertia
- Fast axes thanks to impressive dynamic properties
- Universal application thanks to overload capability
- Good controllability thanks to optimized torque rippling
- Extremely easy to service
- Low costs

Cooling / Construction types

8LSN three-phase synchronous motors are self-cooling and have a long, slim design. The motors must be installed on the cooling surface (flange).

Sizes

8LSN three-phase synchronous motors are available in two different sizes (4, 5). They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Overview

Cooling type	Available sizes	
	4	**5**
A	Yes	Yes

Lengths

8LT three-phase synchronous motors are available in up to 5 different lengths. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number.

Overview

Length	Available sizes	
	4	**5**
3	Yes	-
4	Yes	Yes
5	Yes	Yes
6	Yes	Yes
7	-	Yes
8	-	Yes

Motor encoder systems

8LSN three-phase synchronous motors are available with EnDat encoders as well as resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Analog and digital transfer
The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

For the advanced, fully digital EnDat 2.2 protocol, the positions are generated directly in the encoder and communicated serially with the drive system. This method is very robust against disturbances and is even certified for safety applications.

Safety-related position measurement systems
In machine and system manufacturing, the topic of safety is becoming more and more important. This is mirrored in legislation and stricter safety criteria in national and international standards. Most importantly, stricter requirements serve to protect personnel, but they also increasingly serve to protect property and the environment. The goal of functional safety is to minimize or eliminate dangerous situations that can occur in machines and systems either with or without operational errors. This is generally achieved by implementing redundant systems. Moving axes in safety-oriented applications require position information in order to be able to carry out their corresponding safety functions. Different system configurations can be implemented to get independent position values. One possibility is using two measuring instruments per axis. To keep costs down, the aim is often to create a solution with only one position measuring instrument. Until now, analog measuring instruments with sine/cosine signals were used for this purpose. The encoder manufacturer Heidenhain – as the first manufacturer with the purely serial EnDat 2.2 protocol for safety position measurement systems – offers a serial single-encoder solution in accordance with IEC 61 508 SIL2. All the advantages of serial data transfer – such as cost optimization, diagnostics possibilities, automatic commissioning and high-speed generation of position values – can now benefit safety applications as well.
100% inspection during production and additional measures during final testing ensure errors have not occurred related to shaft and coupling connections on rotary encoders when using motors with S encoders (in accordance with EN ISO 13849-2).
There are also a number of safety functions that are already possible with D encoders.
Information regarding the area of application and the procedure for setting up various safety functions can be found in the "ACOPOSmulti SafeMOTION" user's manual. (Model number: MAACPM-SAFEMC-GER ACOPOSmulti SafeMOTION or in the Downloads section of our website)

EnDat 2.1 and EnDat 2.2 encoders - Technical data

Inductive encoders

Encoder type / Order code	EA	EB
Operating principle	Inductive	Inductive
EnDat protocol	2.1	2.1
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	32	32
Resolution [bits single-turn / bits multi-turn]	19/0	19/12
Precision ["]	180	180
Switching frequency ≥ [kHz]	6	6
Vibration during operation - Stator Max [m/s2]	200	200
Vibration during operation - Rotor max [m/s2]	200	200
Shock during operation max [m/s^2]	2000	2000
Manufacturer's product ID	ECI 1319	EQI 1331
Manufacturer's website	www.heidenhain.de	

Optical encoders

Encoder type / Order code	E0	E1	D0	D1	S0	S1
Operating principle	Optical	Optical	Optical	Optical	Optical	Optical
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	512	512	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder
Resolution [bits single-turn / bits multi-turn]	13/0	13/12	25/0	25/12	25/0	25/12
Precision ["]	60	60	20	20	20	20
Switching frequency ≥ [kHz]	130	130	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder
Vibration during operation - Stator Max [m/s2]	300	300	300	300	300	300
Vibration during operation - Rotor max [m/s2]	300	300	300	300	300	300
Shock during operation max [m/s^2]	2000	2000	2000	2000	2000	2000
Manufacturer's product ID	ECN 1313	EQN 1325	ECN 1325 FS	EQN 1135 FS	ECN 1325 FS	EQN 1135 FS
Manufacturer's website	www.heidenhain.de					

Resolvers

BRX resolvers are used in the servo motors. These resolvers are fed with a single sinusoidal signal (reference signal) and return two sinusoidal signals. The amplitude of these signals change with the angular position (sine or cosine form).

Name	Order code (ee)
	R0
Precision	10 angular minutes
Vibration during operation 10 < f ≤ 500 Hz	≤196 m/s²
Shock during operation Duration 11 ms	≤981 m/s²

Motor options

8LSN three-phase synchronous motors are available

- With various nominal speeds
- With or without an oil seal
- With or without a holding brake
- With a smooth or keyed shaft
- With two different connection directions

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). This code represents the nominal speed divided by 100. The respective combination of other motor options is listed as part of the model number in the form of a 2-digit code (ff).

Nominal speed

8LSN three-phase synchronous motors are available with up to five different nominal speeds depending on the size and length.

Cooling / Construction type N - Overview

Size	Available nominal speeds n_n[rpm]																					
	2000				2200		3000				4500								6000			
4	-	-	-	-	-	-	Yes	Yes	Yes	Yes	-	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	-	-	-	-
Length	4	5	6	7	7	8	3	4	5	6	7	8	3	4	5	6	7	8	3	4	5	6

Holding brake

All 8LSN three-phase synchronous motors can be delivered with a holding brake. It is installed directly behind the A-side flange on the motor and is used to hold the motor shaft when no power is applied to the servo motor.

Operating principle

The holding brake is a spring-loaded brake and is controlled by the ACOPOS servo drive or an ACOPOSmulti inverter module. Based on principle, this type of holding brake exhibits a minimal amount of backlash.
This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle). Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Technical data for the standard holding brake

Name	Motor size	
	4	5
Holding torque M_{Br} [Nm]	8	15
Connected load P_{on} [W]	18	24
Supply current I_{on} [A]	0.75	1
Supply voltage U_{on} [V]	24 VDC +6% / -10%	24 VDC +6% / -10%
Moment of inertia J_{Br} [kgcm²]	0.54	1.66
Mass m_{Br} [kg]	12:46 AM	0.9

Design of the shaft end

All 8LSN three-phase synchronous motor shafts conform to DIN 748. They can be delivered with a smooth shaft or a keyed shaft.

Smooth shaft end

A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end

A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.
The keyways for 8LSN three-phase synchronous motors conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with DIN ISO 8821.
The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Load capacity of the shaft end and bearing

8LSN three-phase synchronous motors are equipped with grooved ball bearings that are sealed on both sides and lubricated. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Connection directions

8LSN three-phase synchronous motors can be delivered with a connection on the top as well as axial swivel connectors.

Oil seal

All 8LSN three-phase synchronous motors are available with an optional form A oil seal according to DIN 3760.
When equipped with an oil seal, the motors have IP65 protection in accordance with EN 60034-5.

Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table:

Motor option				
Connectiondirec-tion	**Oil seal**	**Holding brake**	**Shaft end**	**Code for the order key (ff)**
Straight (top connector)	No	No	Smooth	C0
			Keyed	C1
		Normal	Smooth	C2
			Keyed	C3
	Yes	No	Smooth	C6
			Keyed	C7
		Normal	Smooth	C8
			Keyed	C9
Angled (swivel con-nector)	No	No	Smooth	D0
			Keyed	D1
		Normal	Smooth	D2
			Keyed	D3
	Yes	No	Smooth	D6
			Keyed	D7
		Normal	Smooth	D8
			Keyed	D9

Order key

8LS	N	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (See section "Cooling types")
N...Self cooled, increased moment of inertia

Sizes (See section "sizes")
Valid values:**4,5**

Lengths (See section "lengths")
Valid values: **3,4,5,6,7,8**

Encoder system (See section "Motor encoder systems")

R0...Resolver
EA...ind. EnDat 2.1 single-turn, 32 lines
EB...ind. EnDat 2.1 multi-turn,32 lines
E0...opt. EnDat 2.1 single-turn, 512 lines
E1...opt. EnDat 2.1 multi-turn, 512 lines
D0...opt. EnDat 2.2 single-turn, 31 bit
D1...opt. EnDat 2.2 multi-turn, 31 bit
S0...opt. EnDat 2.2 single-turn, 31 bit, FS
S1...opt. EnDat 2.2 multi-turn, 31 bit, FS

Nominal speed (See section "Nominal speed")
nnn...Nominal speed/100, e.g. 030 corresponds to a nominal speed of 3000 rpm

Motor options (See section "Motor options")

Special motor options
00...No special motor options

Motor version: Valid values: **0** (value assigned automatically and cannot be chosen freely)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A three-phase synchronous motor of type **8LSN45** with a nominal speed of 3000 rpm was selected for an application. Because of the construction, the cables can only be connected on the top of the motor ("top" connection direction). The motor should also be equipped with a holding brake, a keyed shaft and a 16-line EnDat single-turn encoder.
The code (ee) for the encoder system is **EA**.

The (nnn) code for a nominal speed of 3000 rpm is **030**.

The code (ff) for the other options (oil seal, holding brake, keyed shaft and connection direction) is **C3**.

The model number for the required motor is **8LSN45.EA030C300-0.**

Example order 2

A three-phase synchronous motor of type **8LSA56** with a nominal speed of 4500 rpm was selected for an application. Because of the construction, the cables can only be connected on the back of the motor (swivel connectors). The motor should also be equipped with a holding brake, a smooth shaft, an oil seal and a 16-line EnDat multi-turn encoder.

The code (ee) for the encoder system is **EB**.

The code (nnn) for a nominal speed of 4500 rpm is **045**.

The code (ff) for the other options (oil seal, holding brake, smooth shaft end and connection direction) is **D8**.

The model number for the required motor is **8LSN56.EB045D800-0.**

General motor data

General information	Cooling / Construction type N
C-UR-US listed	Yes
Electrical characteristics	
Mains input voltage on servo drive	3x 400 VAC ... 3x 480 VAC ±10%
Connection type Motor connection Encoder connection	speedtec circular connector from Intercontec Size 1, 1.5 Size 1
Thermal characteristics	
Insulation class in accordance with EN 60034-1	F
Methods of cooling in accordance with EN 60034-6 (IC code)	Self-cooled, no separate surface cooling (IC4A0A0)
Thermal motor protection in accordance with EN 60034-11	Maximum winding temperature is 155°C (limited by the thermal motor protection in the ACOPOS servo drive or in the ACOPOSmulti drive system to 110°C with EnDat feedback and 130°C with resolver feedback)
Mechanical characteristics	
Vibration severity in accordance with EN 60034-14	Vibration severity grade R [1)]
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281
Shaft end in accordance with DIN 748	Form E
Oil seal in accordance with DIN 3760	Form A
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway
Balancing the shaft in accordance with DIN ISO 8821	Half-key arrangement
Mounting flange in accordance with DIN 42948	Form A
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R
Coating Name Color	Water-based coating 98160 *IDROLIN/E SM SEMIOPACO NERO RAL 9005-C.452 RAL 9005 flat; shaft end and flange front metallic glossy
Operating conditions	
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation
Ambient temperature during operation	-15°C to +40°C
Relative humidity during operation	5 to 95%, non-condensing
Reduction of the nominal current and stall current at temperatures above 40°C	10% per 10°C
Maximum ambient temperature during operation	+55°C [2)]
Reduction of the nominal current and stall current at installation elevations over 1000 m above sea level	10% per 1000 m
Maximum installation elevation	2000 m [3)]
Maximum flange temperature	65°C
EN 60034-5 protection (IP code) With optional oil seal	IP64 IP65
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Storage and transport conditions	
Storage temperature	-20 to +60°C
Relative humidity during storage	Max. 90%, non-condensing
Transport temperature	-20 to +60°C
Relative humidity during transport	Max. 90%, non-condensing

1) Valid for all motors with a shaft height of more than 56 mm.

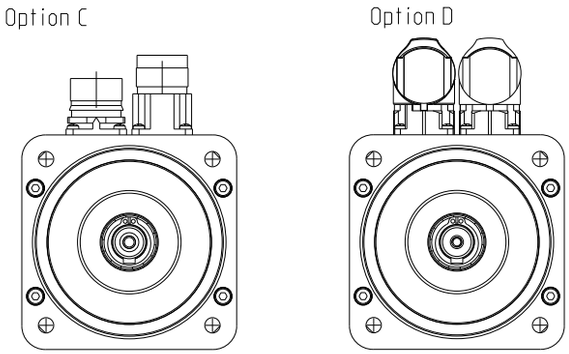
2) Continuous operation of the servo motors at ambient temperatures from +40°C to max. +50°C is possible but results in a shorter lifespan.

3) Requirements that go above and beyond this must be arranged with B&R.

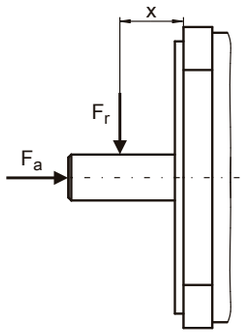
Terminology and formula symbols

Connectiondirection

- Option "C": straight built-in connector, one each for power and signal
- Option "D": angled swivel built-in connector, one each for power and signal



Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors).
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake
Moment of inertia of brake	J_{Br}	kgcm²	Moment of inertia for the built-in holding brake
Brake mass	m_{Br}	kg	Weight of the built-in holding brake
Brake holding torque	M_{Br}	Nm	Minimum torque required to hold the rotor when the brake is activated
Installed load	P_{on}	W	Installed load for the built-in holding brake
Installed current	I_{on}	A	Installed current for the built-in holding brake
Connection voltage	U_{on}	V	Operating voltage for the built-in holding brake
Activation delay	t_{on}	ms	Delay time required for the holding torque of the brake to be established after the operating voltage has been removed from the holding brake
Release delay	t_{off}	ms	Delay time required until the holding torque of the holding brake is reduced by 90% (the brake is released) after operating voltage has been returned to the holding brake

Technical data

	8LSN43.ee030ffgg-0	8LSN43.ee060ffgg-0	8LSN44.ee030ffgg-0	8LSN44.ee060ffgg-0	8LSN45.ee030ffgg-0	8LSN45.ee060ffgg-0	8LSN46.ee030ffgg-0	8LSN46.ee060ffgg-0	8LSN54.ee030ffgg-0	8LSN54.ee020ffgg-0	8LSN54.ee045ffgg-0	8LSN55.ee020ffgg-0
Motor												
Nominal speed n_N [rpm]	3000	6000	3000	6000	3000	6000	3000	6000	3000	2000	4500	2000
Number of pole pairs	3											
Nominal torque M_n [Nm]	3.5	3	5.3	4.6	7.1	6.2	8.8	7.7	7	7.4	5.8	11.1
Nominal power P_N [W]	1100	1885	1665	2890	2231	3896	2765	4838	2199	1550	2733	2325
Nominal current I_N [A]	2.1	3.7	3.3	5.7	4.4	7.6	5.4	9.5	4.3	3	5.3	4.5
Stall torque M_0 [Nm]	4	4	6	6	8	8	10	10	7.8	7.8	7.8	11.7
Stall current I_0 [A]	2.5	4.9	3.7	7.4	4.9	9.8	6.1	12.3	4.8	3.2	7.1	4.8
Maximum torque M_{max} [Nm]	17.1	17.1	24.4	24.4	33.1	33.1	40.5	40.5	30	30	30	48
Maximum current I_{max} [A]	13.1	26.3	18.7	37.5	25.41	50.8	31.09	62.19	24.6	16.4	36.7	26.21
Maximum speed n_{max} [rpm]	7200											
Torque constant K_T [Nm/A]	1.63	0.81	1.63	0.81	1.63	0.81	1.63	0.81	1.63	2.44	1.09	2.44
Voltage constant K_E [V/1000 rpm]	98.4	49.2	98.4	49.2	98.4	49.2	98.4	49.2	98.4	147.6	66	147.6
Stator resistance R_{2ph} [Ω]	11.1	2.5	5.5	1.28	3.7	0.9	2.7	0.68	2.708	5.994	1.188	3.23
Stator inductance L_{2ph} [mH]	48.7	11.1	28.5	6.8	22.5	5.3	16.9	4.23	13.01	29.28	5.78	19.52
Electrical time constant t_{el} [ms]	4.4	4.4	5.2	5.3	6.1	5.9	6.3	6.2	4.8	4.9	4.9	6
Thermal time constant t_{therm} [min]	25	25	30	30	30	30	35	35	40	40	40	43
Moment of inertia J [kgcm^2]	4.99	4.99	7.35	7.35	9.63	9.63	11.74	11.74	15.75	15.75	15.75	23.6
Weight without brake m [kg]	6.4	6.4	7.8	7.8	9.2	9.2	10.5	10.5	9.5	9.5	9.5	11
Holding brake												
Holding torque of the brake M_{Br} [Nm]	8	8	8	8	8	8	8	8	15	15	15	15
Weight of brake [kg]	1	1	1	1	1	1	1	1	1.43	1.43	1.43	1.47
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.66	1.66	1.66	1.66
Recommendations												
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1045	1090	1090	1180	1090	1180	1090	1045	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0055	0110	0055	0110	0110	0220	0055	0055	0110	0055
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4	1.5	4	1.5	1.5	1.5	1.5
Connector type	speedtec											
Connector size	1.0											

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

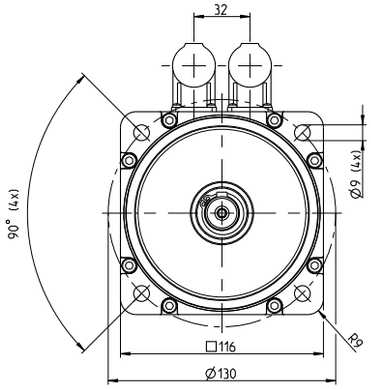
	8LSN55.ee030ffgg-0	8LSN55.ee045ffgg-0	8LSN56.ee020ffgg-0	8LSN56.ee030ffgg-0	8LSN56.ee045ffgg-0	8LSN57.ee020ffgg-0	8LSN57.ee022ffgg-0	8LSN57.ee030ffgg-0	8LSN57.ee045ffgg-0	8LSN58.ee022ffgg-0	8LSN58.ee030ffgg-0	8LSN58.ee045ffgg-0
Motor												
Nominal speed n_N [rpm]	3000	4500	2000	3000	4500	2000	2200	3000	4500	2200	3000	4500
Number of pole pairs	3											
Nominal torque M_n [Nm]	10.5	8.7	14.8	14	11.6	16.7	16.5	14.5	9.7	19.1	16.5	10
Nominal power P_N [W]	3299	4100	3100	4398	5466	3498	3801	4555	4571	4400	5184	4712
Nominal current I_N [A]	6.4	8	6.1	8.6	10.6	6.8	7.4	8.9	8.9	8.6	10.1	9.2
Stall torque M_0 [Nm]	11.7	11.7	15.6	15.6	15.6	19.5	19.5	19.5	19.5	23.4	23.4	23.4
Stall current I_0 [A]	7.2	10.7	6.4	9.6	14.3	8	8.8	12	17.9	10.6	14.4	21.4
Maximum torque M_{max} [Nm]	48	48	60	60	60	80	80	80	80	92	92	92
Maximum current I_{max} [A]	39.31	58.7	32.8	48.1	73.31	43.7	48.11	65.51	97.8	55.3	75.3	112.4
Maximum speed n_{max} [rpm]	7200											
Torque constant K_T [Nm/A]	1.63	1.09	2.44	1.63	1.09	2.44	2.22	1.63	1.09	2.22	1.63	1.09
Voltage constant K_E [V/1000 rpm]	98.4	66	147.6	98.4	66	147.7	134	98.4	66	134	98.4	66
Stator resistance R_{2ph} [Ω]	1.435	0.635	2.068	0.913	0.414	1.43	1.33	0.639	0.309	1.07	0.527	0.231
Stator inductance L_{2ph} [mH]	8.68	3.86	14.64	6.51	2.89	11.07	9.7	4.92	2.51	8.51	4.34	1.93
Electrical time constant t_{el} [ms]	6	6.1	7.1	7.1	7	7.7	7.3	7.7	8.1	7.95	8.2	8.3
Thermal time constant t_{therm} [min]	43	43	45	45	45	48	48	48	48	50	50	50
Moment of inertia J [kgcm^2]	23.6	23.6	31.5	31.5	31.5	38.4	38.4	38.4	38.4	45.4	45.4	45.4
Weight without brake m [kg]	11	11	13.5	13.5	13.5	15.6	15.6	15.6	15.6	18	18	18
Holding brake												
Holding torque of the brake M_{Br} [Nm]	15											
Weight of brake [kg]	1.47	1.47	1.44	1.44	1.44	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66											
Recommendations												
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1090	1180	1180	1090	1180	1180	1320	1180	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0110	0110	0220	0110	0110	0220	0220	0220	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	4	1.5	4	4	1.5	4	4	4	4	4	4
Connector type	speedtec											
Connector size	1.0											

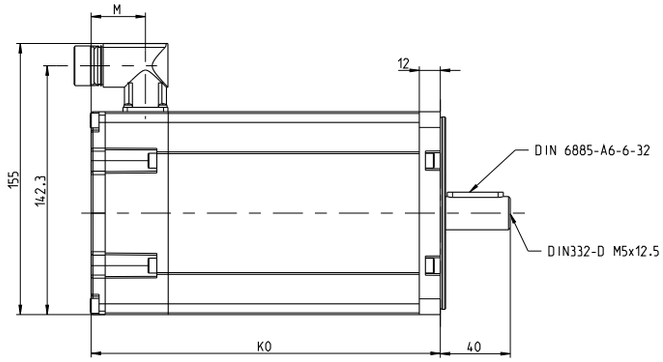
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

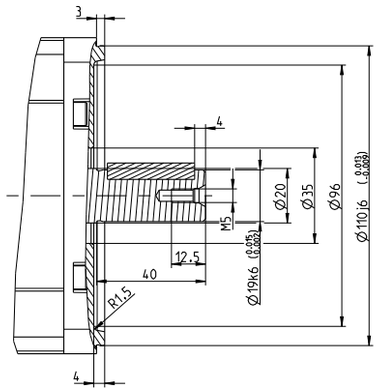
	8LSN43.ee030ffgg-0	8LSN43.ee060ffgg-0	8LSN44.ee030ffgg-0	8LSN44.ee060ffgg-0	8LSN45.ee030ffgg-0	8LSN45.ee060ffgg-0	8LSN46.ee030ffgg-0	8LSN46.ee060ffgg-0
Motor								
Nominal speed n_N [rpm]	3000	6000	3000	6000	3000	6000	3000	6000
Number of pole pairs	3							
Nominal torque M_n [Nm]	3.5	3	5.3	4.6	7.1	6.2	8.8	7.7
Nominal power P_N [W]	1100	1885	1665	2890	2231	3896	2765	4838
Nominal current I_N [A]	2.1	3.7	3.3	5.7	4.4	7.6	5.4	9.5
Stall torque M_0 [Nm]	4	4	6	6	8	8	10	10
Stall current I_0 [A]	2.5	4.9	3.7	7.4	4.9	9.8	6.1	12.3
Maximum torque M_{max} [Nm]	17.1	17.1	24.4	24.4	33.1	33.1	40.5	40.5
Maximum current I_{max} [A]	13.1	26.3	18.7	37.5	25.41	50.8	31.09	62.19
Maximum speed n_{max} [rpm]	7200							
Torque constant K_T [Nm/A]	1.63	0.81	1.63	0.81	1.63	0.81	1.63	0.81
Voltage constant K_E [V/1000 rpm]	98.4	49.2	98.4	49.2	98.4	49.2	98.4	49.2
Stator resistance R_{2ph} [Ω]	11.1	2.5	5.5	1.28	3.7	0.9	2.7	0.68
Stator inductance L_{2ph} [mH]	48.7	11.1	28.5	6.8	22.5	5.3	16.9	4.23
Electrical time constant t_{el} [ms]	4.4	4.4	5.2	5.3	6.1	5.9	6.3	6.2
Thermal time constant t_{therm} [min]	25	25	30	30	30	30	35	35
Moment of inertia J [kgcm^2]	4.99	4.99	7.35	7.35	9.63	9.63	11.74	11.74
Weight without brake m [kg]	6.4	6.4	7.8	7.8	9.2	9.2	10.5	10.5
Holding brake								
Holding torque of the brake M_{Br} [Nm]	8							
Weight of brake [kg]	1							
Moment of inertia for the brake J_{Br} [kgcm^2]	0.54							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1045	1090	1090	1180	1090	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0055	0110	0055	0110	0110	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4	1.5	4
Connector type	speedtec							
Connector size	1.0							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.



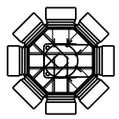


A side flange detail
Standard bearing



Possible
Connection directions

Straight (top connector)



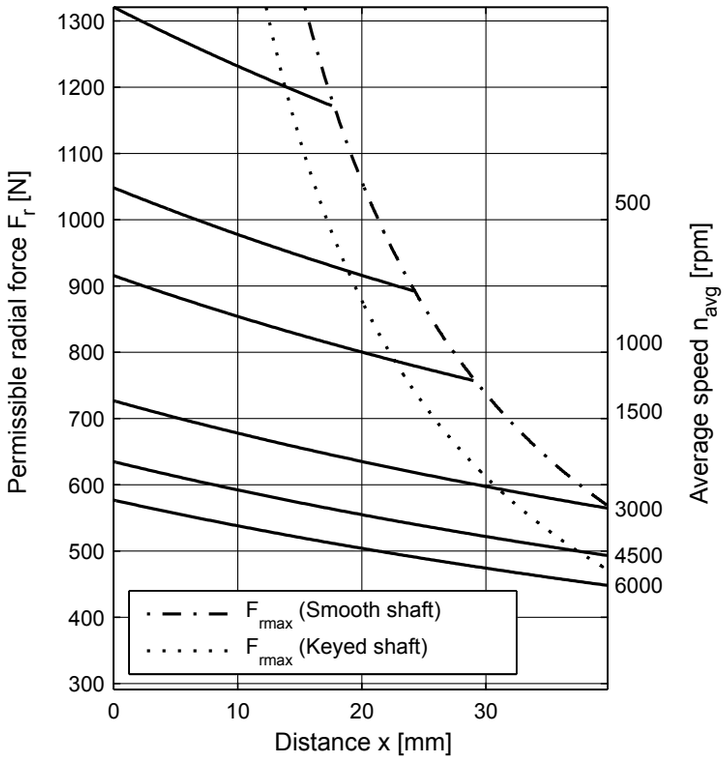
Angled (swivel connector)

Optical EnDat feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A side bearing**
8LSN43.eennnffgg-0	221	52.5	29	---	---
8LSN44.eennnffgg-0	246	52.5	29	---	---
8LSN45.eennnffgg-0	271	52.5	29	---	---
8LSN46.eennnffgg-0	296	52.5	29	---	---

Inductive EnDat / resolver feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A side bearing**
8LSN43.eennnffgg-0	200	31.5	29	---	---
8LSN44.eennnffgg-0	225	31.5	29	---	---
8LSN45.eennnffgg-0	250	31.5	29	---	---
8LSN46.eennnffgg-0	275	31.5	29	---	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

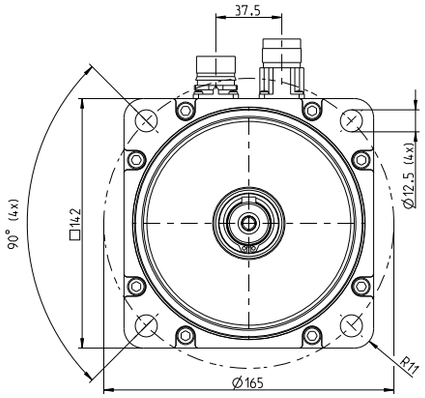


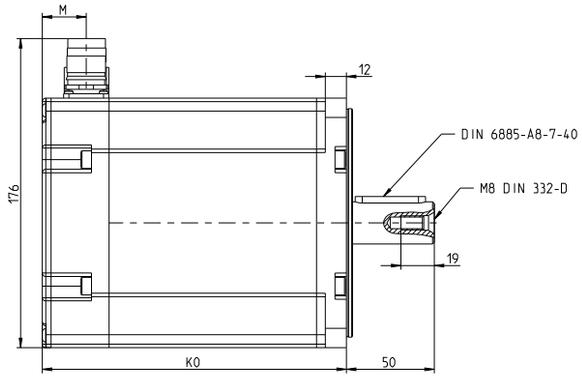
Maximum axial force: F_{amax} = 121 N

Technical data

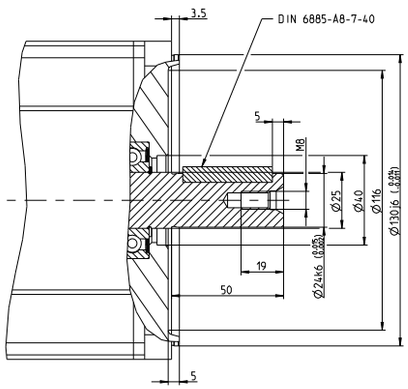
	8LSN54.ee020ffgg-0	8LSN54.ee030ffgg-0	8LSN54.ee045ffgg-0	8LSN55.ee020ffgg-0	8LSN55.ee030ffgg-0	8LSN55.ee045ffgg-0	8LSN56.ee020ffgg-0	8LSN56.ee030ffgg-0	8LSN56.ee045ffgg-0	8LSN57.ee020ffgg-0	8LSN57.ee022ffgg-0	8LSN57.ee030ffgg-0	8LSN57.ee045ffgg-0	8LSN58.ee022ffgg-0	8LSN58.ee030ffgg-0	8LSN58.ee045ffgg-0
Motor																
Nominal speed n_N [rpm]	2000	3000	4500	2000	3000	4500	2000	3000	4500	2000	2200	3000	4500	2200	3000	4500
Number of pole pairs	3															
Nominal torque M_n [Nm]	7.4	7	5.8	11.1	10.5	8.7	14.8	14	11.6	16.7	16.5	14.5	9.7	19.1	16.5	10
Nominal power P_N [W]	1550	2199	2733	2325	3299	4100	3100	4398	5466	3498	3801	4555	4571	4400	5184	4712
Nominal current I_N [A]	3	4.3	5.3	4.5	6.4	8	6.1	8.6	10.6	6.8	7.4	8.9	8.9	8.6	10.1	9.2
Stall torque M_0 [Nm]	7.8	7.8	7.8	11.7	11.7	11.7	15.6	15.6	15.6	19.5	19.5	19.5	19.5	23.4	23.4	23.4
Stall current I_0 [A]	3.2	4.8	7.1	4.8	7.2	10.7	6.4	9.6	14.3	8	8.8	12	17.9	10.6	14.4	21.4
Maximum torque M_{max} [Nm]	30	30	30	48	48	48	60	60	60	80	80	80	80	92	92	92
Maximum current I_{max} [A]	16.4	24.6	36.7	26.21	39.31	58.7	32.8	48.1	73.31	43.7	48.11	65.51	97.8	55.3	75.3	112.4
Maximum speed n_{max} [rpm]	7200															
Torque constant K_T [Nm/A]	2.44	1.63	1.09	2.44	1.63	1.09	2.44	1.63	1.09	2.44	2.22	1.63	1.09	2.22	1.63	1.09
Voltage constant K_E [V/1000 rpm]	147.6	98.4	66	147.6	98.4	66	147.6	98.4	66	147.7	134	98.4	66	134	98.4	66
Stator resistance R_{2ph} [Ω]	5.994	2.708	1.188	3.23	1.435	0.635	2.068	0.913	0.414	1.43	1.33	0.639	0.309	1.07	0.527	0.231
Stator inductance L_{2ph} [mH]	29.28	13.01	5.78	19.52	8.68	3.86	14.64	6.51	2.89	11.07	9.7	4.92	2.51	8.51	4.34	1.93
Electrical time constant t_{el} [ms]	4.9	4.8	4.9	6	6	6.1	7.1	7.1	7	7.7	7.3	7.7	8.1	7.95	8.2	8.3
Thermal time constant t_{therm} [min]	40	40	40	43	43	43	45	45	45	48	48	48	48	50	50	50
Moment of inertia J [kgcm^2]	15.75	15.75	15.75	23.6	23.6	23.6	31.5	31.5	31.5	38.4	38.4	38.4	38.4	45.4	45.4	45.4
Weight without brake m [kg]	9.5	9.5	9.5	11	11	11	13.5	13.5	13.5	15.6	15.6	15.6	15.6	18	18	18
Holding brake																
Holding torque of the brake M_{Br} [Nm]	15															
Weight of brake [kg]	1.43	1.43	1.43	1.47	1.47	1.47	1.44	1.44	1.44	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Moment of inertia for the brake J_{Br} [kgcm^2]	1.66															
Recommendations																
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1090	1090	1090	1180	1090	1180	1180	1090	1180	1180	1320	1180	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0055	0055	0110	0055	0110	0220	0110	0110	0220	0110	0110	0220	0220	0220	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4	1.5	4	4	1.5	4	4	4	4	4	4
Connector type	speedtec															
Connector size	1.0															

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.



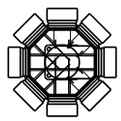


A-side flange detail
Standard bearing



Possible
Connection directions

Straight (top connector)



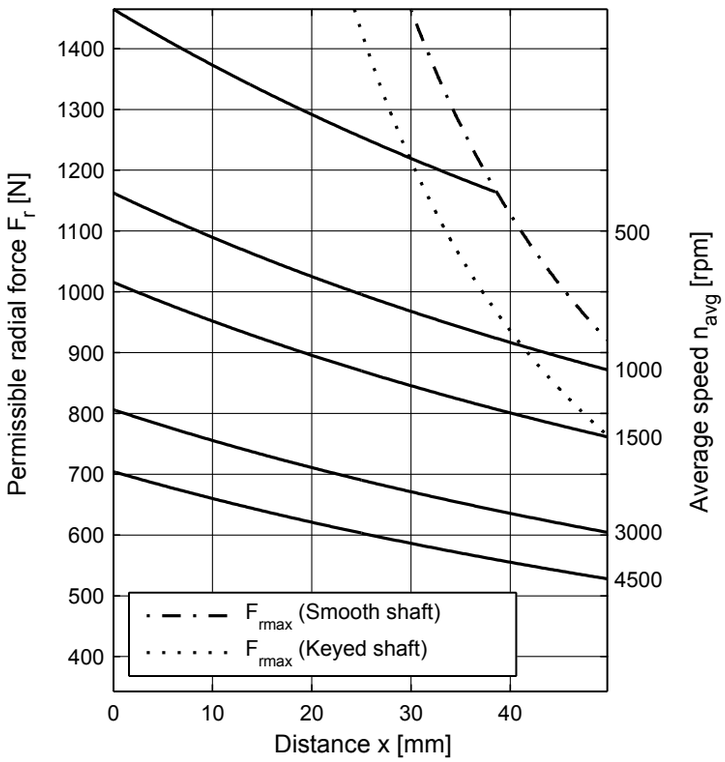
Angled (swivel connector)

Optical EnDat feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A side bearing**
8LSN54.eennnffgg-0	228	55	40	---	---
8LSN55.eennnffgg-0	253	55	40	---	---
8LSN56.eennnffgg-0	278	55	40	---	---
8LSN57.eennnffgg-0	303	55	40	---	---

Inductive EnDat / resolver feedback			**Extension of K_0 depending on motor option [mm]**		
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**	**Reinforced A side bearing**
8LSN54.eennnffgg-0	198	25	40	---	---
8LSN55.eennnffgg-0	223	25	40	---	---
8LSN56.eennnffgg-0	248	25	40	---	---
8LSN57.eennnffgg-0	273	25	40	---	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



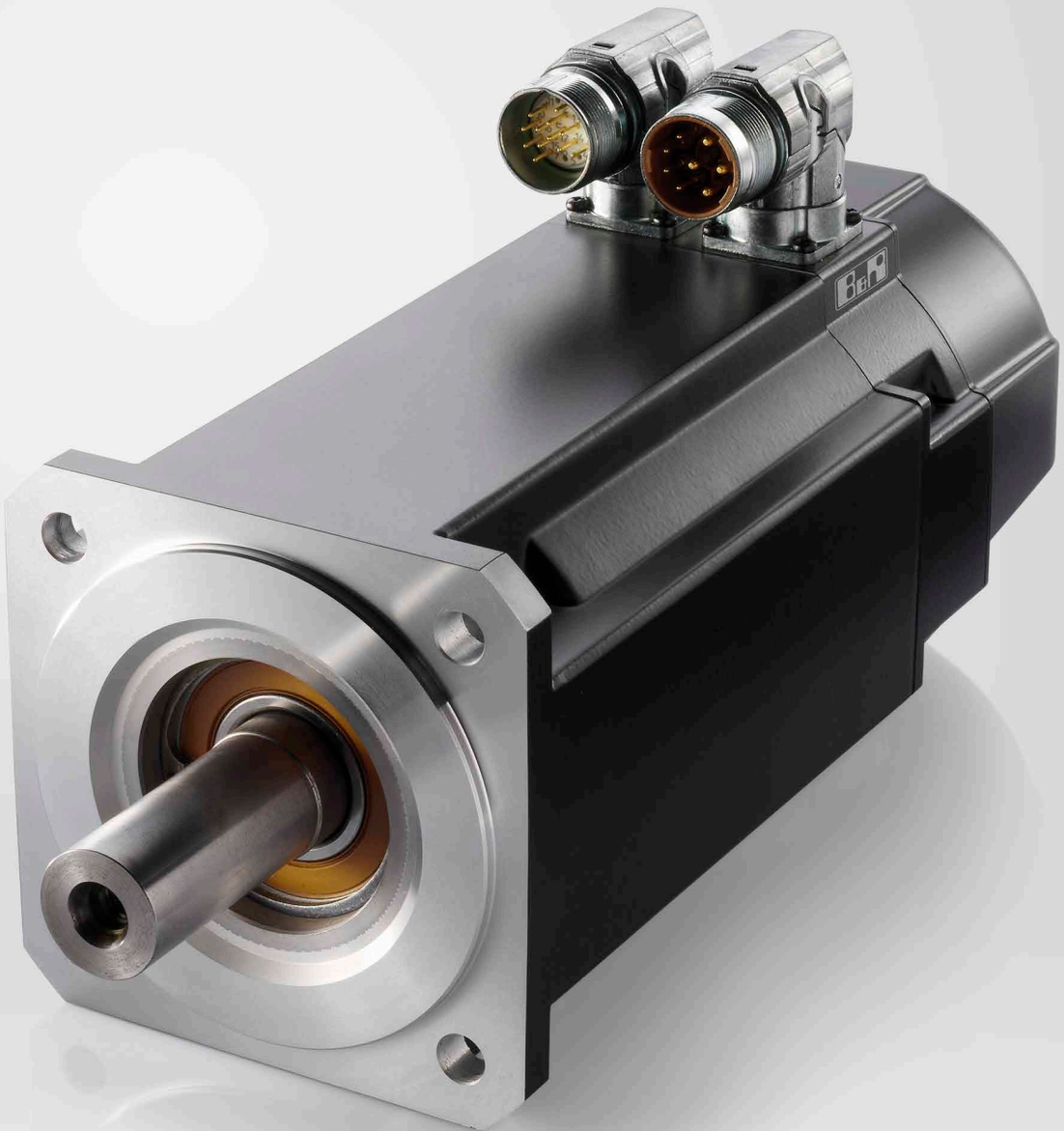
Maximum axial force: F_{amax} = 131 N

8JS three-phase synchronous motors

Dynamic precision motors

Modern machine concepts demand compact and powerful motors. The compact AC servo motor series from B&R provides ways for the user to further optimize production and service processes.

Table of contents



System features

8JS three-phase synchronous motors

B&R's 8JS three-phase synchronous motors have been specially developed for use in high-performance applications. They are now being used to produce consumer goods and products in the plastic, packaging, metal, food and beverage industries and then palletize them with material handling systems. To have a complete solution from a single source, not only do you need the right components, you need them tailored to the application at hand. The large selection of available 8LS three-phase synchronous motors makes it possible to easily meet conditions such as reducing the variety of parts, guaranteeing ease of service and maintaining minimum requirements on space.

An optimum selection of power transmission technology is the perfect way to round off a successful machine design. To meet this goal, specialists are available at B&R subsidiaries all over the world who are eager to share their know-how in the area of mechatronics. B&R automation components: where mechanics, electronics, technology and innovation converge with optimum efficiency.

Feedback systems specified to meet your needs

8JS three-phase synchronous motors are available with different encoder systems. As standard, they come equipped with Heidenhain EnDat encoders. The absolute encoder functions without a battery and is therefore absolutely maintenance-free. 8JS motors are also available with resolvers for machines with lower precision requirements.

Smooth surface

The special construction of the surface of the 8JS three-phase synchronous motor series allows them to be used in applications for the food and beverage industry. Depressions where liquid can collect were deliberately avoided.

Connection type

The uniform connection technology, the pre-assembled cables and the embedded parameter chip allow "plug and play" operation of the power transmission system. The angled connectors can be swiveled for maximum cabling flexibility.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Advantages of B&R 8JS servo motors for your application:

- Compact sizes result in low weight and optimal power density
- Easier construction
- Fast axes thanks to impressive dynamic properties
- Universal application thanks to high overload capability
- Good controllability thanks to optimized torque rippling
- Extremely easy to service
- Minimizes costs

Cooling type

Cooling type A

8JS three-phase synchronous motors with cooling type A are self-cooling and have a long, slim design. The motors must be installed on the cooling surface (flange).

Sizes

8JS three-phase synchronous motors are available in six different sizes (2 through 7). They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Overview

Cooling type	Available sizes					
	2	**3**	**4**	**5**	**6**	**7**
A	Yes	Yes	Yes	Yes	Yes	Yes

Lengths

8JS three-phase synchronous motors are available in up to five different lengths. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number.

Overview

Length	Available sizes					
	2	**3**	**4**	**5**	**6**	**7**
1	---	Yes	---	Yes	---	---
2	Yes	Yes	Yes	Yes	Yes	Yes
3	---	Yes	Yes	---	Yes	Yes
4	Yes	---	Yes	Yes	Yes	Yes
5	---	---	---	---	Yes	---

Motor encoder systems

8JS three-phase synchronous motors are available with EnDat encoders as well as resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Analog and digital transfer

The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

Note regarding E2/ E3 encoders

The inductive encoders with product IDs "EA" and "EB" replace the encoder types with model numbers "E2" and "E3". These encoders should be used in all new applications.
The new "EB" encoder type requires the following versions of our servo drives or inverter modules:
(ACP10_SYS or firmware version)

- ACOPOS: Starting with V2.090 from 2008-09-18
- ACOPOSmulti: Starting with V2.031 from 2008-01-17

For older basic versions of the ACOPOS firmware, using the new encoder is possible starting with V0.556 (from 2010-07-22) for ACOPOS with AC110 (CAN bus) and starting with V1.249 (from 2010-07-22) for ACOPOS with AC112/114.

Technical data – EnDat 2.1 encoders

Motor sizes 2-3

Encoder type / Order code	E8	E9
Operating principle	Inductive	
EnDat protocol	2.1	2.1
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	32	32
Resolution [bits single-turn / bits multi-turn]	18/0	18/12
Precision ["]	280	280
Switching frequency ≥ [kHz]	6	6
Vibration during operation - Stator max [m/s2]	200	200
Vibration during operation - Rotor max [m/s2]	200	200
Shock during operation max [m/s^2]	1000	1000
Manufacturer's product ID	ECI 1118	EQI 1130
Manufacturer's website	www.heidenhain.de	

Encoder type / Order code	E4	E5
Operating principle	Optical	Optical
EnDat protocol	2.1	2.1
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	512	512
Resolution [bits single-turn / bits multi-turn]	13/0	13/12
Precision ["]	60	60
Switching frequency ≥ [kHz]	190	190
Vibration during operation - Stator Max [m/s2]	200	200
Vibration during operation - Rotor max [m/s2]	200	200
Shock during operation max [m/s^2]	1000	1000
Manufacturer's product ID	ECN 1113	EQN 1125
Manufacturer's website	www.heidenhain.de	

Motor sizes 4 - 7

Encoder type / Order code	EA	EB
Operating principle	Inductive	Inductive
EnDat protocol	2.1	2.1
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	32	32
Resolution [bits single-turn / bits multi-turn]	19/0	19/12
Precision ["]	180	180
Switching frequency ≥ [kHz]	6	6
Vibration during operation - Stator Max [m/s2]	200	200
Vibration during operation - Rotor max [m/s2]	200	200
Shock during operation max [m/s^2]	2000	2000
Manufacturer's product ID	ECI 1319	EQI 1331
Manufacturer's website	www.heidenhain.de	

Encoder type / Order code	E6	E7
Operating principle	Optical	Optical
EnDat protocol	2.1	2.1
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	512	512
Resolution [bits single-turn / bits multi-turn]	13/0	13/12
Precision ["]	60	60
Switching frequency ≥ [kHz]	190	190
Vibration during operation - Stator Max [m/s2]	200	200
Vibration during operation - Rotor max [m/s2]	200	200
Shock during operation max [m/s^2]	1000	1000
Manufacturer's product ID	ECN 1113	EQN 1125
Manufacturer's website	www.heidenhain.de	

Resolvers

BRX resolvers are used in 8JSA servo motors. These resolvers are fed with a single sinusoidal signal (reference signal) and return two sinusoidal signals. The amplitude of these signals change with the angular position (sine or cosine form).

Name	Order code (ee)
	R0
Precision	10 angular minutes
Vibration during operation 10 < f ≤ 500 Hz	≤196 m/s²
Shock during operation Duration 11 ms	≤981 m/s²

Motor options

Depending on the size and length, the 8JS three-phase synchronous motors can be delivered

- With various nominal speeds
- With or without an oil seal
- With or without a holding brake
- With a smooth or keyed shaft

geliefert werden.

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). This code represents the nominal speed divided by 100. The respective combination of other motor options is listed as part of the model number in the form of a 2-digit code (ff).

Nominal speed

8JS three-phase synchronous motors can be delivered with different nominal speeds depending on the size and length.

Overview

Size	Lengths				
	1	2	3	4	5
2	---	8000	---	8000	---
3	5000	3000, 5500	4500	---	---
4	---	3500	5000	4000	---
5	4500	4500	---	2750, 5000	---
6	---	3000	2250	3000	2500
7	---	2000	2400	1800	---

Holding brake

All 8JS three-phase synchronous motors can be delivered with a holding brake. It is installed directly behind the B bearing on the motor and used to hold the motor shaft when no power is applied to the servo motor.

Operating principle

The holding brake is a spring-loaded brake and is controlled by the ACOPOS servo drive or an ACOPOSmulti inverter module. Based on principle, this type of holding brake exhibits a minimal amount of backlash.
This brake is designed as a holding brake and is not permitted to be used for operational braking! Under these conditions, the brake has a service life of approximately 5,000,000 cycles (opening and closing the brake is one cycle). Loaded braking during an emergency stop is permitted but reduces its service life. The required brake holding torque is determined based on the actual load torque. If not enough information is known about the load torque, it is recommended to assume a safety factor of 2.

Technical data for the standard holding brake

Name	Motor size					
	2	3	4	5	6	7
Holding torque M_{Br} [Nm]	1.42	2.5	5.3	14.5	25	53
Connected load P_{on} [W]	8.4 ±7%	10.1 ±7%	12.8 ±7%	19.5 ±7%	25.7 ±7%	35.6 ±7%
Supply current I_{on} [A]	0.35	0.42	0.53	0.82	1.07	1.48
Supply voltage U_{On} [V] (+6% / -10%)	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Moment of inertia J_{Br} [kgcm²]	0.011	0.011	0.068	0.173	0.61	1.64
Mass m_{Br} [kg]	0.27	0.35	0.63	1.1	2	2.9

Reduction of nominal values depending on the motor option

The nominal values are reduced depending on the motor option selected (stall torque M_0 and nominal torque M_n) for the motor as seen in the following table: (all values in [Nm])

Motor	Holding brake	EnDat encoders	Holding brakes and EnDat encoders	Oil seal
8JSA22.eennnffgg-0	0.01	0	0.02	0.047
8JSA24.eennnffgg-0	0.05	0	0.12	0.047
8JSA31.eennnffgg-0	0	0	0	0.047
8JSA32.eennnffgg-0	0.05	0	0.1	0.047
8JSA33.eennnffgg-0	0.1	0	0.2	0.047
8JSA42.eennnffgg-0	0.12	0.1	0.36	0.071
8JSA43.eennnffgg-0	0.12	0.2	0.55	0.071
8JSA44.eennnffgg-0	0.12	0.3	0.76	0.071
8JSA51.eennnffgg-0	0.15	0.15	0.39	0.13
8JSA52.eennnffgg-0	0.26	0.34	0.76	0.13
8JSA54.eennnffgg-0	0.43	0.86	1.55	0.13
8JSA62.eennnffgg-0	0.5	0.9	1.6	0.25
8JSA63.eennnffgg-0	0.9	1.2	2.4	0.25
8JSA64.eennnffgg-0	1.3	1.5	3.1	0.25
8JSA65.eennnffgg-0	1.7	1.8	4	0.25
8JSA72.eennnffgg-0	1	2	3.9	0.25
8JSA73.eennnffgg-0	1	2.7	5.1	0.25
8JSA74.eennnffgg-0	1	3.4	6.2	0.25

Load capacity of the shaft end and bearing

8JS three-phase synchronous motors are equipped with grooved ball bearings that are sealed on both sides and lubricated. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Design of the shaft end

All 8JS three-phase synchronous motor shafts comply with DIN 748 and are available with a smooth shaft.

Smooth shaft end
A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end
A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.
The keyways for the 8JS three-phase synchronous motors conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with ISO 1940/1 G6.3.
The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Oil seal

All 8JS three-phase synchronous motors are available with an optional Form A oil seal in accordance with DIN 3760.
When equipped with an oil seal, the motors have IP65 protection in accordance with EN 60034-5.

Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

Connection directions

8JS three-phase synchronous motors can be delivered with angular, axial swivel connectors.

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table:

Motor option

Connectiondirection	Oil seal	Holding brake	Shaft end	Code for the order key (ff)
Angled (swivel connector)	No	No	Smooth	D0
			Keyed	D1
		Normal	Smooth	D2
			Keyed	D3
	Yes	No	Smooth	D6
			Keyed	D7
		Normal	Smooth	D8
			Keyed	D9

Order key

8JS	a	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (See section "Cooling types")
A...self cooled

Sizes (See section "Sizes")
Valid values:**2,3,4,5,6,7**

Lengths (See section "Lengths")
Valid values: **1,2,3,4,5**

Encoder system (See section "Motor encoder systems")

R0...Resolver

Motor size 2,3
E4...opt. EnDat 2.1 single-turn, 512 lines
E5...opt. EnDat 2.1 multi-turn, 512 lines
E8...ind. EnDat 2.1 single-turn, 16lines
E9...ind. EnDat 2.1 multi-turn, 16lines

Motor size 4 - 7
E6...ind. EnDat 2.1 single-turn, 2048lines
E7...ind. EnDat 2.1 multi-turn, 2048lines
EA...ind. EnDat 2.1 single-turn, 32 lines
EB...ind. EnDat 2.1 multi-turn,32 lines

Nominal speed (See sections "Nominal speed")
nnn...Nominal speed/100, e.g. 030 corresponds to a nominal speed of 3000 rpm

Motor options (See section "Motor options")

Special motor options (See section "Special motor options")
00...No special motor options

Motor version: Valid value: **0** (value is automatically and cannot be chosen freely)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A three-phase synchronous motor (type **8JSA44**) with a nominal speed of 4000 rpm was selected for an application. The motor should also be equipped with a holding brake, a keyed shaft and a 2048-line EnDat single-turn encoder.
The code (ee) for the encoder system is **E6**.

The code (nnn) for a nominal speed of 2000 rpm is **040**.

The code (ff) for the other options (oil seal, holding brake, keyed shaft and connection direction) is **D3**.

The model number for the required motor is **8JSA44.E6040D300-0.**

Example order 2

A three-phase synchronous motor (type **8JSA54**) with a nominal speed of 5000 rpm was selected for an application. The motor should also be equipped with a holding brake, a smooth shaft, an oil seal and a 2048-line EnDat multi-turn encoder.

The code (ee) for the encoder system is **E7**.

The code (nnn) for a nominal speed of 2000 rpm is **050**.

The code (ff) for the other options (oil seal, holding brake, keyed shaft and connection direction) is **D8**.

The model number for the required motor is **8JSA54.E7050D800-0.**

General motor data

General information	Cooling type A
C-UR-US listed	Yes
Electrical characteristics	
Mains input voltage on servo drive	3x 400 VAC ... 3x 480 VAC ±10%
Connection type Motor connection Encoder connection	speedtec circular connector from Intercontec Size 1 Size 1
Thermal characteristics	
Insulation class in accordance with EN 60034-1	F
Methods of cooling in accordance with EN 60034-6 (IC code)	Self-cooling, no separate surface cooling (IC4A0A0)
Thermal motor protection in accordance with EN 60034-11	Maximum winding temperature is 140°C (limited by the thermal motor protection in the ACOPOS servo drive or in the ACOPOSmulti drive system to 110°C with EnDat feedback and 130°C with resolver feedback)
Mechanical characteristics	
Vibration severity in accordance with EN 60034-14	Vibration severity stage A [1)]
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281
Shaft end in accordance with DIN 748	Form E
Oil seal in accordance with DIN 3760	Form A
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway
Shaft balancing according to ISO 1940/1, G6.3	Half-key arrangement
Mounting flange	IEC 72-1
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance N
Coating Name Color	Polyester powder coating Mansfield 053-2006 polyester Similar to RAL 9005 flat
Operating conditions	
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation
Ambient temperature during operation	+5°C to +40°C [2)]
Relative humidity during operation	5 to 95%, non-condensing
Maximum ambient temperature during operation	+40°C [2)]
Reduction of the nominal current and stall current at temperatures above 40°C	5% per 5°C
C-UR-US listed	Yes
Maximum installation elevation	1000 m above sea level [3)]
Reduction of the nominal current and stall current at installation elevations Starting at 1000 m above sea level	5% per 1000 m
EN 60034-5 protection (IP code) With optional oil seal	IP54 IP65
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) Vertical, motor stands on the machine (IM3031)
Storage and transport conditions	
Storage temperature	-20 to +60°C
Relative humidity during storage	Max. 90%, non-condensing
Transport temperature	-20 to +60°C
Relative humidity during transport	Max. 90%, non-condensing

1) Valid for all motors with a shaft height of more than 56 mm.

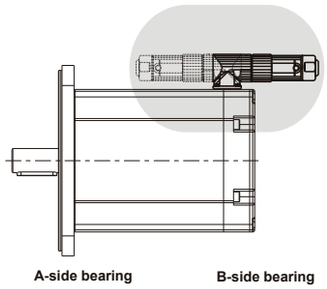
2) Continuous operation of the servo motors at ambient temperatures from +40°C to max. +45°C is possible but results in a shorter lifespan.

3) Requirements that go above and beyond this must be arranged with B&R.

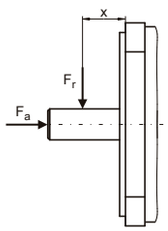
Terminology and formula symbols

Connection direction, bearing

Angled (swivel connector)



Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous current is reduced when the motor is at a complete standstill.
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake
Moment of inertia of brake	J_{Br}	kgcm²	Moment of inertia for the built-in holding brake
Brake mass	m_{Br}	kg	Weight of the built-in holding brake
Brake holding torque	M_{Br}	Nm	Minimum torque required to hold the rotor when the brake is activated
Installed load	P_{on}	W	Installed load for the built-in holding brake
Installed current	I_{on}	A	Installed current for the built-in holding brake
Connection voltage	U_{on}	V	Operating voltage for the built-in holding brake
Activation delay	t_{on}	ms	Delay time required for the holding torque of the brake to be established after the operating voltage has been removed from the holding brake
Release delay	t_{off}	ms	Delay time required until the holding torque of the holding brake is reduced by 90% (the brake is released) after operating voltage has been returned to the holding brake

Technical data

	8JSA22.ee080ffgg-0	8JSA24.ee080ffgg-0	8JSA31.ee050ffgg-0	8JSA32.ee030ffgg-0	8JSA32.ee055ffgg-0	8JSA33.ee045ffgg-0	8JSA42.ee035ffgg-0	8JSA43.ee050ffgg-0	8JSA44.ee040ffgg-0	8JSA51.ee045ffgg-0
Motor										
Nominal speed n_N [rpm]	8000	8000	5000	3000	5500	4500	3500	5000	4000	4500
Number of pole pairs	3	3	4	4	4	4	5	5	5	5
Nominal torque M_n [Nm]	0.63	1.06	0.95	1.81	1.6	2.29	2.74	2.94	3.69	2.89
Nominal power P_N [W]	528	888	497	569	922	1079	1004	1539	1546	1362
Nominal current I_N [A]	1.04	1.67	1.12	1.3	1.74	2.09	2.18	2.96	3.1	4.49
Stall torque M_0 [Nm]	0.84	1.41	1.15	2	2.04	2.79	3.42	4.8	5.88	4.83
Stall current I_0 [A]	1.39	2.21	1.37	1.44	2.23	2.58	2.74	4.87	5	7.5
Maximum torque M_{max} [Nm]	3.1	5.6	4.5	8.2	8.3	11.8	13.1	18.8	23.8	15.7
Maximum current I_{max} [A]	7	11.1	6.9	7.2	11.2	12.9	13.7	24.3	25	37.5
Maximum speed n_{max} [rpm]	8100	8100	8100	8100	8100	8100	6100	6100	6100	6100
Torque constant K_T [Nm/A]	0.61	0.63	0.85	1.4	0.92	1.1	1.26	0.99	1.19	0.64
Voltage constant K_E [V/1000 rpm]	39	40.8	54.5	89.8	59	70.6	80.9	63.9	76.6	41.9
Stator resistance R_{2ph} [Ω]	19.98	9.02	21.4	23.76	10.3	9.01	7.78	2.81	2.8	1.16
Stator inductance L_{2ph} [mH]	35.5	18.7	37.5	46.5	20.1	18.5	26.8	10.8	11.5	5.2
Electrical time constant t_{el} [ms]	1.8	2.1	1.8	2	2	2.1	3.4	3.8	4.1	4.5
Thermal time constant t_{therm} [min]	9	11	14	17	17	20	17	20	24	20
Moment of inertia J [kgcm^2]	0.16	0.27	0.33	0.59	0.59	0.85	1.5	2.1	2.7	3.4
Weight without brake m [kg]	1.1	1.66	1.55	2.23	2.23	2.9	3.39	4.35	5.3	4.2
Holding brake										
Holding torque of the brake M_{Br} [Nm]	1.42	1.42	2.5	2.5	2.5	2.5	5.3	5.3	5.3	14.5
Weight of brake [kg]	0.27	0.27	0.27	0.27	0.27	0.27	0.63	0.63	0.63	1.1
Moment of inertia for the brake J_{Br} [kgcm^2]	0.011	0.011	0.011	0.011	0.011	0.011	0.068	0.068	0.068	0.173
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1016	1045	1016	1016	1045	1045	1045	1090	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0028	0028	0028	0055	0055	0055	0055	0110
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	speedtec									
Connector size	1.0									

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.

Technical data

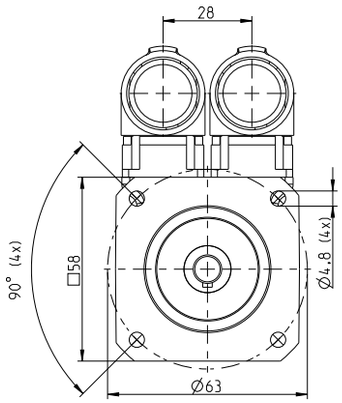
	8JSA52.ee045ffgg-0	8JSA54.ee028ffgg-0	8JSA54.ee050ffgg-0	8JSA62.ee030ffgg-0	8JSA63.ee023ffgg-0	8JSA64.ee030ffgg-0	8JSA65.ee025ffgg-0	8JSA72.ee020ffgg-0	8JSA73.ee024ffgg-0	8JSA74.ee018ffgg-0
Motor										
Nominal speed n_N [rpm]	4500	2750	5000	3000	2250	3000	2500	2000	2400	1800
Number of pole pairs	5									
Nominal torque M_n [Nm]	5.02	11.17	6.92	9.14	13.61	15.4	19	23.4	28.2	39.3
Nominal power P_N [W]	2366	3217	3623	2871	3207	4838	4974	4901	7087	7408
Nominal current I_N [A]	4.31	5.98	6.11	5.7	6.34	9.3	10.25	10.06	13.22	13.82
Stall torque M_0 [Nm]	8.5	14.4	14.11	12.1	16.8	21	25	30	41.6	52.5
Stall current I_0 [A]	7.4	7.8	12.5	7.6	7.9	12.8	13.6	13	19.5	18.5
Maximum torque M_{max} [Nm]	29.9	54.5	53.9	41.1	59.3	76.6	93.2	119.3	167.9	214.6
Maximum current I_{max} [A]	37	38.5	62.5	38	39.3	64	68.2	65	97.4	92.1
Maximum speed n_{max} [rpm]	6100									
Torque constant K_T [Nm/A]	1.16	1.87	1.13	1.6	2.15	1.66	1.85	2.33	2.13	2.84
Voltage constant K_E [V/1000 rpm]	74.9	120.3	72.9	103.2	138.2	107	119	150	137	183
Stator resistance R_{2ph} [Ω]	1.45	1.58	0.65	1.65	1.7	0.75	0.73	0.69	0.38	0.47
Stator inductance L_{2ph} [mH]	7.8	9.6	3.5	13.4	14.6	6.2	6.1	10.8	5.9	7.7
Electrical time constant t_{el} [ms]	5.4	6.1	5.4	8.1	8.6	8.3	8.4	15.7	15.5	16.4
Thermal time constant t_{therm} [min]	24	31	31	20	25	30	35	46	53	60
Moment of inertia J [kgcm^2]	6.2	12	12	17	24.2	32	40	65	92	120
Weight without brake m [kg]	5.8	9	9	8.9	11.1	13.3	15.4	19.7	26.7	33.6
Holding brake										
Holding torque of the brake M_{Br} [Nm]	14.5	14.5	14.5	25	25	25	25	53	53	53
Weight of brake [kg]	1.1	1.1	1.1	2	2	2	2	2.9	2.9	2.9
Moment of inertia for the brake J_{Br} [kgcm^2]	0.173	0.173	0.173	0.605	0.605	0.605	0.605	1.644	1.644	1.644
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1180	1090	1090	1180	1180	1180	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0220	0110	0110	0220	0220	0220	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	1.5	4	4	4	4	4
Connector type	speedtec									
Connector size	1.0									

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.

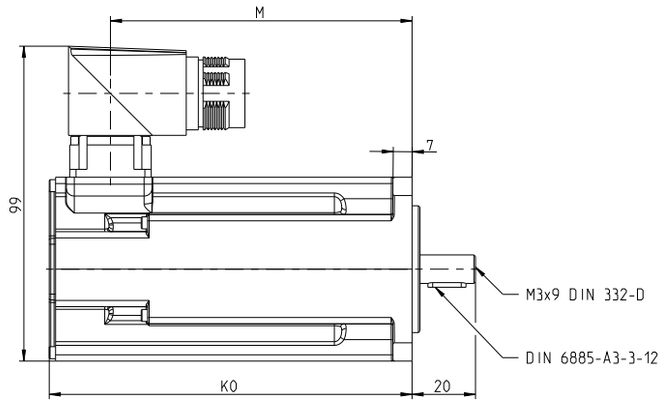
Technical data

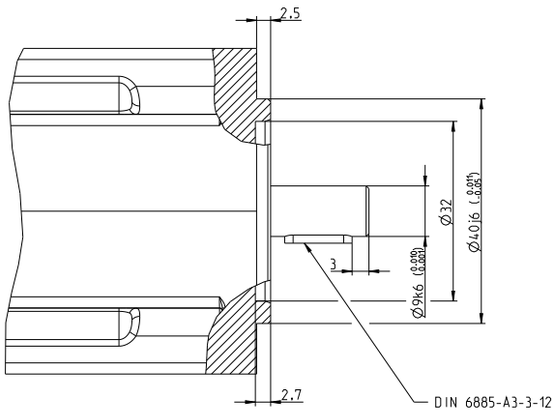
	8JSA22.ee080ffgg-0	8JSA24.ee080ffgg-0
Motor		
Nominal speed n_N [rpm]	8000	
Number of pole pairs	3	
Nominal torque M_n [Nm]	0.63	1.06
Nominal power P_N [W]	528	888
Nominal current I_N [A]	1.04	1.67
Stall torque M_0 [Nm]	0.84	1.41
Stall current I_0 [A]	1.39	2.21
Maximum torque M_{max} [Nm]	3.1	5.6
Maximum current I_{max} [A]	7	11.1
Maximum speed n_{max} [rpm]	8100	
Torque constant K_T [Nm/A]	0.61	0.63
Voltage constant K_E [V/1000 rpm]	39	40.8
Stator resistance R_{2ph} [Ω]	19.98	9.02
Stator inductance L_{2ph} [mH]	35.5	18.7
Electrical time constant t_{el} [ms]	1.8	2.1
Thermal time constant t_{therm} [min]	9	11
Moment of inertia J [kgcm^2]	0.16	0.27
Weight without brake m [kg]	1.1	1.66
Holding brake		
Holding torque of the brake M_{Br} [Nm]	1.42	
Weight of brake [kg]	0.27	
Moment of inertia for the brake J_{Br} [kgcm^2]	0.011	
Recommendations		
ACOPOS servo drive 8Vxxxx.xx...	1016	1045
ACOPOSmulti inverter module 8BVIxxxx...	0028	
Cross section for B&R motor cables [mm^2]	1.5	
Connector type	speedtec	
Connector size	1.0	

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.



A-side flange detail





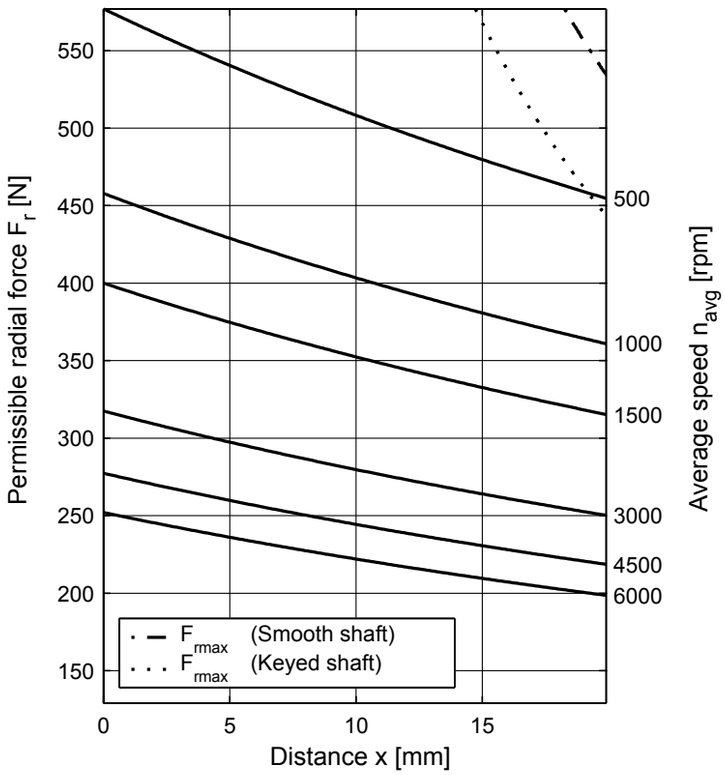
EnDat feedback / Resolver feedback

Extension of K_0 depending on motor option [mm]

Model number	K_0	M	Holding brake	Oil seal
8JSA22.eennnffgg-0	114.4	95.1	34.1	---
8JSA24.eennnffgg-0	152.4	133.1	34.1	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

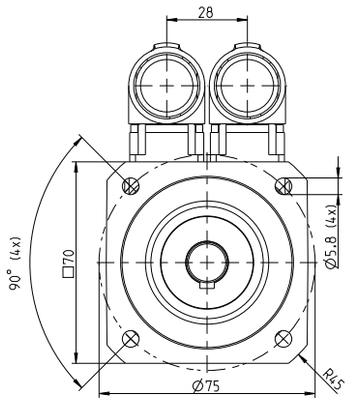


Maximum axial force: F_{amax} = 53 N

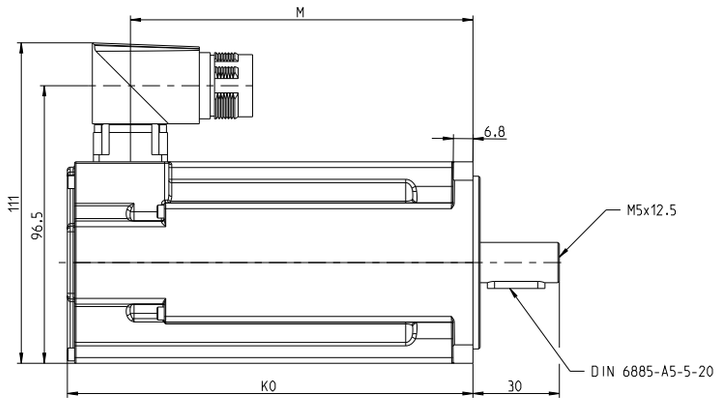
Technical data

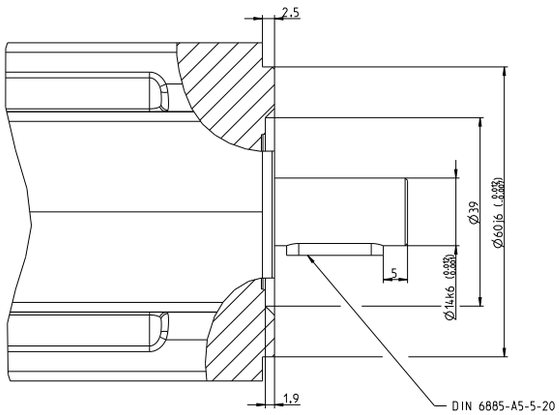
	8JSA31.ee050ffgg-0	8JSA32.ee030ffgg-0	8JSA32.ee055ffgg-0	8JSA33.ee045ffgg-0
Motor				
Nominal speed n_N [rpm]	5000	3000	5500	4500
Number of pole pairs	4			
Nominal torque M_n [Nm]	0.95	1.81	1.6	2.29
Nominal power P_N [W]	497	569	922	1079
Nominal current I_N [A]	1.12	1.3	1.74	2.09
Stall torque M_0 [Nm]	1.15	2	2.04	2.79
Stall current I_0 [A]	1.37	1.44	2.23	2.58
Maximum torque M_{max} [Nm]	4.5	8.2	8.3	11.8
Maximum current I_{max} [A]	6.9	7.2	11.2	12.9
Maximum speed n_{max} [rpm]	8100			
Torque constant K_T [Nm/A]	0.85	1.4	0.92	1.1
Voltage constant K_E [V/1000 rpm]	54.5	89.8	59	70.6
Stator resistance R_{2ph} [Ω]	21.4	23.76	10.3	9.01
Stator inductance L_{2ph} [mH]	37.5	46.5	20.1	18.5
Electrical time constant t_{el} [ms]	1.8	2	2	2.1
Thermal time constant t_{therm} [min]	14	17	17	20
Moment of inertia J [kgcm^2]	0.33	0.59	0.59	0.85
Weight without brake m [kg]	1.55	2.23	2.23	2.9
Holding brake				
Holding torque of the brake M_{Br} [Nm]	2.5			
Weight of brake [kg]	0.27			
Moment of inertia for the brake J_{Br} [kgcm^2]	0.011			
Recommendations				
ACOPOS servo drive 8Vxxxx.xx...	1016	1016	1045	1045
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0028	0055
Cross section for B&R motor cables [mm^2]	1.5			
Connector type	speedtec			
Connector size	1.0			

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.



A-side flange detail





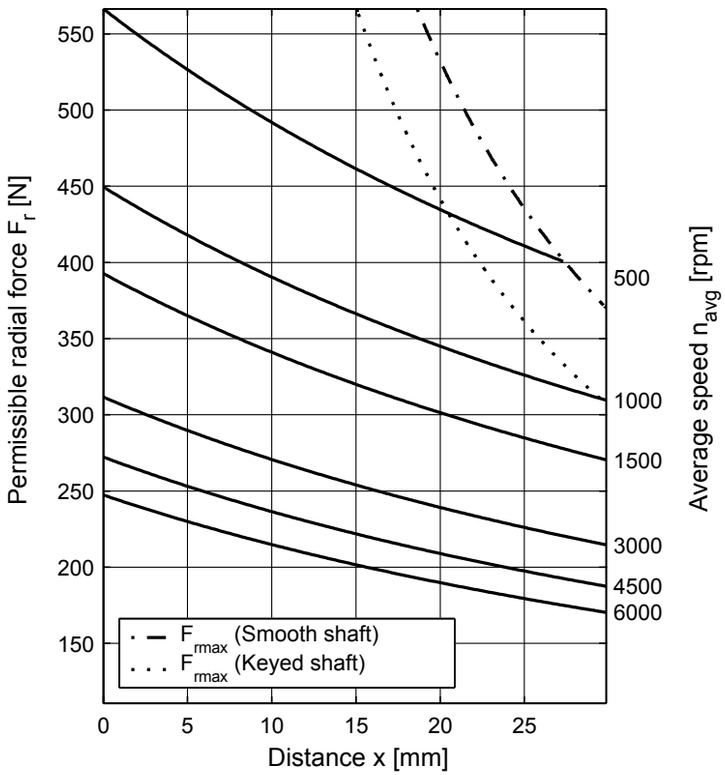
EnDat feedback / Resolver feedback

Extension of K_0 depending on motor option [mm]

Model number	K_0	M	Holding brake	Oil seal
8JSA31.eennnffgg-0	109.8	87.9	31.5	---
8JSA32.eennnffgg-0	140.8	118.9	31.5	---
8JSA33.eennnffgg-0	171.8	149.9	31.5	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

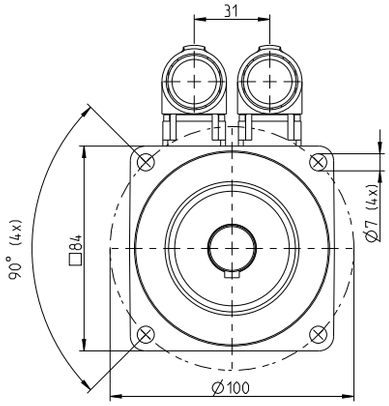


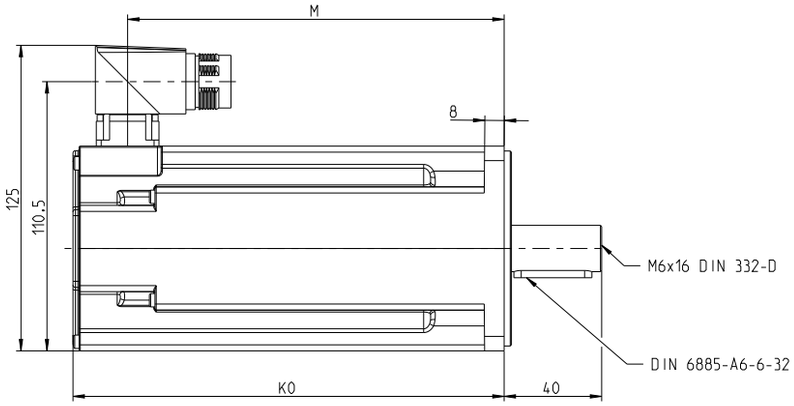
Maximum axial force: F_{amax} = 48 N

Technical data

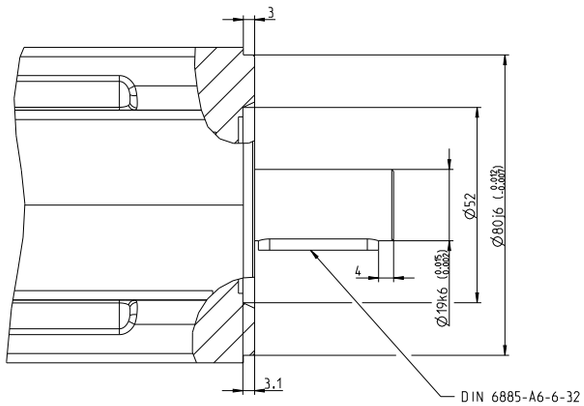
	8JSA42.ee035ffgg-0	8JSA43.ee050ffgg-0	8JSA44.ee040ffgg-0
Motor			
Nominal speed n_N [rpm]	3500	5000	4000
Number of pole pairs		5	
Nominal torque M_n [Nm]	2.74	2.94	3.69
Nominal power P_N [W]	1004	1539	1546
Nominal current I_N [A]	2.18	2.96	3.1
Stall torque M_0 [Nm]	3.42	4.8	5.88
Stall current I_0 [A]	2.74	4.87	5
Maximum torque M_{max} [Nm]	13.1	18.8	23.8
Maximum current I_{max} [A]	13.7	24.3	25
Maximum speed n_{max} [rpm]		6100	
Torque constant K_T [Nm/A]	1.26	0.99	1.19
Voltage constant K_E [V/1000 rpm]	80.9	63.9	76.6
Stator resistance R_{2ph} [Ω]	7.78	2.81	2.8
Stator inductance L_{2ph} [mH]	26.8	10.8	11.5
Electrical time constant t_{el} [ms]	3.4	3.8	4.1
Thermal time constant t_{therm} [min]	17	20	24
Moment of inertia J [kgcm^2]	1.5	2.1	2.7
Weight without brake m [kg]	3.39	4.35	5.3
Holding brake			
Holding torque of the brake M_{Br} [Nm]		5.3	
Weight of brake [kg]		0.63	
Moment of inertia for the brake J_{Br} [kgcm^2]		0.068	
Recommendations			
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1090
ACOPOSmulti inverter module 8BVIxxxx...		0055	
Cross section for B&R motor cables [mm^2]		1.5	
Connector type		speedtec	
Connector size		1.0	

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.





A-side flange detail

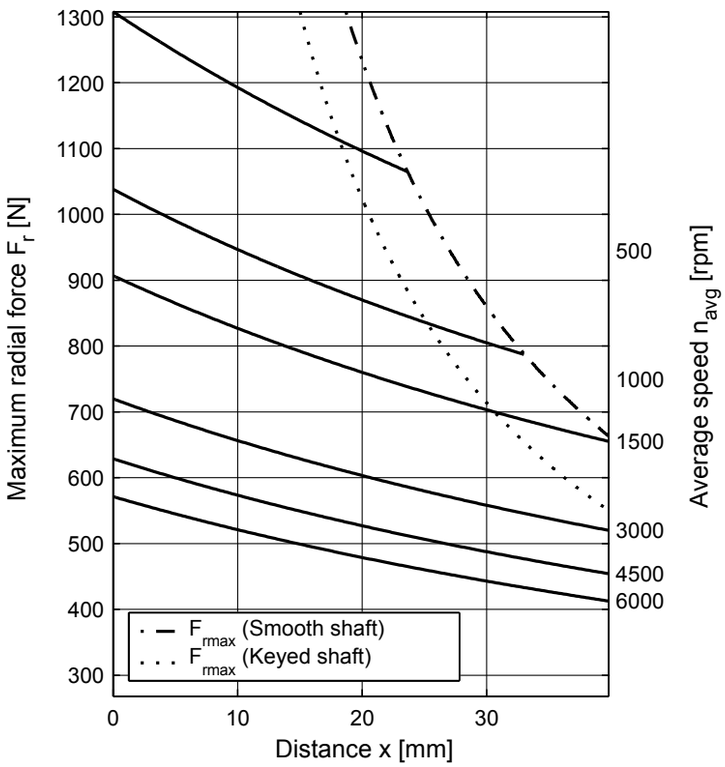


EnDat feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA42.Exnnnffgg-0	165.8	125.4	33.5	---
8JSA43.Exnnnffgg-0	194.8	154.4	33.5	---
8JSA44.Exnnnffgg-0	223.8	183.4	33.5	---

Resolver feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA42.R0nnnffgg-0	147.8	125.4	33.5	---
8JSA43.R0nnnffgg-0	176.8	154.4	33.5	---
8JSA44.R0nnnffgg-0	205.8	183.4	33.5	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

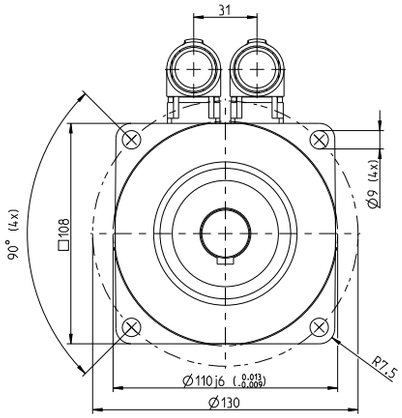


Maximum axial force: F_{amax} = 115 N

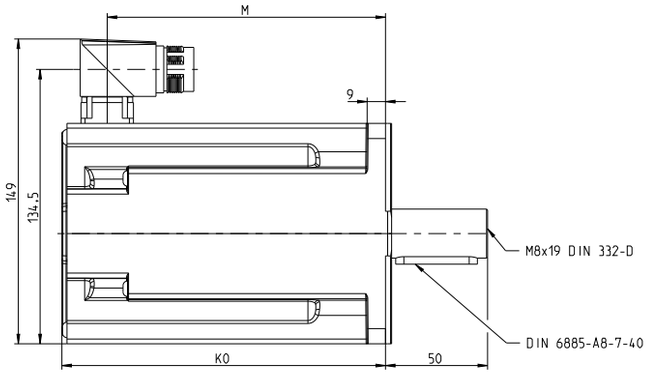
Technical data

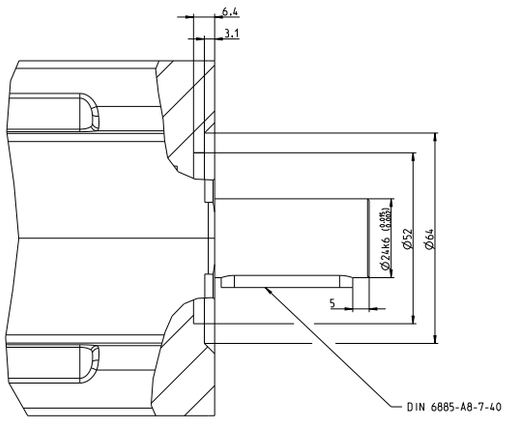
	8JSA51.ee045ffgg-0	8JSA52.ee045ffgg-0	8JSA54.ee028ffgg-0	8JSA54.ee050ffgg-0
Motor				
Nominal speed n_N [rpm]	4500	4500	2750	5000
Number of pole pairs	5			
Nominal torque M_n [Nm]	2.89	5.02	11.17	6.92
Nominal power P_N [W]	1362	2366	3217	3623
Nominal current I_N [A]	4.49	4.31	5.98	6.11
Stall torque M_0 [Nm]	4.83	8.5	14.4	14.11
Stall current I_0 [A]	7.5	7.4	7.8	12.5
Maximum torque M_{max} [Nm]	15.7	29.9	54.5	53.9
Maximum current I_{max} [A]	37.5	37	38.5	62.5
Maximum speed n_{max} [rpm]	6100			
Torque constant K_T [Nm/A]	0.64	1.16	1.87	1.13
Voltage constant K_E [V/1000 rpm]	41.9	74.9	120.3	72.9
Stator resistance R_{2ph} [Ω]	1.16	1.45	1.58	0.65
Stator inductance L_{2ph} [mH]	5.2	7.8	9.6	3.5
Electrical time constant t_{el} [ms]	4.5	5.4	6.1	5.4
Thermal time constant t_{therm} [min]	20	24	31	31
Moment of inertia J [kgcm^2]	3.4	6.2	12	12
Weight without brake m [kg]	4.2	5.8	9	9
Holding brake				
Holding torque of the brake M_{Br} [Nm]	14.5			
Weight of brake [kg]	1.1			
Moment of inertia for the brake J_{Br} [kgcm^2]	0.173			
Recommendations				
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1090	1180
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0110	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	4
Connector type	speedtec			
Connector size	1.0			

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.



A-side flange detail

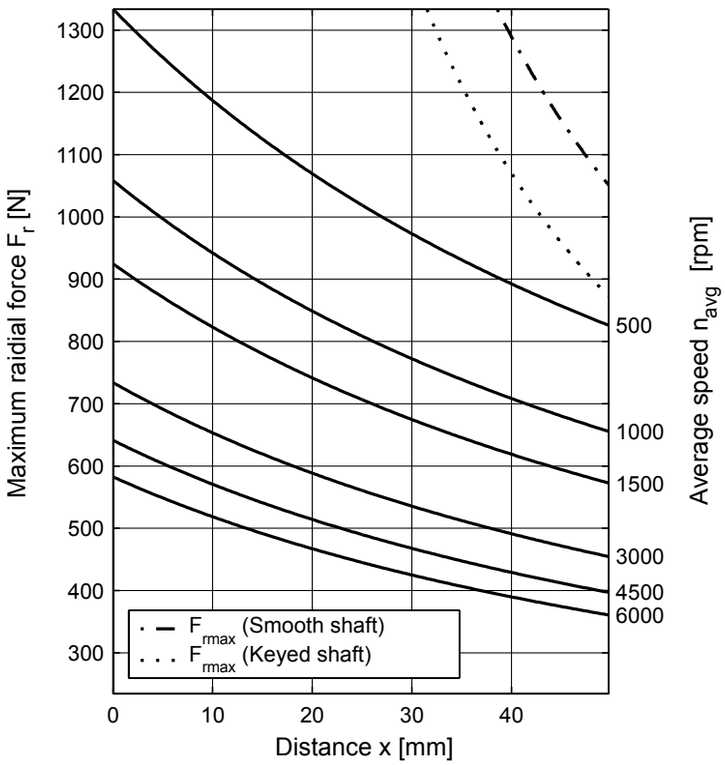




EnDat feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA51.Exnnnffgg-0	146	105.3	43	---
8JSA52.Exnnnffgg-0	177	136.3	43	---
8JSA54.Exnnnffgg-0	239	198.3	43	---
Resolver feedback			**Extension of K_0 depending on motor option [mm]**	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA51.R0nnnffgg-0	127.5	105.3	45	---
8JSA52.R0nnnffgg-0	158.5	136.3	45	---
8JSA54.R0nnnffgg-0	220.5	198.3	45	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

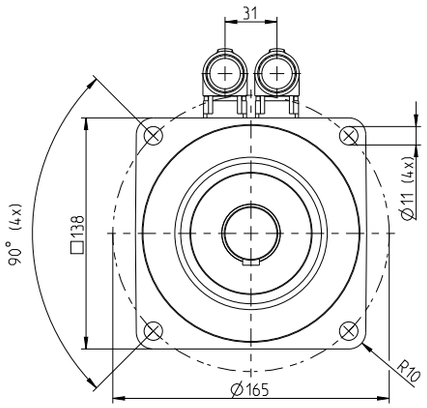


Maximum axial force: F_{amax} = 107 N

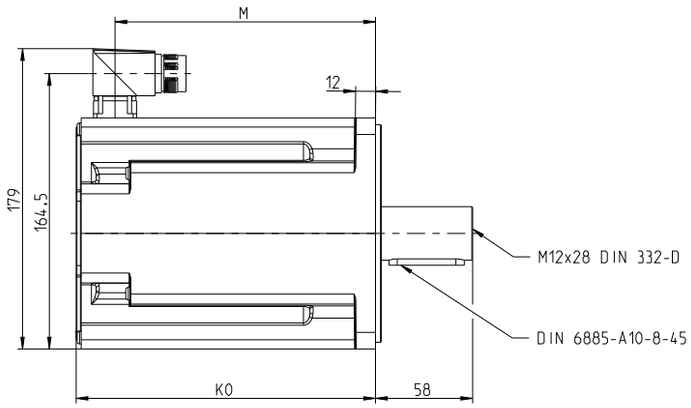
Technical data

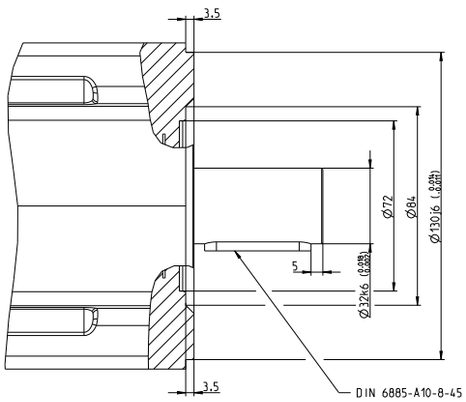
	8JSA62.ee030ffgg-0	8JSA63.ee023ffgg-0	8JSA64.ee030ffgg-0	8JSA65.ee025ffgg-0
Motor				
Nominal speed n_N [rpm]	3000	2250	3000	2500
Number of pole pairs	5			
Nominal torque M_n [Nm]	9.14	13.61	15.4	19
Nominal power P_N [W]	2871	3207	4838	4974
Nominal current I_N [A]	5.7	6.34	9.3	10.25
Stall torque M_0 [Nm]	12.1	16.8	21	25
Stall current I_0 [A]	7.6	7.9	12.8	13.6
Maximum torque M_{max} [Nm]	41.1	59.3	76.6	93.2
Maximum current I_{max} [A]	38	39.3	64	68.2
Maximum speed n_{max} [rpm]	6100			
Torque constant K_T [Nm/A]	1.6	2.15	1.66	1.85
Voltage constant K_E [V/1000 rpm]	103.2	138.2	107	119
Stator resistance R_{2ph} [Ω]	1.65	1.7	0.75	0.73
Stator inductance L_{2ph} [mH]	13.4	14.6	6.2	6.1
Electrical time constant t_{el} [ms]	8.1	8.6	8.3	8.4
Thermal time constant t_{therm} [min]	20	25	30	35
Moment of inertia J [kgcm^2]	17	24.2	32	40
Weight without brake m [kg]	8.9	11.1	13.3	15.4
Holding brake				
Holding torque of the brake M_{Br} [Nm]	25			
Weight of brake [kg]	2			
Moment of inertia for the brake J_{Br} [kgcm^2]	0.605			
Recommendations				
ACOPOS servo drive 8Vxxxx.xx...	1090	1090	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0110	0110	0220	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	4
Connector type	speedtec			
Connector size	1.0			

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: B&R motor cables with this cable cross section are optimally assembled for the recommended ACOPOS servo drive or ACOPOSmulti inverter module. B&R motor cables with different cross sections can also be used (within the specified terminal cross section range) and are available from B&R in the desired design upon request.



A-side flange detail



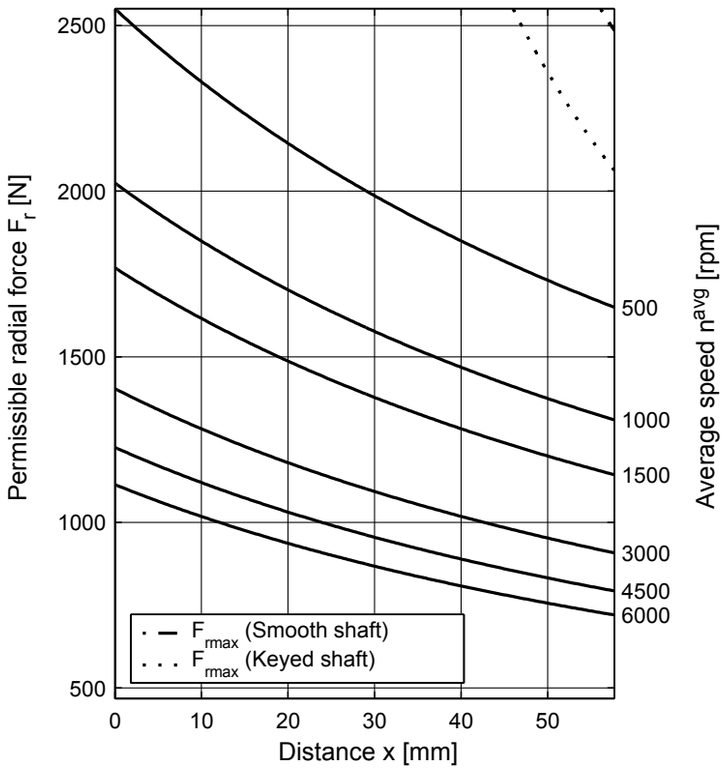


EnDat feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA62.Exnnnffgg-0	172.2	130.5	47.5	---
8JSA63.Exnnnffgg-0	197.2	155.5	47.5	---
8JSA64.Exnnnffgg-0	222.2	180.5	47.5	---
8JSA65.Exnnnffgg-0	247.2	205.5	47.5	---

Resolver feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA62.R0nnnffgg-0	153.7	130.5	47	---
8JSA63.R0nnnffgg-0	178.7	155.5	47	---
8JSA64.R0nnnffgg-0	203.7	180.5	47	---
8JSA65.R0nnnffgg-0	228.7	205.5	47	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



Maximum axial force: F_{amax} = 210 N

Technical data

	8JSA72.ee020ffgg-0	8JSA73.ee024ffgg-0	8JSA74.ee018ffgg-0
Motor			
Nominal speed n_N [rpm]	2000	2400	1800
Number of pole pairs		5	
Nominal torque M_n [Nm]	23.4	28.2	39.3
Nominal power P_N [W]	4901	7087	7408
Nominal current I_N [A]	10.06	13.22	13.82
Stall torque M_0 [Nm]	30	41.6	52.5
Stall current I_0 [A]	13	19.5	18.5
Maximum torque M_{max} [Nm]	119.3	167.9	214.6
Maximum current I_{max} [A]	65	97.4	92.1
Maximum speed n_{max} [rpm]		6100	
Torque constant K_T [Nm/A]	2.33	2.13	2.84
Voltage constant K_E [V/1000 rpm]	150	137	183
Stator resistance R_{2ph} [Ω]	0.69	0.38	0.47
Stator inductance L_{2ph} [mH]	10.8	5.9	7.7
Electrical time constant t_{el} [ms]	15.7	15.5	16.4
Thermal time constant t_{therm} [min]	46	53	60
Moment of inertia J [kgcm^2]	65	92	120
Weight without brake m [kg]	19.7	26.7	33.6
Holding brake			
Holding torque of the brake M_{Br} [Nm]		53	
Weight of brake [kg]		2.9	
Moment of inertia for the brake J_{Br} [kgcm^2]		1.644	
Recommendations			
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1320
ACOPOSmulti inverter module 8BVIxxxx...		0220	
Cross section for B&R motor cables [mm^2]		4	
Connector type		speedtec	
Connector size		1.0	

NOTE – Nominal / stall torque: see table: "Reduction depending on the motor option"
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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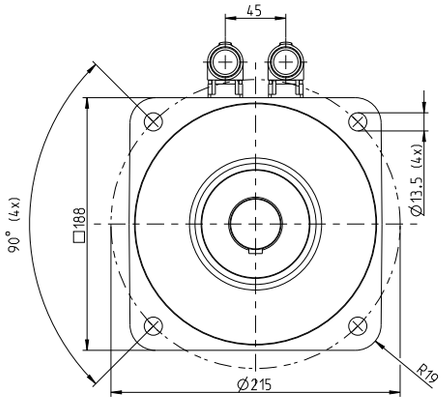
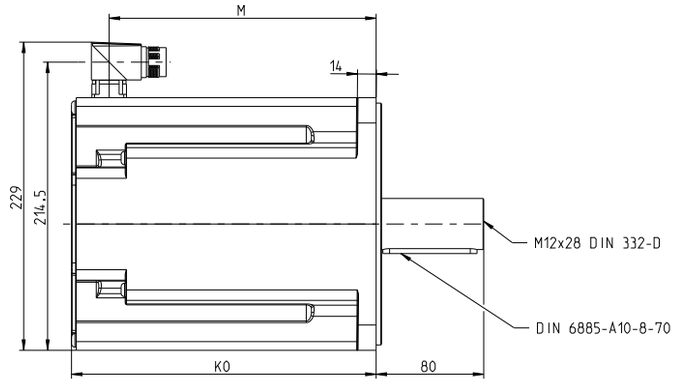
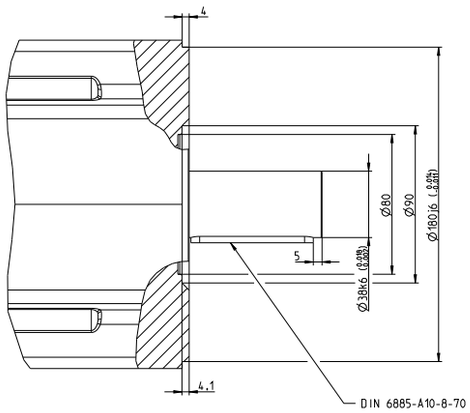


A-side flange detail

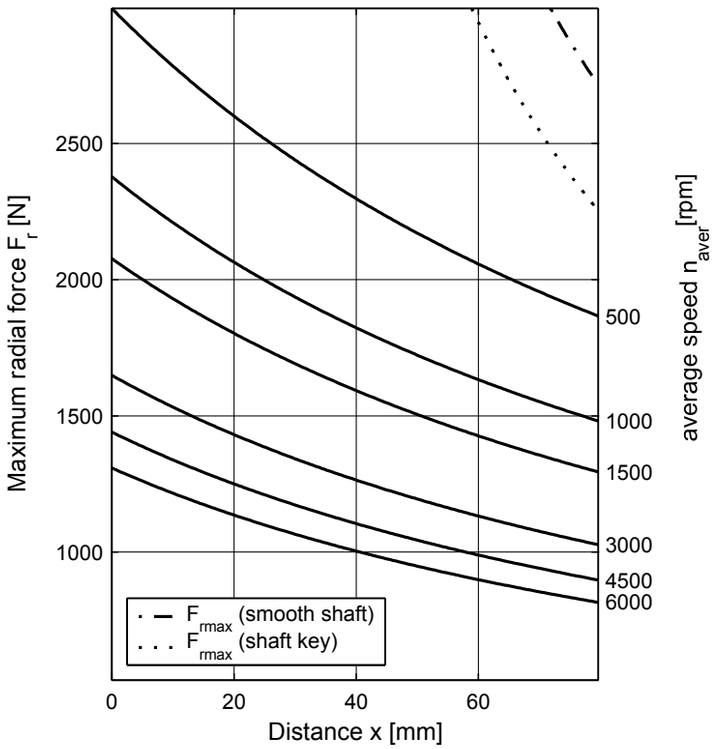




EnDat feedback			Extension of K_0 depending on motor option [mm]	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA72.Exnnnffgg-0	201.7	164.5	51.6	---
8JSA73.Exnnnffgg-0	235.7	198.5	51.6	---
8JSA74.Exnnnffgg-0	269.7	232.5	51.6	---
Resolver feedback			**Extension of K_0 depending on motor option [mm]**	
Model number	**K_0**	**M**	**Holding brake**	**Oil seal**
8JSA72.R0nnnffgg-0	192.5	164.5	42	---
8JSA73.R0nnnffgg-0	226.5	198.5	42	---
8JSA74.R0nnnffgg-0	260.5	232.5	42	---

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



maximum allowed axial force: F_{amax} = 241 N

8JSB/8JSQ stainless steel servo motors

Servo motors for hygienic applications

The B&R servo motors in the 8JSB and 8JSQ series feature a hygienic design that allows efficient cleaning in the areas of foodstuffs production and biomedical engineering. With their smooth surfaces and IP69K protection, they were developed strictly in accordance with EHEDG and FDA hygiene standards.

Table of contents

System features

8JSB and 8JSQ – Servo motors for hygienic applications

The B&R servo motors in the 8JSB and 8JSQ series feature a hygienic design that allows efficient cleaning in the areas of foodstuffs production and biomedical engineering. With a smooth surface and IP69K protection, these motors satisfy the requirements of EHEDG and FDA hygiene standards, making them the optimal choice for harsh environmental conditions or in areas where machines are working with aseptic processes. These motors are characterized by the highest power density in this class. The smooth stainless steel housing with a surface finish of less than 0.8 µm, rounded corners and seamless transitions have been designed to eliminate undercuts and protruding screws in order to prevent the collection of contaminants while allowing for simple, safe and efficient cleaning. With a laser-engraved type plate and IP69K protection, these motors are extremely suitable for efficient daily cleaning processes.

Connection type

The use of B&R's single cable technology with digital feedback reduces the number of feed-throughs to an absolute minimum. The connectors also have IP69K protection and meet hygiene standards. The hybrid cables with FDA approval are heat resistant up to 150°C and provide automatic pressure compensation. These features result in even higher operational safety while eliminating outages caused by the internal formation of rust or condensation. The robust B&R single cable solution with built-in hybrid connector allows these motors to be seamlessly integrated in the B&R system environment, and their safety functionality opens up entirely new possibilities for automation in the foodstuffs and pharmaceutical industries.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for 8JSB /8JSQ hygiene motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The servo drive then reads current limits and current control parameters required for optimal control of the motor from the embedded parameter chip. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Advantages of B&R stainless steel motors for your application:

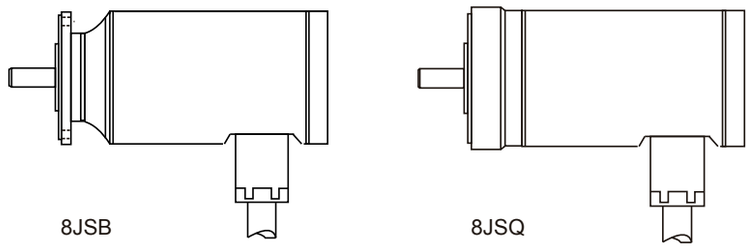
- Simplified installation and maintenance through plug-in connectors
- Robust B&R single cable solution with built-in hybrid connector for safe drives
- Complete hygienic design in accordance with EHEDG and FDA guidelines for optimal washdown
- 100% stainless steel (housing, flange, shaft and connectors)
- Innovative connectors with IP69K protection and a hygienic design
- Food-safe and resistant to chemicals
- Ideal for machines with an open design
- B5 and B14 mounting methods

Cooling type / Construction

The hygiene motors in the 8JSB and 8JSQ series are self-cooled and have a stainless steel design. They are only available as a single cable (built-in hybrid connector) solution with a "straight" connection direction. The mounting method is the only difference between them.

Cooling type / Construction B
The 8JSB series is designed with flange-mounted construction.

Cooling type / Construction Q
The 8JSQ series is designed with front-mounted construction.



Sizes

8JSB and 8JSQ three-phase synchronous motors are available in size 3, 4, 5 and 6.
They have different dimensions (especially flange dimensions) and power ratings. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Cooling type / Construction		Available sizes			
		3	**4**	**5**	**6**
8JS	B	Yes	Yes	Yes	Yes
	Q	Yes	Yes	Yes	Yes

Lengths

8JSB and 8JSQ three-phase synchronous motors are available in five different lengths. They have different power ratings with identical flange dimensions. These different lengths are indicated by a number represented by (d) in the model number.

Overview

Length	Available sizes			
	3	**4**	**5**	**6**
1	Yes	Yes	Yes	-
2	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes
4	-	Yes	Yes	Yes
5	-	-	-	Yes

Motor encoder systems

8JSB and 8JSQ series motors in single-turn or multi-turn variants are equipped with inductive encoders.

EnDat 2.2 encoder
Analog and digital transfer

The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

For the advanced, fully digital EnDat 2.2 protocol, the positions are generated directly in the encoder and communicated serially with the drive system. This method is very robust against disturbances and is even certified for safety applications.

Technical data – EnDat 2.2 encoders
Inductive encoders for motor sizes 3 and 4

Encoder type / Order code	D8	D9
Operating principle	Inductive	Inductive
EnDat protocol	2.2	2.2
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	Digital pos. in the encoder	Digital pos. in the encoder
Number of lines	Digital pos. in the encoder	Digital pos. in the encoder
Resolution [bits single-turn / bits multi-turn]	19/0	19/12
Precision ["]	120	120
Switching frequency ≥ [kHz]	Digital pos. in the encoder	Digital pos. in the encoder
Vibration during operation - Stator max [m/s2]	400	400
Vibration during operation - Rotor max [m/s2]	600	600
Shock during operation max [m/s^2]	2000	2000
Manufacturer's product ID	ECI 1119 FS	EQI 1131 FS
Manufacturer's website	www.heidenhain.de	

Inductive encoders for motor sizes 5 and 6

Encoder type / Order code	DA	DB
Operating principle	Inductive	Inductive
EnDat protocol	2.2	2.2
Functional safety	No	No
Single-turn / Multi-turn	S	M
Revolutions	1	4096
Number of lines	Digital pos. in the encoder	Digital pos. in the encoder
Resolution [bits single-turn / bits multi-turn]	19/0	19/12
Precision ["]	65	65
Switching frequency ≥ [kHz]	Digital pos. in the encoder	Digital pos. in the encoder
Vibration during operation - Stator max [m/s2]	400	400
Vibration during operation - Rotor max [m/s2]	600	600
Shock during operation max [m/s^2]	2000	2000
Manufacturer's product ID	ECI 1319 FS	EQI 1331 FS
Manufacturer's website	www.heidenhain.de	

Nominal speeds

The stainless steel hygiene motors in the 8JSB and 8JSQ series are available with different nominal speeds:

Cooling / Construction type J and Q - Overview

Size	Lengths				
	1	2	3	4	5
3	5000	3000, 7000	2000, 4500	-	-
4	3000, 6000	3500, 6000	2500, 6000	2000, 5000	-
5	2500	1500, 3500	3000	1800, 3000	-
6	-	1800, 5000	1500, 4000	2000, 3000	2000

Holding brake

8JSB/ 8JSQ motors available with an optional built-in holding brake. Retrofitting is not possible. The spring action brake (24 VDC) blocks the rotor when power is not applied.

Name	Motor size			
	3	4	5	6
Holding torque M_{Br} [Nm]	2.5	5.3	14.5	25
Connected load P_{on} [W]	10.1	12.8	19.5	25.7
Supply current I_{on} [A]	0.42	0.53	0.82	1.07
Supply voltage U_{on} [V]	24	24	24	24 VDC
Activation delay t_{on} [ms]	0.01	0.015	0.015	0.02
Release delay t_{off} [ms]	0.025	0.035	0.08	0.105
Moment of inertia J_{Br} [$kgcm^2$]	0.014	0.068	0.173	0.605
Mass m_{Br} [kg]	0.35	0.63	1.1	2.0

The holding brakes are designed to work at a standstill and not suitable for continuous operational braking. If used for frequent operational braking, premature wear and failure of the holding brake can be expected.

Motor options and special motor options

Motor options

Depending on the size and length, the 8JSB/ 8JSQ hygiene motors can be delivered
- With various inductive EnDat 2.2 encoders
- With various nominal speeds
- With a smooth or keyed shaft
- With or without a holding brake

Design of the shaft end

The power is transmitted over the cylindrical shaft end, EN50347-compliant k6 fit with locking thread. A keyed shaft is also available as an alternative. (The DIN 748-compliant keyway and the shaft key correspond to DIN 6885 T1 Form A, for stainless steel 1.4404.)

Special motor options

No special motor options are currently offered for 8JSB/ 8JSQ motors.

Determining the order code for motor options (ff)

Motor options for 8JSB and 8JSQ stainless steel motors

Motor option				
Connection direction	Oil seal	Holding brake	Shaft end	Code for the order key (ff)
Straight, hybrid motor cable	Yes	No	Smooth	U6
			Keyed	U7
		Normal	Smooth	U8
			Keyed	U9

General motor data

General information	Cooling type B	Cooling type Q
C-UR-US listed	In preparation	In preparation
EHEDG certified	In preparation	In preparation

Electrical characteristics		
Mains input voltage on servo drive	3x 400 VAC ... 3x 480 VAC ± 10%	
Connection type Motor connection Encoder connection	htec circular connector from Intercontec, "single cable solution" (hybrid connector), size 1	

Thermal characteristics		
Class of the insulation system In accordance with IEC 60085	F	
Methods of cooling	Self-cooled (IC 400/ IC 4A0A0)	Self-cooled (IC 400/ IC 4A0A0)
Thermal motor protection in accordance with EN 60034-11	KTY83-110 Maximum winding temperature is 140°C (limited for EnDat to 110°C by the thermal motor protection in the ACOPOS servo drive or the ACOPOSmulti drive system)	

Mechanical characteristics		
Vibration severity in accordance with EN 60034-14	Vibration severity level A	
Flange	In accordance with IEC 60072-1	
Shaft end	Cylindrical, with locking thread DIN 332 Form D, DIN SPEC 42955	
Shaft key and keyway	The DIN 748-compliant keyway and the shaft key correspond to DIN 6885 T1 Form A, for stainless steel 1.4404.	
Balancing the shaft in accordance with DIN ISO 8821	Balanced in accordance with DIN ISO 1940/1, severity level G 6.3	
Bearing mission time according to DIN ISO281	20.000h	
Motor housing material Surface roughness	Stainless steel 1.4404 <0.8 µm, which meets EHEDG specifications	

Operating conditions		
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation	
Environmental conditions during operation	0°C to +40°C	
Maximum installation elevation	1000 m	
EN 60034-5 protection (IP code)	IP40, with oil seal IP69K	
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Only horizontal IMB5	Horizontal IMB14 or vertical IMV18

Reduction of I_N, M_N, I_0 and M_0 for installation elevations above 1000 m over sea level or for ambient temperatures above 40°C	
Elevation above sea level	6% up to 2000 m 17% up to 3000 m 30% up to 4000 m 55% up to 5000 m
Ambient temperatures above 40°C, at installation elevations less than 1000 m above sea level	5% more per 5°C

Please contact B&R when operating in lower ambient temperatures.

Storage and transport conditions	
Storage temperature	-25 to +55°C max. change 20 K/h, climate class 1K4 (IEC60721-3-1)
Relative humidity during storage	5% - 95%, non-condensing
Transport temperature	-25 to +70°C max. change 20 K/h, environmental condition class 1K4 (IEC60721-3-2)
Relative humidity during transport	5% - 95%, non-condensing

Order key

8JS	a	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (see section "Cooling types")

B...selfcooled,stainless steel flange mounting
Q...selfcooled,stainless steel front mounting

Sizes (see section "Sizes")
valid values: **3,4,5,6**

Lengths (see section "Lengths")
valid values: **1,2,3,4,5**

Encoder system (see section "Motor encoder systems")

R0...Resolver

Motor size 3,4

D8...ind. EnDat 2.2 single-turn, 19 bit
D9...ind. EnDat 2.2 multi-turn, 19 bit

Motor size 5,6
DA...ind. EnDat 2.2 single-turn,32 - Strich
DB...ind. EnDat 2.2 multi-turn,32 - Strich

Nominal speed (see sections "Nominal speed")
nnn...rated speed/100, e.g. 030 equals a rated speed of 3000 rpm

Motor options (see section "Motor options")

Special motor options (see section "Special motor options")
00...no special motor options

Motor version: valid value: **0**

Additional motor options or special motor options must be arranged with B&R

Example order 1

A stainless steel three-phase synchronous motor with type **8JS** for flange mounting (order code "**B**") is selected for the application. The size/length should be **43**. An inductive single-turn encoder was chosen. The required speed is 2500 rpm. A brake and oil seal are not required, the output shaft should be smooth.

The code for the flange-mounted stainless steel motor **8JSB**.

The code for the size/length is **43**.

The code (ee) for the encoder system is **D8**.

The code (nnn) for a nominal speed of 2500 rpm is **025**.

All 8JSB motors are equipped with option "single cable solution (hybrid cable) connector, straight, top". The option code (ff) is therefore always **"U"**. The no holding brake and smooth shaft without oil seal options result in **"0"**, so the option code is **"U0"**
No special options (gg), the code is **00**.
The version has a fixed definition and is currently **- 0**.

The model number for the required motor is **8JSB43.D8025U000-0.**

Example order 2

A stainless steel three-phase synchronous motor with type **8JS** for front mounting (order code "Q") is selected for the application. The size/length should be **65**. An inductive multi-turn encoder was chosen. The required speed is 2000 rpm. A brake and oil seal are required (IP69K protection), the output shaft should be smooth.

The code for the flange-mounted stainless steel motor **8JSQ**.

The code for the size/length is **65**.

The code (ee) for the encoder system is DB.

The code (nnn) for a nominal speed of 2000 rpm is **020**.

All 8JSQ motors are equipped with option "single cable solution (hybrid cable) connector, straight, top". The option code (ff) is therefore always **"U"**. The holding brake and smooth shaft with oil seal options result in **"8"**, so the option code is **"U8"**
No special options (gg), the code is **00**.
The version has a fixed definition and is currently **- 0**.

The model number for the required motor is **8JSQ65.DB020U800-0.**

Technical data

	8JSB31.ee050ffgg-0	8JSB32.ee030ffgg-0	8JSB32.ee070ffgg-0	8JSB33.ee020ffgg-0	8JSB33.ee045ffgg-0	8JSB41.ee030ffgg-0	8JSB41.ee060ffgg-0	8JSB42.ee035ffgg-0	8JSB42.ee060ffgg-0
Motor									
Nominal speed n_N [rpm]	5000	3000	7000	2000	4500	3000	6000	3500	6000
Number of pole pairs	4	4	4	4	4	5	5	5	5
Nominal torque M_n [Nm]	0.817	1.482	1.045	2.033	1.729	1.518	1.287	2.459	1.971
Nominal power P_N [W]	428	466	766	426	815	477	809	901	1238
Nominal current I_N [A]	0.961	1.059	1.432	1.07	1.572	1.168	1.813	1.891	3.285
Stall torque M_0 [Nm]	0.943	1.62	1.67	2.13	2.2	1.73	1.79	3.09	3.22
Stall current I_0 [A]	1.22	1.23	2.42	1.2	2.1	1.45	2.83	2.64	5.78
Maximum torque M_{max} [Nm]	3.8	6.84	7.04	9.68	9.88	5.65	5.77	10.7	10.8
Maximum current I_{max} [A]	5.5	5.7	11.3	5.9	10.3	5.8	11.4	11	23.4
Maximum speed n_{max} [rpm]	8000	8000	8000	8000	8000	6000	6000	6000	6000
Torque constant K_T [Nm/A]	0.85	1.4	0.73	1.9	1.1	1.3	0.71	1.3	0.6
Voltage constant K_E [V/1000 rpm]	54.5	89.8	47.1	120	70.6	86.3	45.6	80.9	38.3
Stator resistance R_{2ph} [Ω]	21.4	23.8	6.34	26.6	9.03	21.3	6.04	7.8	1.67
Stator inductance L_{2ph} [mH]	37.5	46.5	12.8	53.6	18.5	66.1	18.4	26.8	6
Electrical time constant t_{el} [ms]	1.751	1.956	2.029	2.015	2.049	3.108	3.048	3.437	3.6
Thermal time constant t_{therm} [min]	24	32	32	40	40	40	40	51	51
Moment of inertia J [kgcm^2]	0.33	0.59	0.59	0.85	0.85	0.81	0.81	1.45	1.45
Weight without brake m [kg]	4.1	5	5	5.9	5.9	6.1	6.1	7.4	7.4
Holding brake									
Holding torque of the brake M_{Br} [Nm]	2.5	2.5	2.5	2.5	2.5	6	6	6	6
Weight of brake [kg]	0.7	0.7	0.7	0.7	0.7	1.14	1.14	1.14	1.14
Moment of inertia for the brake J_{Br} [kgcm^2]	0.012	0.012	0.012	0.012	0.012	0.068	0.068	0.068	0.068
Recommendations									
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0028	0014	0028	0014	0028	0028	0055
Cross section for B&R motor cables [mm^2]					1.5				
Connector type					H-Tec				
Connector size					1.0				

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSB43.ee025ffgg-0	8JSB43.ee060ffgg-0	8JSB44.ee020ffgg-0	8JSB44.ee050ffgg-0	8JSB51.ee025ffgg-0	8JSB51.ee055ffgg-0	8JSB52.ee015ffgg-0	8JSB52.ee035ffgg-0	8JSB53.ee030ffgg-0	8JSB54.ee018ffgg-0
Motor										
Nominal speed n_N [rpm]	2500	6000	2000	5000	2500	5500	1500	3500	3000	1800
Number of pole pairs	5									
Nominal torque M_n [Nm]	3.511	2.178	4.385	2.781	2.626	1.275	5.045	3.165	3.751	7.125
Nominal power P_N [W]	919	1368	918	1456	688	734	792	1160	1179	1343
Nominal current I_N [A]	2.041	2.447	2.149	2.624	1.545	1.593	1.802	2.261	2.084	2.74
Stall torque M_0 [Nm]	4.32	4.43	5.36	5.46	3.1	3.18	5.8	5.94	8.13	9.92
Stall current I_0 [A]	2.65	5.23	2.75	5.41	2.16	4.7	2.3	4.5	5	4.13
Maximum torque M_{max} [Nm]	15.2	15.4	19.3	19.5	11	11.1	20.7	21	29.4	36.9
Maximum current I_{max} [A]	11	21.6	11.4	22.4	8.24	18	9	17.7	19.8	16.5
Maximum speed n_{max} [rpm]	6000									
Torque constant K_T [Nm/A]	1.72	0.89	2.04	1.06	1.7	0.8	2.8	1.4	1.8	2.6
Voltage constant K_E [V/1000 rpm]	111	57.4	132	68	110	51.3	179	92.7	112	166
Stator resistance R_{2ph} [Ω]	8.63	2.12	8.66	2.25	9	1.99	8.98	2.37	2.12	3.22
Stator inductance L_{2ph} [mH]	32.6	8.75	34	9.05	36.6	7.9	44.7	11.9	11.4	18.3
Electrical time constant t_{el} [ms]	3.779	4.158	3.916	4.051	4.068	3.977	4.98	5.028	5.386	5.689
Thermal time constant t_{therm} [min]	63	63	74	74	46	46	58	58	69	80
Moment of inertia J [kgcm^2]	2.09	2.09	2.73	2.73	3.42	3.42	6.22	6.22	9.12	11.9
Weight without brake m [kg]	8.8	8.8	10.2	10.2	8.9	8.9	11.1	11.1	13.4	15.7
Holding brake										
Holding torque of the brake M_{Br} [Nm]	6	6	6	6	14.5	14.5	14.5	14.5	14.5	14.5
Weight of brake [kg]	1.14	1.14	1.14	1.14	1.8	1.8	1.8	1.8	1.8	1.8
Moment of inertia for the brake J_{Br} [kgcm^2]	0.068	0.068	0.068	0.068	0.173	0.173	0.173	0.173	0.173	0.173
Recommendations										
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0028	0055	0028	0055	0028	0055	0055	0055
Cross section for B&R motor cables [mm^2]	1.5									
Connector type	H-Tec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSB54.ee030ffgg-0	8JSB62.ee018ffgg-0	8JSB62.ee050ffgg-0	8JSB63.ee015ffgg-0	8JSB63.ee040ffgg-0	8JSB64.ee020ffgg-0	8JSB64.ee030ffgg-0	8JSB65.ee025ff00-0
Motor								
Nominal speed n_N [rpm]	3000	1800	5000	1500	4000	2000	3000	2500
Number of pole pairs	5							
Nominal torque M_n [Nm]	2.282	8.375	3.995	11.88	6.554	13.795	10.664	14.048
Nominal power P_N [W]	717	1579	2092	1866	2745	2889	3350	3678
Nominal current I_N [A]	2.075	3.79	3.917	4	5.285	6.05	6.424	6.786
Stall torque M_0 [Nm]	9.86	9.98	10.2	13.81	14.2	17.69	17.94	21
Stall current I_0 [A]	9.32	5	11.1	5	12.3	8.3	11.5	10.7
Maximum torque M_{max} [Nm]	36.9	28.6	29.1	41.1	42	52.5	53.1	64.2
Maximum current I_{max} [A]	37.5	16.2	36	16.8	41.4	27.5	38.4	36.6
Maximum speed n_{max} [rpm]	6000							
Torque constant K_T [Nm/A]	1.1	2.21	1.02	2.97	1.24	2.28	1.66	2.07
Voltage constant K_E [V/1000 rpm]	72.9	142	65.5	192	79.9	147	107	133
Stator resistance R_{2ph} [Ω]	0.69	3.32	0.76	3.5	0.96	1.43	0.77	0.91
Stator inductance L_{2ph} [mH]	3.55	25.4	5.4	28.1	4.9	11.8	6.22	7.55
Electrical time constant t_{el} [ms]	5.251	7.658	7.137	8.153	7.82	8.271	8.088	8.292
Thermal time constant t_{therm} [min]	80	58	58	62	62	75	75	88
Moment of inertia J [kgcm^2]	11.9	16.9	16.9	24.2	24.2	31.6	31.6	40
Weight without brake m [kg]	15.7	19.6	19.6	23.1	23.1	26.7	26.7	30.2
Holding brake								
Holding torque of the brake M_{Br} [Nm]	14.5	25	25	25	25	25	25	25
Weight of brake [kg]	1.8	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Moment of inertia for the brake J_{Br} [kgcm^2]	0.173	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Recommendations								
ACOPOSmulti inverter module 8BVIxxxx...	0011	0055	0011	0055	0011	0011	0011	0011
Cross section for B&R motor cables [mm^2]	4	1.5	4	1.5	4	4	4	4
Connector type	H-Tec							
Connector size	1.0							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ31.ee050ff00-0	8JSQ32.ee030ffgg-0	8JSQ32.ee070ffgg-0	8JSQ33.ee020ffgg-0	8JSQ33.ee045ffgg-0	8JSQ41.ee030ffgg-0	8JSQ41.ee060ffgg-0	8JSQ42.ee035ffgg-0	8JSQ42.ee060ffgg-0	8JSQ43.ee025ffgg-0	8JSQ43.ee060ffgg-0
Motor											
Nominal speed n_N [rpm]	5000	3000	7000	2000	4500	3000	6000	3500	6000	2500	6000
Number of pole pairs	4	4	4	4	4	5	5	5	5	5	5
Nominal torque M_n [Nm]	0.86	1.482	1.045	2.033	1.729	1.518	1.287	2.459	1.971	3.511	2.178
Nominal power P_N [W]	450	466	766	426	815	477	809	901	1238	919	1368
Nominal current I_N [A]	1.02	1.059	1.432	1.07	1.572	1.168	1.813	1.891	3.285	2.041	2.447
Stall torque M_0 [Nm]	1	1.62	1.67	2.13	2.2	1.73	1.79	3.09	3.22	4.32	4.43
Stall current I_0 [A]	1.29	1.23	2.42	1.2	2.1	1.45	2.83	2.64	5.78	2.65	5.23
Maximum torque M_{max} [Nm]	4.41	6.84	7.04	9.68	9.88	5.65	5.77	10.7	10.8	15.2	15.4
Maximum current I_{max} [A]	6.9	5.7	11.3	5.9	10.3	5.8	11.4	11	23.4	11	21.6
Maximum speed n_{max} [rpm]	8000	8000	8000	8000	8000	6000	6000	6000	6000	6000	6000
Torque constant K_T [Nm/A]	0.85	1.4	0.73	1.9	1.1	1.3	0.71	1.3	0.6	1.72	0.89
Voltage constant K_E [V/1000 rpm]	33.62	89.8	47.1	120	70.6	86.3	45.6	80.9	38.3	111	57.4
Stator resistance R_{2ph} [Ω]	21.417	23.8	6.34	26.6	9.03	21.3	6.04	7.8	1.67	8.63	2.12
Stator inductance L_{2ph} [mH]	37.5	46.5	12.8	53.6	18.5	66.1	18.4	26.8	6	32.6	8.75
Electrical time constant t_{el} [ms]	1.751	1.956	2.029	2.015	2.049	3.108	3.048	3.437	3.6	3.779	4.158
Thermal time constant t_{therm} [min]	24	32	32	40	40	40	40	51	51	63	63
Moment of inertia J [kgcm^2]	0.33	0.59	0.59	0.85	0.85	0.81	0.81	1.45	1.45	2.09	2.09
Weight without brake m [kg]	4.1	5	5	5.9	5.9	6.1	6.1	7.4	7.4	8.8	8.8
Holding brake											
Holding torque of the brake M_{Br} [Nm]	2.5	2.5	2.5	2.5	2.5	6	6	6	6	6	6
Weight of brake [kg]	0.7	0.7	0.7	0.7	0.7	1.14	1.14	1.14	1.14	1.14	1.14
Moment of inertia for the brake J_{Br} [kgcm^2]	0.012	0.012	0.012	0.012	0.012	0.068	0.068	0.068	0.068	0.068	0.068
Recommendations											
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0028	0014	0028	0014	0028	0028	0055	0028	0055
Cross section for B&R motor cables [mm^2]						1.5					
Connector type						H-Tec					
Connector size						1.0					

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ44.ee020ffgg-0	8JSQ44.ee050ffgg-0	8JSQ51.ee025ffgg-0	8JSQ51.ee055ffgg-0	8JSQ52.ee015ffgg-0	8JSQ52.ee035ffgg-0	8JSQ53.ee030ffgg-0	8JSQ54.ee018ffgg-0	8JSQ54.ee030ffgg-0	8JSQ62.ee018ffgg-0
Motor										
Nominal speed n_N [rpm]	2000	5000	2500	5500	1500	3500	3000	1800	3000	1800
Number of pole pairs	5									
Nominal torque M_n [Nm]	4.385	2.781	2.626	1.275	5.045	3.165	3.751	7.125	2.282	8.375
Nominal power P_N [W]	918	1456	688	734	792	1160	1179	1343	717	1579
Nominal current I_N [A]	2.149	2.624	1.545	1.593	1.802	2.261	2.084	2.74	2.075	3.79
Stall torque M_0 [Nm]	5.36	5.46	3.1	3.18	5.8	5.94	8.13	9.92	9.86	9.98
Stall current I_0 [A]	2.75	5.41	2.16	4.7	2.3	4.5	5	4.13	9.32	5
Maximum torque M_{max} [Nm]	19.3	19.5	11	11.1	20.7	21	29.4	36.9	36.9	28.6
Maximum current I_{max} [A]	11.4	22.4	8.24	18	9	17.7	19.8	16.5	37.5	16.2
Maximum speed n_{max} [rpm]	6000									
Torque constant K_T [Nm/A]	2.04	1.06	1.7	0.8	2.8	1.4	1.8	2.6	1.1	2.21
Voltage constant K_E [V/1000 rpm]	132	68	110	51.3	179	92.7	112	166	72.9	142
Stator resistance R_{2ph} [Ω]	8.66	2.25	9	1.99	8.98	2.37	2.12	3.22	0.69	3.32
Stator inductance L_{2ph} [mH]	34	9.05	36.6	7.9	44.7	11.9	11.4	18.3	3.55	25.4
Electrical time constant t_{el} [ms]	3.916	4.051	4.068	3.977	4.98	5.028	5.386	5.689	5.251	7.658
Thermal time constant t_{therm} [min]	74	74	46	46	58	58	69	80	80	58
Moment of inertia J [kgcm^2]	2.73	2.73	3.42	3.42	6.22	6.22	9.12	11.9	11.9	16.9
Weight without brake m [kg]	10.2	10.2	8.9	8.9	11.1	11.1	13.4	15.7	15.7	19.6
Holding brake										
Holding torque of the brake M_{Br} [Nm]	6	6	14.5	14.5	14.5	14.5	14.5	14.5	14.5	25
Weight of brake [kg]	1.14	1.14	1.8	1.8	1.8	1.8	1.8	1.8	1.8	3.4
Moment of inertia for the brake J_{Br} [kgcm^2]	0.068	0.068	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.61
Recommendations										
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0028	0055	0028	0055	0055	0055	0011	0055
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	4	1.5
Connector type	H-Tec									
Connector size	1.0									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ62.ee050ffgg-0	8JSQ63.ee015ffgg-0	8JSQ63.ee040ffgg-0	8JSQ64.ee020ffgg-0	8JSQ64.ee030ffgg-0	8JSQ65.ee025ff00-0
Motor						
Nominal speed n_N [rpm]	5000	1500	4000	2000	3000	2500
Number of pole pairs	5					
Nominal torque M_n [Nm]	3.995	11.88	6.554	13.795	10.664	14.048
Nominal power P_N [W]	2092	1866	2745	2889	3350	3678
Nominal current I_N [A]	3.917	4	5.285	6.05	6.424	6.786
Stall torque M_0 [Nm]	10.2	13.81	14.2	17.69	17.94	21
Stall current I_0 [A]	11.1	5	12.3	8.3	11.5	10.7
Maximum torque M_{max} [Nm]	29.1	41.1	42	52.5	53.1	64.2
Maximum current I_{max} [A]	36	16.8	41.4	27.5	38.4	36.6
Maximum speed n_{max} [rpm]	6000					
Torque constant K_T [Nm/A]	1.02	2.97	1.24	2.28	1.66	2.07
Voltage constant K_E [V/1000 rpm]	65.5	192	79.9	147	107	133
Stator resistance R_{2ph} [Ω]	0.76	3.5	0.96	1.43	0.77	0.91
Stator inductance L_{2ph} [mH]	5.4	28.1	4.9	11.8	6.22	7.55
Electrical time constant t_{el} [ms]	7.137	8.153	7.82	8.271	8.088	8.292
Thermal time constant t_{therm} [min]	58	62	62	75	75	88
Moment of inertia J [kgcm^2]	16.9	24.2	24.2	31.6	31.6	40
Weight without brake m [kg]	19.6	23.1	23.1	26.7	26.7	30.2
Holding brake						
Holding torque of the brake M_{Br} [Nm]	25					
Weight of brake [kg]	3.4					
Moment of inertia for the brake J_{Br} [kgcm^2]	0.61					
Recommendations						
ACOPOSmulti inverter module 8BVIxxxx...	0011	0055	0011	0011	0011	0011
Cross section for B&R motor cables [mm^2]	4	1.5	4	4	4	4
Connector type	H-Tec					
Connector size	1.0					

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSB31.ee050ffgg-0	8JSB32.ee030ffgg-0	8JSB32.ee070ffgg-0	8JSB33.ee020ffgg-0	8JSB33.ee045ffgg-0
Motor					
Nominal speed n_N [rpm]	5000	3000	7000	2000	4500
Number of pole pairs			4		
Nominal torque M_n [Nm]	0.817	1.482	1.045	2.033	1.729
Nominal power P_N [W]	428	466	766	426	815
Nominal current I_N [A]	0.961	1.059	1.432	1.07	1.572
Stall torque M_0 [Nm]	0.943	1.62	1.67	2.13	2.2
Stall current I_0 [A]	1.22	1.23	2.42	1.2	2.1
Maximum torque M_{max} [Nm]	3.8	6.84	7.04	9.68	9.88
Maximum current I_{max} [A]	5.5	5.7	11.3	5.9	10.3
Maximum speed n_{max} [rpm]			8000		
Torque constant K_T [Nm/A]	0.85	1.4	0.73	1.9	1.1
Voltage constant K_E [V/1000 rpm]	54.5	89.8	47.1	120	70.6
Stator resistance R_{2ph} [Ω]	21.4	23.8	6.34	26.6	9.03
Stator inductance L_{2ph} [mH]	37.5	46.5	12.8	53.6	18.5
Electrical time constant t_{el} [ms]	1.751	1.956	2.029	2.015	2.049
Thermal time constant t_{therm} [min]	24	32	32	40	40
Moment of inertia J [kgcm^2]	0.33	0.59	0.59	0.85	0.85
Weight without brake m [kg]	4.1	5	5	5.9	5.9
Holding brake					
Holding torque of the brake M_{Br} [Nm]			2.5		
Weight of brake [kg]			0.7		
Moment of inertia for the brake J_{Br} [kgcm^2]			0.012		
Recommendations					
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0028	0014	0028
Cross section for B&R motor cables [mm^2]			1.5		
Connector type			H-Tec		
Connector size			1.0		

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ31.ee050ffgg-0	8JSQ32.ee030ffgg-0	8JSQ32.ee070ffgg-0	8JSQ33.ee020ffgg-0	8JSQ33.ee045ffgg-0
Motor					
Nominal speed n_N [rpm]	5000	3000	7000	2000	4500
Number of pole pairs			4		
Nominal torque M_n [Nm]	0.817	1.482	1.045	2.033	1.729
Nominal power P_N [W]	428	466	766	426	815
Nominal current I_N [A]	0.961	1.059	1.432	1.07	1.572
Stall torque M_0 [Nm]	0.943	1.62	1.67	2.13	2.2
Stall current I_0 [A]	1.22	1.23	2.42	1.2	2.1
Maximum torque M_{max} [Nm]	3.8	6.84	7.04	9.68	9.88
Maximum current I_{max} [A]	5.5	5.7	11.3	5.9	10.3
Maximum speed n_{max} [rpm]			8000		
Torque constant K_T [Nm/A]	0.85	1.4	0.73	1.9	1.1
Voltage constant K_E [V/1000 rpm]	54.5	89.8	47.1	120	70.6
Stator resistance R_{2ph} [Ω]	21.4	23.8	6.34	26.6	9.03
Stator inductance L_{2ph} [mH]	37.5	46.5	12.8	53.6	18.5
Electrical time constant t_{el} [ms]	1.751	1.956	2.029	2.015	2.049
Thermal time constant t_{therm} [min]	24	32	32	40	40
Moment of inertia J [kgcm^2]	0.33	0.59	0.59	0.85	0.85
Weight without brake m [kg]	4.1	5	5	5.9	5.9
Holding brake					
Holding torque of the brake M_{Br} [Nm]			2.5		
Weight of brake [kg]			0.7		
Moment of inertia for the brake J_{Br} [kgcm^2]			0.012		
Recommendations					
ACOPOSmulti inverter module 8BVIxxxx...	0014	0014	0028	0014	0028
Cross section for B&R motor cables [mm^2]			1.5		
Connector type			H-Tec		
Connector size			1.0		

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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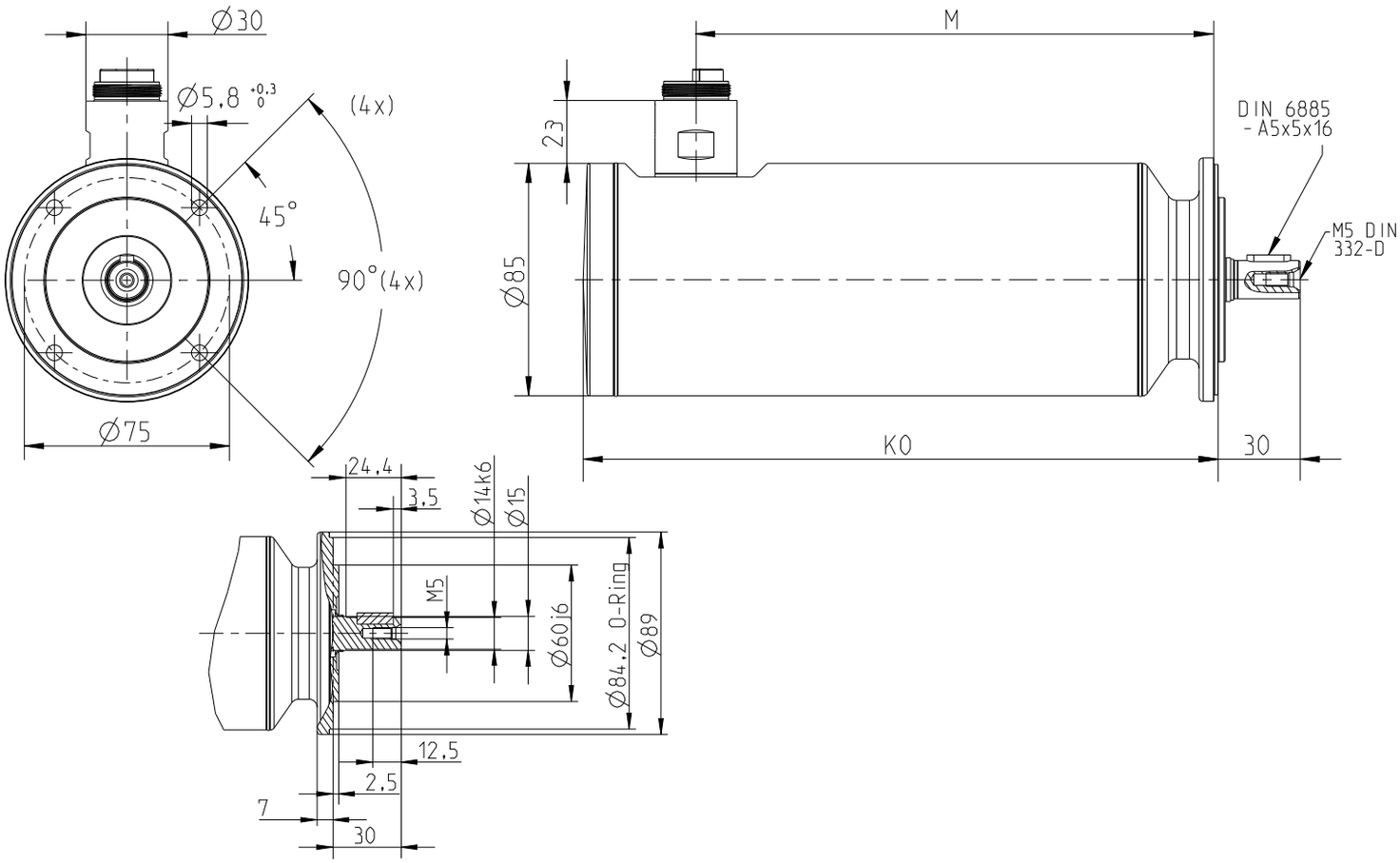
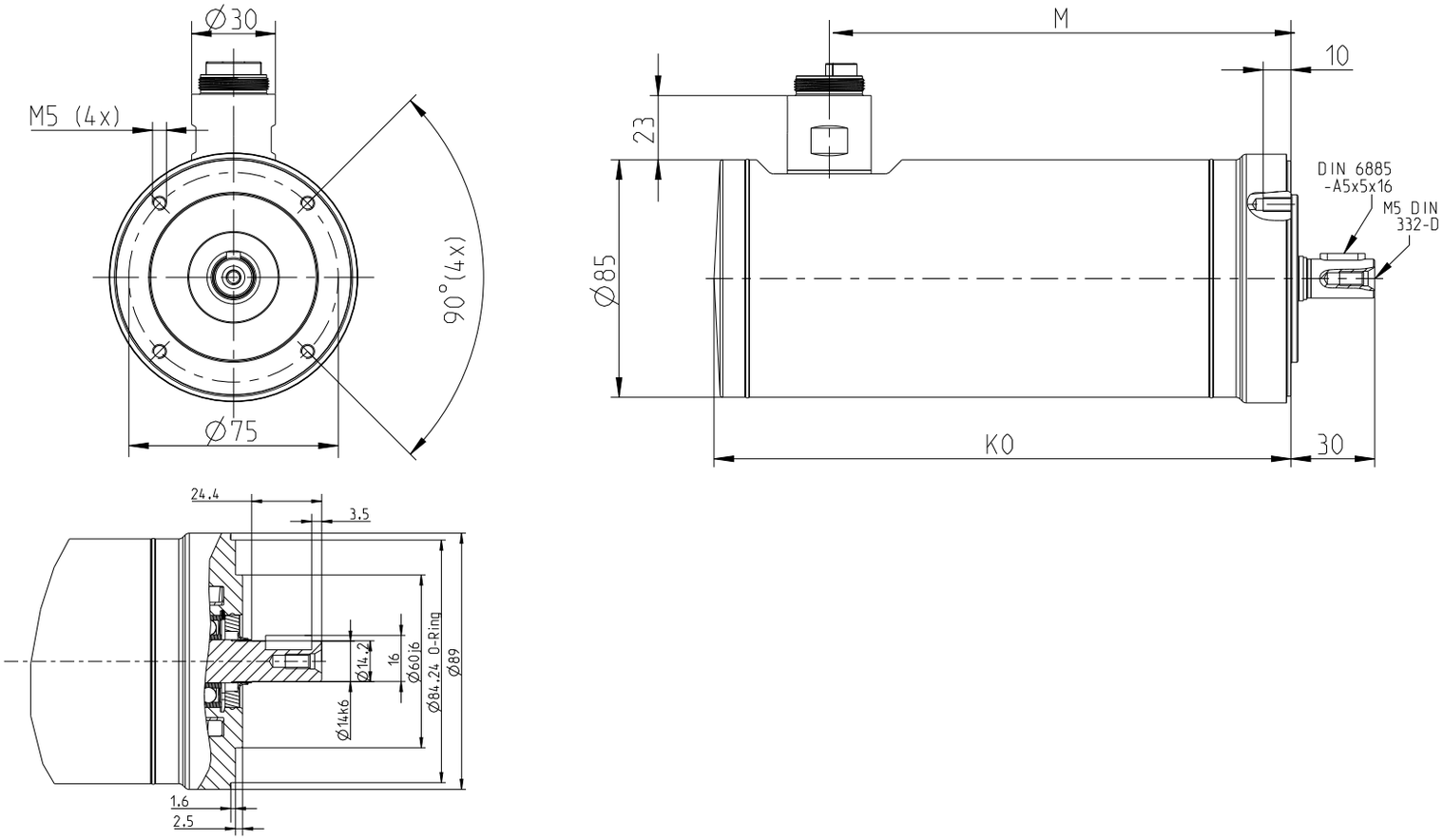
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

8JSB3 dimensions



			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSB31.eennnffgg-0	175.6	134.3	19.3
8JSB32.eennnffgg-0	206.6	165.3	19.3
8JSB33.eennnffgg-0	237.6	196.3	19.3

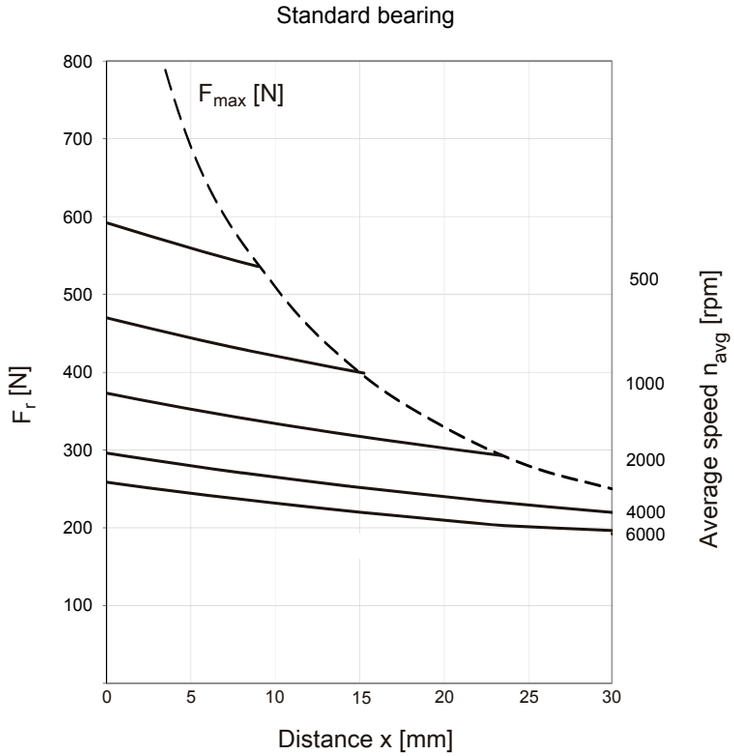
8JSQ3 dimensions



			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSQ31.eennnffgg-0	175.6	134.4	19.3
8JSQ32.eennnffgg-0	206.6	165.3	19.3
8JSQ33.eennnffgg-0	237.6	196.3	19.3

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



Technical data

	8JSB41.ee030ffgg-0	8JSB41.ee060ffgg-0	8JSB42.ee035ffgg-0	8JSB42.ee060ffgg-0	8JSB43.ee025ffgg-0	8JSB43.ee060ffgg-0	8JSB44.ee020ffgg-0	8JSB44.ee050ffgg-0
Motor								
Nominal speed n_N [rpm]	3000	6000	3500	6000	2500	6000	2000	5000
Number of pole pairs	5							
Nominal torque M_n [Nm]	1.518	1.287	2.459	1.971	3.511	2.178	4.385	2.781
Nominal power P_N [W]	477	809	901	1238	919	1368	918	1456
Nominal current I_N [A]	1.168	1.813	1.891	3.285	2.041	2.447	2.149	2.624
Stall torque M_0 [Nm]	1.73	1.79	3.09	3.22	4.32	4.43	5.36	5.46
Stall current I_0 [A]	1.45	2.83	2.64	5.78	2.65	5.23	2.75	5.41
Maximum torque M_{max} [Nm]	5.65	5.77	10.7	10.8	15.2	15.4	19.3	19.5
Maximum current I_{max} [A]	5.8	11.4	11	23.4	11	21.6	11.4	22.4
Maximum speed n_{max} [rpm]	6000							
Torque constant K_T [Nm/A]	1.3	0.71	1.3	0.6	1.72	0.89	2.04	1.06
Voltage constant K_E [V/1000 rpm]	86.3	45.6	80.9	38.3	111	57.4	132	68
Stator resistance R_{2ph} [Ω]	21.3	6.04	7.8	1.67	8.63	2.12	8.66	2.25
Stator inductance L_{2ph} [mH]	66.1	18.4	26.8	6	32.6	8.75	34	9.05
Electrical time constant t_{el} [ms]	3.108	3.048	3.437	3.6	3.779	4.158	3.916	4.051
Thermal time constant t_{therm} [min]	40	40	51	51	63	63	74	74
Moment of inertia J [kgcm^2]	0.81	0.81	1.45	1.45	2.09	2.09	2.73	2.73
Weight without brake m [kg]	6.1	6.1	7.4	7.4	8.8	8.8	10.2	10.2
Holding brake								
Holding torque of the brake M_{Br} [Nm]	6							
Weight of brake [kg]	1.14							
Moment of inertia for the brake J_{Br} [kgcm^2]	0.068							
Recommendations								
ACOPOSmulti inverter module 8BVIxxxx...	0014	0028	0028	0055	0028	0055	0028	0055
Cross section for B&R motor cables [mm^2]	1.5							
Connector type	H-Tec							
Connector size	1.0							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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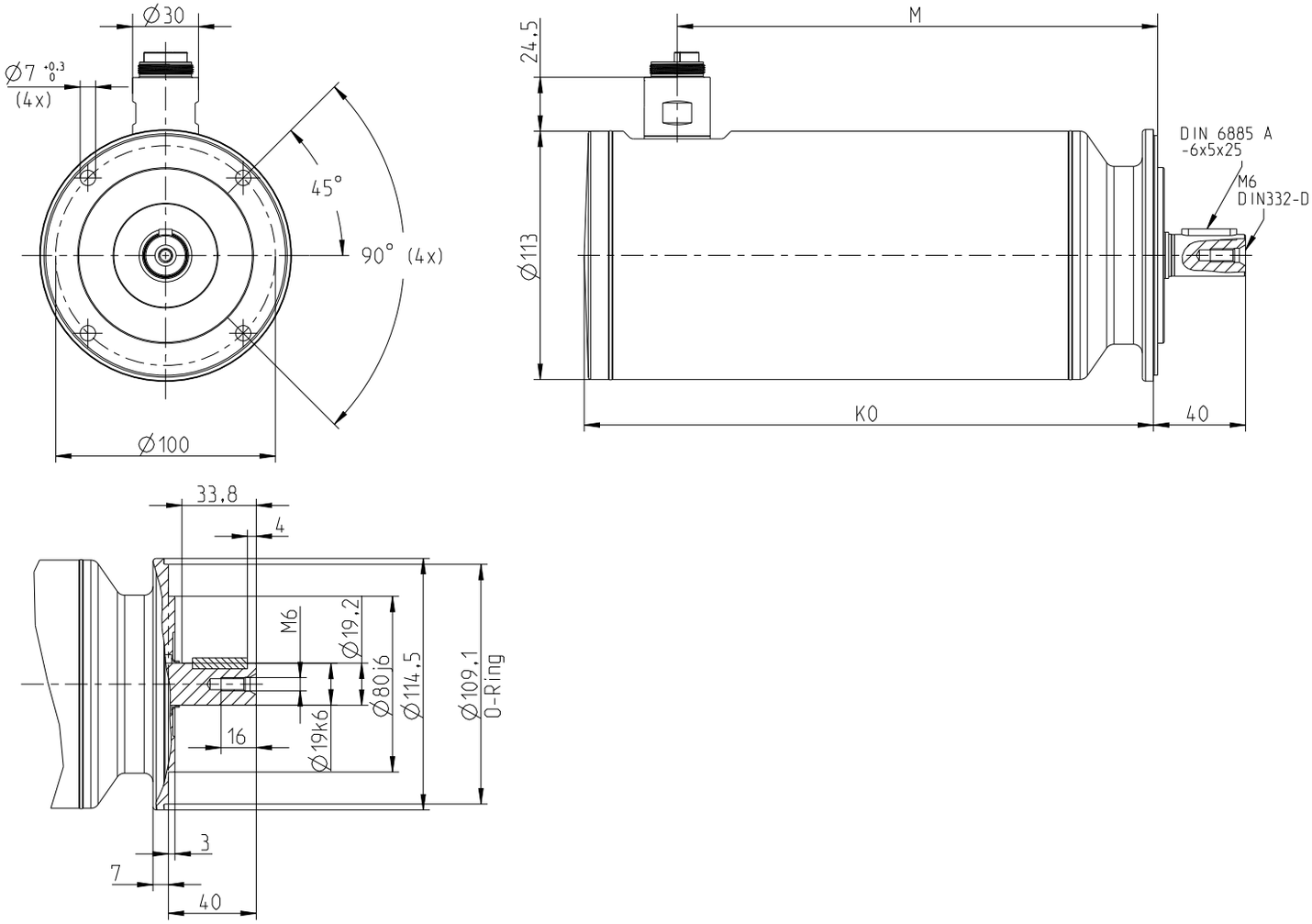
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ41.ee030ffgg-0	8JSQ41.ee060ffgg-0	8JSQ42.ee035ffgg-0	8JSQ42.ee060ffgg-0	8JSQ43.ee025ffgg-0	8JSQ43.ee060ffgg-0	8JSQ44.ee020ffgg-0	8JSQ44.ee050ffgg-0
Motor								
Nominal speed n_N [rpm]	3000	6000	3500	6000	2500	6000	2000	5000
Number of pole pairs	5							
Nominal torque M_n [Nm]	1.518	1.287	2.459	1.971	3.511	2.178	4.385	2.781
Nominal power P_N [W]	477	809	901	1238	919	1368	918	1456
Nominal current I_N [A]	1.168	1.813	1.891	3.285	2.041	2.447	2.149	2.624
Stall torque M_0 [Nm]	1.73	1.79	3.09	3.22	4.32	4.43	5.36	5.46
Stall current I_0 [A]	1.45	2.83	2.64	5.78	2.65	5.23	2.75	5.41
Maximum torque M_{max} [Nm]	5.65	5.77	10.7	10.8	15.2	15.4	19.3	19.5
Maximum current I_{max} [A]	5.8	11.4	11	23.4	11	21.6	11.4	22.4
Maximum speed n_{max} [rpm]	6000							
Torque constant K_T [Nm/A]	1.3	0.71	1.3	0.6	1.72	0.89	2.04	1.06
Voltage constant K_E [V/1000 rpm]	86.3	45.6	80.9	38.3	111	57.4	132	68
Stator resistance R_{2ph} [Ω]	21.3	6.04	7.8	1.67	8.63	2.12	8.66	2.25
Stator inductance L_{2ph} [mH]	66.1	18.4	26.8	6	32.6	8.75	34	9.05
Electrical time constant t_{el} [ms]	3.108	3.048	3.437	3.6	3.779	4.158	3.916	4.051
Thermal time constant t_{therm} [min]	40	40	51	51	63	63	74	74
Moment of inertia J [kgcm^2]	0.81	0.81	1.45	1.45	2.09	2.09	2.73	2.73
Weight without brake m [kg]	6.1	6.1	7.4	7.4	8.8	8.8	10.2	10.2
Holding brake								
Holding torque of the brake M_{Br} [Nm]	6							
Weight of brake [kg]	1.14							
Moment of inertia for the brake J_{Br} [kgcm^2]	0.068							
Recommendations								
ACOPOSmulti inverter module 8BVIxxxx...	0014	0028	0028	0055	0028	0055	0028	0055
Cross section for B&R motor cables [mm^2]	1.5							
Connector type	H-Tec							
Connector size	1.0							

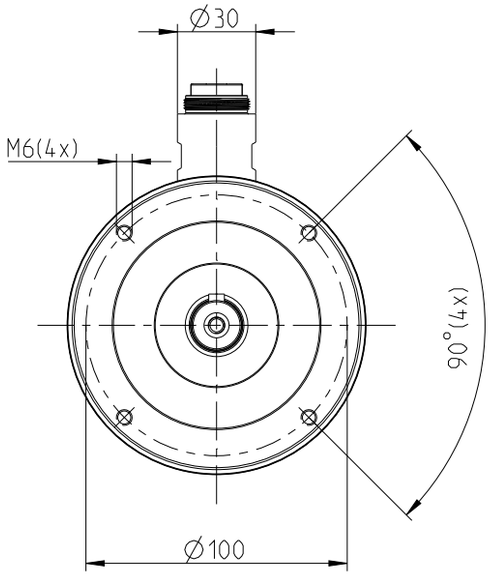
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

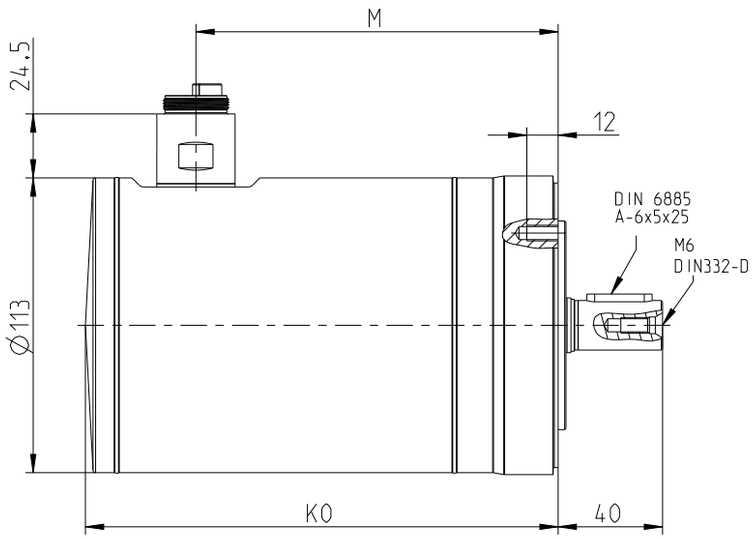
8JSB4 dimensions

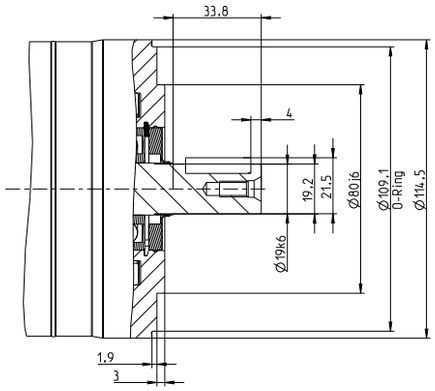


			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSB41.eennnffgg-0	181.1	138.8	20.2
8JSB42.eennnffgg-0	201.1	167.8	20.2
8JSB43.eennnffgg-0	239.1	169.8	20.2
8JSB44.eennnffgg-0	268.1	225.8	20.2

8JSQ4 dimensions



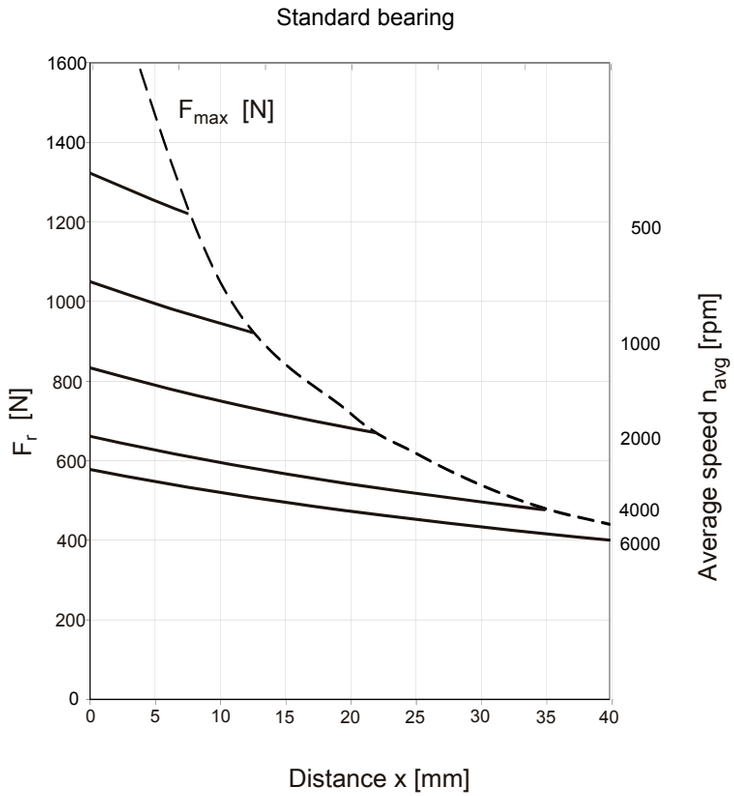




			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSQ41.eennnffgg-0	181.1	138.8	20.2
8JSQ42.eennnffgg-0	210.1	167.8	20.2
8JSQ43.eennnffgg-0	239.1	196.8	20.2
8JSQ44.eennnffgg-0	268.1	225.8	20.2

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



Technical data

	8JSB51.ee025ffgg-0	8JSB52.ee015ffgg-0	8JSB52.ee035ffgg-0	8JSB53.ee030ffgg-0	8JSB54.ee018ffgg-0	8JSB54.ee030ffgg-0
Motor						
Nominal speed n_N [rpm]	2500	1500	3500	3000	1800	3000
Number of pole pairs	5					
Nominal torque M_n [Nm]	2.626	5.045	3.165	3.751	7.125	2.282
Nominal power P_N [W]	688	792	1160	1179	1343	717
Nominal current I_N [A]	1.545	1.802	2.261	2.084	2.74	2.075
Stall torque M_0 [Nm]	3.1	5.8	5.94	8.13	9.92	9.86
Stall current I_0 [A]	2.16	2.3	4.5	5	4.13	9.32
Maximum torque M_{max} [Nm]	11	20.7	21	29.4	36.9	36.9
Maximum current I_{max} [A]	8.24	9	17.7	19.8	16.5	37.5
Maximum speed n_{max} [rpm]	6000					
Torque constant K_T [Nm/A]	1.7	2.8	1.4	1.8	2.6	1.1
Voltage constant K_E [V/1000 rpm]	110	179	92.7	112	166	72.9
Stator resistance R_{2ph} [Ω]	9	8.98	2.37	2.12	3.22	0.69
Stator inductance L_{2ph} [mH]	36.6	44.7	11.9	11.4	18.3	3.55
Electrical time constant t_{el} [ms]	4.068	4.98	5.028	5.386	5.689	5.251
Thermal time constant t_{therm} [min]	46	58	58	69	80	80
Moment of inertia J [kgcm^2]	3.42	6.22	6.22	9.12	11.9	11.9
Weight without brake m [kg]	8.9	11.1	11.1	13.4	15.7	15.7
Holding brake						
Holding torque of the brake M_{Br} [Nm]	14.5					
Weight of brake [kg]	1.8					
Moment of inertia for the brake J_{Br} [kgcm^2]	0.173					
Recommendations						
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0055	0055	0055	0011
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4
Connector type	H-Tec					
Connector size	1.0					

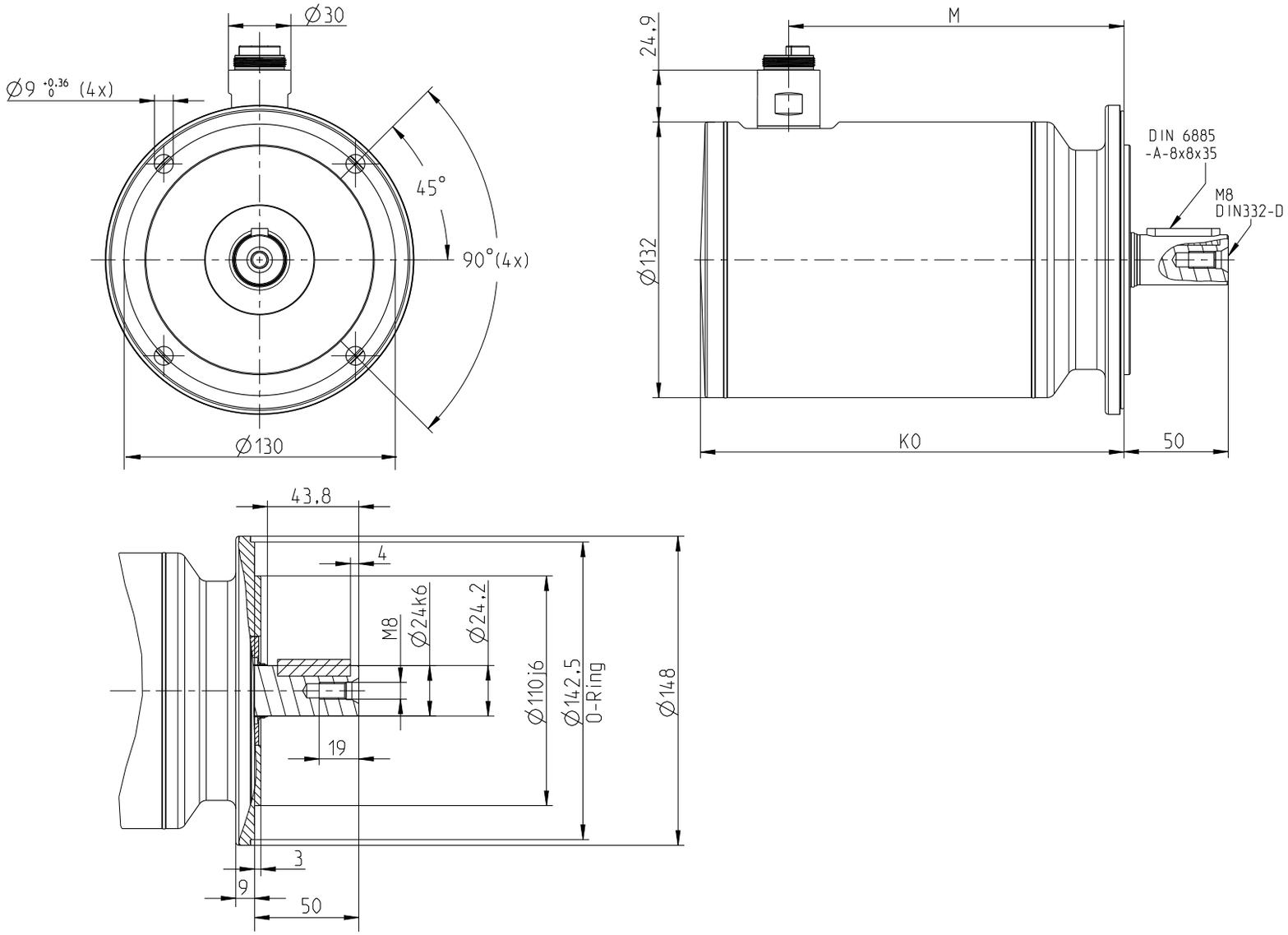
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ51.ee025ffgg-0	8JSQ52.ee015ffgg-0	8JSQ52.ee035ffgg-0	8JSQ53.ee030ffgg-0	8JSQ54.ee018ffgg-0	8JSQ54.ee030ffgg-0
Motor						
Nominal speed n_N [rpm]	2500	1500	3500	3000	1800	3000
Number of pole pairs	5					
Nominal torque M_n [Nm]	2.626	5.045	3.165	3.751	7.125	2.282
Nominal power P_N [W]	688	792	1160	1179	1343	717
Nominal current I_N [A]	1.545	1.802	2.261	2.084	2.74	2.075
Stall torque M_0 [Nm]	3.1	5.8	5.94	8.13	9.92	9.86
Stall current I_0 [A]	2.16	2.3	4.5	5	4.13	9.32
Maximum torque M_{max} [Nm]	11	20.7	21	29.4	36.9	36.9
Maximum current I_{max} [A]	8.24	9	17.7	19.8	16.5	37.5
Maximum speed n_{max} [rpm]	6000					
Torque constant K_T [Nm/A]	1.7	2.8	1.4	1.8	2.6	1.1
Voltage constant K_E [V/1000 rpm]	110	179	92.7	112	166	72.9
Stator resistance R_{2ph} [Ω]	9	8.98	2.37	2.12	3.22	0.69
Stator inductance L_{2ph} [mH]	36.6	44.7	11.9	11.4	18.3	3.55
Electrical time constant t_{el} [ms]	4.068	4.98	5.028	5.386	5.689	5.251
Thermal time constant t_{therm} [min]	46	58	58	69	80	80
Moment of inertia J [kgcm^2]	3.42	6.22	6.22	9.12	11.9	11.9
Weight without brake m [kg]	8.9	11.1	11.1	13.4	15.7	15.7
Holding brake						
Holding torque of the brake M_{Br} [Nm]	14.5					
Weight of brake [kg]	1.8					
Moment of inertia for the brake J_{Br} [kgcm^2]	0.173					
Recommendations						
ACOPOSmulti inverter module 8BVIxxxx...	0028	0028	0055	0055	0055	0011
Cross section for B&R motor cables [mm^2]	1.5	1.5	1.5	1.5	1.5	4
Connector type	H-Tec					
Connector size	1.0					

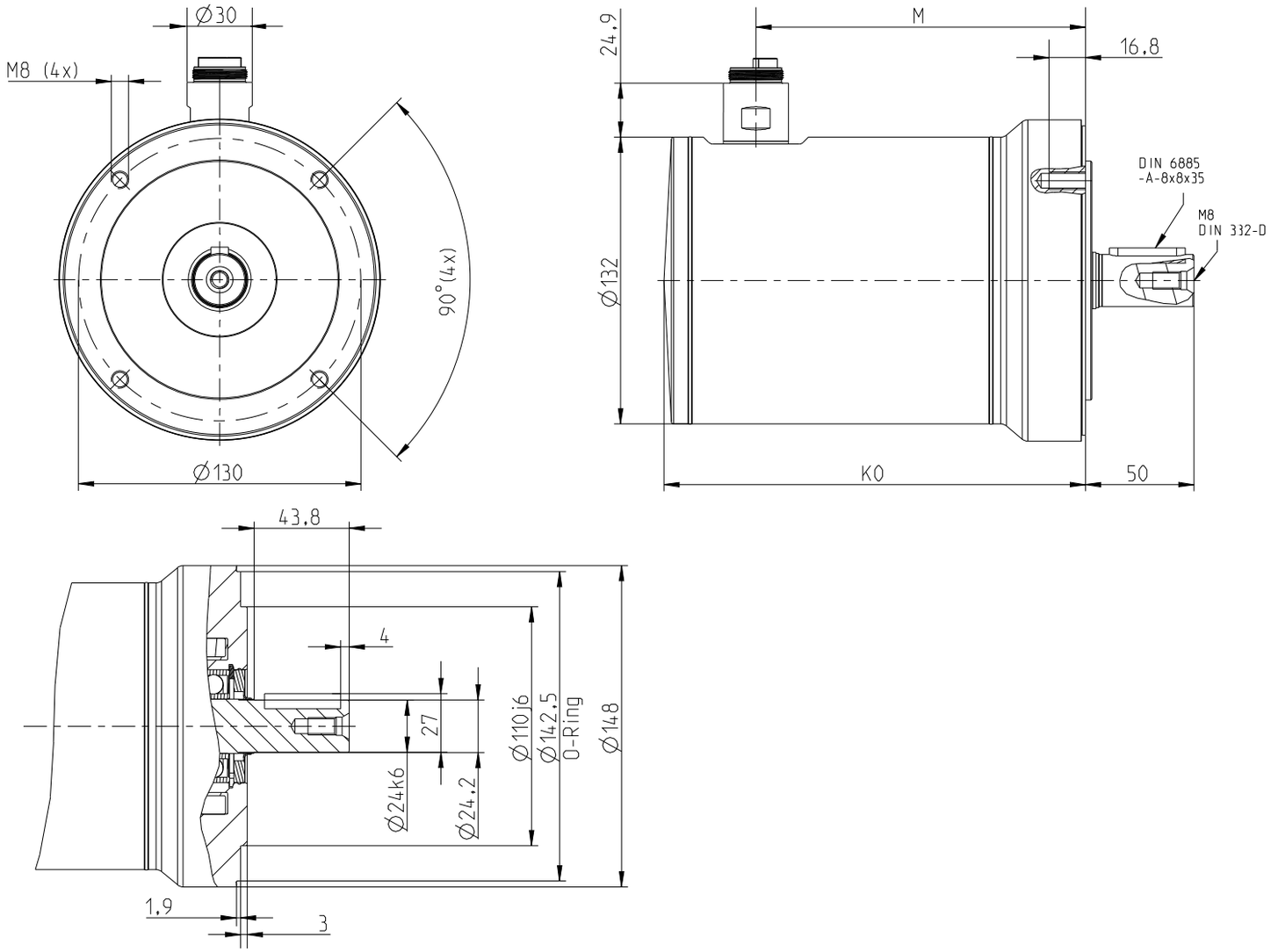
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

8JSB5 dimensions



			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSB51.eennnffgg-0	194.1	151.8	34
8JSB52.eennnffgg-0	225.1	182.8	34
8JSB53.eennnffgg-0	256.1	213.8	34
8JSB54.eennnffgg-0	287.1	244.8	34

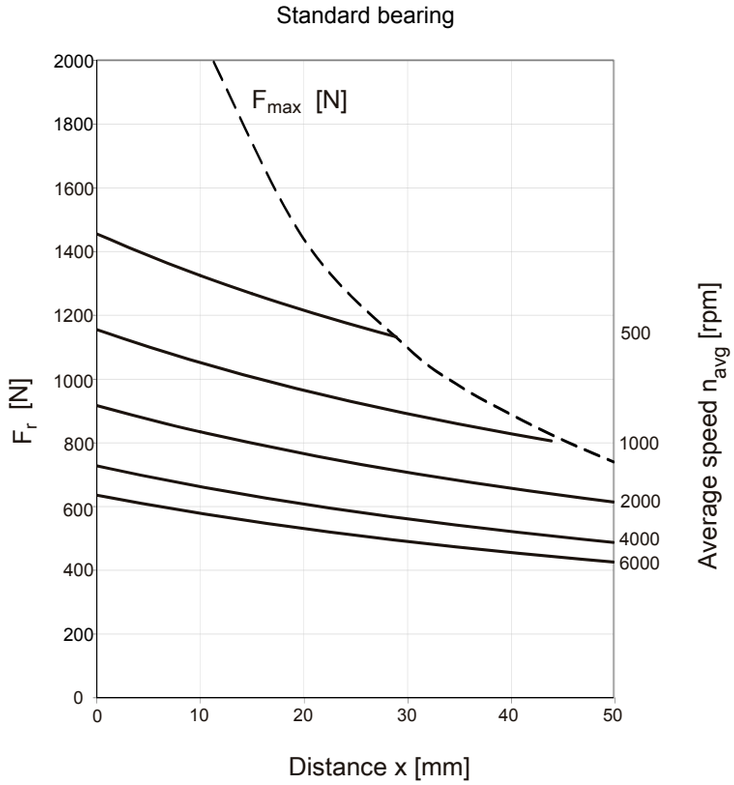
8JSQ5 dimensions



			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSQ51.eennnffgg-0	194.1	151.8	34
8JSQ52.eennnffgg-0	225.1	182.8	34
8JSQ53.eennnffgg-0	256.1	213.8	34
8JSQ54.eennnffgg-0	287.1	214.8	34

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



Technical data

	8JSB62.ee018ffgg-0	8JSB62.ee050ffgg-0	8JSB63.ee015ffgg-0	8JSB63.ee040ffgg-0	8JSB64.ee020ffgg-0	8JSB64.ee030ffgg-0	8JSB65.ee025ff00-0
Motor							
Nominal speed n_N [rpm]	1800	5000	1500	4000	2000	3000	2500
Number of pole pairs				5			
Nominal torque M_n [Nm]	8.375	3.995	11.88	6.554	13.795	10.664	14.048
Nominal power P_N [W]	1579	2092	1866	2745	2889	3350	3678
Nominal current I_N [A]	3.79	3.917	4	5.285	6.05	6.424	6.786
Stall torque M_0 [Nm]	9.98	10.2	13.81	14.2	17.69	17.94	21
Stall current I_0 [A]	5	11.1	5	12.3	8.3	11.5	10.7
Maximum torque M_{max} [Nm]	28.6	29.1	41.1	42	52.5	53.1	64.2
Maximum current I_{max} [A]	16.2	36	16.8	41.4	27.5	38.4	36.6
Maximum speed n_{max} [rpm]				6000			
Torque constant K_T [Nm/A]	2.21	1.02	2.97	1.24	2.28	1.66	2.07
Voltage constant K_E [V/1000 rpm]	142	65.5	192	79.9	147	107	133
Stator resistance R_{2ph} [Ω]	3.32	0.76	3.5	0.96	1.43	0.77	0.91
Stator inductance L_{2ph} [mH]	25.4	5.4	28.1	4.9	11.8	6.22	7.55
Electrical time constant t_{el} [ms]	7.658	7.137	8.153	7.82	8.271	8.088	8.292
Thermal time constant t_{therm} [min]	58	58	62	62	75	75	88
Moment of inertia J [kgcm^2]	16.9	16.9	24.2	24.2	31.6	31.6	40
Weight without brake m [kg]	19.6	19.6	23.1	23.1	26.7	26.7	30.2
Holding brake							
Holding torque of the brake M_{Br} [Nm]				25			
Weight of brake [kg]				3.4			
Moment of inertia for the brake J_{Br} [kgcm^2]				0.61			
Recommendations							
ACOPOSmulti inverter module 8BVIxxxx...	0055	0011	0055	0011	0011	0011	0011
Cross section for B&R motor cables [mm^2]	1.5	4	1.5	4	4	4	4
Connector type				H-Tec			
Connector size				1.0			

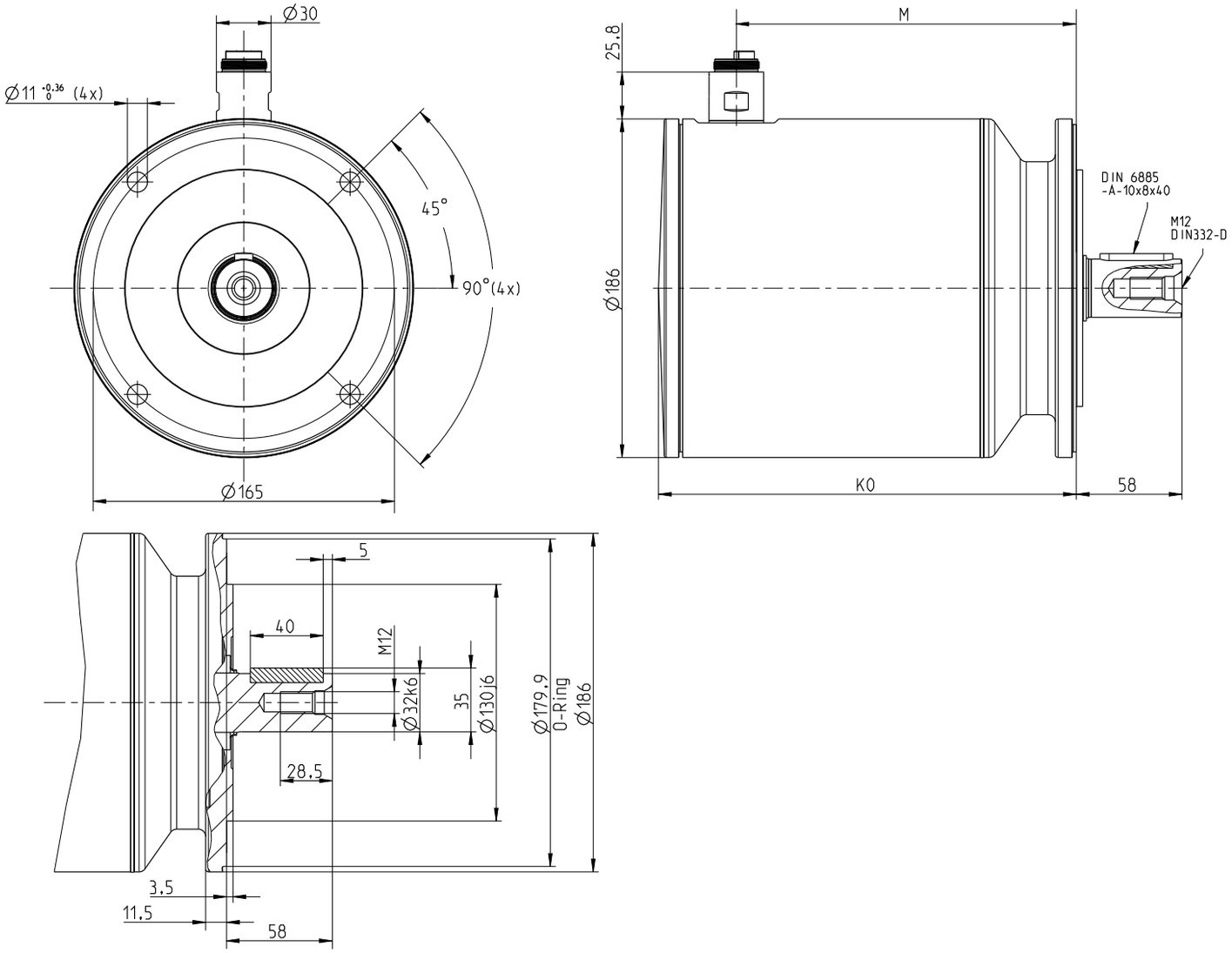
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

Technical data

	8JSQ62.ee018ffgg-0	8JSQ62.ee050ffgg-0	8JSQ63.ee015ffgg-0	8JSQ63.ee040ffgg-0	8JSQ64.ee020ffgg-0	8JSQ64.ee030ffgg-0	8JSQ65.ee025ff00-0
Motor							
Nominal speed n_N [rpm]	1800	5000	1500	4000	2000	3000	2500
Number of pole pairs				5			
Nominal torque M_n [Nm]	8.375	3.995	11.88	6.554	13.795	10.664	14.048
Nominal power P_N [W]	1579	2092	1866	2745	2889	3350	3678
Nominal current I_N [A]	3.79	3.917	4	5.285	6.05	6.424	6.786
Stall torque M_0 [Nm]	9.98	10.2	13.81	14.2	17.69	17.94	21
Stall current I_0 [A]	5	11.1	5	12.3	8.3	11.5	10.7
Maximum torque M_{max} [Nm]	28.6	29.1	41.1	42	52.5	53.1	64.2
Maximum current I_{max} [A]	16.2	36	16.8	41.4	27.5	38.4	36.6
Maximum speed n_{max} [rpm]				6000			
Torque constant K_T [Nm/A]	2.21	1.02	2.97	1.24	2.28	1.66	2.07
Voltage constant K_E [V/1000 rpm]	142	65.5	192	79.9	147	107	133
Stator resistance R_{2ph} [Ω]	3.32	0.76	3.5	0.96	1.43	0.77	0.91
Stator inductance L_{2ph} [mH]	25.4	5.4	28.1	4.9	11.8	6.22	7.55
Electrical time constant t_{el} [ms]	7.658	7.137	8.153	7.82	8.271	8.088	8.292
Thermal time constant t_{therm} [min]	58	58	62	62	75	75	88
Moment of inertia J [kgcm^2]	16.9	16.9	24.2	24.2	31.6	31.6	40
Weight without brake m [kg]	19.6	19.6	23.1	23.1	26.7	26.7	30.2
Holding brake							
Holding torque of the brake M_{Br} [Nm]				25			
Weight of brake [kg]				3.4			
Moment of inertia for the brake J_{Br} [kgcm^2]				0.61			
Recommendations							
ACOPOSmulti inverter module 8BVIxxxx...	0055	0011	0055	0011	0011	0011	0011
Cross section for B&R motor cables [mm^2]	1.5	4	1.5	4	4	4	4
Connector type				H-Tec			
Connector size				1.0			

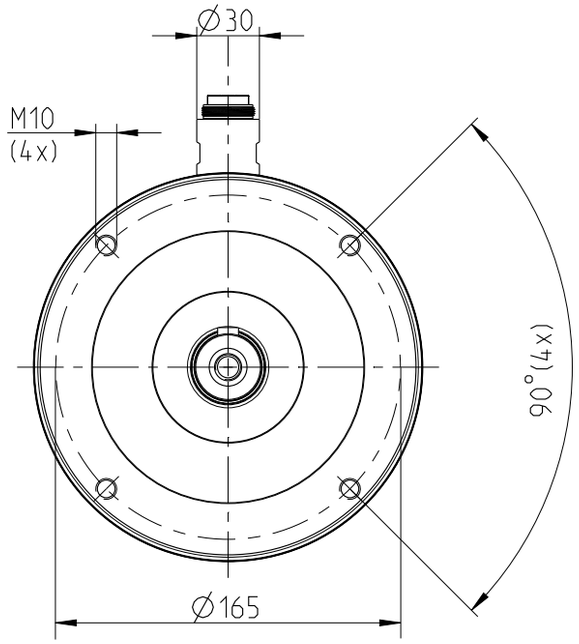
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.
NOTE – Hybrid connector: The following conditions must be met by the drives in order to operate a motor with a hybrid connector:
For ACOPOSmulti: the cable cover must be designed for operation with a hybrid cable (with cable cutout; delivered 2015 or later)
For ACOPOSmulti with SafeMOTION: the operating system (NC version) must be V2.48.0 or higher; the safety release must be V1.9 or higher
For all drives: the operating system (NC version) must be V2.42.2 or higher
NOTE: If the conditions listed above are not met, temperature evaluation on the drive will not work.

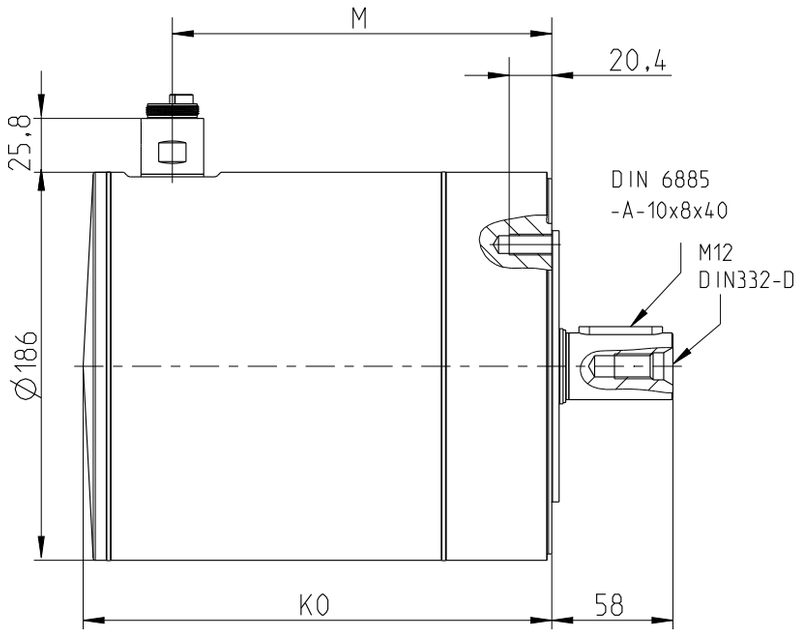
8JSB6 dimensions

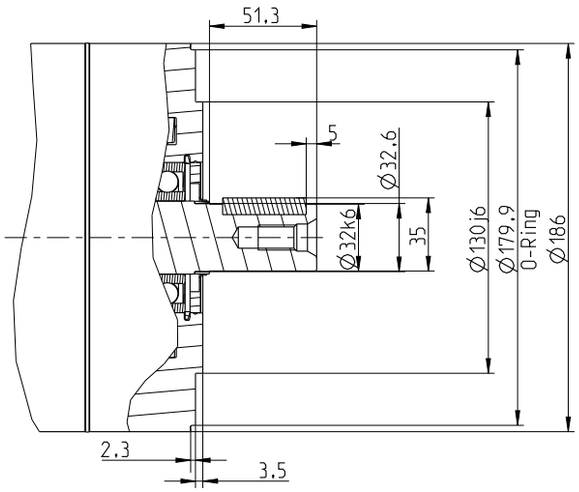


			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSB62.eennnffgg-0	224.4	181.7	36.9
8JSB63.eennnffgg-0	249.4	206.7	36.9
8JSB64.eennnffgg-0	274.4	231.7	36.9
8JSB65.eennnffgg-0	299.4	256.7	36.9

8JSQ6 dimensions



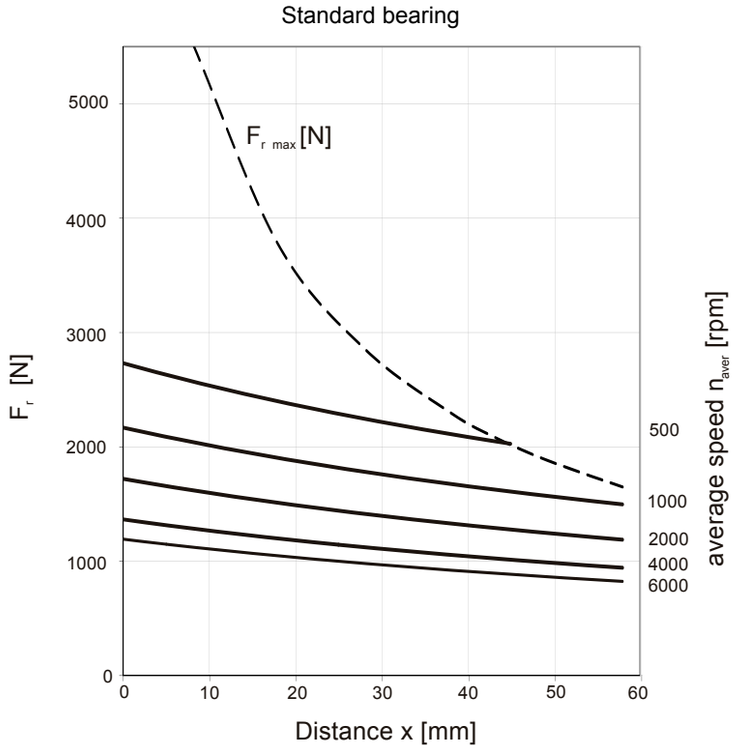




			Extension of K_0 depending on motor option [mm]
Model number	**K_0**	**M**	**Holding brake**
8JSQ62.eennnffgg-0	224.4	181.7	36.9
8JSQ63.eennnffgg-0	249.4	206.7	36.9
8JSQ64.eennnffgg-0	274.4	231.7	36.9
8JSQ65.eennnffgg-0	299.4	256.7	36.9

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.



8KS three-phase synchronous motors

Motors for high-performance applications

Motors with high torque at high speeds are required in the upper performance class. Servo motors from B&R's 8KS series are specially designed for these types of applications.

Table of contents

System features

8KS three-phase synchronous motors

The new 8KS motors extend B&R's range of motors up to 140 kW. The expansion opens up applications that demand a maximum standstill torque of 555 Nm and speeds of up to 3000 rpm. Motors are available with axial and centrifugal fans as well as highly efficient water cooling. Together with B&R's servo pump control, these servo motors are excellent for high-power servo-hydraulic drive solutions. The optional reinforced bearings make it possible to implement belt and feed axes with very high torque. The single- or double-sided mounting base provides additional engineering freedom for modern machine concepts.

Feedback systems specified to meet your needs

8KS three-phase synchronous motors are available with different encoder systems. They come equipped with Heidenhain EnDat encoders as a standard feature. Depending on the application, the customer can select between single-turn or multi-turn optical encoders. They allow operation without requiring homing procedures or additional measurement systems on the workpiece. The 8KS three-phase synchronous motors are also available with resolvers for machines with lower precision and speed requirements.

Connection type

Due to their high performance, 8KS motors rely exclusively on terminal boxes for their power connection. The encoder is connected using an angled rotating connector.

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for B&R three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Advantages of B&R 8KS servo motors for your application

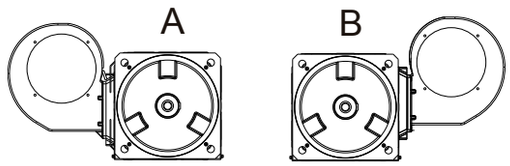
Three-phase synchronous motors from the 8KS series are permanently excited, electronically commutated synchronous motors for applications that require excellent dynamic characteristics and positioning precision.

- Nominal power up to 140 kW
- Fan cooling and optimized water cooling
- Encoders for functional safety available
- High dynamic torque at high speeds
- Power connected using terminal box, encoders connected using speedtec or ITEC circular connectors

Cooling types

Cooling types C and D

8KS three-phase synchronous motors with cooling types C and D are externally cooled using a centrifugal fan. Two different mounting directions can be ordered (position A to the left and position B to the right). Cooling type C permits flange mounting and base mounting on a B-type base. Cooling type D permits flange mounting and base mounting on the A and B side.



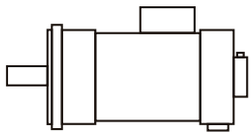
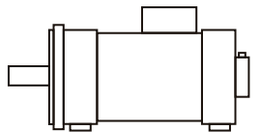
Cooling type J

8KS three-phase synchronous motors with cooling type J are externally cooled using a highly efficient water cooling system. Size 8KSJ9 has two independent cooling circuits. The connection direction for size 8 8KSJ motors is always to the right. Size 9 8KSJ motors must always be connected on both sides. 8KSJ permits flange mounting and base mounting on a B-type base. **The foot mounting on the A-side is not possible with this cooling type for mechanical reasons!**

Cooling types L and M

8KS three-phase synchronous motors with cooling types L and M are externally cooled using an axial fan. Cooling type L permits flange mounting and base mounting on a B-type base. Cooling type M permits flange mounting and base mounting on the A and B side.

8KS mounting types

Mounting type	Flange and B-foot	Flange, A- and B-foot
		
8KSC	Yes	---
8KSD	---	Yes
8KSJ	Yes	---
8KSL	Yes	---
8KSM	---	Yes

Sizes

8KS motors are available in various sizes (8 or 8 and 9) depending on their construction. These different sizes are indicated by a number represented by (c) in the model number. The larger the number, the larger the flange dimensions and power rating for the respective motor.

Overview

Cooling type	Available sizes	
	8	9
C	Yes	Yes
D	Yes	--
J	Yes	Yes
L	Yes	Yes
M	Yes	---

Lengths

8KS three-phase synchronous motors are available in four different lengths. These different lengths are indicated by a number represented by (d) in the model number.

Overview

Length	Available sizes	
	8	9
2	Yes	Yes
4	Yes	Yes
5	Yes	Yes
6	Yes	Yes

Motor encoder systems

8KS three-phase synchronous motors are available with EnDat encoders as well as resolvers. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).

Analog and digital transfer

The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

For the advanced, fully digital EnDat 2.2 protocol, the positions are generated directly in the encoder and communicated serially with the drive system. This method is very robust against disturbances and is even certified for safety applications.

Safety-related position measurement systems

In machine and system manufacturing, the topic of safety is becoming more and more important. This is mirrored in legislation and stricter safety criteria in national and international standards. Most importantly, stricter requirements serve to protect personnel, but they also increasingly serve to protect property and the environment. The goal of functional safety is to minimize or eliminate dangerous situations that can occur in machines and systems either with or without operational errors. This is generally achieved by implementing redundant systems. Moving axes in safety-oriented applications require position information in order to be able to carry out their corresponding safety functions. Different system configurations can be implemented to get independent position values. One possibility is using two measuring instruments per axis. To keep costs down, the aim is often to create a solution with only one position measuring instrument. Until now, analog measuring instruments with sine/cosine signals were used for this purpose. The encoder manufacturer Heidenhain – as the first manufacturer with the purely serial EnDat 2.2 protocol for safety position measurement systems – offers a serial single-encoder solution in accordance with IEC 61 508 SIL2. All the advantages of serial data transfer – such as cost optimization, diagnostics possibilities, automatic commissioning and high-speed generation of position values – can now benefit safety applications as well.
100% inspection during production and additional measures during final testing ensure errors have not occurred related to shaft and coupling connections on rotary encoders when using motors with S encoders (in accordance with EN ISO 13849-2).

Information regarding the area of application and the procedure for setting up various safety functions can be found in the "ACOPOSmulti SafeMOTION" user's manual. (Model number: MAACPMSAFEMC-GER ACOPOSmulti SafeMOTION or in the Downloads section of our website)

EnDat 2.1 and EnDat 2.2 encoders - Technical data

Optical

Encoder type / Order code	E6	E7	S0	S1
Operating principle	Optical	Optical	Optical	Optical
EnDat protocol	2.1	2.1	2.2	2.2
Functional safety	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M
Revolutions	1	4096	Digital pos. in the encoder	Digital pos. in the encoder
Number of lines	512	512	Digital pos. in the encoder	Digital pos. in the encoder
Resolution [bits single-turn / bits multi-turn]	13/0	13/12	25/0	25/12
Precision ["]	60	60	20	20
Switching frequency ≥ [kHz]	130	130	Digital pos. in the encoder	Digital pos. in the encoder
Vibration during operation - Stator max [m/s2]	300	300	300	300
Vibration during operation - Rotor max [m/s2]	300	300	300	300
Shock during operation max [m/s^2]	2000	2000	2000	2000
Manufacturer's product ID	ECN 1313	EQN 1325	ECN 1325 FS	EQN 1135 FS
Manufacturer's website	www.heidenhain.de			

Resolvers

General information

BRX resolvers are used in the servo motors. These resolvers are fed with a single sinusoidal signal (reference signal) and return two sinusoidal signals. The amplitude of these signals change with the angular position (sine or cosine form).

Technical data

Name	Order code (ee)
	R0
Precision	10 angular minutes
Vibration during operation 10 < f ≤ 500 Hz	≤196 m/s²
Shock during operation Duration 11 ms	≤981 m/s²

Motor options

8KS three-phase synchronous motors can be delivered with various options depending on the cooling type, size and length:

- With various nominal speeds
- With or without a holding brake
- With a smooth or keyed shaft
- With air or water cooling

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). This code represents the nominal speed divided by 100. The respective combination of other motor options is listed as part of the model number in the form of a 2-digit code (ff).

Nominal speeds

8KS three-phase synchronous motors can be delivered with different nominal speeds depending on the size and length.

Overview of cooling types C, D (centrifugal fans) and L, M (axial fans)

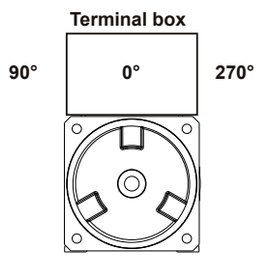
Motor size and length	Available nominal speeds n_N [rpm]						
	1000	1100	1500	1600	2000	2500	3000
8KSC8	--	Yes	--	Yes	Yes	Yes	Yes
8KSD8	--	Yes	--	Yes	Yes	Yes	Yes
8KSL8	--	Yes		Yes	Yes	Yes	Yes
8KSM8	--	Yes	--	Yes	Yes	Yes	Yes
8KSC92,94	Yes	--	Yes	--	Yes	Yes	Yes
8KSC95	Yes	--	Yes	--	Yes	Yes	--
8KSC96	Yes	--	Yes	--	Yes	--	--
8KSL92,94	Yes	--	Yes	--	Yes	Yes	Yes
8KSL95	Yes	--	Yes	--	Yes	Yes	--
8KSL96	Yes	--	Yes	--	Yes	--	--

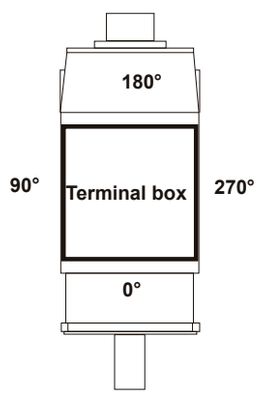
Overview of cooling type J (water cooling)

Motor size and length	Available nominal speeds n_N [rpm]				
	1000	1500	2000	2500	3000
8KSJ82, 84, 85	Yes	Yes	Yes	Yes	Yes
8KSJ86	Yes	Yes	Yes	Yes	--
8KSJ92	Yes	Yes	Yes	Yes	--
8KSJ94	Yes	Yes	Yes	--	--
8KSJ95	Yes	Yes	--	--	--
8KSJ96	Yes	--	--	--	--

Connection directions

The power connection for 8KS three-phase synchronous motors is generally made using terminal boxes. The position of the terminal box is "top" and the cable outlet is "right" (corresponds to 270°).





Holding brake

All 8KS three-phase synchronous motors can be delivered with a holding brake. It is used to hold the motor shaft when no power is applied to the servo motor. This brake is designed as a holding brake and is not permitted to be used for operational braking!

Technical data for the standard holding brake

Name	Motor size	
	8	9
Holding torque M_{Br} [Nm]	200	320
Connected load P_{on} [W]	170	190
Supply current I_{on} [A]	6.5	7.3
Supply voltage U_{on} [V]	24	24
Moment of inertia J_{Br} [kgcm²]	40	90
Mass m_{Br} [kg]	13	29

NOTE: External control of the brake is necessary for operation on ACOPOS servo drives and ACOPOSmulti power inverters.

Design of the shaft end

All 8KS three-phase synchronous motor shafts comply with DIN 748, form E. They can be delivered with a smooth shaft or a keyed shaft.

Smooth shaft end
A smooth shaft end is used for a force-fit shaft-hub connection and guarantees a backlash-free connection between the shaft and hub as well as a high degree of operating smoothness. The end of the shaft has a threaded center hole.

Keyed shaft end
A keyed shaft end is used for a form-fit torque transfer with low demands on the shaft-hub connection and for handling torque in a constant direction.
The keyways for the 8KS three-phase synchronous motors conform to keyway form N1 in accordance with DIN 6885-1. Form A keyed shafts that conform to DIN 6885-1 are used. Balancing motors with keyways is done using the shaft and fitment key convention in accordance with DIN ISO 8821.
The end of the shaft has a threaded center hole that can be used to mount drive elements with shaft end plates.

Load capacity of the shaft end and bearing

Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table:

Motor options for cooling types C, D and J (centrifugal fans and water cooling)

Motor option					
Connectiondirection	**Oil seal**	**Holding brake**	**Shaft end**	**Mounting direction / connection direction Cooling unit**	**Code for the order key (ff)**
Terminal box on the top, cable outlet is 270° (right)	No	No	Smooth	Fan on the left	A0
			Keyed	Fan on the left	A1
		Normal	Smooth	Fan on the left	A2
			Keyed	Fan on the left	A3
		No	Smooth	Fan/Water lines on the right	B0
			Keyed	Fan/Water lines on the right	B1
		Normal	Smooth	Fan/Water lines on the right	B2
			Keyed	Fan/Water lines on the right	B3

NOTE: For **8KSJ** motors, it is **only** possible to select **"B" options** since the water lines on the 8KSJ8 are **always** located on the right side. For size 8KSJ9, it must **always** be connected on both sides since two cooling circuits must be supplied.

Motor options for cooling types L and M (axial fans)

Motor option					
Connection direction	**Oil seal**	**Holding brake**	**Shaft end**	**Mounting direction / connection direction for the cooling unit**	**Code for the order key (ff)**
Terminal box on the top, cable outlet is 270° (right)	No	No	Smooth	Axial	C0
			Keyed	Axial	C1
		Normal	Smooth	Axial	C2
			Keyed	Axial	C3

8KS special motor options

The "Reinforced bearings" special motor option is offered for all 8KS motors. For 8KSC and 8KSD fan motors, a square filter can be selected as a special motor option.

Determining the order code for special options (gg)

The respective code (gg) for the order key can be found in the following table.

Special option	Order code
No special option	00
Reinforced bearings	04
Square filter for centrifugal fans (cooling type C and D)	15

Technical data – Fan modules

Technical data – Centrifugal fans

Motor size	8		9	
General information	400 VAC fan	400 VAC fan	400 VAC fan	400 VAC fan
C-UR-US listed	Yes	Yes	Yes	Yes
Fan type	Centrifugal fan	Centrifugal fan	Centrifugal fan	Centrifugal fan
Rotor bearings	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Protection	IP54	IP54	IP54	IP54
Nominal voltage	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V
Mains frequency	50 Hz	60 Hz	50 Hz	60 Hz
Nominal current	Δ/Y 0.48/0.28 A	Δ/Y 0.48/0.28 A	Δ/Y 1.8/1.05 A	Δ/Y 1.8/1.05 A
Nominal speed	2820 rpm	3420 rpm	2882 rpm	3460 rpm
Power consumption	0.25 W	0.3 W	0.45 W	0.6 W
Temperature range	0 - 40°C	0 - 40°C	0 - 40°C	0 - 40°C
Operating noise	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)
Service life at 40°C	20,000 h	20,000 h	20,000 h	20,000 h

Technical data – Axial fans

Motor size	8		9	
General information	400 VAC fan	400 VAC fan	400 VAC fan	400 VAC fan
C-UR-US listed	Yes	Yes	Yes	Yes
Fan type	Axial fan	Axial fan	Axial fan	Axial fan
Rotor bearings	Ball bearings	Ball bearings	Ball bearings	Ball bearings
Protection	IP54	IP54	IP54	IP54
Nominal voltage	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V	Δ/Y 240/420 // 280/480V
Mains frequency	50 Hz	60 Hz	50 Hz	60 Hz
Nominal current	Δ/Y 0.48/ 0.28	Δ/Y 0.48/ 0.28	Δ/Y 1.05/ 0.6	Δ/Y 1.05/ 0.6
Nominal speed	2730 rpm	3250 rpm	2820 rpm	3420 rpm
Power consumption	0.08 W	0.12 W	0.25 W	0.3 W
Temperature range	0 - 40°C	0 - 40°C	0 - 40°C	0 - 40°C
Operating noise	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)	74 - 78 ±3 dB(A)
Service life at 40°C	20,000 h	20,000 h	20,000 h	20,000 h

System features

Order Key

8KS	a	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (See section "cooling types")

C...forced cooling by radial fan, flangemounting, footmounting B-side possible
D...forced cooling by radial fan, flangemounting, footmounting A and B-side possible
J...forced cooling by water cooling jacket, flange mounting footmounting A and B-side possible
L...forced cooling by axial fan, flangemounting, footmounting B-side possible
M...forced cooling by axial fan, flangemounting, footmounting A and B-side possible

Sizes (See section "Sizes")
Valid values: **8,9**

Lengths (See section "Lengths")
Valid values: **2,4,5,6**

Encoder system (See section "Motor encoder systems")

R0...Resolver
E6...EnDat single-turn,2048 lines
E7...EnDat multi-turn, 048 lines,
S0...EnDat 2.2single-turn, 2048 lines, 31 bit, FS
S1...EnDat 2.2 multi-turn, 2048 lines, 31 bit,FS

Nominal speed (See section „Motor options“)
nnn...Nominal speed/100, e.g. 015 corresponds to a nominal speed of 1500 min $^{-1}$

Motor options (See section „Motor options“)

Special motor options (See section„Special motor options“)

00...No special motor options
04...Reinforced bearing (roller bearing)
15...Square filter (8KSC and 8KSD only)

Motor version: Valid value: **0** (value is assigned automatically and cannot be chosen freely)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A fan-cooled **8KS** three-phase synchronous motor with size**84** is selected for the application. The motor should be equipped with a mounting base on the A side in addition to the existing mounting base on the B side. The name is therefore 8KS**D**. A single-turn encoder with functional safety was chosen. The required speed is 2500 rpm. The radially-mounted fan should be on the left side of the motor. A brake is not required, the output shaft should be smooth. The fan should be equipped with a filter that is available as a special option.

The code (ee) for the encoder system is **S0**.

The code (nnn) for a nominal speed of 2500 rpm is **025**.

The option code (ff) for fan-cooled 8KS motors with the fan on the left side is always **"A"**. All 8KS motors are equipped with a terminal box (position on the top and cable channel outlet on the right, that corresponds to 270°). The no holding brake and smooth shaft options result in **"0"**, so the option code is **"A0"**
The special option code (gg) for the filter (square filter) is **15**.

The model number for the required motor is **8KSD84.S0025A015-0.**

Example order 2

A water-cooled **8KSJ** three-phase synchronous motor with size**92** is selected for the application. A multi-turn encoder with functional safety was chosen. The required speed is 2000 rpm. A brake is not required, the output shaft should have a keyway.

The code (ee) for the encoder system is **S1**.

The code (nnn) for a nominal speed of 2000 rpm is **020**.

The option code (ff) for water-cooled 8KSJ motors is always **"B"**. All 8KS motors are equipped with a terminal box (position on the top and cable channel outlet on the right, that corresponds to 270°). The no holding brake and shaft key options result in **"1"**, so the option code is **"B1"**
No special options.

The model number for the required motor is **8KSJ92.S1020B100-0.**

General motor data

General information	Cooling type C/D	Cooling type J	Cooling type L/M
C-UR-US listed	Yes	Yes	In preparation
Electrical characteristics			
Mains input voltage on servo drive		3x 400 VAC ... 3x 480 VAC ±10%	
Connection type	Motor connection Encoder connection		Terminal box speedtec circular connector from Intercontec, size 1
Thermal characteristics			
Class of the insulation system in accordance with EN 60034-1		F	
Methods of cooling in accordance with EN 60034-6 (IC code)	Externally cooled, with independent centrifugal fan module (IC 416) Direction of air flow: B to A	Liquid-cooled with integrated heat exchanger (IC 3W7)	Externally cooled, with independent axial fan module (IC 416) Direction of air flow: A to B
Incoming coolant temperature		10°C to 25°C, max. 5 K less than the ambient temperature	
Thermal motor protection in accordance with EN 60034-11	KTY84-130 Maximum winding temperature is 155°C (limited by the thermal motor protection in the ACOPOS servo drive or in the ACOPOSmulti drive system to 110°C with EnDat feedback and 130°C with resolver feedback)		
Mechanical characteristics			
Grade of vibration severity in accordance with EN 60034-14	Vibration severity grade A (vibration severity grade B on request)		
Eye bolt according to DIN 580	The eye bolts provided are to be used as lifting lugs		
Flange	FF flange in accordance with IEC standard		
Shaft end	In accordance with DIN 748, centered with inner threads in accordance with DIN 332, Form D		
Key and keyway in accordance with DIN 6885-1	Form A shaft keys, form N1 keyway		
Balancing the shaft in accordance with DIN ISO 8821	Half-key arrangement		
Concentricity in accordance with DIN 42955	Tolerance N, option: R, only ball bearing		
Bearing service life	LH10 20,000 h, reference value, permanent lubrication for roller bearing		
Coating Color	Water-based coating RAL 9005 flat; shaft end and flange front metallic glossy		
Operating conditions			
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation		
Environmental conditions during operation	Class 3K3/3Z12 in accordance with DIN EN 60721-3-3 at 0°C to +40°C corresponds to -15 to 60°C at 5% to 85% relative humidity and an absolute humidity of 1 g/m3 to 25 g/m		
Maximum installation elevation	1000 m		
Maximum flange temperature	No limitations		
EN 60034-5 protection (IP code)	IP54		
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal IMB5 or IMB35		
Resistance to vibration in accordance with EN 60068-2-6	Radial 3 g, axial 1 g (10 Hz to 55 Hz)		

Reduction of I_N, M_N, I_0 and M_0 for ambient temperatures above 40°C or installation elevations above 1000 m over sea level (all motors)

Ambient temperature	**40°C**	**45°C**	**50°C**	**55°C**	**60°C**
Correction factor K1	1	1.06	1.13	1.22	1.34
Elevation above sea level	**1000 m**	**2000 m**	**3000 m**	**4000 m**	**5000 m**
Correction factor K2	1	1.07	1.16	1.27	1.55

Reduction of rated power at increased incoming coolant temperatures

Incoming coolant temperature	25°C	30°C	35°C	40°C	45°C
Percent of rated power (torque)	100%	97%	95%	92%	89%

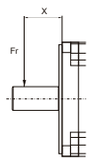
Storage and transport conditions

Storage temperature	-15 to +60°C in accordance with 1K2/1M1 and EN 60721-3-1: 1995

Storage and transport conditions	
Relative humidity during storage	Max. 85%, non-condensing, corresponds to 0 - 40°C: 5% to 85% relative humidity and 1 g/m³ to 25 g/m³ absolute humidity
Transport temperature	-15 to +60°C in accordance with 2K2/ 2M1 and EN 60721-3-1
Relative humidity during transport	Max. 85%, non-condensing, corresponds to 0 - 40°C: 5% to 85% relative humidity and 1 g/m³ to 25 g/m³ absolute humidity

To avoid frost damage, coolant must be emptied at temperatures lower than 3°C!

Definitions for maximum shaft load diagrams



F_r = Radial force
X = the distance between the motor flange and radial force F_r

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at speed n_0 ($n \geq 1$ rpm) when the stall current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct ($n \geq 1$ rpm).
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum speed (electrical)	n_{max}	rpm	Maximum electrical speed. Calculated using the following formula:
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. The torque constant is valid up to approx. 2x M_0.
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm.
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake
Moment of inertia of brake	J_{Br}	kgcm²	Moment of inertia for the built-in holding brake
Brake mass	m_{Br}	kg	Weight of the built-in holding brake
Brake holding torque	M_{Br}	Nm	Minimum torque required to hold the rotor when the brake is activated
Installed load	P_{on}	W	Installed load for the built-in holding brake
Installed current	I_{on}	A	Installed current for the built-in holding brake
Connection voltage	U_{on}	V	Operating voltage for the built-in holding brake
Activation delay	t_{on}	ms	Delay time required for the holding torque of the brake to be established after the operating voltage has been removed from the holding brake
Release delay	t_{off}	ms	Delay time required until the holding torque of the holding brake is reduced by 90% (the brake is released) after operating voltage has been returned to the holding brake

Technical data

	8KSC82.ee011ffgg-0	8KSC82.ee016ffgg-0	8KSC82.ee020ffgg-0	8KSC82.ee025ffgg-0	8KSC82.ee030ffgg-0	8KSC84.ee011ffgg-0	8KSC84.ee016ffgg-0	8KSC84.ee020ffgg-0	8KSC84.ee025ffgg-0	8KSC84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC85.ee011ffgg-0	8KSC85.ee016ff00-0	8KSC85.ee020ffgg-0	8KSC85.ee025ffgg-0	8KSC85.ee030ffgg-0	8KSC86.ee011ffgg-0	8KSC86.ee016ffgg-0	8KSC86.ee020ffgg-0	8KSC86.ee025ffgg-0	8KSC86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSD82.ee011ffgg-0	8KSD82.ee016ffgg-0	8KSD82.ee020ffgg-0	8KSD82.ee025ffgg-0	8KSD82.ee030ffgg-0	8KSD84.ee011ffgg-0	8KSD84.ee016ffgg-0	8KSD84.ee020ffgg-0	8KSD84.ee025ffgg-0	8KSD84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSD85.ee011ffgg-0	8KSD85.ee016ffgg-0	8KSD85.ee020ffgg-0	8KSD85.ee025ffgg-0	8KSD85.ee030ffgg-0	8KSD86.ee011ffgg-0	8KSD86.ee016ffgg-0	8KSD86.ee020ffgg-0	8KSD86.ee025ffgg-0	8KSD86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL82.ee011ffgg-0	8KSL82.ee016ffgg-0	8KSL82.ee020ffgg-0	8KSL82.ee025ffgg-0	8KSL82.ee030ffgg-0	8KSL84.ee011ffgg-0	8KSL84.ee016ffgg-0	8KSL84.ee020ffgg-0	8KSL84.ee025ffgg-0	8KSL84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL85.ee011ffgg-0	8KSL85.ee016ffgg-0	8KSL85.ee020ffgg-0	8KSL85.ee025ffgg-0	8KSL85.ee030ffgg-0	8KSL86.ee011ffgg-0	8KSL86.ee016ffgg-0	8KSL86.ee020ffgg-0	8KSL86.ee025ffgg-0	8KSL86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSM82.ee011ffgg-0	8KSM82.ee016ffgg-0	8KSM82.ee020ffgg-0	8KSM82.ee025ffgg-0	8KSM82.ee030ffgg-0	8KSM84.ee011ffgg-0	8KSM84.ee016ffgg-0	8KSM84.ee020ffgg-0	8KSM84.ee025ffgg-0	8KSM84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSM85.ee011ffgg-0	8KSM85.ee016ffgg-0	8KSM85.ee020ffgg-0	8KSM85.ee025ffgg-0	8KSM85.ee030ffgg-0	8KSM86.ee011ffgg-0	8KSM86.ee016ffgg-0	8KSM86.ee020ffgg-0	8KSM86.ee025ffgg-0	8KSM86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSJ82.ee010ffgg-0	8KSJ82.ee015ffgg-0	8KSJ82.ee020ffgg-0	8KSJ82.ee025ffgg-0	8KSJ82.ee030ffgg-0	8KSJ84.ee010ffgg-0	8KSJ84.ee015ffgg-0	8KSJ84.ee020ffgg-0	8KSJ84.ee025ffgg-0	8KSJ84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	175	170	165	165	150	230	225	215	210	200
Nominal power P_N [W]	18326	26704	34558	43197	47124	24086	35343	45029	54978	62832
Nominal current I_N [A]	39.1	55	67	82	86	52	70	86	102	115
Stall torque M_0 [Nm]	180	180	180	180	180	240	240	240	240	240
Stall current I_0 [A]	40.4	58	73	90	101	54	74	93	116	135
Maximum torque M_{max} [Nm]	340	340	340	340	340	450	450	450	450	450
Maximum current I_{max} [A]	85	121	155	190	210	113	155	195	240	280
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.65	3.26	2.56	2.09	1.86	4.63	3.39	2.67	2.16	1.85
Voltage constant K_E [V/1000 rpm]	296	207	163	133	118	296	217	171	138	118
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	16.1	16.1	16.1	16.1	16.1	15	15	15	15	15
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	1640	128M	128M	128M	1640	128M	128M	128M	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0660	0880	1650	1650	0660	0880	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSJ85.ee010ffgg-0	8KSJ85.ee015ffgg-0	8KSJ85.ee020ffgg-0	8KSJ85.ee025ffgg-0	8KSJ85.ee030ffgg-0	8KSJ86.ee010ffgg-0	8KSJ86.ee015ffgg-0	8KSJ86.ee020ffgg-0	8KSJ86.ee025ffgg-0
Motor									
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500
Number of pole pairs					3				
Nominal torque M_n [Nm]	290	285	275	265	255	350	345	330	320
Nominal power P_N [W]	30369	44768	57596	69377	80111	36652	54192	69115	83776
Nominal current I_N [A]	62	87	109	130	150	80	112	135	160
Stall torque M_0 [Nm]	305	305	305	305	305	360	360	360	360
Stall current I_0 [A]	64	92	119	147	180	83	118	146	180
Maximum torque M_{max} [Nm]	555	555	555	555	555	665	665	665	665
Maximum current I_{max} [A]	130	190	240	300	365	170	240	300	365
Maximum speed n_{max} [rpm]					4300				
Torque constant K_T [Nm/A]	4.96	3.43	2.67	2.16	1.78	4.57	3.2	2.59	2.13
Voltage constant K_E [V/1000 rpm]	321	222	173	140	115	296	207	168	138
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667
Thermal time constant t_{therm} [min]	14	14	14	14	14	13	13	13	13
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250
Holding brake									
Holding torque of the brake M_{Br} [Nm]					200				
Weight of brake [kg]					13				
Moment of inertia for the brake J_{Br} [kgcm^2]					40				
Recommendations									
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	1650	0	1650	1650	1650	0
Connector type					Terminal box				

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC92.ee010ffgg-0	8KSC92.ee015ffgg-0	8KSC92.ee020ffgg-0	8KSC92.ee025ffgg-0	8KSC92.ee030ffgg-0	8KSC94.ee010ffgg-0	8KSC94.ee015ffgg-0	8KSC94.ee020ffgg-0	8KSC94.ee025ffgg-0	8KSC94.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	285	265	245	225	205	355	330	305	285	260
Nominal power P_N [W]	29845	41626	51313	58905	64403	37176	51836	63879	74613	81681
Nominal current I_N [A]	59	82	100	115	122	75	104	127	145	160
Stall torque M_0 [Nm]	325	325	325	325	325	405	405	405	405	405
Stall current I_0 [A]	68	103	134	170	195	85	127	165	205	245
Maximum torque M_{max} [Nm]	700	700	700	700	700	875	875	875	875	875
Maximum current I_{max} [A]	160	245	320	400	455	205	305	400	490	585
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	4.92	3.27	2.51	2	1.75	4.87	3.28	2.49	2.02	1.7
Voltage constant K_E [V/1000 rpm]	337	224	172	137	119	334	225	171	139	117
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.03	0.174	0.08	0.046	0.03	0.022
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	1.33	8.3	3.7	2.2	1.42	1.01
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	43.733	46.621	46.25	46.261	46.467	45.091
Thermal time constant t_{therm} [min]	48.8	48.8	48.8	48.8	48.8	43.9	43.9	43.9	43.9	43.9
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1500	1800	1800	1800	1800	1800
Weight without brake m [kg]	230	230	230	230	230	255	255	255	255	255
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	0	0	1650	1650	0	0	0
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC95.ee010ffgg-0	8KSC95.ee015ffgg-0	8KSC95.ee020ffgg-0	8KSC95.ee025ffgg-0	8KSC96.ee010ffgg-0	8KSC96.ee015ffgg-0	8KSC96.ee020ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	1500	2000	-	1000	1500	2000
Number of pole pairs	3	3	3	-	3	3	3
Nominal torque M_n [Nm]	430	400	375	-	500	470	440
Nominal power P_N [W]	45029	62832	78540	-	52360	73827	92153
Nominal current I_N [A]	90	130	147	-	107	139	175
Stall torque M_0 [Nm]	480	480	480	-	555	555	555
Stall current I_0 [A]	101	155	190	-	118	165	220
Maximum torque M_{max} [Nm]	1050	1050	1050	-	1110	1110	1110
Maximum current I_{max} [A]	245	375	455	-	255	355	475
Maximum speed n_{max} [rpm]	3600	3600	3600	-	3600	3600	3600
Torque constant K_T [Nm/A]	4.89	3.18	2.61	-	4.8	3.48	2.6
Voltage constant K_E [V/1000 rpm]	336	218	179	-	331	240	179
Stator resistance R_{2ph} [Ω]	0.136	0.058	0.038	-	0.108	0.056	0.032
Stator inductance L_{2ph} [mH]	6.9	2.9	1.96	-	5.7	3	1.66
Electrical time constant t_{el} [ms]	49.824	49.448	48.3	-	51.852	52.5	51.188
Thermal time constant t_{therm} [min]	39	39	39	-	34.2	34.2	34.2
Moment of inertia J [kgcm^2]	2200	2200	2200	-	2500	2500	2500
Weight without brake m [kg]	285	285	285	-	310	310	310
Holding brake							
Holding torque of the brake M_{Br} [Nm]	200	200	200	-	200	200	200
Weight of brake [kg]	13	13	13	-	13	13	13
Moment of inertia for the brake J_{Br} [kgcm^2]	40	40	40	-	40	40	40
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	128M	0	0	-	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	1650	0	0	-	1650	0	0
Connector type	Terminal box	Terminal box	Terminal box	-	Terminal box	Terminal box	Terminal box

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSJ92.ee010ffgg-0	8KSJ92.ee015ffgg-0	8KSJ92.ee020ffgg-0	8KSJ92.ee025ffgg-0	8KSJ94.ee010ffgg-0	8KSJ94.ee015ffgg-0	8KSJ94.ee020ffgg-0	8KSJ95.ee010ffgg-0	8KSJ95.ee015ffgg-0	8KSJ96.ee010ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	1000	1500	2000	1000	1500	1000
Number of pole pairs	3									
Nominal torque M_n [Nm]	305	295	285	275	390	380	375	465	460	555
Nominal power P_N [W]	31940	46338	59690	71995	40841	59690	78540	48695	72257	58119
Nominal current I_N [A]	59	86	109	132	76	111	143	91	137	110
Stall torque M_0 [Nm]	320	320	320	320	400	400	400	480	480	575
Stall current I_0 [A]	62	93	122	150	78	116	150	94	144	114
Maximum torque M_{max} [Nm]	695	695	695	695	870	870	870	1030	1030	1210
Maximum current I_{max} [A]	146	220	285	360	185	270	360	215	335	255
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	5.29	3.52	2.7	2.15	5.25	3.54	2.69	5.27	3.43	5.2
Voltage constant K_E [V/1000 rpm]	337	224	172	137	334	225	171	336	218	331
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.174	0.08	0.046	0.136	0.058	0.108
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	8.3	3.7	2.2	6.9	2.9	5.7
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	46.621	46.25	46.261	49.824	49.448	51.852
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	24	24	24	25.2	25.2	26.3
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1800	1800	1800	2200	2200	2500
Weight without brake m [kg]	225	225	225	225	260	260	260	295	295	330
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	128M	128M	0	128M	0	128M
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	1650	0880	1650	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL92.ee010ffgg-0	8KSL92.ee015ffgg-0	8KSL92.ee020ffgg-0	8KSL92.ee025ffgg-0	8KSL92.ee030ffgg-0	8KSL94.ee010ffgg-0	8KSL94.ee015ffgg-0	8KSL94.ee020ffgg-0	8KSL94.ee025ffgg-0	8KSL94.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	285	265	245	225	205	355	330	305	285	260
Nominal power P_N [W]	29845	41626	51313	58905	64403	37176	51836	63879	74613	81681
Nominal current I_N [A]	59	82	100	115	122	75	104	127	145	160
Stall torque M_0 [Nm]	325	325	325	325	325	405	405	405	405	405
Stall current I_0 [A]	68	103	134	170	195	85	127	165	205	245
Maximum torque M_{max} [Nm]	700	700	700	700	700	875	875	875	875	875
Maximum current I_{max} [A]	160	245	320	400	455	205	305	400	490	585
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	4.92	3.27	2.51	2	1.75	4.87	3.28	2.49	2.02	1.7
Voltage constant K_E [V/1000 rpm]	337	224	172	137	119	334	225	171	139	117
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.03	0.174	0.08	0.046	0.03	0.022
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	1.33	8.3	3.7	2.2	1.42	1.01
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	43.733	46.621	46.25	46.261	46.467	45.091
Thermal time constant t_{therm} [min]	48.8	48.8	48.8	48.8	48.8	43.9	43.9	43.9	43.9	43.9
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1500	1800	1800	1800	1800	1800
Weight without brake m [kg]	230	230	230	230	230	255	255	255	255	255
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	0	0	1650	1650	0	0	0
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL95.ee010ffgg-0	8KSL95.ee015ffgg-0	8KSL95.ee020ffgg-0	8KSL95.ee025ffgg-0	8KSL96.ee010ffgg-0	8KSL96.ee015ffgg-0	8KSL96.ee020ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	1500	2000	2500	1000	1500	2000
Number of pole pairs				3			
Nominal torque M_n [Nm]	430	400	375	345	500	470	440
Nominal power P_N [W]	45029	62832	78540	90321	52360	73827	92153
Nominal current I_N [A]	90	130	147	175	107	139	175
Stall torque M_0 [Nm]	480	480	480	480	555	555	555
Stall current I_0 [A]	101	155	190	240	118	165	220
Maximum torque M_{max} [Nm]	1050	1050	1050	1050	1110	1110	1110
Maximum current I_{max} [A]	245	375	455	585	255	355	475
Maximum speed n_{max} [rpm]				3600			
Torque constant K_T [Nm/A]	4.89	3.18	2.61	2.04	4.8	3.48	2.6
Voltage constant K_E [V/1000 rpm]	336	218	179	140	331	240	179
Stator resistance R_{2ph} [Ω]	0.136	0.058	0.038	0.024	0.108	0.056	0.032
Stator inductance L_{2ph} [mH]	6.9	2.9	1.96	1.2	5.7	3	1.66
Electrical time constant t_{el} [ms]	49.824	49.448	48.3	49.167	51.852	52.5	51.188
Thermal time constant t_{therm} [min]	39	39	39	39	34.2	34.2	34.2
Moment of inertia J [kgcm^2]	2200	2200	2200	2200	2500	2500	2500
Weight without brake m [kg]	285	285	285	285	310	310	310
Holding brake							
Holding torque of the brake M_{Br} [Nm]				200			
Weight of brake [kg]				13			
Moment of inertia for the brake J_{Br} [kgcm^2]				40			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	128M	0	0	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	1650	0	0	0	1650	0	0
Connector type				Terminal box			

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC82.ee011ffgg-0	8KSC82.ee016ffgg-0	8KSC82.ee020ffgg-0	8KSC82.ee025ffgg-0	8KSC82.ee030ffgg-0	8KSC84.ee011ffgg-0	8KSC84.ee016ffgg-0	8KSC84.ee020ffgg-0	8KSC84.ee025ffgg-0	8KSC84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC85.ee011ffgg-0	8KSC85.ee016ffgg-0	8KSC85.ee020ffgg-0	8KSC85.ee025ffgg-0	8KSC85.ee030ffgg-0	8KSC86.ee011ffgg-0	8KSC86.ee016ffgg-0	8KSC86.ee020ffgg-0	8KSC86.ee025ffgg-0	8KSC86.ee030ff00-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

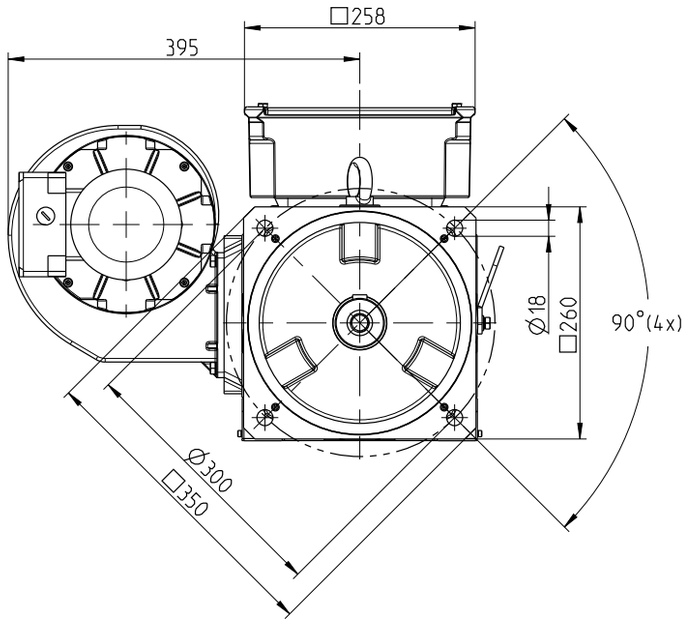
	8KSD82.ee011ffgg-0	8KSD82.ee016ffgg-0	8KSD82.ee020ffgg-0	8KSD82.ee025ffgg-0	8KSD82.ee030ffgg-0	8KSD84.ee011ffgg-0	8KSD84.ee016ffgg-0	8KSD84.ee020ffgg-0	8KSD84.ee025ffgg-0	8KSD84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

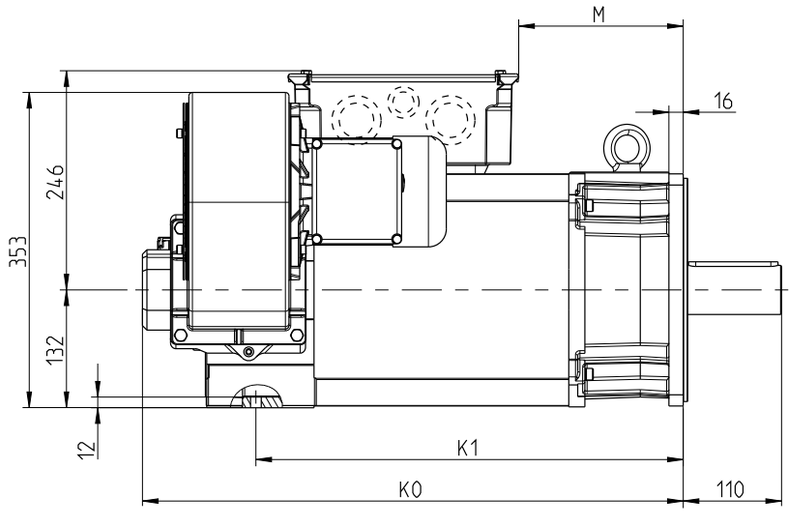
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

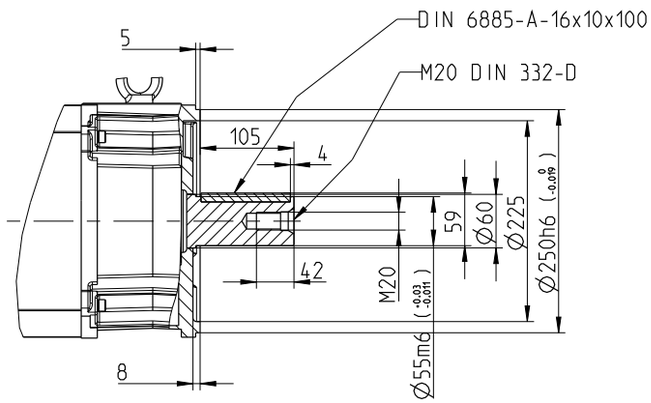
Technical data

	8KSD85.ee011ffgg-0	8KSD85.ee016ffgg-0	8KSD85.ee020ffgg-0	8KSD85.ee025ffgg-0	8KSD85.ee030ffgg-0	8KSD86.ee011ffgg-0	8KSD86.ee016ffgg-0	8KSD86.ee020ffgg-0	8KSD86.ee025ffgg-0	8KSD86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.



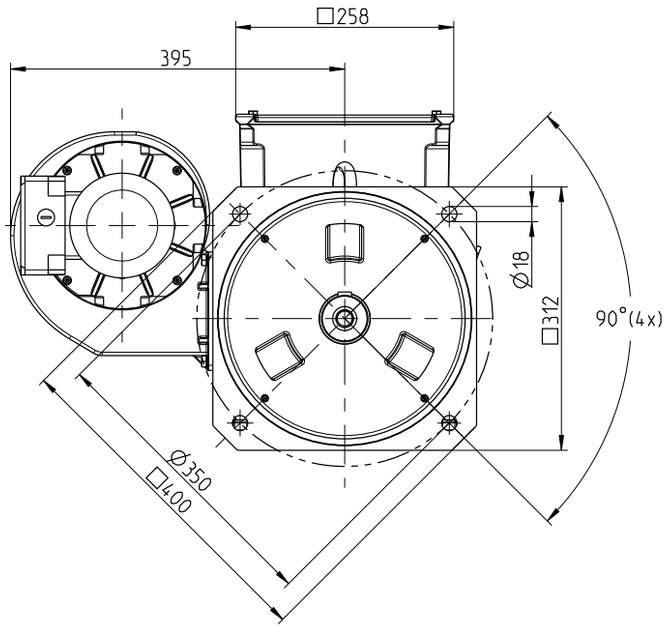


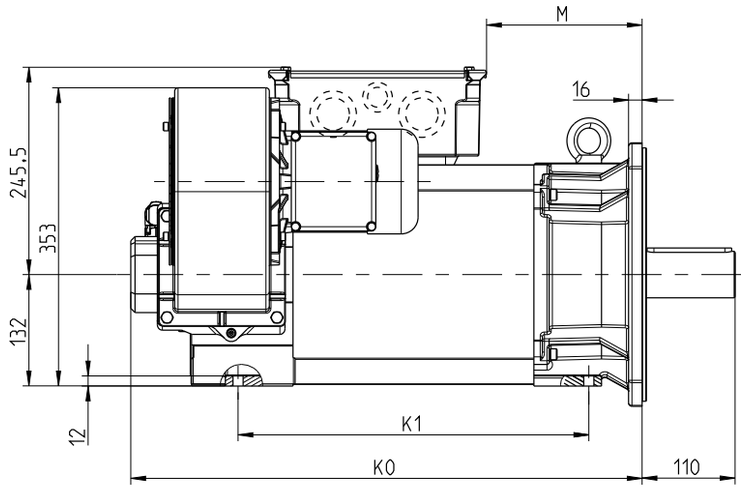


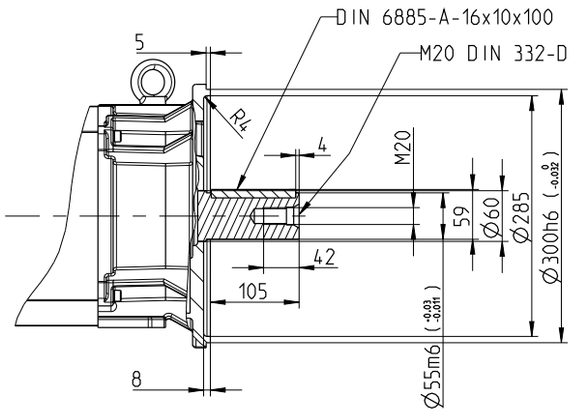
8KSC8 - Dimensions

The dimensions for the fan on the right (position B) are the same as for the fan on the left (position A).

Model number	K_0	K1	M	Extension of K0 or K1 with brake
8KSC82.eennnffgg-0	556	428	134	108
8KSC84.eennnffgg-0	606	478	184	108
8KSC85.eennnffgg-0	656	528	234	108
8KSC86.eennnffgg-0	706	578	284	108







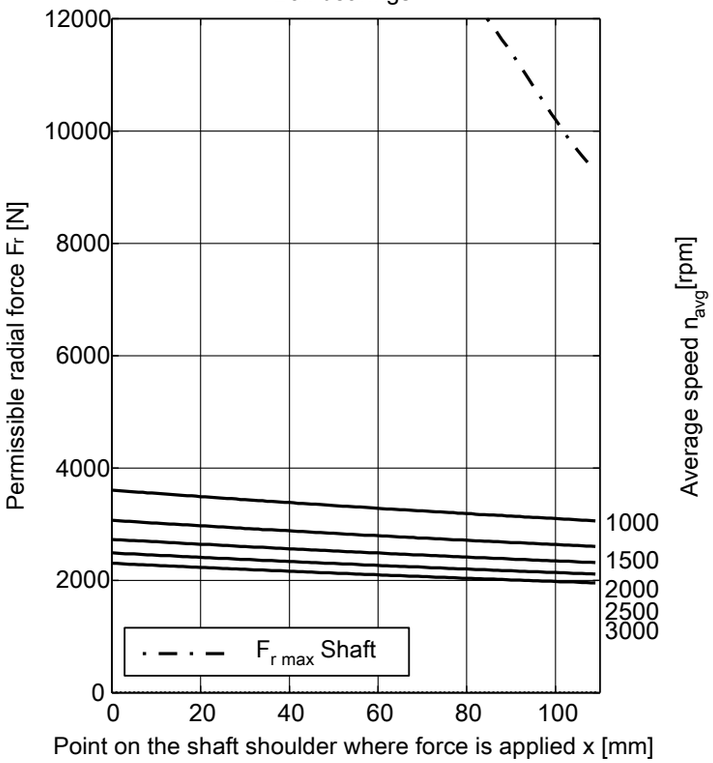
8KSD8 - Dimensions

Model number	K_0	K1	M	Extension of K0 or K1 with brake
8KSD82.eennnffgg-0	556	365	134	108
8KSD84.eennnffgg-0	606	415	184	108
8KSD85.eennnffgg-0	656	465	234	108
8KSD86.eennnffgg-0	706	515	284	108

Maximum shaft load

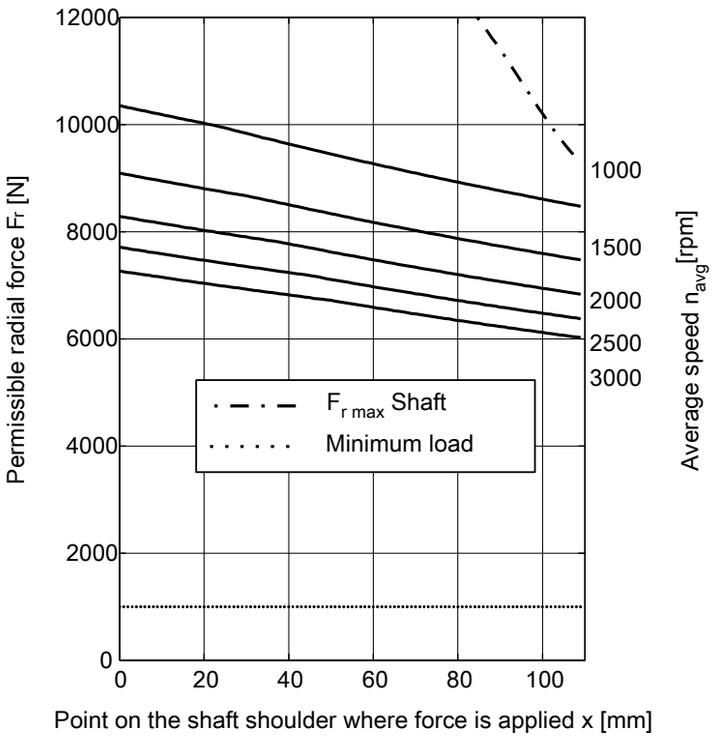
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing
Ball bearings



The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings
Roller bearings



The rigidity curve for the shaft is valid for the maximum motor torque

8KSC9

Technical data

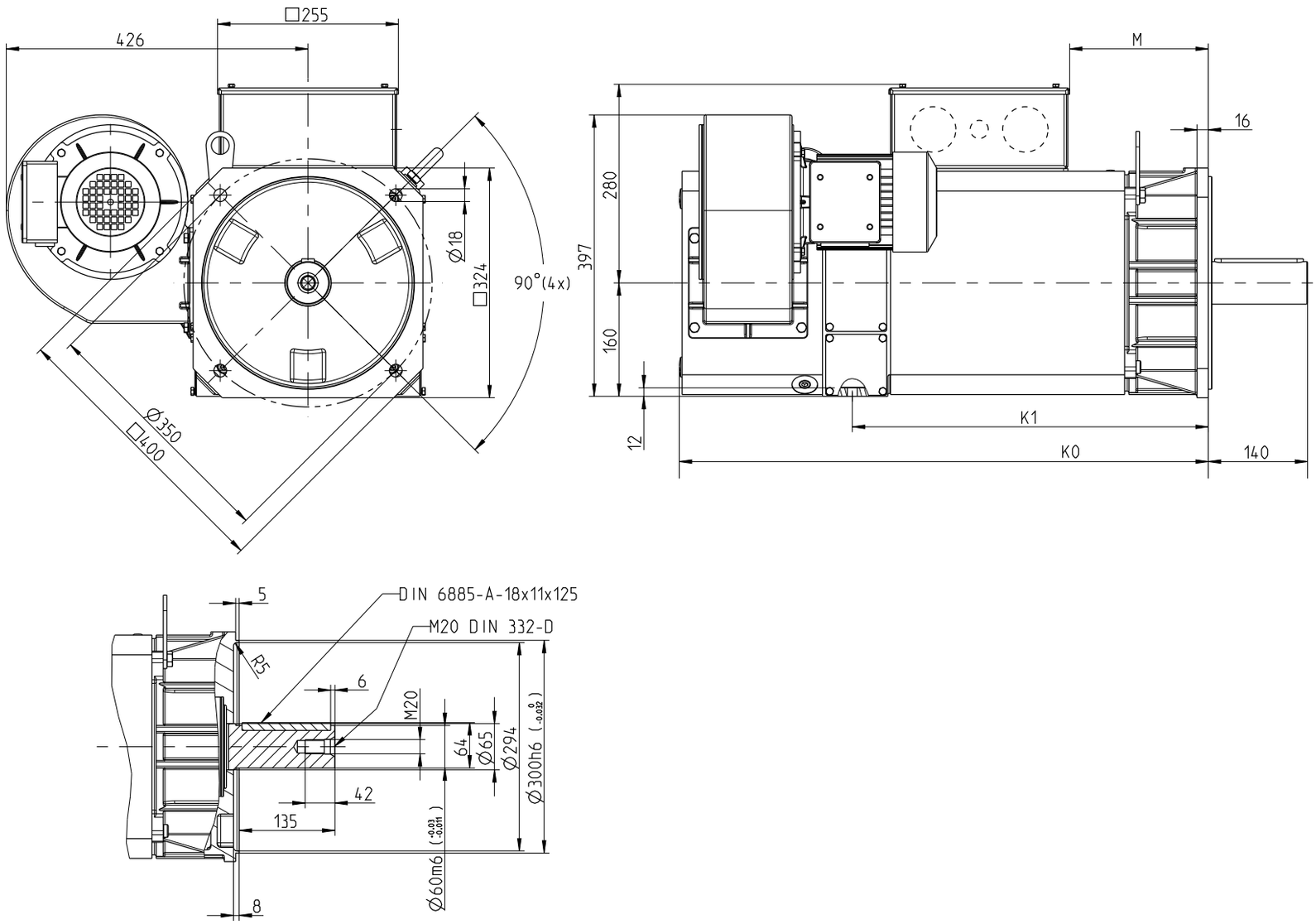
	8KSC92.ee010ffgg-0	8KSC92.ee015ffgg-0	8KSC92.ee020ffgg-0	8KSC92.ee025ffgg-0	8KSC92.ee030ffgg-0	8KSC94.ee010ffgg-0	8KSC94.ee015ffgg-0	8KSC94.ee020ffgg-0	8KSC94.ee025ffgg-0	8KSC94.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	285	265	245	225	205	355	330	305	285	260
Nominal power P_N [W]	29845	41626	51313	58905	64403	37176	51836	63879	74613	81681
Nominal current I_N [A]	59	82	100	115	122	75	104	127	145	160
Stall torque M_0 [Nm]	325	325	325	325	325	405	405	405	405	405
Stall current I_0 [A]	68	103	134	170	195	85	127	165	205	245
Maximum torque M_{max} [Nm]	700	700	700	700	700	875	875	875	875	875
Maximum current I_{max} [A]	160	245	320	400	455	205	305	400	490	585
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	4.92	3.27	2.51	2	1.75	4.87	3.28	2.49	2.02	1.7
Voltage constant K_E [V/1000 rpm]	337	224	172	137	119	334	225	171	139	117
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.03	0.174	0.08	0.046	0.03	0.022
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	1.33	8.3	3.7	2.2	1.42	1.01
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	43.733	46.621	46.25	46.261	46.467	45.091
Thermal time constant t_{therm} [min]	48.8	48.8	48.8	48.8	48.8	43.9	43.9	43.9	43.9	43.9
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1500	1800	1800	1800	1800	1800
Weight without brake m [kg]	230	230	230	230	230	255	255	255	255	255
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	0	0	1650	1650	0	0	0
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSC95.ee010ffgg-0	8KSC95.ee015ffgg-0	8KSC95.ee020ffgg-0	8KSC95.ee025ffgg-0	8KSC96.ee010ffgg-0	8KSC96.ee015ffgg-0	8KSC96.ee020ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	1500	2000	-	1000	1500	2000
Number of pole pairs	3	3	3	-	3	3	3
Nominal torque M_n [Nm]	430	400	375	-	500	470	440
Nominal power P_N [W]	45029	62832	78540	-	52360	73827	92153
Nominal current I_N [A]	90	130	147	-	107	139	175
Stall torque M_0 [Nm]	480	480	480	-	555	555	555
Stall current I_0 [A]	101	155	190	-	118	165	220
Maximum torque M_{max} [Nm]	1050	1050	1050	-	1110	1110	1110
Maximum current I_{max} [A]	245	375	455	-	255	355	475
Maximum speed n_{max} [rpm]	3600	3600	3600	-	3600	3600	3600
Torque constant K_T [Nm/A]	4.89	3.18	2.61	-	4.8	3.48	2.6
Voltage constant K_E [V/1000 rpm]	336	218	179	-	331	240	179
Stator resistance R_{2ph} [Ω]	0.136	0.058	0.038	-	0.108	0.056	0.032
Stator inductance L_{2ph} [mH]	6.9	2.9	1.96	-	5.7	3	1.66
Electrical time constant t_{el} [ms]	49.824	49.448	48.3	-	51.852	52.5	51.188
Thermal time constant t_{therm} [min]	39	39	39	-	34.2	34.2	34.2
Moment of inertia J [kgcm^2]	2200	2200	2200	-	2500	2500	2500
Weight without brake m [kg]	285	285	285	-	310	310	310
Holding brake							
Holding torque of the brake M_{Br} [Nm]	200	200	200	-	200	200	200
Weight of brake [kg]	13	13	13	-	13	13	13
Moment of inertia for the brake J_{Br} [kgcm^2]	40	40	40	-	40	40	40
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	128M	0	0	-	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	1650	0	0	-	1650	0	0
Connector type	Terminal box	Terminal box	Terminal box	-	Terminal box	Terminal box	Terminal box

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.



8KSC9 - Dimensions

The dimensions for the fan on the right (position B) are the same as for the fan on the left (position A).

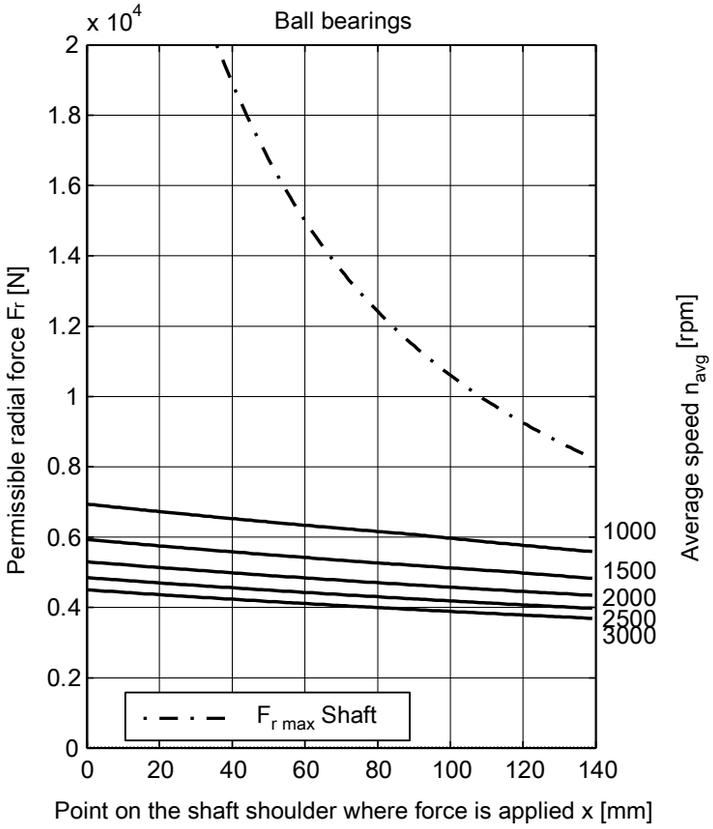
Model number	K_0	K1	M	Extension of K0 or K1 with brake
8KSC92.eennnffgg-0	696	452	Depends on on the terminal box [1)]	On request
8KSC94.eennnffgg-0	746	502	Depends on the terminal box [1)]	On request
8KSC95.eennnffgg-0	796	552	Depends on on the terminal box [1)]	On request
8KSC96.eennnffgg-0	846	602	Depends on on the terminal box [1)]	On request

[1)] Different terminal boxes are used depending on the nominal speed; please request the step file.

Maximum shaft load

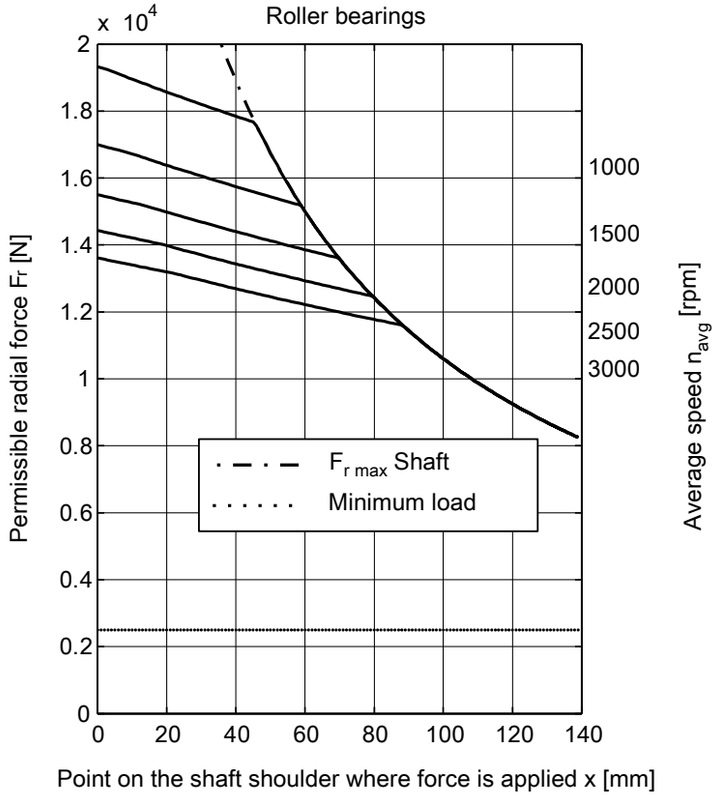
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings



The rigidity curve for the shaft is valid for the maximum motor torque

Technical data

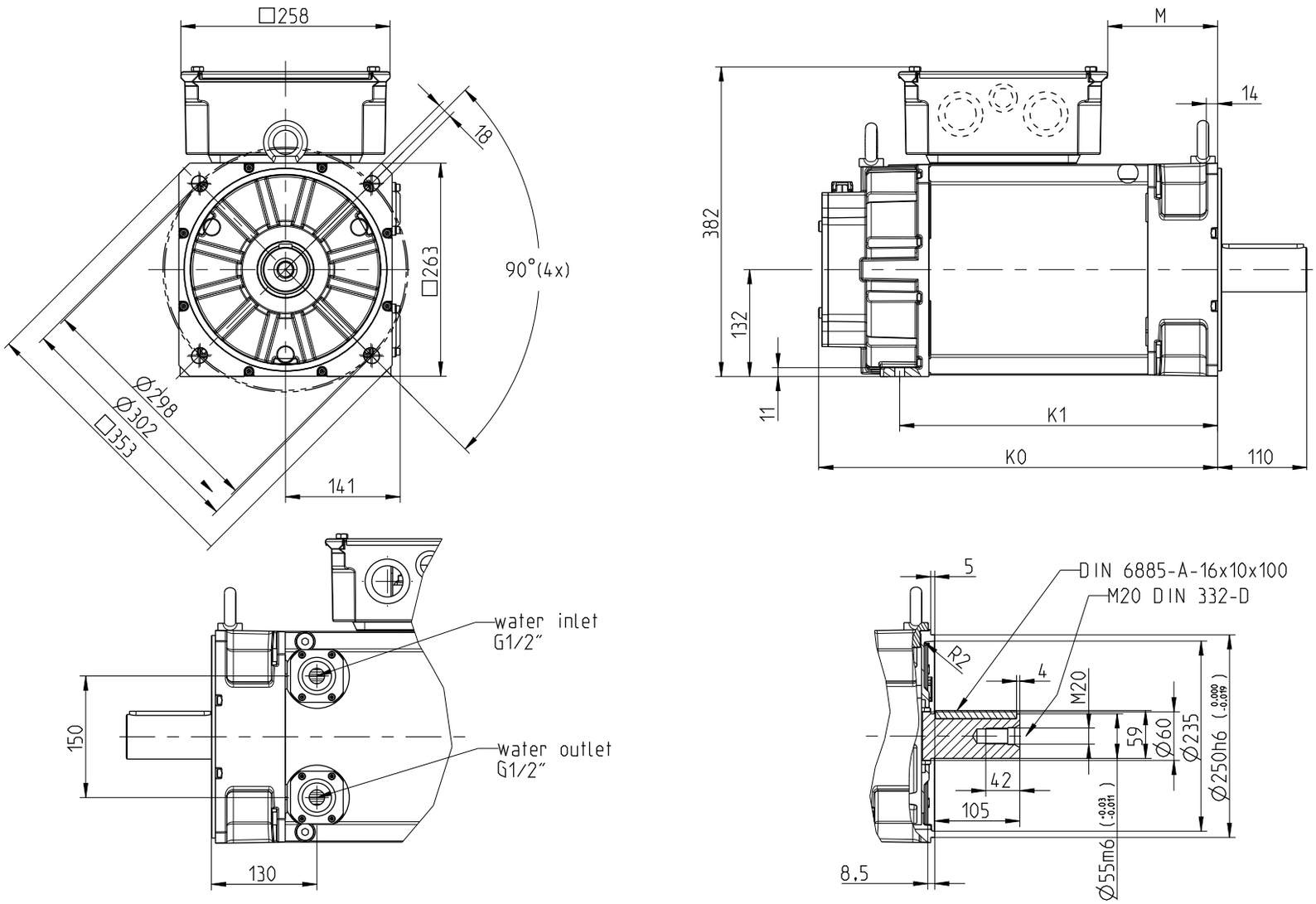
	8KSJ82.ee010ffgg-0	8KSJ82.ee015ffgg-0	8KSJ82.ee020ffgg-0	8KSJ82.ee025ffgg-0	8KSJ82.ee030ffgg-0	8KSJ84.ee010ffgg-0	8KSJ84.ee015ffgg-0	8KSJ84.ee020ffgg-0	8KSJ84.ee025ffgg-0	8KSJ84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	175	170	165	165	150	230	225	215	210	200
Nominal power P_N [W]	18326	26704	34558	43197	47124	24086	35343	45029	54978	62832
Nominal current I_N [A]	39.1	55	67	82	86	52	70	86	102	115
Stall torque M_0 [Nm]	180	180	180	180	180	240	240	240	240	240
Stall current I_0 [A]	40.4	58	73	90	101	54	74	93	116	135
Maximum torque M_{max} [Nm]	340	340	340	340	340	450	450	450	450	450
Maximum current I_{max} [A]	85	121	155	190	210	113	155	195	240	280
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.65	3.26	2.56	2.09	1.86	4.63	3.39	2.67	2.16	1.85
Voltage constant K_E [V/1000 rpm]	296	207	163	133	118	296	217	171	138	118
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	16.1	16.1	16.1	16.1	16.1	15	15	15	15	15
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	1640	128M	128M	128M	1640	128M	128M	128M	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0660	0880	1650	1650	0660	0880	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSJ85.ee010ffgg-0	8KSJ85.ee015ffgg-0	8KSJ85.ee020ffgg-0	8KSJ85.ee025ffgg-0	8KSJ85.ee030ffgg-0	8KSJ86.ee010ffgg-0	8KSJ86.ee015ffgg-0	8KSJ86.ee020ffgg-0	8KSJ86.ee025ffgg-0	8KSJ86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	290	285	275	265	255	350	345	330	320	305
Nominal power P_N [W]	30369	44768	57596	69377	80111	36652	54192	69115	83776	95819
Nominal current I_N [A]	62	87	109	130	150	80	112	135	160	175
Stall torque M_0 [Nm]	305	305	305	305	305	360	360	360	360	360
Stall current I_0 [A]	64	92	119	147	180	83	118	146	180	205
Maximum torque M_{max} [Nm]	555	555	555	555	555	665	665	665	665	665
Maximum current I_{max} [A]	130	190	240	300	365	170	240	300	365	425
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.96	3.43	2.67	2.16	1.78	4.57	3.2	2.59	2.13	1.83
Voltage constant K_E [V/1000 rpm]	321	222	173	140	115	296	207	168	138	118
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	14	14	14	14	14	13	13	13	13	13
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	1650	0	1650	1650	1650	0	0
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.



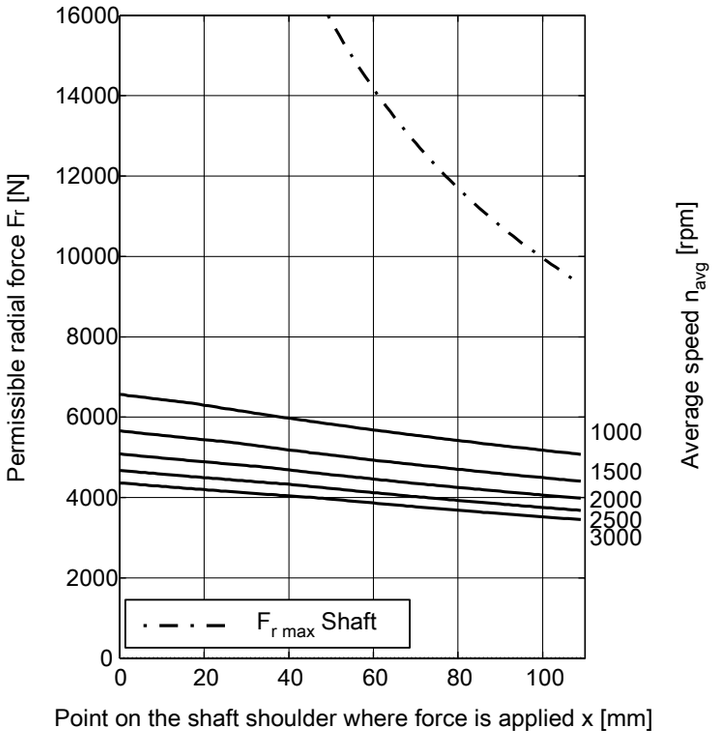
8KSJ8 - Dimensions

Model number	K_0	K1	M	Extension of K0 or K1 with brake
8KSJ82.eennnffgg-0	442	342	86	140
8KSJ84.eennnffgg-0	492	392	136	140
8KSJ85.eennnffgg-0	542	442	186	140
8KSJ86.eennnffgg-0	592	492	236	140

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

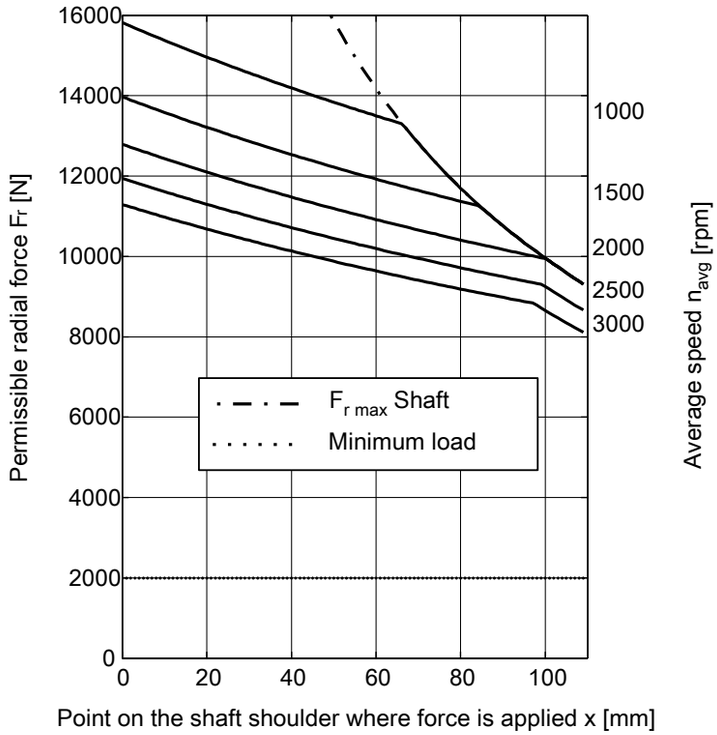
Standard bearing
Ball bearings



Point on the shaft shoulder where force is applied x [mm]

The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings
Roller bearings



Point on the shaft shoulder where force is applied x [mm]

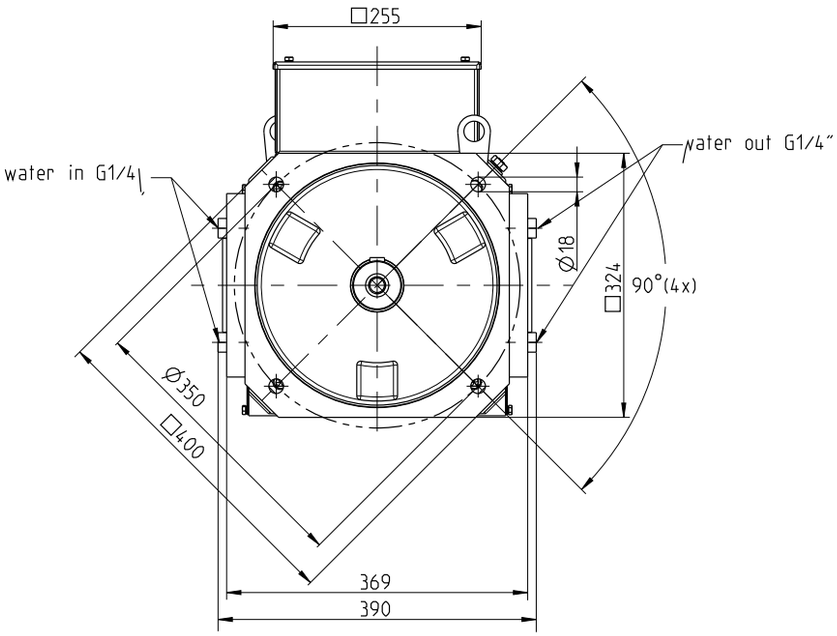
The rigidity curve for the shaft is valid for the maximum motor torque

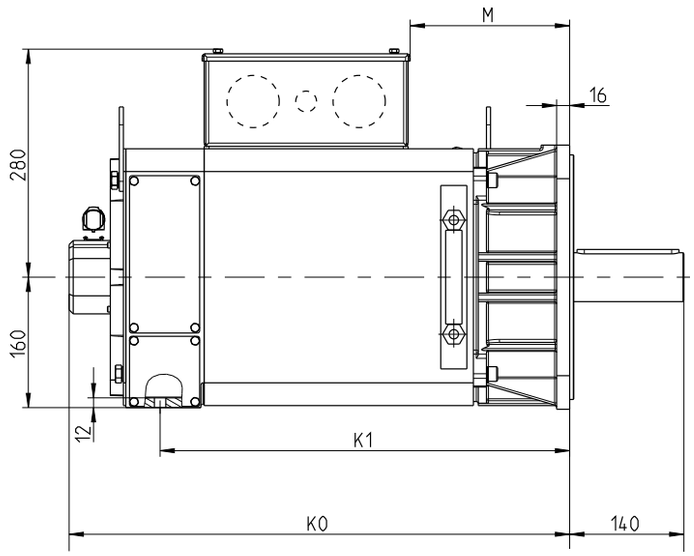
8KSJ9

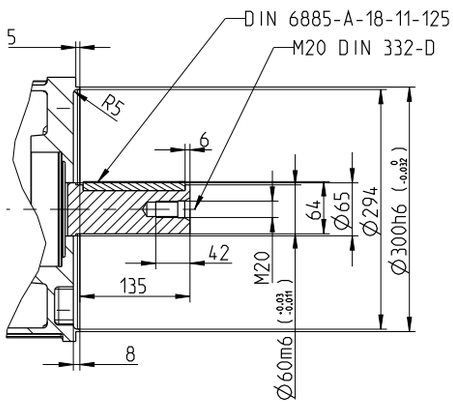
Technical data

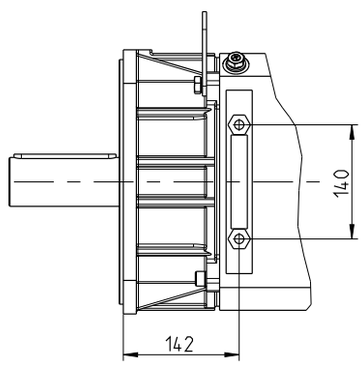
	8KSJ92.ee010ffgg-0	8KSJ92.ee015ffgg-0	8KSJ92.ee020ffgg-0	8KSJ92.ee025ffgg-0	8KSJ94.ee010ffgg-0	8KSJ94.ee015ffgg-0	8KSJ94.ee020ffgg-0	8KSJ95.ee010ffgg-0	8KSJ95.ee015ff00-0	8KSJ96.ee010ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	1000	1500	2000	1000	1500	1000
Number of pole pairs	3									
Nominal torque M_n [Nm]	305	295	285	275	390	380	375	465	460	555
Nominal power P_N [W]	31940	46338	59690	71995	40841	59690	78540	48695	72257	58119
Nominal current I_N [A]	59	86	109	132	76	111	143	91	137	110
Stall torque M_0 [Nm]	320	320	320	320	400	400	400	480	480	575
Stall current I_0 [A]	62	93	122	150	78	116	150	94	144	114
Maximum torque M_{max} [Nm]	695	695	695	695	870	870	870	1030	1030	1210
Maximum current I_{max} [A]	146	220	285	360	185	270	360	215	335	255
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	5.29	3.52	2.7	2.15	5.25	3.54	2.69	5.27	3.43	5.2
Voltage constant K_E [V/1000 rpm]	337	224	172	137	334	225	171	336	218	331
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.174	0.08	0.046	0.136	0.058	0.108
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	8.3	3.7	2.2	6.9	2.9	5.7
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	46.621	46.25	46.261	49.824	49.448	51.852
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	24	24	24	25.2	25.2	26.3
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1800	1800	1800	2200	2200	2500
Weight without brake m [kg]	225	225	225	225	260	260	260	295	295	330
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	128M	128M	0	128M	0	128M
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	1650	0880	1650	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.









8KSJ9 - Dimensions

Model number	K_0	K1	M	Extension of K0 or K1 with brake
8KSJ92.eennnffgg-0	564	452	Depends on on the terminal box [1]	150
8KSJ94.eennnffgg-0	614	502	Depends on on the terminal box [1]	150
8KSJ95.eennnffgg-0	664	552	Depends on on the terminal box [1]	150
8KSJ96.eennnffgg-0	714	602	Depends on on the terminal box [1]	150

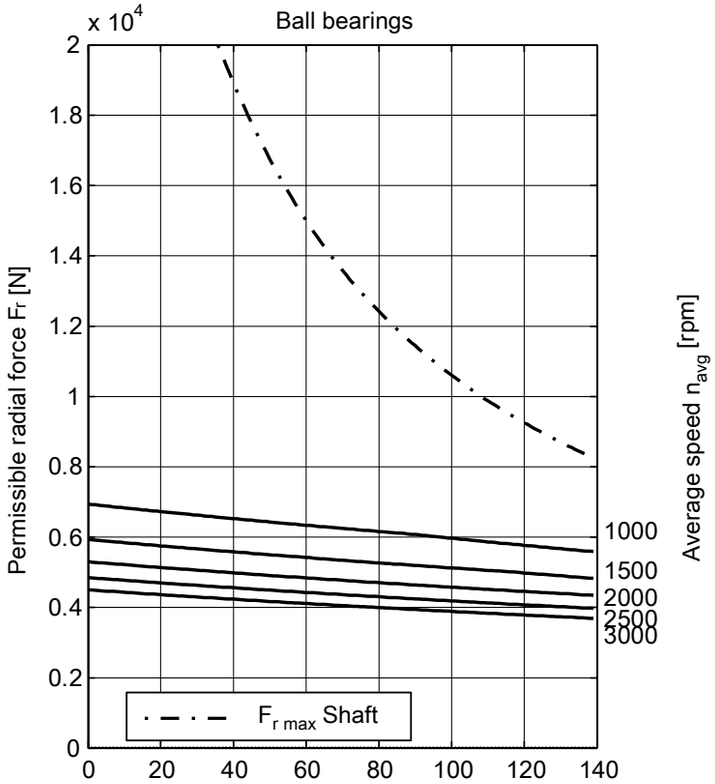
[1] Different terminal boxes are used depending on the nominal speed; please request the step file.

Maximum shaft load

The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing

Ball bearings

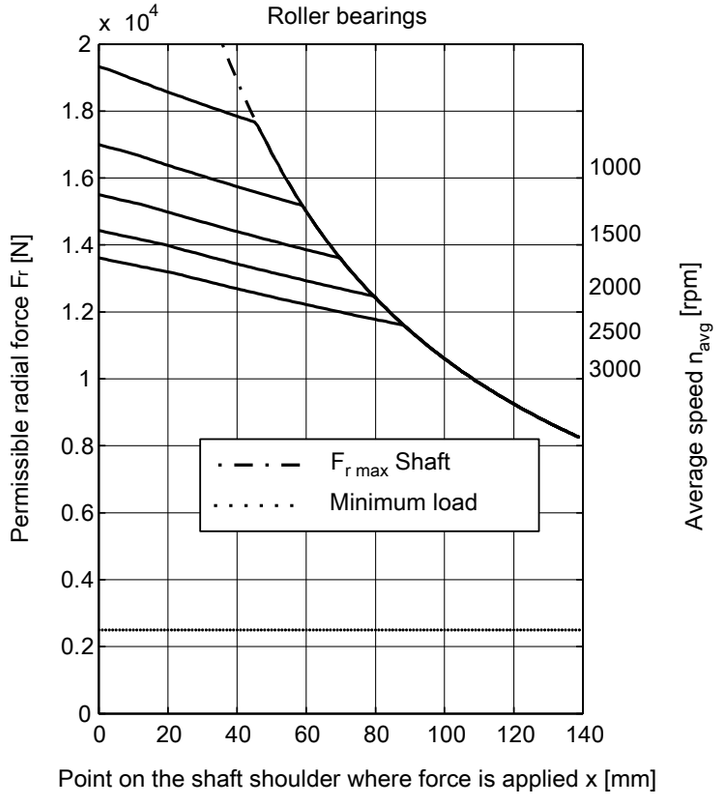


Point on the shaft shoulder where force is applied x [mm]

The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings

Roller bearings



Point on the shaft shoulder where force is applied x [mm]

The rigidity curve for the shaft is valid for the maximum motor torque

Technical data

	8KSL82.ee011ffgg-0	8KSL82.ee016ffgg-0	8KSL82.ee020ffgg-0	8KSL82.ee025ffgg-0	8KSL82.ee030ffgg-0	8KSL84.ee011ffgg-0	8KSL84.ee016ffgg-0	8KSL84.ee020ffgg-0	8KSL84.ee025ffgg-0	8KSL84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL85.ee011ffgg-0	8KSL85.ee016ffgg-0	8KSL85.ee020ffgg-0	8KSL85.ee025ffgg-0	8KSL85.ee030ffgg-0	8KSL86.ee011ffgg-0	8KSL86.ee016ffgg-0	8KSL86.ee020ffgg-0	8KSL86.ee025ffgg-0	8KSL86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

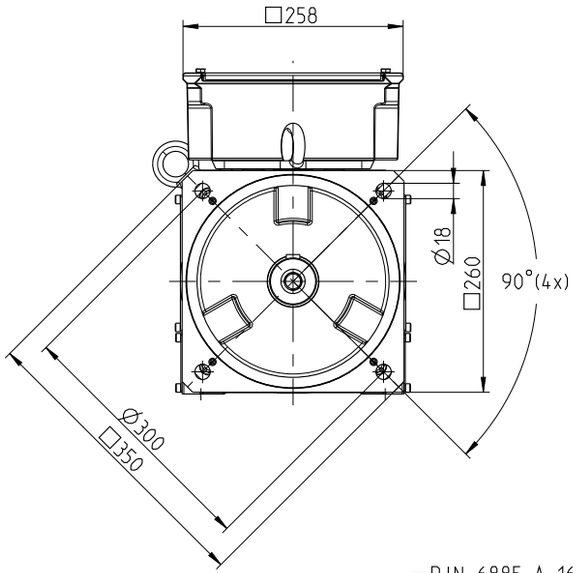
	8KSM82.ee011ffgg-0	8KSM82.ee016ffgg-0	8KSM82.ee020ffgg-0	8KSM82.ee025ffgg-0	8KSM82.ee030ffgg-0	8KSM84.ee011ffgg-0	8KSM84.ee016ffgg-0	8KSM84.ee020ffgg-0	8KSM84.ee025ffgg-0	8KSM84.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	120	115	115	110	105	160	150	145	140	130
Nominal power P_N [W]	13823	19268	24086	28798	32987	18431	25133	30369	36652	40841
Nominal current I_N [A]	27.3	37.6	46.3	54	58	35.7	46.5	57	67	74
Stall torque M_0 [Nm]	130	130	130	130	130	175	175	175	175	175
Stall current I_0 [A]	29.3	41.8	53	65	73	39	53	68	84	98
Maximum torque M_{max} [Nm]	305	305	305	305	305	405	405	405	405	405
Maximum current I_{max} [A]	76	108	138	170	190	101	138	175	215	250
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.63	3.24	2.55	2.08	1.85	4.61	3.38	2.66	2.15	1.84
Voltage constant K_E [V/1000 rpm]	300	210	165	135	120	300	220	173	140	120
Stator resistance R_{2ph} [Ω]	0.64	0.32	0.196	0.132	0.104	0.42	0.22	0.14	0.092	0.068
Stator inductance L_{2ph} [mH]	19.4	9.6	6	4	3.1	14.6	7.8	4.8	3.2	2.3
Electrical time constant t_{el} [ms]	31.656	31	30.6	34.167	32.4	35.667	36.636	35.714	32.6	40
Thermal time constant t_{therm} [min]	22.8	22.8	22.8	22.8	22.8	23.8	23.8	23.8	23.8	23.8
Moment of inertia J [kgcm^2]	450	450	450	450	450	580	580	580	580	580
Weight without brake m [kg]	175	175	175	175	175	200	200	200	200	200
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1640	128M	128M	1640	1640	128M	128M	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0660	0880	0880	0440	0660	0880	1650	1650
Connector type	Terminal box									

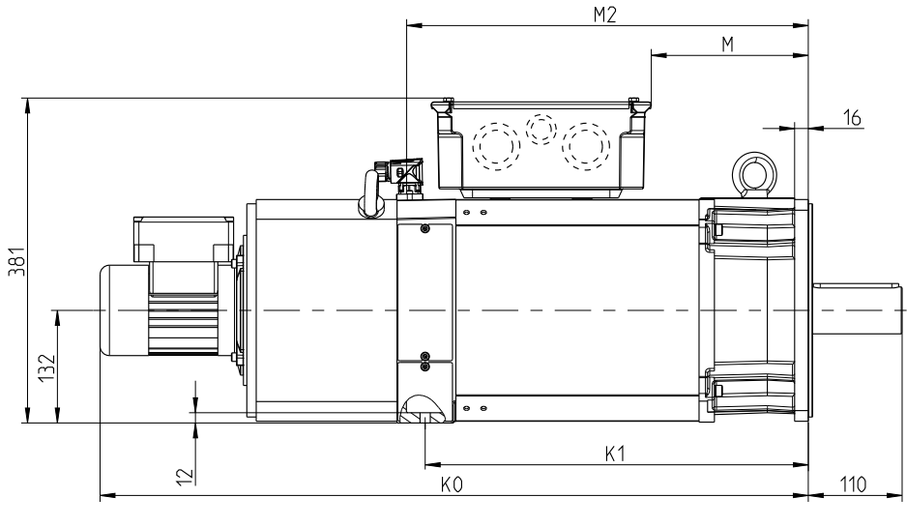
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

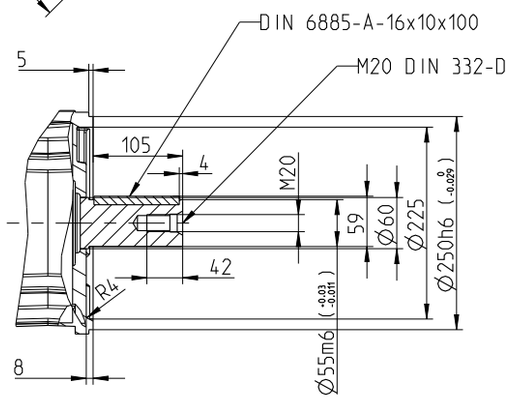
Technical data

	8KSM85.ee011ffgg-0	8KSM85.ee016ffgg-0	8KSM85.ee020ffgg-0	8KSM85.ee025ffgg-0	8KSM85.ee030ffgg-0	8KSM86.ee011ffgg-0	8KSM86.ee016ffgg-0	8KSM86.ee020ffgg-0	8KSM86.ee025ffgg-0	8KSM86.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1100	1600	2000	2500	3000	1100	1600	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	195	185	175	165	155	230	215	205	190	175
Nominal power P_N [W]	22462	30997	36652	43197	48695	26494	36024	42935	49742	54978
Nominal current I_N [A]	40.4	55	68	79	90	52	69	81	91	99
Stall torque M_0 [Nm]	215	215	215	215	215	260	260	260	260	260
Stall current I_0 [A]	45	65	84	103	125	59	84	103	125	146
Maximum torque M_{max} [Nm]	505	505	505	505	505	610	605	605	605	605
Maximum current I_{max} [A]	117	170	215	265	325	150	215	265	325	380
Maximum speed n_{max} [rpm]	4300									
Torque constant K_T [Nm/A]	4.99	3.46	2.69	2.18	1.79	4.61	3.23	2.61	2.15	1.84
Voltage constant K_E [V/1000 rpm]	325	225	175	141	116	300	210	170	140	120
Stator resistance R_{2ph} [Ω]	0.36	0.172	0.104	0.068	0.046	0.24	0.116	0.076	0.052	0.038
Stator inductance L_{2ph} [mH]	13.6	6.5	4	2.5	1.74	9.6	4.6	3.1	2.09	1.53
Electrical time constant t_{el} [ms]	38.722	37.111	40.4	44	45	41	40.167	39.5	35.667	39.5
Thermal time constant t_{therm} [min]	25	25	25	25	25	26.2	26.2	26.2	26.2	26.2
Moment of inertia J [kgcm^2]	710	710	710	710	710	840	840	840	840	840
Weight without brake m [kg]	225	225	225	225	225	250	250	250	250	250
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	128M	128M	128M	0	128M	128M	128M	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0660	0880	1650	1650	1650	0660	1650	1650	1650	1650
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

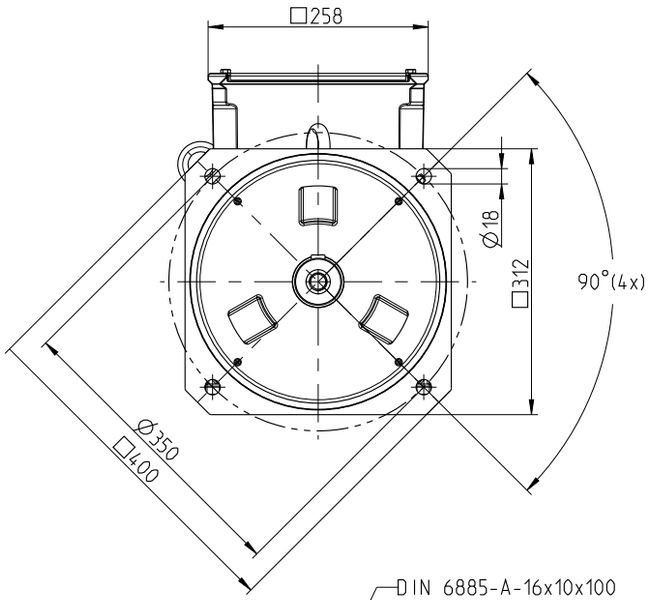


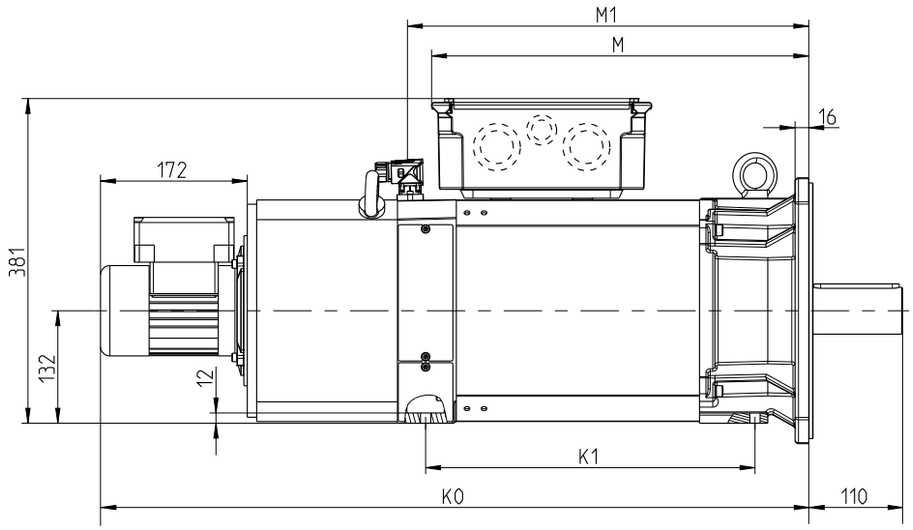


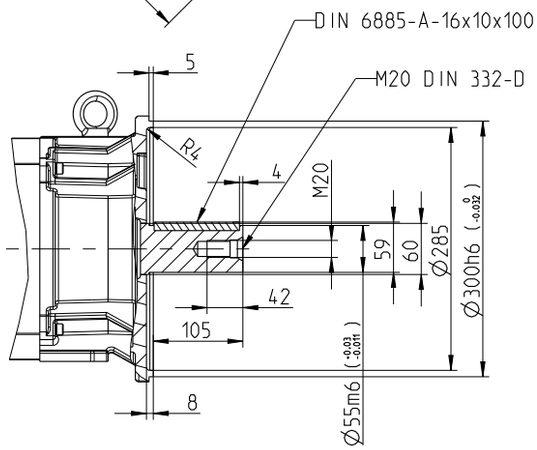


8KSL8 - Dimensions

Model number	K_0	K1	M	M2	Extension of K0 or K1 and M2 with brake
8KSL82.eennnffgg-0	780	399	134	417	On request
8KSL84.eennnffgg-0	830	449	184	467	On request
8KSL85.eennnffgg-0	880	499	234	517	On request
8KSL86.eennnffgg-0	930	549	284	567	On request







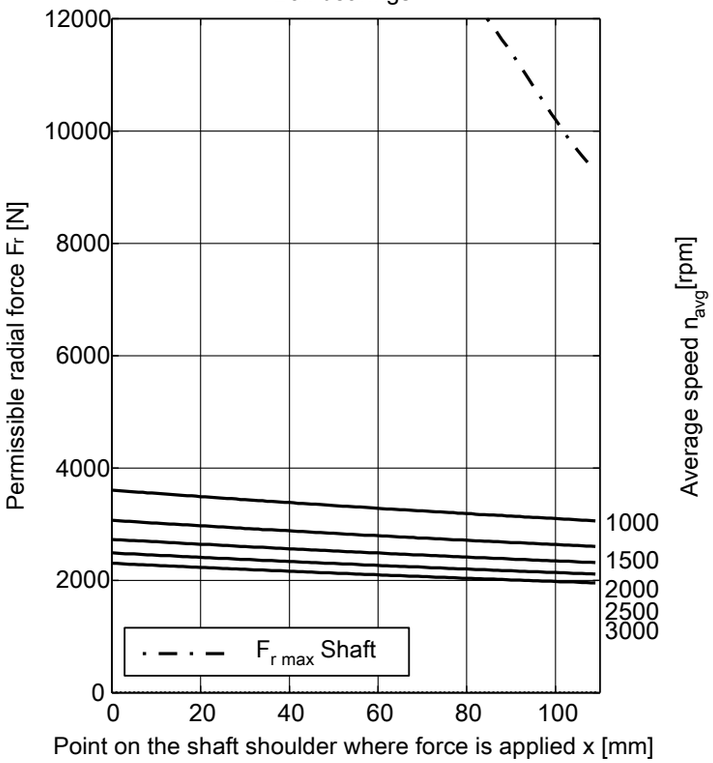
8KSM8 - Dimensions

Model number	K_0	K1	M	M1	Extension of K0 or K1 and M1 with brake
8KSM82.eennnffgg-0	780	336	134	417	On request
8KSM84.eennnffgg-0	830	386	184	467	On request
8KSM85.eennnffgg-0	880	436	234	517	On request
8KSM86.eennnffgg-0	930	486	284	567	On request

Maximum shaft load

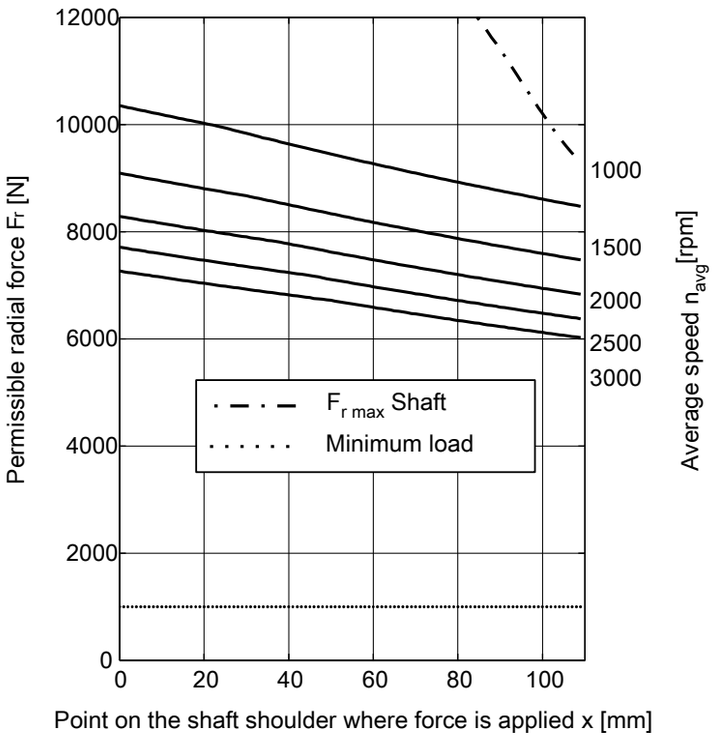
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing
Ball bearings



The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings
Roller bearings



The rigidity curve for the shaft is valid for the maximum motor torque

8KSL9

Technical data

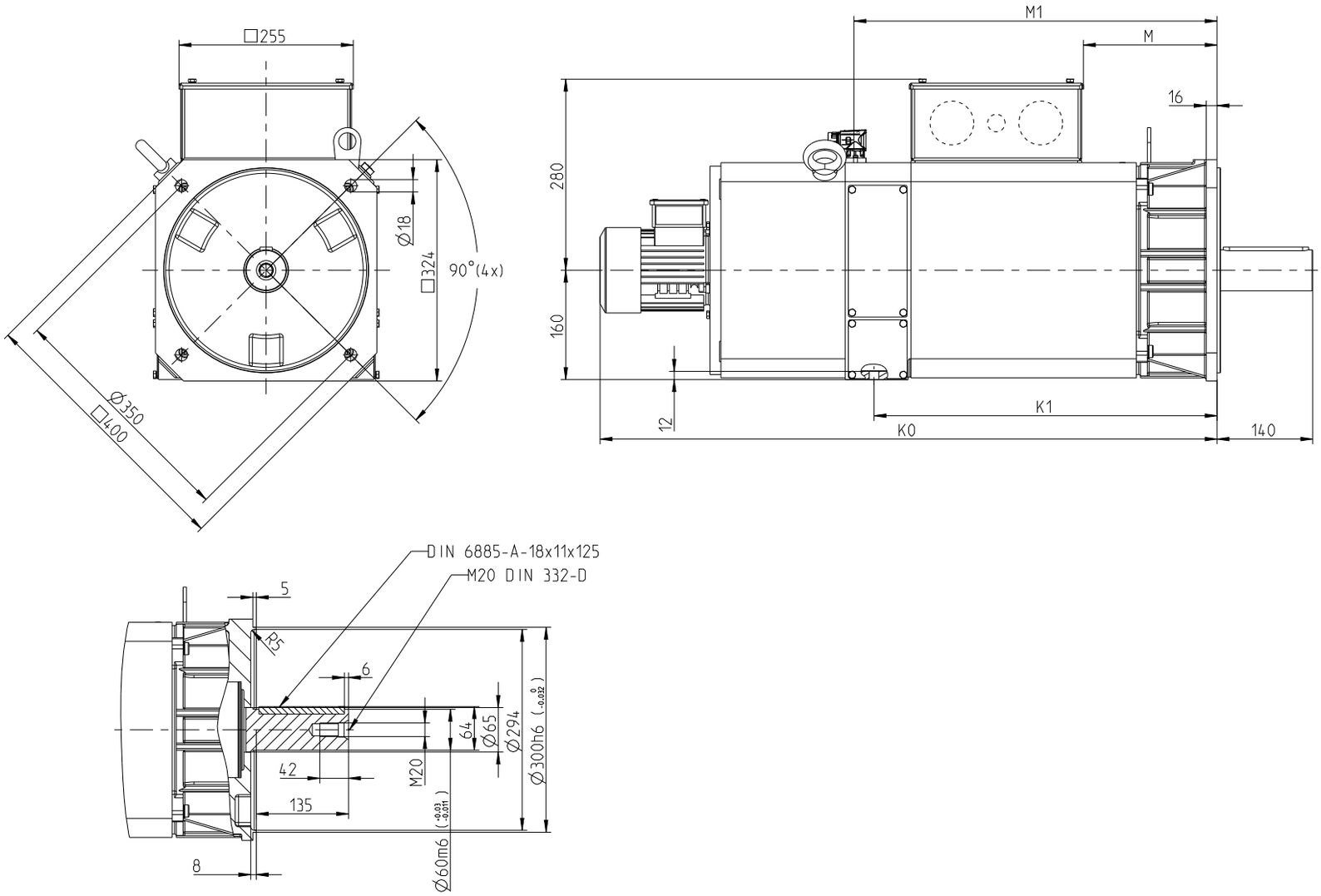
	8KSL92.ee010ffgg-0	8KSL92.ee015ffgg-0	8KSL92.ee020ffgg-0	8KSL92.ee025ffgg-0	8KSL92.ee030ffgg-0	8KSL94.ee010ffgg-0	8KSL94.ee015ffgg-0	8KSL94.ee020ffgg-0	8KSL94.ee025ffgg-0	8KSL94.ee030ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	1500	2000	2500	3000	1000	1500	2000	2500	3000
Number of pole pairs	3									
Nominal torque M_n [Nm]	285	265	245	225	205	355	330	305	285	260
Nominal power P_N [W]	29845	41626	51313	58905	64403	37176	51836	63879	74613	81681
Nominal current I_N [A]	59	82	100	115	122	75	104	127	145	160
Stall torque M_0 [Nm]	325	325	325	325	325	405	405	405	405	405
Stall current I_0 [A]	68	103	134	170	195	85	127	165	205	245
Maximum torque M_{max} [Nm]	700	700	700	700	700	875	875	875	875	875
Maximum current I_{max} [A]	160	245	320	400	455	205	305	400	490	585
Maximum speed n_{max} [rpm]	3600									
Torque constant K_T [Nm/A]	4.92	3.27	2.51	2	1.75	4.87	3.28	2.49	2.02	1.7
Voltage constant K_E [V/1000 rpm]	337	224	172	137	119	334	225	171	139	117
Stator resistance R_{2ph} [Ω]	0.24	0.108	0.064	0.04	0.03	0.174	0.08	0.046	0.03	0.022
Stator inductance L_{2ph} [mH]	10.6	4.7	2.8	1.74	1.33	8.3	3.7	2.2	1.42	1.01
Electrical time constant t_{el} [ms]	42.358	42.593	42.313	43.05	43.733	46.621	46.25	46.261	46.467	45.091
Thermal time constant t_{therm} [min]	48.8	48.8	48.8	48.8	48.8	43.9	43.9	43.9	43.9	43.9
Moment of inertia J [kgcm^2]	1500	1500	1500	1500	1500	1800	1800	1800	1800	1800
Weight without brake m [kg]	230	230	230	230	230	255	255	255	255	255
Holding brake										
Holding torque of the brake M_{Br} [Nm]	200									
Weight of brake [kg]	13									
Moment of inertia for the brake J_{Br} [kgcm^2]	40									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	128M	0	0	0	128M	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	0880	1650	1650	0	0	1650	1650	0	0	0
Connector type	Terminal box									

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.

Technical data

	8KSL95.ee010ffgg-0	8KSL95.ee015ffgg-0	8KSL95.ee020ffgg-0	8KSL95.ee025ffgg-0	8KSL96.ee010ffgg-0	8KSL96.ee015ffgg-0	8KSL96.ee020ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	1500	2000	2500	1000	1500	2000
Number of pole pairs				3			
Nominal torque M_n [Nm]	430	400	375	345	500	470	440
Nominal power P_N [W]	45029	62832	78540	90321	52360	73827	92153
Nominal current I_N [A]	90	130	147	175	107	139	175
Stall torque M_0 [Nm]	480	480	480	480	555	555	555
Stall current I_0 [A]	101	155	190	240	118	165	220
Maximum torque M_{max} [Nm]	1050	1050	1050	1050	1110	1110	1110
Maximum current I_{max} [A]	245	375	455	585	255	355	475
Maximum speed n_{max} [rpm]				3600			
Torque constant K_T [Nm/A]	4.89	3.18	2.61	2.04	4.8	3.48	2.6
Voltage constant K_E [V/1000 rpm]	336	218	179	140	331	240	179
Stator resistance R_{2ph} [Ω]	0.136	0.058	0.038	0.024	0.108	0.056	0.032
Stator inductance L_{2ph} [mH]	6.9	2.9	1.96	1.2	5.7	3	1.66
Electrical time constant t_{el} [ms]	49.824	49.448	48.3	49.167	51.852	52.5	51.188
Thermal time constant t_{therm} [min]	39	39	39	39	34.2	34.2	34.2
Moment of inertia J [kgcm^2]	2200	2200	2200	2200	2500	2500	2500
Weight without brake m [kg]	285	285	285	285	310	310	310
Holding brake							
Holding torque of the brake M_{Br} [Nm]				200			
Weight of brake [kg]				13			
Moment of inertia for the brake J_{Br} [kgcm^2]				40			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	128M	0	0	0	0	0	0
ACOPOSmulti inverter module 8BVIxxxx...	1650	0	0	0	1650	0	0
Connector type				Terminal box			

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Missing servo drive specification: Smaller drives can also be used for all motors within the limits of the respective drive.
NOTE – Cable cross section: No pre-assembled cables are offered for the 8KS motor.
The cable cross section depends on the cabling method used (see relevant standards and regulations), the recommendations from the respective manufacturer, etc.



8KSL9 - Dimensions

The dimensions for the fan on the right (position B) are the same as for the fan on the left (position A).

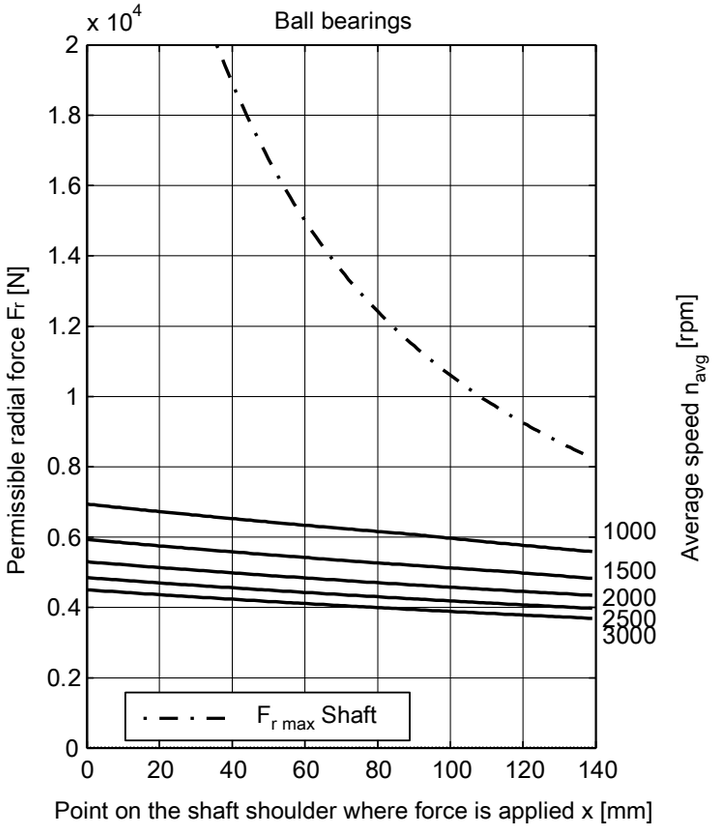
Model number	K_0	K1	M	M1	Extension of K0 or K1 and M1 with brake
8KSL92.eennnffgg-0	853	452	Depends on on the terminal box [1]	On request	175
8KSL94.eennnffgg-0	903	502	Depends on on the terminal box [1]	On request	175
8KSL95.eennnffgg-0	953	552	Depends on on the terminal box [1]	On request	175
8KSL96.eennnffgg-0	1003	602	Depends on on the terminal box [1]	On request	175

[1] Different terminal boxes are used depending on the nominal speed; please request the step file.

Maximum shaft load

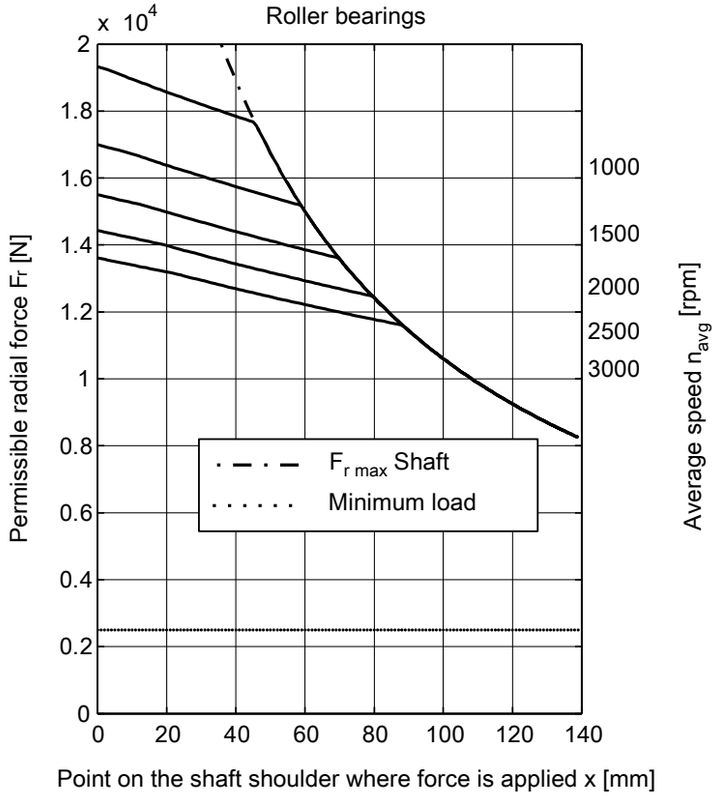
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

Standard bearing



The rigidity curve for the shaft is valid for the maximum motor torque

Reinforced bearings



The rigidity curve for the shaft is valid for the maximum motor torque

8LT direct drive torque motors

High-torque power transmission

Modern machine concepts demand dynamics and precision. High-torque motors from B&R offer a high level of dynamics and positioning accuracy with compact sizes and provide users the highest degree of flexibility when designing their machines.

Table of contents

System features

8LT direct drive torque motors

Direct drive torque motors from the 8LT series are permanently excited torque motors for applications that require extraordinary dynamic characteristics and positioning precision as well as compact size and reduced weight. These are available in self-cooled or externally cooled variants.

The 8LT series torque motors provide the user with the highest degree of flexibility - the ideal basis for mechatronic and efficient machine design.
All motor components are designed in such a way that saves maintenance.

This motor series features a relatively compact structure with a higher degree of rigidity and more dynamic properties as well as low detent torque. The externally cooled variant additionally ensures intensive surface cooling – the motor does not cause the area around it to heat up.

The 8LT torque motors are designed as complete motors. Unlike built-in motors, there is no need to install bearings and encoders.

Feedback systems specified to meet your needs

8LT synchronous motors are equipped with high resolution EnDat encoders. A model is also available with a multi-turn encoder. They allow operation without requiring homing procedures or additional measurement systems on the workpiece. The absolute encoder functions without a battery and is therefore absolutely maintenance-free.
With hollow shaft motors, EnDat 2.2 encoders with distance-coded reference marks for absolute position are used.
All 8LT motors rotate clockwise (when looking at the shaft from the front) with th exception of the counterclockwise 8LTB/ 8LTK hollow shaft motors.

Connection type

The uniform connection technology, the pre-assembled cables and the embedded parameter chip allow "plug and play" operation of the power transmission system. The angled connectors can be swiveled, which provides the maximum amount of flexibility during cabling.

Areas of use

8LT torque motors are compact power transmission units in which the mechanical power of the motor is directed right to the working machine without transfer elements. Typical areas of application are:

- Main extruder drives
- Worm gear drives in injection molding machines
- Pull-Roll drives in foil machines
- Dynamic positioning tasks (e.g. rotary tables, clocked conveyor belts)
- Replacement for hydraulic motors
- Roller drives in paper machines
- Cross cutter drives with continuous product tracks (e.g. paper, textiles, sheet metal)
- Wire-drawing machines

Embedded parameter chip

All relevant mechanical and electrical information and data is stored in the EnDat encoder used for 8LT three-phase synchronous motors. This means that the user doesn't have to configure settings on the servo drive in the field. As soon as the encoder is connected to the servo drive and power is applied to the electronics, the motor is automatically identified. The motor sends its nominal parameters and limit parameters to the servo drive. The drive then automatically determines the current limits and current control parameters required for optimal control of the motor. The only things that the user has to optimize are the speed and position controllers. The integrated commissioning environment in B&R Automation Studio™ provides all necessary support.
In addition to assistance during commissioning, routine service work is also simplified, and motors can be exchanged without having to take extra time to set parameters.

Advantages of B&R direct drive torque motors for your application:

- Easy to install
- Small installation dimensions
- Extremely easy to service
- Low costs
- High overload capability/peak torque
- Also available with hollow shaft
- Very good control properties because of low cogging torque
- Available with encoders for functional safety
- When used as a direct drive: No mechanical transfer elements that are subject to wear in the power transmission system, therefore high level of availability and no elasticity in the power transmission system

Cooling / construction types

Cooling / construction type A
8LT three-phase synchronous motors with cooling / construction type A are self-cooling and are equipped with a ISO output flange. The motors must be installed on the cooling surface (flange).

Cooling / construction type B
8LT three-phase synchronous motors with cooling/construction type B are self-cooling hollow shaft motors.

Cooling / construction type J
8LT three-phase synchronous motors with cooling / construction type J are based on motors with cooling type A and are liquid-cooled. The liquid-cooling increases the nominal torque (M_N), nominal current (I_N), stall torque (M_0) and stall current (I_0) by 70% as compared to the respective motors with cooling type A.

Cooling / construction type K
8LT three-phase synchronous motors with cooling / construction type K are based on motors with cooling type B and are liquid-cooled.

Cooling / construction type Q
8LT three-phase synchronous motors with cooling / construction type Q are self-cooling and have a shaft with a blind hole. The motors must be installed on the cooling surface (flange).

Cooling / construction type S
8LT three-phase synchronous motors with cooling / construction type S are based on motors with cooling type Q and are liquid-cooled. The liquid-cooling increases the nominal torque (M_N), nominal current (I_N), stall torque (M_0) and stall current (I_0) by 70% as compared to the respective motors with cooling type Q.

Sizes

8LT three-phase synchronous motors are available in size 9 and C.

Cooling type	Available sizes	
	9	C
A	Yes	Yes
B	Yes	---
J	Yes	Yes
K	Yes	---
Q	Yes	Yes
S	Yes	Yes

Lengths

8LT three-phase synchronous motors are available in up to six different lengths. They have different power ratings with identical flange dimensions. The various lengths can be differentiated by a number (d) in the model number (3, 4, 5, 6, 7, 8).

Overview

Length	Available for size	
	9	C[1)]
3	Yes[1)]	Yes
4	Yes	Yes
5	Yes	Yes
6	Yes	Yes
7	Yes	Yes
8	---	Yes

[1)] Not for 8LTB/8LTK

Motor encoder systems

8LT three-phase synchronous motors can be delivered with high resolution EnDat Heidenhain encoders. The encoder system is listed as part of the model number in the form of a 2-digit code (ee).
For 8LTB and 8LTK hollow shaft motors, M0 magnetic encoders are the only ones used!

Analog and digital transfer
The encoders operate with a serial transfer protocol. This protocol is called EnDat. The EnDat protocol is a developed standard that incorporates the advantages of absolute and incremental position measurement and also offers a read/write parameter memory in the encoder. The embedded parameter chip is stored by B&R in this encoder memory. This data and the B&R ACOPOS systems form a plug-and-play drive solution. Absolute positioning can be used within a revolution with the single-turn variants. A homing procedure is not required because of the absolute position measurement. For applications where the motor covers several revolutions for positioning, a multi-turn encoder that can save up to 65535 revolutions can be used. A solution with a single-turn encoder variant with a homing procedure is also possible. In EnDat 2.1 analog/digital sampling, a very fine resolution is achieved by the evaluation modules developed by B&R.

For the advanced, fully digital EnDat 2.2 protocol, the positions are generated directly in the encoder and communicated serially with the drive system. This method is very robust against disturbances and is even certified for safety applications.

Safety-related position measurement systems
In machine and system manufacturing, the topic of safety is becoming more and more important. This is mirrored in legislation and stricter safety criteria in national and international standards. Most importantly, stricter requirements serve to protect personnel, but they also increasingly serve to protect property and the environment. The goal of functional safety is to minimize or eliminate dangerous situations that can occur in machines and systems either with or without operational errors. This is generally achieved by implementing redundant systems. Moving axes in safety-oriented applications require position information in order to be able to carry out their corresponding safety functions. Different system configurations can be implemented to get independent position values. One possibility is using two measuring instruments per axis. To keep costs down, the aim is often to create a solution with only one position measuring instrument. Until now, analog measuring instruments with sine/cosine signals were used for this purpose. The encoder manufacturer Heidenhain – as the first manufacturer with the purely serial EnDat 2.2 protocol for safety position measurement systems – offers a serial single-encoder solution in accordance with IEC 61 508 SIL2. All the advantages of serial data transfer – such as cost optimization, diagnostics possibilities, automatic commissioning and high-speed generation of position values – can now benefit safety applications as well.
100% inspection during production and additional measures during final testing ensure errors have not occurred related to shaft and coupling connections on rotary encoders when using motors with S encoders (in accordance with EN ISO 13849-2).
There are also a number of safety functions that are already possible with D encoders.

Information regarding the area of application and the procedure for setting up various safety functions can be found in the "ACOPOSmulti SafeMOTION" user's manual. (Model number: MAACPM-SAFEMC-GER ACOPOSmulti SafeMOTION or in the Downloads section of our website)

EnDat 2.1 and EnDat 2.2 encoders - Technical data

Optical

Encoder type / Order code	E6	E7	D0	D1	S0	S1
Operating principle	Optical	Optical	Optical	Optical	Optical	Optical
EnDat protocol	2.1	2.1	2.2	2.2	2.2	2.2
Functional safety	No	No	No	No	Yes	Yes
Single-turn / Multi-turn	S	M	S	M	S	M
Revolutions	1	4096	1	4096	1	4096
Number of lines	512	512	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder
Resolution [bits single-turn / bits multi-turn]	13/0	13/12	25/0	25/12	25/0	25/12
Precision ["]	60	60	20	20	20	20
Switching frequency ≥ [kHz]	190	190	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder	Digital pos. in the encoder
Vibration during operation - Stator Max [m/s2]	200	200	300	300	300	300
Vibration during operation - Rotor max [m/s2]	200	200	300	300	300	300
Shock during operation max [m/s^2]	1000	1000	2000	2000	2000	2000
Manufacturer's product ID	ECN 1313	EQN 1325	ECN 1325 FS	EQN 1135 FS	ECN 1325 FS	EQN 1135 FS
Manufacturer's website	www.heidenhain.de					

Magnetic, only for 8LTB/8LTK hollow shaft motors

Encoder type / Order code	M0
Operating principle	Magnetic
EnDat protocol	2.2
Functional safety	No
Single-turn / Multi-turn	S
Revolutions	1
Number of lines	1400
Resolution [bits single-turn / bits multi-turn]	14/0
Precision ["]	Absolute after 18"
Vibration during operation - Stator Max [m/s2]	300
Vibration during operation - Rotor max [m/s2]	300
Shock during operation max [m/s^2]	1000
Manufacturer's product ID	ERM 2410
Manufacturer's website	www.heidenhain.de

Motor options

8LT three-phase synchronous motors can be delivered with the following options depending on the cooling type and size:

- With various nominal speeds
- With or without an oil seal
- With two different connection directions for the motor connector

The nominal speed is listed as part of the model number in the form of a 3-digit code (nnn). The code corresponds with the nominal speed divided by 100 and preceded by a zero. For example, 1000 rpm would correspond with code 010. If the nominal speed is below 100 rpm, the "nominal speed" part of the order code has an "A" as the first character and then the nominal speed is listed as follows. A speed of 80 rpm corresponds to A08.

The respective combination of other motor options is listed as part of the model number in the form of a 2-digit code (ff).

Nominal speed

8LT three-phase synchronous motors can be delivered with three different nominal speeds:

Size	**Available nominal speeds n_N [rpm]**																					
	80 / 100[1)]						**300**						**500**					**1000**				
9	---	---	---	---	---	---	Yes	Yes	Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C[1)]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	---	---	---	---	---
Length	3	4	5	6	7	8	3[1)]	4	5	6	7	8	3[1)]	4	5	6	7	3[1)]	4	5	6	7

[1)] Not for 8LTB/8LTK

Oil seal

All 8LT three-phase synchronous motors are available with an optional Form A oil seal according to DIN 3760. When equipped with an oil seal, the motors have IP65 protection in accordance with EN 60034-5.

Proper lubrication of the oil seal must be ensured throughout the entire service life of the motor.

Load capacity of the shaft end and bearing

8LT three-phase synchronous motors are equipped with grooved ball bearings that are sealed on both sides and lubricated. Bearing elements must not be subjected to shocks or impacts! Incorrect handling will reduce the service life and result in damage to the bearings.

Determining the order code for motor options (ff)

The respective code (ff) for the order key can be found in the following table:

Motor options

Shaft end	Connectiondirection	Oil seal	Code for the order key (ff)
ISO flange / blind hole / hollow shaft	Motor and encoder connectors - angled (swivel)	No	**F0**
		Yes	**F3**
	Motor connector - straight, Encoder connector - swivel (angled)	No	**F6**
		Yes	**F9**

Order key

8LT	a	c	d	.	ee	nnn	ff	gg	-	h

Cooling type/ construction (See section "Cooling types")

A...self-cooled,
B...self-cooled, hollow shaft
J ...forced cooling by integrated heat exchanger
K...forced cooling by integrated heat exchanger, hollow shaft
Q...self-cooled,with blind hole
S...self-cooled, with blind hole

Sizes (See section "Sizes")
Valid values: **9,C**

Lengths (See section "Lengths")
Valid values: **2,4,5,6**

Encoder system (See section "Motor encoder systems")
8LT except: 8LTB, 8LTK
R0...Resolver
E6...EnDat 2.1 single-turn, 2048 lines
E7...EnDat 2.1 multi-turn, 2048 lines
D0...EnDat 2.2 single-turn, 31 bit
D1...EnDat 2.2 multi-turn, 31 bit
S0...EnDat 2.2 single-turn, 31 bit, FS
S1...EnDat 2.2 multi-turn, 31 bit, FS

8LTB, 8LTK hollow shaft only
M0...EnDat 2.2 single-turn, magnetic, absolute after 18", 1400 lines

Rated speed (See section„Nominal speed“)
nnn...Nominal speed /100, z.B. 003 corresponds to a nominal speed of 300 rpm
nominal speeds below 100 min $^{-1}$ are marked by an „A“, 80 rpm reads A08

Motor options: (See section „Motor options“)

Special motor options (See section „Special motor options“)
00... No special motor options

Motor version: Valid value: **0** (Value is assigned automatically and cannot be chosen freely)

Additional motor options or special motor options must be arranged with B&R

Example order 1

A torque motor of type **8LSA45** with a nominal speed of 300 rpm has been selected for an application. The motor should have a 2048-line EnDat single-turn encoder. Both the motor and encoder connector should have a swivel design.

The code (ee) for the encoder system is **E6**.

The code (nnn) for a nominal speed of 300 rpm is **003**.

The code (ff) for the other options (connection direction) is **F0**.

The model number for the required motor is **8LTA93.E6003F000-0.**

Example order 2

A three-phase synchronous motor of type **8LTJ97** with a nominal speed of 500 rpm has been selected for an application. The motor should have an oil seal and a 2048-line EnDat multi-turn encoder. The male motor connector should have a straight connection. The male encoder connector should have a "swivel (angled)" connection.

The code (ee) for the encoder system is **E7**.

The code (nnn) for a nominal speed of 500 rpm is **005**.

The code (ff) for the other options (oil seal and connection direction) is **F9**.

The model number for the required motor is **8LTJ97.E7005F900-0.**

General motor data

General information	Cooling / construction type A, B, Q	Cooling / construction type J, K, S
C-UR-US listed	Yes	
Electrical characteristics		
Mains input voltage on servo drive	3x 400 VAC ... 3x 480 VAC ±10%	
Connection type Motor connection Encoder connection	speedtec circular connector from Intercontec Size 1, 1.5 Size 1	
Efficiency	Typ. >90%	
Thermal characteristics		
Insulation class in accordance with EN 60034-1	F	
Methods of cooling in accordance with EN 60034-6 (IC code)	Self-cooled No separate surface cooling (IC4A0A0)	Separately cooled Surface cooling with built-in heat exchanger (IC7A0W7, IC7A0U7)
Thermal motor protection in accordance with EN 60034-11	Maximum winding temperature is 155°C (limited to 110°C by the thermal motor protection in the ACOPOS servo drive or the ACOPOSmulti drive system)	
Mechanical characteristics		
Vibration severity in accordance with EN 60034-14	Vibration severity grade R [1]	
Roller bearing, dynamic load ratings and nominal service life	Based on DIN ISO 281	
Eye bolt	In accordance with DIN 580	
Oil seal in accordance with DIN 3760	Form A	
Mounting flange in accordance with DIN 42948	Form A	
Smooth rotation of shaft end, coaxial properties and mounting flange plane in accordance with DIN 42955	Tolerance R	
Coating Name Color	Water-based coating 98160 *IDROLIN/E SM SEMIOPACO NERO RAL 9005-C.452 RAL 9005 flat; shaft end and flange front metallic glossy	
Operating conditions		
Rating class, operating mode in accordance with EN 60034-1	S1 - Continuous operation	
Ambient temperature during operation	-15°C to +40°C	
Relative humidity during operation	5 to 95%, non-condensing	
Maximum ambient temperature during operation	+55°C [2]	
Reduction of the nominal current and stall current at temperatures above 40°C	5% per 5°C	
Maximum installation elevation	1000 m [3]	
Reduction of the nominal current and stall current at installation elevations over 1000 m above sea level	5% per 1000 m	
Maximum flange temperature	65°C	
EN 60034-5 protection (IP code) With optional oil seal	IP64 (flange-side IP54) IP65	
Construction and mounting arrangement type in accordance with EN 60034-7 (IM code)	Horizontal (IM3001) Vertical, motor hangs on the machine (IM3011) [4]Vertical, motor stands on the machine (IM3031)[5]	
Coolant	---	Water
Coolant input temperature	---	+5°C to +25°C, non-condensing
Storage and transport conditions		
Storage temperature	-20 to +60°C	
Relative humidity during storage	Max. 90%, non-condensing	
Transport temperature	-20 to +60°C	
Relative humidity during transport	Max. 90%, non-condensing	

1) Valid for all motors with a shaft height greater than 56 mm.

2) Continuous operation of the servo motors at ambient temperatures from +40°C to max. +55°C is possible but results in a shorter lifespan.

3) Requirements that go above and beyond this must be arranged with B&R.

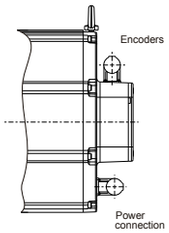
4) Permitted direction of water lines: Top.

5) Permitted direction of water lines: Incoming water - bottom, outgoing water - top.

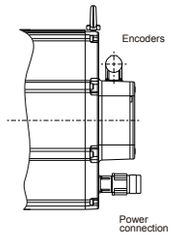
Connection directions

8LT three-phase synchronous motors can be delivered with either straight or angled (swivel) motor connectors. The encoder connectors always have an angled (swivel) design.

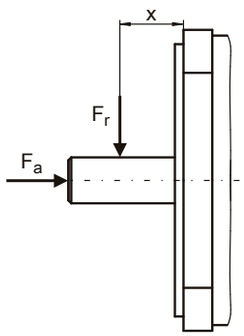
Angled (swivel connector)



Even



Definitions for maximum shaft load diagrams



- F_r..... Radial force
- F_a..... Axial force
- x..... Distance between the motor flange and the point where radial force Fr is applied

Formula symbols

Term	Character	Unit	Description
Nominal speed	n_N	rpm	Nominal speed of the motor
Nominal torque	M_N	Nm	The nominal torque is output by the motor ($n = n_N$) when the nominal current is being drawn. This is possible for any length of time if the environmental conditions are correct.
Nominal power	P_N	kW	The nominal power is output by the motor when $n = n_N$. This is possible for any length of time if the environmental conditions are correct.
Nominal current	I_N	A	The nominal current is the effective value for the phase current (current in the motor supply line) when generating the nominal torque at the nominal speed. This is possible for any length of time if the environmental conditions are correct.
Stall torque	M_0	Nm	The stall torque is output by the motor at the speed n_0 and when the stall current is being applied. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous torque is reduced when the motor is at a complete standstill.
Stall current	I_0	A	The stall current is the effective value of the phase current (current in the motor supply line) for the generation of the stall torque at the speed n_0. This is possible for any length of time if the environmental conditions are correct. The speed n_0 must be high enough so that the winding temperature in all windings is uniform and steady (n_0= 50 rpm for B&R motors). The continuous current is reduced when the motor is at a complete standstill.
Peak torque	M_{max}	Nm	The peak torque is briefly output by the motor when the peak current is being drawn.
Peak current	I_{max}	A	The peak current is the effective value of the phase current (current in the motor supply line) for generating the peak torque. This is only possible for a short time. The peak current is determined by the magnetic circuit. Exceeding this value for a short time can cause irreversible damage (demagnetization of the magnet material).
Maximum angular acceleration	a	rad/s²	Maximum acceleration of the motor without a load or brake. Value for the dynamics of the motor (corresponds to Mmax/J).
Maximum speed	n_{max}	rpm	Maximum motor speed. This is a mechanical condition (centrifugal force, bearing wear).
Average speed	n_{avg}	rpm	Average speed for one cycle
Torque constant	K_T	Nm/A	The torque constant determines the torque created by the motor with 1 A rms phase current. This value applies at a motor temperature of 20°C. When the temperature increases, the torque constant is reduced (usually down to 10%). When the current increases, the torque constant is reduced (generally starting at twice the value of the nominal current).
Voltage constant	K_E	V/1000 rpm	The voltage constant determines the effective value (phase-phase) of the counter EMF induced by the motor at a speed of 1000 rpm. This value applies at a motor temperature of 20°C. When the temperature increases, the voltage constant is reduced (usually down to 5%). When the current increases, the voltage constant is reduced (generally starting at twice the value of the nominal current).
Stator resistance	R_{2ph}	Ohm	Resistance measured in ohms between two motor leads (phase-phase) at 20°C winding temperature. On B&R motors, the windings use a star connection.
Stator inductance	L_{2ph}	mH	Winding inductance measured between two motor leads. Stator inductance depends on the rotor position.
Electrical time constant	t_{el}	ms	Corresponds to 1/5 of the time needed for the stator current to stabilize with constant operating conditions.
Thermal time constant	t_{therm}	min	Corresponds to 1/5 of the time needed for the motor temperature to stabilize with constant operating conditions.
Moment of inertia without brake	J	kgcm²	Moment of inertia for a motor without a holding brake
Weight without brake	m	kg	Weight of a motor without a holding brake

Technical data

	8LTA93.ee003ffgg-0	8LTA93.ee005ffgg-0	8LTA93.ee010ffgg-0	8LTA94.ee003ffgg-0	8LTA94.ee005ffgg-0	8LTA94.ee010ffgg-0	8LTA95.ee003ffgg-0	8LTA95.ee005ffgg-0	8LTA95.ee010ffgg-0	8LTA96.ee003ffgg-0
Motor										
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500	1000	300
Number of pole pairs	12									
Nominal torque M_n [Nm]	48	45	39	95	90	77	142	135	116	188
Nominal power P_N [W]	1508	2356	4084	2985	4712	8063	4461	7069	12147	5906
Nominal current I_N [A]	2.86	4.48	8.19	5.71	9.12	15.88	8.45	13.67	23.5	11.19
Stall torque M_0 [Nm]	50	50	50	100	100	100	150	150	150	200
Stall current I_0 [A]	3	5	10.5	6	10.1	20.6	8.9	15.2	30.4	11.9
Maximum torque M_{max} [Nm]	173	173	173	345	345	345	510	510	510	680
Maximum current I_{max} [A]	18.17	30.37	64.12	33.99	57.27	116.55	48.85	83.17	166.16	65.15
Maximum speed n_{max} [rpm]	1200									
Torque constant K_T [Nm/A]	16.8	10.05	4.76	16.63	9.87	4.85	16.8	9.87	4.94	16.8
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	288	1005.3	596.9	293.2	1015.8	596.9	298.4	1015.8
Stator resistance R_{2ph} [Ω]	10.88	3.72	0.82	4.25	1.63	0.4	2.82	0.96	0.24	1.97
Stator inductance L_{2ph} [mH]	82.57	29	6.6	39.9	15.1	3.42	27.5	9.41	2.42	20.86
Electrical time constant t_{el} [ms]	7.6	7.8	8	9.28	9.17	8.38	9.91	9.92	10.21	10.89
Thermal time constant t_{therm} [min]	50	50	50	70	70	70	90	90	90	110
Moment of inertia J [kgcm^2]	409	409	409	784	784	784	1159	1159	1159	1534
Weight without brake m [kg]	33	33	33	50	50	50	67	67	67	84
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1180	1180	1320	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0110	0055	0110	0330	0110	0220	0440	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	4	4	4	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTA96.ee005ffgg-0	8LTA96.ee010ffgg-0	8LTA97.ee003ffgg-0	8LTA97.ee005ffgg-0	8LTA97.ee010ffgg-0	8LTAC3.ee001ffgg-0	8LTAC3.ee003ffgg-0	8LTAC3.ee005ffgg-0	8LTAC4.ee001ffgg-0	8LTAC4.ee003ffgg-0
Motor										
Nominal speed n_N [rpm]	500	1000	300	500	1000	100	300	500	100	300
Number of pole pairs	12	12	12	12	12	15	15	15	15	15
Nominal torque M_n [Nm]	180	153	225	212	182	108.1	100.05	88.55	211.5	195.75
Nominal power P_N [W]	9425	16022	7069	11100	19059	1132	3143	4636	2215	6150
Nominal current I_N [A]	17.92	31	13.39	21.1	36.87	2.21	6.14	9.06	4.33	12.02
Stall torque M_0 [Nm]	200	200	240	240	240	115	115	115	225	225
Stall current I_0 [A]	19.9	40.5	14.3	23.9	48.6	2.4	7.1	11.8	4.6	13.8
Maximum torque M_{max} [Nm]	680	680	816	816	816	345	345	345	703	703
Maximum current I_{max} [A]	108.9	221.55	78.17	130.68	265.85	10.24	30.71	51.18	20.86	62.58
Maximum speed n_{max} [rpm]	1200	1200	1200	1200	1200	700	700	700	700	700
Torque constant K_T [Nm/A]	10.05	4.94	16.8	10.05	4.94	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	607.4	298.4	1015.8	607.4	298.4	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	0.72	0.17	1.76	0.6	0.16	17.1	1.9	0.75	7.61	0.91
Stator inductance L_{2ph} [mH]	7.4	1.76	18.09	6.63	1.52	297.7	33.08	12.5	154	17.9
Electrical time constant t_{el} [ms]	10.31	10.3	10.2	10	9.8	17.41	17.41	16.58	20.24	19.76
Thermal time constant t_{therm} [min]	110	110	130	130	130	68	68	68	95.2	95.2
Moment of inertia J [kgcm^2]	1534	1534	1833	1833	1833	1600	1600	1600	3000	3000
Weight without brake m [kg]	84	84	98	98	98	63	63	63	89	89
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1180	1320	1640	1045	1090	1180	1090	1180
ACOPOSmulti inverter module 8BVIxxxx...	0220	0660	0220	0330	0660	0028	0110	0110	0055	0220
Cross section for B&R motor cables [mm^2]	4	10	4	4	10	1.5	1.5	4	1.5	4
Connector type	speedtec									
Connector size	1.0	1.5	1.0	1.0	1.5	1.0	1.0	1.0	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTAC4.ee005ffgg-0	8LTAC5.ee001ffgg-0	8LTAC5.ee003ffgg-0	8LTAC5.ee005ffgg-0	8LTAC6.ee001ffgg-0	8LTAC6.ee003ffgg-0	8LTAC6.ee005ffgg-0	8LTAC7.ee001ffgg-0	8LTAC7.ee003ffgg-0	8LTAC7.ee005ffgg-0
Motor										
Nominal speed n_N [rpm]	500	100	300	500	100	300	500	100	300	500
Number of pole pairs	15									
Nominal torque M_n [Nm]	173.25	305.5	282.75	250.25	394.8	365.4	323.4	479.4	443.7	392.7
Nominal power P_N [W]	9071	3199	8883	13103	4134	11479	16933	5020	13939	20562
Nominal current I_N [A]	17.74	6.26	17.37	25.62	8.08	22.44	33.11	9.82	27.25	40.2
Stall torque M_0 [Nm]	225	325	325	325	420	420	420	510	510	510
Stall current I_0 [A]	23	6.7	20	33.3	8.6	25.8	43	10.4	31.3	52.2
Maximum torque M_{max} [Nm]	703	1054	1054	1054	1405	1405	1405	1750	1750	1750
Maximum current I_{max} [A]	104.3	31.27	93.82	156.37	41.69	125.07	208.44	51.93	155.78	259.63
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	9.77	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28	9.77
Voltage constant K_E [V/1000 rpm]	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6
Stator resistance R_{2ph} [Ω]	0.32	4.31	0.53	0.21	3.4	0.38	0.13	2.66	0.32	0.11
Stator inductance L_{2ph} [mH]	6.62	99.2	11.4	4.35	77	8.66	3.1	62.3	7.07	2.42
Electrical time constant t_{el} [ms]	20.88	23.03	21.63	20.62	22.65	22.73	23.66	23.42	21.75	22.36
Thermal time constant t_{therm} [min]	95.2	122.4	122.4	122.4	149.6	149.6	149.6	177	177	177
Moment of inertia J [kgcm^2]	3000	4400	4400	4400	5800	5800	5800	7200	7200	7200
Weight without brake m [kg]	89	115	115	115	141	141	141	167	167	167
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1090	1320	1640	1180	1320	1640	1180	1640	1640
ACOPOSmulti inverter module 8BVIxxxx...	0330	0055	0220	0440	0110	0330	0660	0110	0440	0660
Cross section for B&R motor cables [mm^2]	4	1.5	4	10	4	4	10	4	10	10
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.5	1.0	1.0	1.5	1.0	1.5	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTAC8.ee001ffgg-0	8LTAC8.ee003ffgg-0	8LTB94.ee003ffgg-0	8LTB94.ee005ffgg-0	8LTB94.ee010ffgg-0	8LTB95.ee003ffgg-0	8LTB95.ee005ffgg-0	8LTB95.ee010ffgg-0	8LTB96.ee003ffgg-0	8LTB96.ee005ffgg-0
Motor										
Nominal speed n_N [rpm]	100	300	300	500	1000	300	500	1000	300	500
Number of pole pairs	15	15	12	12	12	12	12	12	12	12
Nominal torque M_n [Nm]	564	522	95	90	77	142	135	116	188	180
Nominal power P_N [W]	5906	16399	2985	4712	8063	4461	7069	12147	5906	9425
Nominal current I_N [A]	11.55	32.06	5.71	9.12	15.88	8.45	13.67	23.5	11.19	17.92
Stall torque M_0 [Nm]	600	600	100	100	100	150	150	150	200	200
Stall current I_0 [A]	12.3	36.9	6	10.1	20.6	8.9	15.2	30.4	11.9	19.9
Maximum torque M_{max} [Nm]	2108	2108	345	345	345	510	510	510	680	680
Maximum current I_{max} [A]	62.55	187.64	33.99	57.27	116.55	48.85	83.17	166.16	65.15	108.9
Maximum speed n_{max} [rpm]	700	700	1200	1200	1200	1200	1200	1200	1200	1200
Torque constant K_T [Nm/A]	48.84	16.28	16.63	9.87	4.85	16.8	9.87	4.94	16.8	10.05
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	1005.3	596.9	293.2	1015.8	596.9	298.4	1015.8	607.4
Stator resistance R_{2ph} [Ω]	2.29	0.25	4.25	1.63	0.4	2.82	0.96	0.24	1.97	0.72
Stator inductance L_{2ph} [mH]	52.9	5.86	39.9	15.1	3.42	27.5	9.41	2.42	20.86	7.4
Electrical time constant t_{el} [ms]	23.1	23.07	9.28	9.17	8.38	9.91	9.92	10.21	10.89	10.31
Thermal time constant t_{therm} [min]	204	204	70	70	70	90	90	90	110	110
Moment of inertia J [kgcm^2]	8600	8600	1651	1651	1651	1931	1931	1931	2210	2210
Weight without brake m [kg]	192	192	65	65	65	77	77	77	89	89
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1640	1090	1180	1320	1180	1180	1320	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0110	0440	0055	0110	0330	0110	0220	0440	0110	0220
Cross section for B&R motor cables [mm^2]	4	10	1.5	4	4	4	4	4	4	4
Connector type	speedtec									
Connector size	1.0	1.5	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTB96.ee010ffgg-0	8LTB97.ee003ffgg-0	8LTB97.ee005ffgg-0	8LTB97.ee010ffgg-0	8LTJ93.ee003ffgg-0	8LTJ93.ee005ffgg-0	8LTJ93.ee010ffgg-0	8LTJ94.ee003ffgg-0	8LTJ94.ee005ffgg-0	8LTJ94.ee010ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	1000	300	500	1000
Number of pole pairs	12									
Nominal torque M_n [Nm]	153	225	212	182	81.6	76.5	66.3	161.5	153	130.9
Nominal power P_N [W]	16022	7069	11100	19059	2564	4006	6943	5074	8011	13708
Nominal current I_N [A]	31	13.39	21.1	36.87	4.86	7.62	13.92	9.71	15.5	26.99
Stall torque M_0 [Nm]	200	240	240	240	85	85	85	170	170	170
Stall current I_0 [A]	40.5	14.3	23.9	48.6	5.1	8.5	17.8	10.2	17.2	35.1
Maximum torque M_{max} [Nm]	680	816	816	816	173	173	173	345	345	345
Maximum current I_{max} [A]	221.55	78.17	130.68	265.85	18.17	30.37	64.12	33.99	57.27	116.55
Maximum speed n_{max} [rpm]	1200									
Torque constant K_T [Nm/A]	4.94	16.8	10.05	4.94	16.8	10.05	4.76	16.63	9.87	4.85
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	298.4	1015.8	607.4	288	1005.3	596.9	293.2
Stator resistance R_{2ph} [Ω]	0.17	1.76	0.66	0.16	10.88	3.72	0.82	4.25	1.63	0.4
Stator inductance L_{2ph} [mH]	1.76	18.09	6.63	1.52	82.57	29	6.6	39.9	15.1	3.42
Electrical time constant t_{el} [ms]	10.63	10.63	10	10.98	7.6	7.28	7.51	9.28	9.17	8.38
Thermal time constant t_{therm} [min]	110	130	130	130	50	50	50	70	70	70
Moment of inertia J [kgcm^2]	2210	2434	2434	2434	409	409	409	784	784	784
Weight without brake m [kg]	89	99	99	99	34	34	34	53	53	53
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1640	1180	1320	1640	1090	1180	1320	1180	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0660	0220	0330	0660	0055	0110	0220	0110	0220	0440
Cross section for B&R motor cables [mm^2]	10	4	4	10	1.5	4	4	4	4	10
Connector type	speedtec									
Connector size	1.5	1.0	1.0	1.5	1.0	1.0	1.0	1.0	1.0	1.5

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Technical data

	8LTJ95.ee003ffgg-0	8LTJ95.ee005ffgg-0	8LTJ95.ee010ffgg-0	8LTJ96.ee003ffgg-0	8LTJ96.ee005ffgg-0	8LTJ96.ee010ffgg-0	8LTJ97.ee003ffgg-0	8LTJ97.ee005ffgg-0	8LTJ97.ee009ffgg-0	8LTJC3.eeA08ffgg-0
Motor										
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500	900	80
Number of pole pairs	12	12	12	12	12	12	12	12	12	15
Nominal torque M_n [Nm]	241.4	229.5	197.2	319.6	306	260.1	382.5	360.4	320	190
Nominal power P_N [W]	7584	12017	20651	10041	16022	27238	12017	18871	30159	1592
Nominal current I_N [A]	14.37	23.25	39.95	19.02	30.46	52.69	22.77	35.88	58.58	3.89
Stall torque M_0 [Nm]	255	255	255	340	340	340	408	408	408	196
Stall current I_0 [A]	15.2	25.8	51.7	20.2	33.8	68.9	24.3	40.6	74.7	4
Maximum torque M_{max} [Nm]	510	510	510	680	680	680	816	816	816	345
Maximum current I_{max} [A]	48.85	83.17	166.16	65.15	108.9	221.55	78.17	130.68	240.55	10.24
Maximum speed n_{max} [rpm]	1200	1200	1200	1200	1200	1200	1200	1200	1200	700
Torque constant K_T [Nm/A]	16.8	9.87	4.94	16.8	10.05	4.94	16.8	10.05	5.46	48.84
Voltage constant K_E [V/1000 rpm]	1015.8	596.9	298.4	1015.8	607.4	298.4	1015.8	607.4	330.3	2953.1
Stator resistance R_{2ph} [Ω]	2.82	0.96	0.24	1.97	0.72	0.17	1.76	0.66	0.18	17.1
Stator inductance L_{2ph} [mH]	27.5	9.41	2.42	20.86	7.4	1.76	18.09	6.63	1.85	297.7
Electrical time constant t_{el} [ms]	9.91	9.92	10.21	10.89	10.31	10.63	10.63	10	10.3	17.41
Thermal time constant t_{therm} [min]	90	90	90	110	110	110	130	130	130	68
Moment of inertia J [kgcm^2]	1159	1159	1159	1534	1534	1534	1833	1833	1833	1600
Weight without brake m [kg]	71	71	71	89	89	89	104	104	104	66
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1640	1320	1640	128M	1320	1640	128M	1090
ACOPOSmulti inverter module 8BVIxxxx...	0220	0330	0660	0330	0440	0880	0330	0660	0880	0055
Cross section for B&R motor cables [mm^2]	4	4	10	4	10	0	4	10	0	1.5
Connector type	speedtec									
Connector size	1.0	1.0	1.5	1.0	1.5	0.0	1.0	1.5	0.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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Technical data

	8LTJC3.ee003ffgg-0	8LTJC3.ee005ffgg-0	8LTJC4.eeA08ffgg-0	8LTJC4.ee003ffgg-0	8LTJC4.ee005ffgg-0	8LTJC5.eeA08ffgg-0	8LTJC5.ee003ffgg-0	8LTJC5.ee005ffgg-0	8LTJC6.eeA08ffgg-0	8LTJC6.ee003ffgg-0
Motor										
Nominal speed n_N [rpm]	300	500	80	300	500	80	300	500	80	300
Number of pole pairs	15									
Nominal torque M_n [Nm]	176	163	372	344	318	540	498	461	695	643
Nominal power P_N [W]	5529	8535	3116	10807	16650	4524	15645	24138	5822	20200
Nominal current I_N [A]	10.81	16.69	7.62	21.13	32.55	11.06	30.59	47.19	14.23	39.49
Stall torque M_0 [Nm]	196	196	383	383	383	553	553	553	714	714
Stall current I_0 [A]	12	20.1	7.8	23.5	39.2	11.3	34	56.6	14.6	43.9
Maximum torque M_{max} [Nm]	345	345	703	703	703	1054	1054	1054	1405	1405
Maximum current I_{max} [A]	30.71	51.18	20.86	62.58	104.3	31.27	93.82	156.37	41.69	125.07
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	16.28	9.77	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	1.9	0.75	7.61	0.91	0.32	4.31	0.53	0.21	3.4	0.38
Stator inductance L_{2ph} [mH]	33.08	12.5	154	17.9	6.62	99.2	11.4	4.35	77	8.66
Electrical time constant t_{el} [ms]	17.41	16.58	20.24	19.76	20.88	23.03	21.63	20.62	22.65	22.73
Thermal time constant t_{therm} [min]	68	68	95.2	95.2	95.2	122.4	122.4	122.4	149.6	149.6
Moment of inertia J [kgcm^2]	1600	1600	3000	3000	3000	4400	4400	4400	5800	5800
Weight without brake m [kg]	66	66	94	94	94	123	123	123	151	151
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1090	1320	1640	1180	1640	1640	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0110	0330	0110	0330	0440	0110	0440	0660	0220	0660
Cross section for B&R motor cables [mm^2]	4	4	1.5	4	10	4	10	10	4	10
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.5	1.0	1.5	1.5	1.0	1.5

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Technical data

	8LTJC6.ee005ffgg-0	8LTJC7.eeA08ffgg-0	8LTJC7.ee003ffgg-0	8LTJC8.eeA08ffgg-0	8LTJC8.ee003ffgg-0	8LTQ93.ee003ffgg-0	8LTQ93.ee005ffgg-0	8LTQ93.ee010ffgg-0	8LTQ94.ee003ffgg-0	8LTQ94.ee005ffgg-0
Motor										
Nominal speed n_N [rpm]	500	80	300	80	300	300	500	1000	300	500
Number of pole pairs	15	15	15	15	15	12	12	12	12	12
Nominal torque M_n [Nm]	596	845	780	993	918	48	45	39	95	90
Nominal power P_N [W]	31206	7079	24504	8319	28840	1508	2356	4084	2985	4712
Nominal current I_N [A]	61.01	17.3	47.91	20.33	56.38	2.86	4.48	8.19	5.71	9.12
Stall torque M_0 [Nm]	714	867	867	1020	1020	50	50	50	100	100
Stall current I_0 [A]	73.1	17.8	53.3	20.9	62.6	3	5	10.5	6	10.1
Maximum torque M_{max} [Nm]	1405	1750	1750	2108	2108	173	173	173	345	345
Maximum current I_{max} [A]	208.44	51.93	155.78	62.55	187.64	18.17	30.37	64.12	33.99	57.27
Maximum speed n_{max} [rpm]	700	700	700	700	700	1200	1200	1200	1200	1200
Torque constant K_T [Nm/A]	9.77	48.84	16.28	48.84	16.28	16.8	10.05	4.76	16.63	9.87
Voltage constant K_E [V/1000 rpm]	590.6	2953.1	984.4	2953.1	984.4	1015.8	607.4	288	1005.3	596.9
Stator resistance R_{2ph} [Ω]	0.13	2.66	0.32	2.29	0.25	10.88	3.72	0.82	4.25	1.63
Stator inductance L_{2ph} [mH]	3.1	62.3	7.07	52.9	5.86	82.57	29	6.6	39.9	15.1
Electrical time constant t_{el} [ms]	23.66	23.42	21.75	23.1	23.07	7.6	7.28	7.51	9.28	9.17
Thermal time constant t_{therm} [min]	149.6	177	177	204	204	50	50	50	70	70
Moment of inertia J [kgcm^2]	5800	7200	7200	8600	8600	404	404	404	774	774
Weight without brake m [kg]	151	180	180	209	209	31	31	31	48	48
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	1320	1640	1320	128M	1045	1090	1180	1090	1180
ACOPOSmulti inverter module 8BVIxxxx...	0880	0220	0660	0330	0880	0028	0055	0110	0055	0110
Cross section for B&R motor cables [mm^2]	0	4	10	4	0	1.5	1.5	4	1.5	4
Connector type	speedtec									
Connector size	0.0	1.0	1.5	1.0	0.0	1.0	1.0	1.0	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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Technical data

	8LTK94.ee003ffgg-0	8LTK94.ee005ffgg-0	8LTK94.ee010ffgg-0	8LTK95.ee003ffgg-0	8LTK95.ee005ffgg-0	8LTK95.ee010ffgg-0	8LTK96.ee003ffgg-0	8LTK96.ee005ffgg-0	8LTK96.ee010ffgg-0	8LTK97.ee003ffgg-0	8LTK97.ee005ffgg-0	8LTK97.ee009ffgg-0
Motor												
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500	1000	300	500	900
Number of pole pairs	12											
Nominal torque M_n [Nm]	161.5	153	130.9	241.4	229.5	197.2	319.6	306	260.1	382.5	360.4	320
Nominal power P_N [W]	5074	8011	13708	7584	12017	20651	10041	16022	27238	12017	18871	30159
Nominal current I_N [A]	9.71	15.5	26.99	14.37	23.25	39.95	19.02	30.46	52.69	22.77	35.88	58.58
Stall torque M_0 [Nm]	170	170	170	255	255	255	340	340	340	408	408	408
Stall current I_0 [A]	10.2	17.2	35.1	15.2	25.8	51.7	20.2	33.8	68.9	24.3	40.6	74.7
Maximum torque M_{max} [Nm]	345	345	345	510	510	510	680	680	680	816	816	816
Maximum current I_{max} [A]	33.99	57.27	116.55	48.85	83.17	166.16	65.15	108.9	221.55	78.17	130.68	240.55
Maximum speed n_{max} [rpm]	1200											
Torque constant K_T [Nm/A]	16.63	9.87	4.85	16.8	9.87	4.94	16.8	10.05	4.94	16.8	10.05	5.46
Voltage constant K_E [V/1000 rpm]	1005.3	596.9	293.2	1015.8	596.9	298.4	1015.8	607.4	298.4	1015.8	607.4	330.3
Stator resistance R_{2ph} [Ω]	4.25	1.63	0.4	2.82	0.96	0.24	1.97	0.72	0.17	1.76	0.66	0.18
Stator inductance L_{2ph} [mH]	39.9	15.1	3.42	27.5	9.41	2.42	20.86	7.4	1.76	18.09	6.63	1.85
Electrical time constant t_{el} [ms]	9.28	9.17	8.38	9.91	9.92	10.21	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	70	70	70	90	90	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	1651	1651	1651	1931	1931	1931	2210	2210	2210	2434	2434	2434
Weight without brake m [kg]	67	67	67	80	80	80	93	93	93	103	103	103
Holding brake												
Holding torque of the brake M_{Br} [Nm]	0											
Weight of brake [kg]	0											
Moment of inertia for the brake J_{Br} [kgcm^2]	0											
Recommendations												
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1640	1180	1320	1640	1320	1640	128M	1320	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0440	0220	0330	0660	0330	0440	0880	0330	0660	0880
Cross section for B&R motor cables [mm^2]	4	4	10	4	4	10	4	10	0	4	10	0
Connector type	speedtec											
Connector size	1.0	1.0	1.5	1.0	1.0	1.5	1.0	1.5	0.0	1.0	1.5	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQ94.ee010ffgg-0	8LTQ95.ee003ffgg-0	8LTQ95.ee005ffgg-0	8LTQ95.ee010ffgg-0	8LTQ96.ee003ffgg-0	8LTQ96.ee005ffgg-0	8LTQ96.ee010ffgg-0	8LTQ97.ee003ffgg-0	8LTQ97.ee005ffgg-0	8LTQ97.ee010ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	1000	300	500	1000
Number of pole pairs	12									
Nominal torque M_n [Nm]	77	142	135	116	188	180	153	225	212	182
Nominal power P_N [W]	8063	4461	7069	12147	5906	9425	16022	7069	11100	19059
Nominal current I_N [A]	15.88	8.45	13.67	23.5	11.19	17.92	31	13.39	21.1	36.87
Stall torque M_0 [Nm]	100	150	150	150	200	200	200	240	240	240
Stall current I_0 [A]	20.6	8.9	15.2	30.4	11.9	19.9	40.5	14.3	23.9	48.6
Maximum torque M_{max} [Nm]	345	510	510	510	680	680	680	816	816	816
Maximum current I_{max} [A]	116.55	48.85	83.17	166.16	65.15	108.9	221.55	78.17	130.68	265.85
Maximum speed n_{max} [rpm]	1200									
Torque constant K_T [Nm/A]	4.85	16.8	9.87	4.94	16.8	10.05	4.94	16.8	10.05	4.94
Voltage constant K_E [V/1000 rpm]	293.2	1015.8	596.9	298.4	1015.8	607.4	298.4	1015.8	607.4	298.4
Stator resistance R_{2ph} [Ω]	0.4	2.82	0.96	0.24	1.97	0.72	0.17	1.76	0.66	0.16
Stator inductance L_{2ph} [mH]	3.42	27.5	9.41	2.42	20.86	7.4	1.76	18.09	6.63	1.52
Electrical time constant t_{el} [ms]	8.38	9.91	9.92	10.21	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	70	90	90	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	774	1146	1146	1146	1519	1519	1519	1816	1816	1816
Weight without brake m [kg]	48	64	64	64	81	81	81	94	94	94
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1320	1180	1180	1320	1180	1320	1640	1180	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0330	0110	0220	0440	0110	0220	0660	0220	0330	0660
Cross section for B&R motor cables [mm^2]	4	4	4	4	4	4	10	4	4	10
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.5	1.0	1.0	1.5	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQC3.ee001ffgg-0	8LTQC3.ee003ffgg-0	8LTQC3.ee005ffgg-0	8LTQC4.ee001ffgg-0	8LTQC4.ee003ffgg-0	8LTQC4.ee005ffgg-0	8LTQC5.ee001ffgg-0	8LTQC5.ee003ffgg-0	8LTQC5.ee005ffgg-0	8LTQC6.ee001ffgg-0
Motor										
Nominal speed n_N [rpm]	100	300	500	100	300	500	100	300	500	100
Number of pole pairs	15									
Nominal torque M_n [Nm]	108.1	100.05	88.55	211.5	195.75	173.25	305.5	282.75	250.25	394.8
Nominal power P_N [W]	1132	3143	4636	2215	6150	9071	3199	8883	13103	4134
Nominal current I_N [A]	2.21	6.14	9.06	4.33	12.02	17.74	6.26	17.37	25.62	8.08
Stall torque M_0 [Nm]	115	115	115	225	225	225	325	325	325	420
Stall current I_0 [A]	2.4	7.1	11.8	4.6	13.8	23	6.7	20	33.3	8.6
Maximum torque M_{max} [Nm]	345	345	345	703	703	703	1054	1054	1054	1405
Maximum current I_{max} [A]	10.24	30.71	51.18	20.86	62.58	104.3	31.27	93.82	156.37	41.69
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28	9.77	48.84
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1
Stator resistance R_{2ph} [Ω]	17.1	1.9	0.75	7.61	0.91	0.32	4.31	0.53	0.21	3.4
Stator inductance L_{2ph} [mH]	297.7	33.08	12.5	154	17.9	6.62	99.2	11.4	4.35	77
Electrical time constant t_{el} [ms]	17.41	17.41	16.58	20.24	19.76	20.88	23.03	21.63	20.62	22.65
Thermal time constant t_{therm} [min]	68	68	68	95.2	95.2	95.2	122.4	122.4	122.4	149.6
Moment of inertia J [kgcm^2]	1700	1700	1700	3000	3000	3000	4400	4400	4400	5800
Weight without brake m [kg]	63	63	63	88	88	88	113	113	113	138
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1090	1320	1640	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0110	0110	0055	0220	0330	0055	0220	0440	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	1.5	4	10	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQC6.ee003ffgg-0	8LTQC6.ee005ffgg-0	8LTQC7.ee001ffgg-0	8LTQC7.ee003ffgg-0	8LTQC7.ee005ffgg-0	8LTQC8.ee001ffgg-0	8LTQC8.ee003ffgg-0	8LTS93.ee003ffgg-0
Motor								
Nominal speed n_N [rpm]	300	500	100	300	500	100	300	300
Number of pole pairs	15	15	15	15	15	15	15	12
Nominal torque M_n [Nm]	365.4	323.4	479.4	443.7	392.7	564	522	81.6
Nominal power P_N [W]	11479	16933	5020	13939	20562	5906	16399	2564
Nominal current I_N [A]	22.44	33.11	9.82	27.25	40.2	11.55	32.06	4.86
Stall torque M_0 [Nm]	420	420	510	510	510	600	600	85
Stall current I_0 [A]	25.8	43	10.4	31.3	52.2	12.3	36.9	5.1
Maximum torque M_{max} [Nm]	1405	1405	1750	1750	1750	2108	2108	173
Maximum current I_{max} [A]	125.07	208.44	51.93	155.78	259.63	62.55	187.64	18.17
Maximum speed n_{max} [rpm]	700	700	700	700	700	700	700	1200
Torque constant K_T [Nm/A]	16.28	9.77	48.84	16.28	9.77	48.84	16.28	16.8
Voltage constant K_E [V/1000 rpm]	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	1015.8
Stator resistance R_{2ph} [Ω]	0.38	0.13	2.66	0.32	0.11	2.29	0.25	10.88
Stator inductance L_{2ph} [mH]	8.66	3.1	62.3	7.07	2.42	52.9	5.86	82.57
Electrical time constant t_{el} [ms]	22.73	23.66	23.42	21.75	22.36	23.1	23.07	7.6
Thermal time constant t_{therm} [min]	149.6	149.6	177	177	177	204	204	50
Moment of inertia J [kgcm^2]	5800	5800	7150	7150	7150	8500	8500	404
Weight without brake m [kg]	138	138	163	163	163	187	187	32
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1180	1640	1640	1180	1640	1090
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0110	0440	0660	0110	0440	0055
Cross section for B&R motor cables [mm^2]	4	10	4	10	10	4	10	1.5
Connector type	speedtec							
Connector size	1.0	1.5	1.0	1.5	1.5	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTS93.ee005ffgg-0	8LTS93.ee010ffgg-0	8LTS94.ee003ffgg-0	8LTS94.ee005ffgg-0	8LTS94.ee010ffgg-0	8LTS95.ee003ffgg-0	8LTS95.ee005ffgg-0	8LTS95.ee010ffgg-0	8LTS96.ee003ffgg-0	8LTS96.ee005ffgg-0
Motor										
Nominal speed n_N [rpm]	500	1000	300	500	1000	300	500	1000	300	500
Number of pole pairs	12									
Nominal torque M_n [Nm]	76.5	66.3	161.5	153	130.9	241.4	229.5	197.2	319.6	306
Nominal power P_N [W]	4006	6943	5074	8011	13708	7584	12017	20651	10041	16022
Nominal current I_N [A]	7.62	13.92	9.71	15.5	26.99	14.37	23.25	39.95	19.02	30.46
Stall torque M_0 [Nm]	85	85	170	170	170	255	255	255	340	340
Stall current I_0 [A]	8.5	17.8	10.2	17.2	35.1	15.2	25.8	51.7	20.2	33.8
Maximum torque M_{max} [Nm]	173	173	345	345	345	510	510	510	680	680
Maximum current I_{max} [A]	30.37	64.12	33.99	57.27	116.55	48.85	83.17	166.16	65.15	108.9
Maximum speed n_{max} [rpm]	1200									
Torque constant K_T [Nm/A]	10.05	4.76	16.63	9.87	4.85	16.8	9.87	4.94	16.8	10.05
Voltage constant K_E [V/1000 rpm]	607.4	288	1005.3	596.9	293.2	1015.8	596.9	298.4	1015.8	607.4
Stator resistance R_{2ph} [Ω]	3.72	0.82	4.25	1.63	0.4	2.82	0.96	0.24	1.97	0.72
Stator inductance L_{2ph} [mH]	29	6.6	39.9	15.1	3.42	27.5	9.41	2.42	20.86	7.4
Electrical time constant t_{el} [ms]	7.28	7.51	9.28	9.17	8.38	9.91	9.92	10.21	10.89	10.31
Thermal time constant t_{therm} [min]	50	50	70	70	70	90	90	90	110	110
Moment of inertia J [kgcm^2]	404	404	774	774	774	1146	1146	1146	1519	1519
Weight without brake m [kg]	32	32	51	51	51	68	68	68	86	86
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1180	1180	1640	1180	1320	1640	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0110	0220	0440	0220	0330	0660	0330	0440
Cross section for B&R motor cables [mm^2]	4	4	4	4	10	4	4	10	4	10
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.5	1.0	1.0	1.5	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTS96.ee010ffgg-0	8LTS97.ee003ffgg-0	8LTS97.ee005ffgg-0	8LTS97.ee009ffgg-0	8LTSC3.ee003ffgg-0	8LTSC3.ee005ffgg-0	8LTSC3.eeA08ffgg-0	8LTSC4.eeA08ffgg-0	8LTSC4.ee003ffgg-0	8LTSC4.ee005ffgg-0
Motor										
Nominal speed n_N [rpm]	1000	300	500	900	300	500	80	80	300	500
Number of pole pairs	12	12	12	12	15	15	15	15	15	15
Nominal torque M_n [Nm]	260.1	382.5	360.4	320	176	163	190	372	344	318
Nominal power P_N [W]	27238	12017	18871	30159	5529	8535	1592	3116	10807	16650
Nominal current I_N [A]	52.69	22.77	35.88	58.58	10.81	16.69	3.89	7.62	21.13	32.55
Stall torque M_0 [Nm]	340	408	408	408	196	196	196	383	383	383
Stall current I_0 [A]	68.9	24.3	40.6	74.7	12	20.1	4	7.8	23.5	39.2
Maximum torque M_{max} [Nm]	680	816	816	816	345	345	345	703	703	703
Maximum current I_{max} [A]	221.55	78.17	130.68	240.55	30.71	51.18	10.24	20.86	62.58	104.3
Maximum speed n_{max} [rpm]	1200	1200	1200	1200	700	700	700	700	700	700
Torque constant K_T [Nm/A]	4.94	16.8	10.05	5.46	16.28	9.77	48.84	48.84	16.28	9.77
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	330.3	984.4	590.6	2953.1	2953.1	984.4	590.6
Stator resistance R_{2ph} [Ω]	0.17	1.76	0.66	0.18	1.9	0.75	17.1	7.61	0.91	0.32
Stator inductance L_{2ph} [mH]	1.76	18.09	6.63	1.85	33.08	12.5	297.7	154	17.9	6.62
Electrical time constant t_{el} [ms]	10.63	10.63	10	10.98	17.41	16.58	17.41	20.24	19.76	20.88
Thermal time constant t_{therm} [min]	110	130	130	130	68	68	68	95.2	95.2	95.2
Moment of inertia J [kgcm^2]	1519	1816	1816	1816	1700	1700	1700	3000	3000	3000
Weight without brake m [kg]	86	100	100	100	66	66	66	93	93	93
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	128M	1320	1640	128M	1180	1320	1090	1090	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0880	0330	0660	0880	0110	0330	0055	0110	0330	0440
Cross section for B&R motor cables [mm^2]	0	4	10	0	4	4	1.5	1.5	4	10
Connector type	speedtec									
Connector size	0.0	1.0	1.5	0.0	1.0	1.0	1.0	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTSC5.eeA08ffgg-0	8LTSC5.ee003ffgg-0	8LTSC5.ee005ffgg-0	8LTSC6.eeA08ffgg-0	8LTSC6.ee003ffgg-0	8LTSC6.ee005ffgg-0	8LTSC7.eeA08ffgg-0	8LTSC7.ee003ffgg-0	8LTSC8.eeA08ffgg-0	8LTSC8.ee003ffgg-0
Motor										
Nominal speed n_N [rpm]	80	300	500	80	300	500	80	300	80	300
Number of pole pairs	15									
Nominal torque M_n [Nm]	540	498	461	695	643	596	845	780	993	918
Nominal power P_N [W]	4524	15645	24138	5822	20200	31206	7079	24504	8319	28840
Nominal current I_N [A]	11.06	30.59	47.19	14.23	39.49	61.01	17.3	47.91	20.33	56.38
Stall torque M_0 [Nm]	553	553	553	714	714	714	867	867	1020	1020
Stall current I_0 [A]	11.3	34	56.6	14.6	43.9	73.1	17.8	53.3	20.9	62.6
Maximum torque M_{max} [Nm]	1054	1054	1054	1405	1405	1405	1750	1750	2108	2108
Maximum current I_{max} [A]	31.27	93.82	156.37	41.69	125.07	208.44	51.93	155.78	62.55	187.64
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28	48.84	16.28
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	2953.1	984.4
Stator resistance R_{2ph} [Ω]	4.31	0.53	0.21	3.4	0.38	0.13	2.66	0.32	2.29	0.25
Stator inductance L_{2ph} [mH]	99.2	11.4	4.35	77	8.66	3.1	62.3	7.07	52.9	5.86
Electrical time constant t_{el} [ms]	23.03	21.63	20.62	22.65	22.73	23.66	23.42	21.75	23.1	23.07
Thermal time constant t_{therm} [min]	122.4	122.4	122.4	149.6	149.6	149.6	177	177	204	204
Moment of inertia J [kgcm^2]	4400	4400	4400	5800	5800	5800	7150	7150	8500	8500
Weight without brake m [kg]	121	121	121	148	148	148	176	176	204	204
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1180	1640	1640	1180	1640	128M	1320	1640	1320	128M
ACOPOSmulti inverter module 8BVIxxxx...	0110	0440	0660	0220	0660	0880	0220	0660	0330	0880
Cross section for B&R motor cables [mm^2]	4	10	10	4	10	0	4	10	4	0
Connector type	speedtec									
Connector size	1.0	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.0	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTA93.ee003ffgg-0	8LTA93.ee005ffgg-0	8LTA93.ee010ffgg-0	8LTA94.ee003ffgg-0	8LTA94.ee005ffgg-0	8LTA94.ee010ffgg-0	8LTA95.ee003ffgg-0	8LTA95.ee005ffgg-0
Motor								
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500
Number of pole pairs	12							
Nominal torque M_n [Nm]	48	45	39	95	90	77	142	135
Nominal power P_N [W]	1508	2356	4084	2985	4712	8063	4461	7069
Nominal current I_N [A]	2.86	4.48	8.19	5.71	9.12	15.88	8.45	13.67
Stall torque M_0 [Nm]	50	50	50	100	100	100	150	150
Stall current I_0 [A]	3	5	10.5	6	10.1	20.6	8.9	15.2
Maximum torque M_{max} [Nm]	173	173	173	345	345	345	510	510
Maximum current I_{max} [A]	18.17	30.37	64.12	33.99	57.27	116.55	48.85	83.17
Maximum speed n_{max} [rpm]	1200							
Torque constant K_T [Nm/A]	16.8	10.05	4.76	16.63	9.87	4.85	16.8	9.87
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	288	1005.3	596.9	293.2	1015.8	596.9
Stator resistance R_{2ph} [Ω]	10.88	3.72	0.82	4.25	1.63	0.4	2.82	0.96
Stator inductance L_{2ph} [mH]	82.57	29	6.6	39.9	15.1	3.42	27.5	9.41
Electrical time constant t_{el} [ms]	7.6	7.8	8	9.28	9.17	8.38	9.91	9.92
Thermal time constant t_{therm} [min]	50	50	50	70	70	70	90	90
Moment of inertia J [kgcm^2]	409	409	409	784	784	784	1159	1159
Weight without brake m [kg]	33	33	33	50	50	50	67	67
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0110	0055	0110	0330	0110	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	4	4
Connector type	speedtec							
Connector size	1.0							

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTA95.ee010ffgg-0	8LTA96.ee003ffgg-0	8LTA96.ee005ffgg-0	8LTA96.ee010ffgg-0	8LTA97.ee003ffgg-0	8LTA97.ee005ffgg-0	8LTA97.ee010ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	1000
Number of pole pairs				12			
Nominal torque M_n [Nm]	116	188	180	153	225	212	182
Nominal power P_N [W]	12147	5906	9425	16022	7069	11100	19059
Nominal current I_N [A]	23.5	11.19	17.92	31	13.39	21.1	36.87
Stall torque M_0 [Nm]	150	200	200	200	240	240	240
Stall current I_0 [A]	30.4	11.9	19.9	40.5	14.3	23.9	48.6
Maximum torque M_{max} [Nm]	510	680	680	680	816	816	816
Maximum current I_{max} [A]	166.16	65.15	108.9	221.55	78.17	130.68	265.85
Maximum speed n_{max} [rpm]				1200			
Torque constant K_T [Nm/A]	4.94	16.8	10.05	4.94	16.8	10.05	4.94
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	298.4	1015.8	607.4	298.4
Stator resistance R_{2ph} [Ω]	0.24	1.97	0.72	0.17	1.76	0.6	0.16
Stator inductance L_{2ph} [mH]	2.42	20.86	7.4	1.76	18.09	6.63	1.52
Electrical time constant t_{el} [ms]	10.21	10.89	10.31	10.3	10.2	10	9.8
Thermal time constant t_{therm} [min]	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	1159	1534	1534	1534	1833	1833	1833
Weight without brake m [kg]	67	84	84	84	98	98	98
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1320	1180	1320	1640	1180	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0440	0110	0220	0660	0220	0330	0660
Cross section for B&R motor cables [mm^2]	4	4	4	10	4	4	10
Connector type				speedtec			
Connector size	1.5	1.0	1.0	1.5	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQ93.ee003ffgg-0	8LTQ93.ee005ffgg-0	8LTQ93.ee010ffgg-0	8LTQ94.ee003ffgg-0	8LTQ94.ee005ffgg-0	8LTQ94.ee010ffgg-0	8LTQ95.ee003ffgg-0	8LTQ95.ee005ffgg-0
Motor								
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500
Number of pole pairs	12							
Nominal torque M_n [Nm]	48	45	39	95	90	77	142	135
Nominal power P_N [W]	1508	2356	4084	2985	4712	8063	4461	7069
Nominal current I_N [A]	2.86	4.48	8.19	5.71	9.12	15.88	8.45	13.67
Stall torque M_0 [Nm]	50	50	50	100	100	100	150	150
Stall current I_0 [A]	3	5	10.5	6	10.1	20.6	8.9	15.2
Maximum torque M_{max} [Nm]	173	173	173	345	345	345	510	510
Maximum current I_{max} [A]	18.17	30.37	64.12	33.99	57.27	116.55	48.85	83.17
Maximum speed n_{max} [rpm]	1200							
Torque constant K_T [Nm/A]	16.8	10.05	4.76	16.63	9.87	4.85	16.8	9.87
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	288	1005.3	596.9	293.2	1015.8	596.9
Stator resistance R_{2ph} [Ω]	10.88	3.72	0.82	4.25	1.63	0.4	2.82	0.96
Stator inductance L_{2ph} [mH]	82.57	29	6.6	39.9	15.1	3.42	27.5	9.41
Electrical time constant t_{el} [ms]	7.6	7.28	7.51	9.28	9.17	8.38	9.91	9.92
Thermal time constant t_{therm} [min]	50	50	50	70	70	70	90	90
Moment of inertia J [kgcm^2]	404	404	404	774	774	774	1146	1146
Weight without brake m [kg]	31	31	31	48	48	48	64	64
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1180	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0055	0110	0055	0110	0330	0110	0220
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	4	4
Connector type	speedtec							
Connector size	1.0							

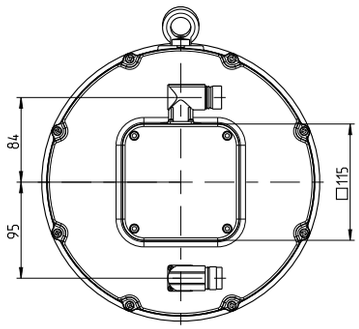
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

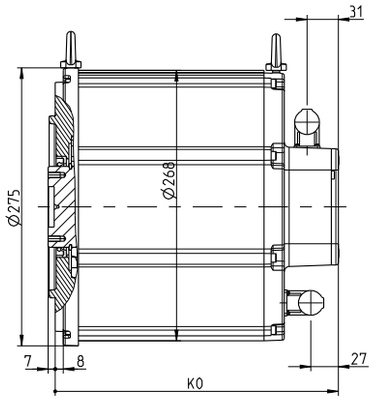
Technical data

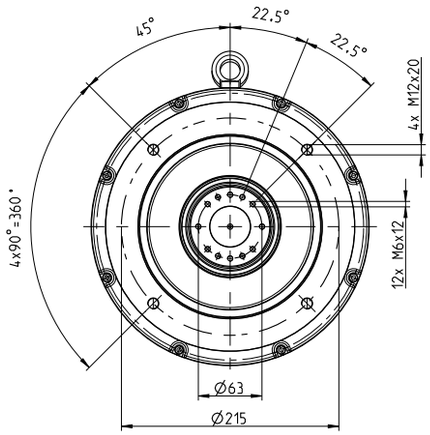
	8LTQ95.ee010ffgg-0	8LTQ96.ee003ffgg-0	8LTQ96.ee005ffgg-0	8LTQ96.ee010ffgg-0	8LTQ97.ee003ffgg-0	8LTQ97.ee005ffgg-0	8LTQ97.ee010ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	1000
Number of pole pairs				12			
Nominal torque M_n [Nm]	116	188	180	153	225	212	182
Nominal power P_N [W]	12147	5906	9425	16022	7069	11100	19059
Nominal current I_N [A]	23.5	11.19	17.92	31	13.39	21.1	36.87
Stall torque M_0 [Nm]	150	200	200	200	240	240	240
Stall current I_0 [A]	30.4	11.9	19.9	40.5	14.3	23.9	48.6
Maximum torque M_{max} [Nm]	510	680	680	680	816	816	816
Maximum current I_{max} [A]	166.16	65.15	108.9	221.55	78.17	130.68	265.85
Maximum speed n_{max} [rpm]				1200			
Torque constant K_T [Nm/A]	4.94	16.8	10.05	4.94	16.8	10.05	4.94
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	298.4	1015.8	607.4	298.4
Stator resistance R_{2ph} [Ω]	0.24	1.97	0.72	0.17	1.76	0.66	0.16
Stator inductance L_{2ph} [mH]	2.42	20.86	7.4	1.76	18.09	6.63	1.52
Electrical time constant t_{el} [ms]	10.21	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	1146	1519	1519	1519	1816	1816	1816
Weight without brake m [kg]	64	81	81	81	94	94	94
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1320	1180	1320	1640	1180	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0440	0110	0220	0660	0220	0330	0660
Cross section for B&R motor cables [mm^2]	4	4	4	10	4	4	10
Connector type				speedtec			
Connector size	1.5	1.0	1.0	1.5	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

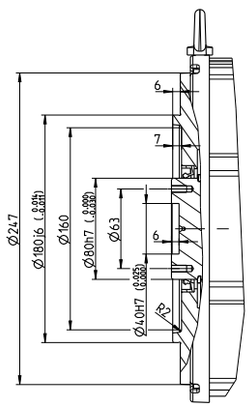
8LTA9/8LTQ9



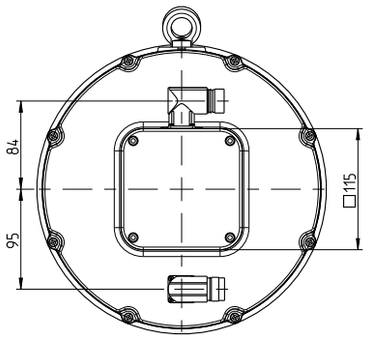


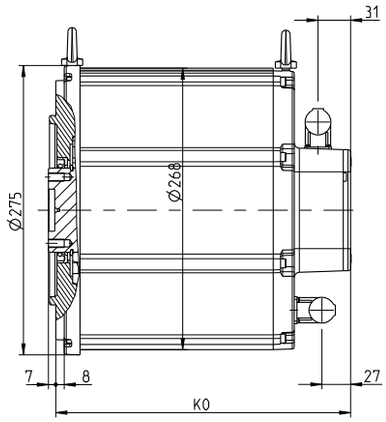


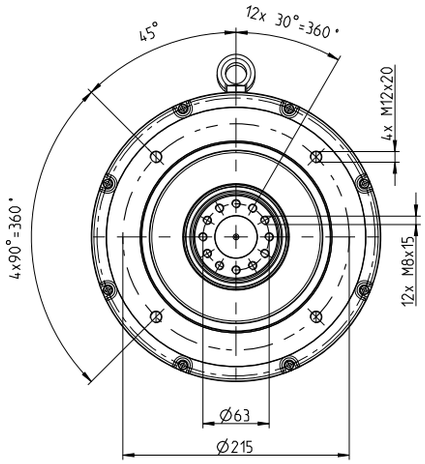
A-side flange detail



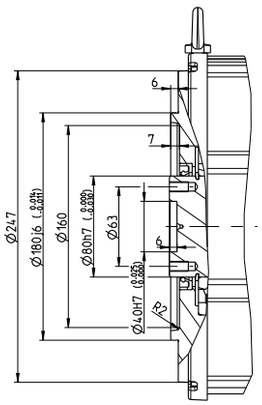
Model number	K_0
8LTA93.eennnffgg-0	230
8LTA94.eennnffgg-0	280
8LTA95.eennnffgg-0	330





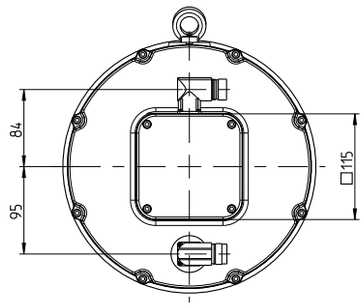


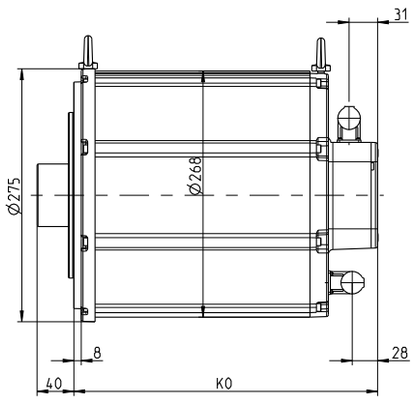
A-side flange detail

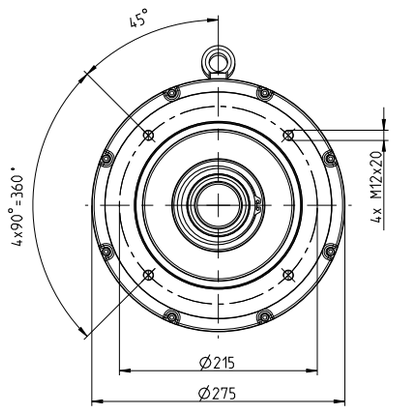


Model number	K_0
8LTA96.eennnffgg-0	380
8LTA97.eennnffgg-0	420

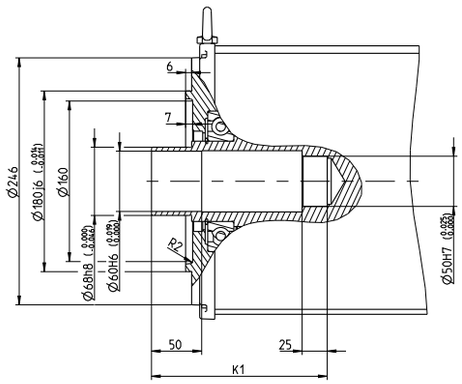
8LTA9/8LTQ9







A-side flange detail

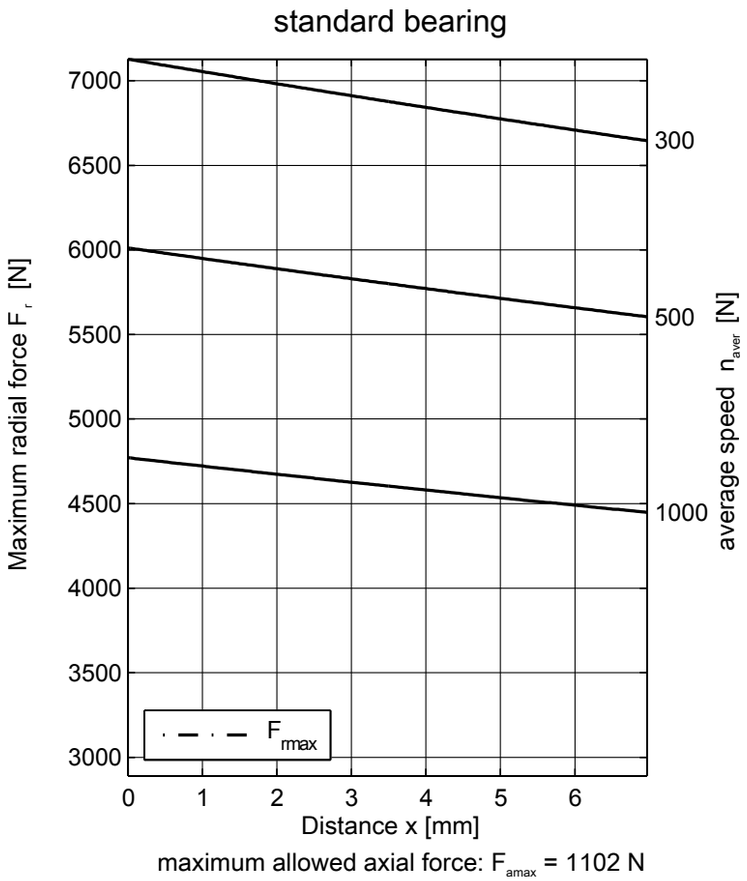


Model number	K_0	K1
8LTQ93.eennnffgg-0	230	125
8LTQ94.eennnffgg-0	280	150
8LTQ95.eennnffgg-0	330	175
8LTQ96.eennnffgg-0	380	200
8LTQ97.eennnffgg-0	420	225

Maximum shaft load

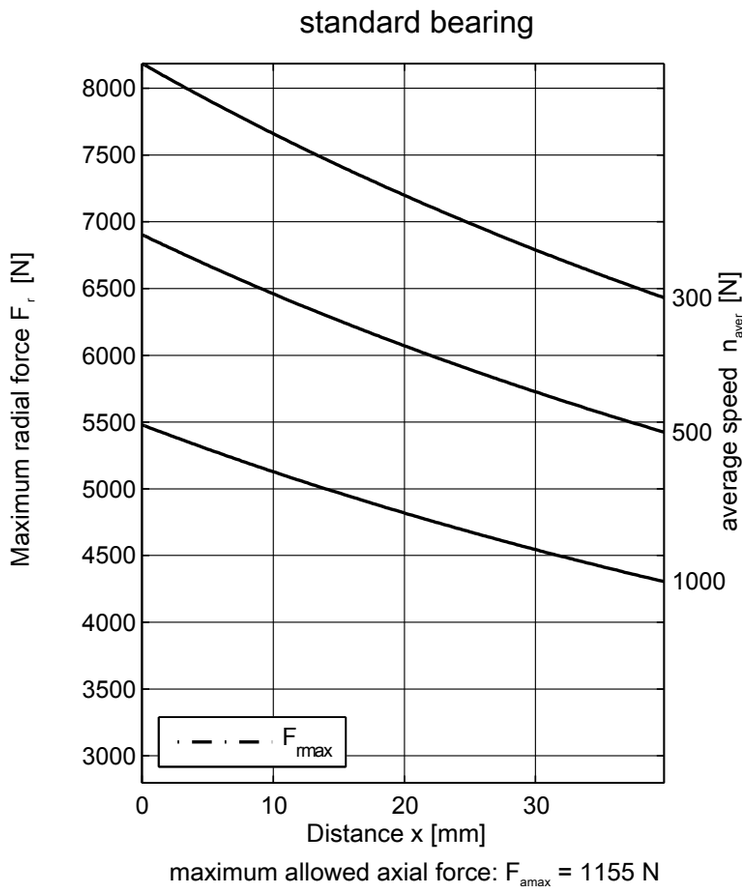
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

8LTA9x.eennnffgg-0



maximum allowed axial force: F_{amax} = 1102 N

8LTQ9x.eennnffgg-0



maximum allowed axial force: F_{amax} = 1155 N

Technical data

	8LTAC3.ee001ffgg-0	8LTAC3.ee003ffgg-0	8LTAC3.ee005ffgg-0	8LTAC4.ee001ffgg-0	8LTAC4.ee003ffgg-0	8LTAC4.ee005ffgg-0	8LTAC5.ee001ffgg-0	8LTAC5.ee003ffgg-0	8LTAC5.ee005ffgg-0	8LTAC6.ee001ffgg-0
Motor										
Nominal speed n_N [rpm]	100	300	500	100	300	500	100	300	500	100
Number of pole pairs	15									
Nominal torque M_n [Nm]	108.1	100.05	88.55	211.5	195.75	173.25	305.5	282.75	250.25	394.8
Nominal power P_N [W]	1132	3143	4636	2215	6150	9071	3199	8883	13103	4134
Nominal current I_N [A]	2.21	6.14	9.06	4.33	12.02	17.74	6.26	17.37	25.62	8.08
Stall torque M_0 [Nm]	115	115	115	225	225	225	325	325	325	420
Stall current I_0 [A]	2.4	7.1	11.8	4.6	13.8	23	6.7	20	33.3	8.6
Maximum torque M_{max} [Nm]	345	345	345	703	703	703	1054	1054	1054	1405
Maximum current I_{max} [A]	10.24	30.71	51.18	20.86	62.58	104.3	31.27	93.82	156.37	41.69
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28	9.77	48.84
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1
Stator resistance R_{2ph} [Ω]	17.1	1.9	0.75	7.61	0.91	0.32	4.31	0.53	0.21	3.4
Stator inductance L_{2ph} [mH]	297.7	33.08	12.5	154	17.9	6.62	99.2	11.4	4.35	77
Electrical time constant t_{el} [ms]	17.41	17.41	16.58	20.24	19.76	20.88	23.03	21.63	20.62	22.65
Thermal time constant t_{therm} [min]	68	68	68	95.2	95.2	95.2	122.4	122.4	122.4	149.6
Moment of inertia J [kgcm^2]	1600	1600	1600	3000	3000	3000	4400	4400	4400	5800
Weight without brake m [kg]	63	63	63	89	89	89	115	115	115	141
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1090	1320	1640	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0110	0110	0055	0220	0330	0055	0220	0440	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	1.5	4	10	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTAC6.ee003ffgg-0	8LTAC6.ee005ffgg-0	8LTAC7.ee001ffgg-0	8LTAC7.ee003ffgg-0	8LTAC7.ee005ffgg-0	8LTAC8.ee001ffgg-0	8LTAC8.ee003ffgg-0
Motor							
Nominal speed n_N [rpm]	300	500	100	300	500	100	300
Number of pole pairs				15			
Nominal torque M_n [Nm]	365.4	323.4	479.4	443.7	392.7	564	522
Nominal power P_N [W]	11479	16933	5020	13939	20562	5906	16399
Nominal current I_N [A]	22.44	33.11	9.82	27.25	40.2	11.55	32.06
Stall torque M_0 [Nm]	420	420	510	510	510	600	600
Stall current I_0 [A]	25.8	43	10.4	31.3	52.2	12.3	36.9
Maximum torque M_{max} [Nm]	1405	1405	1750	1750	1750	2108	2108
Maximum current I_{max} [A]	125.07	208.44	51.93	155.78	259.63	62.55	187.64
Maximum speed n_{max} [rpm]				700			
Torque constant K_T [Nm/A]	16.28	9.77	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	0.38	0.13	2.66	0.32	0.11	2.29	0.25
Stator inductance L_{2ph} [mH]	8.66	3.1	62.3	7.07	2.42	52.9	5.86
Electrical time constant t_{el} [ms]	22.73	23.66	23.42	21.75	22.36	23.1	23.07
Thermal time constant t_{therm} [min]	149.6	149.6	177	177	177	204	204
Moment of inertia J [kgcm^2]	5800	5800	7200	7200	7200	8600	8600
Weight without brake m [kg]	141	141	167	167	167	192	192
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1180	1640	1640	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0110	0440	0660	0110	0440
Cross section for B&R motor cables [mm^2]	4	10	4	10	10	4	10
Connector type				speedtec			
Connector size	1.0	1.5	1.0	1.5	1.5	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQC3.ee001ffgg-0	8LTQC3.ee003ffgg-0	8LTQC3.ee005ffgg-0	8LTQC4.ee001ffgg-0	8LTQC4.ee003ffgg-0	8LTQC4.ee005ffgg-0	8LTQC5.ee001ffgg-0	8LTQC5.ee003ffgg-0	8LTQC5.ee005ffgg-0	8LTQC6.ee001ffgg-0
Motor										
Nominal speed n_N [rpm]	100	300	500	100	300	500	100	300	500	100
Number of pole pairs	15									
Nominal torque M_n [Nm]	108.1	100.05	88.55	211.5	195.75	173.25	305.5	282.75	250.25	394.8
Nominal power P_N [W]	1132	3143	4636	2215	6150	9071	3199	8883	13103	4134
Nominal current I_N [A]	2.21	6.14	9.06	4.33	12.02	17.74	6.26	17.37	25.62	8.08
Stall torque M_0 [Nm]	115	115	115	225	225	225	325	325	325	420
Stall current I_0 [A]	2.4	7.1	11.8	4.6	13.8	23	6.7	20	33.3	8.6
Maximum torque M_{max} [Nm]	345	345	345	703	703	703	1054	1054	1054	1405
Maximum current I_{max} [A]	10.24	30.71	51.18	20.86	62.58	104.3	31.27	93.82	156.37	41.69
Maximum speed n_{max} [rpm]	700									
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28	9.77	48.84
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1
Stator resistance R_{2ph} [Ω]	17.1	1.9	0.75	7.61	0.91	0.32	4.31	0.53	0.21	3.4
Stator inductance L_{2ph} [mH]	297.7	33.08	12.5	154	17.9	6.62	99.2	11.4	4.35	77
Electrical time constant t_{el} [ms]	17.41	17.41	16.58	20.24	19.76	20.88	23.03	21.63	20.62	22.65
Thermal time constant t_{therm} [min]	68	68	68	95.2	95.2	95.2	122.4	122.4	122.4	149.6
Moment of inertia J [kgcm^2]	1700	1700	1700	3000	3000	3000	4400	4400	4400	5800
Weight without brake m [kg]	63	63	63	88	88	88	113	113	113	138
Holding brake										
Holding torque of the brake M_{Br} [Nm]	0									
Weight of brake [kg]	0									
Moment of inertia for the brake J_{Br} [kgcm^2]	0									
Recommendations										
ACOPOS servo drive 8Vxxxx.xx...	1045	1090	1180	1090	1180	1320	1090	1320	1640	1180
ACOPOSmulti inverter module 8BVIxxxx...	0028	0110	0110	0055	0220	0330	0055	0220	0440	0110
Cross section for B&R motor cables [mm^2]	1.5	1.5	4	1.5	4	4	1.5	4	10	4
Connector type	speedtec									
Connector size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTQC6.ee003ffgg-0	8LTQC6.ee005ffgg-0	8LTQC7.ee001ffgg-0	8LTQC7.ee003ffgg-0	8LTQC7.ee005ffgg-0	8LTQC8.ee001ffgg-0	8LTQC8.ee003ffgg-0
Motor							
Nominal speed n_N [rpm]	300	500	100	300	500	100	300
Number of pole pairs				15			
Nominal torque M_n [Nm]	365.4	323.4	479.4	443.7	392.7	564	522
Nominal power P_N [W]	11479	16933	5020	13939	20562	5906	16399
Nominal current I_N [A]	22.44	33.11	9.82	27.25	40.2	11.55	32.06
Stall torque M_0 [Nm]	420	420	510	510	510	600	600
Stall current I_0 [A]	25.8	43	10.4	31.3	52.2	12.3	36.9
Maximum torque M_{max} [Nm]	1405	1405	1750	1750	1750	2108	2108
Maximum current I_{max} [A]	125.07	208.44	51.93	155.78	259.63	62.55	187.64
Maximum speed n_{max} [rpm]				700			
Torque constant K_T [Nm/A]	16.28	9.77	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	0.38	0.13	2.66	0.32	0.11	2.29	0.25
Stator inductance L_{2ph} [mH]	8.66	3.1	62.3	7.07	2.42	52.9	5.86
Electrical time constant t_{el} [ms]	22.73	23.66	23.42	21.75	22.36	23.1	23.07
Thermal time constant t_{therm} [min]	149.6	149.6	177	177	177	204	204
Moment of inertia J [kgcm^2]	5800	5800	7150	7150	7150	8500	8500
Weight without brake m [kg]	138	138	163	163	163	187	187
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	1180	1640	1640	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0330	0660	0110	0440	0660	0110	0440
Cross section for B&R motor cables [mm^2]	4	10	4	10	10	4	10
Connector type				speedtec			
Connector size	1.0	1.5	1.0	1.5	1.5	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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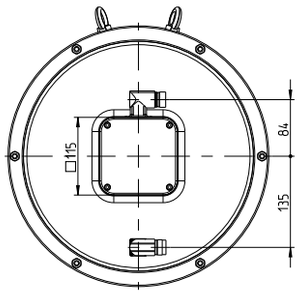
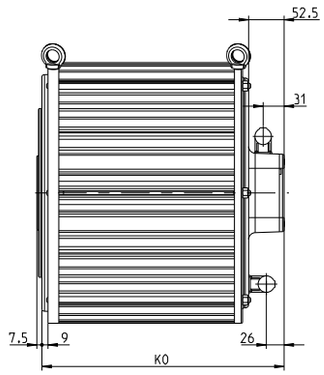
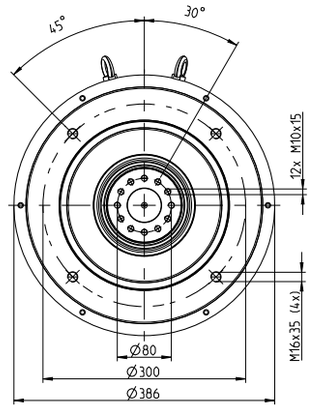
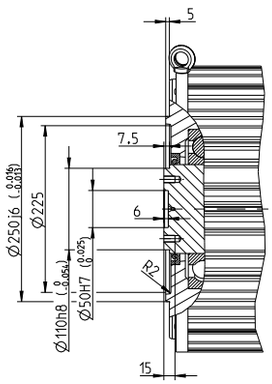
8LTAC/8LTQC



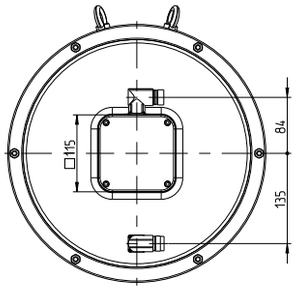


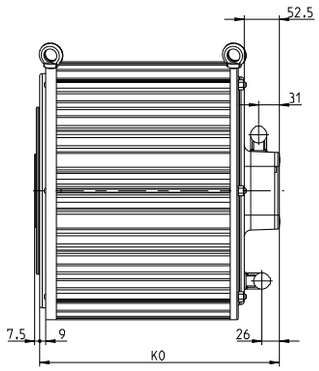


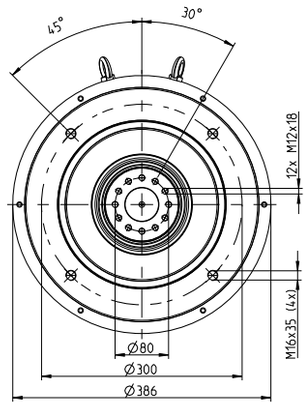
A flange detail



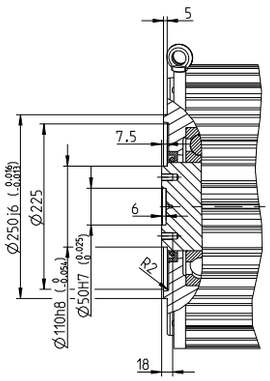
Model number	K_0
8LTAC3.eennnffgg-0	259
8LTAC4.eennnffgg-0	309
8LTAC5.eennnffgg-0	359
8LTAC6.eennnffgg-0	409





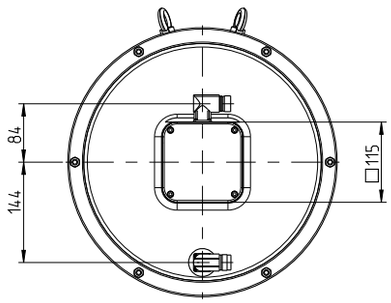


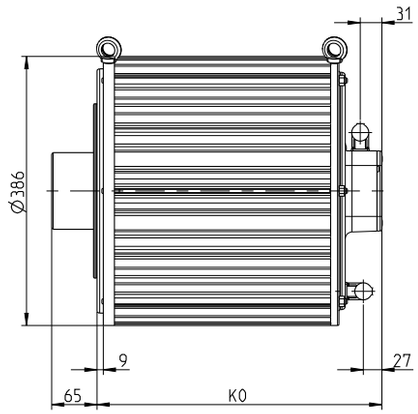
A flange detail

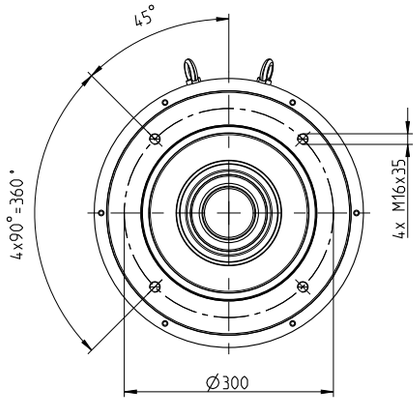


Model number	K_0
8LTAC7.eennnffgg-0	459
8LTAC8.eennnffgg-0	509

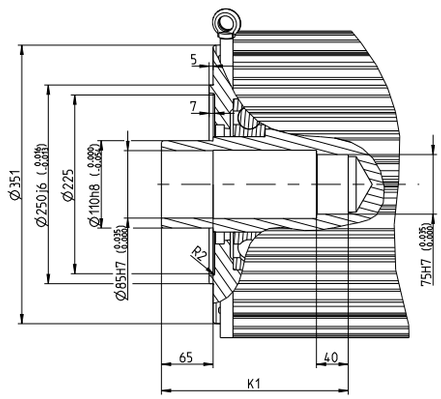
8LTAC/8LTQC







A-side flange detail

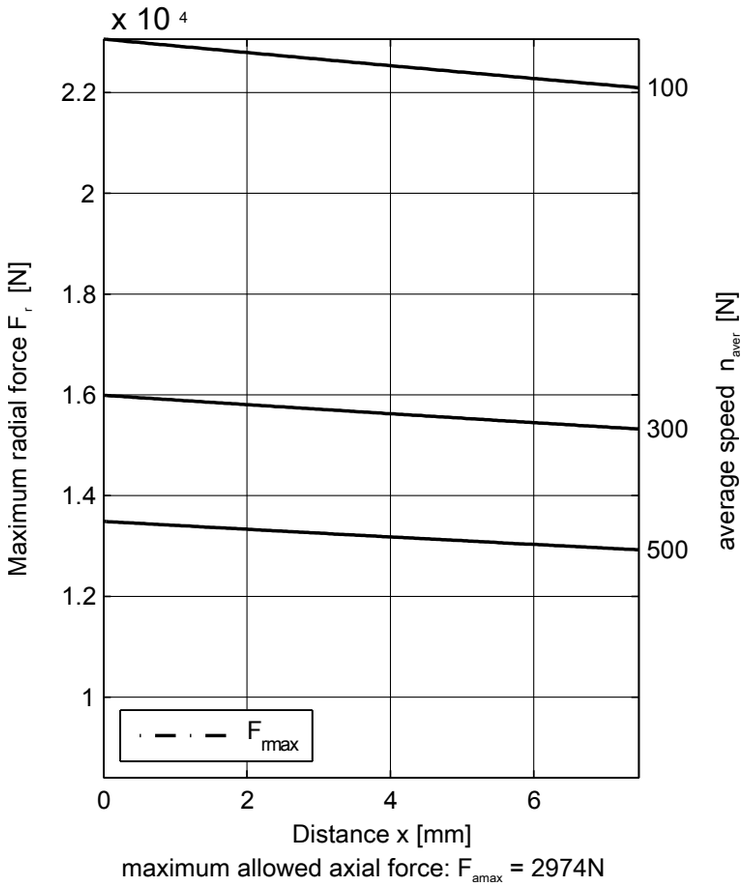


Model number	K_0	K1
8LTQC3.eennnffgg-0	259	160
8LTQC4.eennnffgg-0	309	185
8LTQC5.eennnffgg-0	359	210
8LTQC6.eennnffgg-0	409	235
8LTQC7.eennnffgg-0	459	260
8LTQC8.eennnffgg-0	509	285

Maximum shaft load

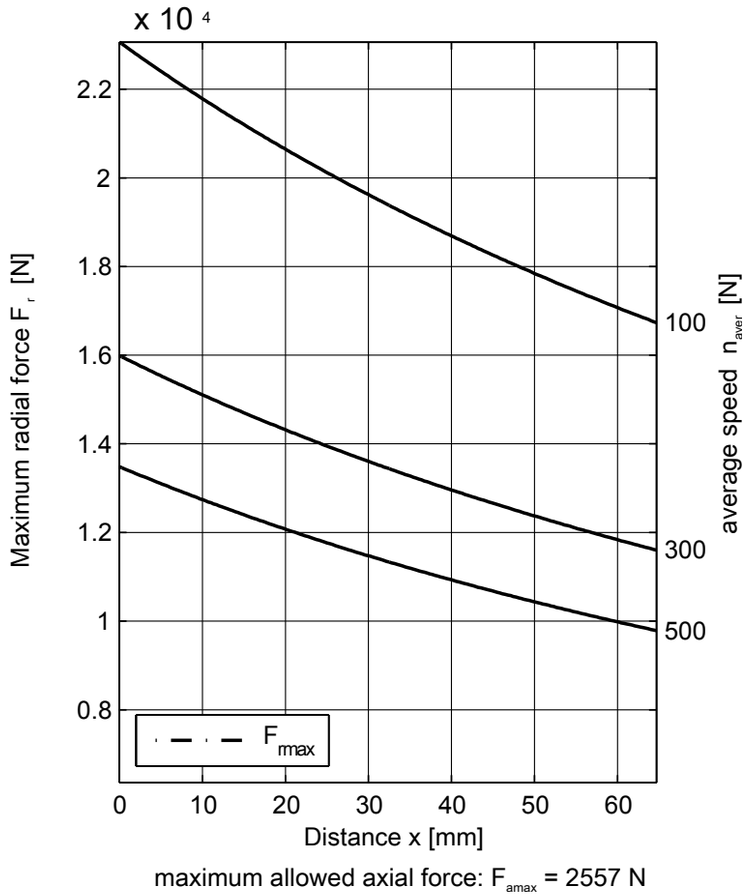
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

8LTACx.eennnffgg-0



maximum allowed axial force: F_{amax} = 2974N

8LTQCx.eennnffgg-0



maximum allowed axial force: F_{amax} = 2557 N

8LTB9

Technical data

	8LTB94.ee003ffgg-0	8LTB94.ee005ffgg-0	8LTB94.ee010ffgg-0	8LTB95.ee003ffgg-0	8LTB95.ee005ffgg-0	8LTB95.ee010ffgg-0
Motor						
Nominal speed n_N [rpm]	300	500	1000	300	500	1000
Number of pole pairs	12					
Nominal torque M_n [Nm]	95	90	77	142	135	116
Nominal power P_N [W]	2985	4712	8063	4461	7069	12147
Nominal current I_N [A]	5.71	9.12	15.88	8.45	13.67	23.5
Stall torque M_0 [Nm]	100	100	100	150	150	150
Stall current I_0 [A]	6	10.1	20.6	8.9	15.2	30.4
Maximum torque M_{max} [Nm]	345	345	345	510	510	510
Maximum current I_{max} [A]	33.99	57.27	116.55	48.85	83.17	166.16
Maximum speed n_{max} [rpm]	1200					
Torque constant K_T [Nm/A]	16.63	9.87	4.85	16.8	9.87	4.94
Voltage constant K_E [V/1000 rpm]	1005.3	596.9	293.2	1015.8	596.9	298.4
Stator resistance R_{2ph} [Ω]	4.25	1.63	0.4	2.82	0.96	0.24
Stator inductance L_{2ph} [mH]	39.9	15.1	3.42	27.5	9.41	2.42
Electrical time constant t_{el} [ms]	9.28	9.17	8.38	9.91	9.92	10.21
Thermal time constant t_{therm} [min]	70	70	70	90	90	90
Moment of inertia J [kgcm^2]	1651	1651	1651	1931	1931	1931
Weight without brake m [kg]	65	65	65	77	77	77
Holding brake						
Holding torque of the brake M_{Br} [Nm]	0					
Weight of brake [kg]	0					
Moment of inertia for the brake J_{Br} [kgcm^2]	0					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1320	1180	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0330	0110	0220	0440
Cross section for B&R motor cables [mm^2]	1.5	4	4	4	4	4
Connector type	speedtec					
Connector size	1.0	1.0	1.0	1.0	1.0	1.5

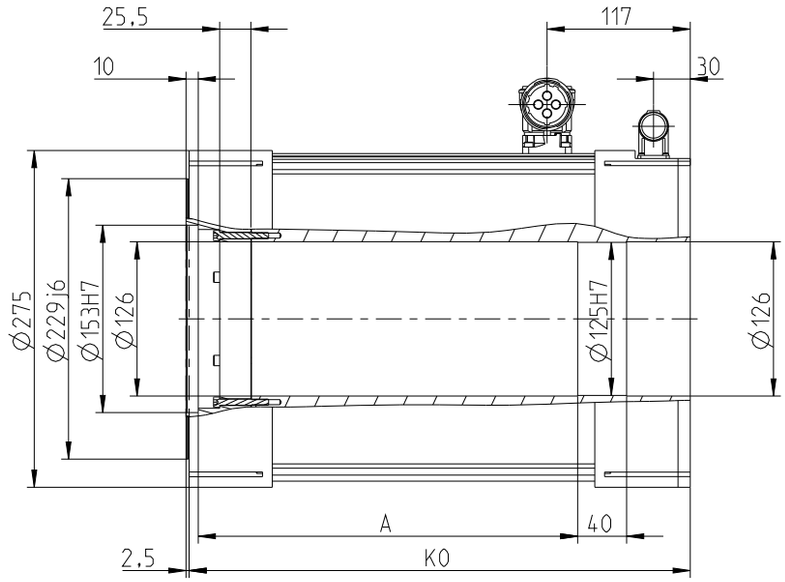
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

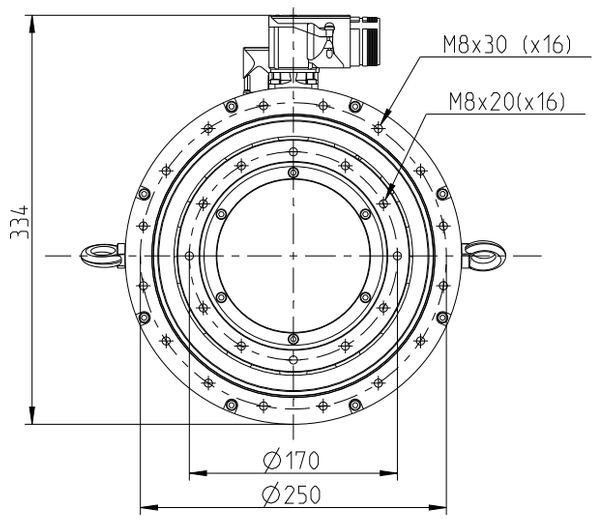
	8LTB96.ee003ffgg-0	8LTB96.ee005ffgg-0	8LTB96.ee010ffgg-0	8LTB97.ee003ffgg-0	8LTB97.ee005ffgg-0	8LTB97.ee010ffgg-0
Motor						
Nominal speed n_N [rpm]	300	500	1000	300	500	1000
Number of pole pairs	12					
Nominal torque M_n [Nm]	188	180	153	225	212	182
Nominal power P_N [W]	5906	9425	16022	7069	11100	19059
Nominal current I_N [A]	11.19	17.92	31	13.39	21.1	36.87
Stall torque M_0 [Nm]	200	200	200	240	240	240
Stall current I_0 [A]	11.9	19.9	40.5	14.3	23.9	48.6
Maximum torque M_{max} [Nm]	680	680	680	816	816	816
Maximum current I_{max} [A]	65.15	108.9	221.55	78.17	130.68	265.85
Maximum speed n_{max} [rpm]	1200					
Torque constant K_T [Nm/A]	16.8	10.05	4.94	16.8	10.05	4.94
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	298.4	1015.8	607.4	298.4
Stator resistance R_{2ph} [Ω]	1.97	0.72	0.17	1.76	0.66	0.16
Stator inductance L_{2ph} [mH]	20.86	7.4	1.76	18.09	6.63	1.52
Electrical time constant t_{el} [ms]	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	2210	2210	2210	2434	2434	2434
Weight without brake m [kg]	89	89	89	99	99	99
Holding brake						
Holding torque of the brake M_{Br} [Nm]	0					
Weight of brake [kg]	0					
Moment of inertia for the brake J_{Br} [kgcm^2]	0					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1180	1320	1640	1180	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0660	0220	0330	0660
Cross section for B&R motor cables [mm^2]	4	4	10	4	4	10
Connector type	speedtec					
Connector size	1.0	1.0	1.5	1.0	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

8LTB9



SCHNITT A-A



Model number	A	K_0
8LTB94.eennnffgg-0	260	360
8LTB95.eennnffgg-0	310	410
8LTB96.eennnffgg-0	360	460
8LTB97.eennnffgg-0	400	500

Technical data

	8LTK94.ee003ffgg-0	8LTK94.ee005ffgg-0	8LTK94.ee010ffgg-0	8LTK95.ee003ffgg-0	8LTK95.ee005ffgg-0	8LTK95.ee010ffgg-0
Motor						
Nominal speed n_N [rpm]	300	500	1000	300	500	1000
Number of pole pairs	12					
Nominal torque M_n [Nm]	161.5	153	130.9	241.4	229.5	197.2
Nominal power P_N [W]	5074	8011	13708	7584	12017	20651
Nominal current I_N [A]	9.71	15.5	26.99	14.37	23.25	39.95
Stall torque M_0 [Nm]	170	170	170	255	255	255
Stall current I_0 [A]	10.2	17.2	35.1	15.2	25.8	51.7
Maximum torque M_{max} [Nm]	345	345	345	510	510	510
Maximum current I_{max} [A]	33.99	57.27	116.55	48.85	83.17	166.16
Maximum speed n_{max} [rpm]	1200					
Torque constant K_T [Nm/A]	16.63	9.87	4.85	16.8	9.87	4.94
Voltage constant K_E [V/1000 rpm]	1005.3	596.9	293.2	1015.8	596.9	298.4
Stator resistance R_{2ph} [Ω]	4.25	1.63	0.4	2.82	0.96	0.24
Stator inductance L_{2ph} [mH]	39.9	15.1	3.42	27.5	9.41	2.42
Electrical time constant t_{el} [ms]	9.28	9.17	8.38	9.91	9.92	10.21
Thermal time constant t_{therm} [min]	70	70	70	90	90	90
Moment of inertia J [kgcm^2]	1651	1651	1651	1931	1931	1931
Weight without brake m [kg]	67	67	67	80	80	80
Holding brake						
Holding torque of the brake M_{Br} [Nm]	0					
Weight of brake [kg]	0					
Moment of inertia for the brake J_{Br} [kgcm^2]	0					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1180	1180	1640	1180	1320	1640
ACOPOSmulti inverter module 8BVIxxxx...	0110	0220	0440	0220	0330	0660
Cross section for B&R motor cables [mm^2]	4	4	10	4	4	10
Connector type	speedtec					
Connector size	1.0	1.0	1.5	1.0	1.0	1.5

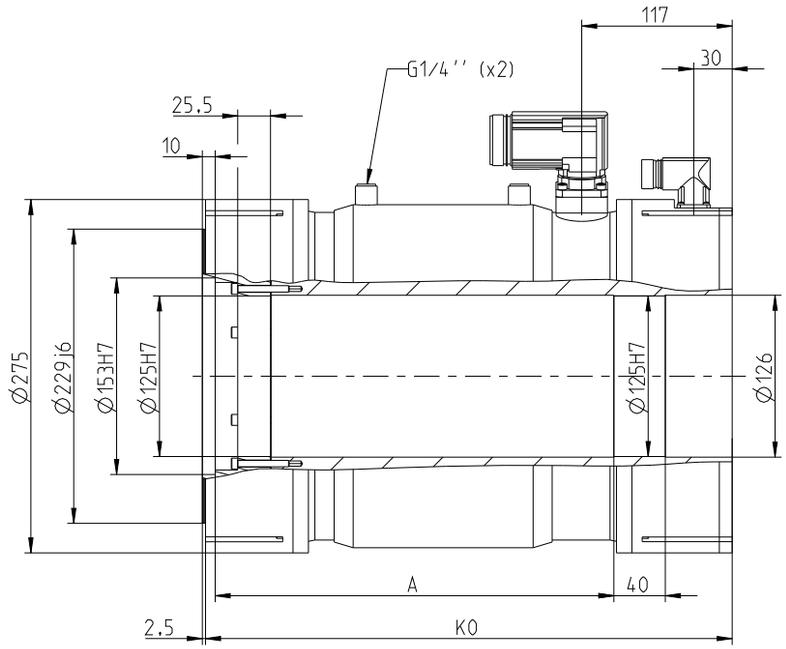
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

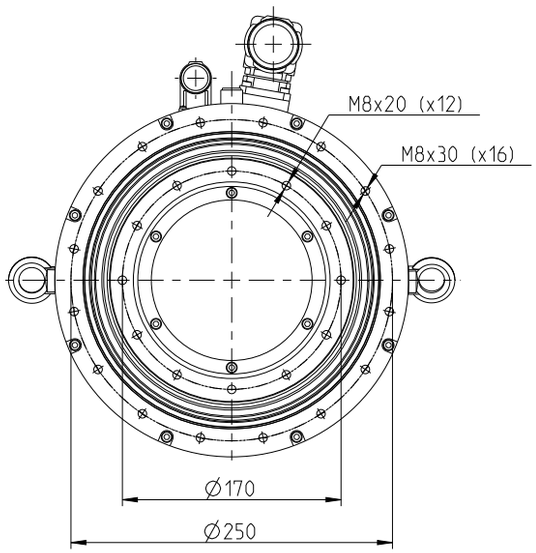
Technical data

	8LTK96.ee003ffgg-0	8LTK96.ee005ffgg-0	8LTK96.ee010ffgg-0	8LTK97.ee003ffgg-0	8LTK97.ee005ffgg-0	8LTK97.ee009ffgg-0
Motor						
Nominal speed n_N [rpm]	300	500	1000	300	500	900
Number of pole pairs	12					
Nominal torque M_n [Nm]	319.6	306	260.1	382.5	360.4	320
Nominal power P_N [W]	10041	16022	27238	12017	18871	30159
Nominal current I_N [A]	19.02	30.46	52.69	22.77	35.88	58.58
Stall torque M_0 [Nm]	340	340	340	408	408	408
Stall current I_0 [A]	20.2	33.8	68.9	24.3	40.6	74.7
Maximum torque M_{max} [Nm]	680	680	680	816	816	816
Maximum current I_{max} [A]	65.15	108.9	221.55	78.17	130.68	240.55
Maximum speed n_{max} [rpm]	1200					
Torque constant K_T [Nm/A]	16.8	10.05	4.94	16.8	10.05	5.46
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	298.4	1015.8	607.4	330.3
Stator resistance R_{2ph} [Ω]	1.97	0.72	0.17	1.76	0.66	0.18
Stator inductance L_{2ph} [mH]	20.86	7.4	1.76	18.09	6.63	1.85
Electrical time constant t_{el} [ms]	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	2210	2210	2210	2434	2434	2434
Weight without brake m [kg]	93	93	93	103	103	103
Holding brake						
Holding torque of the brake M_{Br} [Nm]	0					
Weight of brake [kg]	0					
Moment of inertia for the brake J_{Br} [kgcm^2]	0					
Recommendations						
ACOPOS servo drive 8Vxxxx.xx...	1320	1640	128M	1320	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0330	0440	0880	0330	0660	0880
Cross section for B&R motor cables [mm^2]	4	10	0	4	10	0
Connector type	speedtec					
Connector size	1.0	1.5	0.0	1.0	1.5	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

8LTK9





Model number	A	K_0
8LTK94.eennnffgg-0	260	360
8LTK95.eennnffgg-0	310	410
8LTK96.eennnffgg-0	360	460
8LTK97.eennnffgg-0	400	500

Technical data

	8LTJ93.ee003ffgg-0	8LTJ93.ee005ffgg-0	8LTJ93.ee010ffgg-0	8LTJ94.ee003ffgg-0	8LTJ94.ee005ffgg-0	8LTJ94.ee010ffgg-0	8LTJ95.ee003ffgg-0	8LTJ95.ee005ffgg-0
Motor								
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500
Number of pole pairs	12							
Nominal torque M_n [Nm]	81.6	76.5	66.3	161.5	153	130.9	241.4	229.5
Nominal power P_N [W]	2564	4006	6943	5074	8011	13708	7584	12017
Nominal current I_N [A]	4.86	7.62	13.92	9.71	15.5	26.99	14.37	23.25
Stall torque M_0 [Nm]	85	85	85	170	170	170	255	255
Stall current I_0 [A]	5.1	8.5	17.8	10.2	17.2	35.1	15.2	25.8
Maximum torque M_{max} [Nm]	173	173	173	345	345	345	510	510
Maximum current I_{max} [A]	18.17	30.37	64.12	33.99	57.27	116.55	48.85	83.17
Maximum speed n_{max} [rpm]	1200							
Torque constant K_T [Nm/A]	16.8	10.05	4.76	16.63	9.87	4.85	16.8	9.87
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	288	1005.3	596.9	293.2	1015.8	596.9
Stator resistance R_{2ph} [Ω]	10.88	3.72	0.82	4.25	1.63	0.4	2.82	0.96
Stator inductance L_{2ph} [mH]	82.57	29	6.6	39.9	15.1	3.42	27.5	9.41
Electrical time constant t_{el} [ms]	7.6	7.28	7.51	9.28	9.17	8.38	9.91	9.92
Thermal time constant t_{therm} [min]	50	50	50	70	70	70	90	90
Moment of inertia J [kgcm^2]	409	409	409	784	784	784	1159	1159
Weight without brake m [kg]	34	34	34	53	53	53	71	71
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1320	1180	1180	1640	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0220	0110	0220	0440	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	4	4	4	4	10	4	4
Connector type	speedtec							
Connector size	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTJ95.ee010ffgg-0	8LTJ96.ee003ffgg-0	8LTJ96.ee005ffgg-0	8LTJ96.ee010ffgg-0	8LTJ97.ee003ffgg-0	8LTJ97.ee005ffgg-0	8LTJ97.ee009ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	900
Number of pole pairs				12			
Nominal torque M_n [Nm]	197.2	319.6	306	260.1	382.5	360.4	320
Nominal power P_N [W]	20651	10041	16022	27238	12017	18871	30159
Nominal current I_N [A]	39.95	19.02	30.46	52.69	22.77	35.88	58.58
Stall torque M_0 [Nm]	255	340	340	340	408	408	408
Stall current I_0 [A]	51.7	20.2	33.8	68.9	24.3	40.6	74.7
Maximum torque M_{max} [Nm]	510	680	680	680	816	816	816
Maximum current I_{max} [A]	166.16	65.15	108.9	221.55	78.17	130.68	240.55
Maximum speed n_{max} [rpm]				1200			
Torque constant K_T [Nm/A]	4.94	16.8	10.05	4.94	16.8	10.05	5.46
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	298.4	1015.8	607.4	330.3
Stator resistance R_{2ph} [Ω]	0.24	1.97	0.72	0.17	1.76	0.66	0.18
Stator inductance L_{2ph} [mH]	2.42	20.86	7.4	1.76	18.09	6.63	1.85
Electrical time constant t_{el} [ms]	10.21	10.89	10.31	10.63	10.63	10	10.3
Thermal time constant t_{therm} [min]	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	1159	1534	1534	1534	1833	1833	1833
Weight without brake m [kg]	71	89	89	89	104	104	104
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1640	1320	1640	128M	1320	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0660	0330	0440	0880	0330	0660	0880
Cross section for B&R motor cables [mm^2]	10	4	10	0	4	10	0
Connector type				speedtec			
Connector size	1.5	1.0	1.5	0.0	1.0	1.5	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTS93.ee003ffgg-0	8LTS93.ee005ffgg-0	8LTS93.ee010ffgg-0	8LTS94.ee003ffgg-0	8LTS94.ee005ffgg-0	8LTS94.ee010ffgg-0	8LTS95.ee003ffgg-0	8LTS95.ee005ffgg-0
Motor								
Nominal speed n_N [rpm]	300	500	1000	300	500	1000	300	500
Number of pole pairs	12							
Nominal torque M_n [Nm]	81.6	76.5	66.3	161.5	153	130.9	241.4	229.5
Nominal power P_N [W]	2564	4006	6943	5074	8011	13708	7584	12017
Nominal current I_N [A]	4.86	7.62	13.92	9.71	15.5	26.99	14.37	23.25
Stall torque M_0 [Nm]	85	85	85	170	170	170	255	255
Stall current I_0 [A]	5.1	8.5	17.8	10.2	17.2	35.1	15.2	25.8
Maximum torque M_{max} [Nm]	173	173	173	345	345	345	510	510
Maximum current I_{max} [A]	18.17	30.37	64.12	33.99	57.27	116.55	48.85	83.17
Maximum speed n_{max} [rpm]	1200							
Torque constant K_T [Nm/A]	16.8	10.05	4.76	16.63	9.87	4.85	16.8	9.87
Voltage constant K_E [V/1000 rpm]	1015.8	607.4	288	1005.3	596.9	293.2	1015.8	596.9
Stator resistance R_{2ph} [Ω]	10.88	3.72	0.82	4.25	1.63	0.4	2.82	0.96
Stator inductance L_{2ph} [mH]	82.57	29	6.6	39.9	15.1	3.42	27.5	9.41
Electrical time constant t_{el} [ms]	7.6	7.28	7.51	9.28	9.17	8.38	9.91	9.92
Thermal time constant t_{therm} [min]	50	50	50	70	70	70	90	90
Moment of inertia J [kgcm^2]	404	404	404	774	774	774	1146	1146
Weight without brake m [kg]	32	32	32	51	51	51	68	68
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1320	1180	1180	1640	1180	1320
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0220	0110	0220	0440	0220	0330
Cross section for B&R motor cables [mm^2]	1.5	4	4	4	4	10	4	4
Connector type	speedtec							
Connector size	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
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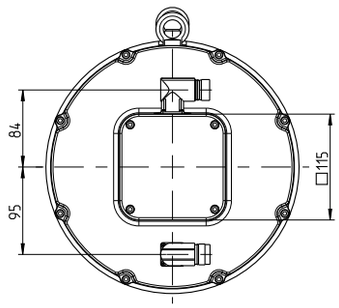
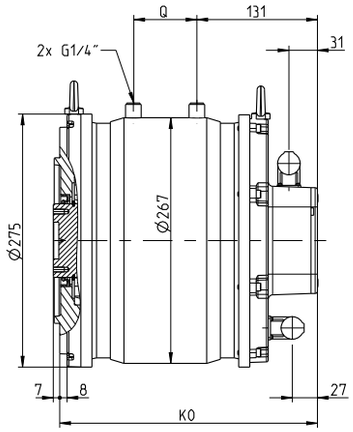
Technical data

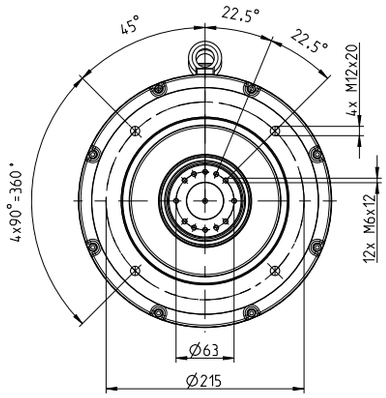
	8LTS95.ee010ffgg-0	8LTS96.ee003ffgg-0	8LTS96.ee005ffgg-0	8LTS96.ee010ffgg-0	8LTS97.ee003ffgg-0	8LTS97.ee005ffgg-0	8LTS97.ee009ffgg-0
Motor							
Nominal speed n_N [rpm]	1000	300	500	1000	300	500	900
Number of pole pairs				12			
Nominal torque M_n [Nm]	197.2	319.6	306	260.1	382.5	360.4	320
Nominal power P_N [W]	20651	10041	16022	27238	12017	18871	30159
Nominal current I_N [A]	39.95	19.02	30.46	52.69	22.77	35.88	58.58
Stall torque M_0 [Nm]	255	340	340	340	408	408	408
Stall current I_0 [A]	51.7	20.2	33.8	68.9	24.3	40.6	74.7
Maximum torque M_{max} [Nm]	510	680	680	680	816	816	816
Maximum current I_{max} [A]	166.16	65.15	108.9	221.55	78.17	130.68	240.55
Maximum speed n_{max} [rpm]				1200			
Torque constant K_T [Nm/A]	4.94	16.8	10.05	4.94	16.8	10.05	5.46
Voltage constant K_E [V/1000 rpm]	298.4	1015.8	607.4	298.4	1015.8	607.4	330.3
Stator resistance R_{2ph} [Ω]	0.24	1.97	0.72	0.17	1.76	0.66	0.18
Stator inductance L_{2ph} [mH]	2.42	20.86	7.4	1.76	18.09	6.63	1.85
Electrical time constant t_{el} [ms]	10.21	10.89	10.31	10.63	10.63	10	10.98
Thermal time constant t_{therm} [min]	90	110	110	110	130	130	130
Moment of inertia J [kgcm^2]	1146	1519	1519	1519	1816	1816	1816
Weight without brake m [kg]	68	86	86	86	100	100	100
Holding brake							
Holding torque of the brake M_{Br} [Nm]				0			
Weight of brake [kg]				0			
Moment of inertia for the brake J_{Br} [kgcm^2]				0			
Recommendations							
ACOPOS servo drive 8Vxxxx.xx...	1640	1320	1640	128M	1320	1640	128M
ACOPOSmulti inverter module 8BVIxxxx...	0660	0330	0440	0880	0330	0660	0880
Cross section for B&R motor cables [mm^2]	10	4	10	0	4	10	0
Connector type				speedtec			
Connector size	1.5	1.0	1.5	0.0	1.0	1.5	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

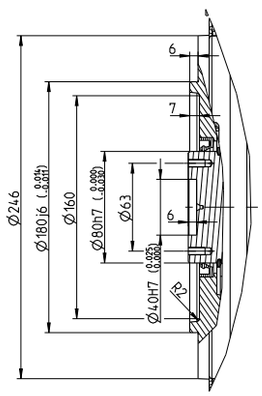
8LTJ9/8LTS9



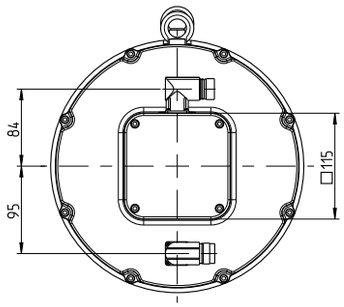




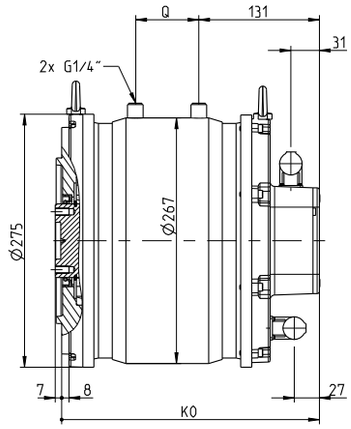
A-side flange detail

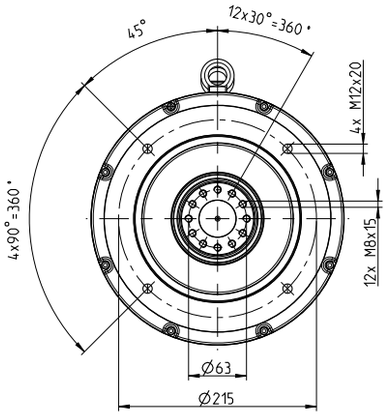


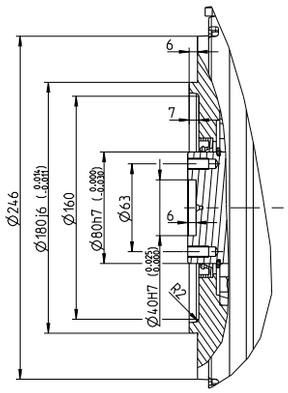
Model number	K_0	Q
8LTJ93.eennnffgg-0	230	19
8LTJ94.eennnffgg-0	280	69
8LTJ95.eennnffgg-0	330	119



A-side flange detail

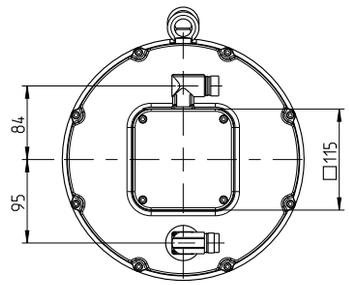


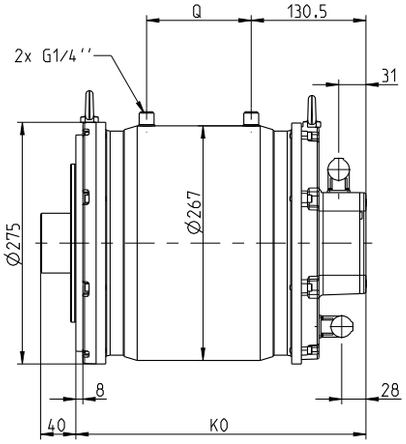


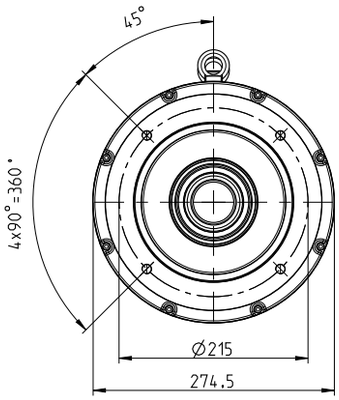


Model number	K_0	Q
8LTJ96.eennnffgg-0	380	169
8LTJ97.eennnffgg-0	420	209

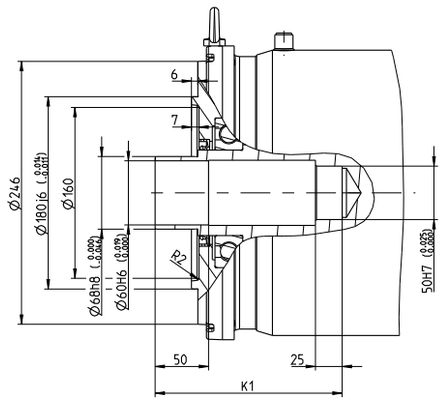
8LTJ9/8LTS9







A-side flange detail

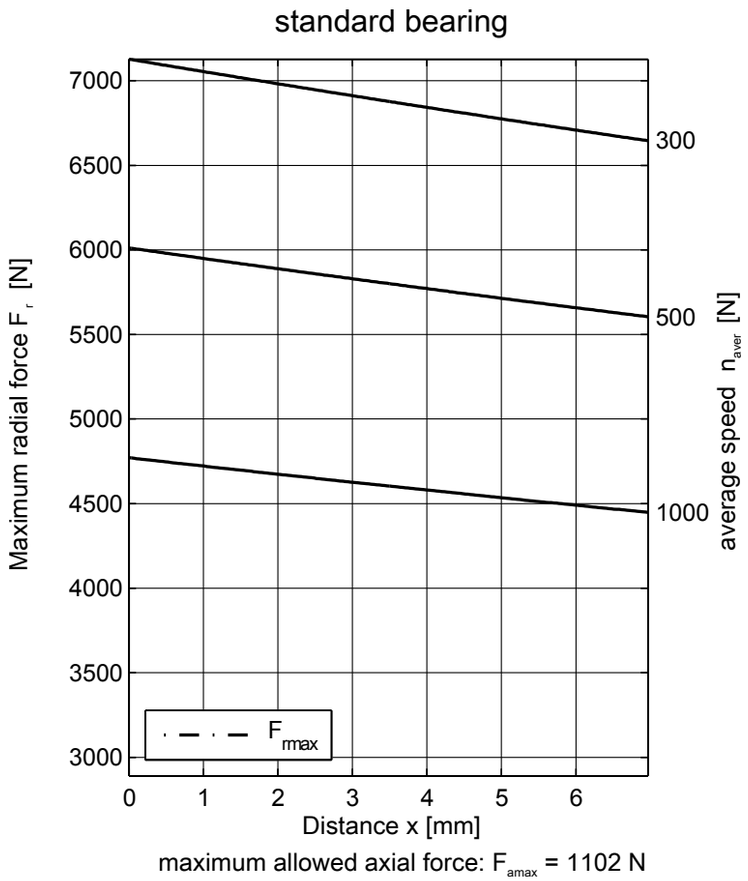


Model number	K_0	K1	Q
8LTS93.eennnffgg-0	230	125	19
8LTS94.eennnffgg-0	280	150	69
8LTS95.eennnffgg-0	330	175	119
8LTS96.eennnffgg-0	380	200	169
8LTS97.eennnffgg-0	420	225	209

Maximum shaft load

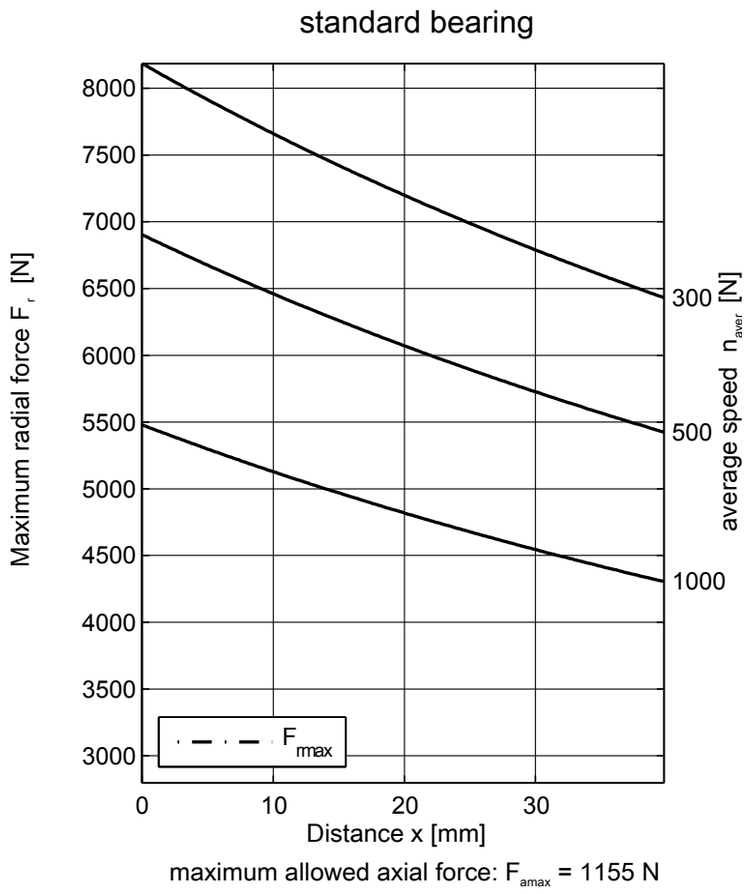
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

8LTJ9x.eennnffgg-0



maximum allowed axial force: F_{amax} = 1102 N

8LTS9x.eennnffgg-0



maximum allowed axial force: F_{amax} = 1155 N

Technical data

	8LTJC3.eeA08ffgg-0	8LTJC3.ee003ffgg-0	8LTJC3.ee005ffgg-0	8LTJC4.eeA08ffgg-0	8LTJC4.ee003ffgg-0	8LTJC4.ee005ffgg-0	8LTJC5.eeA08ffgg-0	8LTJC5.ee003ffgg-0
Motor								
Nominal speed n_N [rpm]	80	300	500	80	300	500	80	300
Number of pole pairs	15							
Nominal torque M_n [Nm]	190	176	163	372	344	318	540	498
Nominal power P_N [W]	1592	5529	8535	3116	10807	16650	4524	15645
Nominal current I_N [A]	3.89	10.81	16.69	7.62	21.13	32.55	11.06	30.59
Stall torque M_0 [Nm]	196	196	196	383	383	383	553	553
Stall current I_0 [A]	4	12	20.1	7.8	23.5	39.2	11.3	34
Maximum torque M_{max} [Nm]	345	345	345	703	703	703	1054	1054
Maximum current I_{max} [A]	10.24	30.71	51.18	20.86	62.58	104.3	31.27	93.82
Maximum speed n_{max} [rpm]	700							
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	17.1	1.9	0.75	7.61	0.91	0.32	4.31	0.53
Stator inductance L_{2ph} [mH]	297.7	33.08	12.5	154	17.9	6.62	99.2	11.4
Electrical time constant t_{el} [ms]	17.41	17.41	16.58	20.24	19.76	20.88	23.03	21.63
Thermal time constant t_{therm} [min]	68	68	68	95.2	95.2	95.2	122.4	122.4
Moment of inertia J [kgcm^2]	1600	1600	1600	3000	3000	3000	4400	4400
Weight without brake m [kg]	66	66	66	94	94	94	123	123
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1320	1090	1320	1640	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0330	0110	0330	0440	0110	0440
Cross section for B&R motor cables [mm^2]	1.5	4	4	1.5	4	10	4	10
Connector type	speedtec							
Connector size	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.5

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTJC5.ee005ffgg-0	8LTJC6.eeA08ffgg-0	8LTJC6.ee003ffgg-0	8LTJC6.ee005ffgg-0	8LTJC7.eeA08ffgg-0	8LTJC7.ee003ffgg-0	8LTJC8.eeA08ffgg-0	8LTJC8.ee003ffgg-0
Motor								
Nominal speed n_N [rpm]	500	80	300	500	80	300	80	300
Number of pole pairs	15							
Nominal torque M_n [Nm]	461	695	643	596	845	780	993	918
Nominal power P_N [W]	24138	5822	20200	31206	7079	24504	8319	28840
Nominal current I_N [A]	47.19	14.23	39.49	61.01	17.3	47.91	20.33	56.38
Stall torque M_0 [Nm]	553	714	714	714	867	867	1020	1020
Stall current I_0 [A]	56.6	14.6	43.9	73.1	17.8	53.3	20.9	62.6
Maximum torque M_{max} [Nm]	1054	1405	1405	1405	1750	1750	2108	2108
Maximum current I_{max} [A]	156.37	41.69	125.07	208.44	51.93	155.78	62.55	187.64
Maximum speed n_{max} [rpm]	700							
Torque constant K_T [Nm/A]	9.77	48.84	16.28	9.77	48.84	16.28	48.84	16.28
Voltage constant K_E [V/1000 rpm]	590.6	2953.1	984.4	590.6	2953.1	984.4	2953.1	984.4
Stator resistance R_{2ph} [Ω]	0.21	3.4	0.38	0.13	2.66	0.32	2.29	0.25
Stator inductance L_{2ph} [mH]	4.35	77	8.66	3.1	62.3	7.07	52.9	5.86
Electrical time constant t_{el} [ms]	20.62	22.65	22.73	23.66	23.42	21.75	23.1	23.07
Thermal time constant t_{therm} [min]	122.4	149.6	149.6	149.6	177	177	204	204
Moment of inertia J [kgcm^2]	4400	5800	5800	5800	7200	7200	8600	8600
Weight without brake m [kg]	123	151	151	151	180	180	209	209
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1640	1180	1640	128M	1320	1640	1320	128M
ACOPOSmulti inverter module 8BVIxxxx...	0660	0220	0660	0880	0220	0660	0330	0880
Cross section for B&R motor cables [mm^2]	10	4	10	0	4	10	4	0
Connector type	speedtec							
Connector size	1.5	1.0	1.5	0.0	1.0	1.5	1.0	0.0

NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

	8LTSC3.eeA08ffgg-0	8LTSC3.ee003ffgg-0	8LTSC3.ee005ffgg-0	8LTSC4.eeA08ffgg-0	8LTSC4.ee003ffgg-0	8LTSC4.ee005ffgg-0	8LTSC5.eeA08ffgg-0	8LTSC5.ee003ffgg-0
Motor								
Nominal speed n_N [rpm]	80	300	500	80	300	500	80	300
Number of pole pairs	15							
Nominal torque M_n [Nm]	190	176	163	372	344	318	540	498
Nominal power P_N [W]	1592	5529	8535	3116	10807	16650	4524	15645
Nominal current I_N [A]	3.89	10.81	16.69	7.62	21.13	32.55	11.06	30.59
Stall torque M_0 [Nm]	196	196	196	383	383	383	553	553
Stall current I_0 [A]	4	12	20.1	7.8	23.5	39.2	11.3	34
Maximum torque M_{max} [Nm]	345	345	345	703	703	703	1054	1054
Maximum current I_{max} [A]	10.24	30.71	51.18	20.86	62.58	104.3	31.27	93.82
Maximum speed n_{max} [rpm]	700							
Torque constant K_T [Nm/A]	48.84	16.28	9.77	48.84	16.28	9.77	48.84	16.28
Voltage constant K_E [V/1000 rpm]	2953.1	984.4	590.6	2953.1	984.4	590.6	2953.1	984.4
Stator resistance R_{2ph} [Ω]	17.1	1.9	0.75	7.61	0.91	0.32	4.31	0.53
Stator inductance L_{2ph} [mH]	297.7	33.08	12.5	154	17.9	6.62	99.2	11.4
Electrical time constant t_{el} [ms]	17.41	17.41	16.58	20.24	19.76	20.88	23.03	21.63
Thermal time constant t_{therm} [min]	68	68	68	95.2	95.2	95.2	122.4	122.4
Moment of inertia J [kgcm^2]	1700	1700	1700	3000	3000	3000	4400	4400
Weight without brake m [kg]	66	66	66	93	93	93	121	121
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1090	1180	1320	1090	1320	1640	1180	1640
ACOPOSmulti inverter module 8BVIxxxx...	0055	0110	0330	0110	0330	0440	0110	0440
Cross section for B&R motor cables [mm^2]	1.5	4	4	1.5	4	10	4	10
Connector type	speedtec							
Connector size	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.5

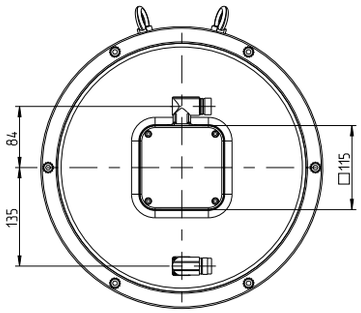
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

Technical data

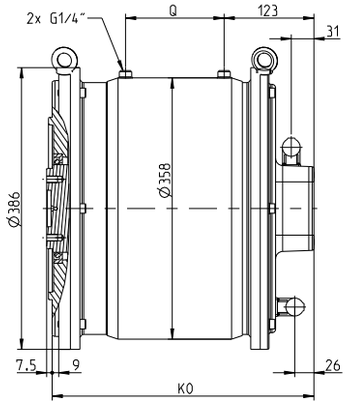
	8LTSC5.ee005ffgg-0	8LTSC6.eeA08ffgg-0	8LTSC6.ee003ffgg-0	8LTSC6.ee005ffgg-0	8LTSC7.eeA08ffgg-0	8LTSC7.ee003ffgg-0	8LTSC8.eeA08ffgg-0	8LTSC8.ee003ffgg-0
Motor								
Nominal speed n_N [rpm]	500	80	300	500	80	300	80	300
Number of pole pairs	15							
Nominal torque M_n [Nm]	461	695	643	596	845	780	993	918
Nominal power P_N [W]	24138	5822	20200	31206	7079	24504	8319	28840
Nominal current I_N [A]	47.19	14.23	39.49	61.01	17.3	47.91	20.33	56.38
Stall torque M_0 [Nm]	553	714	714	714	867	867	1020	1020
Stall current I_0 [A]	56.6	14.6	43.9	73.1	17.8	53.3	20.9	62.6
Maximum torque M_{max} [Nm]	1054	1405	1405	1405	1750	1750	2108	2108
Maximum current I_{max} [A]	156.37	41.69	125.07	208.44	51.93	155.78	62.55	187.64
Maximum speed n_{max} [rpm]	700							
Torque constant K_T [Nm/A]	9.77	48.84	16.28	9.77	48.84	16.28	48.84	16.28
Voltage constant K_E [V/1000 rpm]	590.6	2953.1	984.4	590.6	2953.1	984.4	2953.1	984.4
Stator resistance R_{2ph} [Ω]	0.21	3.4	0.38	0.13	2.66	0.32	2.29	0.25
Stator inductance L_{2ph} [mH]	4.35	77	8.66	3.1	62.3	7.07	52.9	5.86
Electrical time constant t_{el} [ms]	20.62	22.65	22.73	23.66	23.42	21.75	23.1	23.07
Thermal time constant t_{therm} [min]	122.4	149.6	149.6	149.6	177	177	204	204
Moment of inertia J [kgcm^2]	4400	5800	5800	5800	7150	7150	8500	8500
Weight without brake m [kg]	121	148	148	148	176	176	204	204
Holding brake								
Holding torque of the brake M_{Br} [Nm]	0							
Weight of brake [kg]	0							
Moment of inertia for the brake J_{Br} [kgcm^2]	0							
Recommendations								
ACOPOS servo drive 8Vxxxx.xx...	1640	1180	1640	128M	1320	1640	1320	128M
ACOPOSmulti inverter module 8BVIxxxx...	0660	0220	0660	0880	0220	0660	0330	0880
Cross section for B&R motor cables [mm^2]	10	4	10	0	4	10	4	0
Connector type	speedtec							
Connector size	1.5	1.0	1.5	1.5	1.0	1.5	1.0	0.0

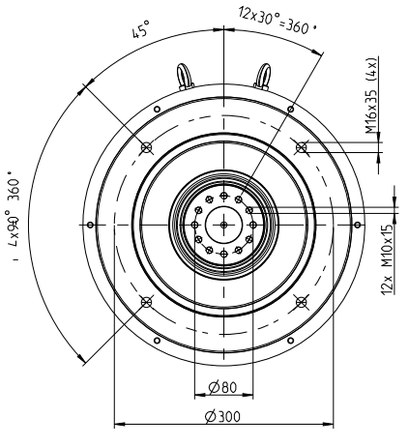
NOTE – Servo drive: The recommended servo drive / inverter module is designed for 1.1x the stall current. If more than double the amount is needed during the acceleration phase, the next larger servo drive should be selected. This recommendation is only a guideline; detailed inspection of the corresponding speed/torque characteristic curve can result in deviations of the servo drive size (larger or smaller).
NOTE – Cable cross section: The B&R motor cables with this cable cross section are produced optimally (cables stripped to the correct length) for the ACOPOS servo drive or the recommended ACOPOS inverter module. B&R motor cables with other cable cross sections can also be used (within the specified terminal cross section range) and can be obtained from B&R in the desired design on request.

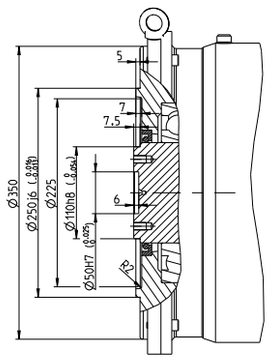
8LTJC/8LTSC



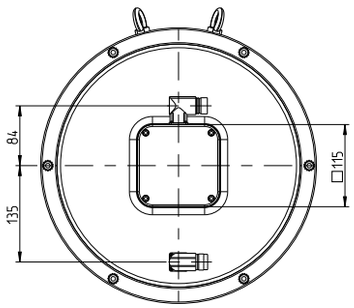
A flange detail



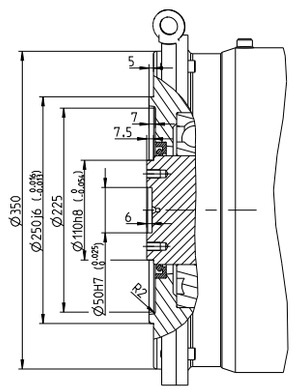


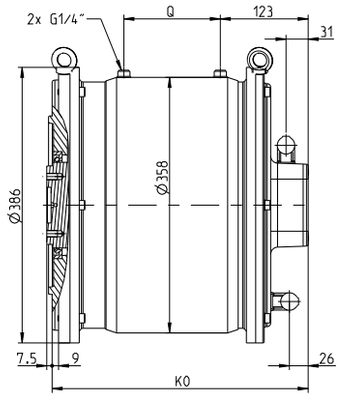


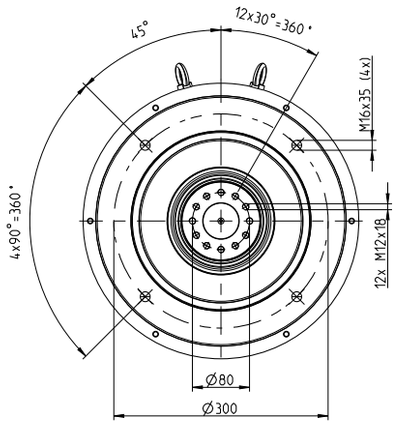
Model number	K_0	Q
8LTJC3.eennnffgg-0	259	35
8LTJC4.eennnffgg-0	309	85
8LTJC5.eennnffgg-0	359	135
8LTJC6.eennnffgg-0	409	185



A flange detail

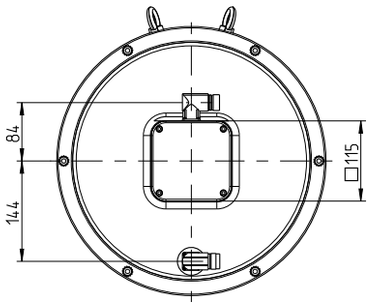




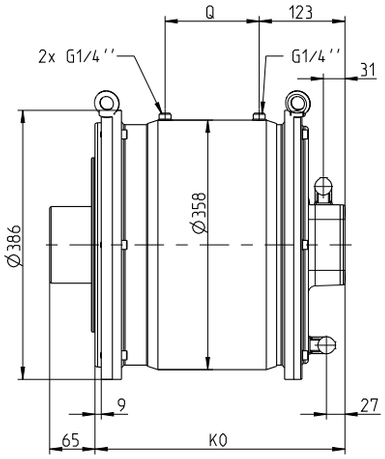


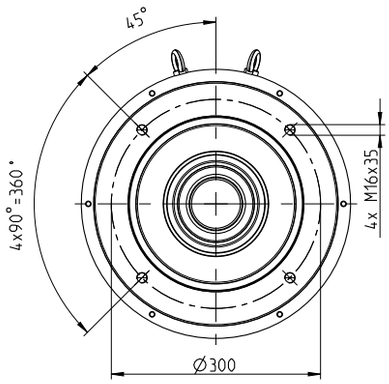
Model number	K_0	Q
8LTJC7.eennnffgg-0	459	235
8LTJC8.eennnffgg-0	509	285

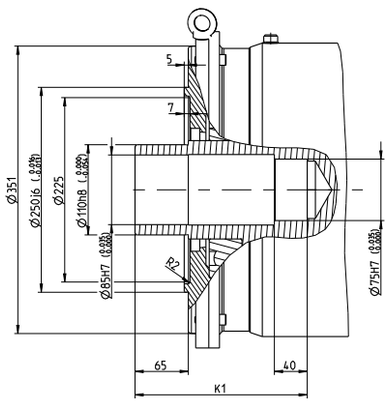
8LTJC/8LTSC



A-side flange detail





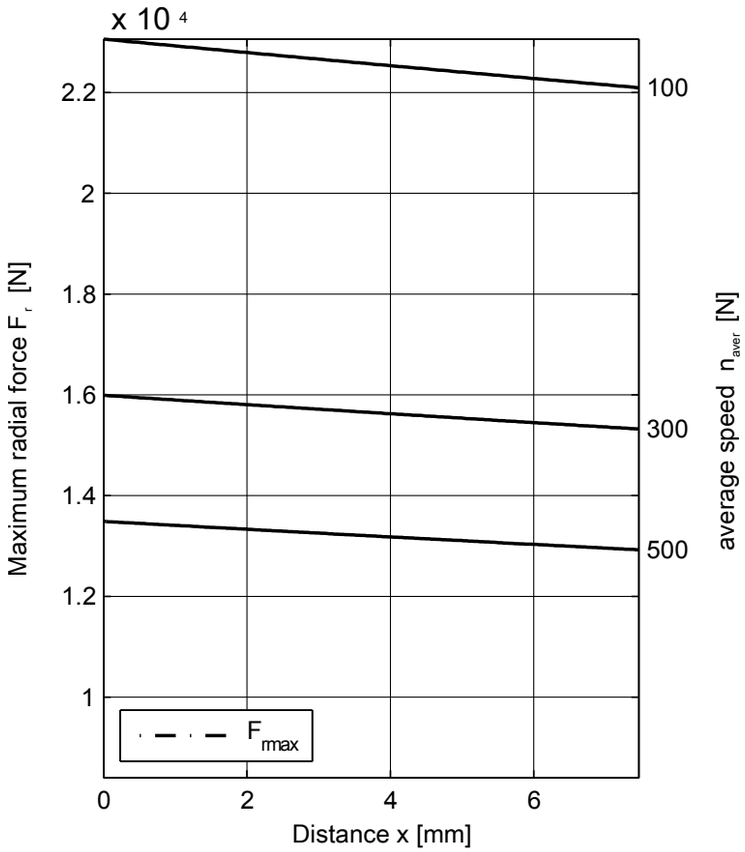


Model number	K_0	K1	Q
8LTSC3.eennnffgg-0	259	160	35
8LTSC4.eennnffgg-0	309	185	85
8LTSC5.eennnffgg-0	359	210	135
8LTSC6.eennnffgg-0	409	235	185
8LTSC7.eennnffgg-0	459	260	235
8LTSC8.eennnffgg-0	509	285	285

Maximum shaft load

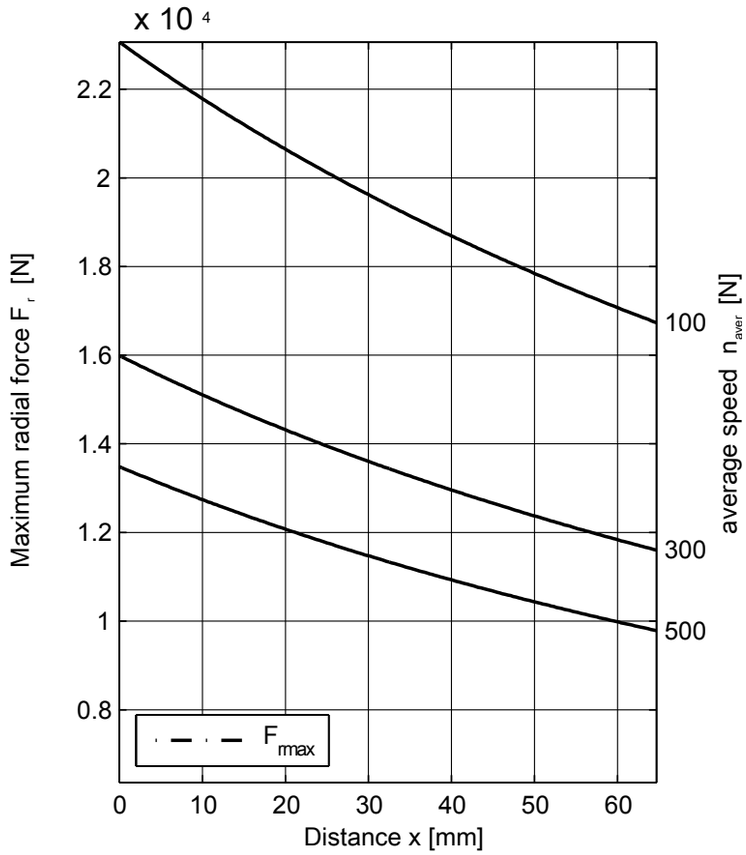
The values in the diagram below are based on a mechanical service life of the bearings of 20,000 operating hours.

8LTJCx.eennnffgg-0



maximum allowed axial force: F_{amax} = 2974N

8LTSCx.eennnffgg-0



maximum allowed axial force: F_{amax} = 2557 N

Stepper motors

The market demands cost-effective solutions. To meet this demand, B&R offers stepper motors as an inexpensive and powerful addition to it‘s existing product portfolio.

Table of contents

Product overview

Stepper motors

Accessories / Cables

System features

Areas of application

More than 500 million stepper motors are installed each year around the world. Although most of these motors are used in very simple applications, they are also seeing increased usage in applications that have traditionally been handled by DC and BLDC motors. High-performance controllers increasingly make it possible for more complex tasks to be solved. Many applications that were once handled using smaller servo motors can now be handled by a stepper motor outfitted with the corresponding electronics.

Not only have the possibilities involving controllers advanced over the last few years, but the motors themselves are running considerably smoother and with higher torque thanks to improved technology. New, robust position feedback possibilities are becoming much less expensive and are also playing their part in opening up new areas of use for stepper motors.

Of course, stepper motor solutions also have their limitations. Particularly when it comes to high speeds, which are no problem for servos, stepper motors often don't stand a chance. If implementing a geared solution, however, many opportunities present themselves by using a smaller gear ratio or even no gears at all. The reason for this is the high torque that can be achieved with stepper motors in the low to intermediate speed range.

Selecting the right motor

The user faces many difficulties when it comes to choosing a motor. There are considerable differences between motors from different manufacturers or even between motor generations from the same manufacturer. The standard specifications listed in the data sheets often do not provide enough information to make a decision in this regard. Only detailed information can reliably indicate the possible areas of use. The more complex the application, the more important parameters such as concentricity, counter EMF, efficiency, resonance frequencies, etc. become.

When chosen with care, stepper motors can be used for many more applications than is normally the case today. Special attention must be given to the characteristics that are particularly important for the respective application. These characteristics often cannot be achieved unless a drive is also used.

Concentricity and angular precision

A majority of two-phase hybrid stepper motors have a step angle of 1.8°. In addition, there are versions with a step angle of 0.9° and even, less commonly, 0.45°. The smaller stepping angle often results in poorer torque characteristics. Positioning at a higher resolution can only be handled with stepper motor drivers that support microstepping. Moreover, a high step resolution produces excellent concentricity properties and reduces potential problems resulting from resonance effects.

Position accuracy

The accuracy with which the position setpoint can ultimately be reached depends on the load torque applied as well as the precision with which the stepper motor was manufactured. The position accuracy within one step is always dependent on the load and the resulting angular slip. This can never be higher than one full step, however, because otherwise the motor gets out of sync and steps are lost. The best way to compensate for this load angle is via position feedback.
This is why all B&R stepper motors are also available in affordable encoder variations, which achieve a resolution of up to 12 bits. Therefore, positioning accuracy is possible with an angular deviation of less than 0.1°, even under considerable load torque.

Highlights of the B&R stepper motors

- High torque
- High overload capability
- Cost-effective encoder option
- Operation in parallel and in series

Order key

80MP	a	b	.	cc	d	ee	ff	-	01

Flange dimensions

D...56 mm (NEMA 23)
F ...60 mm
H...86 mm (NEMA 34)

Number of stacks (corresponds to the length of the motor)
1... 1 stack
3... 2 stacks
4... 2 stacks - high torque (80MPH)
5... 3 stacks (80MPD und 80MPF)
6... 3 stacks (80MPH)

Current [1)]
cc... Current x 100 mA Example: 30 corresponds to 3,000 mA = 3 A
50 corresponds to 5,000 mA = 5 A

Current multiplier [1)]
d... 10^{d} Example: cc = 10, d = 1
10 x 100 mA x 10^{1} = 10,000 mA = 10 A

Protection type / brake option

S0...Standard
S1...IP65
D1...IP65 + brake

Options

00...No encoder
11...Hiperface
13...SSI absolute encoder
14...ABR incremental encoder

Additional motor options or special motor options must be arranged with B&R.

1) With 8 wire motors (*eeff* = S000), the user can wire the stepper motor for series or parallel operation.
The designation *ccd* in the model number for these motors corresponds to the specified current for series wiring.
If the 8 wire motor is operated with parallel wiring, the specified current *ccd* in the model number must be doubled.

Stepper motors without an encoder - Overview

Flange size 56 mm - 80MPD

Motor	80MPD1.300S000-01		80MPD3.300S000-01		80MPD5.300S000-01	
Length [mm]	45		57.5		80.5	
Wiring	Series	Parallel	Series	Parallel	Series	Parallel
Current [A]	3	6	3	6	3	6
Resistance / phase [Ω]	1.2	0.3	1.6	0.4	2.4	0.6
Inductance / phase [mH]	3.6	0.9	5.2	1.3	8.8	2.2
Stall torque [Nm]	0.8		1.25		2.2	
Holding torque [Nm]	1.1		1.8		3.0	
Detent torque [mNm]	<30		<50		<90	
Stepping angle [°]	1.8		1.8		1.8	

Flange size 60 mm - 80MPF

Motor	80MPF1.250S000-01		80MPF3.250S000-01		80MPF5.250S000-01	
Length [mm]	51.8		62		93.3	
Wiring	Series	Parallel	Series	Parallel	Series	Parallel
Current [A]	2.5	5	2.5	5	2.5	5
Resistance / phase [Ω]	1.28	0.32	1.52	0.38	2.4	0.6
Inductance / phase [mH]	3.4	0.85	5.6	1.4	11.2	2.8
Stall torque [Nm]	0.8		1.2		2.5	
Holding torque [Nm]	1.1		1.7		3.5	
Detent torque [mNm]	<35		<45		<75	
Stepping angle [°]	1.8		1.8		1.8	

Flange size 86 mm - 80MPH

Motor	80MPH1.300S000-01		80MPH3.300S000-01		80MPH4.300S000-01		80MPH4.500S000-01		80MPH6.300S000-01		80MPH6.101S000-01
Length [mm]	66		98		98		98		130		130
Wiring	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Parallel
Current [A]	3	6	3	6	3	6	5	10	3	6	10
Resistance / phase [Ω]	1.7	0.4	2.2	0.6	2.2	0.6	0.9	0.2	2.7	0.7	0.24
Inductance / phase [mH]	12.9	3.2	17.3	4.3	17.3	4.3	5.6	1.4	20.0	5.0	1.6
Stall torque [Nm]	2.9		5.5		6.3		6.3		9.3		9.3
Holding torque [Nm]	4.0		7.8		9.5		9.5		13.6		13.6
Detent torque [mNm]	<160		<210		<320		<320		<420		<420
Stepping angle [°]	1.8		1.8		1.8		1.8		1.8		1.8

General motor data

Applies to all stepper motors, with or without an encoder.

Environmental conditions	
Temperature during operation	-20 to 40°C
Relative humidity during operation	5 to 95%, non-condensing

Stepper motors without encoders 80MPD

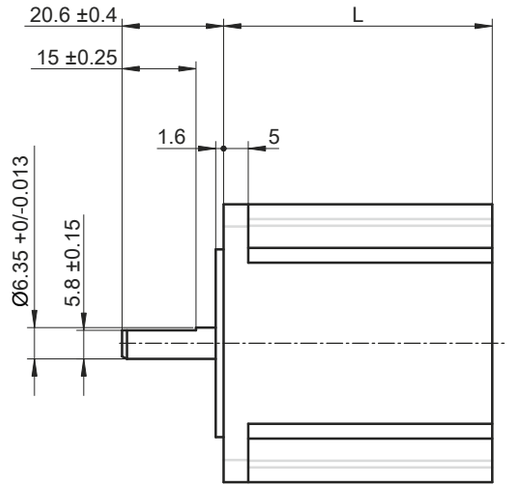
Technical data

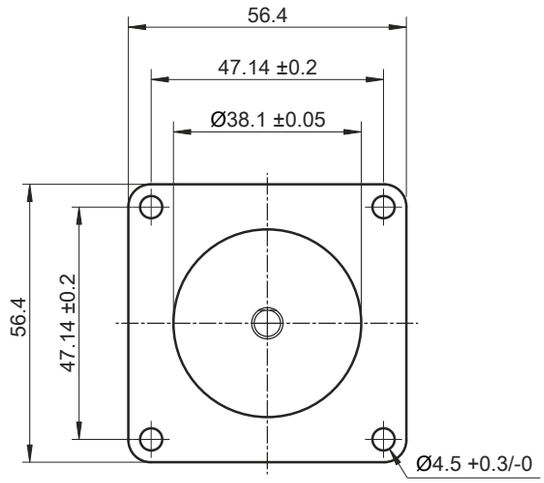
	80MPD1.300S000-01	80MPD3.300S000-01	80MPD5.300S000-01
Short description			
Stepper motor	Stepper motor flange size 56 mm, length 45 mm	Stepper motor flange size 56 mm, length 57.5 mm	Stepper motor flange size 56 mm, length 80.5 mm
Specific motor data			
Wiring			
Series		True	
Parallel		True	
Current			
Series wiring		3 A	
Parallel wiring		6 A	
Resistance / phase			
Series wiring	1.2 Ω	1.6 Ω	2.4 Ω
Parallel wiring	0.3 Ω	0.4 Ω	0.6 Ω
Inductance / phase			
Series wiring	3.6 mH	5.2 mH	8.8 mH
Parallel wiring	0.9 mH	1.3 mH	2.2 mH
Stall torque	0.8 Nm	1.25 Nm	2.2 Nm
Holding torque [1]	1.1 Nm	1.8 Nm	3.0 Nm
Detent torque	<30 mNm	<50 mNm	<90 mNm
Rotor inertia	Approx. 145 gcm^2	Approx. 245 gcm^2	Approx. 470 gcm^2
General motor data			
Rated protection		IP30	
Stepping angle		1.8°	
Max. surface temperature		100°C	
Average period of operation between failures		21,000 hours	
Cable length		300 mm	
Cable cross section		AWG 22, UL3266	
Shaft type		Flat-sided (D-cut)	
Insulation class		B (130°C)	
Insulation resistance		100 MΩ min. 500 VDC	
Dielectric resistance		500 VAC for 1 minute	
Driver voltage supply		Max. 80 VDC	
Mechanical characteristics			
Max. radial load [2]		73.5 N	
Max. axial load		The permitted axial load must not be larger than the motor mass	
Weight	520 g	720 g	1,110 g
Length	45 mm	57.5 mm	80.5 mm

[1] Measured with serial wiring

[2] Measured in the middle of the shaft

Dimensions of 80MPD stepper motors (all measurements in mm)





Stepper motors without encoders 80MPF

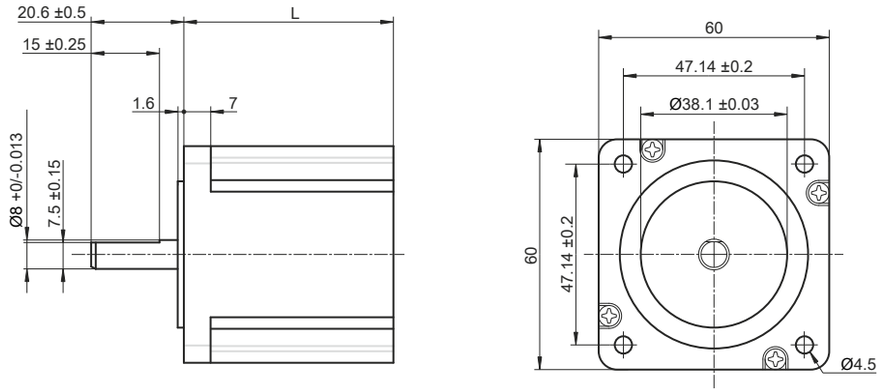
Technical data

	80MPF1.250S000-01	80MPF3.250S000-01	80MPF5.250S000-01
Short description			
Stepper motor	Stepper motor flange size 60 mm, length 51.8 mm	Stepper motor flange size 60 mm, length 62 mm	Stepper motor flange size 60 mm, length 93.3 mm
Specific motor data			
Wiring			
Series		True	
Parallel		True	
Current			
Series wiring		2.5 A	
Parallel wiring		5 A	
Resistance / phase			
Series wiring	1.28 Ω	1.52 Ω	2.4 Ω
Parallel wiring	0.32 Ω	0.38 Ω	0.6 Ω
Inductance / phase			
Series wiring	3.4 mH	5.6 mH	11.2 mH
Parallel wiring	0.85 mH	1.4 mH	2.8 mH
Stall torque	0.8 Nm	1.2 Nm	2.5 Nm
Holding torque [1]	1.1 Nm	1.7 Nm	3.5 Nm
Detent torque	<35 mNm	<45 mNm	<75 mNm
Rotor inertia	280 gcm^2	440 gcm^2	920 gcm^2
General motor data			
Rated protection		IP30	
Stepping angle		1.8°	
Max. surface temperature		100°C	
Average period of operation between failures		21,000 hours	
Cable length		300 mm	
Cable cross section		AWG 22	
Shaft type		Flat-sided (D-cut)	
Insulation class		B (130°C)	
Insulation resistance		100 MΩ min. 500 VDC	
Dielectric resistance		500 VAC for 1 minute	
Driver voltage supply		Max. 80 VDC	
Mechanical characteristics			
Max. radial load [2]		75 N	
Max. axial load		The permitted axial load must not be larger than the motor mass	
Weight	620 g	880 g	1,400 g
Length	51.8 mm	62 mm	93.3 mm

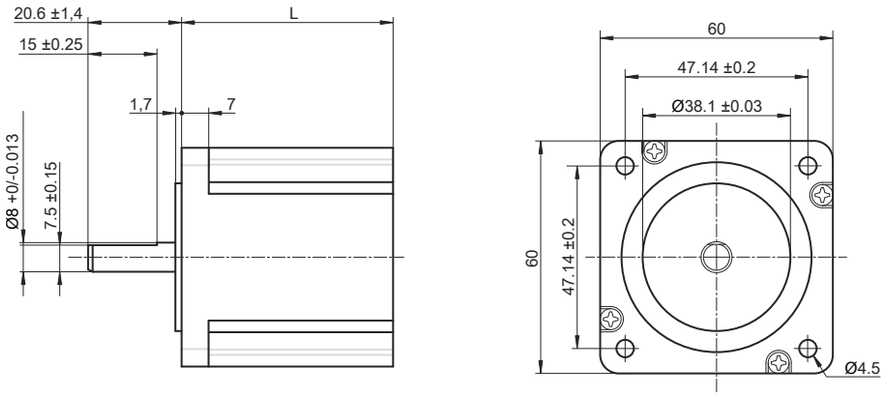
[1] Measured with serial wiring

[2] Measured in the middle of the shaft

Dimensions of 80MPF stepper motors (all measurements in mm)



Dimensions of 80MPF stepper motors with a brake (all measurements in mm)



Stepper motors without encoders 80MPH

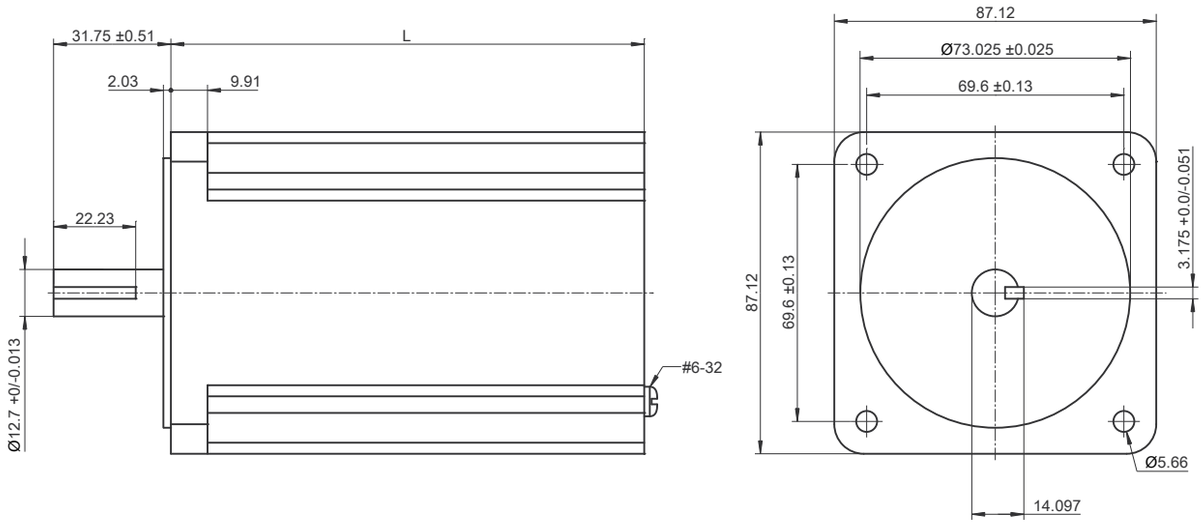
Technical data

	80MPH1.300S000-01	80MPH3.300S000-01	80MPH4.300S000-01	80MPH4.500S000-01	80MPH6.300S000-01	80MPH6.101S000-01
Short description						
Stepper motor	Stepper motor flange size 86 mm, length 66 mm	Stepper motor flange size 86 mm, length 98 mm			Stepper motor flange size 86 mm, length 130 mm	
Specific motor data						
Wiring						
Series			Yes			
Parallel			Yes			
Current						
Series wiring		3 A		5 A	3 A	-
Parallel wiring		6 A		10 A	6 A	10 A
Resistance / phase						
Series wiring	1.7 Ω	2.2 Ω		0.9 Ω	2.7 Ω	-
Parallel wiring	0.4 Ω	0.6 Ω		0.2 Ω	0.7 Ω	0.24 Ω
Inductance / phase						
Series wiring	12.9 mH	17.3 mH		5.6 mH	20.0 mH	-
Parallel wiring	3.2 mH	4.3 mH		1.4 mH	5.0 mH	1.6 mH
Stall torque	2.9 Nm	5.5 Nm	6.3 Nm		9.3 Nm	
Holding torque [1]	4.0 Nm	7.8 Nm	9.5 Nm		13.6 Nm	
Detent torque	<160 mNm	<210 mNm	<320 mNm		<420 mNm	
Rotor inertia	Approx. 1.31 kgcm^2	Approx. 2.61 kgcm^2			Approx. 3.92 kgcm^2	
General motor data						
Rated protection	IP40					
Stepping angle	1.8°					
Max. surface temperature	100°C					
Average period of operation between failures	20,000 hours					
Cable length	300 mm					
Cable cross section	AWG 22, UL3266					
Shaft type	Keyed					
Insulation class	B (130°C)					
Insulation resistance	100 MΩ min. 500 VDC					
Dielectric resistance	1776 VAC for 1 minute					
Driver voltage supply	Max. 80 VDC					
Mechanical characteristics						
Max. radial load [2]	290 N					
Max. axial load	225 N					
Weight	1.8 kg	3.0 kg			4.2 kg	
Length	66 mm	98 mm			130 mm	

[1] Measured with serial wiring

[2] Measured in the middle of the shaft

Dimensions of 80MPH stepper motors (all measurements in mm)



Stepper motors with incremental encoders (IP20)

Technical data

	80MPD1.300S014-01	80MPD1.600S014-01	80MPD3.300S014-01	80MPD3.600S014-01	80MPD5.300S014-01	80MPD5.600S014-01
Short description						
Stepper motor	Stepper motor flange size 56 mm, length 66 mm, incremental encoder		Stepper motor flange size 56 mm, length 78.5 mm, incremental encoder		Stepper motor flange size 56 mm, length 101.5 mm, incremental encoder	
Specific motor data						
Wiring	Series	Parallel	Series	Parallel	Series	Parallel
Current	3 A	6 A	3 A	6 A	3 A	6 A
Resistance / phase	1.2 Ω	0.3 Ω	1.6 Ω	0.4 Ω	2.4 Ω	0.6 Ω
Inductance / phase	3.6 mH	0.9 mH	5.2 mH	1.3 mH	8.8 mH	2.2 mH
Stall torque	0.8 Nm		1.25 Nm		2.2 Nm	
Holding torque	1.1 Nm		1.8 Nm		3.0 Nm	
Detent torque	<30 mNm		<50 mNm		<90 mNm	
Rotor inertia	Approx. 145 gcm^2		Approx. 245 gcm^2		Approx. 470 gcm^2	
General motor data						
Stepping angle	1.8°					
Max. surface temperature	95°C					
Average period of operation between failures	21,000 hours					
Shaft type	Flat-sided (D-cut)					
Insulation class	B (130°C)					
Insulation resistance	100 MΩ min. 500 VDC					
Dielectric resistance	500 VAC for 1 minute					
Driver voltage supply	Max. 80 VDC					
Operating conditions						
EN 60529 protection [1]	IP20					
Electrical characteristics - Encoder						
Number of outputs	3 A / B / R					
Resolution	1024 increments / 256 positions per revolution					
Output circuit	Push / Pull level, asymmetric					
Output protection	Short circuit protection					
Current consumption	Max. 12 mA + output load					
Supply voltage	18 to 30 VDC					
Max. output current	±10 mA per output					
Mechanical characteristics						
Max. radial load [2]	73.5 N					
Max. axial load	The permitted axial load must not be larger than the motor mass					
Weight	550 g		750 g		1,140 g	
Length	66 mm		78.5 mm		101.5 mm	

[1] From the back side of the flange

[2] Measured in the middle of the shaft

Technical data

	80MPH1.300S014-01	80MPH1.600S014-01	80MPH3.300S014-01	80MPH3.600S014-01	80MPH4.300S014-01	80MPH4.500S014-01	80MPH4.600S014-01	80MPH4.101S014-01	80MPH6.300S014-01	80MPH6.600S014-01	80MPH6.101S014-01
Short description											
Stepper motor	Stepper motor flange size 86 mm, length 87 mm, incremental encoder		Stepper motor flange size 86 mm, length 119 mm, incremental encoder						Stepper motor flange size 86 mm, length 151 mm, incremental encoder		
Specific motor data											
Wiring	Series	Parallel	Series	Parallel	Series		Parallel		Series	Parallel	
Current	3 A	6 A	3 A	6 A	3 A	5 A	6 A	10 A	3 A	6 A	10 A
Resistance / phase	1.7 Ω	0.4 Ω	2.2 Ω	0.6 Ω	2.2 Ω	0.9 Ω	0.6 Ω	0.2 Ω	2.7 Ω	0.7 Ω	0.24 Ω
Inductance / phase	12.9 mH	3.2 mH	17.3 mH	4.3 mH	17.3 mH	5.6 mH	4.3 mH	1.4 mH	20.0 mH	5.0 mH	1.6 mH
Stall torque	2.9 Nm		5.5 Nm		6.3 Nm				9.3 Nm		
Holding torque	4.2 Nm		7.8 Nm		9.5 Nm				13.6 Nm		
Detent torque	<160 mNm		<210 mNm		<320 mNm				<420 mNm		
Rotor inertia	Approx. 1.31 kgcm^2		Approx. 2.61 kgcm^2						Approx. 3.92 kgcm^2		
General motor data											
Stepping angle	1.8°										
Max. surface temperature	95°C										
Average period of operation between failures	20,000 hours										
Shaft type	Keyed										
Insulation class	B (130°C)										
Insulation resistance	100 MΩ min. 500 VDC										
Dielectric resistance	1776 VAC for 1 minute										
Driver voltage supply	Max. 80 VDC										
Operating conditions											
EN 60529 protection [1]	IP20										
Electrical characteristics - Encoder											
Number of outputs	3 A / B / R										
Resolution	1024 increments / 256 positions per revolution										
Output circuit	Push / Pull level, asymmetric										
Output protection	Short circuit protection										
Current consumption	Max. 12 mA + output load										
Supply voltage	18 to 30 VDC										
Max. output current	±10 mA per output										
Mechanical characteristics											
Max. radial load [2]	290 N										
Max. axial load	225 N										
Weight	1,900 g		3,100 g						4300 g		
Length	87 mm		119 mm						151 mm		

[1] From the back side of the flange

[2] Measured in the middle of the shaft

Stepper motors with incremental encoders (IP65)

Technical data

	80MPF1.250S114-01	80MPF1.500S114-01	80MPF3.250S114-01	80MPF3.500S114-01	80MPF5.250S114-01	80MPF5.500S114-01
Short description						
Stepper motor	Stepper motor flange size 60 mm, length 97.1 mm, incremental encoder		Stepper motor flange size 60 mm, length 107.3 mm, incremental encoder		Stepper motor flange size 60 mm, length 138.6 mm, incremental encoder	
Specific motor data						
Wiring	Series	Parallel	Series	Parallel	Series	Parallel
Current	2.5 A	5 A	2.5 A	5 A	2.5 A	5 A
Resistance / phase	1.28 Ω	0.32 Ω	1.52 Ω	0.38 Ω	2.4 Ω	0.6 Ω
Inductance / phase	3.4 mH	0.85 mH	5.6 mH	1.4 mH	11.2 mH	2.8 mH
Stall torque	0.8 Nm		1.2 Nm		2.5 Nm	
Holding torque	1.1 Nm		1.7 Nm		3.5 Nm	
Detent torque	<35 mNm				<75 mNm	
Rotor inertia	280 gcm^2		440 gcm^2		920 gcm^2	
General motor data						
Stepping angle	1.8°					
Max. surface temperature	95°C					
Average period of operation between failures	21,000 hours					
Shaft type	Flat-sided (D-cut)					
Insulation class	B (130°C)					
Insulation resistance	100 MΩ min. 500 VDC					
Dielectric resistance	500 VAC for 1 minute					
Driver voltage supply	Max. 80 VDC					
Operating conditions						
EN 60529 protection [1]	IP65					
Electrical characteristics - Encoder						
Number of outputs	3 A / B / R					
Resolution	1024 increments / 256 positions per revolution					
Output circuit	Push / Pull level, asymmetric					
Output protection	Short circuit protection					
Current consumption	Max. 12 mA + output load					
Supply voltage	18 to 30 VDC					
Max. output current	±10 mA per output					
Mechanical characteristics						
Max. radial load [2]	75 N					
Max. axial load	The permitted axial load must not be larger than the motor mass					
Weight	750 g		1,000 g		1,500 g	
Length	97.1 mm		107.3 mm		138.6 mm	

[1] From the back side of the flange

[2] Measured in the middle of the shaft

Technical data

	80MPH1.300S114-01	80MPH1.600S114-01	80MPH3.600S114-01	80MPH4.300S114-01	80MPH4.500S114-01	80MPH4.600S114-01	80MPH4.101S114-01	80MPH6.300S114-01	80MPH6.600S114-01	80MPH6.101S114-01
Short description										
Stepper motor	Stepper motor flange size 86 mm, length 101.4 mm, incremental encoder			Stepper motor flange size 86 mm, length 133.4 mm, incremental encoder				Stepper motor flange size 86 mm, length 165.4 mm, incremental encoder		
Specific motor data										
Wiring	Series	Parallel		Series		Parallel		Series	Parallel	
Current	3 A	6 A		3 A	5 A	6 A	10 A	3 A	6 A	10 A
Resistance / phase	1.7 Ω	0.4 Ω	0.6 Ω	2.2 Ω	0.9 Ω	0.6 Ω	0.2 Ω	2.7 Ω	0.7 Ω	0.24 Ω
Inductance / phase	12.9 mH	3.2 mH	4.3 mH	17.3 mH	5.6 mH	4.3 mH	1.4 mH	20.0 mH	5.0 mH	1.6 mH
Stall torque	2.9 Nm		5.5 Nm	6.3 Nm				9.3 Nm		
Holding torque	4.0 Nm		7.8 Nm	9.5 Nm				13.6 Nm		
Detent torque	<160 mNm		<210 mNm	<320 mNm				<420 mNm		
Rotor inertia	Approx. 1.31 kgcm^2			Approx. 2.61 kgcm^2				Approx. 3.92 kgcm^2		
General motor data										
Stepping angle	1.8°									
Max. surface temperature	95°C									
Average period of operation between failures	20,000 hours									
Shaft type	Keyed									
Insulation class	B (130°C)									
Insulation resistance	100 MΩ min. 500 VDC									
Dielectric resistance	1776 VAC for 1 minute									
Driver voltage supply	Max. 80 VDC									
Operating conditions										
EN 60529 protection [1]	IP65									
Electrical characteristics - Encoder										
Number of outputs	3 A / B / R									
Resolution	1024 increments / 256 positions per revolution									
Output circuit	Push / Pull level, asymmetric									
Output protection	Short circuit protection									
Current consumption	Max. 12 mA + output load									
Supply voltage	18 to 30 VDC									
Max. output current	±10 mA per output									
Mechanical characteristics										
Max. radial load [2]	290 N									
Max. axial load	225 N									
Weight	1,900 g			3,100 g				4300 g		
Length	101.4 mm			133.4 mm				165.4 mm		

[1] From the back side of the flange

[2] Measured in the middle of the shaft

Stepper motors with SSI encoders (IP65)

Technical data

	80MPF5.250S113-01	80MPF5.500S113-01
Short description		
Stepper motor	Stepper motor flange size 60 mm, length 138.6 mm, SSI encoder	
Specific motor data		
Wiring	Series	Parallel
Current	2.5 A	5 A
Resistance / phase	2.4 Ω	0.6 Ω
Inductance / phase	11.2 mH	2.8 mH
Stall torque	2.5 Nm	
Holding torque	3.5 Nm	
Detent torque	<75 mNm	
Rotor inertia	920 gcm^2	
General motor data		
Stepping angle	1.8°	
Max. surface temperature	95°C	
Average period of operation between failures	21,000 hours	
Shaft type	Flat-sided (D-cut)	
Insulation class	B (130°C)	
Insulation resistance	100 MΩ min. 500 VDC	
Dielectric resistance	500 VAC for 1 minute	
Driver voltage supply	Max. 80 VDC	
Operating conditions		
EN 60529 protection [1]	IP65	
Electrical characteristics - Encoder		
Number of outputs	4 Data / nData / CLK / nCLK	
Resolution	4096 increments per revolution	
Output circuit	Differential signal	
Output protection	Short circuit protection	
Current consumption	Max. 21 mA + output load	
Supply voltage	18 to 30 VDC	
Max. output current	±25 mA per output	
Data format	Gray	
Counting direction	Clockwise	
Clock frequency	Max. 400 kHz	
Mechanical characteristics		
Max. radial load [2]	75 N	
Max. axial load	The permitted axial load must not be larger than the motor mass	
Weight	1,500 g	
Length	138.6 mm	

[1] From the back side of the flange

[2] Measured in the middle of the shaft

Stepper motors with Hiperface encoders (IP65)

Technical data

	80MPH4.600S111-02
Short description	
Stepper motor	Stepper motor flange size 86 mm, length 128.5 mm, Hiperface encoder
Specific motor data	
Wiring	Parallel
Current	6 A
Resistance / phase	0.6 Ω
Inductance / phase	4.3 mH
Stall torque	6.3 Nm
Holding torque	9.5 Nm
Detent torque	<320 mNm
Rotor inertia	Approx. 2.61 kgcm^2
General motor data	
Stepping angle	1.8°
Max. surface temperature	95°C
Average period of operation between failures	20,000 hours
Shaft type	Keyed
Insulation class	B (130°C)
Insulation resistance	100 MΩ min. 500 VDC
Dielectric resistance	1776 VAC for 1 minute
Driver voltage supply	Max. 80 VDC
Operating conditions	
EN 60529 protection [1)]	IP65
Electrical characteristics - Encoder	
Encoder type	Hiperface Multiturn, 4096 revolution measurable
Integral nonlinearity	±300 angular seconds
Supply voltage	10 VDC
Sine-Cosine signals	
Periods per revolution	16
Peak-to-peak signal voltage	0.8 to 1.2 Vss
Signal offset	2.2 to 2.8 V
Digital interface	
Address	64
Total width of the position value	21-bit
Width of the multi-turn information	12-bit
Width of the single-turn information	9-bit
Mechanical characteristics	
Max. radial load [2)]	290 N
Max. axial load	225 N
Weight	3,400 g
Length	128.5 mm

[1)] From the back side of the flange

[2)] Measured in the middle of the shaft

Stepper motors with incremental encoders and brakes (IP65)

Technical data

	80MPF1.250D114-01	80MPF1.500D114-01	80MPF3.250D114-01	80MPF3.500D114-01	80MPF5.250D114-01	80MPF5.500D114-01
Short description						
Stepper motor	Stepper motor flange size 60 mm, length 142.9 mm, incremental encoder and brake		Stepper motor flange size 60 mm, length 153.1 mm, incremental encoder and brake		Stepper motor flange size 60 mm, length 184.4 mm, incremental encoder and brake	
Specific motor data						
Wiring	Series	Parallel	Series	Parallel	Series	Parallel
Current	2.5 A	5 A	2.5 A	5 A	2.5 A	5 A
Resistance / phase	1.28 Ω	0.32 Ω	1.52 Ω	0.38 Ω	2.4 Ω	0.6 Ω
Inductance / phase	3.4 mH	0.85 mH	5.6 mH	1.4 mH	11.2 mH	2.8 mH
Stall torque	0.8 Nm		1.2 Nm		2.5 Nm	
Holding torque	1.1 Nm		1.7 Nm		3.5 Nm	
Detent torque	<35 mNm		<45 mNm		<75 mNm	
Rotor inertia	280 gcm^2		440 gcm^2		920 gcm^2	
General motor data						
Stepping angle	1.8°					
Max. surface temperature	90°C					
Average period of operation between failures	21,000 hours					
Shaft type	Flat-sided (D-cut)					
Insulation class	B (130°C)					
Insulation resistance	100 MΩ min. 500 VDC					
Dielectric resistance	500 VAC for 1 minute					
Driver voltage supply	Max. 80 VDC					
Operating conditions						
EN 60529 protection [1]	IP65					
Electrical characteristics - Encoder						
Number of outputs	3 A / B / R					
Resolution	1024 increments per revolution					
Output circuit	Push / Pull level, asymmetric					
Output protection	Short circuit protection					
Current consumption	Max. 12 mA + output load					
Supply voltage	18 to 30 VDC					
Max. output current	±10 mA per output					
Electrical characteristics - Brake						
Supply voltage	24 VDC +6% / -10%					
Braking torque	2 Nm					
Coil resistance	52.36 Ω ±7%					
Inductance	0.7 H					
Power consumption	Typ. 11 W					
Connection time [2]	6 ms					
Response delay [3]	2 ms					
Cutoff time [4]	25 ms					
Mechanical characteristics						
Max. radial load [5]	75 N					
Max. axial load	The permitted axial load must not be larger than the motor mass					

Technical data

	80MPF1.250D114-01	80MPF1.500D114-01	80MPF3.250D114-01	80MPF3.500D114-01	80MPF5.250D114-01	80MPF5.500D114-01
Weight	1,020 g		1,280 g		1,800 g	
Length	142.9 mm		153.1 mm		184.4 mm	

[1] From the back side of the flange

[2] Time from switching off the current until the nominal torque is reached

[3] Time from switching off the current until the torque increases

[4] Time from switching on the current until the torque begins decreasing

[5] Measured in the middle of the shaft

See the next page for additional stepper motors with the same options.

Stepper motors with incremental encoders and brakes (IP65)

Technical data

	80MPH1.300D114-01	80MPH1.600D114-01	80MPH3.600D114-01	80MPH4.600D114-01	80MPH4.101D114-01	80MPH6.300D114-01	80MPH6.600D114-01	80MPH6.101D114-01
Short description								
Stepper motor	Stepper motor flange size 86 mm, length 156.5 mm, incremental encoder and brake		Stepper motor flange size 86 mm, length 188.5 mm, incremental encoder and brake			Stepper motor flange size 86 mm, length 220.5 mm, incremental encoder and brake		
Specific motor data								
Wiring	Series	Parallel				Series	Parallel	
Current	3 A	6 A			10 A	3 A	6 A	10 A
Resistance / phase	1.7 Ω	0.4 Ω	0.6 Ω		0.2 Ω	2.7 Ω	0.7 Ω	0.24 Ω
Inductance / phase	12.9 mH	3.2 mH	4.3 mH		1.4 mH	20.0 mH	5.0 mH	1.6 mH
Stall torque	2.9 Nm		5.5 Nm	6.3 Nm		9.3 Nm		
Holding torque	4.0 Nm		7.8 Nm	9.5 Nm		13.6 Nm		
Detent torque	<160 mNm		<210 mNm	<320 mNm		<420 mNm		
Rotor inertia	Approx. 1.31 kgcm^2		Approx. 2.61 kgcm^2			Approx. 3.92 kgcm^2		
General motor data								
Stepping angle	1.8°							
Max. surface temperature	85°C							
Average period of operation between failures	20,000 hours							
Shaft type	Keyed							
Insulation class	B (130°C)							
Insulation resistance	100 MΩ min. 500 VDC							
Dielectric resistance	1776 VAC for 1 minute	500 VAC for 1 minute	1776 VAC for 1 minute					500 VAC for 1 minute
Driver voltage supply	Max. 80 VDC							
Operating conditions								
EN 60529 protection [1]	IP65							
Electrical characteristics - Encoder								
Number of outputs	3 A / B / R							
Resolution	1024 increments per revolution							
Output circuit	Push / Pull level, asymmetric							
Output protection	Short circuit protection							
Current consumption	Max. 12 mA + output load							
Supply voltage	18 to 30 VDC							
Max. output current	±10 mA per output							
Electrical characteristics - Brake								
Supply voltage	24 VDC +6% / -10%							
Braking torque	9 Nm							
Coil resistance	32.00 Ω ±7%							
Inductance	0.83 H							
Power consumption	Typ. 18 W							
Connection time [2]	7 ms							
Response delay [3]	2 ms							
Cutoff time [4]	40 ms							

Technical data

	80MPH1.300D114-01	80MPH1.600D114-01	80MPH3.600D114-01	80MPH4.600D114-01	80MPH4.101D114-01	80MPH6.300D114-01	80MPH6.600D114-01	80MPH6.101D114-01
Mechanical characteristics								
Max. radial load [5]	290 N							
Max. axial load	225 N							
Weight	2,500 g		3,700 g			4,900 g		
Length	156.5 mm		188.5 mm			220.5 mm		

[1] From the back side of the flange

[2] Time from switching off the current until the nominal torque is reached

[3] Time from switching off the current until the torque increases

[4] Time from switching on the current until the torque begins decreasing

[5] Measured in the middle of the shaft

Stepper motors with SSI encoders and brakes (IP65)

Technical data

	80MPF5.500D113-01
Short description	
Stepper motor	Stepper motor flange size 60 mm, length 184.4 mm, SSI encoder and brake
Specific motor data	
Wiring	Parallel
Current	5 A
Resistance / phase	0.6 Ω
Inductance / phase	2.8 mH
Stall torque	2.5 Nm
Holding torque	3.5 Nm
Detent torque	<75 mNm
Rotor inertia	920 gcm^2
General motor data	
Stepping angle	1.8°
Max. surface temperature	90°C
Average period of operation between failures	21,000 hours
Shaft type	Flat-sided (D-cut)
Insulation class	B (130°C)
Insulation resistance	100 MΩ min. 500 VDC
Dielectric resistance	500 VAC for 1 minute
Driver voltage supply	Max. 80 VDC
Operating conditions	
EN 60529 protection [1)]	IP65
Electrical characteristics - Encoder	
Number of outputs	4 Data / nData / CLK / nCLK
Resolution	4096 increments per revolution
Output circuit	Differential signal
Output protection	Short circuit protection
Current consumption	Max. 16 mA + output load
Supply voltage	18 to 30 VDC
Max. output current	±25 mA per output
Electrical characteristics - Brake	
Supply voltage	24 VDC +6% / -10%
Braking torque	2 Nm
Coil resistance	52.36 Ω ±7%
Inductance	0.7 H
Power consumption	Typ. 11 W
Connection time [2)]	6 ms
Response delay [3)]	2 ms
Cutoff time [4)]	25 ms
Mechanical characteristics	
Max. radial load [5)]	75 N
Max. axial load	The permitted axial load must not be larger than the motor mass
Weight	1,800 g

Technical data

	80MPF5.500D113-01
Length	184.4 mm

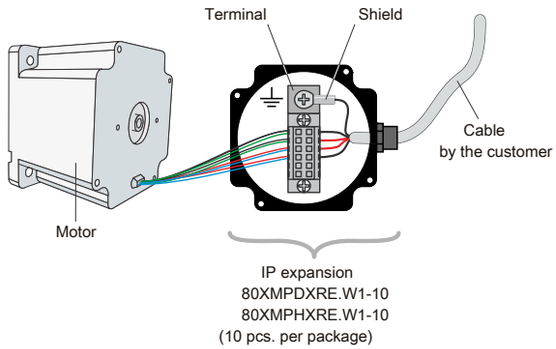
[1] From the back side of the flange
[2] Time from switching off the current until the nominal torque is reached
[3] Time from switching off the current until the torque increases
[4] Time from switching on the current until the torque begins decreasing
[5] Measured in the middle of the shaft

Accessory – IP expansions for stepper motors

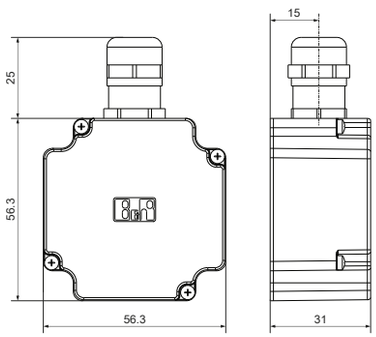
80XMPDXRE.W1-10, 80XMPHXRE.W1-10

Short description	80XMPDXRE.W1-10	80XMPHXRE.W1-10
Accessories	Stepper motor 80MPD and 80MPF, 10 units per package	Stepper motor 80MPH, 10 units per package
Operating conditions	**80XMPDXRE.W1-10**	**80XMPHXRE.W1-10**
EN 60529 protection	IP40 for 80MPD IP65 for 80MPF [1]	IP65 [1]

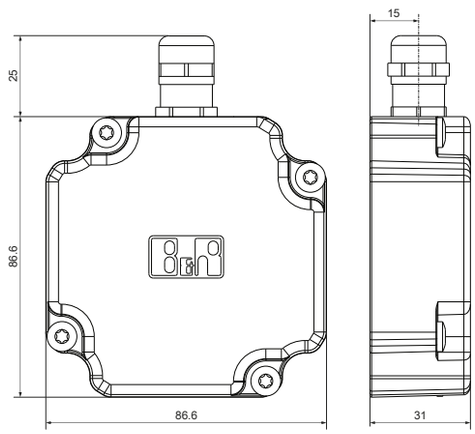
[1] Except front-side fastening flange and motor shaft



IP expansions - Dimensions



IP expansions for stepper motors - Dimensions
80MPD and 80MPF (all measurements in mm)



IP expansions for stepper motors - Dimensions
80MPH (all measurements in mm)

Incremental encoder cables

80CMxx003.25-01

- UL certified
- Can be used in cable drag chains
- 8-pin male Molex connector on the motor side
- 9-pin DSUB plug on the drive side

General information	
Cable cross section	4 x 0.14 mm² + 2 x 0.35 mm²
Listed	UL AWM Style 20963, 80°C, 30 V, E63216
Certification	
cULus	Yes
Cable construction	
Supply lines	
Quantity	2
Wire insulation	Special thermoplastic material
Wire colors	Red, black
Design	Tinned copper stranded wire
Diameter	0.35 mm²
Shield	No
Stranding	No
Signal lines	
Quantity	4
Wire insulation	Special thermoplastic material
Wire colors	Gray, yellow, green, white
Design	Tinned copper stranded wire
Shield	No
Stranding	All 4 leads together
Cable stranding	With foil shield
Complete shielding	Copper braiding, optical coverage ≥85% and wrapped in foil shield
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 4x0,14+2x0,35 FLEX UL AWM STYLE 20963 80°C 30 V E63216
Electrical characteristics	
Conductor resistance	
0.14 mm²	≤134 Ω/km
0.34 mm²	>55 Ω/km
Insulation resistance	>200 MΩ/km
Mechanical characteristics	
Dimensions	
Diameter	5.8 mm ±0.2 mm
Flex radius	
Single bend	≥20 mm
Moving	≥50 mm

Cable length	Model number
1 m	80CM01003.25-01
2 m	80CM02003.25-01
3 m	80CM03003.25-01
5 m	80CM05003.25-01
10 m	80CM10003.25-01
15 m	80CM15003.25-01
20 m	80CM20003.25-01
25 m	80CM25003.25-01

Incremental encoder cables with M12 plug

80CMxx003.26-01

- UL certified
- Can be used in cable drag chains
- 8-pin male Molex connector on the motor side
- Male M12 connector on the drive side

General information	
Cable cross section	5x 0.34 mm²
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	5
Wire insulation	PVC
Wire colors	Black, brown, blue, gray, white
Cross-section	0.34 mm²
Shield	Yes
Stranding	Yes
Cable stranding	With filler elements and foil banding
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film
Outer sheathing	
Material	PUR/PVC
Electrical characteristics	
Nominal current	Max. 4 A / contact
Connection voltage	Max. 60 V AC/DC
Mechanical characteristics	
Dimensions	
Diameter	6.4 mm ±0.2 mm
Flex radius	≥10x outer diameter

Cable length	Model number
2 m	80CM02003.26-01
3 m	80CM03003.26-01
10 m	80CM10003.26-01

SSI encoder cables

80CMxx004.25-01

- UL certified
- Can be used in cable drag chains
- 8-pin male Molex connector on the motor side
- 9-pin DSUB plug on the drive side

General information	
Cable cross section	1x 4x 0.14 mm² + 4x 0.34 mm²
Listed	UL AWM Style 20963, 80°C, 30 V, E63216
Certification	
cULus	Yes
Cable construction	
Supply lines	
Quantity	4
Wire insulation	Special thermoplastic material
Wire colors	White/green, brown/green, blue, white
Design	Tinned copper stranded wire
Cross-section	0.34 mm²
Shield	No
Stranding	No
Signal lines	
Quantity	4
Wire insulation	Special thermoplastic material
Wire colors	Yellow, gray, pink, violet
Design	Tinned copper stranded wire
Diameter	0.14 mm²
Shield	No
Stranding	All 4 leads together
Cable stranding	With foil shield
Complete shielding	Copper/tin braiding
Outer sheathing	
Material	PUR
Labeling	Heidenhain UR AWM Style 20963 80°C 30V E63216
Electrical characteristics	
Conductor resistance	
Supply lines	≤55 Ω/km
Signal lines	≤134 Ω/km
Insulation resistance	>200 MΩ/km
Mechanical characteristics	
Dimensions	
Diameter	6 mm ±0.25 mm
Flex radius	
Single bend	≥20 mm
Moving	≥75 mm

Cable length	Model number
1 m	80CM01004.25-01
2 m	80CM02004.25-01
3 m	80CM03004.25-01
5 m	80CM05004.25-01
10 m	80CM10004.25-01
15 m	80CM15004.25-01
20 m	80CM20004.25-01

Hiperface encoder cables

80CMxx005.65-01

- UL certified
- Can be used in cable drag chains
- Male springtec® connector on the motor side
- 9-pin DSUB plug on the drive side

General information	
Cable cross section	5x 2x 0.14 mm² + 1x 2x 0.50 mm²
Listed	UL AWM Style 20963, 80°C, 30 V, E63216 and CSA AWM I/II A/B, 90°C, 30 V, FT1 LL46064
Certification	
cULus	Yes
Cable construction	
Supply lines	
Quantity	2
Wire insulation	Special thermoplastic material
Wire colors	White/Green, white/red
Design	Tinned copper stranded wire
Cross-section	0.5 mm²
Shield	No
Stranding	White/Red with white/green and filler elements
Signal lines	
Quantity	10
Wire insulation	Special thermoplastic material
Wire colors	Blue, brown, yellow, gray, green, pink, red, black, violet, white
Design	Tinned copper stranded wire
Cross-section	0.14 mm²
Shield	No
Stranding	Green with brown, gray with yellow, white with violet, black with red, pink with blue
Cable stranding	With foil shield
Complete shielding	Copper braiding, optical coverage >85% and wrapped in foil shield
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 10x0.14+2x0.50 FLEX UL AWM STYLE 20963 80°C 30 V E63216 CSA AWM I/II A/B 90°C 30 V FT1 LL46064
Electrical characteristics	
Conductor resistance	
Supply lines	≤40 Ω/km
Signal lines	≤140 Ohm/km
Insulation resistance	>200 MΩ/km
Mechanical characteristics	
Dimensions	
Diameter	7.85 mm ±0.2 mm
Flex radius	
Single bend	≥24 mm
Moving	≥60 mm

Cable length	Model number
5 m	80CM05005.65-01
15 m	80CM15005.65-01
20 m	80CM20005.65-01

Motor cables

80CMxx001.21-01

- UL certified
- Can be used in cable drag chains
- 4-pin male Molex connector on the motor side

General information	
Cable cross section	5x 0.75 mm²
Listed	UL AWM Style 20234, 80°C, 1000 V, E63216 and CSA AWM I/II A/B, 90°C, 1000 V, FT2 LL46064
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	5
Wire insulation	Special thermoplastic material
Wire colors	Black, brown, blue, green, yellow/green
Design	Tinned copper stranded wire
Cross-section	0.75 mm²
Shield	No
Stranding	No
Cable stranding	With filler elements and foil banding
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 5x 0.75 FLEX UL AWM STYLE 20234 80°C 1000 V E63216 CSA AWM I/II A/B 90°C 1000 V FT2 LL46064
Electrical characteristics	
Conductor resistance	
Power lines	≤29 Ω/km
Insulation resistance	>200 MΩ/km
Max. current load in accordance with IEC 60364-5-523 by installation type	
Wall mounting	13 A
Installed in conduit or cable duct	11.5 A
Installed in cable tray	13.5 A
Mechanical characteristics	
Dimensions	
Diameter	8.5 mm ±0.3 mm
Flex radius	
Single bend	>34 mm
Moving	≥85 mm

Cable length	Model number
1 m	80CM01001.21-01
2 m	80CM02001.21-01
3 m	80CM03001.21-01
5 m	80CM05001.21-01
10 m	80CM10001.21-01
15 m	80CM15001.21-01
20 m	80CM20001.21-01
25 m	80CM25001.21-01

Motor cables with male M12 connector

80CMxx001.26-01

- UL certified
- Can be used in cable drag chains
- 4-pin male Molex connector on the motor side
- Male M12 connector on the drive side

General information	
Cable cross section	5x 0.34 mm²
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	5
Wire insulation	PVC
Wire colors	Black, brown, blue, gray, white
Cross-section	0.34 mm²
Shield	Yes
Stranding	Yes
Cable stranding	With filler elements and foil banding
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film
Outer sheathing	
Material	PUR/PVC
Electrical characteristics	
Nominal current	Max. 4 A / contact
Connection voltage	Max. 60 V AC/DC
Mechanical characteristics	
Dimensions	
Diameter	6.4 mm ±0.2 mm
Flex radius	≥10x outer diameter

Cable length	Model number
2 m	80CM02001.26-01
3 m	80CM03001.26-01
10 m	80CM10001.26-01

When using motors with IP65 protection, an adapted gasket is required that can be ordered in an accessory set.

Accessory set for motors with IP65 option	Model number
Gaskets for IP65 stepper motors for use with 80CMxxxxx.26-01 cables, 10 units per package	80XMPXAC1.00-10

Motor cables with brake

80CMxx002.21-01

- UL certified
- Can be used in cable drag chains
- 4-pin and 2-pin male Molex connector on the motor side

General information	
Cable cross section	5x 0.75 mm² + 1x 2x 0.5 mm²
Listed	UL AWM Style 20234, 80°C, 1000 V, E63216 and CSA AWM I/II A/B, 90°C, 1000 V, FT2 LL46064
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	5
Wire insulation	Special thermoplastic material
Wire colors	Black, brown, blue, green, yellow/green
Design	Tinned copper stranded wire
Cross-section	0.75 mm²
Shield	No
Stranding	No
Signal lines	
Quantity	2
Wire insulation	Special thermoplastic material
Wire colors	White, white/red
Design	Tinned copper stranded wire
Cross-section	0.5 mm²
Shield	Separate shielding for pairs, tinned copper braiding, optical coverage >85% and foil banding
Stranding	White with white/red
Cable stranding	With filler elements and foil banding
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 5x0.75+1x2x0.5 FLEX UL AWM STYLE 20234 80°C 1000 V E63216 CSA AWM I/II A/B 90°C 1000 V FT2 LL46064
Electrical characteristics	
Conductor resistance	
Power lines	≤29 Ω/km
Signal lines	≤39 Ω/km
Insulation resistance	>200 MΩ/km
Max. current load in accordance with IEC 60364-5-523 by installation type	
Wall mounting	13 A
Installed in conduit or cable duct	11.5 A
Installed in cable tray	13.5 A
Mechanical characteristics	
Dimensions	
Diameter	10.8 mm ±0.4 mm
Flex radius	
Single bend	>34 mm
Moving	≥85 mm

Cable length	Model number
1 m	80CM01002.21-01
2 m	80CM02002.21-01
3 m	80CM03002.21-01
5 m	80CM05002.21-01
10 m	80CM10002.21-01
15 m	80CM15002.21-01
20 m	80CM20002.21-01

Hiperface motor cables

80CMxx001.61-01

- UL certified
- Can be used in cable drag chains
- Male springtec® connector on the motor side

General information	
Cable cross section	5x 0.75 mm²
Listed	UL AWM Style 20234, 80°C, 1000 V, E63216 and CSA AWM I/II A/B, 90°C, 1000 V, FT2 LL46064
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	5
Wire insulation	Special thermoplastic material
Wire colors	Black, brown, blue, green, yellow/green
Design	Tinned copper stranded wire
Cross-section	0.75 mm²
Shield	No
Stranding	No
Cable stranding	With filler elements and foil banding
Complete shielding	Tinned copper braiding, optical coverage >85% and wrapped in isolating film
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 5x 0.75 FLEX UL AWM STYLE 20234 80°C 1000 V E63216 CSA AWM I/II A/B 90°C 1000 V FT2 LL46064
Electrical characteristics	
Conductor resistance	
Power lines	≤29 Ω/km
Insulation resistance	>200 MΩ/km
Max. current load in accordance with IEC 60364-5-523 by installation type	
Wall mounting	13 A
Installed in conduit or cable duct	11.5 A
Installed in cable tray	13.5 A
Mechanical characteristics	
Dimensions	
Diameter	8.5 mm ±0.3 mm
Flex radius	
Single bend	>34 mm
Moving	≥85 mm

Cable length	Model number
5 m	80CM05001.61-01
15 m	80CM15001.61-01
20 m	80CM20001.61-01

Hybrid cables

80CMxx013.21-01

- UL certified
- Can be used in cable drag chains
- 4-pin and 8-pin male Molex connector on the motor side

General information	
Cable cross section	4x 0.5 mm² + 2x 0.35 mm² + 3x 0.14 mm²
Listed	UL AWM Style 20963, 80°C, 30 V, E63216 and CSA AWM I/II A/B, 90°C, 30 V, FT2 LL46064
Certification	
cULus	Yes
Cable construction	
Power lines	
Quantity	4
Wire insulation	Special thermoplastic material
Wire colors	Black, gray, brown, blue
Design	Tinned copper stranded wire
Cross-section	0.5 mm²
Supply lines	
Quantity	2
Wire insulation	Special thermoplastic material
Wire colors	Red, black
Design	Tinned copper stranded wire
Cross-section	0.35 mm²
Shield	Yes
Stranding	Yes
Signal lines	
Quantity	3
Wire insulation	Special thermoplastic material
Wire colors	Gray, yellow, green
Design	Tinned copper stranded wire
Cross-section	0.14 mm²
Shield	Yes
Stranding	Yes
Cable stranding	Yes
Complete shielding	Tinned copper wire braiding, optical coverage ≥ 85%
Outer sheathing	
Material	PUR
Labeling	BERNECKER + RAINER 4x0.50+1x(2x0.35+3x0.14 C) FLEX UL AWM STYLE 20963 80°C 30 V E63216 CSA AWM I/II A/B 90°C 30V FT2 LL46064
Electrical characteristics	
Conductor resistance	
0.14 mm²	≤134 Ω/km
0.35 mm²	≤55 Ω/km
0.50 mm²	≤39 Ω/km
Insulation resistance	>200 MΩ/km
Mechanical characteristics	
Dimensions	
Diameter	5.8 mm ±0.2 mm
Flex radius	
Single bend	≥20 mm
Moving	≥50 mm

Cable length	Model number
1 m	80CM01013.21-01
2 m	80CM02013.21-01
3 m	80CM03013.21-01

Planetary gearboxes

Flexibility and modularity

B&R's innovative and efficient planetary gearboxes are designed to meet every possible requirement. Ultimate flexibility and modularity is offered by B&R's standard planetary gearbox series. Demands for minimal backlash and maximum load capacity are met by B&R's premium planetary gearbox series. A low-cost yet powerful solution is also available with B&R's economy planetary gearbox series.

Table of contents

System features

Planetary and angular planetary gearboxes

B&R gearboxes are optimized for use with its broad range of synchronous and stepper motors. The result is a high performance and economical drive program for all industrial fields that can be optimized to meet customers' needs and is provided from a single supplier.
The features and sizes of our gearboxes are completely scalable. Whatever your requirements for flange type, output torque, gear ratio, degree of precision and protection rating – you're guaranteed to find a perfect solution.
B&R gearboxes are available in a range of performance classes as angular planetary or planetary with a coaxial output shaft or output flange. Thanks to lifelong lubrication, our gearboxes are maintenance free and can be installed anywhere.

Highlights

- Cost savings thanks to:
  - Scalability of the B&R solution
  - Reduced number of suppliers
  - Logistical benefits
  - Motor and gearbox delivered already assembled

- Faster development times
  - Single supplier carries responsibility for entire solution

Uniquely modular system

The standard gearboxes are single-stage for gear ratios i= 3, 4, 5, 7, 8 and 10 and have ≤ 8 - ≤ 15 arcmin backlash. In addition, these gearboxes are also offered in two-stage or three-stage designs. At the top of the product line, the premium series provides backlash ≤ 1 arcmin as an option paired with high output torques. B&R gearboxes from the standard series give you the possibility to choose between all output geometries established on the market in the area of coaxial planetary gearboxes.

- This enables B&R to supply gearboxes for existing applications without having to make changes to the machine.

With the 8GP55 series, you are also able to combine the output bearings and the output geometry of the 8GP60 premium series in combination with the torsional play of the standard series for applications that do not require extremely reduced backlash. This makes it possible to handle high radial and axial forces in a cost-efficient manner.

- In applications where the backlash of the standard series is sufficient, this offers a cost-optimized solution for implementing higher bearing forces.

B&R motors with gearboxes

The B&R motor series 8LS, 8JSA, 8LV and 80MP can be ordered with fully assembled gearboxes that are optimally designed to work together right from the factory. The gearboxes are fastened to the motor's output side using adapter plates tailored precisely to the respective motor.
Communication problems between the motor supplier and gearbox supplier are now a thing of the past.

Motors with an oil seal, reinforced bearings and/or an output shaft with a keyway cannot be combined with a gearbox.

3 classes for 3 levels of precision

Standard

Offers the perfect solution for most applications with an optimized price/performance ratio. The uniquely modular system provides maximum flexibility with regard to gear ratio, flange type, construction and more.

Premium

For applications that demand maximum precision. Alternatively to the standard spur toothing, helical toothing is also available, and offers even quieter, smoother operation. The angular gearbox is also available with a hollow shaft, through which you can run cables, fluid lines or material strands. This opens up entirely new possibilities in machine design.

Economy

Offers a low-cost alternative. These cost-optimized gearboxes feature a simplified clamping system between the motor shaft and gearbox and the output torque and gear ratios have been reduced to market standard levels. The drive shaft is only available with a keyway. Economy gearboxes have an IP54 protection rating.

System features

Product overview






Type	Economy	Standard	Standard	Standard	Standard	Premium
Series	**8GP30**	**8GP40**	**8GP45**	**8GP50**	**8GP55**	**8GP60 / 8GP70**
Size						
	40, 60, 80, 120	40, 60, 80, 120	67, 89, 121	50, 70, 90, 120, 155	60, 80, 120	70, 90, 115,142, 190
Protection						
	IP54	IP54	IP54	IP54	IP65	IP65
Backlash [arcmin]						
Single-stage	≤ 8 - ≤ 15	≤ 8 - ≤ 15	≤ 8 - ≤ 12	≤ 8 - ≤ 15	≤ 8 - ≤ 12	≤ 1 - ≤ 3
Two-stage	≤ 12 - ≤ 19	≤ 12 - ≤ 19	≤ 12 - ≤ 15	≤ 12 - ≤ 19	≤ 12 - ≤ 15	≤ 1 - ≤ 5
Three-stage	-	≤ 14 - ≤ 22	≤ 14 - ≤ 18	-	-	-
Gear ratios						
Single-stage	5, 10	3 - 10	3 - 10	3 - 10	3 - 10	3 - 10
Two-stage	25	9 - 100	9 - 100	9 - 100	9 - 100	12 - 100
Three-stage	-	60 - 512	60 - 512	-	-	-
Rated output torque [Nm]						
	5 - 172	5 - 260	15 - 260	5 - 460	15 - 260	27 - 1800
Radial load 20.000 h [N] [1)]						
	200 - 1750	200 - 1750	900 - 2950	800 - 5200	3200 - 6000	3200 - 21000
Axial load 20.000 h [N] [1)]						
	200 - 2500	200 - 2500	1000 - 2500	1000 - 7000	4400 - 8000	4400 - 21000
Output shaft						
Smooth	-	○	○	○	●	●
Keyed (DIN 6885 T1)	●	●	●	●	○	○
Spline (DIN 5480)	-	-	-	-	-	○

1) With reference to the center of the output shaft. These values refer to an output shaft speed of n2=100min-1 and application factor KA=1 as well as S1 operating mode for electrical machines and T=30°C, depending on the respective motor shaft diameter.

● = standard
○ = option
- = not available

Product overview






Type	Standard	Standard	Standard	Premium	Standard	Premium
Series	**8GA40**	**8GA45**	**8GA50**	**8GA60 [2] / 8GA75**	**8GF40**	**8GF60 / 8GF70**
Size						
	40, 60, 80, 120	89, 121	50, 70, 90, 120	70, 90, 115, 142	64, 90, 110	64, 90, 110, 140, 200
Protection						
	IP54	IP54	IP54	IP65	IP54	IP65
Backlash [arcmin]						
Single-stage	≤ 12 - ≤ 21	≤ 12 - ≤ 14	≤ 12 - ≤ 21	≤ 5	≤ 8 - ≤ 12	≤ 1 - ≤ 3
Two-stage	≤ 16 - ≤ 25	≤ 16 - ≤ 18	≤ 16 - ≤ 25	≤ 7 / -	≤ 12 - ≤ 15	≤ 1 - ≤ 5
Three-stage	≤ 18 - ≤ 28	≤ 18 - ≤ 20	-	-	-	-
Gear ratios						
Single-stage	3 - 10	3 - 10	3 - 10	4 - 10	3 - 10	4 - 10
Two-stage	9 - 100	9 - 100	9 - 100	16 - 100 / -	9 - 100	16 - 100
Three-stage	60 - 512	60 - 512	-	-	-	-
Rated output torque [Nm]						
	4.5 - 260	38 - 260	4.5 - 195	22 - 800	15 - 260	27 - 1800
Radial load 20.000 h [N] [1]						
	200 - 1750	2050 - 2950	800 - 2500	3200 - 11400	550 - 2400	2400 - 33000
Axial load 20.000 h [N] [1]						
	200 - 2500	2500	1000 - 4000	4300 - 15000	1200 - 3300	4300 - 25000
Output shaft				**8GA60 / 8GA75**		
Smooth	○	○	○	● / -	-	-
Keyed (DIN 6885 T1)	●	●	●	○ / -	-	-
Spline (DIN 5480)	-	-	-	- / -	-	-
Hollow shaft single side	-	-	-	- / ●	-	-
Hollow shaft both sides	-	-	-	- / ○	-	-
Flange	-	-	-	- / -	●	●

1) With reference to the center of the output shaft. These values refer to an output shaft speed of n2=100min-1 and application factor KA=1 as well as S1 operating mode for electrical machines and T=30°C, depending on the respective motor shaft diameter.
2) 8GA60: Size 142 only available as two stage type!

● = standard
○ = option
- = not available

Order key

8G	e	ff	-	ggg	hh	iii	k	l	mm

Gear type

P ...planetary gearbox with output shaft
F ...planetary gearbox with output flange
A...angular planetary gearbox

Type

Economy... **30**
Standard... **40, 45, 50, 55**
Premium... **60, 70, 75**

Sizes

see table „Size“

Design code

- - ...standard

Gear ratio

Always three digits, e.g. 003 corresponds to i = 3
see table „Available ratios“

Backlash

S...standard
R...reduced (premium gear boxes only!)

Type of output shaft

0...output flange (only for gear boxes 8GF!)
1...smooth shaft
2...keyed shaft (acc. to DIN 6885)
4...spline shaft (acc.to DIN 5480) **for 8GP60 and 8GP70 only!**
6...hollow shaft single side
7...hollow shaft both sides

Motor see table „Motor mount“

Available ratios

Planetary gearbox with output shaft

Gearbox series	1-stage	2-stage	3-stage
8GP30	005, 010	025	---
8GP40	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	060, 080, 120, 160, 200, 256, 320, 512
8GP45	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	060, 080, 120, 160, 200, 256, 320, 512
8GP50	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	---
8GP50-155	004, 005, 010	016, 020, 025, 040, 050, 100	---
8GP55	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	---
8GP60	003, 004, 005, 007, 008, 010	012, 015, 016, 020, 025, 032, 040, 064, 100	---
8GP70	003, 004, 005, 007, 010	012, 015, 016, 020, 025, 035, 040, 050, 070, 100	---

Planetary gearbox with output flange

Gearbox series	1-stage	2-stage	3-stage
8GF40	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	---
8GF60	004, 005, 007, 008, 010	016, 020, 025, 032, 040, 050, 064, 100	---
8GF70	004, 005, 007, 010	016, 020, 025, 035, 040, 050, 070, 100	---

Angular planetary gearbox

Gearbox series	1-stage	2-stage	3-stage
8GA40	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	060, 080, 120, 160, 200, 256, 320, 512
8GA45	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	060, 080, 120, 160, 200, 256, 320, 512
8GA50	003, 004, 005, 007, 008, 010	009, 012, 015, 016, 020, 025, 032, 040, 064, 100	---
8GA60	004, 005, 008, 010	016, 020, 025, 032, 040, 064, 100	---
8GA60-142	---	016, 020, 025, 032, 040, 064, 100	---
8GA75	004, 005, 008, 010	---	---

Size

Planetary gearbox with output shaft

Gearbox series	1-stage	2-stage	3-stage
8GP30	040, 060, 080, 120	040, 060, 080, 120	---
8GP40	040, 060, 080, 120	040, 060, 080, 120	040, 060, 080, 120
8GP45	067, 089, 121	067, 089, 121	067, 089, 121
8GP50	050, 070, 090, 120.155	050, 070, 090, 120.155	---
8GP55	060, 080, 120	060, 080, 120	---
8GP60	070, 090, 115, 142, 190	070, 090, 115, 142, 190	---
8GP70	070, 090, 115, 142, 190	070, 090, 115, 142, 190	---

Planetary gearbox with output flange

Gearbox series	1-stage	2-stage	3-stage
8GF40	064, 090, 110	064, 090, 110	---
8GF60	064, 090, 110, 140, 200	064, 090, 110, 140, 200	---
8GF70	064, 090, 110, 140, 200	064, 090, 110, 140, 200	---

Angular planetary gearbox

Gearbox series	1-stage	2-stage	3-stage
8GA40	040, 060, 080, 120	040, 060, 080, 120	040, 060, 080, 120
8GA45	089, 121	089, 121	089, 121
8GA50	050, 070, 090, 120	050, 070, 090, 120	---
8GA60	070, 090, 115	070, 090, 115, 142	---
8GA75	070, 090, 115.142	---	---

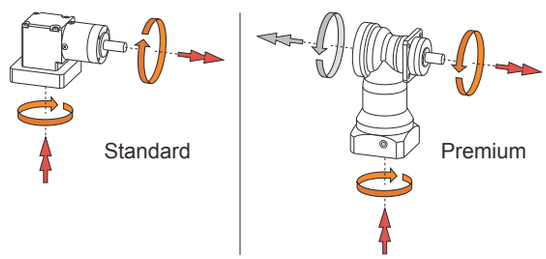
Motor mounting

1st character = Motor series	2nd character = Motor size
V= 8LVA servo motors	**1, 2, 3**
L = 8LSA [1] servo motors, 8LSC servo motors	**2, 3, 4, 5, 6, 7, 8** [1]
M = 8LSA85 and 8LSA86 servo motors	**8**
N = 8LSN servo motors	**4, 5**
J = 8JSA servo motors	**2, 3, 4, 5, 6, 7**
P = 80MP stepper motors	**D, F,H** [2]
Q = 8LSA76/77/78 and 8LSC76/77/78 servo motors	**7**

[1] **8LSA85** and **8LSA86** servo motors are assigned to motor series **M**.

[2] D = Flange 56 = Nema 23
F = Flange 60 = Nema 23
H = Flange 86 = Nema 34

Direction of rotation diagram for angular gearboxes



Standard planetary gearboxes

Standard planetary gearboxes

The cost-effective alternative to the premium series
Standard series planetary gearboxes are the ideal solution for applications that don't require an extremely low level of backlash or IP65 protection. Typical applications for these gearboxes include those with high speeds and acceleration values as well as toothed belt or rack applications.

In combination with honed sun and planets, the straight-toothed and fully hardened gearing guarantee high output torque and high-precision positioning. The unique building block principle used with this series makes it possible to handle all output geometries established on the market in the area of coaxial planetary gearboxes. The standard series gearboxes are available as angular planetary gearboxes or coaxial planetary gearboxes with a smooth or keyed drive shaft, or as planetary gearboxes with an output flange.

Standard planetary gearboxes

Motor - gearbox combinations

Series		8LSA						8LSA/ 8LSC									8LSC			8LSA/ 8LSC												8LVA			8JSA						8LSN		80M		
	Size	2	3					4				5					5			6			7				8				1	2	3	2	3	4	5	6	7	4	5	PD	PF	PH
	Length		3	4	5	6	7	3	4	5	6	3	4	5	6	7	A	B	C	3	4	5	6	3	4	5	6	7	8	3	4	5	6												
8GP40	040	•																													•			•								•	•	
8GP40	060	•	•	•	•	•	■																									•	•	•	•	4						•	•	•
8GP40	080		•	•	•	•	•	•	•	•	•																					•	•		•	•	4			5				•
8GP40	120		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																	•	•	•		•	8				•
8GP45	067	•	•	•	•	•	■																									•	•	•	•	4						•	•	•
8GP45	089		•	•	•	•	•	•	•	•	•																					•	•		•	•	4			5				•
8GP45	121		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																	•	•	•		•	8				•
8GP50	050	•																														•			•								•	•	
8GP50	070	•	•	•	•	•	■																									•	•	•	•	4						•	•	•
8GP50	090		•	•	•	•	•	•	•	•	•																					•	•		•	•	4			5				•
8GP50	120		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																	•	•	•		•	8				•
8GP50	155							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•								•	•	•	•	•				
8GP55	060	•	•	•	•	•	■																									•	•	•	•	4						•	•	•
8GP55	080		•	•	•	•	•	•	•	•	•																					•	•		•	•	4			5				•
8GP55	120		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																	•	•	•		•	8				•
8GA40	040	6																														•			4								•	•	
8GA40	060	•	•	•	■	■	■																										•		•	•							•	•	•
8GA40	080		•	•	•	•	•	•	•	■	■																						•	•		•	•				4				•
8GA40	120		•	•	•	•	•	•	•	•	•	•	•	•	C	■	■	■	■																		•	•			•	6				•
8GA45	089		•	•	■	■	■	■	■	■	■																						•	•		•	3				3				•
8GA45	121		•	•	•	•	•	•	•	■	■	C	■	■	■	■	■	■	■																		•	4			4	4				•
8GA50	050	6																														•			4								•	•	
8GA50	070	•	•	•	■	■	■																										•		•	•							•	•	•
8GA50	090		•	•	•	•	•	•	•	■	■																						•	•		•	•				4				•
8GA50	120		•	•	•	•	•	•	•	•	•	•	•	•	C	■	■	■	■																		•	•			•	6				•
8GF40	064	•	•	•	•	•	■																										•	•	•	•	4						•	•	•
8GF40	090		•	•	•	•	•	•	•	•	•																						•	•		•	•	4			5				•
8GF40	110		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																		•	•	•		•	8				•

- • combination available, for horizontal installation no support structure necessary, max. acceleration 1,2g
- ■ combination available, support structure necessary for horizontal installation
- 4 combination available, support structure necessary for horizontal installation from motor size "**figure**"
- C combination available, support structure necessary for horizontal installation of 8LS**C**, 8LSA possible without support structure

8GP40-040 standard

Technical data

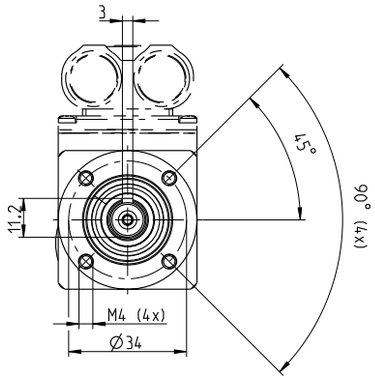
	8GP40-040hh003klmm	8GP40-040hh004klmm	8GP40-040hh005klmm	8GP40-040hh008klmm	8GP40-040hh010klmm	8GP40-040hh009klmm	8GP40-040hh012klmm	8GP40-040hh015klmm	8GP40-040hh016klmm	8GP40-040hh020klmm	8GP40-040hh025klmm	8GP40-040hh032klmm	8GP40-040hh040klmm	8GP40-040hh064klmm	8GP40-040hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	11	15	14	6	5	16.5	20	18	20	20	18	20	18	7.5	5
Max. output torque T_{2max} [Nm]	18	24	22	10	8	26	32	29	32	32	29	32	29	12	8
E-stop torque T_{2stop} [Nm]	23	30	36	27	27	33	40	36	40	40	36	40	36	27	27
Idle torque [Nm] at 20°C and 3000 rpm								0.05							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1								5000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1								5000							
Max. drive speed n_{1max} [rpm]								18000							
Max. backlash J_t [arcmin]	15	15	15	15	15	19	19	19	19	19	19	19	19	19	19
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	1	1	1	1	1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								160							
Max. radial force Fr_{max} [N] for 20,000 h								200							
Max. axial force Fa_{max} [N] for 30,000 h								160							
Max. axial force Fa_{max} [N] for 20,000 h								200							
Operating noise L_{PA} [dB(A)]								58							
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	0.35	0.35	0.35	0.35	0.35	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Moment of inertia J_1 [kgcm^2]	0.031	0.022	0.019	0.017	0.016	0.03	0.029	0.023	0.022	0.019	0.019	0.017	0.016	0.016	0.016

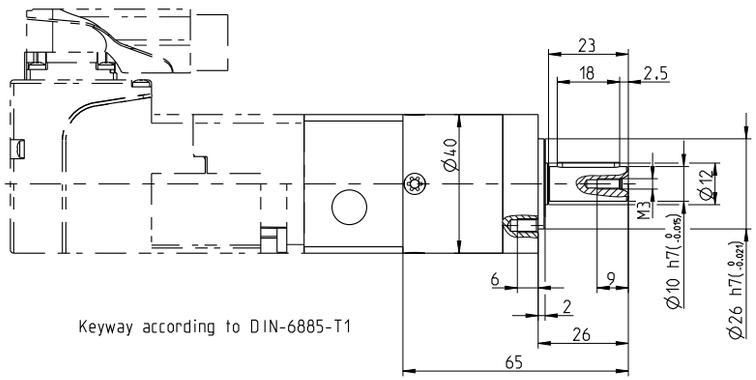
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

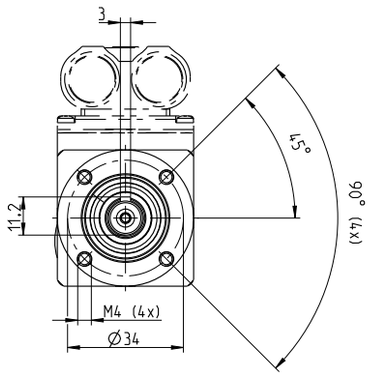
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

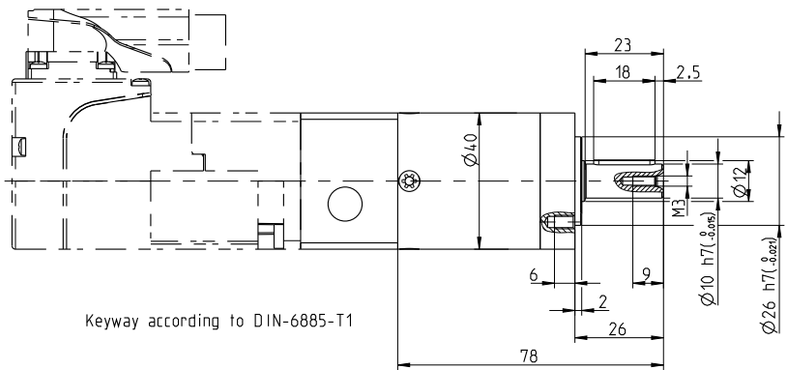
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-040	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	27.5	28.5	28.5	24.5	24.5
Flange diameter Q [mm]	55	40	60	60	60

8GP40-040 standard

Technical data

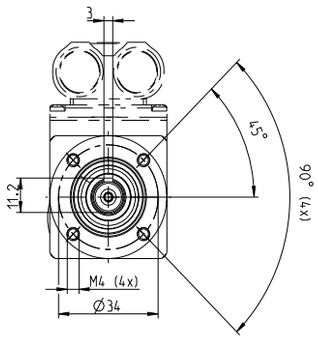
	8GP40-040hh060klmm	8GP40-040hh080klmm	8GP40-040hh120klmm	8GP40-040hh160klmm	8GP40-040hh200klmm	8GP40-040hh256klmm	8GP40-040hh320klmm	8GP40-040hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	20	20	18	20	18	20	18	7.5
Max. output torque T_{2max} [Nm]	32	32	29	32	29	32	29	12
E-stop torque T_{2stop} [Nm]	40	40	36	40	36	40	36	27
Idle torque [Nm] at 20°C and 3000 rpm	0.05							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000							
Max. drive speed n_{1max} [rpm]	18000							
Max. backlash J_t [arcmin]	22							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	1							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	160							
Max. radial force Fr_{max} [N] for 20,000 h	200							
Max. axial force Fa_{max} [N] for 30,000 h	160							
Max. axial force Fa_{max} [N] for 20,000 h	200							
Operating noise L_{PA} [dB(A)]	58							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	0.55							
Moment of inertia J_1 [kgcm^2]	0.029	0.019	0.029	0.016	0.016	0.016	0.016	0.016

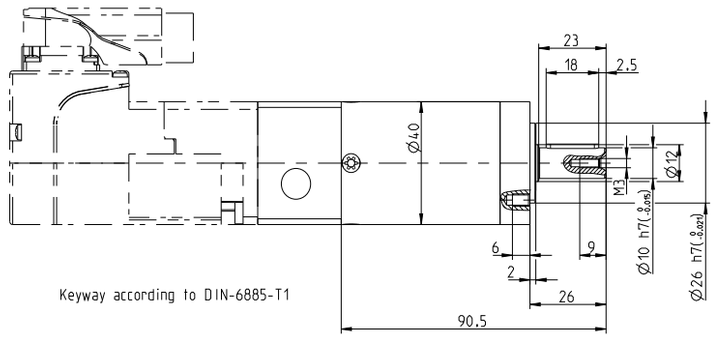
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

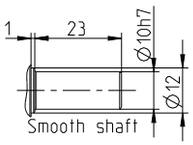
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-040	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	27.5	28.5	28.5	24.5	24.5
Flange diameter Q [mm]	55	40	60	60	60

8GP40-060 standard

Technical data

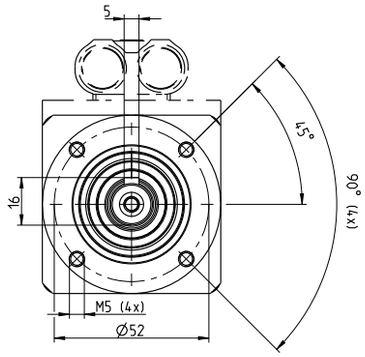
	8GP40-060hh003klmm	8GP40-060hh004klmm	8GP40-060hh005klmm	8GP40-060hh008klmm	8GP40-060hh010klmm	8GP40-060hh009klmm	8GP40-060hh012klmm	8GP40-060hh015klmm	8GP40-060hh016klmm	8GP40-060hh020klmm	8GP40-060hh025klmm	8GP40-060hh032klmm	8GP40-060hh040klmm	8GP40-060hh064klmm	8GP40-060hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	28	38	40	18	15	44	44	44	44	44	40	44	40	18	15
Max. output torque T_{2max} [Nm]	45	61	64	29	24	70	70	70	70	70	64	70	64	29	24
E-stop torque T_{2stop} [Nm]	66	88	80	80	80	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500														
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500														
Max. drive speed n_{1max} [rpm]	13000														
Max. backlash J_t [arcmin]	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	340														
Max. radial force Fr_{max} [N] for 20,000 h	400														
Max. axial force Fa_{max} [N] for 30,000 h	450														
Max. axial force Fa_{max} [N] for 20,000 h	500														
Operating noise L_{PA} [dB(A)]	58														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	0.9	0.9	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Moment of inertia J_1 [kgcm^2]	0.135	0.093	0.078	0.065	0.064	0.131	0.127	0.077	0.088	0.075	0.075	0.064	0.064	0.064	0.064

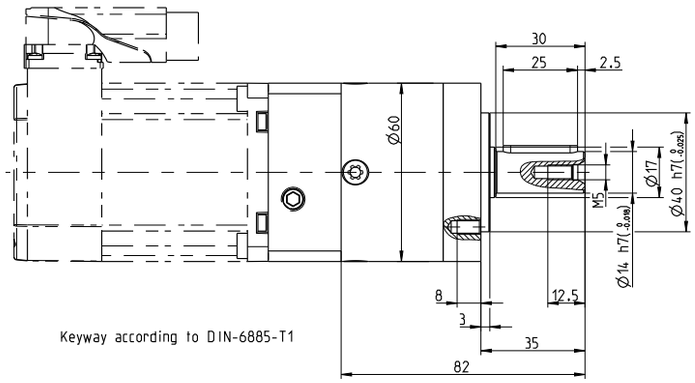
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

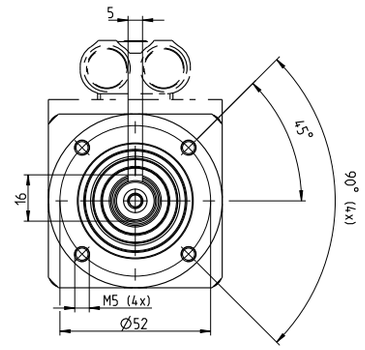
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

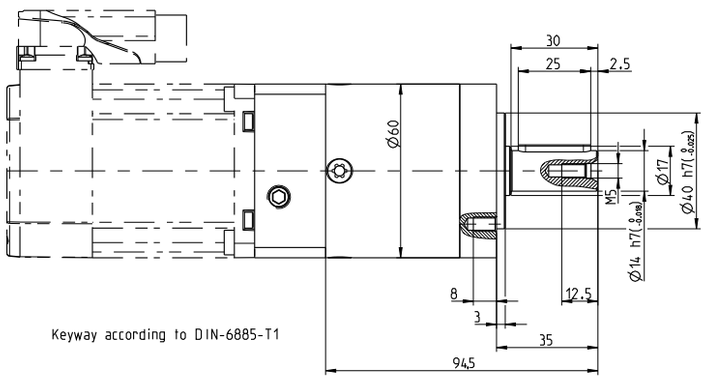
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-060	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.1	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP40-060 standard

Technical data

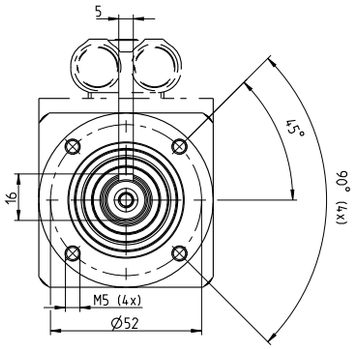
	8GP40-060hh060klmm	8GP40-060hh080klmm	8GP40-060hh120klmm	8GP40-060hh160klmm	8GP40-060hh200klmm	8GP40-060hh256klmm	8GP40-060hh320klmm	8GP40-060hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	44	44	44	44	40	44	40	18
Max. output torque T_{2max} [Nm]	70	70	70	70	64	70	64	29
E-stop torque T_{2stop} [Nm]	88	88	88	88	80	88	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.1							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500							
Max. drive speed n_{1max} [rpm]	13000							
Max. backlash J_t [arcmin]	15							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	2.5							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	340							
Max. radial force Fr_{max} [N] for 20,000 h	400							
Max. axial force Fa_{max} [N] for 30,000 h	450							
Max. axial force Fa_{max} [N] for 20,000 h	500							
Operating noise L_{PA} [dB(A)]	58							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	1.3							
Moment of inertia J_1 [kgcm^2]	0.076	0.075	0.064	0.064	0.064	0.064	0.064	0.064

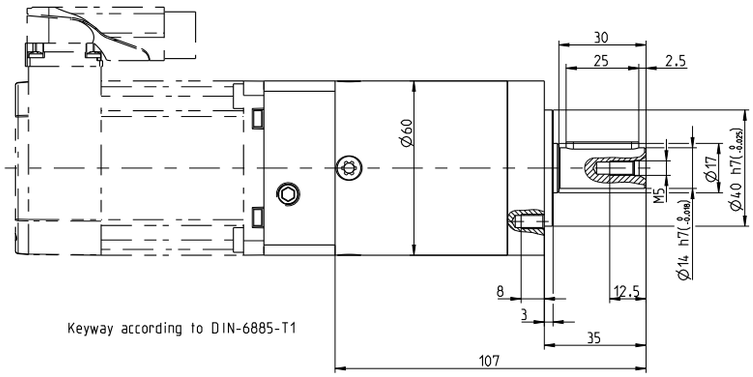
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

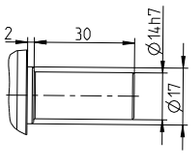
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-060	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.1	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP40-080 standard

Technical data

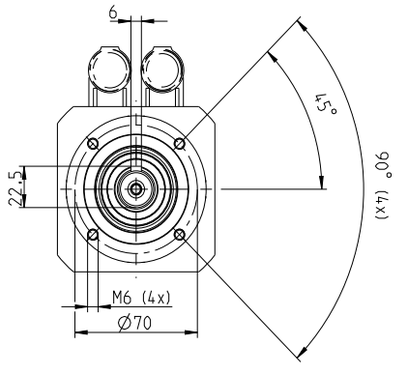
	8GP40-080hh003klmm	8GP40-080hh004klmm	8GP40-080hh005klmm	8GP40-080hh008klmm	8GP40-080hh010klmm	8GP40-080hh009klmm	8GP40-080hh012klmm	8GP40-080hh015klmm	8GP40-080hh016klmm	8GP40-080hh020klmm	8GP40-080hh025klmm	8GP40-080hh032klmm	8GP40-080hh040klmm	8GP40-080hh064klmm	8GP40-080hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	85	115	110	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	136	184	176	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	200	260	240	220	240	240	220	240	220	190	200
Idle torque [Nm] at 20°C and 3000 rpm	0.35	0.35	0.25	0.2	0.2	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.15	0.15	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000	3900	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2700	2500	3000	4000	4000	3050	3750	4000	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	650														
Max. radial force Fr_{max} [N] for 20,000 h	750														
Max. axial force Fa_{max} [N] for 30,000 h	900														
Max. axial force Fa_{max} [N] for 20,000 h	1000														
Operating noise L_{PA} [dB(A)]	60														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	2.1	2.1	2.1	2.1	2.1	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Moment of inertia J_1 [kgcm^2]	0.77	0.52	0.45	0.39	0.39	0.74	0.72	0.71	0.5	0.44	0.44	0.39	0.39	0.39	0.39

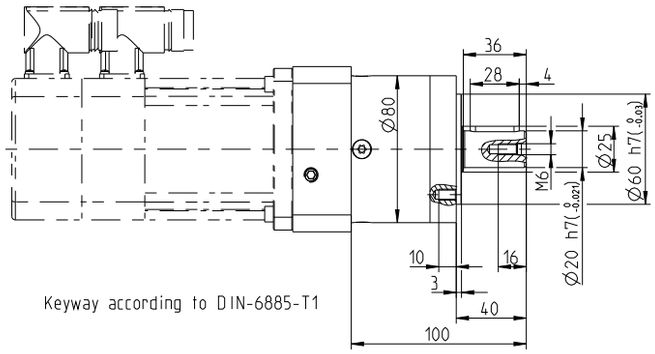
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

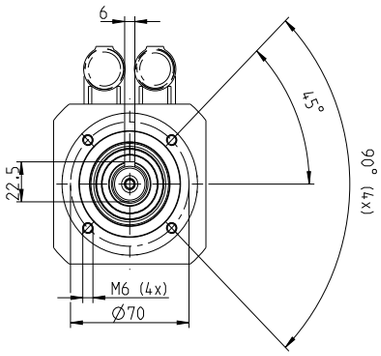
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

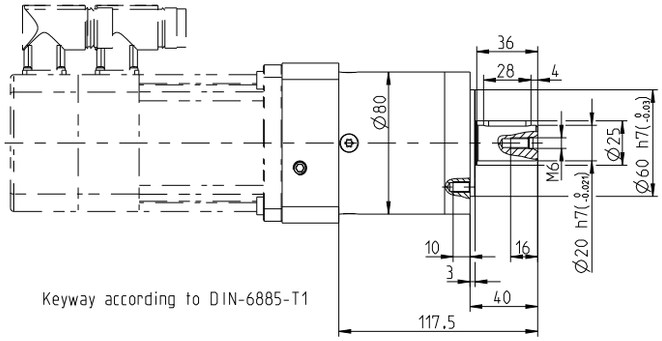
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP40-080 standard

Technical data

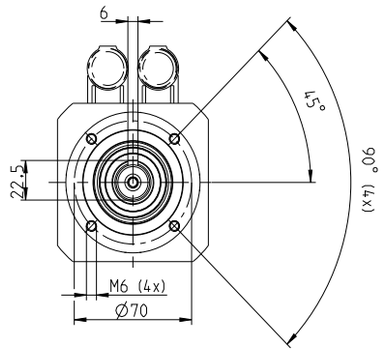
	8GP40-080hh060klmm	8GP40-080hh080klmm	8GP40-080hh120klmm	8GP40-080hh160klmm	8GP40-080hh200klmm	8GP40-080hh256klmm	8GP40-080hh320klmm	8GP40-080hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	110	120	110	120	110	120	110	50
Max. output torque T_{2max} [Nm]	176	192	176	192	176	192	176	80
E-stop torque T_{2stop} [Nm]	220	240	220	240	220	240	220	190
Idle torque [Nm] at 20°C and 3000 rpm	0.2	0.2	0.2	0.15	0.15	0.15	0.15	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000							
Max. drive speed n_{1max} [rpm]	7000							
Max. backlash J_t [arcmin]	11							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	6.3							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	650							
Max. radial force Fr_{max} [N] for 20,000 h	750							
Max. axial force Fa_{max} [N] for 30,000 h	900							
Max. axial force Fa_{max} [N] for 20,000 h	1000							
Operating noise L_{PA} [dB(A)]	60							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	3.1							
Moment of inertia J_1 [kgcm^2]	0.51	0.5	0.7	0.39	0.39	0.39	0.39	0.39

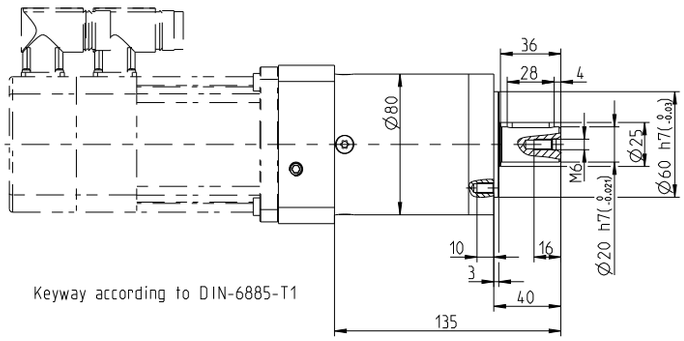
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

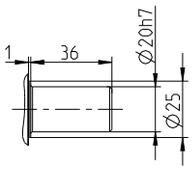
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP40-120 standard

Technical data

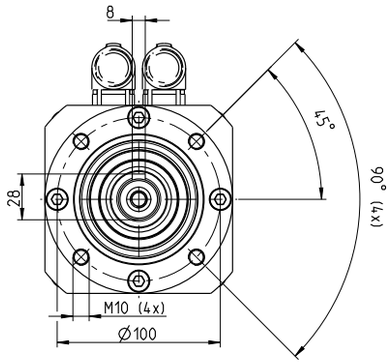
	8GP40-120hh003klmm	8GP40-120hh004klmm	8GP40-120hh005klmm	8GP40-120hh008klmm	8GP40-120hh010klmm	8GP40-120hh009klmm	8GP40-120hh012klmm	8GP40-120hh015klmm	8GP40-120hh016klmm	8GP40-120hh020klmm	8GP40-120hh025klmm	8GP40-120hh032klmm	8GP40-120hh040klmm	8GP40-120hh064klmm	8GP40-120hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	115	155	195	120	95	210	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	184	248	312	192	152	336	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	390	520	500	380	480	500	520	500	520	520	500	520	500	380	480
Idle torque [Nm] at 20°C and 3000 rpm	1.05	1	0.75	0.55	0.5	0.8	0.8	0.75	0.8	0.65	0.6	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3400	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2600	2500	2500	3500	3500	2650	2700	3200	3150	3500	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]								6500							
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								1500							
Max. radial force Fr_{max} [N] for 20,000 h								1750							
Max. axial force Fa_{max} [N] for 30,000 h								2100							
Max. axial force Fa_{max} [N] for 20,000 h								2500							
Operating noise L_{PA} [dB(A)]								65							
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8
Moment of inertia J_1 [kgcm^2]	2.63	1.79	1.53	1.32	1.3	2.62	2.56	2.53	1.75	1.5	1.49	1.3	1.3	1.3	1.3

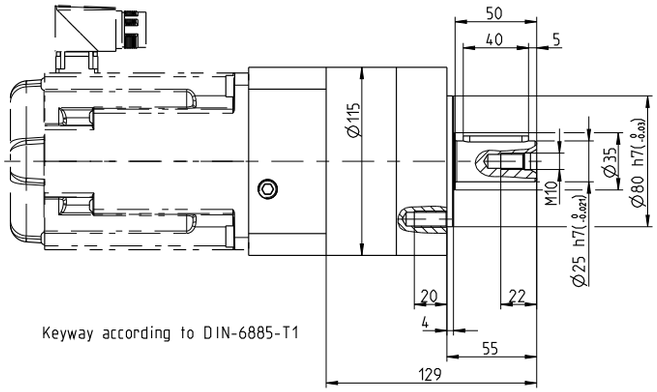
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

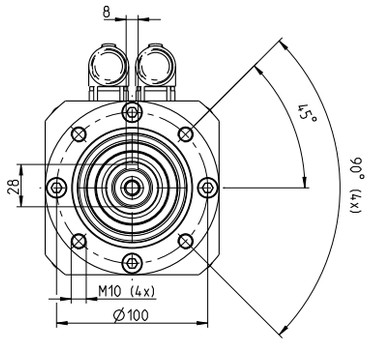
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

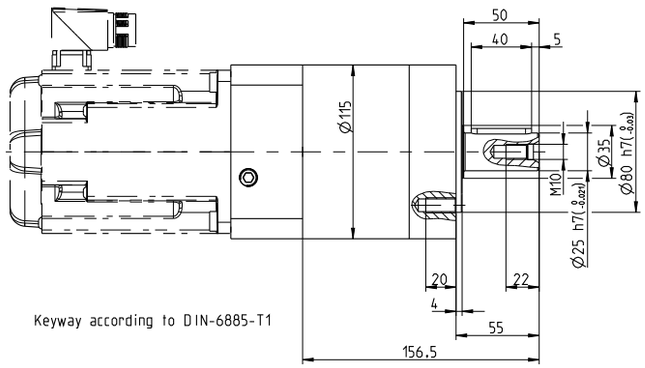
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-120	8LSA3	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/C7	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
Flange length L [mm]	47.4	47.4	57.4	57.4	75.1	47.4	57.4	73	47.4	57.4	47.4
Flange diameter Q [mm]	115	115	140	190	190	115	115	140	115	140	115

8GP40-120 standard

Technical data

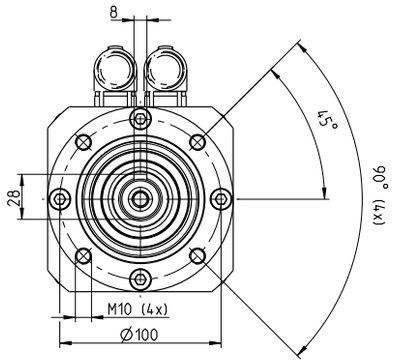
	8GP40-120hh060klmm	8GP40-120hh080klmm	8GP40-120hh120klmm	8GP40-120hh160klmm	8GP40-120hh200klmm	8GP40-120hh256klmm	8GP40-120hh320klmm	8GP40-120hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	260	260	230	260	230	260	230	120
Max. output torque T_{2max} [Nm]	416	416	368	416	368	416	368	192
E-stop torque T_{2stop} [Nm]	520	520	500	520	500	520	500	380
Idle torque [Nm] at 20°C and 3000 rpm	0.75	0.6	0.7	0.45	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3500							
Max. drive speed n_{1max} [rpm]	6500							
Max. backlash J_t [arcmin]	11							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	12							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	1500							
Max. radial force Fr_{max} [N] for 20,000 h	1750							
Max. axial force Fa_{max} [N] for 30,000 h	2100							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	65							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	10							
Moment of inertia J_1 [kgcm^2]	2.57	1.5	2.5	1.3	1.3	1.3	1.3	1.3

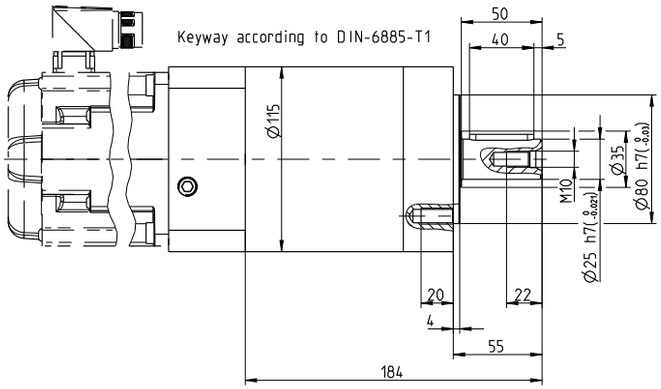
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

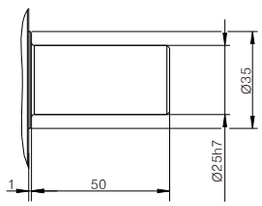
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-120	8LSA3	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/C7	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
Flange length L [mm]	47.4	47.4	57.4	57.4	75.1	47.4	57.4	73	47.4	57.4	47.4
Flange diameter Q [mm]	115	115	140	190	190	115	115	140	115	140	115

8GP45-067 standard

Technical data

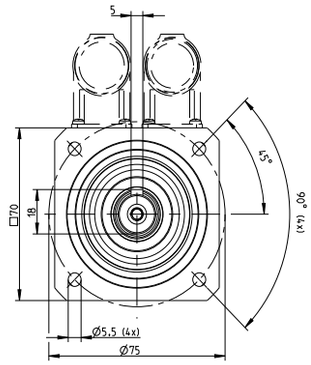
	8GP45-067hh003klmm	8GP45-067hh004klmm	8GP45-067hh005klmm	8GP45-067hh008klmm	8GP45-067hh010klmm	8GP45-067hh009klmm	8GP45-067hh012klmm	8GP45-067hh015klmm	8GP45-067hh016klmm	8GP45-067hh020klmm	8GP45-067hh025klmm	8GP45-067hh032klmm	8GP45-067hh040klmm	8GP45-067hh064klmm	8GP45-067hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	28	38	40	18	15	44	44	44	44	44	40	44	40	18	15
Max. output torque T_{2max} [Nm]	45	61	64	29	24	70	70	70	70	70	64	70	64	29	24
E-stop torque T_{2stop} [Nm]	66	88	80	80	80	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.2	0.15	0.15	0.1	0.1	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500														
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4200	4300	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	13000														
Max. backlash J_t [arcmin]	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	700														
Max. radial force Fr_{max} [N] for 20,000 h	900														
Max. axial force Fa_{max} [N] for 30,000 h	800														
Max. axial force Fa_{max} [N] for 20,000 h	1000														
Operating noise L_{PA} [dB(A)]	58														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	1.1	1.1	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Moment of inertia J_1 [kgcm^2]	0.135	0.093	0.078	0.065	0.064	0.131	0.127	0.077	0.088	0.075	0.075	0.064	0.064	0.064	0.064

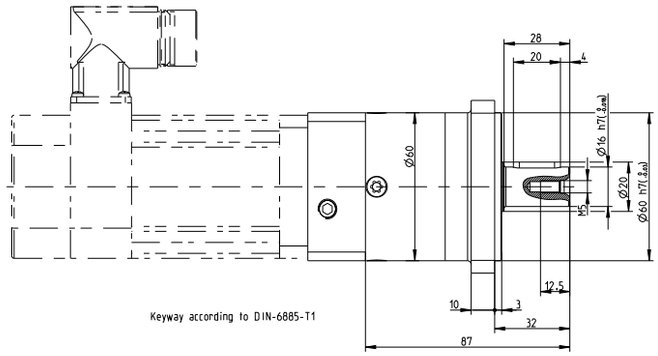
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

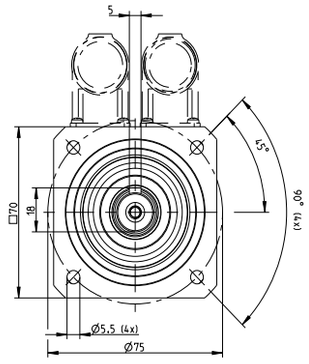
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

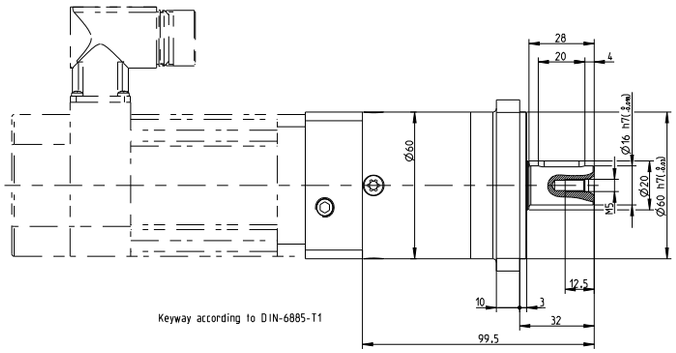
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-067	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.2	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP45-067 standard

Technical data

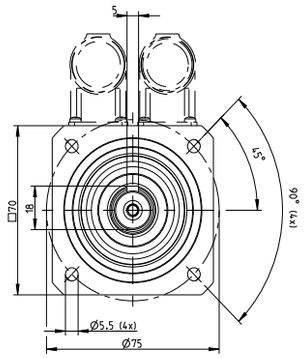
	8GP45-067hh060klmm	8GP45-067hh080klmm	8GP45-067hh120klmm	8GP45-067hh160klmm	8GP45-067hh200klmm	8GP45-067hh256klmm	8GP45-067hh320klmm	8GP45-067hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	44	44	44	44	40	44	40	18
Max. output torque T_{2max} [Nm]	70	70	70	70	64	70	64	29
E-stop torque T_{2stop} [Nm]	88	88	88	88	80	88	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.1							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500							
Max. drive speed n_{1max} [rpm]	13000							
Max. backlash J_t [arcmin]	15							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	2.5							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	700							
Max. radial force Fr_{max} [N] for 20,000 h	900							
Max. axial force Fa_{max} [N] for 30,000 h	800							
Max. axial force Fa_{max} [N] for 20,000 h	1000							
Operating noise L_{PA} [dB(A)]	58							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	1.5							
Moment of inertia J_1 [kgcm^2]	0.076	0.075	0.064	0.064	0.064	0.064	0.064	0.064

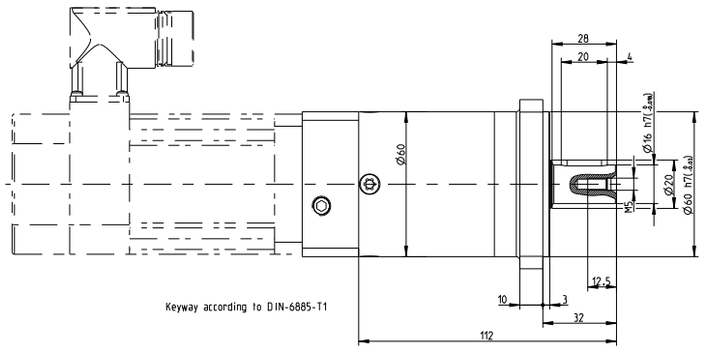
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

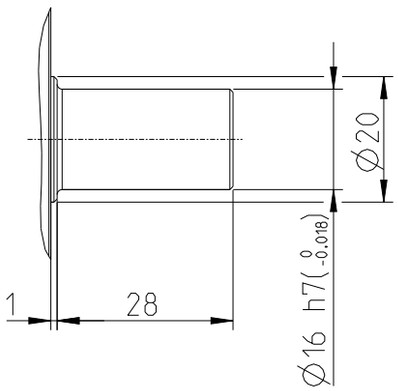
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-067	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.2	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP45-089 standard

Technical data

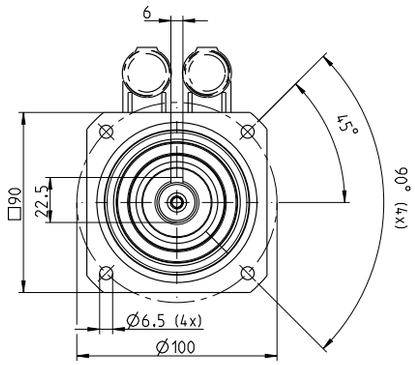
	8GP45-089hh003klmm	8GP45-089hh004klmm	8GP45-089hh005klmm	8GP45-089hh008klmm	8GP45-089hh010klmm	8GP45-089hh009klmm	8GP45-089hh012klmm	8GP45-089hh015klmm	8GP45-089hh016klmm	8GP45-089hh020klmm	8GP45-089hh025klmm	8GP45-089hh032klmm	8GP45-089hh040klmm	8GP45-089hh064klmm	8GP45-089hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	85	115	110	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	136	184	176	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	200	260	240	220	240	240	220	240	220	190	200
Idle torque [Nm] at 20°C and 3000 rpm	0.55	0.5	0.4	0.25	0.25	0.3	0.25	0.25	0.3	0.25	0.25	0.2	0.2	0.2	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3400	3450	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2400	2350	2800	4000	4000	2950	3650	4000	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	1700														
Max. radial force Fr_{max} [N] for 20,000 h	2050														
Max. axial force Fa_{max} [N] for 30,000 h	2000														
Max. axial force Fa_{max} [N] for 20,000 h	2500														
Operating noise L_{PA} [dB(A)]	60														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	3.2	3.2	3.2	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Moment of inertia J_1 [kgcm^2]	0.77	0.52	0.45	0.39	0.39	0.74	0.72	0.71	0.5	0.44	0.44	0.39	0.39	0.39	0.39

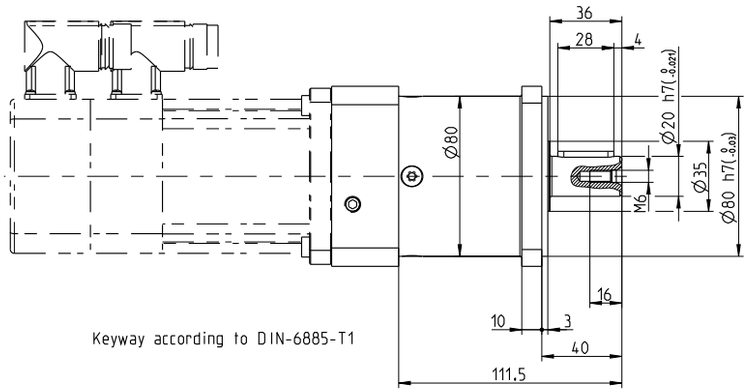
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

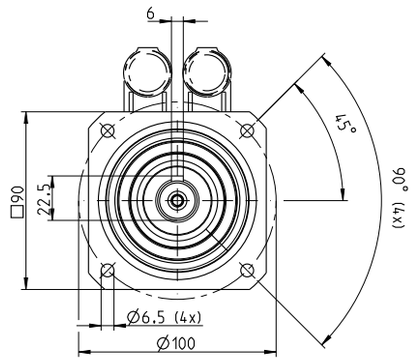
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

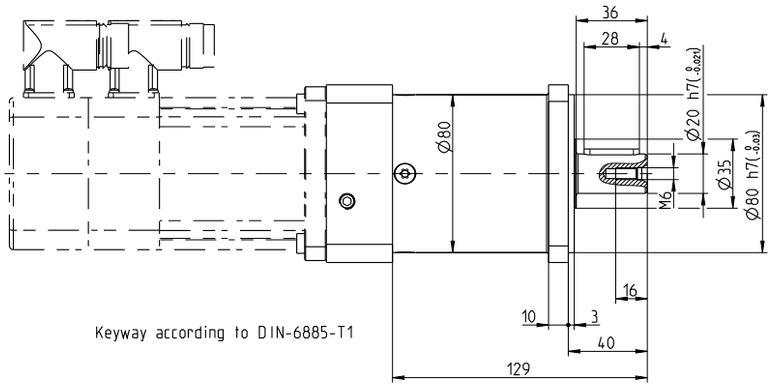
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-089	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP45-089 standard

Technical data

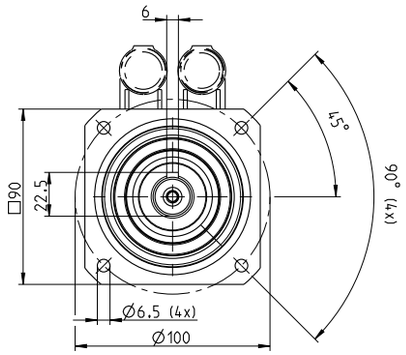
	8GP45-089hh060klmm	8GP45-089hh080klmm	8GP45-089hh120klmm	8GP45-089hh160klmm	8GP45-089hh200klmm	8GP45-089hh256klmm	8GP45-089hh320klmm	8GP45-089hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	110	120	110	120	110	120	110	50
Max. output torque T_{2max} [Nm]	176	192	176	192	176	192	176	80
E-stop torque T_{2stop} [Nm]	220	240	220	240	220	240	220	190
Idle torque [Nm] at 20°C and 3000 rpm	0.2	0.2	0.2	0.15	0.15	0.15	0.15	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000							
Max. drive speed n_{1max} [rpm]	7000							
Max. backlash J_t [arcmin]	11							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	6.3							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	1700							
Max. radial force Fr_{max} [N] for 20,000 h	2050							
Max. axial force Fa_{max} [N] for 30,000 h	2000							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	60							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	4.2							
Moment of inertia J_1 [kgcm^2]	0.51	0.5	0.7	0.39	0.39	0.39	0.39	0.39

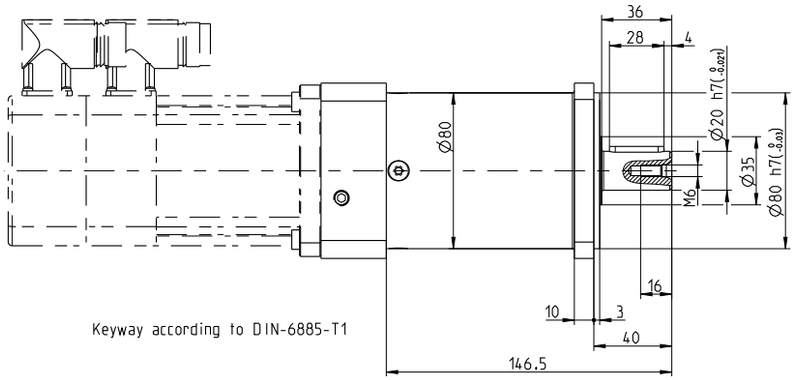
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

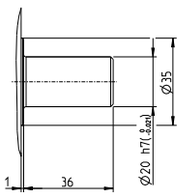
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-089	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP45-121 standard

Technical data

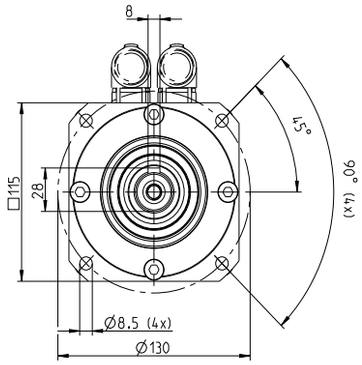
	8GP45-121hh003klmm	8GP45-121hh004klmm	8GP45-121hh005klmm	8GP45-121hh008klmm	8GP45-121hh010klmm	8GP45-121hh009klmm	8GP45-121hh012klmm	8GP45-121hh015klmm	8GP45-121hh016klmm	8GP45-121hh020klmm	8GP45-121hh025klmm	8GP45-121hh032klmm	8GP45-121hh040klmm	8GP45-121hh064klmm	8GP45-121hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	115	155	195	120	95	210	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	184	248	312	192	152	336	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	390	520	500	380	480	500	520	500	520	520	500	520	500	380	480
Idle torque [Nm] at 20°C and 3000 rpm	1.05	1	0.75	0.55	0.5	0.8	0.8	0.75	0.8	0.65	0.6	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3400	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2600	2500	2500	3500	3500	2650	2700	3200	3150	3500	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]								6500							
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								2400							
Max. radial force Fr_{max} [N] for 20,000 h								2950							
Max. axial force Fa_{max} [N] for 30,000 h								2100							
Max. axial force Fa_{max} [N] for 20,000 h								2500							
Operating noise L_{PA} [dB(A)]								65							
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	6.6	6.6	6.6	6.6	6.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Moment of inertia J_1 [kgcm^2]	2.63	1.79	1.53	1.32	1.3	2.62	2.56	2.53	1.75	1.5	1.49	1.3	1.3	1.3	1.3

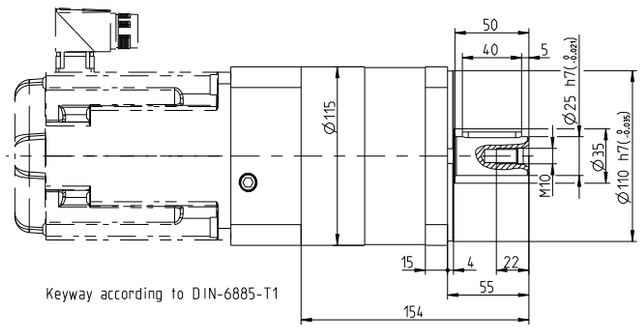
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

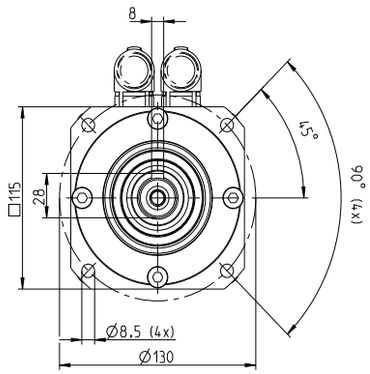
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

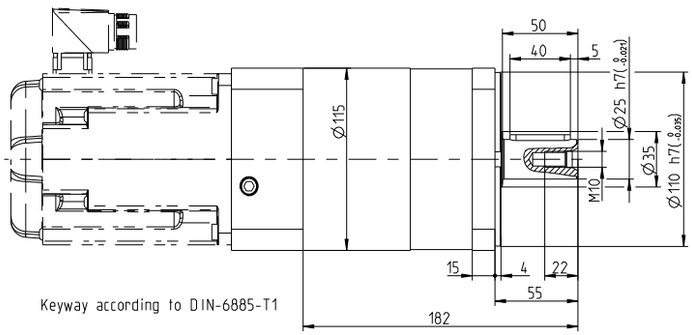
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-121	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8JSA6	8LSN4	8LSN 5	80MPH
Flange length L [mm]	47.4	47.4	57.4	47.4	57.4	73	47.4	57.4	47.5
Flange diameter Q [mm]	115	115	140	115	115	140	115	140	115

8GP45-121 standard

Technical data

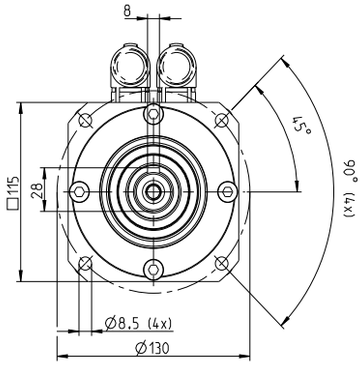
	8GP45-121hh060klmm	8GP45-121hh080klmm	8GP45-121hh120klmm	8GP45-121hh160klmm	8GP45-121hh200klmm	8GP45-121hh256klmm	8GP45-121hh320klmm	8GP45-121hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	260	260	230	260	230	260	230	120
Max. output torque T_{2max} [Nm]	416	416	368	416	368	416	368	192
E-stop torque T_{2stop} [Nm]	520	520	500	520	500	520	500	380
Idle torque [Nm] at 20°C and 3000 rpm	0.75	0.6	0.7	0.45	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3500							
Max. drive speed n_{1max} [rpm]	6500							
Max. backlash J_t [arcmin]	11							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	12							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	2400							
Max. radial force Fr_{max} [N] for 20,000 h	2950							
Max. axial force Fa_{max} [N] for 30,000 h	2100							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	65							
Efficiency at full load ŋ [%]	90							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	10.6							
Moment of inertia J_1 [kgcm^2]	2.57	1.5	2.5	1.3	1.3	1.3	1.3	1.3

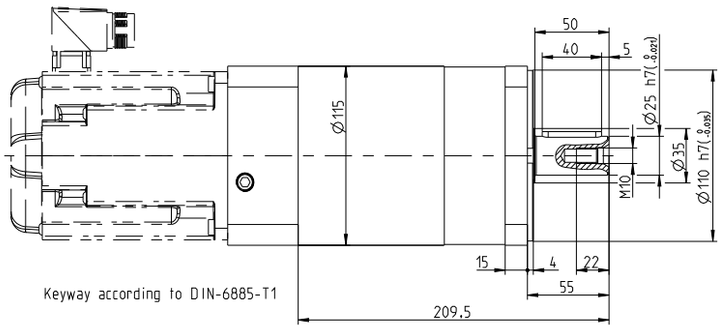
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

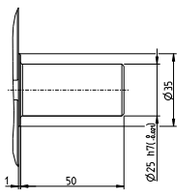
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP45-121	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8JSA6	8LSN4	8LSN 5	80MPH
Flange length L [mm]	47.4	47.4	57.4	47.4	57.4	73	47.4	57.4	47.5
Flange diameter Q [mm]	115	115	140	115	115	140	115	140	115

8GP50-050 standard

Technical data

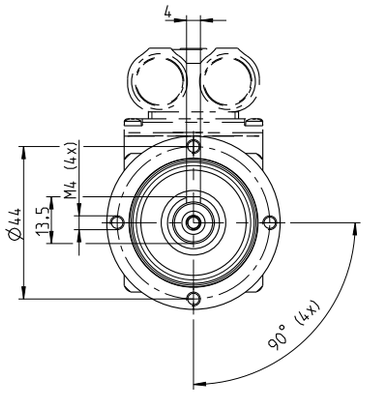
	8GP50-050hh003klmm	8GP50-050hh004klmm	8GP50-050hh005klmm	8GP50-050hh008klmm	8GP50-050hh010klmm	8GP50-050hh009klmm	8GP50-050hh012klmm	8GP50-050hh015klmm	8GP50-050hh016klmm	8GP50-050hh020klmm	8GP50-050hh025klmm	8GP50-050hh032klmm	8GP50-050hh040klmm	8GP50-050hh064klmm	8GP50-050hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	11	15	13	6	5	12	15	13	15	15	13	15	13	7.5	5
Max. output torque T_{2max} [Nm]	18	24	21	10	8	19	24	21	24	24	21	24	21	12	8
E-stop torque T_{2stop} [Nm]	23	30	36	27	27	33	40	36	40	40	36	40	36	27	27
Idle torque [Nm] at 20°C and 3000 rpm	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000														
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000														
Max. drive speed n_{1max} [rpm]	18000														
Max. backlash J_t [arcmin]	15	15	15	15	15	19	19	19	19	19	19	19	19	19	19
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	1	1	1	1	1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	700														
Max. radial force Fr_{max} [N] for 20,000 h	800														
Max. axial force Fa_{max} [N] for 30,000 h	800														
Max. axial force Fa_{max} [N] for 20,000 h	1000														
Operating noise L_{PA} [dB(A)]	58														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	0.7	0.7	0.7	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Moment of inertia J_1 [kgcm^2]	0.031	0.022	0.019	0.017	0.016	0.03	0.029	0.023	0.022	0.019	0.019	0.017	0.016	0.016	0.016

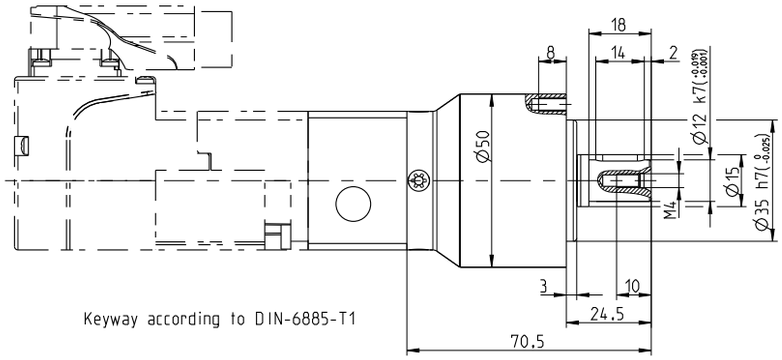
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

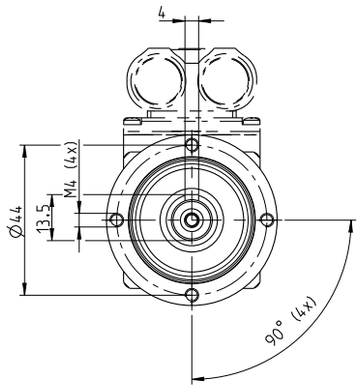
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

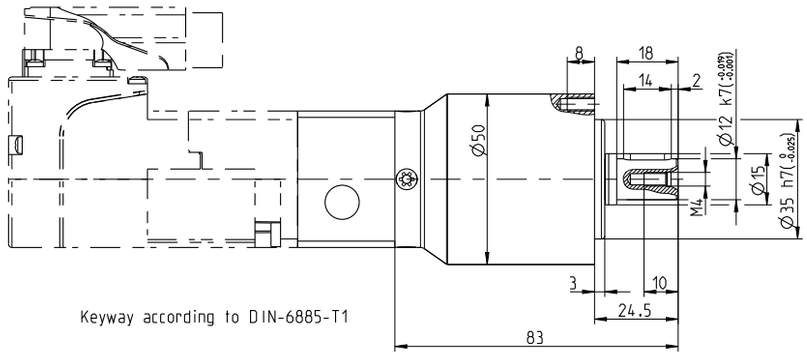
1-stage gear





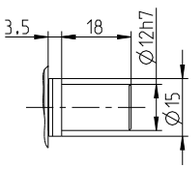
2-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP50-050	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	27.5	28.5	28.5	24.5	24.5
Flange diameter Q [mm]	55	40	60	60	60

8GP50-070 standard

Technical data

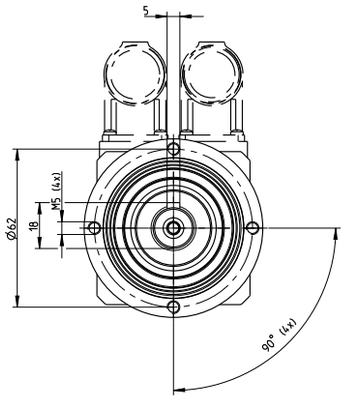
	8GP50-070hh003klmm	8GP50-070hh004klmm	8GP50-070hh005klmm	8GP50-070hh008klmm	8GP50-070hh010klmm	8GP50-070hh009klmm	8GP50-070hh012klmm	8GP50-070hh015klmm	8GP50-070hh016klmm	8GP50-070hh020klmm	8GP50-070hh025klmm	8GP50-070hh032klmm	8GP50-070hh040klmm	8GP50-070hh064klmm	8GP50-070hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	28	33	30	18	15	33	33	33	33	33	30	33	30	18	15
Max. output torque T_{2max} [Nm]	45	53	48	29	24	53	53	53	53	53	48	53	48	29	24
E-stop torque T_{2stop} [Nm]	66	88	80	80	80	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.4	0.25	0.2	0.15	0.15	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1								4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3650	4100	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]								13000							
Max. backlash J_t [arcmin]	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								900							
Max. radial force Fr_{max} [N] for 20,000 h								1050							
Max. axial force Fa_{max} [N] for 30,000 h								1000							
Max. axial force Fa_{max} [N] for 20,000 h								1350							
Operating noise L_{PA} [dB(A)]								58							
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	1.5	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Moment of inertia J_1 [kgcm^2]	0.157	0.106	0.086	0.068	0.066	0.133	0.128	0.078	0.089	0.076	0.075	0.064	0.064	0.064	0.064

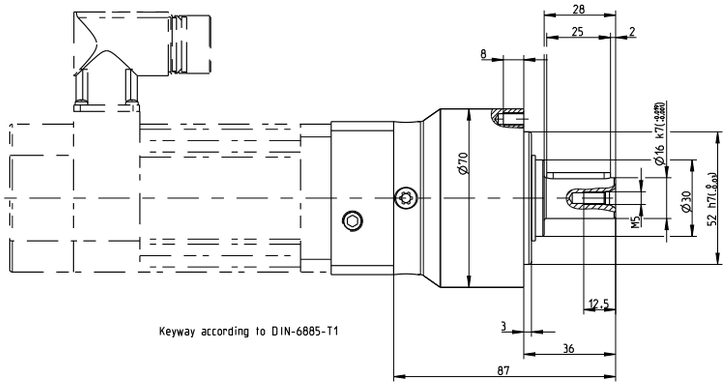
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

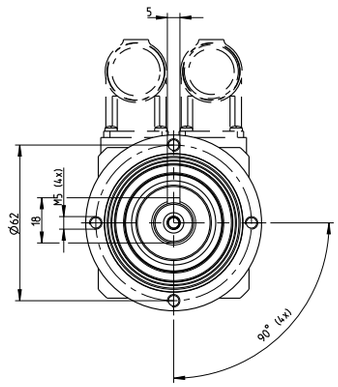
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

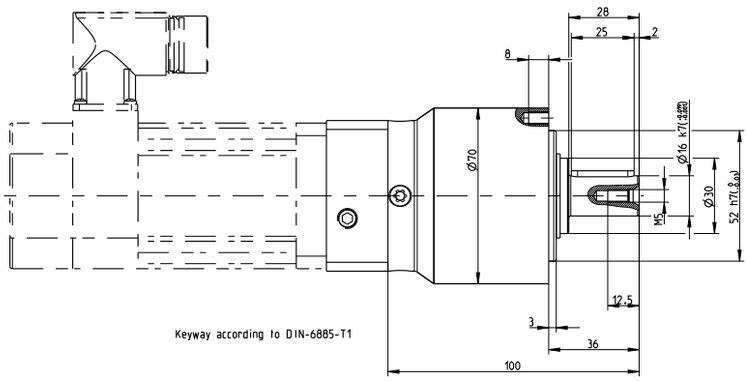
1-stage gear





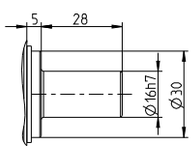
2-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP50-070	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.2	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP50-090 standard

Technical data

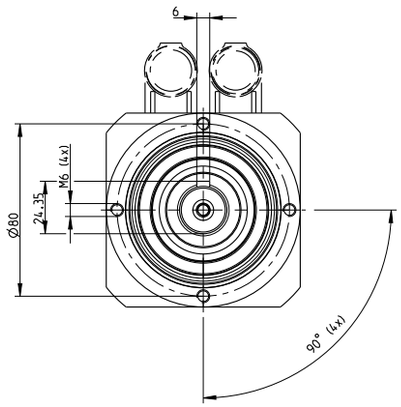
	8GP50-090hh003klmm	8GP50-090hh004klmm	8GP50-090hh005klmm	8GP50-090hh008klmm	8GP50-090hh010klmm	8GP50-090hh009klmm	8GP50-090hh012klmm	8GP50-090hh015klmm	8GP50-090hh016klmm	8GP50-090hh020klmm	8GP50-090hh025klmm	8GP50-090hh032klmm	8GP50-090hh040klmm	8GP50-090hh064klmm	8GP50-090hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	85	90	82	50	38	97	90	82	90	90	82	90	82	50	38
Max. output torque T_{2max} [Nm]	136	144	131	80	61	155	144	131	144	144	131	144	131	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	200	260	240	220	240	240	220	240	220	190	200
Idle torque [Nm] at 20°C and 3000 rpm	0.75	0.55	0.45	0.3	0.25	0.3	0.3	0.25	0.25	0.25	0.2	0.2	0.2	0.2	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3250	3750	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2300	2650	3200	4000	4000	3450	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	1700														
Max. radial force Fr_{max} [N] for 20,000 h	1900														
Max. axial force Fa_{max} [N] for 30,000 h	1500														
Max. axial force Fa_{max} [N] for 20,000 h	2000														
Operating noise L_{PA} [dB(A)]	60														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	3	3	3	3	3	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Moment of inertia J_1 [kgcm^2]	0.82	0.57	0.48	0.4	0.4	0.75	0.73	0.71	0.5	0.44	0.44	0.39	0.39	0.39	0.39

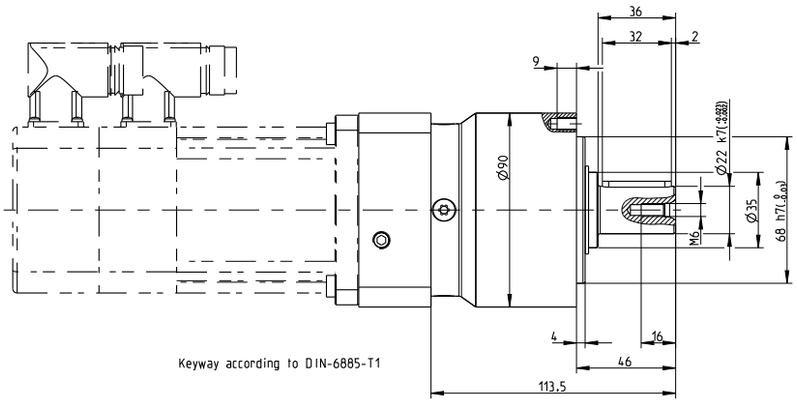
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

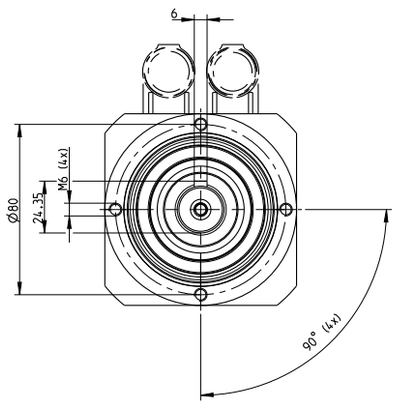
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

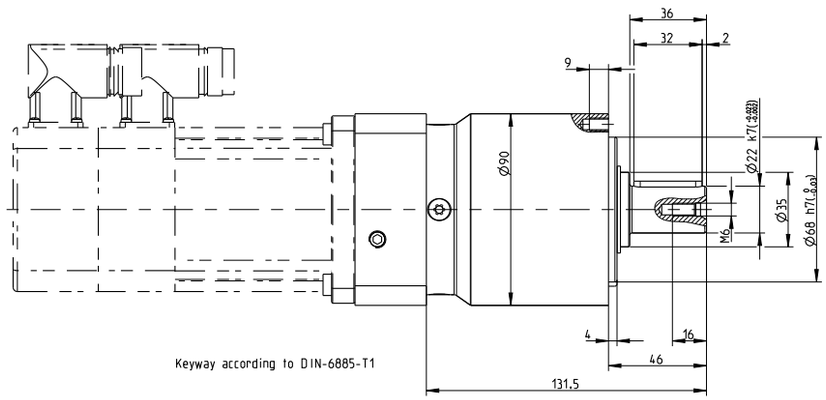
1-stage gear





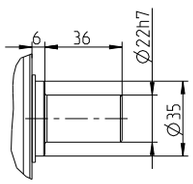
2-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP50-090	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP50-120 standard

Technical data

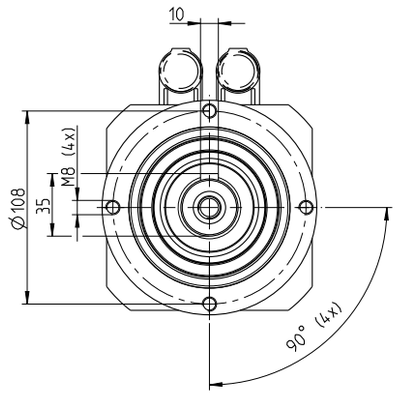
	8GP50-120hh003klmm	8GP50-120hh004klmm	8GP50-120hh005klmm	8GP50-120hh008klmm	8GP50-120hh010klmm	8GP50-120hh009klmm	8GP50-120hh012klmm	8GP50-120hh015klmm	8GP50-120hh016klmm	8GP50-120hh020klmm	8GP50-120hh025klmm	8GP50-120hh032klmm	8GP50-120hh040klmm	8GP50-120hh064klmm	8GP50-120hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	115	155	172	120	95	157	195	172	195	195	172	195	172	120	95
Max. output torque T_{2max} [Nm]	184	248	275	192	152	251	312	275	312	312	275	312	275	192	152
E-stop torque T_{2stop} [Nm]	390	520	500	380	480	500	520	500	520	520	500	520	500	380	480
Idle torque [Nm] at 20°C and 3000 rpm	1.8	1.4	1.05	0.7	0.6	0.85	0.8	0.75	0.75	0.65	0.6	0.5	0.5	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2650	2800	3100	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2050	2050	2200	3500	3500	2700	2750	3250	3200	3500	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]								6500							
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								2150							
Max. radial force Fr_{max} [N] for 20,000 h								2500							
Max. axial force Fa_{max} [N] for 30,000 h								3000							
Max. axial force Fa_{max} [N] for 20,000 h								4000							
Operating noise L_{PA} [dB(A)]								65							
Efficiency at full load η [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	7.5	7.5	7.5	7.5	7.5	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Moment of inertia J_1 [kgcm^2]	2.87	1.92	1.6	1.35	1.3	2.65	2.57	2.54	1.76	1.5	1.5	1.3	1.3	1.3	1.3

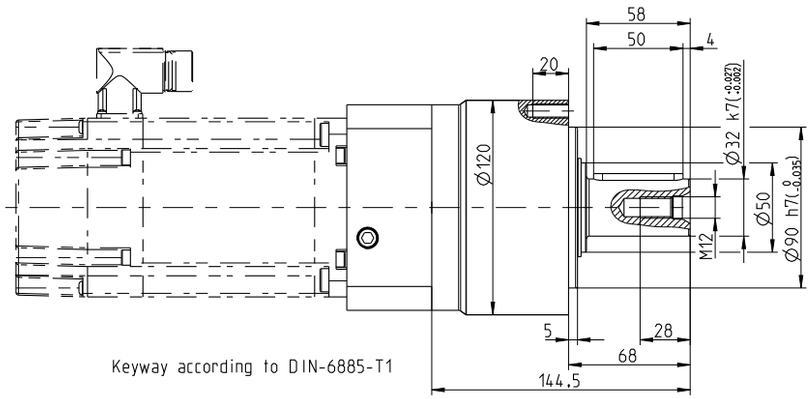
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

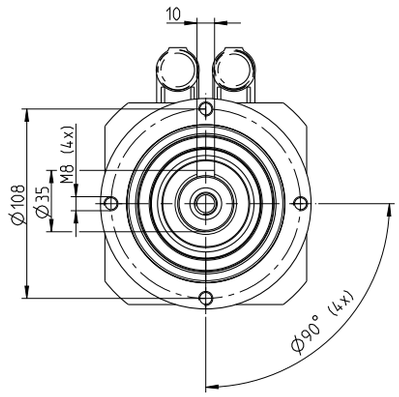
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

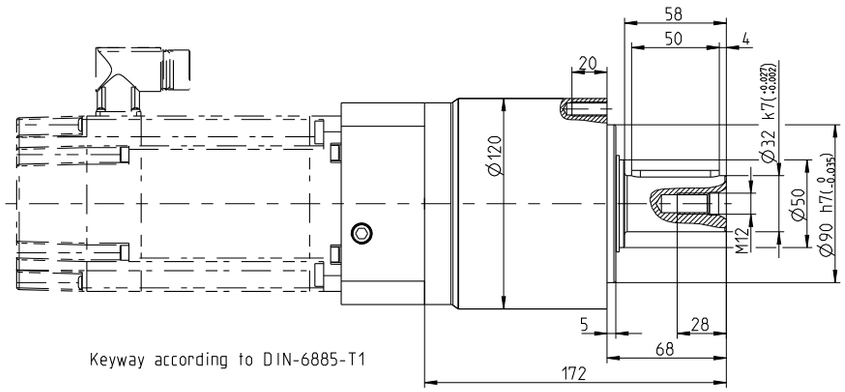
1-stage gear





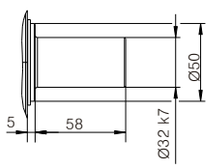
2-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP50-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
Flange length L [mm]	47.4	47.4	57.4	47.4	57.4	73	47.4	57.4	47.5
Flange diameter Q [mm]	115	115	140	115	115	140	115	140	115

8GP50-155 standard

Technical data

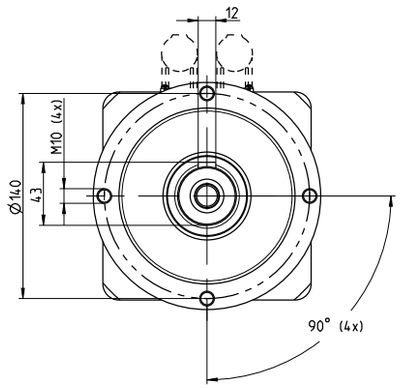
	8GP50-155hh004klmm	8GP50-155hh005klmm	8GP50-155hh010klmm	8GP50-155hh016klmm	8GP50-155hh020klmm	8GP50-155hh025klmm	8GP50-155hh040klmm	8GP50-155hh050klmm	8GP50-155hh100klmm
Gearbox									
Number of gear stages	1	1	1	2	2	2	2	2	2
Gear ratio i	4	5	10	16	20	25	40	50	100
Nominal output torque T_{2N} [Nm]	460	445	210	460	460	445	460	445	210
Max. output torque T_{2max} [Nm]	736	712	336	736	736	712	736	712	336
E-stop torque T_{2stop} [Nm]	920	890	420	920	920	890	920	890	420
Idle torque [Nm] at 20°C and 3000 rpm	0.6	0.5	0.45	1.15	1.45	1.1	0.65	0.6	0.65
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1800	2150	3000	2900	3000	3000	3000	3000	3000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1100	1350	3000	2050	2400	2800	3000	3000	3000
Max. drive speed n_{1max} [rpm]					5500				
Max. backlash J_t [arcmin]	8	8	8	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than					0				
Torsional rigidity C_{t21} [Nm/arcmin]	38	38	38	41	41	41	41	41	41
Tilting rigidity C_{2K} [Nm/arcmin]					0				
Max. breakdown torque M_{2Kmax} [Nm]					0				
Max. radial force Fr_{max} [N] for 30,000 h					4600				
Max. radial force Fr_{max} [N] for 20,000 h					5200				
Max. axial force Fa_{max} [N] for 30,000 h					6000				
Max. axial force Fa_{max} [N] for 20,000 h					7000				
Operating noise L_{PA} [dB(A)]					70				
Efficiency at full load ŋ [%]	96	96	96	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]					-25				
Max. operating temperature $B_{Tempmax}$ [°C]					90				
Mounting orientation					Any				
Protection					IP54				
Weight m [kg]	16.5	16.5	16.5	20.5	20.5	20.5	20.5	20.5	20.5
Moment of inertia J_1 [kgcm^2]	7.073	6.046	4.663	6.156	5.194	5.147	4.454	4.442	4.442

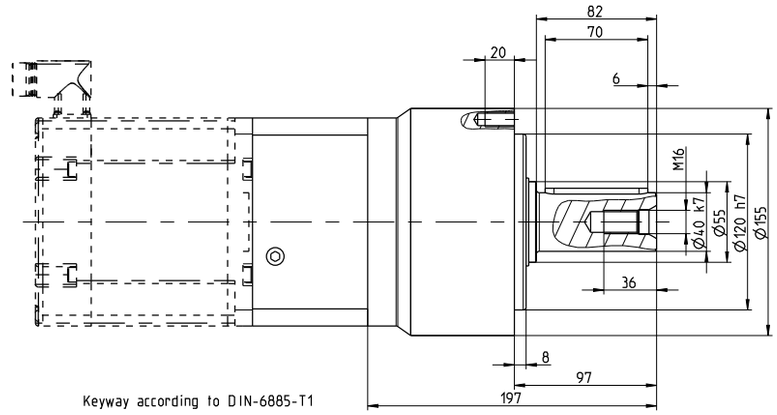
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

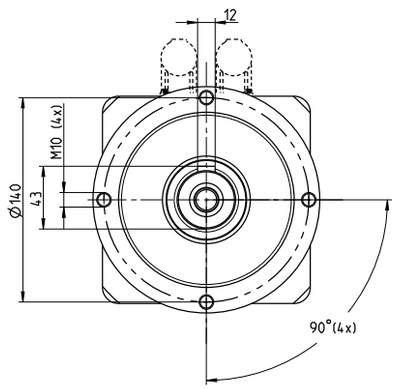
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

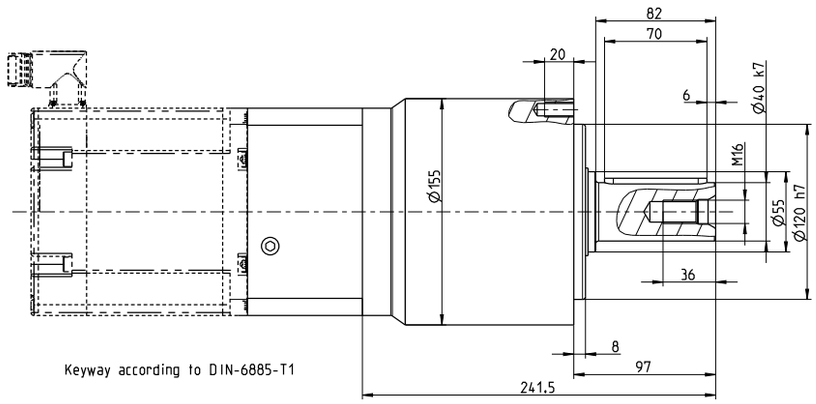
1-stage gear





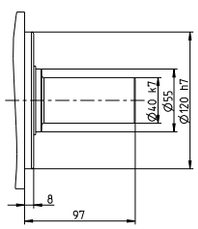
2-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP50-155	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5
Flange length L [mm]	78.5	78.5	88.5	88.5	108.5	78.5	88.5	108.5	78.5	78.5
Flange diameter Q [mm]	142	142	190	190	190	142	142	190	142	142

8GP55-060 standard

Technical data

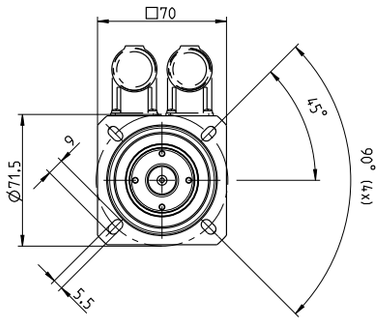
	8GP55-060hh003klmm	8GP55-060hh004klmm	8GP55-060hh005klmm	8GP55-060hh008klmm	8GP55-060hh010klmm	8GP55-060hh009klmm	8GP55-060hh012klmm	8GP55-060hh015klmm	8GP55-060hh016klmm	8GP55-060hh020klmm	8GP55-060hh025klmm	8GP55-060hh032klmm	8GP55-060hh040klmm	8GP55-060hh064klmm	8GP55-060hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	28	38	40	18	15	44	44	44	44	44	40	44	40	18	15
Max. output torque T_{2max} [Nm]	45	61	64	29	24	70	70	70	70	70	64	70	64	29	24
E-stop torque T_{2stop} [Nm]	66	88	80	80	80	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.5	0.35	0.3	0.2	0.15	0.2	0.15	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2950	3500	4200	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2500	2900	3400	4500	4500	4200	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	13000														
Max. backlash J_t [arcmin]	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	3200														
Max. radial force Fr_{max} [N] for 20,000 h	3200														
Max. axial force Fa_{max} [N] for 30,000 h	3900														
Max. axial force Fa_{max} [N] for 20,000 h	4400														
Operating noise L_{PA} [dB(A)]	58														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	1.4	1.4	1.4	1.4	1.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Moment of inertia J_1 [kgcm^2]	0.15	0.102	0.083	0.067	0.065	0.133	0.128	0.078	0.089	0.075	0.075	0.064	0.064	0.064	0.064

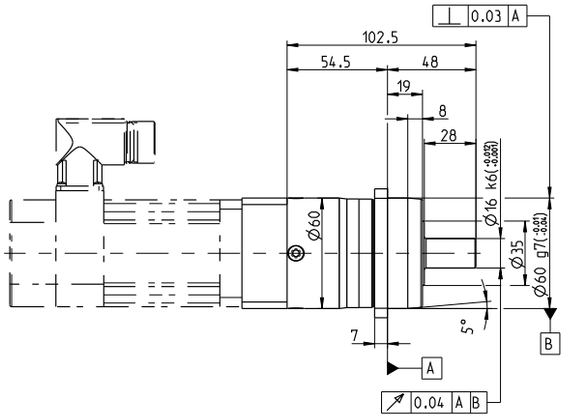
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

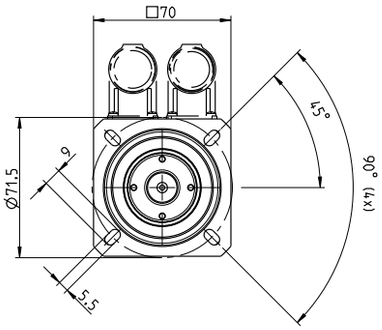
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

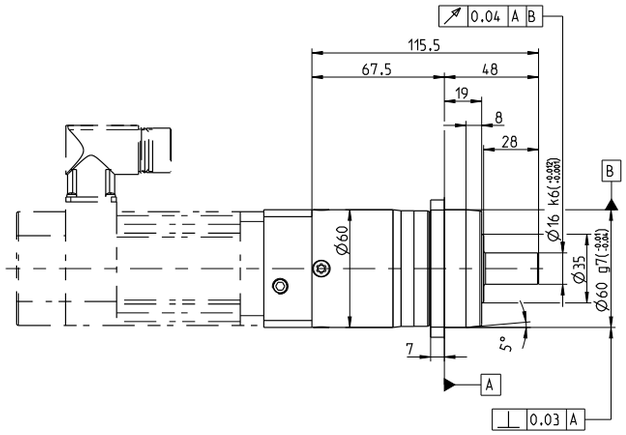
1-stage gear





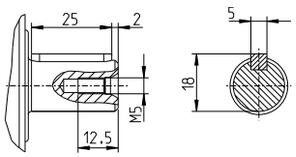
2-stage gear





Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP55-060	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.2	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GP55-080 standard

Technical data

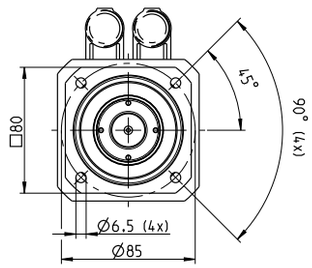
	8GP55-080hh003klmm	8GP55-080hh004klmm	8GP55-080hh005klmm	8GP55-080hh008klmm	8GP55-080hh010klmm	8GP55-080hh009klmm	8GP55-080hh012klmm	8GP55-080hh015klmm	8GP55-080hh016klmm	8GP55-080hh020klmm	8GP55-080hh025klmm	8GP55-080hh032klmm	8GP55-080hh040klmm	8GP55-080hh064klmm	8GP55-080hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	85	115	110	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	136	184	176	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	200	260	240	220	240	240	220	240	220	190	200
Idle torque [Nm] at 20°C and 3000 rpm	0.9	0.7	0.55	0.35	0.3	0.4	0.35	0.3	0.35	0.25	0.25	0.2	0.2	0.2	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2450	2700	3250	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1900	2000	2400	4000	4000	2850	3550	4000	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	4800														
Max. radial force Fr_{max} [N] for 20,000 h	5500														
Max. axial force Fa_{max} [N] for 30,000 h	5700														
Max. axial force Fa_{max} [N] for 20,000 h	6400														
Operating noise L_{PA} [dB(A)]	60														
Efficiency at full load η [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	2.7	2.7	2.7	2.7	2.7	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Moment of inertia J_1 [kgcm^2]	0.803	0.538	0.462	0.395	0.393	0.744	0.722	0.71	0.5	0.44	0.44	0.39	0.39	0.39	0.39

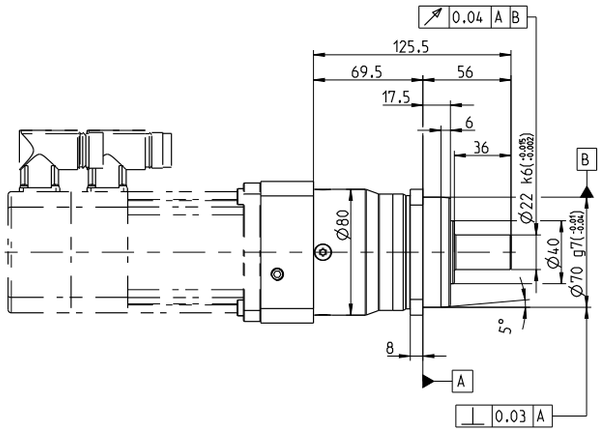
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

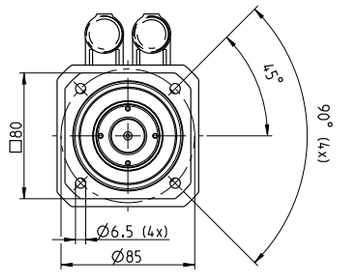
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

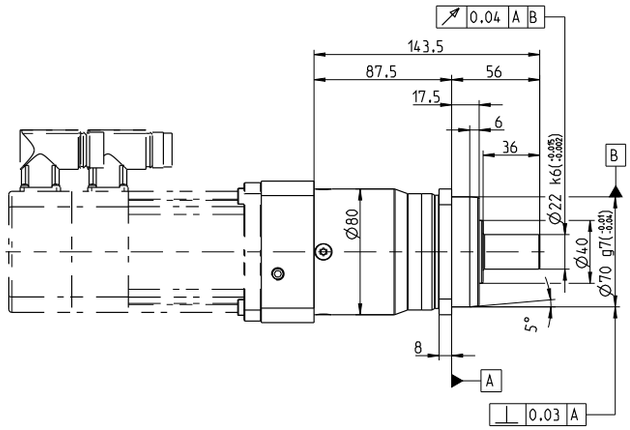
1-stage gear





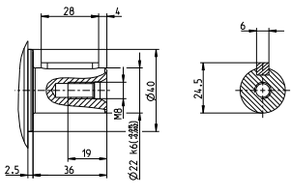
2-stage gear





Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP55-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GP55-120 standard

Technical data

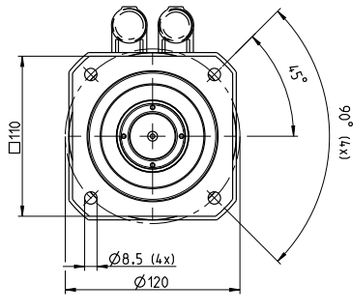
	8GP55-120hh003klmm	8GP55-120hh004klmm	8GP55-120hh005klmm	8GP55-120hh008klmm	8GP55-120hh010klmm	8GP55-120hh009klmm	8GP55-120hh012klmm	8GP55-120hh015klmm	8GP55-120hh016klmm	8GP55-120hh020klmm	8GP55-120hh025klmm	8GP55-120hh032klmm	8GP55-120hh040klmm	8GP55-120hh064klmm	8GP55-120hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	115	155	195	120	95	210	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	184	248	312	192	152	336	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	390	520	500	380	480	500	520	500	520	520	500	520	500	380	480
Idle torque [Nm] at 20°C and 3000 rpm	1.75	1.45	1.1	0.75	0.65	0.95	0.9	0.85	0.9	0.7	0.65	0.5	0.5	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2150	2400	2600	3500	3500	3050	3200	3500	3500	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1750	1850	1900	3350	3500	2250	2350	2800	2750	3250	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	12	12	12	12	12	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	5400														
Max. radial force Fr_{max} [N] for 20,000 h	6000														
Max. axial force Fa_{max} [N] for 30,000 h	7000														
Max. axial force Fa_{max} [N] for 20,000 h	8000														
Operating noise L_{PA} [dB(A)]	65														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	6.8	6.8	6.8	6.8	6.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Moment of inertia J_1 [kgcm^2]	2.69	1.824	1.55	1.328	1.305	2.627	2.564	2.532	1.752	1.5	1.49	1.3	1.3	1.3	1.3

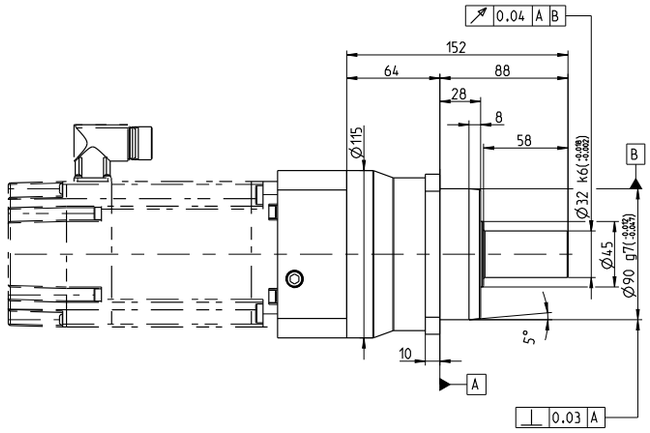
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

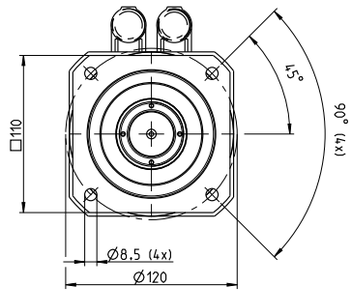
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

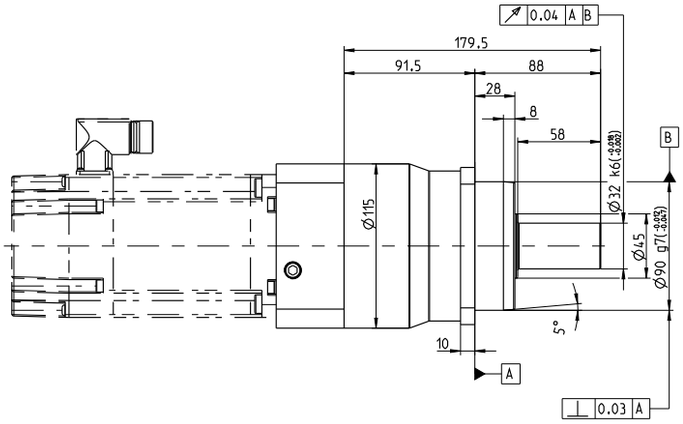
1-stage gear





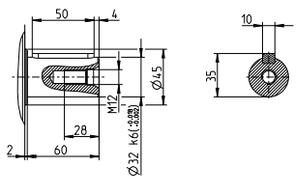
2-stage gear





Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP55-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
Flange length L [mm]	47.4	47.4	57.4	47.4	57.4	73	47.4	57.4	52.4
Flange diameter Q [mm]	115	115	140	115	115	140	115	140	115

8GA40-040 standard

Technical data

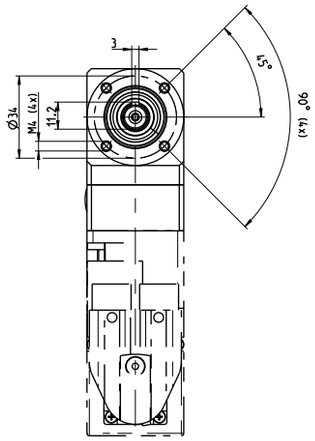
	8GA40-040hh003klmm	8GA40-040hh004klmm	8GA40-040hh005klmm	8GA40-040hh008klmm	8GA40-040hh010klmm	8GA40-040hh009klmm	8GA40-040hh012klmm	8GA40-040hh015klmm	8GA40-040hh016klmm	8GA40-040hh020klmm	8GA40-040hh025klmm	8GA40-040hh032klmm	8GA40-040hh040klmm	8GA40-040hh064klmm	8GA40-040hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	4.5	6	7.5	6	5	16.5	20	18	20	20	18	20	18	7.5	5
Max. output torque T_{2max} [Nm]	7	10	12	10	8	26	32	29	32	32	29	32	29	12	8
E-stop torque T_{2stop} [Nm]	23	28	35	27	25	33	40	36	40	40	36	40	36	27	27
Idle torque [Nm] at 20°C and 3000 rpm								0.1							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1								5000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1								5000							
Max. drive speed n_{1max} [rpm]								18000							
Max. backlash J_t [arcmin]	21	21	21	21	21	25	25	25	25	25	25	25	25	25	25
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	0.7	0.7	0.7	0.7	0.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								160							
Max. radial force Fr_{max} [N] for 20,000 h								200							
Max. axial force Fa_{max} [N] for 30,000 h								160							
Max. axial force Fa_{max} [N] for 20,000 h								200							
Operating noise L_{PA} [dB(A)]								68							
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	0.51	0.51	0.51	0.51	0.51	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Moment of inertia J_1 [kgcm^2]	0.044	0.035	0.032	0.03	0.03	0.043	0.042	0.036	0.035	0.032	0.032	0.03	0.029	0.029	0.029

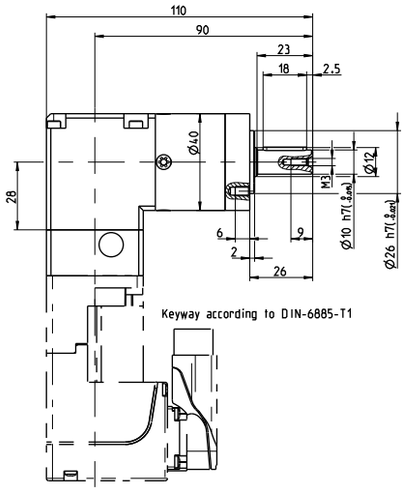
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

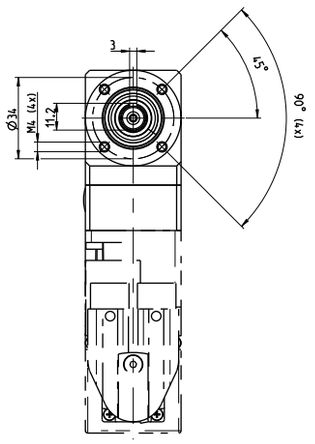
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

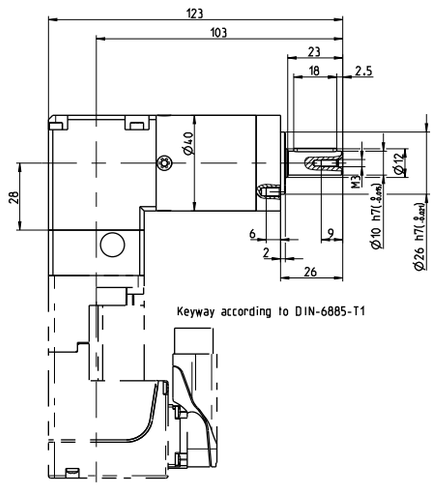
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-040	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	19	19	19	15	15
Flange diameter Q [mm]	60	40	60	60	60

8GA40-040 standard

Technical data

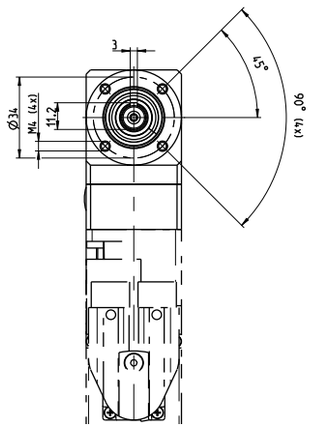
	8GA40-040hh060klmm	8GA40-040hh080klmm	8GA40-040hh120klmm	8GA40-040hh160klmm	8GA40-040hh200klmm	8GA40-040hh256klmm	8GA40-040hh320klmm	8GA40-040hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	20	20	18	20	18	20	18	7.5
Max. output torque T_{2max} [Nm]	32	32	29	32	29	32	29	12
E-stop torque T_{2stop} [Nm]	40	40	36	40	36	40	36	27
Idle torque [Nm] at 20°C and 3000 rpm	0.1							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	5000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	5000							
Max. drive speed n_{1max} [rpm]	18000							
Max. backlash J_t [arcmin]	28							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	1							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	160							
Max. radial force Fr_{max} [N] for 20,000 h	200							
Max. axial force Fa_{max} [N] for 30,000 h	160							
Max. axial force Fa_{max} [N] for 20,000 h	200							
Operating noise L_{PA} [dB(A)]	68							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	0.71							
Moment of inertia J_1 [kgcm^2]	0.042	0.032	0.042	0.029	0.029	0.029	0.029	0.029

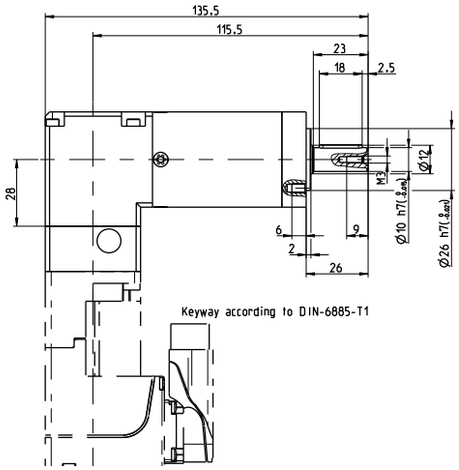
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

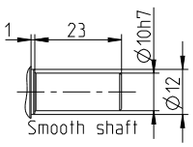
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-040	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	19	19	19	15	15
Flange diameter Q [mm]	60	40	60	60	60

8GA40-060 standard

Technical data

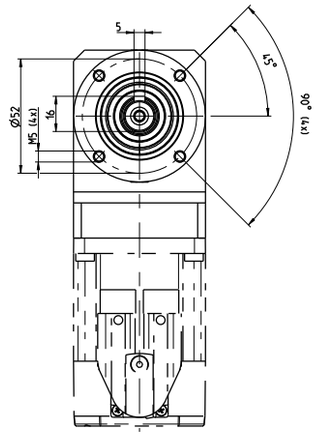
	8GA40-060hh003klmm	8GA40-060hh004klmm	8GA40-060hh005klmm	8GA40-060hh008klmm	8GA40-060hh010klmm	8GA40-060hh009klmm	8GA40-060hh012klmm	8GA40-060hh015klmm	8GA40-060hh016klmm	8GA40-060hh020klmm	8GA40-060hh025klmm	8GA40-060hh032klmm	8GA40-060hh040klmm	8GA40-060hh064klmm	8GA40-060hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	14	19	24	18	15	44	44	44	44	44	40	44	40	18	15
Max. output torque T_{2max} [Nm]	22	30	38	29	24	70	70	70	70	70	64	70	64	29	24
E-stop torque T_{2stop} [Nm]	66	86	80	80	70	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.25	0.25	0.2	0.2	0.2	0.25	0.25	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1								4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3900	3950	4000	4500	4500	3550	4150	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]								13000							
Max. backlash J_t [arcmin]	16	16	16	16	16	18	18	18	18	18	18	18	18	18	18
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								340							
Max. radial force Fr_{max} [N] for 20,000 h								400							
Max. axial force Fa_{max} [N] for 30,000 h								450							
Max. axial force Fa_{max} [N] for 20,000 h								500							
Operating noise L_{PA} [dB(A)]								70							
Efficiency at full load η [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	1.7	1.7	1.7	1.7	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Moment of inertia J_1 [kgcm^2]	0.246	0.204	0.189	0.176	0.175	0.242	0.238	0.188	0.199	0.186	0.186	0.175	0.175	0.175	0.175

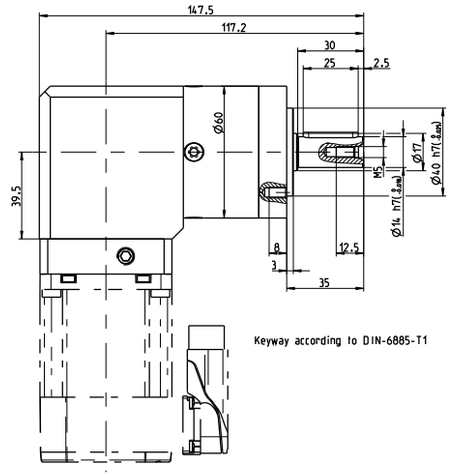
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

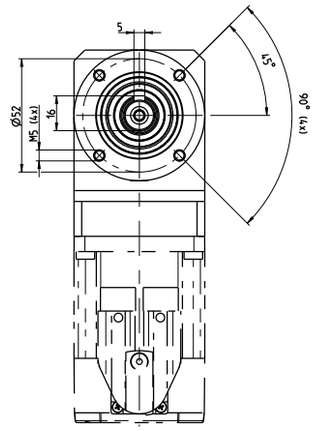
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

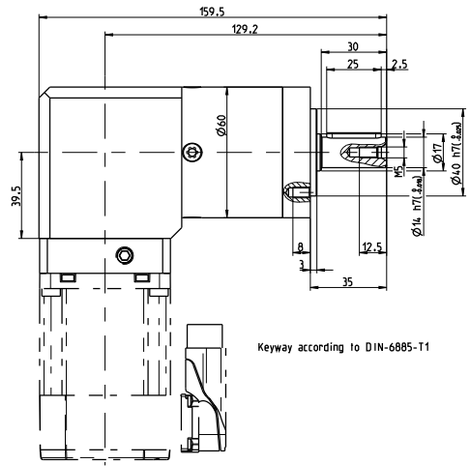
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-060	8LSA2	8LSA3	8LVA2	8JSA2	8JSA3	80MPD	80MPF	80MPH
Flange length L [mm]	17.1	23.1	23.1	16.1	23.1	16.1	16.1	25.1
Flange diameter Q [mm]	60	90	60	60	70	60	60	80

8GA40-060 standard

Technical data

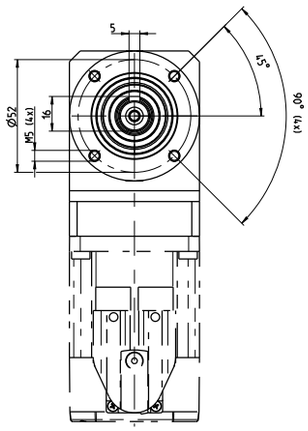
	8GA40-060hh060klmm	8GA40-060hh080klmm	8GA40-060hh120klmm	8GA40-060hh160klmm	8GA40-060hh200klmm	8GA40-060hh256klmm	8GA40-060hh320klmm	8GA40-060hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	44	44	44	44	40	44	40	18
Max. output torque T_{2max} [Nm]	70	70	70	70	64	70	64	29
E-stop torque T_{2stop} [Nm]	88	88	88	88	80	88	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.2							
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4500							
Max. drive speed n_{1max} [rpm]	13000							
Max. backlash J_t [arcmin]	21							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	2.5							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	340							
Max. radial force Fr_{max} [N] for 20,000 h	400							
Max. axial force Fa_{max} [N] for 30,000 h	450							
Max. axial force Fa_{max} [N] for 20,000 h	500							
Operating noise L_{PA} [dB(A)]	70							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	2.1							
Moment of inertia J_1 [kgcm^2]	0.187	0.186	0.175	0.175	0.175	0.175	0.175	0.175

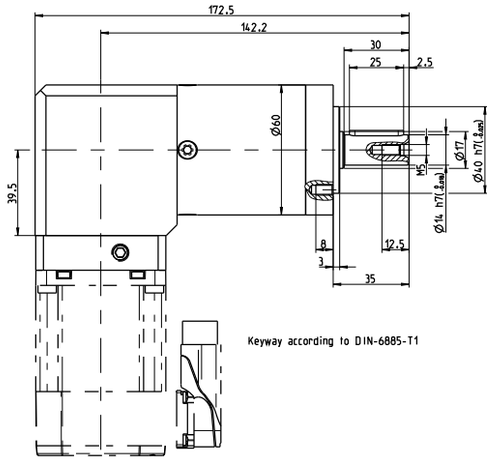
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

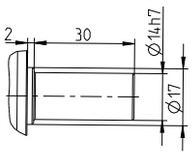
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-060	8LSA2	8LSA3	8LVA2	8JSA2	8JSA3	80MPD	80MPF	80MPH
Flange length L [mm]	17.1	23.1	23.1	16.1	23.1	16.1	16.1	25.1
Flange diameter Q [mm]	60	90	60	60	70	60	60	80

8GA40-080 standard

Technical data

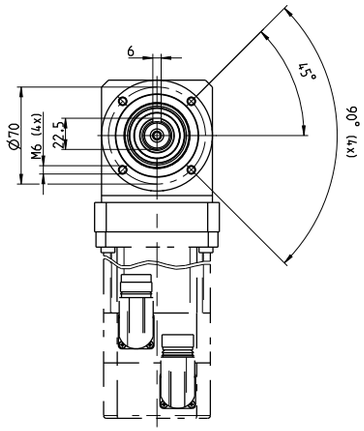
	8GA40-080hh003klmm	8GA40-080hh004klmm	8GA40-080hh005klmm	8GA40-080hh008klmm	8GA40-080hh010klmm	8GA40-080hh009klmm	8GA40-080hh012klmm	8GA40-080hh015klmm	8GA40-080hh016klmm	8GA40-080hh020klmm	8GA40-080hh025klmm	8GA40-080hh032klmm	8GA40-080hh040klmm	8GA40-080hh064klmm	8GA40-080hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	40	53	67	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	64	85	107	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	170	260	240	220	240	240	220	240	220	190	170
Idle torque [Nm] at 20°C and 3000 rpm	0.6	0.6	0.55	0.5	0.5	0.55	0.55	0.5	0.55	0.5	0.5	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3500	3550	3600	4000	4000	3250	3850	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2500	2450	2450	3800	4000	2100	2650	3150	3100	3550	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	13	13	13	13	13	15	15	15	15	15	15	15	15	15	15
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	4.5	4.5	4.5	4.5	4.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	650														
Max. radial force Fr_{max} [N] for 20,000 h	750														
Max. axial force Fa_{max} [N] for 30,000 h	900														
Max. axial force Fa_{max} [N] for 20,000 h	1000														
Operating noise L_{PA} [dB(A)]	73														
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	4.4	4.4	4.4	4.4	4.4	5	5	5	5	5	5	5	5	5	5
Moment of inertia J_1 [kgcm^2]	1.189	0.939	0.869	0.809	0.809	1.159	1.139	1.129	0.919	0.859	0.859	0.809	0.809	0.809	0.809

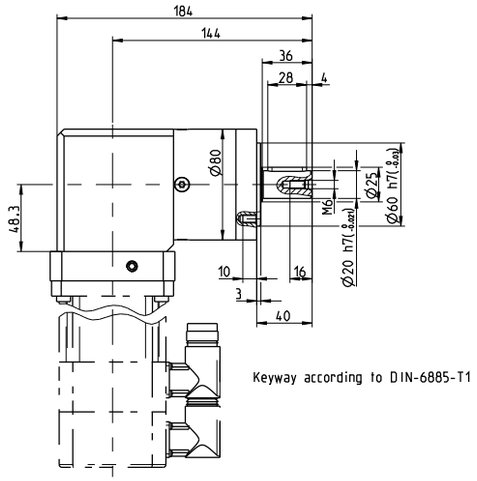
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

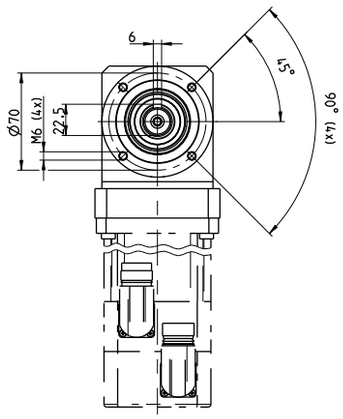
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

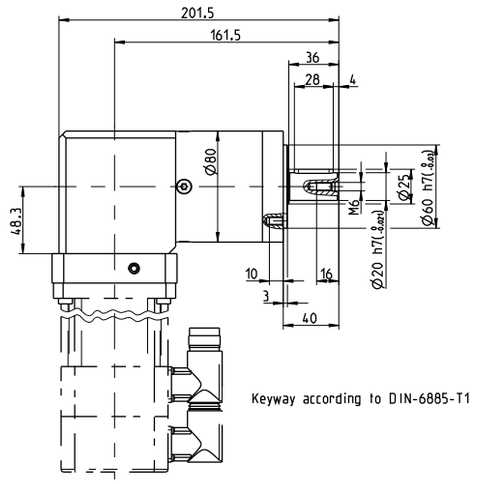
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8LSN4	80MPH
Flange length L [mm]	21.2	31.2	21.2	31.2	21.2	31.2	31.2	23.2
Flange diameter Q [mm]	90	100	80	80	80	90	115	90

8GA40-080 standard

Technical data

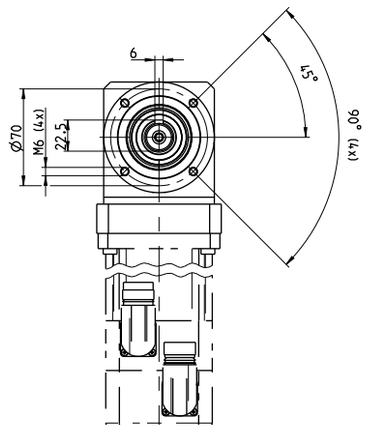
	8GA40-080hh060klmm	8GA40-080hh080klmm	8GA40-080hh120klmm	8GA40-080hh160klmm	8GA40-080hh200klmm	8GA40-080hh256klmm	8GA40-080hh320klmm	8GA40-080hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	110	120	110	120	110	120	110	50
Max. output torque T_{2max} [Nm]	176	192	176	192	176	192	176	80
E-stop torque T_{2stop} [Nm]	220	240	220	240	220	240	220	190
Idle torque [Nm] at 20°C and 3000 rpm	0.5	0.5	0.5	0.45	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000							
Max. drive speed n_{1max} [rpm]	7000							
Max. backlash J_t [arcmin]	17							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	6.3							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	650							
Max. radial force Fr_{max} [N] for 20,000 h	750							
Max. axial force Fa_{max} [N] for 30,000 h	900							
Max. axial force Fa_{max} [N] for 20,000 h	1000							
Operating noise L_{PA} [dB(A)]	73							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	5.5							
Moment of inertia J_1 [kgcm^2]	0.929	0.919	1.119	0.809	0.809	0.809	0.809	0.809

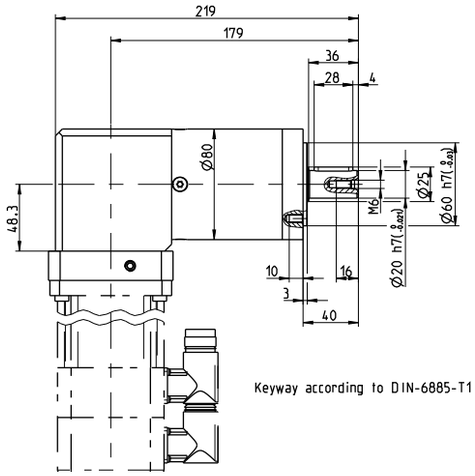
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

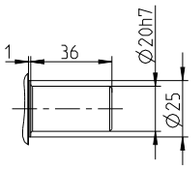
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

3-stage gear





Alternative drive shaft options



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8LSN4	80MPH
Flange length L [mm]	21.2	31.2	21.2	31.2	21.2	31.2	31.2	23.2
Flange diameter Q [mm]	90	100	80	80	80	90	115	90

8GA40-120 standard

Technical data

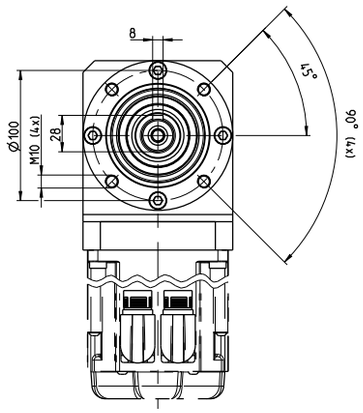
	8GA40-120hh003klmm	8GA40-120hh004klmm	8GA40-120hh005klmm	8GA40-120hh008klmm	8GA40-120hh010klmm	8GA40-120hh009klmm	8GA40-120hh012klmm	8GA40-120hh015klmm	8GA40-120hh016klmm	8GA40-120hh020klmm	8GA40-120hh025klmm	8GA40-120hh032klmm	8GA40-120hh040klmm	8GA40-120hh064klmm	8GA40-120hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	80	105	130	120	95	210	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	128	168	208	192	152	336	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	360	474	500	380	430	500	520	500	520	520	500	520	500	380	430
Idle torque [Nm] at 20°C and 3000 rpm	1.5	1.45	1.2	1	0.95	1.25	1.25	1.2	1.25	1.1	1.05	0.9	0.9	0.9	0.9
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2850	2950	3050	3500	3500	2950	3050	3500	3450	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2050	2050	2050	2950	3500	2000	2050	2550	2450	2850	3350	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500														
Max. backlash J_t [arcmin]	11	11	11	11	11	13	13	13	13	13	13	13	13	13	13
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	10	10	10	10	10	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	1500														
Max. radial force Fr_{max} [N] for 20,000 h	1750														
Max. axial force Fa_{max} [N] for 30,000 h	2100														
Max. axial force Fa_{max} [N] for 20,000 h	2500														
Operating noise L_{PA} [dB(A)]	75														
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	12	12	12	12	12	14	14	14	14	14	14	14	14	14	14
Moment of inertia J_1 [kgcm^2]	5.75	3.91	3.35	2.89	2.85	5.73	5.6	5.53	3.83	3.28	3.26	2.84	2.84	2.84	2.84

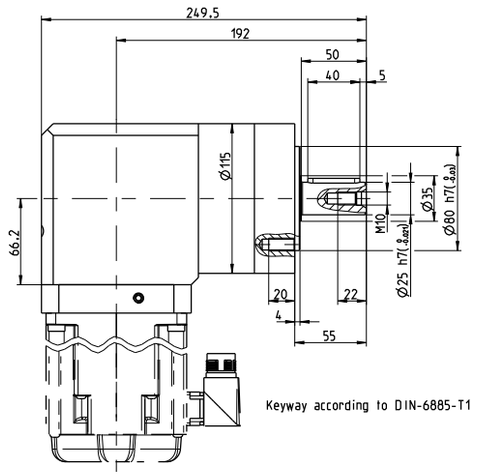
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

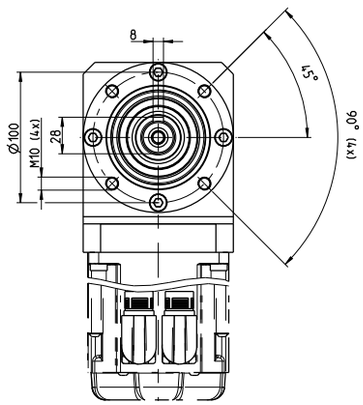
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

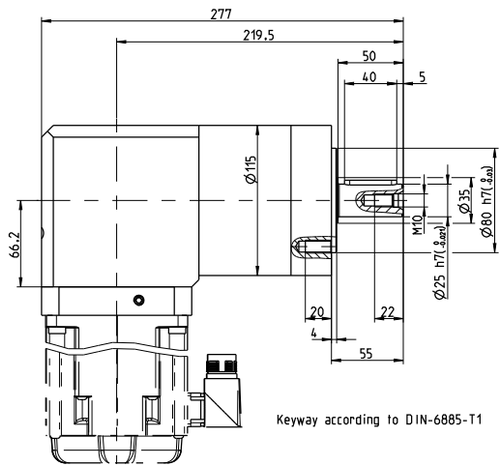
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8LSN 4	8LSN5	80MPH
Flange length L [mm]	21.8	21.8	31.8	21.8	31.8	21.8	31.8	21.8
Flange diameter Q [mm]	115	115	140	115	115	115	140	115

8GA40-120 standard

Technical data

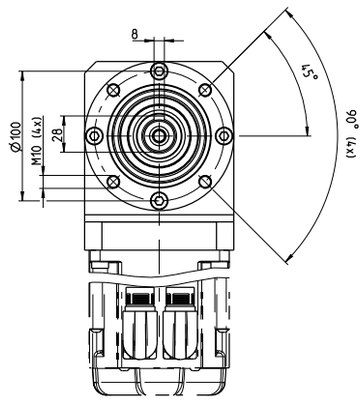
	8GA40-120hh060klmm	8GA40-120hh080klmm	8GA40-120hh120klmm	8GA40-120hh160klmm	8GA40-120hh200klmm	8GA40-120hh256klmm	8GA40-120hh320klmm	8GA40-120hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	260	260	230	260	230	260	230	120
Max. output torque T_{2max} [Nm]	416	416	368	416	368	416	368	192
E-stop torque T_{2stop} [Nm]	520	520	500	520	500	520	500	380
Idle torque [Nm] at 20°C and 3000 rpm	1.2	1.05	1.15	0.9	0.9	0.9	0.9	0.9
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3500							
Max. drive speed n_{1max} [rpm]	6500							
Max. backlash J_t [arcmin]	15							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	12							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	1500							
Max. radial force Fr_{max} [N] for 20,000 h	1750							
Max. axial force Fa_{max} [N] for 30,000 h	2100							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	75							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	16							
Moment of inertia J_1 [kgcm^2]	5.62	3.28	5.47	2.84	2.84	2.84	2.84	2.84

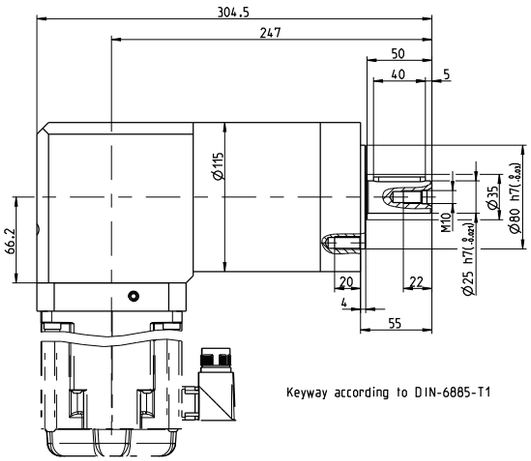
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

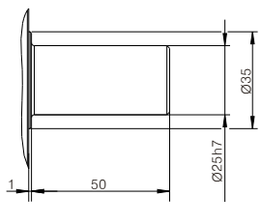
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA40-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8LSN 4	8LSN5	80MPH
Flange length L [mm]	21.8	21.8	31.8	21.8	31.8	21.8	31.8	21.8
Flange diameter Q [mm]	115	115	140	115	115	115	140	115

8GA45-089 standard

Technical data

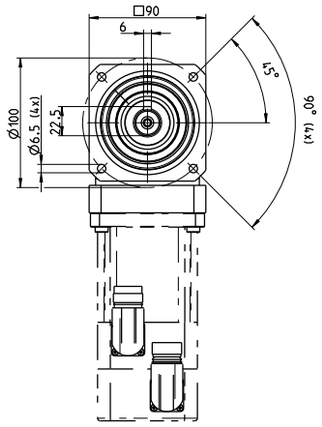
	8GA45-089hh003klmm	8GA45-089hh004klmm	8GA45-089hh005klmm	8GA45-089hh008klmm	8GA45-089hh010klmm	8GA45-089hh009klmm	8GA45-089hh012klmm	8GA45-089hh015klmm	8GA45-089hh016klmm	8GA45-089hh020klmm	8GA45-089hh025klmm	8GA45-089hh032klmm	8GA45-089hh040klmm	8GA45-089hh064klmm	8GA45-089hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	40	53	67	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	64	85	107	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	170	260	240	220	240	240	220	240	220	190	170
Idle torque [Nm] at 20°C and 3000 rpm	0.85	0.75	0.65	0.55	0.5	0.6	0.55	0.55	0.55	0.5	0.5	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3100	3250	3350	4000	4000	3150	3750	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2300	2300	2350	3650	4000	2050	2600	3100	3050	3500	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	13	13	13	13	13	15	15	15	15	15	15	15	15	15	15
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	4.5	4.5	4.5	4.5	4.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	1700														
Max. radial force Fr_{max} [N] for 20,000 h	2050														
Max. axial force Fa_{max} [N] for 30,000 h	2000														
Max. axial force Fa_{max} [N] for 20,000 h	2500														
Operating noise L_{PA} [dB(A)]	73														
Efficiency at full load η [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	5.5	5.5	5.5	5.5	5.5	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Moment of inertia J_1 [kgcm^2]	1.189	0.939	0.869	0.809	0.809	1.159	1.139	1.129	0.919	0.859	0.859	0.809	0.809	0.809	0.809

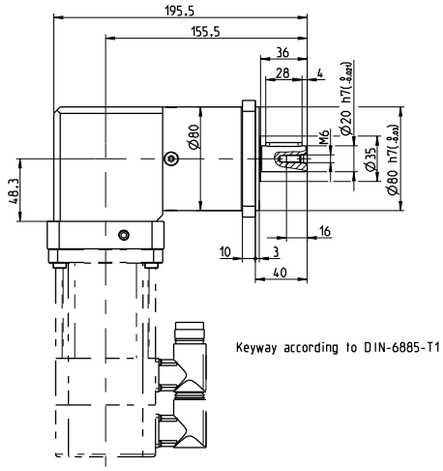
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

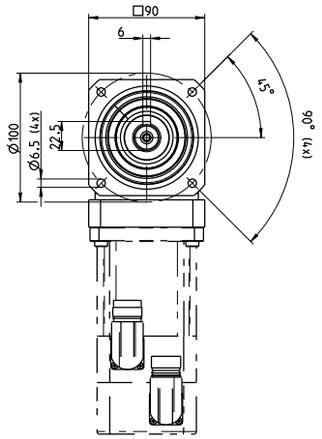
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

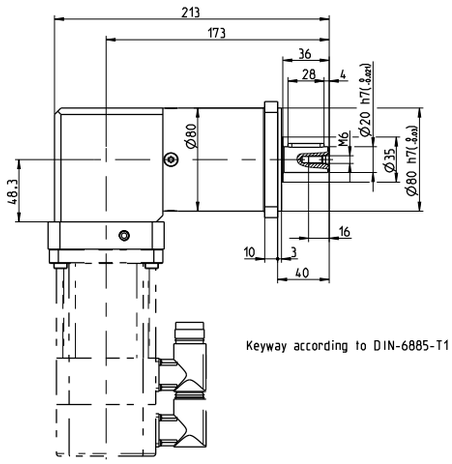
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA45-089	8LSA3	8LSA/C4	8LVA 2	8LVA3	8JSA3	8JSA4	8LSN4	80MPH
Flange length L [mm]	21.2	31.2	21.2	31.2	21.2	31.2	31.2	23.2
Flange diameter Q [mm]	90	100	80	80	80	90	115	90

8GA45-089 standard

Technical data

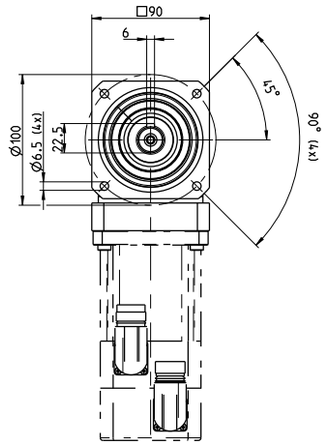
	8GA45-089hh060klmm	8GA45-089hh080klmm	8GA45-089hh120klmm	8GA45-089hh160klmm	8GA45-089hh200klmm	8GA45-089hh256klmm	8GA45-089hh320klmm	8GA45-089hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	110	120	110	120	110	120	110	50
Max. output torque T_{2max} [Nm]	176	192	176	192	176	192	176	80
E-stop torque T_{2stop} [Nm]	220	240	220	240	220	240	220	190
Idle torque [Nm] at 20°C and 3000 rpm	0.5	0.5	0.5	0.45	0.45	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	4000							
Max. drive speed n_{1max} [rpm]	7000							
Max. backlash J_t [arcmin]	17							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	6.3							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	1700							
Max. radial force Fr_{max} [N] for 20,000 h	2050							
Max. axial force Fa_{max} [N] for 30,000 h	2000							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	73							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	6.6							
Moment of inertia J_1 [kgcm^2]	0.929	0.919	1.119	0.809	0.809	0.809	0.809	0.809

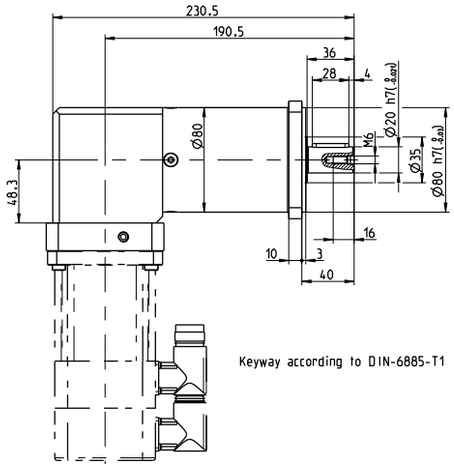
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

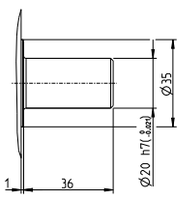
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA45-089	8LSA3	8LSA/C4	8LVA 2	8LVA3	8JSA3	8JSA4	8LSN4	80MPH
Flange length L [mm]	21.2	31.2	21.2	31.2	21.2	31.2	31.2	23.2
Flange diameter Q [mm]	90	100	80	80	80	90	115	90

8GA45-121 standard

Technical data

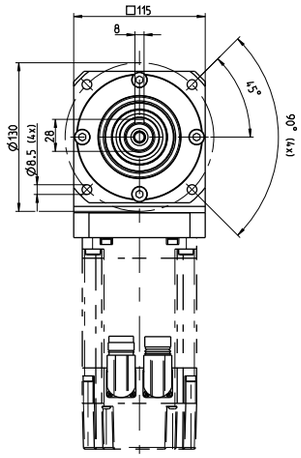
	8GA45-121hh003klmm	8GA45-121hh004klmm	8GA45-121hh005klmm	8GA45-121hh008klmm	8GA45-121hh010klmm	8GA45-121hh009klmm	8GA45-121hh012klmm	8GA45-121hh015klmm	8GA45-121hh016klmm	8GA45-121hh020klmm	8GA45-121hh025klmm	8GA45-121hh032klmm	8GA45-121hh040klmm	8GA45-121hh064klmm	8GA45-121hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	80	105	130	120	95	210	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	128	168	208	192	152	336	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	360	474	500	380	430	500	520	500	520	520	500	520	500	380	430
Idle torque [Nm] at 20°C and 3000 rpm	1.5	1.45	1.2	1	0.95	1.25	1.25	1.2	1.25	1.1	1.05	0.9	0.9	0.9	0.9
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2850	2950	3050	3500	3500	2950	3050	3500	3450	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2050	2050	2050	2950	3500	2000	2050	2550	2450	2850	3350	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]								6500							
Max. backlash J_t [arcmin]	11	11	11	11	11	13	13	13	13	13	13	13	13	13	13
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	10	10	10	10	10	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								2400							
Max. radial force Fr_{max} [N] for 20,000 h								2950							
Max. axial force Fa_{max} [N] for 30,000 h								2100							
Max. axial force Fa_{max} [N] for 20,000 h								2500							
Operating noise L_{PA} [dB(A)]								75							
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	12.6	12.6	12.6	12.6	12.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Moment of inertia J_1 [kgcm^2]	5.75	3.91	3.35	2.89	2.85	5.73	5.6	5.53	3.83	3.28	3.26	2.84	2.84	2.84	2.84

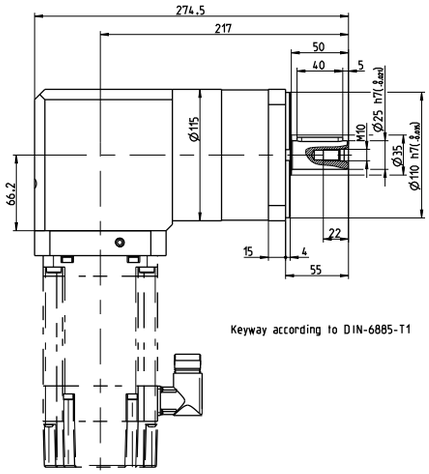
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

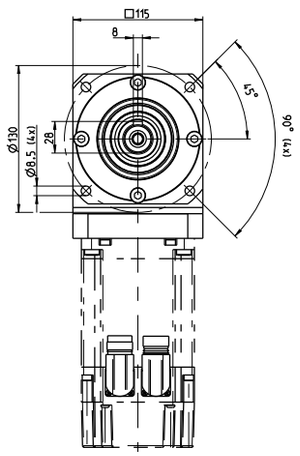
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

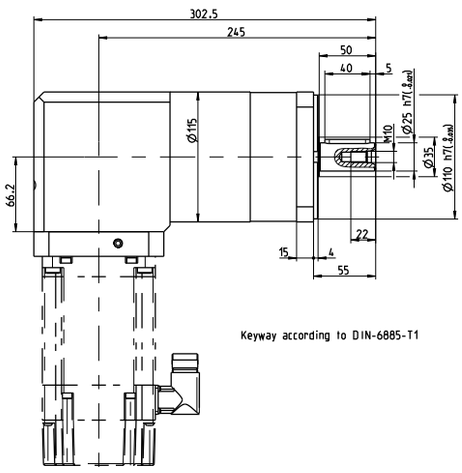
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA45-121	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8LSN 4	8LSN5	80MPH
Flange length L [mm]	21.8	21.8	31.8	21.8	31.8	21.8	31.8	21.8
Flange diameter Q [mm]	115	115	140	115	115	115	140	115

8GA45-121 standard

Technical data

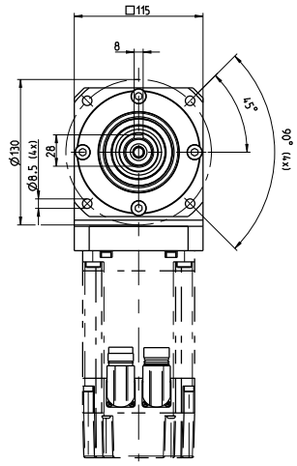
	8GA45-121hh060klmm	8GA45-121hh080klmm	8GA45-121hh120klmm	8GA45-121hh160klmm	8GA45-121hh200klmm	8GA45-121hh256klmm	8GA45-121hh320klmm	8GA45-121hh512klmm
Gearbox								
Number of gear stages	3							
Gear ratio i	60	80	120	160	200	256	320	512
Nominal output torque T_{2N} [Nm]	260	260	230	260	230	260	230	120
Max. output torque T_{2max} [Nm]	416	416	368	416	368	416	368	192
E-stop torque T_{2stop} [Nm]	520	520	500	520	500	520	500	380
Idle torque [Nm] at 20°C and 3000 rpm	1.2	1.05	1.15	0.9	0.9	0.9	0.9	0.9
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3500							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3500							
Max. drive speed n_{1max} [rpm]	6500							
Max. backlash J_t [arcmin]	15							
Reduced backlash J_t [arcmin] less than	0							
Torsional rigidity C_{t21} [Nm/arcmin]	12							
Tilting rigidity C_{2K} [Nm/arcmin]	0							
Max. breakdown torque M_{2Kmax} [Nm]	0							
Max. radial force Fr_{max} [N] for 30,000 h	2400							
Max. radial force Fr_{max} [N] for 20,000 h	2950							
Max. axial force Fa_{max} [N] for 30,000 h	2100							
Max. axial force Fa_{max} [N] for 20,000 h	2500							
Operating noise L_{PA} [dB(A)]	75							
Efficiency at full load ŋ [%]	88							
Min. operating temperature $B_{Tempmin}$ [°C]	-25							
Max. operating temperature $B_{Tempmax}$ [°C]	90							
Mounting orientation	Any							
Protection	IP54							
Weight m [kg]	16.6							
Moment of inertia J_1 [kgcm^2]	5.62	3.28	5.47	2.84	2.84	2.84	2.84	2.84

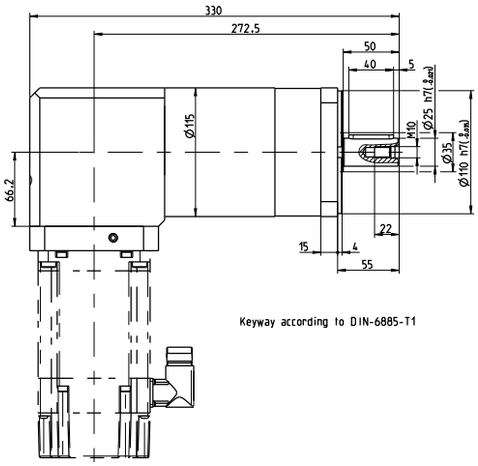
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

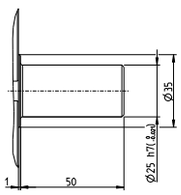
3-stage gear





Alternative drive shaft options

Smooth shaft



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA45-121	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8LSN 4	8LSN5	80MPH
Flange length L [mm]	21.8	21.8	31.8	21.8	31.8	21.8	31.8	21.8
Flange diameter Q [mm]	115	115	140	115	115	115	140	115

8GA50-050 standard

Technical data

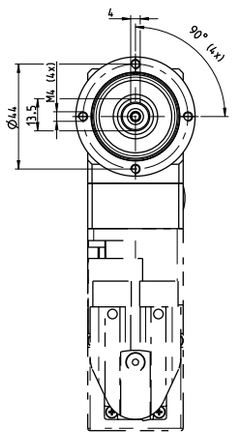
	8GA50-050hh003klmm	8GA50-050hh004klmm	8GA50-050hh005klmm	8GA50-050hh008klmm	8GA50-050hh010klmm	8GA50-050hh009klmm	8GA50-050hh012klmm	8GA50-050hh015klmm	8GA50-050hh016klmm	8GA50-050hh020klmm	8GA50-050hh025klmm	8GA50-050hh032klmm	8GA50-050hh040klmm	8GA50-050hh064klmm	8GA50-050hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	4.5	6	7.5	6	5	12	15	13	15	15	13	15	13	7.5	5
Max. output torque T_{2max} [Nm]	7	10	12	10	8	19	24	21	24	24	21	24	21	12	8
E-stop torque T_{2stop} [Nm]	23	28	35	27	25	33	40	36	40	40	36	40	36	27	27
Idle torque [Nm] at 20°C and 3000 rpm	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1								5000							
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1								5000							
Max. drive speed n_{1max} [rpm]								18000							
Max. backlash J_t [arcmin]	21	21	21	21	21	25	25	25	25	25	25	25	25	25	25
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	0.7	0.7	0.7	0.7	0.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								700							
Max. radial force Fr_{max} [N] for 20,000 h								800							
Max. axial force Fa_{max} [N] for 30,000 h								800							
Max. axial force Fa_{max} [N] for 20,000 h								1000							
Operating noise L_{PA} [dB(A)]								68							
Efficiency at full load η [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	0.86	0.86	0.86	0.86	0.86	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Moment of inertia J_1 [kgcm^2]	0.031	0.022	0.019	0.017	0.016	0.03	0.029	0.023	0.022	0.019	0.019	0.017	0.016	0.016	0.016

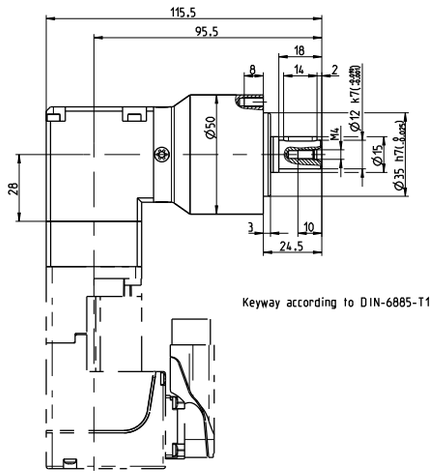
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

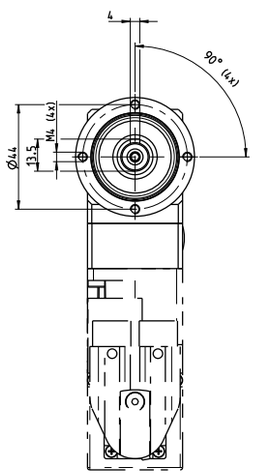
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

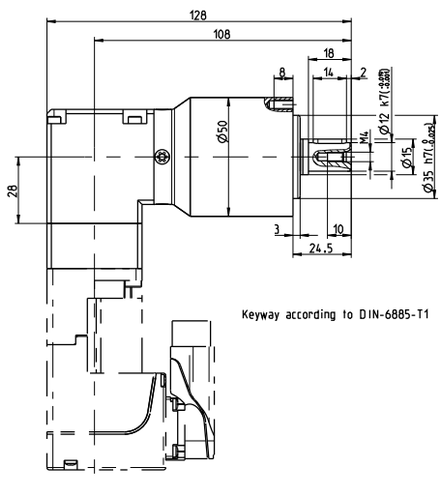
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA50-050	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	19	19	19	15	15
Flange diameter Q [mm]	60	40	60	60	60

8GA50-070 standard

Technical data

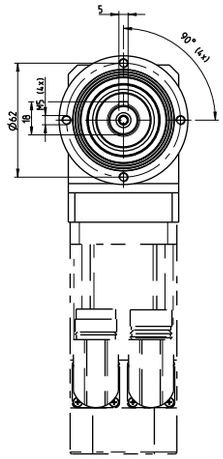
	8GA50-070hh003klmm	8GA50-070hh004klmm	8GA50-070hh005klmm	8GA50-070hh008klmm	8GA50-070hh010klmm	8GA50-070hh009klmm	8GA50-070hh012klmm	8GA50-070hh015klmm	8GA50-070hh016klmm	8GA50-070hh020klmm	8GA50-070hh025klmm	8GA50-070hh032klmm	8GA50-070hh040klmm	8GA50-070hh064klmm	8GA50-070hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	14	19	24	18	15	33	33	33	33	33	30	33	30	18	15
Max. output torque T_{2max} [Nm]	22	30	38	29	24	53	53	53	53	53	48	53	48	29	24
E-stop torque T_{2stop} [Nm]	66	86	80	80	70	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.5	0.4	0.35	0.25	0.25	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.2	0.2	0.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	4200	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3300	3500	3600	4500	4500	4000	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	13000														
Max. backlash J_t [arcmin]	16	16	16	16	16	18	18	18	18	18	18	18	18	18	18
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	1.5	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	900														
Max. radial force Fr_{max} [N] for 20,000 h	1050														
Max. axial force Fa_{max} [N] for 30,000 h	1000														
Max. axial force Fa_{max} [N] for 20,000 h	1350														
Operating noise L_{PA} [dB(A)]	70														
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	2.3	2.3	2.3	2.3	2.3	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Moment of inertia J_1 [kgcm^2]	0.157	0.106	0.086	0.068	0.066	0.133	0.128	0.078	0.089	0.076	0.075	0.064	0.064	0.064	0.064

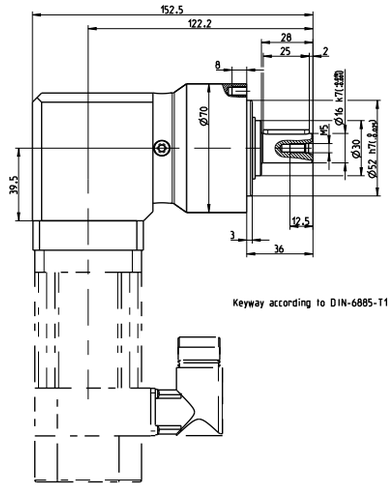
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

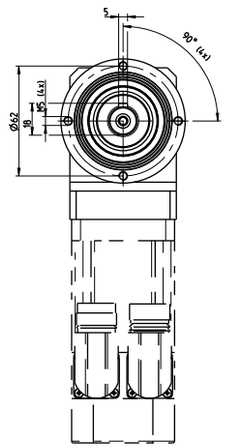
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

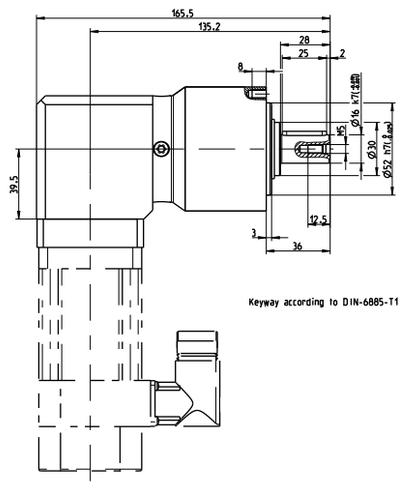
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA50-070	8LSA2	8LSA3	8LVA2	8JSA2	8JSA3	80MPD	80MPF	80MPH
Flange length L [mm]	17.1	23.1	23.1	16.1	23.1	16.1	16.1	25.1
Flange diameter Q [mm]	60	90	60	60	70	60	60	80

8GA50-090 standard

Technical data

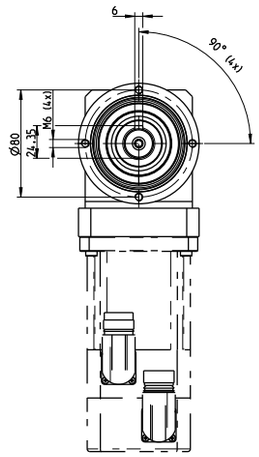
	8GA50-090hh003klmm	8GA50-090hh004klmm	8GA50-090hh005klmm	8GA50-090hh008klmm	8GA50-090hh010klmm	8GA50-090hh009klmm	8GA50-090hh012klmm	8GA50-090hh015klmm	8GA50-090hh016klmm	8GA50-090hh020klmm	8GA50-090hh025klmm	8GA50-090hh032klmm	8GA50-090hh040klmm	8GA50-090hh064klmm	8GA50-090hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	40	53	67	50	38	97	90	82	90	90	82	90	82	50	38
Max. output torque T_{2max} [Nm]	64	85	107	80	61	155	144	131	144	144	131	144	131	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	170	260	240	220	240	240	220	240	220	190	170
Idle torque [Nm] at 20°C and 3000 rpm	1.05	0.85	0.75	0.6	0.55	0.6	0.55	0.55	0.55	0.5	0.5	0.5	0.45	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3000	3150	3250	4000	4000	3500	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2200	2250	2300	3550	4000	2450	3000	3500	3450	3900	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]								7000							
Max. backlash J_t [arcmin]	13	13	13	13	13	15	15	15	15	15	15	15	15	15	15
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	4.5	4.5	4.5	4.5	4.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								1700							
Max. radial force Fr_{max} [N] for 20,000 h								1900							
Max. axial force Fa_{max} [N] for 30,000 h								1500							
Max. axial force Fa_{max} [N] for 20,000 h								2000							
Operating noise L_{PA} [dB(A)]								73							
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	5.3	5.3	5.3	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Moment of inertia J_1 [kgcm^2]	0.82	0.57	0.48	0.4	0.4	0.75	0.73	0.71	0.5	0.44	0.44	0.39	0.39	0.39	0.39

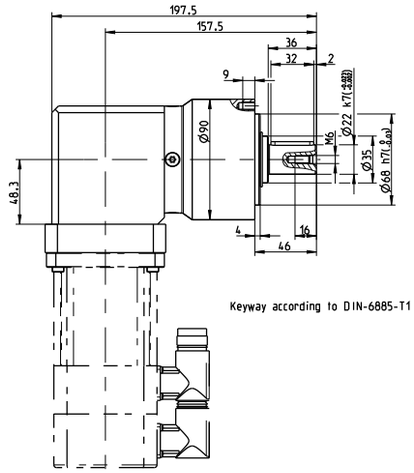
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

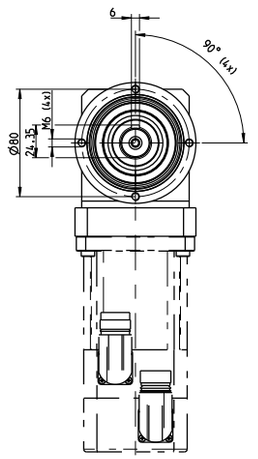
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

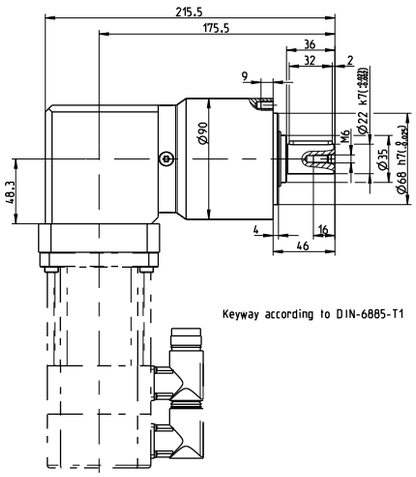
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA50-090	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8LSN4	80MPH
Flange length L [mm]	21.2	31.2	21.2	31.2	21.2	31.2	31.2	23.2
Flange diameter Q [mm]	90	100	80	80	80	90	115	90

8GA50-120 standard

Technical data

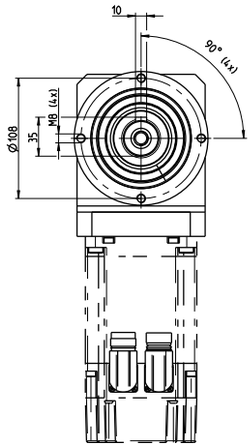
	8GA50-120hh003klmm	8GA50-120hh004klmm	8GA50-120hh005klmm	8GA50-120hh008klmm	8GA50-120hh010klmm	8GA50-120hh009klmm	8GA50-120hh012klmm	8GA50-120hh015klmm	8GA50-120hh016klmm	8GA50-120hh020klmm	8GA50-120hh025klmm	8GA50-120hh032klmm	8GA50-120hh040klmm	8GA50-120hh064klmm	8GA50-120hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	80	105	130	120	95	157	195	172	195	195	172	195	172	120	95
Max. output torque T_{2max} [Nm]	128	168	208	192	152	251	312	275	312	312	275	312	275	192	152
E-stop torque T_{2stop} [Nm]	360	474	500	380	430	500	520	500	520	520	500	520	500	380	430
Idle torque [Nm] at 20°C and 3000 rpm	2.25	1.85	1.5	1.15	1.05	1.3	1.25	1.2	1.2	1.1	1.05	0.95	0.95	0.9	0.9
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2350	2450	2600	3450	3500	2950	3050	3450	3450	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1700	1750	1750	2550	3200	2100	2150	2650	2550	2900	3400	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]								6500							
Max. backlash J_t [arcmin]	11	11	11	11	11	13	13	13	13	13	13	13	13	13	13
Reduced backlash J_t [arcmin] less than								0							
Torsional rigidity C_{t21} [Nm/arcmin]	10	10	10	10	10	13	13	13	13	13	13	13	13	13	13
Tilting rigidity C_{2K} [Nm/arcmin]								0							
Max. breakdown torque M_{2Kmax} [Nm]								0							
Max. radial force Fr_{max} [N] for 30,000 h								2150							
Max. radial force Fr_{max} [N] for 20,000 h								2500							
Max. axial force Fa_{max} [N] for 30,000 h								3000							
Max. axial force Fa_{max} [N] for 20,000 h								4000							
Operating noise L_{PA} [dB(A)]								75							
Efficiency at full load ŋ [%]	94	94	94	94	94	92	92	92	92	92	92	92	92	92	92
Min. operating temperature $B_{Tempmin}$ [°C]								-25							
Max. operating temperature $B_{Tempmax}$ [°C]								90							
Mounting orientation								Any							
Protection								IP54							
Weight m [kg]	13.5	13.5	13.5	13.5	13.5	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Moment of inertia J_1 [kgcm^2]	2.87	1.92	1.6	1.35	1.3	2.65	2.57	2.54	1.76	1.5	1.5	1.3	1.3	1.3	1.3

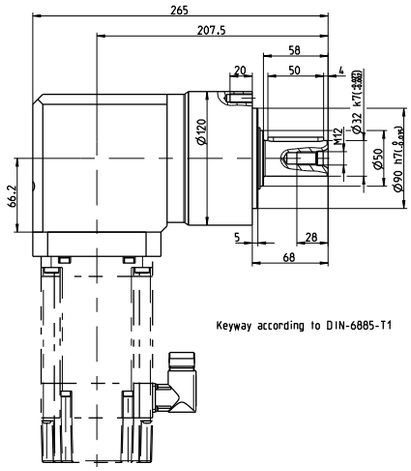
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

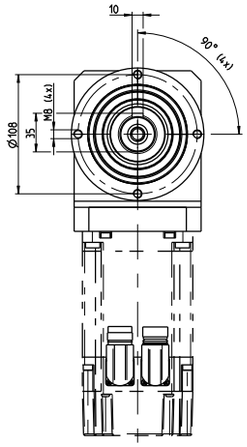
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

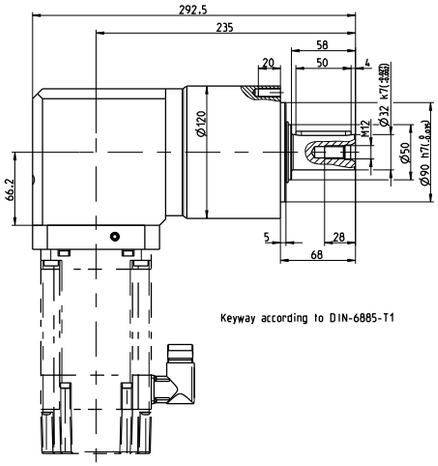
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA50-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8LSN4	8LSN5	80MPH
Flange length L [mm]	21.8	21.8	31.8	21.8	31.8	21.8	31.8	21.8
Flange diameter Q [mm]	115	115	140	115	115	115	140	115

8GF40-064 standard

Technical data

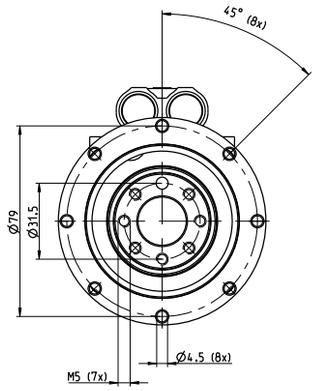
	8GF40-064hh003klmm	8GF40-064hh004klmm	8GF40-064hh005klmm	8GF40-064hh008klmm	8GF40-064hh010klmm	8GF40-064hh009klmm	8GF40-064hh012klmm	8GF40-064hh015klmm	8GF40-064hh016klmm	8GF40-064hh020klmm	8GF40-064hh025klmm	8GF40-064hh032klmm	8GF40-064hh040klmm	8GF40-064hh064klmm	8GF40-064hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	28	38	40	18	15	44	44	44	44	44	40	44	40	18	15
Max. output torque T_{2max} [Nm]	45	61	64	29	24	70	70	70	70	70	64	70	64	29	24
E-stop torque T_{2stop} [Nm]	66	88	80	80	80	88	88	88	88	88	80	88	80	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.3	0.2	0.2	0.15	0.1	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3950	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3200	3450	4000	4500	4500	4400	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	13000														
Max. backlash J_t [arcmin]	10	10	10	10	10	12	12	12	12	12	12	12	12	12	12
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	18	18	18	18	18	12	12	12	12	12	12	12	12	12	12
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	500														
Max. radial force Fr_{max} [N] for 20,000 h	550														
Max. axial force Fa_{max} [N] for 30,000 h	1200														
Max. axial force Fa_{max} [N] for 20,000 h	1200														
Operating noise L_{PA} [dB(A)]	58														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	1.1	1.1	1.1	1.1	1.1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Moment of inertia J_1 [kgcm^2]	0.183	0.123	0.097	0.071	0.071	0.145	0.134	0.087	0.101	0.084	0.084	0.074	0.073	0.071	0.07

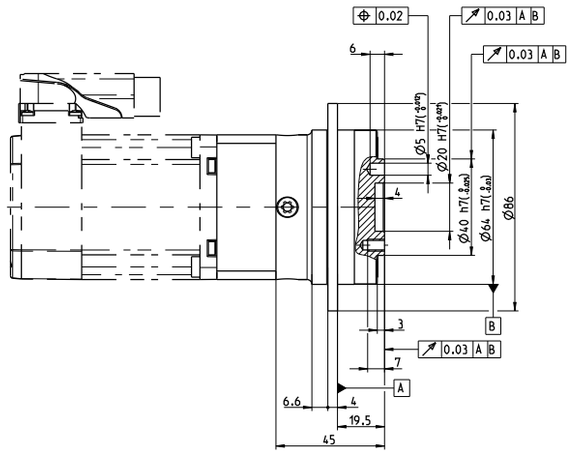
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

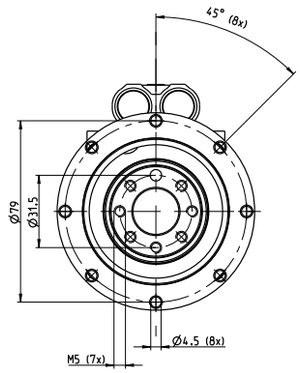
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

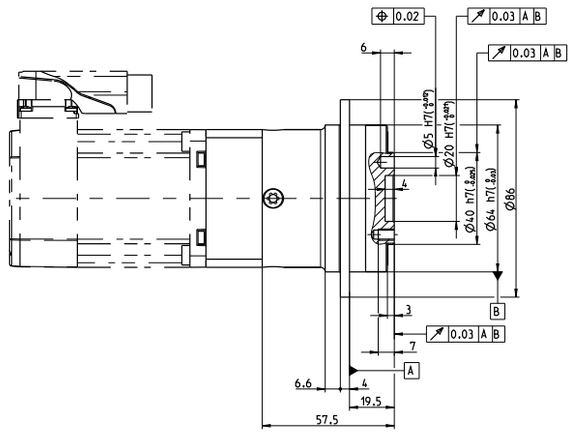
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF40-064	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPD	80MPF	80MPH
Flange length L [mm]	25.5	31.2	31.2	41.3	24.2	31.2	41.3	24	24	33.2
Flange diameter Q [mm]	60	90	60	80	60	70	90	60	60	90

8GF40-090 standard

Technical data

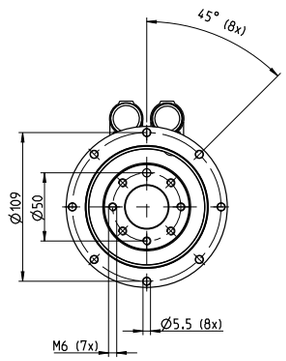
	8GF40-090hh003klmm	8GF40-090hh004klmm	8GF40-090hh005klmm	8GF40-090hh008klmm	8GF40-090hh010klmm	8GF40-090hh009klmm	8GF40-090hh012klmm	8GF40-090hh015klmm	8GF40-090hh016klmm	8GF40-090hh020klmm	8GF40-090hh025klmm	8GF40-090hh032klmm	8GF40-090hh040klmm	8GF40-090hh064klmm	8GF40-090hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	85	115	110	50	38	130	120	110	120	120	110	120	110	50	38
Max. output torque T_{2max} [Nm]	136	184	176	80	61	208	192	176	192	192	176	192	176	80	61
E-stop torque T_{2stop} [Nm]	180	240	220	190	200	260	240	220	240	240	220	240	220	190	200
Idle torque [Nm] at 20°C and 3000 rpm	0.6	0.5	0.4	0.25	0.25	0.3	0.3	0.25	0.3	0.25	0.25	0.2	0.2	0.2	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2800	3000	3550	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2100	2100	2500	4000	4000	2800	3450	4000	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	7000														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	34	34	34	34	34	25	25	25	25	25	25	25	25	25	25
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	1200														
Max. radial force Fr_{max} [N] for 20,000 h	1400														
Max. axial force Fa_{max} [N] for 30,000 h	3000														
Max. axial force Fa_{max} [N] for 20,000 h	3000														
Operating noise L_{PA} [dB(A)]	60														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	2.9	2.9	2.9	2.9	2.9	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Moment of inertia J_1 [kgcm^2]	1.01	0.67	0.53	0.41	0.39	0.79	0.75	0.73	0.54	0.45	0.44	0.46	0.46	0.45	0.43

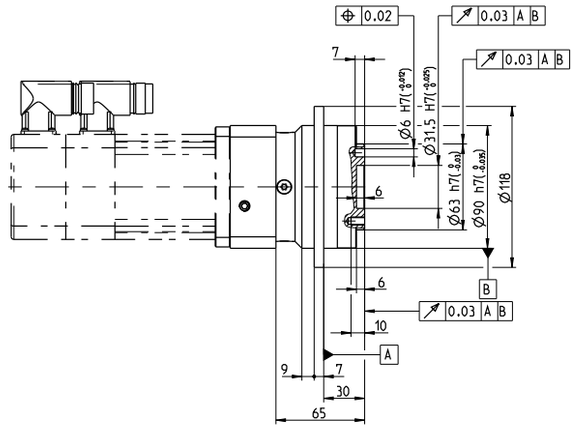
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

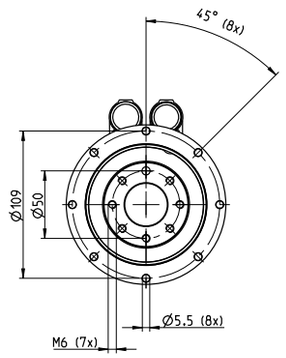
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

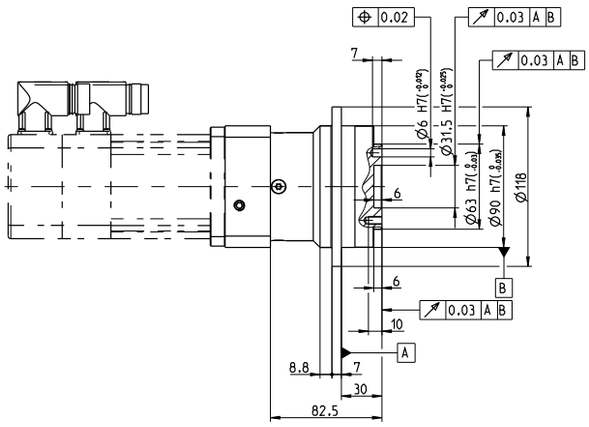
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP40-080	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	53.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	80	80	90	115	115	90

8GF40-110 standard

Technical data

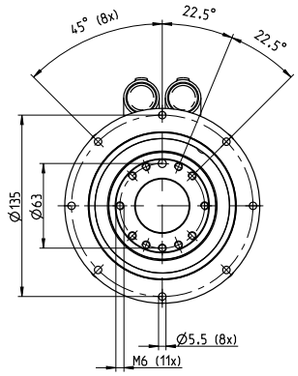
	8GF40-110hh003klmm	8GF40-110hh004klmm	8GF40-110hh005klmm	8GF40-110hh008klmm	8GF40-110hh010klmm	8GF40-110hh009klmm	8GF40-110hh012klmm	8GF40-110hh015klmm	8GF40-110hh016klmm	8GF40-110hh020klmm	8GF40-110hh025klmm	8GF40-110hh032klmm	8GF40-110hh040klmm	8GF40-110hh064klmm	8GF40-110hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	9	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	115	155	195	120	95	240	260	230	260	260	230	260	230	120	95
Max. output torque T_{2max} [Nm]	184	248	312	192	152	384	416	368	416	416	368	416	368	192	152
E-stop torque T_{2stop} [Nm]	390	520	500	380	480	500	520	500	520	520	500	520	500	380	480
Idle torque [Nm] at 20°C and 3000 rpm	1.3	1.15	0.9	0.6	0.55	0.85	0.85	0.8	0.85	0.65	0.65	0.5	0.5	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2350	2550	2700	3500	3500	2850	3100	3500	3500	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1850	1900	1950	3400	3500	2000	2250	2700	2650	3050	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500														
Max. backlash J_t [arcmin]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Reduced backlash J_t [arcmin] less than	0														
Torsional rigidity C_{t21} [Nm/arcmin]	93	93	93	93	93	68	68	68	68	68	68	68	68	68	68
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	2100														
Max. radial force Fr_{max} [N] for 20,000 h	2400														
Max. axial force Fa_{max} [N] for 30,000 h	3300														
Max. axial force Fa_{max} [N] for 20,000 h	3300														
Operating noise L_{PA} [dB(A)]	65														
Efficiency at full load ŋ [%]	96	96	96	96	96	94	94	94	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP54														
Weight m [kg]	7	7	7	7	7	9	9	9	9	9	9	9	9	9	9
Moment of inertia J_1 [kgcm^2]	3.43	2.28	1.84	1.45	1.42	2.87	2.75	2.68	1.96	1.84	1.64	1.42	1.4	1.38	1.35

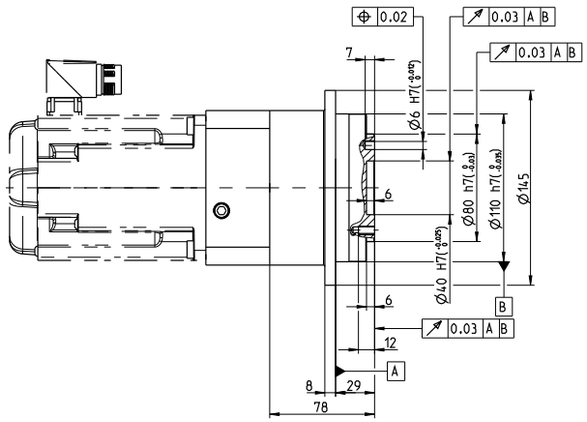
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

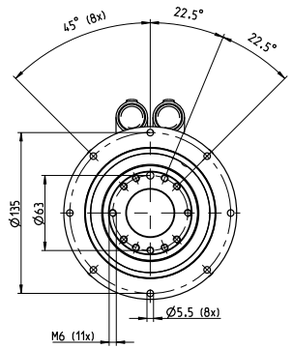
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

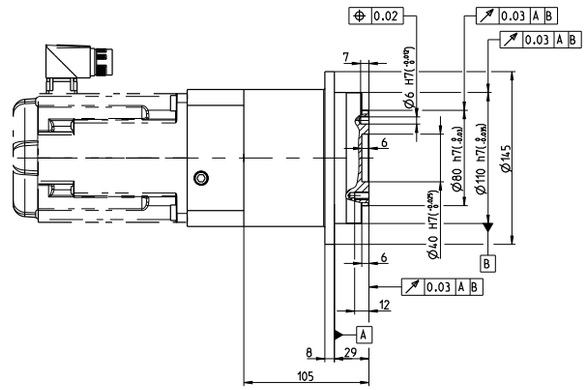
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF40-110	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	8JSA6	8LSN 4	8LSN5	80MPH
Flange length L [mm]	47.4	47.4	57.4	47.4	57.4	73	47.4	57.4	47.5
Flange diameter Q [mm]	115	115	140	115	115	140	115	140	115

Premium planetary gearboxes

Premium planetary gearboxes

Lowest backlash – highest loads
These gearboxes feature very low backlash and high torsional rigidity. They are especially well suited for use in handling systems that run with high speeds and acceleration values and applications in which the optionally available backlash of <1 arcminute is of particular significance.

The honed gearing of this series ensures the lowest level of operating noise and reduces vibration. The use of special bearings enables high radial and axial forces. These gearboxes are the right choice for both S1 and S5 operation. The series also features IP65 protection, flexible mounting orientation and maintenance-free operation through lifelong lubrication. The premium series gearboxes are available as angular planetary gearboxes or coaxial planetary gearboxes with a smooth, keyed, toothed or hollow shaft, or as planetary gearboxes with an output flange.

Motor - gearbox combinations

Series		8LSA						8LSA/ 8LSC									8LSC			8LSA/ 8LSC												8LVA			8JSA							8LSN		80M		
	Size	2	3					4				5					5			6				7					8					1	2	3	2	3	4	5	6	7	4	5	PD	PF	PH
	Length		3	4	5	6	7	3	4	5	6	3	4	5	6	7	A	B	C	3	4	5	6	3	4	5	6	7	8	3	4	5	6													
8GP60	070	•	•	•	•	•	•																											•	•	•						•				•
8GP60	090		•	•	•	•	•	•	•	•	•																							•	•		•	•	•			•				•
8GP60	115		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•															•				•	•	•		•	•			•
8GP60	142							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										•	•	•		•	•			
8GP60	190											•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■							•	•	•			•			
8GP70	070 [1]	•	•	•	•	•	•																											•	•	•	•	•	•							•
8GP70	070 [2]	•	•	•	•	•	•																											•	•	•	•	•	•							•
8GP70	090 [1]		•	•	•	•	•	•	•	•	•																							•	•		•	•	•			•				•
8GP70	090 [2]	•	•	•	•	•	•	•	•	•	•																							•	•	•	•	•	•			•				•
8GP70	115 [1]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																•				•	•	•		•	•			•
8GP70	115 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■															•	•		•	•	•			•	8			•
8GP70	142 [1]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■	■									•	•	•		•	•			
8GP70	142 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■										•				•	•	•		•	•			•
8GP70	190 [1]											•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■							•	•	•			•			
8GP70	190 [2]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	C	■	■									•	•	•		•	•			

Series		8LSA						8LSA/ 8LSC									8LSC			8LSA/ 8LSC												8LVA			8JSA							8LSN		80M		
	Size	2	3					4				5					5			6				7				8				1	2	3	2	3	4	5	6	7	4	5	PD	PF	PH
	Length		3	4	5	6	7	3	4	5	6	3	4	5	6	7	A	B	C	3	4	5	6	3	4	5	6	7	8	3	4	5	6												
8GA60	070	•	•	•	•	•	•																										•	•	•	•	•								•
8GA60	090 [1]		•	•	•	•	•	•	•	•	•																						•	•		•	•	•			•				•
8GA60	090 [2]	•	•	•	•	•	•	•	•	C	■																						•	•	•	•	•				4				•
8GA60	115 [1]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■															•			•	•	•		•	•				•
8GA60	115 [2]		•	•	•	•	•	•	•	•	•	•	•	•	C	■	■	■	■															•	•		•	•	•			•	6			•
8GA60	142 [1]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	C	■										•	•	•	•	•				
8GA60	142 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■											•			•	•	•		•	•				•
8GA75	070	•	•	•	•	•	•																										•	•	•	•	•								•
8GA75	090		•	•	•	•	•	•	•	•	•																						•	•		•	•	•			•				•
8GA75	115		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■															•			•	•	•		•	•				•
8GA75	142							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	C	■										•	•	•		•	•				
8GF60	064 [1]	•	•	•	•	•	•																										•	•	•	•	•								•
8GF60	064 [2]	•	•	•	•	•	•																										•	•	•	•	•								•
8GF60	090 [1]		•	•	•	•	•	•	•	•	•																						•	•		•	•	•			•				•
8GF60	090 [2]	•	•	•	•	•	•	•	•	•	•																						•	•	•	•	•				6				•
8GF60	110 [1]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•															•			•	•	•		•	•				•
8GF60	110 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■															•	•		•	•	•			•	8			•
8GF60	140 [1]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										•	•	•	•	•				
8GF60	140 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■											•			•	•	•		•	•				•
8GF60	200 [1]											•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■						•	•	•			•			
8GF60	200 [2]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	C	■	■						•	•	•	•	•				
8GF70	064 [1]	•	•	•	•	•	•																										•	•	•	•	•								•
8GF70	064 [2]	•	•	•	•	•	•																										•	•	•	•	•								•
8GF70	090 [1]		•	•	•	•	•	•	•	•	•																						•	•		•	•	•			•				•
8GF70	090 [2]	•	•	•	•	•	•	•	•	•	•																						•	•	•	•	•				6				•
8GF70	110 [1]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•															•			•	•	•		•	•				•
8GF70	110 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■															•	•		•	•	•			•	8			•
8GF70	140 [1]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										•	•	•	•	•				
8GF70	140 [2]		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■											•			•	•	•		•	•				•
8GF70	200 [1]											•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■						•	•	•			•			
8GF70	200 [2]							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	C	■	■						•	•	•	•	•				

- • combination available, for horizontal installation no support structure necessary, max. acceleration 1,2g
- ■ combination available, support structure necessary for horizontal installation
- 4 combination available, support structure necessary for horizontal installation from motor size "**figure**"
- C combination available, support structure necessary for horizontal installation of 8LS**C**, 8LSA possible without support structure
- 1) 1-stage
- 2) 2-stage

8GP60-070 premium

Technical data

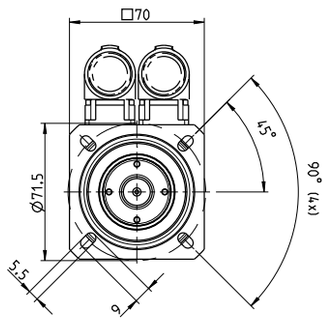
	8GP60-070hh003kImm	8GP60-070hh004kImm	8GP60-070hh005kImm	8GP60-070hh008kImm	8GP60-070hh010kImm	8GP60-070hh012kImm	8GP60-070hh015kImm	8GP60-070hh016kImm	8GP60-070hh020kImm	8GP60-070hh025kImm	8GP60-070hh032kImm	8GP60-070hh040kImm	8GP60-070hh064kImm	8GP60-070hh100kImm
Gearbox														
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	45	60	65	40	27	68	68	77	77	65	77	65	40	27
Max. output torque T_{2max} [Nm]	72	96	104	64	43	109	109	123	123	104	123	104	64	43
E-stop torque T_{2stop} [Nm]	90	120	130	90	90	135	135	150	150	150	150	150	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.7	0.5	0.4	0.3	0.25	0.35	0.3	0.3	0.25	0.25	0.2	0.2	0.2	0.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2050	2300	2650	3800	4400	3550	4000	3800	4300	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1700	1900	2100	3300	4000	2900	3300	3150	3600	4100	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	14000													
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	2													
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6	6	6	7	7	7	7	7	7	7	7	7
Tilting rigidity C_{2K} [Nm/arcmin]	0													
Max. breakdown torque M_{2Kmax} [Nm]	0													
Max. radial force Fr_{max} [N] for 30,000 h	3200													
Max. radial force Fr_{max} [N] for 20,000 h	3200													
Max. axial force Fa_{max} [N] for 30,000 h	3900													
Max. axial force Fa_{max} [N] for 20,000 h	4400													
Operating noise L_{PA} [dB(A)]	58													
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25													
Max. operating temperature $B_{Tempmax}$ [°C]	90													
Mounting orientation	Any													
Protection	IP65													
Weight m [kg]	1.9	1.9	1.9	1.9	1.9	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Moment of inertia J_1 [kgcm^2]	0.4	0.32	0.28	0.25	0.25	0.4	0.38	0.35	0.33	0.3	0.32	0.29	0.26	0.25

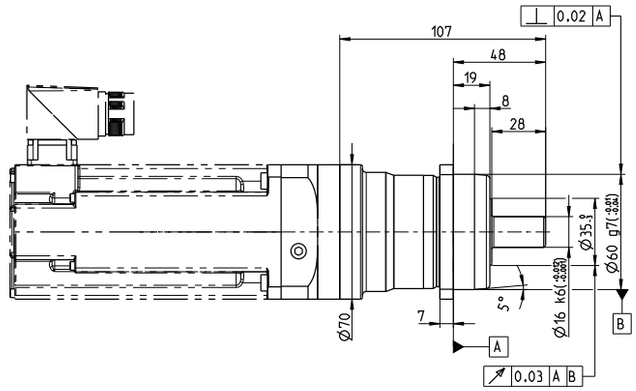
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

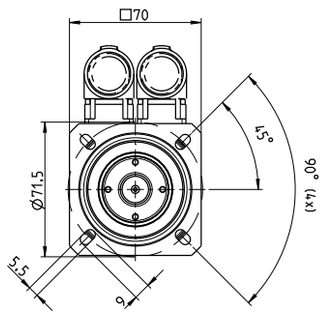
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

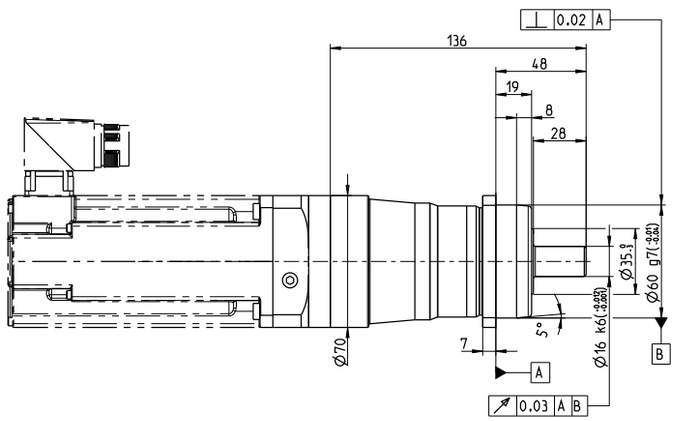
1-stage gear





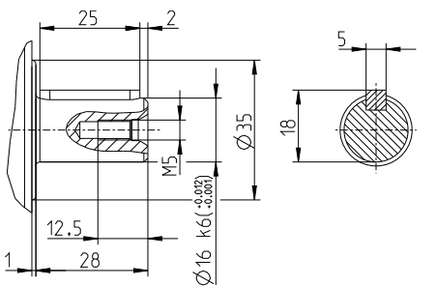
2-stage gear



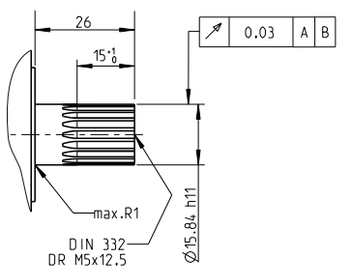


Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Spline shaft according to DIN 5480 - W 16 x 0.8 x 30 x 18 x 6 m



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP60-070	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
Flange length L [mm]	37.5	37.5	37.5	48	30.5	37.5	48	47.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

8GP60-090 premium

Technical data

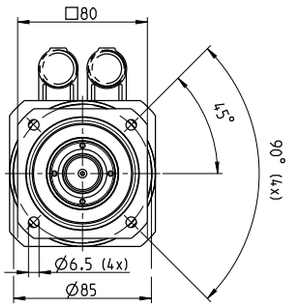
	8GP60-090hh003kImm	8GP60-090hh004kImm	8GP60-090hh005kImm	8GP60-090hh008kImm	8GP60-090hh010kImm	8GP60-090hh012kImm	8GP60-090hh015kImm	8GP60-090hh016kImm	8GP60-090hh020kImm	8GP60-090hh025kImm	8GP60-090hh032kImm	8GP60-090hh040kImm	8GP60-090hh064kImm	8GP60-090hh100kImm
Gearbox														
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	100	140	140	80	60	110	110	150	150	140	150	140	80	60
Max. output torque T_{2max} [Nm]	160	224	224	128	96	176	176	240	240	224	240	224	128	96
E-stop torque T_{2stop} [Nm]	210	280	280	200	200	220	220	300	300	300	300	300	200	200
Idle torque [Nm] at 20°C and 3000 rpm	1.15	1	0.75	0.5	0.4	0.7	0.55	0.7	0.5	0.5	0.35	0.35	0.35	0.3
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1950	2100	2500	3950	4000	3400	4000	3550	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1550	1600	1900	3350	4000	2750	3300	2850	3400	3850	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	10000													
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1													
Torsional rigidity C_{t21} [Nm/arcmin]	9	9	9	9	9	10	10	10	10	10	10	10	10	10
Tilting rigidity C_{2K} [Nm/arcmin]	0													
Max. breakdown torque M_{2Kmax} [Nm]	0													
Max. radial force Fr_{max} [N] for 30,000 h	4800													
Max. radial force Fr_{max} [N] for 20,000 h	5500													
Max. axial force Fa_{max} [N] for 30,000 h	5700													
Max. axial force Fa_{max} [N] for 20,000 h	6400													
Operating noise L_{PA} [dB(A)]	60													
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25													
Max. operating temperature $B_{Tempmax}$ [°C]	90													
Mounting orientation	Any													
Protection	IP65													
Weight m [kg]	3.3	3.3	3.3	3.3	3.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Moment of inertia J_1 [kgcm^2]	1.01	0.78	0.68	0.59	0.57	1.02	0.95	0.89	0.82	0.76	0.77	0.7	0.63	0.59

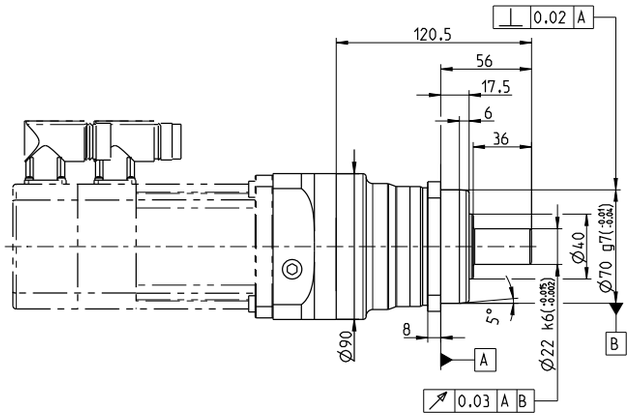
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

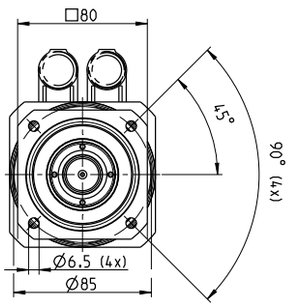
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

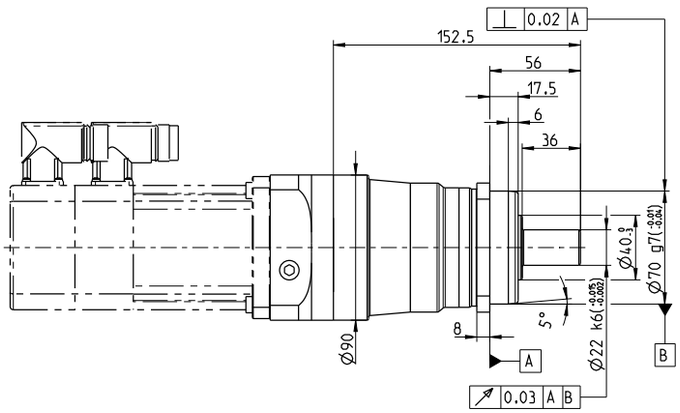
1-stage gear





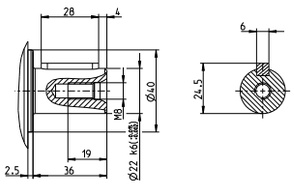
2-stage gear



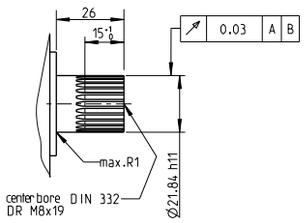


Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Spline shaft according to DIN 5480 - W 22 x 1.25 x 30 x 16 x 6 m



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP60-090	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L [mm]	38.8	48.8	38.8	48.8	38.8	48.8	58.9	48.8	38.8
Flange diameter Q [mm]	90	115	90	90	90	90	115	115	90

8GP60-115 premium

Technical data

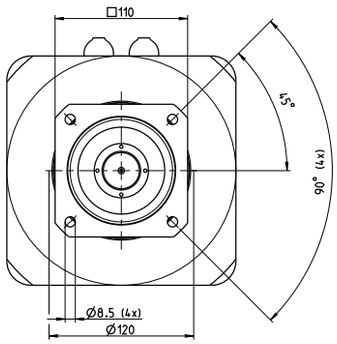
	8GP60-115hh003klmm	8GP60-115hh004klmm	8GP60-115hh005klmm	8GP60-115hh008klmm	8GP60-115hh010klmm	8GP60-115hh012klmm	8GP60-115hh015klmm	8GP60-115hh016klmm	8GP60-115hh020klmm	8GP60-115hh025klmm	8GP60-115hh032klmm	8GP60-115hh040klmm	8GP60-115hh064klmm	8GP60-115hh100klmm
Gearbox														
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	230	300	260	150	125	250	250	300	300	260	300	260	150	125
Max. output torque T_{2max} [Nm]	368	480	416	240	200	400	400	480	480	416	480	416	240	200
E-stop torque T_{2stop} [Nm]	490	650	650	380	480	500	500	650	650	650	650	650	380	480
Idle torque [Nm] at 20°C and 3000 rpm	2.3	2.2	1.55	0.95	0.85	1.75	1.25	1.75	1.25	1.2	0.8	0.75	0.75	0.65
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1500	1600	2000	3200	3500	2450	3000	2550	3050	3400	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1150	1150	1500	2650	3200	1950	2350	2050	2450	2850	3350	3500	3500	3500
Max. drive speed n_{1max} [rpm]	8500													
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1													
Torsional rigidity C_{t21} [Nm/arcmin]	20	20	20	20	20	22	22	22	22	22	22	22	22	22
Tilting rigidity C_{2K} [Nm/arcmin]	0													
Max. breakdown torque M_{2Kmax} [Nm]	0													
Max. radial force Fr_{max} [N] for 30,000 h	5400													
Max. radial force Fr_{max} [N] for 20,000 h	6000													
Max. axial force Fa_{max} [N] for 30,000 h	7000													
Max. axial force Fa_{max} [N] for 20,000 h	8000													
Operating noise L_{PA} [dB(A)]	65													
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25													
Max. operating temperature $B_{Tempmax}$ [°C]	90													
Mounting orientation	Any													
Protection	IP65													
Weight m [kg]	6.9	6.9	6.9	6.9	6.9	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Moment of inertia J_1 [kgcm^2]	3.14	2.4	2.16	1.93	1.9	3.12	2.95	2.74	2.57	2.38	2.41	2.23	2.03	1.97

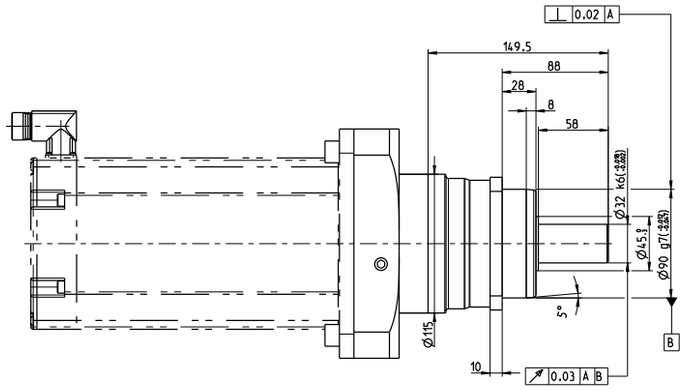
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

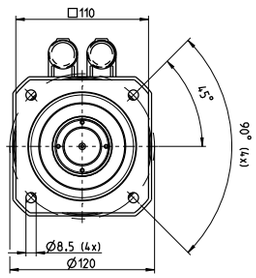
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

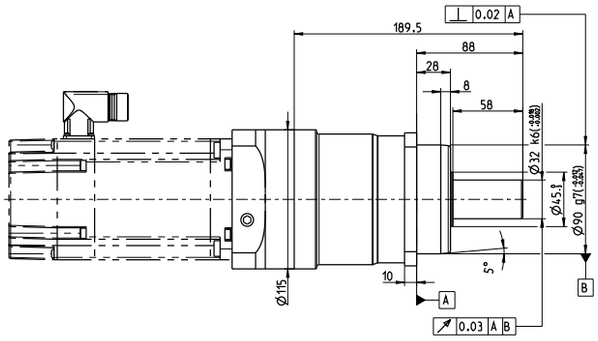
1-stage gear





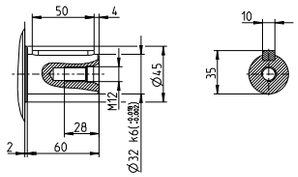
2-stage gear



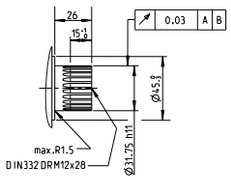


Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Spline shaft according to DIN 5480 - W 32 x 1.25 x 30 x 24 x 6 m



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP60-120	8LSA3	8LSA/C4	8LSA/C5	8LV3	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
Flange length L [mm]	51.5	51.5	61.5	51.5	51.5	61.5	71.4	51.5	61.5	51.5
Flange diameter Q [mm]	115	115	142	115	115	115	142	120	142	115

8GP60-142 premium

Technical data

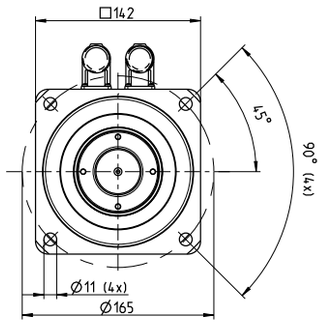
	8GP60-142hh003klmm	8GP60-142hh004klmm	8GP60-142hh005klmm	8GP60-142hh008klmm	8GP60-142hh010klmm	8GP60-142hh012klmm	8GP60-142hh015klmm	8GP60-142hh016klmm	8GP60-142hh020klmm	8GP60-142hh025klmm	8GP60-142hh032klmm	8GP60-142hh040klmm	8GP60-142hh064klmm	8GP60-142hh100klmm
Gearbox														
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	450	600	750	450	305	780	780	1000	1000	900	1000	900	450	305
Max. output torque T_{2max} [Nm]	720	960	1200	720	488	1248	1248	1600	1600	1440	1600	1440	720	488
E-stop torque T_{2stop} [Nm]	975	1300	1500	1000	750	1500	1500	2000	2000	1800	2000	1800	1000	750
Idle torque [Nm] at 20°C and 3000 rpm	7.95	6.65	4.45	2.35	1.85	5.65	3.7	5.5	3.6	3.45	1.9	1.8	1.75	1.4
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	850	950	1050	1800	2250	1300	1600	1350	1600	1850	2300	2550	3000	3000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	700	700	750	1400	1900	950	1200	1000	1200	1400	1750	2050	2900	3000
Max. drive speed n_{1max} [rpm]	6500													
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1													
Torsional rigidity C_{t21} [Nm/arcmin]	44	44	44	44	44	46	46	46	46	46	46	46	46	46
Tilting rigidity C_{2K} [Nm/arcmin]	0													
Max. breakdown torque M_{2Kmax} [Nm]	0													
Max. radial force Fr_{max} [N] for 30,000 h	11400													
Max. radial force Fr_{max} [N] for 20,000 h	12500													
Max. axial force Fa_{max} [N] for 30,000 h	13200													
Max. axial force Fa_{max} [N] for 20,000 h	15000													
Operating noise L_{PA} [dB(A)]	68													
Efficiency at full load η [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25													
Max. operating temperature $B_{Tempmax}$ [°C]	90													
Mounting orientation	Any													
Protection	IP65													
Weight m [kg]	16	16	16	16	16	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Moment of inertia J_1 [kgcm^2]	16.77	12.16	10.31	8.73	8.35	16.72	15.19	14.52	13.05	11.89	11.94	10.79	9.39	8.76

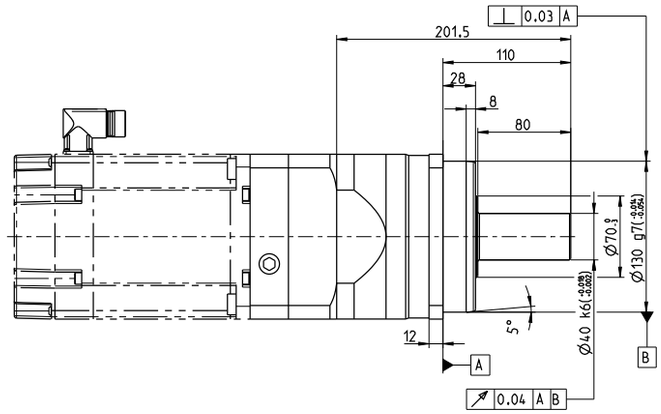
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

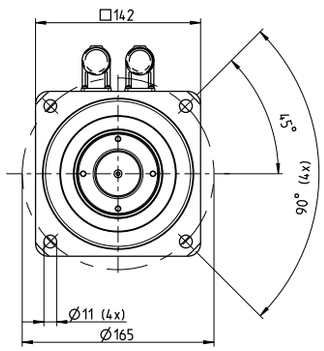
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

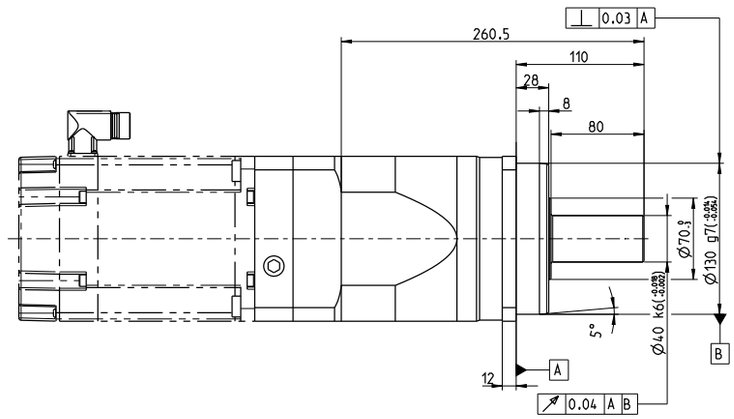
1-stage gear





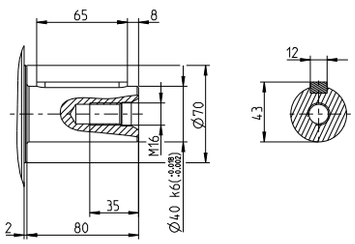
2-stage gear



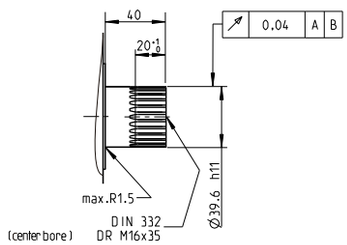


Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Spline shaft according to DIN 5480 - W 40 x 2 x 30 x 18 x 6 m



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP60-142	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5
Flange length L [mm]	74.5	74.5	84.5	84.5	112.5	74.5	84.5	112.5	74.5	74.5
Flange diameter Q [mm]	142	142	190	190	190	142	142	190	142	142

8GP60-190 premium

Technical data

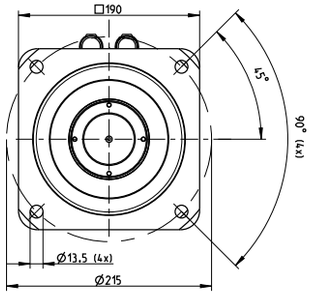
	8GP60-190hh003klmm	8GP60-190hh004klmm	8GP60-190hh005klmm	8GP60-190hh008klmm	8GP60-190hh010klmm	8GP60-190hh012klmm	8GP60-190hh015klmm	8GP60-190hh016klmm	8GP60-190hh020klmm	8GP60-190hh025klmm	8GP60-190hh032klmm	8GP60-190hh040klmm	8GP60-190hh064klmm	8GP60-190hh100klmm
Gearbox														
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	8	10	12	15	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	1000	1300	1600	1000	630	1500	1500	1800	1800	1800	1800	1800	1000	630
Max. output torque T_{2max} [Nm]	1600	2080	2560	1600	1008	2400	2400	2880	2880	2880	2880	2880	1600	1008
E-stop torque T_{2stop} [Nm]	2000	2700	3200	2600	1350	3000	3000	3600	3600	3600	3600	3600	2600	1350
Idle torque [Nm] at 20°C and 3000 rpm	18.9	15.1	9.85	4.6	3.65	13.9	8.95	13.5	8.65	8.3	3.9	3.75	3.55	2.85
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	700	750	850	1450	1900	1000	1250	1050	1300	1400	1900	2100	2500	2500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	500	550	550	1100	1550	750	950	800	1000	1100	1450	1600	2300	2500
Max. drive speed n_{1max} [rpm]	6000													
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1													
Torsional rigidity C_{t21} [Nm/arcmin]	130	130	130	130	130	140	140	140	140	140	140	140	140	140
Tilting rigidity C_{2K} [Nm/arcmin]	0													
Max. breakdown torque M_{2Kmax} [Nm]	0													
Max. radial force Fr_{max} [N] for 30,000 h	18000													
Max. radial force Fr_{max} [N] for 20,000 h	21000													
Max. axial force Fa_{max} [N] for 30,000 h	18500													
Max. axial force Fa_{max} [N] for 20,000 h	21000													
Operating noise L_{PA} [dB(A)]	72													
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25													
Max. operating temperature $B_{Tempmax}$ [°C]	90													
Mounting orientation	Any													
Protection	IP65													
Weight m [kg]	30.5	30.5	30.5	30.5	30.5	45	45	45	45	45	45	45	45	45
Moment of inertia J_1 [kgcm^2]	54.2	39.44	33.38	27.49	25.97	54.3	52.5	49.9	45.03	40.32	40.36	35.68	30.36	27.74

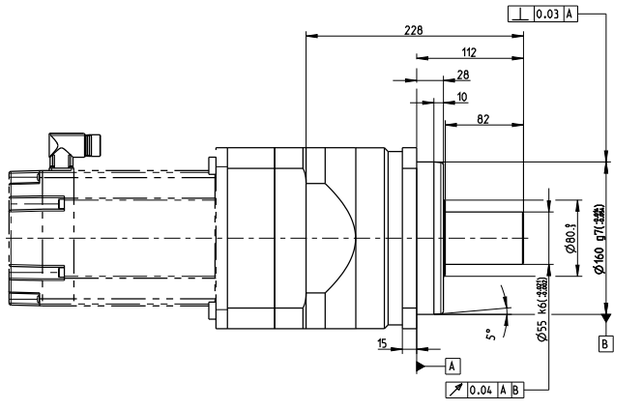
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

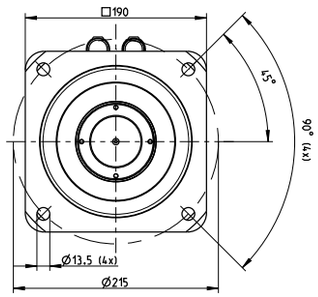
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

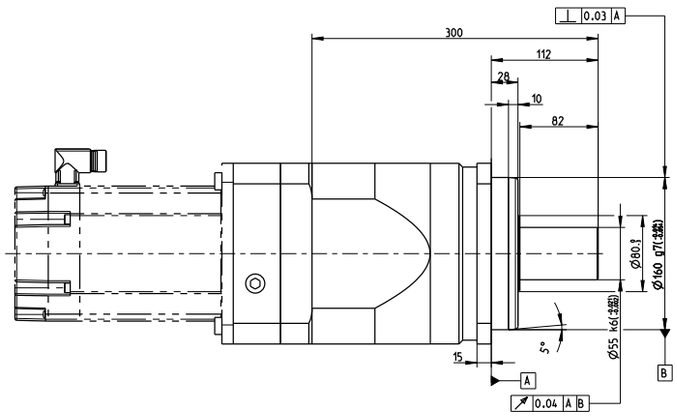
1-stage gear





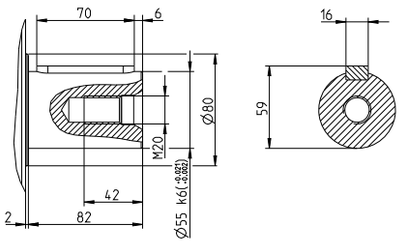
2-stage gear



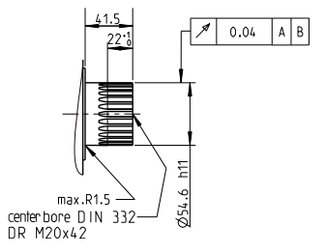


Alternative drive shaft options

Shaft keys according to DIN 6885 form A



Spline shaft according to DIN 5480 - W 55 x 2 x 30 x 26 x 6 m



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP60-190	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LSA/ C83/84	8LSA/ C85/86	8JSA5	8JSA6	8JSA7	8LSN5
Flange length L [mm]	82.3	82.3	82.3	102.3	102.3	132.3	82.3	82.3	102.3	82.3
Flange diameter Q [mm]	190	190	190	190	240	240	190	190	190	190

8GP70-070 premium

Technical data

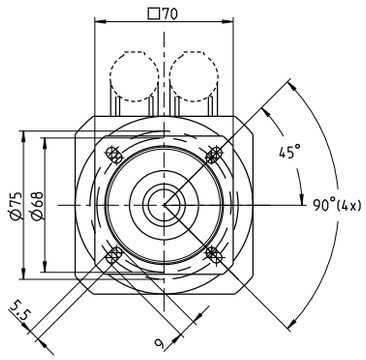
	8GP70-070hh003klmm	8GP70-070hh004klmm	8GP70-070hh005klmm	8GP70-070hh007klmm	8GP70-070hh010klmm	8GP70-070hh012klmm	8GP70-070hh015klmm	8GP70-070hh016klmm	8GP70-070hh020klmm	8GP70-070hh025klmm	8GP70-070hh035klmm	8GP70-070hh040klmm	8GP70-070hh050klmm	8GP70-070hh070klmm	8GP70-070hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	7	10	12	15	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	29	39	40	37	28	29	29	39	39	40	40	39	40	37	28
Max. output torque T_{2max} [Nm]	46	62	64	59	45	46	46	62	62	64	64	62	64	59	45
E-stop torque T_{2stop} [Nm]	90	120	130	80	90	135	135	150	150	150	150	150	150	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.65	0.45	0.35	0.25	0.2	0.45	0.3	0.4	0.3	0.3	0.2	0.15	0.15	0.15	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3000	3700	4400	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2850	3400	4050	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	14000														
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	2														
Torsional rigidity C_{t21} [Nm/arcmin]	5														
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	3200														
Max. radial force Fr_{max} [N] for 20,000 h	3200														
Max. axial force Fa_{max} [N] for 30,000 h	3900														
Max. axial force Fa_{max} [N] for 20,000 h	4400														
Operating noise L_{PA} [dB(A)]	63	57	57	57	57	57	57	57	57	57	57	57	57	57	57
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	1.9	1.9	1.9	1.9	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Moment of inertia J_1 [kgcm^2]	0.273	0.191	0.163	0.137	0.125	0.18	0.156	0.175	0.152	0.151	0.131	0.123	0.122	0.122	0.122

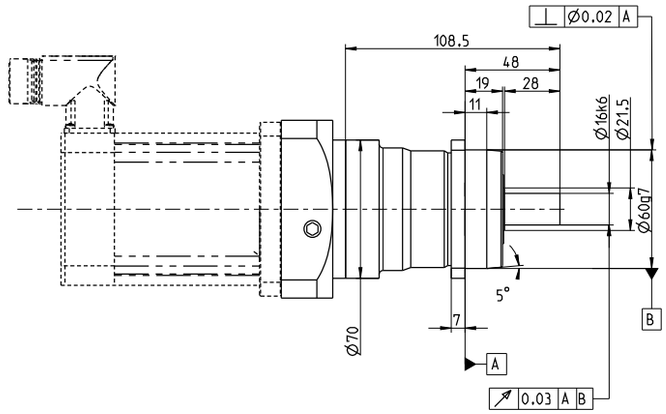
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

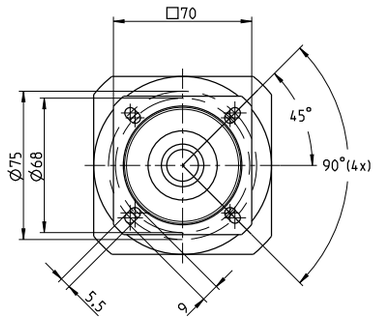
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

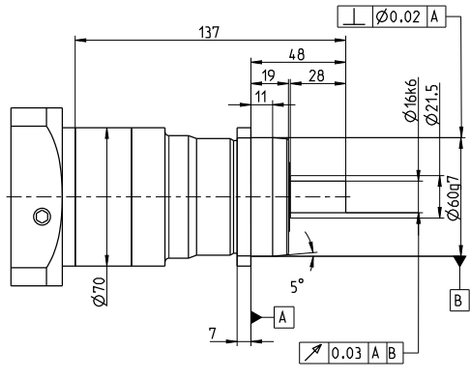
1-stage gear





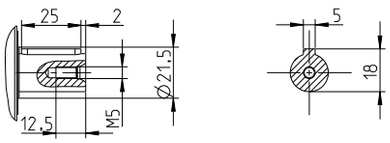
2-stage gear





Alternative drive shaft options

Keyway in accordance with DIN-6885-T1



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP70-070	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
One-stage								
Flange length L [mm]	32.5	32.5	32.5	42.8	25.5	32.5	42.8	42.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90
Two-stage								
Flange length L [mm]	32.5	32.5	32.5	42.8	25.5	32.5	42.8	42.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

8GP70-090 premium

Technical data

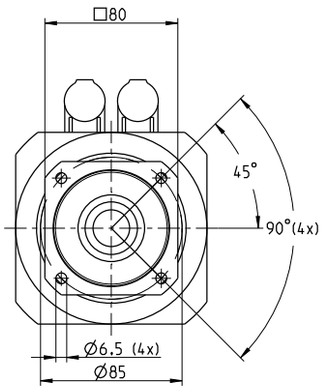
	8GP70-090hh003klmm	8GP70-090hh004klmm	8GP70-090hh005klmm	8GP70-090hh007klmm	8GP70-090hh010klmm	8GP70-090hh012klmm	8GP70-090hh015klmm	8GP70-090hh016klmm	8GP70-090hh020klmm	8GP70-090hh025klmm	8GP70-090hh035klmm	8GP70-090hh040klmm	8GP70-090hh050klmm	8GP70-090hh070klmm	8GP70-090hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	7	10	12	15	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	54	80	80	78	59	54	54	80	80	80	80	80	80	78	59
Max. output torque T_{2max} [Nm]	86	128	128	125	94	86	86	128	128	128	128	128	128	125	94
E-stop torque T_{2stop} [Nm]	210	280	280	175	200	220	220	300	300	300	300	300	300	175	200
Idle torque [Nm] at 20°C and 3000 rpm	1.25	1.1	0.8	0.55	0.4	0.55	0.45	0.55	0.45	0.4	0.3	0.25	0.25	0.25	0.25
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2700	3050	3700	4000	4000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2550	2850	3400	4000	4000	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	10000														
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1														
Torsional rigidity C_{t21} [Nm/arcmin]	11														
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	4800														
Max. radial force Fr_{max} [N] for 20,000 h	5500														
Max. axial force Fa_{max} [N] for 30,000 h	5700														
Max. axial force Fa_{max} [N] for 20,000 h	6400														
Operating noise L_{PA} [dB(A)]	64	58	58	58	58	58	58	58	58	58	58	58	58	58	58
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	3.3	3.3	3.3	3.3	3.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Moment of inertia J_1 [kgcm^2]	0.805	0.556	0.436	0.351	0.307	0.206	0.172	0.19	0.162	0.157	0.135	0.125	0.124	0.123	0.123

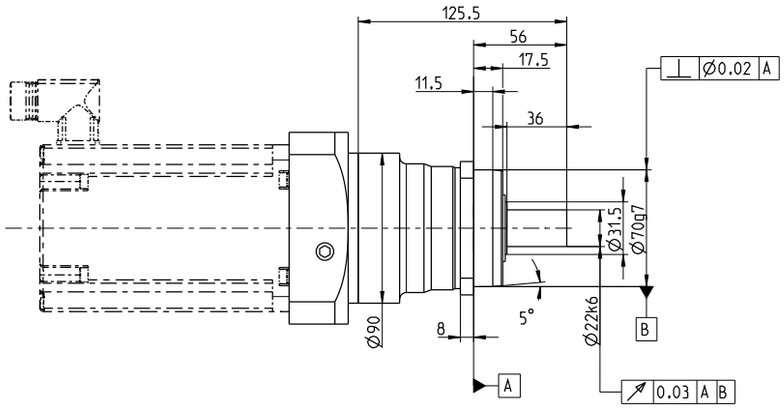
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

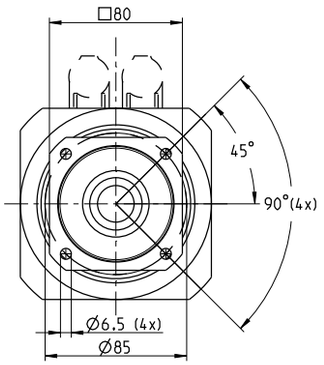
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

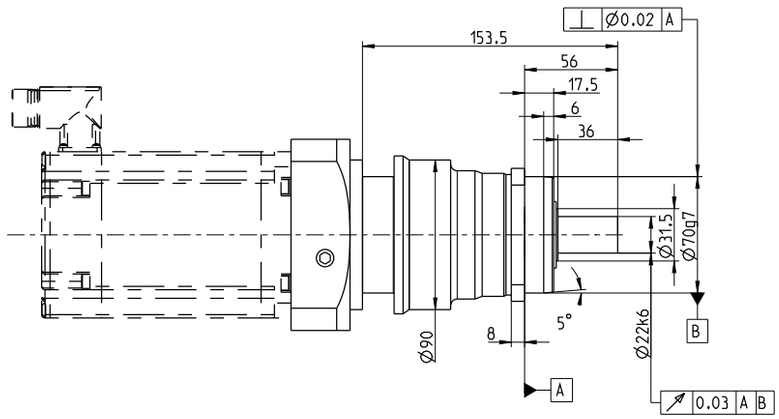
1-stage gear





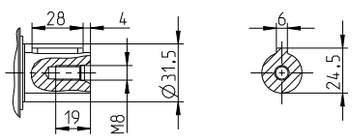
2-stage gear





Alternative drive shaft options

Keyway in accordance with DIN-6885-T1



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP70-090	8LSA2	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
One-stage											
Flange length L [mm]	---	31.6	41.6	31.6	41.6	---	31.6	41.6	51.7	41.6	41.6
Flange diameter Q [mm]	---	90	115	90	90	---	90	90	115	115	90
Two-stage											
Flange length L [mm]	32.5	32.5	42.8	32.5	42.8	25.5	32.5	42.8	---	42.8	42.5
Flange diameter Q [mm]	70	90	115	70	90	70	70	90	---	115	90

8GP70-115 premium

Technical data

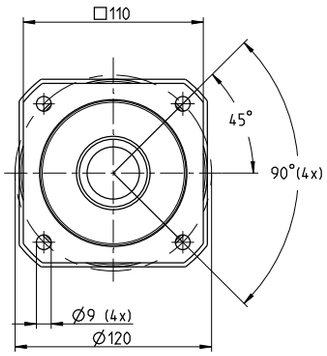
	8GP70-115hh003klmm	8GP70-115hh004klmm	8GP70-115hh005klmm	8GP70-115hh007klmm	8GP70-115hh010klmm	8GP70-115hh012klmm	8GP70-115hh015klmm	8GP70-115hh016klmm	8GP70-115hh020klmm	8GP70-115hh025klmm	8GP70-115hh035klmm	8GP70-115hh040klmm	8GP70-115hh050klmm	8GP70-115hh070klmm	8GP70-115hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	7	10	12	15	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	135	180	175	175	140	135	135	180	180	175	175	180	175	175	140
Max. output torque T_{2max} [Nm]	216	288	280	280	224	216	216	288	288	280	280	288	280	280	224
E-stop torque T_{2stop} [Nm]	490	650	650	340	480	500	500	650	650	650	650	650	650	340	480
Idle torque [Nm] at 20°C and 3000 rpm	2.65	2.5	1.7	1.1	0.75	1.35	0.95	1.3	0.95	0.9	0.6	0.5	0.45	0.45	0.4
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2000	2250	2750	3500	3500	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1900	2050	2500	3250	3500	3800	4000	3950	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	8500														
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1														
Torsional rigidity C_{t21} [Nm/arcmin]	28														
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	5400														
Max. radial force Fr_{max} [N] for 20,000 h	6000														
Max. axial force Fa_{max} [N] for 30,000 h	7000														
Max. axial force Fa_{max} [N] for 20,000 h	8000														
Operating noise L_{PA} [dB(A)]	69	63	63	63	63	63	63	63	63	63	63	63	63	63	63
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	6.9	6.9	6.9	6.9	6.9	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Moment of inertia J_1 [kgcm^2]	2.479	1.547	1.175	0.956	0.82	0.622	0.479	0.564	0.442	0.427	0.347	0.309	0.305	0.303	0.302

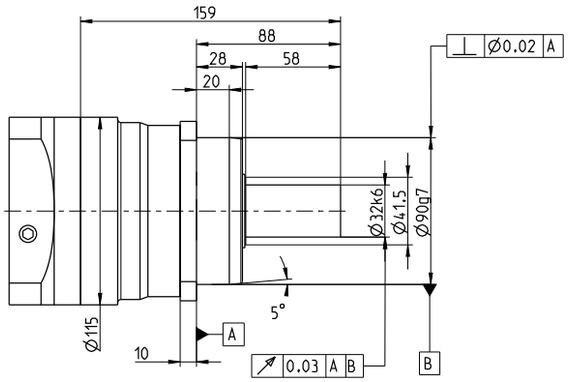
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

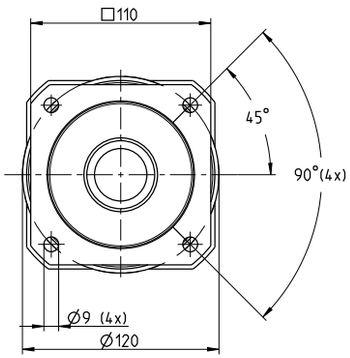
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

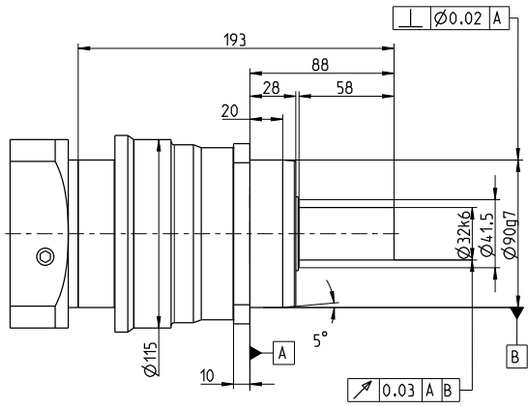
1-stage gear





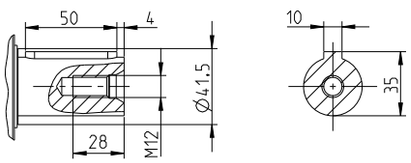
2-stage gear





Alternative drive shaft options

Keyway in accordance with DIN-6885-T1



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP70-115	8LSA3	8LSA4	8LSA5	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
One-stage												
Flange length L [mm]	43.4	43.4	53.4	---	43.4	---	43.4	53.4	64.5	43.4	53.4	43.4
Flange diameter Q [mm]	115	115	142	---	115	---	115	115	150	120	142	115
Two-stage												
Flange length L [mm]	31.6	41.6	51.7	31.6	41.6	31.6	41.6	51.7	---	41.6	51.7	41.6
Flange diameter Q [mm]	90	115	142	90	90	90	90	115	---	115	142	90

8GP70-142 premium

Technical data

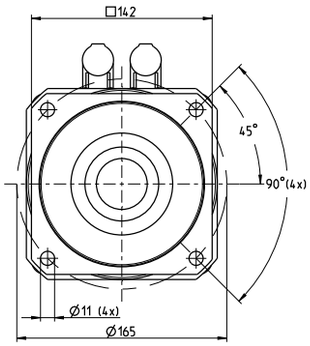
	8GP70-142hh003klmm	8GP70-142hh004klmm	8GP70-142hh005klmm	8GP70-142hh007klmm	8GP70-142hh010klmm	8GP70-142hh012klmm	8GP70-142hh015klmm	8GP70-142hh016klmm	8GP70-142hh020klmm	8GP70-142hh025klmm	8GP70-142hh035klmm	8GP70-142hh040klmm	8GP70-142hh050klmm	8GP70-142hh070klmm	8GP70-142hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	7	10	12	15	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	380	470	405	355	305	380	380	450	450	405	405	470	405	355	305
Max. output torque T_{2max} [Nm]	608	752	648	568	488	608	608	720	720	648	648	752	648	568	488
E-stop torque T_{2stop} [Nm]	1250	1650	1650	1300	600	1250	1250	1650	1650	1650	1650	1650	1650	1300	600
Idle torque [Nm] at 20°C and 3000 rpm	9.55	6.5	4.5	2.9	2.05	3.4	2.3	3.05	2.05	1.9	1.2	0.85	0.8	0.75	0.7
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1000	1250	1550	2000	2500	2400	3000	2600	3250	3500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	950	1100	1400	1800	2350	2200	2700	2400	2950	3250	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500	6500	6500	6500	6500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1														
Torsional rigidity C_{t21} [Nm/arcmin]	50														
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	11500														
Max. radial force Fr_{max} [N] for 20,000 h	13000														
Max. axial force Fa_{max} [N] for 30,000 h	13500														
Max. axial force Fa_{max} [N] for 20,000 h	15000														
Operating noise L_{PA} [dB(A)]	71	66	66	66	66	66	66	66	66	66	66	66	66	66	66
Efficiency at full load ŋ [%]	98	98	98	98	98	95	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	15.7	15.7	15.7	15.7	15.7	17	17	17	17	17	17	17	17	17	17
Moment of inertia J_1 [kgcm^2]	13.949	10.006	8.644	7.517	6.942	2.084	1.541	1.836	1.387	1.321	1.044	0.898	0.885	0.888	0.882

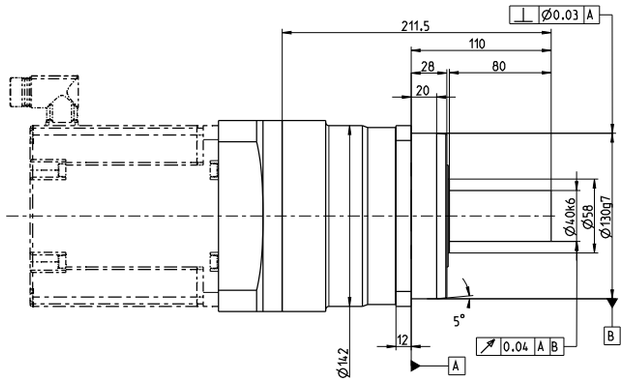
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

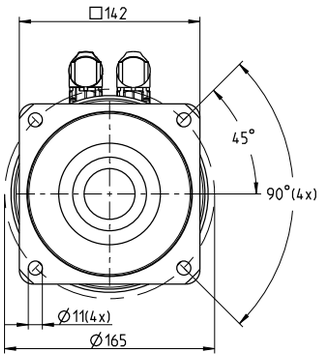
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

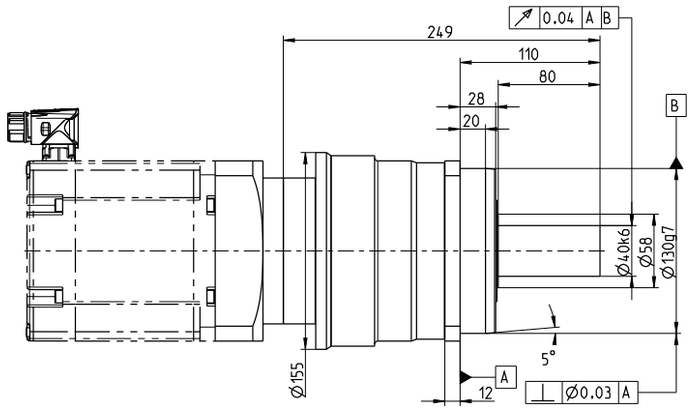
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP70-142	8LSA3	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/C7(3-5)	8LSA/C7(6-8)	8LSA/C83/84	8LSA/C85/86
One-stage								
Flange length L [mm]	---	50.5	50.5	50.5	60.5	82	82	112
Flange diameter Q [mm]	---	150	150	210	210	210	240	240
Two-stage								
Flange length L [mm]	43.4	43.4	53.4	53.4	64.5	---	---	---
Flange diameter Q [mm]	115	115	142	190	190	---	---	---

8GP70-140	8JSA4	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5	80MPH
One-stage							
Flange length L [mm]	---	50.5	60.5	82	50.5	50.5	---
Flange diameter Q [mm]	---	150	150	210	150	150	---
Two-stage							
Flange length L [mm]	43.4	53.4	64.5	---	43.4	53.4	43.4
Flange diameter Q [mm]	115	115	150	---	120	142	115

8GP70-190 premium

Technical data

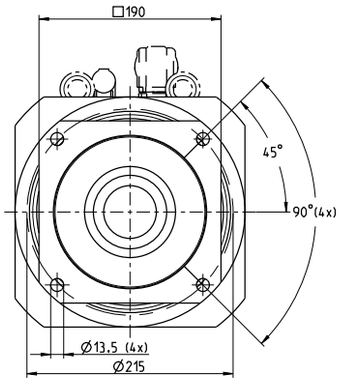
	8GP70-190hh003klmm	8GP70-190hh004klmm	8GP70-190hh005klmm	8GP70-190hh007klmm	8GP70-190hh010klmm	8GP70-190hh012klmm	8GP70-190hh015klmm	8GP70-190hh016klmm	8GP70-190hh020klmm	8GP70-190hh025klmm	8GP70-190hh035klmm	8GP70-190hh040klmm	8GP70-190hh050klmm	8GP70-190hh070klmm	8GP70-190hh100klmm
Gearbox															
Number of gear stages	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
Gear ratio i	3	4	5	7	10	12	15	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	845	950	950	900	750	845	845	950	950	950	950	950	950	900	750
Max. output torque T_{2max} [Nm]	1352	1520	1520	1440	1200	1352	1352	1520	1520	1520	1520	1520	1520	1440	1200
E-stop torque T_{2stop} [Nm]	2400	3200	3200	3200	1700	2400	2400	3200	3200	3200	3200	3200	3200	3200	1700
Idle torque [Nm] at 20°C and 3000 rpm	20.3	16	10.6	6.5	4.3	7.3	5.05	6.85	4.7	4.3	2.75	2.05	1.9	1.8	1.75
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	750	900	1100	1450	1900	1550	1900	1650	2050	2200	2800	3000	3000	3000	3000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	700	800	950	1300	1700	1350	1650	1500	1800	2000	2550	2950	3000	3000	3000
Max. drive speed n_{1max} [rpm]	6000	6000	6000	6000	6000	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500
Max. backlash J_t [arcmin]	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1														
Torsional rigidity C_{t21} [Nm/arcmin]	160														
Tilting rigidity C_{2K} [Nm/arcmin]	0														
Max. breakdown torque M_{2Kmax} [Nm]	0														
Max. radial force Fr_{max} [N] for 30,000 h	17500														
Max. radial force Fr_{max} [N] for 20,000 h	20000														
Max. axial force Fa_{max} [N] for 30,000 h	18500														
Max. axial force Fa_{max} [N] for 20,000 h	19000														
Operating noise L_{PA} [dB(A)]	73	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Efficiency at full load ŋ [%]	98	98	98	98	98	98	95	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25														
Max. operating temperature $B_{Tempmax}$ [°C]	90														
Mounting orientation	Any														
Protection	IP65														
Weight m [kg]	36	36	36	36	36	39.7	39.7	39.7	39.7	39.7	39.7	39.7	39.7	39.7	39.7
Moment of inertia J_1 [kgcm^2]	55.597	37.914	31.551	26.275	23.525	11.594	9.668	10.422	8.918	8.663	7.529	7.011	6.948	6.898	6.898

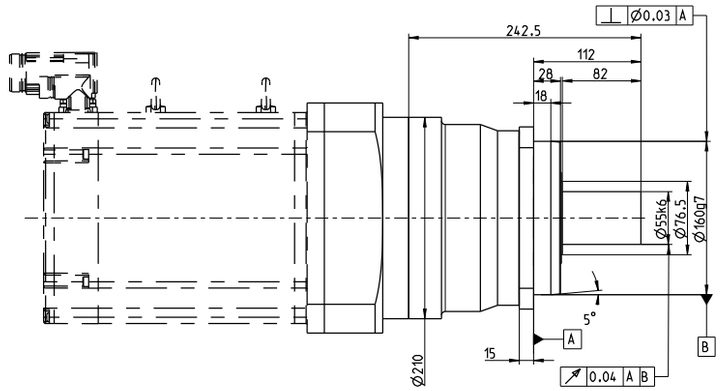
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

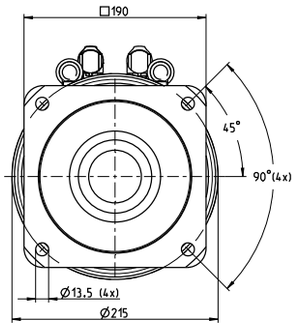
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

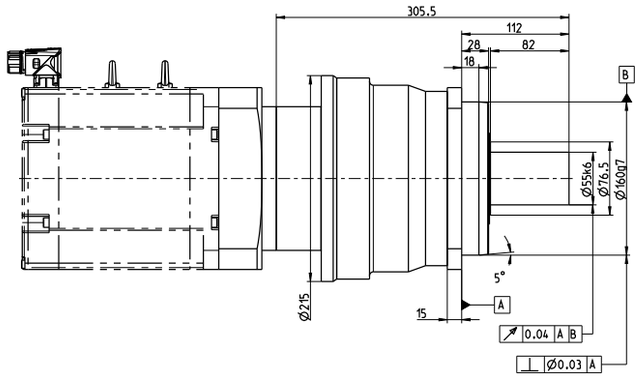
1-stage gear





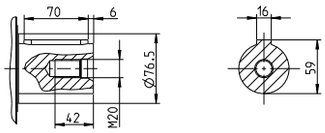
2-stage gear





Alternative drive shaft options

Keyway in accordance with DIN-6885-T1



Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP70-190	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LSA/ C83/84	8LSA/ C85/86	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5
One-stage												
Flange length L [mm]	---	68	68	68	88	88	118	68	68	88	---	68
Flange diameter Q [mm]	---	210	210	210	210	240	240	210	210	210	---	210
Two-stage												
Flange length L [mm]	50.5	50.5	50.5	60.5	82	82	112	50.5	60.5	82	50.5	50.5
Flange diameter Q [mm]	152	150	210	210	210	240	240	150	150	210	150	150

8GA60-070 premium

Technical data

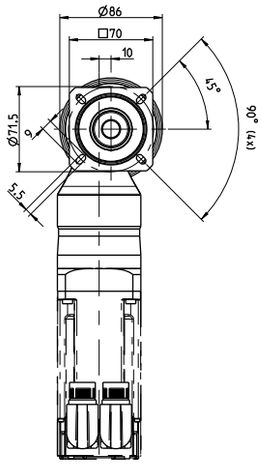
	8GA60-070hh004klmm	8GA60-070hh005klmm	8GA60-070hh008klmm	8GA60-070hh010klmm	8GA60-070hh016klmm	8GA60-070hh020klmm	8GA60-070hh025klmm	8GA60-070hh032klmm	8GA60-070hh040klmm	8GA60-070hh064klmm	8GA60-070hh100klmm
Gearbox											
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	45	42	27	22	77	77	65	77	65	40	27
Max. output torque T_{2max} [Nm]	72	67	43	35	123	123	104	123	104	64	43
E-stop torque T_{2stop} [Nm]	100	100	75	75	150	150	150	150	150	80	80
Idle torque [Nm] at 20°C and 3000 rpm	1.5	1.35	1.25	1.2	1	0.9	0.9	0.8	0.8	0.8	0.75
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1800	2000	2350	2500	1850	2000	2150	2300	2400	2600	2700
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1450	1650	2100	2300	1550	1700	1900	2000	2200	2500	2650
Max. drive speed n_{1max} [rpm]	16000										
Max. backlash J_t [arcmin]	5	5	5	5	7	7	7	7	7	7	7
Reduced backlash J_t [arcmin] less than	0										
Torsional rigidity C_{t21} [Nm/arcmin]	2.4										
Tilting rigidity C_{2K} [Nm/arcmin]	0										
Max. breakdown torque M_{2Kmax} [Nm]	0										
Max. radial force Fr_{max} [N] for 30,000 h	3200										
Max. radial force Fr_{max} [N] for 20,000 h	3200										
Max. axial force Fa_{max} [N] for 30,000 h	3700	3700	3700	3700	3900	3900	3900	3900	3900	3900	3900
Max. axial force Fa_{max} [N] for 20,000 h	4300	4300	4300	4300	4400	4400	4400	4400	4400	4400	4400
Operating noise L_{PA} [dB(A)]	66										
Efficiency at full load ŋ [%]	96	96	96	96	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]	-25										
Max. operating temperature $B_{Tempmax}$ [°C]	90										
Mounting orientation	Any										
Protection	IP65										
Weight m [kg]	3	3	3	3	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Moment of inertia J_1 [kgcm^2]	0.654	0.6	0.532	0.516	0.639	0.591	0.59	0.528	0.528	0.528	0.514

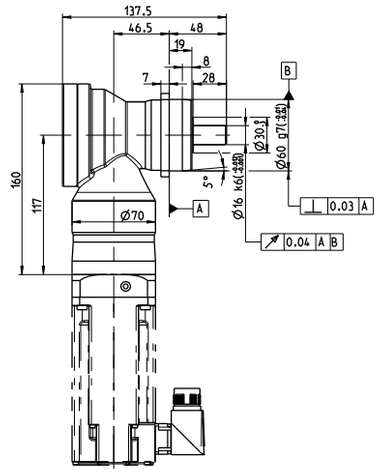
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

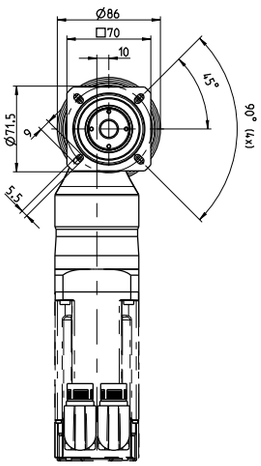
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

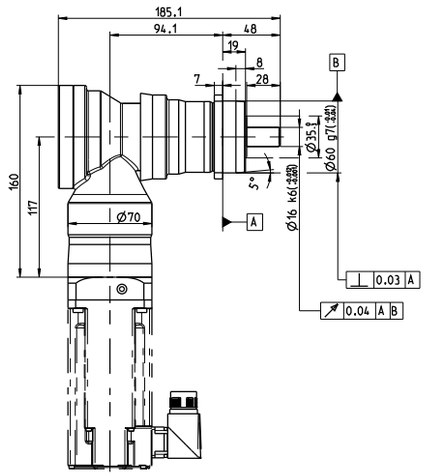
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA60-070	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
Flange length L [mm]	26.1	26.1	26.1	35.5	19.1	26.1	35.5	28
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

8GA60-090 premium

Technical data

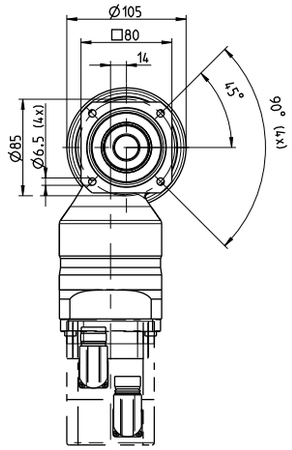
	8GA60-090hh004klmm	8GA60-090hh005klmm	8GA60-090hh008klmm	8GA60-090hh010klmm	8GA60-090hh016klmm	8GA60-090hh020klmm	8GA60-090hh025klmm	8GA60-090hh032klmm	8GA60-090hh040klmm	8GA60-090hh064klmm	8GA60-090hh100klmm
Gearbox											
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	90	75	50	40	150	150	140	108	135	80	60
Max. output torque T_{2max} [Nm]	144	120	80	64	240	240	224	172	216	128	96
E-stop torque T_{2stop} [Nm]	200	200	150	150	300	300	300	300	300	200	200
Idle torque [Nm] at 20°C and 3000 rpm	2.3	2.1	1.9	1.8	1.25	0.95	0.9	1.25	1.25	0.8	0.75
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1650	1900	2250	2400	1800	2100	2250	2300	2300	2950	3100
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1300	1550	2000	2200	1400	1600	1850	2000	2000	2750	3000
Max. drive speed n_{1max} [rpm]	14000	14000	14000	14000	16000	16000	16000	16000	16000	16000	16000
Max. backlash J_t [arcmin]	5	5	5	5	7	7	7	7	7	7	7
Reduced backlash J_t [arcmin] less than						0					
Torsional rigidity C_{t21} [Nm/arcmin]	6.6	6.6	6.6	6.6	11	11	11	11	11	11	11
Tilting rigidity C_{2K} [Nm/arcmin]						0					
Max. breakdown torque M_{2Kmax} [Nm]						0					
Max. radial force Fr_{max} [N] for 30,000 h	5200	5200	5200	5200	4800	4800	4800	4800	4800	4800	4800
Max. radial force Fr_{max} [N] for 20,000 h	5200	5200	5200	5200	5500	5500	5500	5500	5500	5500	5500
Max. axial force Fa_{max} [N] for 30,000 h	5200	5200	5200	5200	5700	5700	5700	5700	5700	5700	5700
Max. axial force Fa_{max} [N] for 20,000 h	5900	5900	5900	5900	6400	6400	6400	6400	6400	6400	6400
Operating noise L_{PA} [dB(A)]						67					
Efficiency at full load ŋ [%]	96	96	96	96	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]						-25					
Max. operating temperature $B_{Tempmax}$ [°C]						90					
Mounting orientation						Any					
Protection						IP65					
Weight m [kg]	5	5	5	5	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Moment of inertia J_1 [kgcm^2]	1.331	1.168	1.004	0.966	0.642	0.593	0.591	0.529	0.528	0.528	0.514

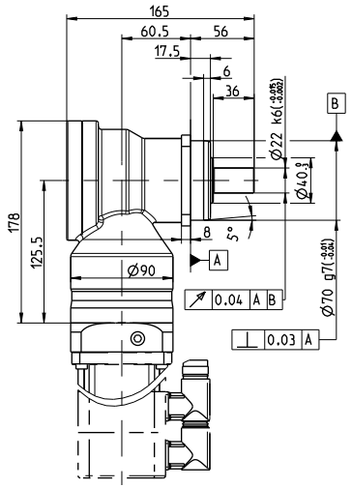
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

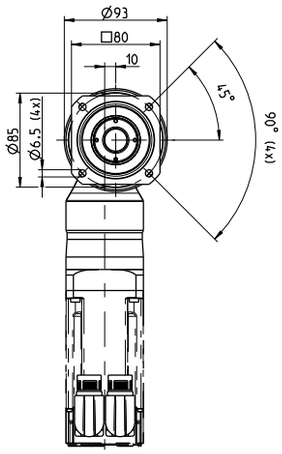
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

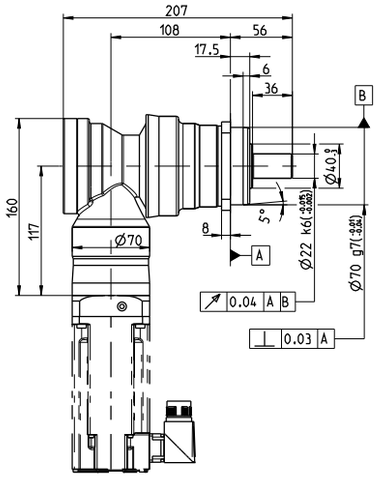
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA60-090	8LSA2	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
One-stage											
Flange length L[mm]	---	25.5	35.5	25.5	35.5	---	25.5	35.5	37.5	35.5	35.5
Flange diameter Q [mm]	---	90	115	90	90	---	90	90	115	115	90
Two-stage											
Flange length L [mm]	26.1	26.1	35.5	26.1	35.5	19.1	26.1	35.5	---	35.5	28
Flange diameter Q [mm]	70	90	115	70	90	70	70	90	---	115	90

8GA60-115 premium

Technical data

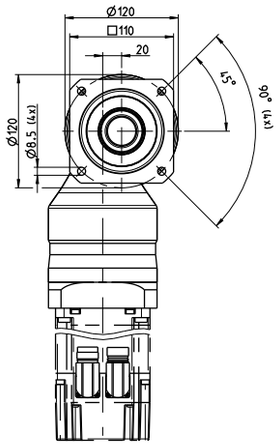
	8GA60-115hh004klmm	8GA60-115hh005klmm	8GA60-115hh008klmm	8GA60-115hh010klmm	8GA60-115hh016klmm	8GA60-115hh020klmm	8GA60-115hh025klmm	8GA60-115hh032klmm	8GA60-115hh040klmm	8GA60-115hh064klmm	8GA60-115hh100klmm
Gearbox											
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	160	140	90	75	300	300	260	200	250	150	125
Max. output torque T_{2max} [Nm]	256	224	144	120	480	480	416	320	400	240	200
E-stop torque T_{2stop} [Nm]	400	400	300	300	650	650	650	600	650	380	480
Idle torque [Nm] at 20°C and 3000 rpm	6.85	6.5	6.1	6	2.05	1.5	1.45	1.95	1.9	1.2	1.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1150	1250	1450	1500	1650	1950	2150	2200	2250	2850	3050
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	900	1050	1300	1400	1250	1450	1750	1900	1900	2700	2900
Max. drive speed n_{1max} [rpm]	9500	9500	9500	9500	14000	14000	14000	14000	14000	14000	14000
Max. backlash J_t [arcmin]	5	5	5	5	7	7	7	7	7	7	7
Reduced backlash J_t [arcmin] less than						0					
Torsional rigidity C_{t21} [Nm/arcmin]	14.3	14.3	14.3	14.3	34	34	34	34	34	34	34
Tilting rigidity C_{2K} [Nm/arcmin]						0					
Max. breakdown torque M_{2Kmax} [Nm]						0					
Max. radial force Fr_{max} [N] for 30,000 h	6000	6000	6000	6000	5400	5400	5400	5400	5400	5400	5400
Max. radial force Fr_{max} [N] for 20,000 h						6000					
Max. axial force Fa_{max} [N] for 30,000 h	6100	6100	6100	6100	7000	7000	7000	7000	7000	7000	7000
Max. axial force Fa_{max} [N] for 20,000 h	7000	7000	7000	7000	8000	8000	8000	8000	8000	8000	8000
Operating noise L_{PA} [dB(A)]						68					
Efficiency at full load ŋ [%]	96	96	96	96	94	94	94	94	94	94	94
Min. operating temperature $B_{Tempmin}$ [°C]						-25					
Max. operating temperature $B_{Tempmax}$ [°C]						90					
Mounting orientation						Any					
Protection						IP65					
Weight m [kg]	10.5	10.5	10.5	10.5	9.2	9.2	9.2	9.2	9.2	9.2	9.2
Moment of inertia J_1 [kgcm^2]	5.924	5.441	4.989	4.883	1.366	1.19	1.186	1.013	1.011	1.01	0.97

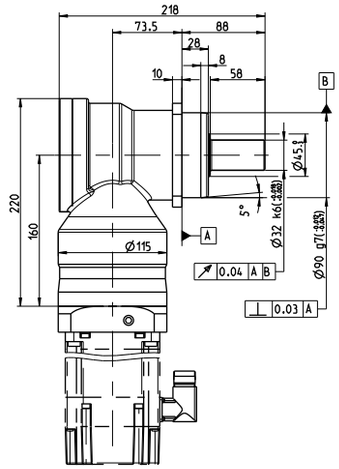
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

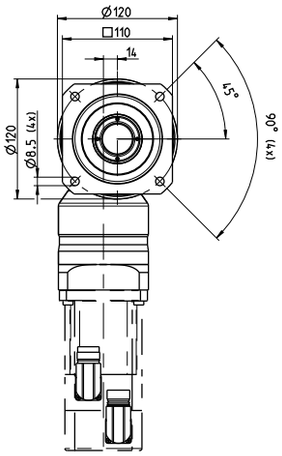
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

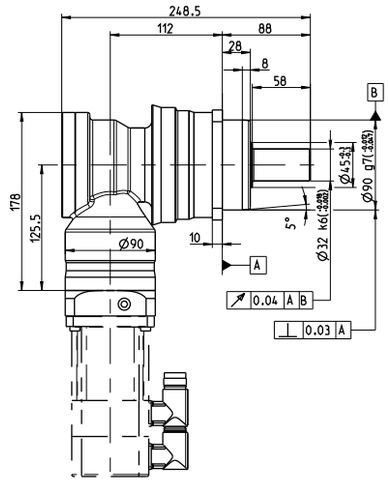
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA60-115	8LSA3	8LSA4	8LSA5	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8JSA6	8LSN 4	8LSN5	80MPH
One-stage												
Flange length L [mm]	27.6	27.6	37.6	---	27.6	---	27.6	37.6	43	27.6	37.6	27.6
Flange diameter Q [mm]	115	115	142	---	115	---	115	115	142	115	142	115
Two-stage		8LSA/C4	8LSA/C5									
Flange length L [mm]	25.5	35.5	37.6	25.5	35.5	25.5	35.5	37.6	---	35.5	37.6	35.5
Flange diameter Q [mm]	90	115	142	90	90	90	90	115	---	115	142	90

8GA60-142 premium

Technical data

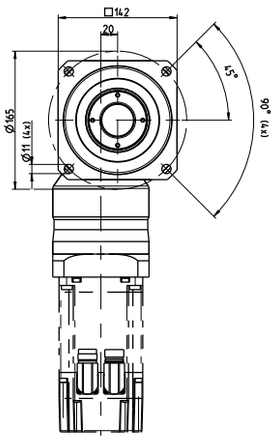
	8GA60-142hh016klmm	8GA60-142hh020klmm	8GA60-142hh025klmm	8GA60-142hh032klmm	8GA60-142hh040klmm	8GA60-142hh064klmm	8GA60-142hh100klmm
Gearbox							
Number of gear stages				2			
Gear ratio i	16	20	25	32	40	64	100
Nominal output torque T_{2N} [Nm]	640	800	700	360	450	450	305
Max. output torque T_{2max} [Nm]	1024	1280	1120	576	720	720	488
E-stop torque T_{2stop} [Nm]	1600	1600	1600	1200	1500	1000	750
Idle torque [Nm] at 20°C and 3000 rpm	7.7	7.15	6.95	6.4	6.35	4.05	3.95
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1000	1050	1150	1400	1450	1750	1900
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	750	750	900	1250	1250	1600	1800
Max. drive speed n_{1max} [rpm]				9500			
Max. backlash J_t [arcmin]				7			
Reduced backlash J_t [arcmin] less than				0			
Torsional rigidity C_{t21} [Nm/arcmin]				58			
Tilting rigidity C_{2K} [Nm/arcmin]				0			
Max. breakdown torque M_{2Kmax} [Nm]				0			
Max. radial force Fr_{max} [N] for 30,000 h				11400			
Max. radial force Fr_{max} [N] for 20,000 h				12500			
Max. axial force Fa_{max} [N] for 30,000 h				13200			
Max. axial force Fa_{max} [N] for 20,000 h				15000			
Operating noise L_{PA} [dB(A)]				70			
Efficiency at full load ŋ [%]				94			
Min. operating temperature $B_{Tempmin}$ [°C]				-25			
Max. operating temperature $B_{Tempmax}$ [°C]				90			
Mounting orientation				Any			
Protection				IP65			
Weight m [kg]				21.5			
Moment of inertia J_1 [kgcm^2]	6.082	6.016	5.5	5.028	5.012	5.004	4.892

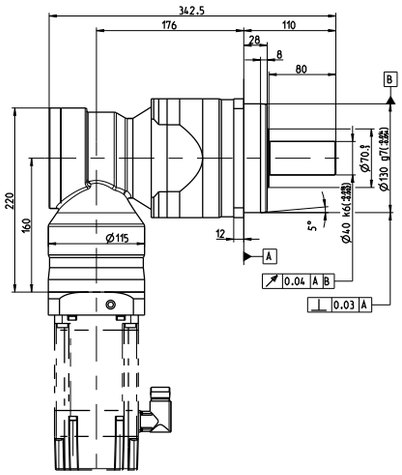
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GA60-142	8LSA3	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/C7(3-5)	8LSA/C7(6-8)	8LVA3
One-stage							
Flange length L [mm]	---	33	56.5	33	43	69.5	---
Flange diameter Q [mm]	---	142	142	190	190	190	---
Two-stage							
Flange length L [mm]	27.6	27.6	37.6	37.6	43	---	27.6
Flange diameter Q [mm]	115	115	142	190	190	---	115

8GA60-142	8JSA4	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5	80MPH
One-stage							
Flange length L [mm]	---	33	43	69.5	33	33	---
Flange diameter Q [mm]	---	142	142	190	142	142	---
Two-stage							
Flange length L [mm]	27.6	37.6	43	---	27.6	37.6	27.5
Flange diameter Q [mm]	115	115	142	---	115	142	115

8GA75-070 premium

Technical data

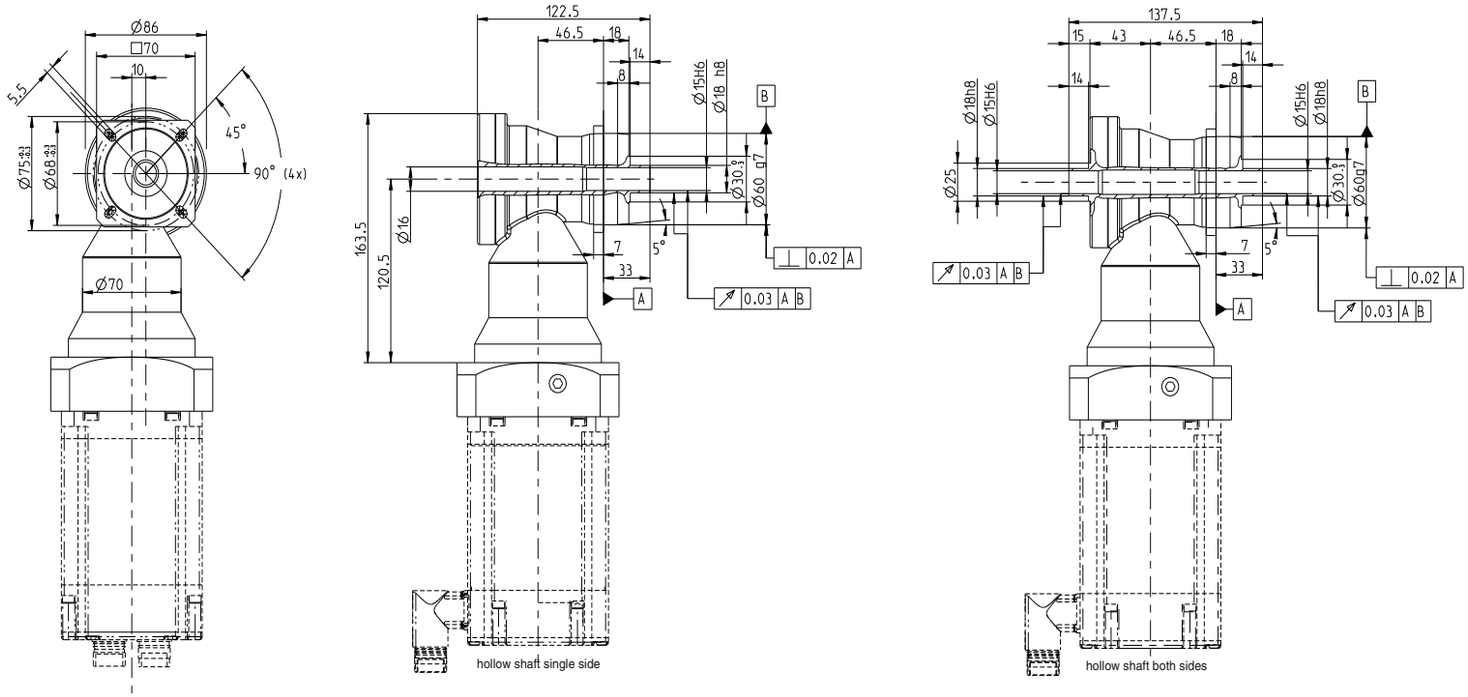
	8GA75-070hh004klmm	8GA75-070hh005klmm	8GA75-070hh008klmm	8GA75-070hh010klmm
Gearbox				
Number of gear stages	1			
Gear ratio i	4	5	8	10
Nominal output torque T_{2N} [Nm]	45	42	27	22
Max. output torque T_{2max} [Nm]	72	67	43	35
E-stop torque T_{2stop} [Nm]	100	100	75	75
Idle torque [Nm] at 20°C and 3000 rpm	1.5	1.4	1.25	1.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1750	1900	2300	2400
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1400	1600	2050	2250
Max. drive speed n_{1max} [rpm]	16000			
Max. backlash J_t [arcmin]	5			
Reduced backlash J_t [arcmin] less than	0			
Torsional rigidity C_{t21} [Nm/arcmin]	2.4	2.5	2.3	2
Tilting rigidity C_{2K} [Nm/arcmin]	0			
Max. breakdown torque M_{2Kmax} [Nm]	0			
Max. radial force Fr_{max} [N] for 30,000 h	2700			
Max. radial force Fr_{max} [N] for 20,000 h	2700			
Max. axial force Fa_{max} [N] for 30,000 h	3700			
Max. axial force Fa_{max} [N] for 20,000 h	4300			
Operating noise L_{PA} [dB(A)]	66			
Efficiency at full load ŋ [%]	96			
Min. operating temperature $B_{Tempmin}$ [°C]	-25			
Max. operating temperature $B_{Tempmax}$ [°C]	90			
Mounting orientation	Any			
Protection	IP65			
Weight m [kg]	3			
Moment of inertia J_1 [kgcm^2]	0.654	0.6	0.532	0.516

NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

1-stage gear



Adapter flange - Overview of dimensions

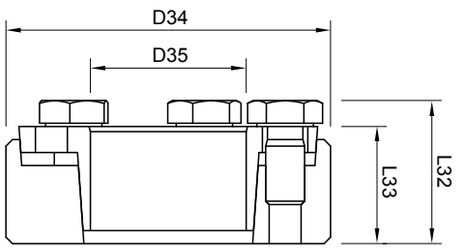
The flange length L completes the diagram for determining the gearbox length.

8GA75-070	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
Flange length L [mm]	26.1	26.1	26.1	35.5	19.1	26.1	35.5	28
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

Accessories

Shrink disc

Model number	D34	D35	L32	L33	Size
8GA75-070-ZSR18-0	44 mm	18 mm	19 mm	15 mm	8GA75-070



8GA75-090 premium

Technical data

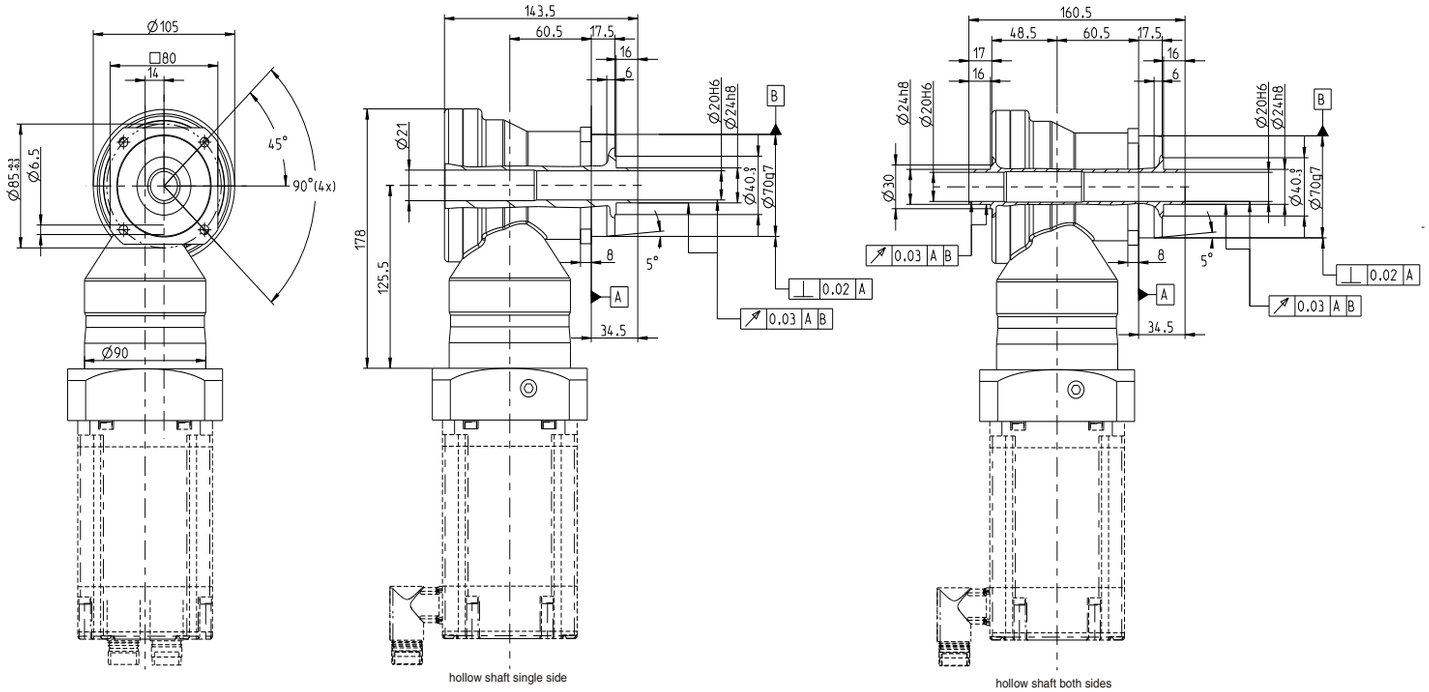
	8GA75-090hh004klmm	8GA75-090hh005klmm	8GA75-090hh008klmm	8GA75-090hh010klmm
Gearbox				
Number of gear stages	1			
Gear ratio i	4	5	8	10
Nominal output torque T_{2N} [Nm]	70	70	50	40
Max. output torque T_{2max} [Nm]	112	112	80	64
E-stop torque T_{2stop} [Nm]	200	200	150	150
Idle torque [Nm] at 20°C and 3000 rpm	2.35	2.15	1.9	1.85
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1700	1850	2200	2350
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1400	1550	1950	2150
Max. drive speed n_{1max} [rpm]	14000			
Max. backlash J_t [arcmin]	5			
Reduced backlash J_t [arcmin] less than	0			
Torsional rigidity C_{t21} [Nm/arcmin]	1.9	1.7	2.2	2
Tilting rigidity C_{2K} [Nm/arcmin]	0			
Max. breakdown torque M_{2Kmax} [Nm]	0			
Max. radial force Fr_{max} [N] for 30,000 h	4000			
Max. radial force Fr_{max} [N] for 20,000 h	4000			
Max. axial force Fa_{max} [N] for 30,000 h	5200			
Max. axial force Fa_{max} [N] for 20,000 h	5900			
Operating noise L_{PA} [dB(A)]	67			
Efficiency at full load ŋ [%]	96			
Min. operating temperature $B_{Tempmin}$ [°C]	-25			
Max. operating temperature $B_{Tempmax}$ [°C]	90			
Mounting orientation	Any			
Protection	IP65			
Weight m [kg]	5			
Moment of inertia J_1 [kgcm^2]	1.331	1.168	1.004	0.966

NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

1-stage gear



Adapter flange - Overview of dimensions

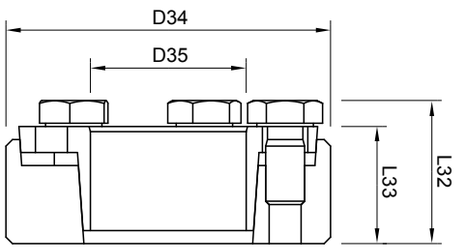
The flange length L completes the diagram for determining the gearbox length.

8GA75-090	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
Flange length L[mm]	25.5	35.5	25.5	35.5	25.5	35.5	37.5	35.5	35.5
Flange diameter Q [mm]	90	115	90	90	90	90	115	115	90

Accessories

Shrink disc

Model number	D34	D35	L32	L33	Size
8GA75-090-ZSR24-0	50 mm	24 mm	22 mm	18 mm	8GA75-090



8GA75-115 premium

Technical data

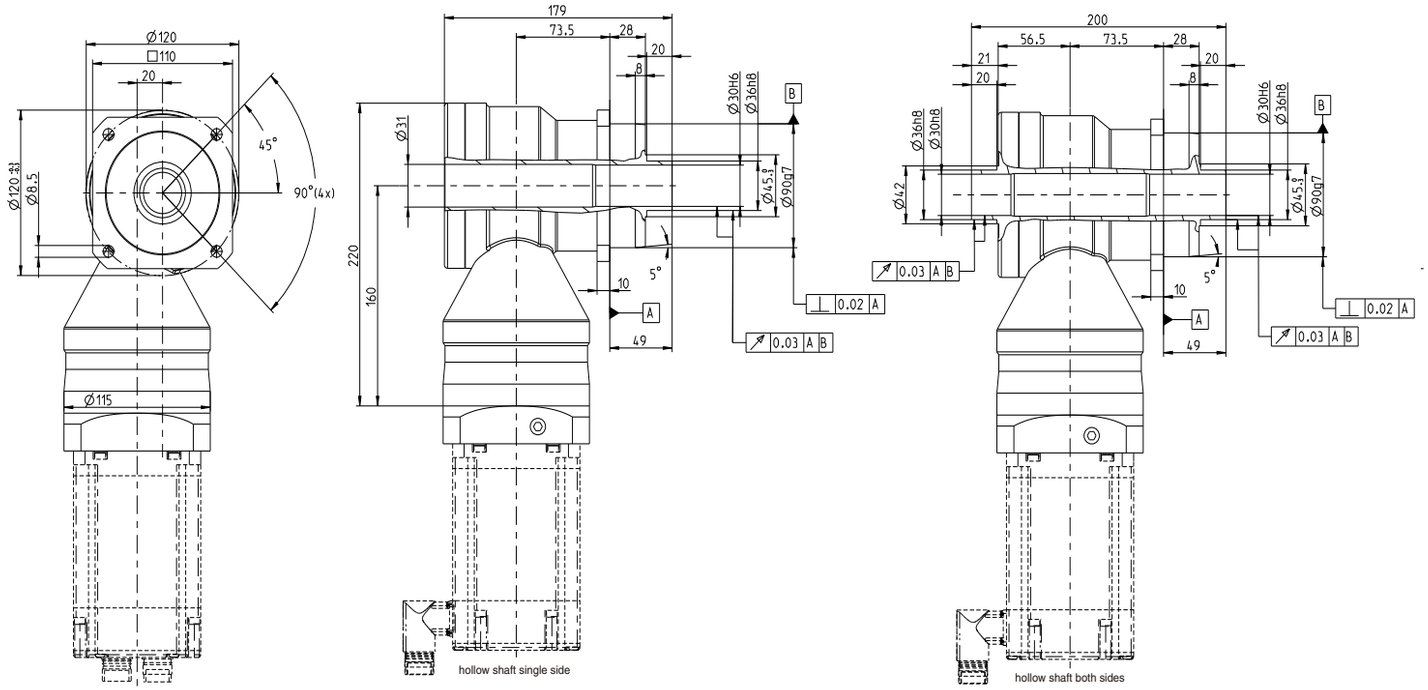
	8GA75-115hh004klmm	8GA75-115hh005klmm	8GA75-115hh008klmm	8GA75-115hh010klmm
Gearbox				
Number of gear stages	1			
Gear ratio i	4	5	8	10
Nominal output torque T_{2N} [Nm]	140	140	90	75
Max. output torque T_{2max} [Nm]	224	224	144	120
E-stop torque T_{2stop} [Nm]	400	400	300	300
Idle torque [Nm] at 20°C and 3000 rpm	6.9	6.55	6.15	6
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1150	1200	1400	1500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	950	1000	1300	1350
Max. drive speed n_{1max} [rpm]	9500			
Max. backlash J_t [arcmin]	5			
Reduced backlash J_t [arcmin] less than	0			
Torsional rigidity C_{t21} [Nm/arcmin]	12	14.5	14.5	14.5
Tilting rigidity C_{2K} [Nm/arcmin]	0			
Max. breakdown torque M_{2Kmax} [Nm]	0			
Max. radial force Fr_{max} [N] for 30,000 h	6500			
Max. radial force Fr_{max} [N] for 20,000 h	6500			
Max. axial force Fa_{max} [N] for 30,000 h	6100			
Max. axial force Fa_{max} [N] for 20,000 h	7000			
Operating noise L_{PA} [dB(A)]	68			
Efficiency at full load ŋ [%]	96			
Min. operating temperature $B_{Tempmin}$ [°C]	-25			
Max. operating temperature $B_{Tempmax}$ [°C]	90			
Mounting orientation	Any			
Protection	IP65			
Weight m [kg]	9.2			
Moment of inertia J_1 [kgcm^2]	5.924	5.441	4.989	4.883

NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

1-stage gear



Adapter flange - Overview of dimensions

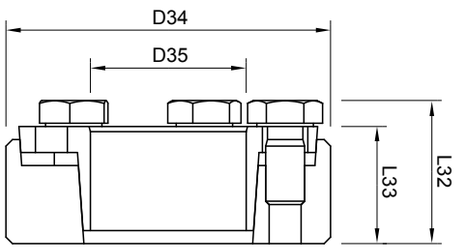
The flange length L completes the diagram for determining the gearbox length.

8GA75-115	8LSA3	8LSA4	8LSA5	8LVA3	8JSA4	8JSA5	8JSA6	8LSN 4	8LSN5	80MPH
Flange length L [mm]	27.6	27.6	37.6	27.6	27.6	37.6	43	27.6	37.6	27.6
Flange diameter Q [mm]	115	115	142	115	115	115	142	115	142	115

Accessories

Shrink disc

Model number	D34	D35	L32	L33	Size
8GA75-115-ZSR36-0	72 mm	36 mm	27.3 mm	22 mm	8GA75-115



8GA75-142 premium

Technical data

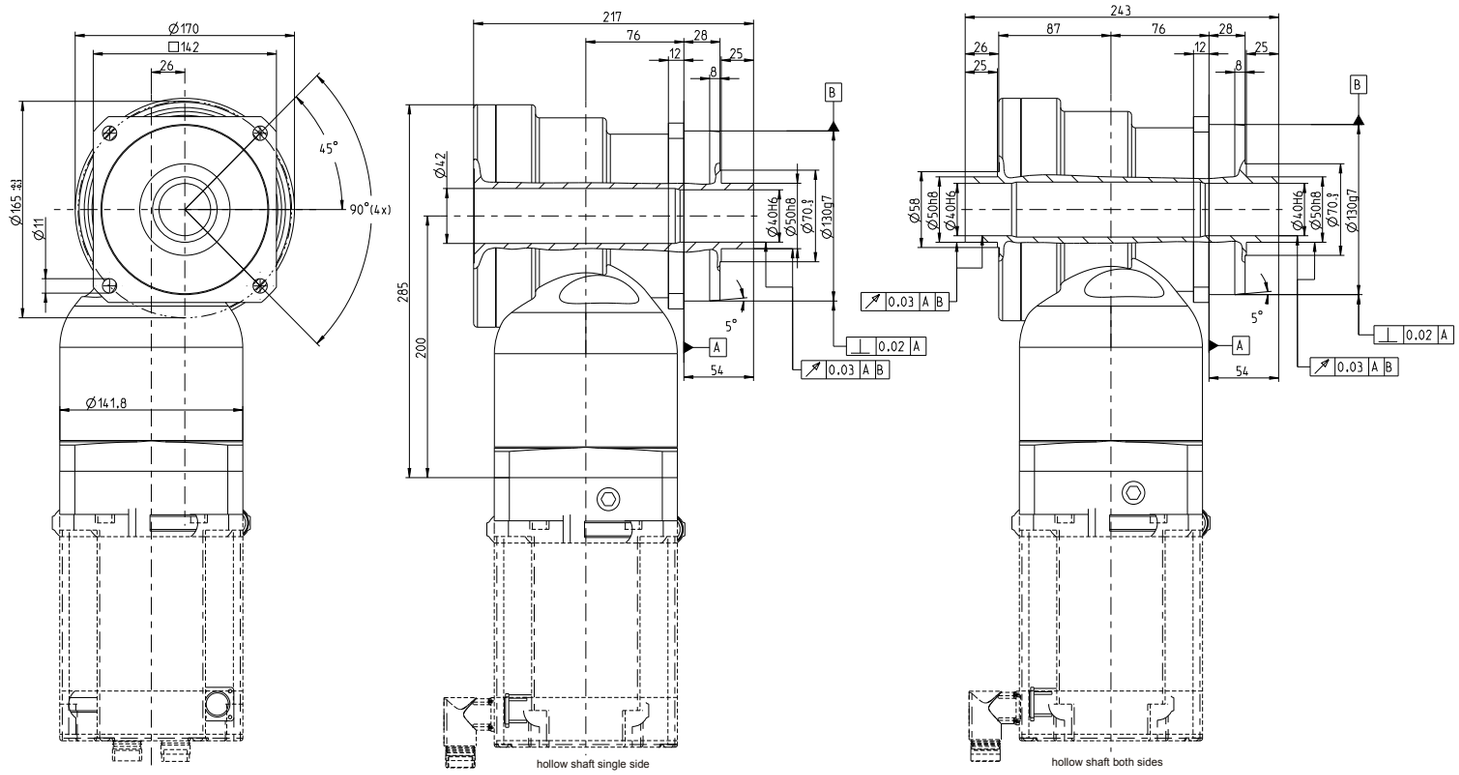
	8GA75-142hh004klmm	8GA75-142hh005klmm	8GA75-142hh008klmm	8GA75-142hh010klmm
Gearbox				
Number of gear stages	1			
Gear ratio i	4	5	8	10
Nominal output torque T_{2N} [Nm]	320	280	180	160
Max. output torque T_{2max} [Nm]	512	448	288	256
E-stop torque T_{2stop} [Nm]	800	800	700	700
Idle torque [Nm] at 20°C and 3000 rpm	16.1			
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	950	950	1050	1050
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	750	800	900	950
Max. drive speed n_{1max} [rpm]	8000			
Max. backlash J_t [arcmin]	5			
Reduced backlash J_t [arcmin] less than	0			
Torsional rigidity C_{t21} [Nm/arcmin]	33	35.5	35.5	35.5
Tilting rigidity C_{2K} [Nm/arcmin]	0			
Max. breakdown torque M_{2Kmax} [Nm]	0			
Max. radial force Fr_{max} [N] for 30,000 h	10000			
Max. radial force Fr_{max} [N] for 20,000 h	10000			
Max. axial force Fa_{max} [N] for 30,000 h	12000			
Max. axial force Fa_{max} [N] for 20,000 h	14500			
Operating noise L_{PA} [dB(A)]	70			
Efficiency at full load ŋ [%]	96			
Min. operating temperature $B_{Tempmin}$ [°C]	-25			
Max. operating temperature $B_{Tempmax}$ [°C]	90			
Mounting orientation	Any			
Protection	IP65			
Weight m [kg]	25			
Moment of inertia J_1 [kgcm^2]	22.302	19.904	17.66	17.016

NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

1-stage gear



Adapter flange - Overview of dimensions

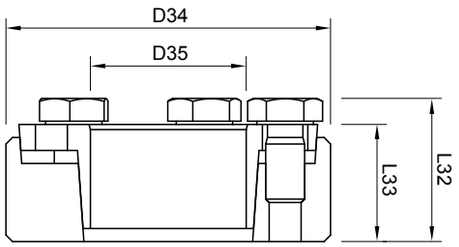
The flange length L completes the diagram for determining the gearbox length.

8GA75-142	8LSA4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8JSA5	8JSA6	8JSA7	8LSN 4	8LSN5
Flange length L[mm]	33	56.5	33	43	69.5	33	43	69.5	33	33
Flange diameter Q [mm]	142	142	190	190	190	142	142	190	142	142

Accessories

Shrink disc

Model number	D34	D35	L32	L33	Size
8GA75-142-ZSR50-0	90 mm	50 mm	31.3 mm	26 mm	8GA75-142



8GF60-064 premium

Technical data

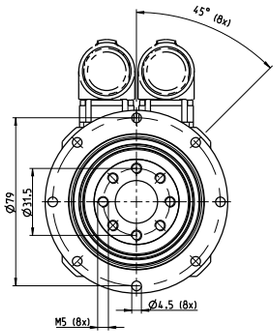
	8GF60-064hh004klmm	8GF60-064hh005klmm	8GF60-064hh008klmm	8GF60-064hh010klmm	8GF60-064hh016klmm	8GF60-064hh020klmm	8GF60-064hh025klmm	8GF60-064hh032klmm	8GF60-064hh040klmm	8GF60-064hh050klmm	8GF60-064hh064klmm	8GF60-064hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	50	64	100
Nominal output torque T_{2N} [Nm]	60	65	40	27	77	77	65	77	65	65	40	27
Max. output torque T_{2max} [Nm]	96	104	64	43	123	123	104	123	104	104	64	43
E-stop torque T_{2stop} [Nm]	120	130	90	90	150	150	150	150	150	150	80	80
Idle torque [Nm] at 20°C and 3000 rpm	0.7	0.55	0.35	0.3	0.35	0.3	0.25	0.25	0.2	0.2	0.2	0.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2100	2450	3550	4100	3700	4200	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1750	2000	3100	3800	3050	3500	4000	4400	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	14000											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	2											
Torsional rigidity C_{t21} [Nm/arcmin]	16	16	16	16	14	14	14	14	14	14	14	14
Tilting rigidity C_{2K} [Nm/arcmin]	117											
Max. breakdown torque M_{2Kmax} [Nm]	148											
Max. radial force Fr_{max} [N] for 30,000 h	2100											
Max. radial force Fr_{max} [N] for 20,000 h	2400											
Max. axial force Fa_{max} [N] for 30,000 h	3800											
Max. axial force Fa_{max} [N] for 20,000 h	4300											
Operating noise L_{PA} [dB(A)]	65											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	1.5	1.5	1.5	1.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Moment of inertia J_1 [kgcm^2]	0.29	0.26	0.22	0.21	0.32	0.3	0.27	0.29	0.26	0.22	0.23	0.22

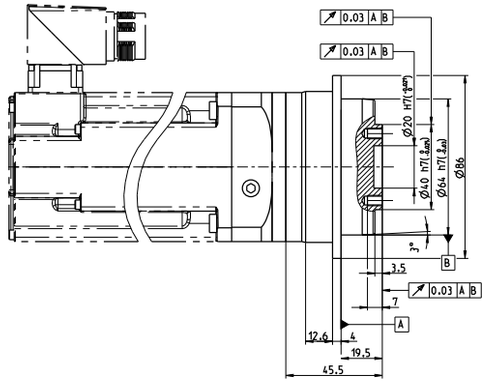
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

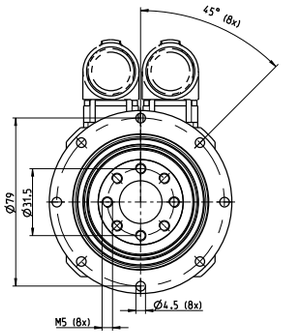
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

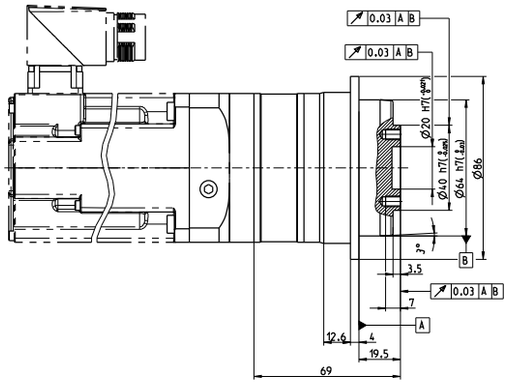
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF60-064	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
One-stage								
Flange length L [mm]	32.5	32.5	32.5	42.8	25.5	32.5	42.8	42.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90
Two-stage								
Flange length L [mm]	37.5	37.5	37.5	48	30.5	37.5	48	47.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

8GF60-090 premium

Technical data

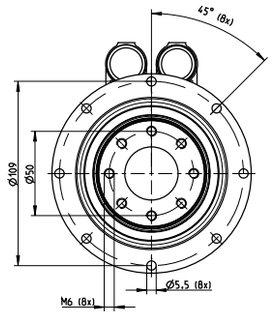
	8GF60-090hh004klmm	8GF60-090hh005klmm	8GF60-090hh008klmm	8GF60-090hh010klmm	8GF60-090hh016klmm	8GF60-090hh020klmm	8GF60-090hh025klmm	8GF60-090hh032klmm	8GF60-090hh040klmm	8GF60-090hh050klmm	8GF60-090hh064klmm	8GF60-090hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	50	64	100
Nominal output torque T_{2N} [Nm]	140	140	80	60	150	150	140	150	140	130	80	60
Max. output torque T_{2max} [Nm]	224	224	128	96	240	240	224	240	224	208	128	96
E-stop torque T_{2stop} [Nm]	280	280	200	200	300	300	300	300	300	300	200	200
Idle torque [Nm] at 20°C and 3000 rpm	1.55	1.15	0.65	0.55	0.4	0.35	0.3	0.25	0.25	0.2	0.2	0.25
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1750	2100	3350	4000	3850	4450	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1350	1650	2850	3600	2950	3450	4000	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	10000											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	35	35	35	35	30	30	30	30	30	30	30	30
Tilting rigidity C_{2K} [Nm/arcmin]	316											
Max. breakdown torque M_{2Kmax} [Nm]	363											
Max. radial force Fr_{max} [N] for 30,000 h	3900											
Max. radial force Fr_{max} [N] for 20,000 h	4400											
Max. axial force Fa_{max} [N] for 30,000 h	7200											
Max. axial force Fa_{max} [N] for 20,000 h	8200											
Operating noise L_{PA} [dB(A)]	65											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	3	3	3	3	4	4	4	4	4	4	4	4
Moment of inertia J_1 [kgcm^2]	0.92	0.77	0.63	0.59	0.58	0.56	0.45	0.54	0.43	0.28	0.3	0.26

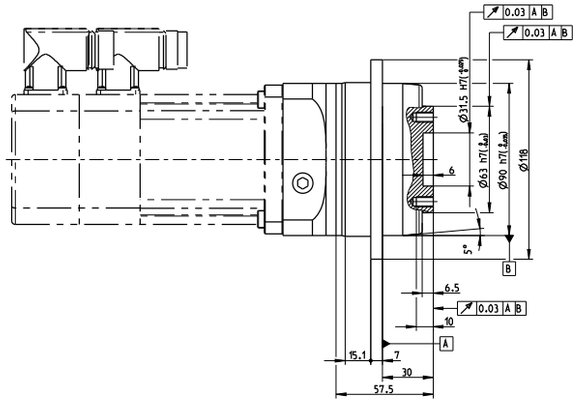
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

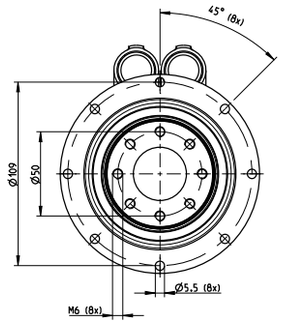
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

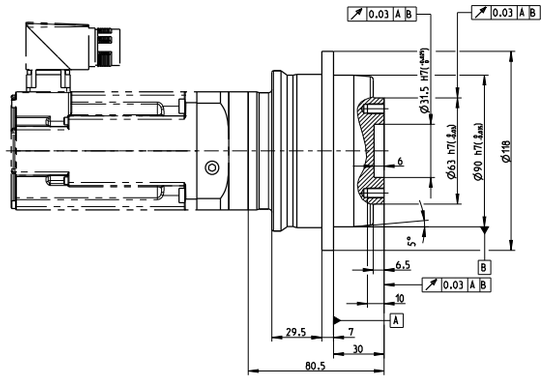
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF60-090	8LSA2	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
One-stage											
Flange length L [mm]	---	31.6	41.6	31.6	41.6	---	31.6	41.6	51.7	41.6	41.6
Flange diameter Q [mm]	---	90	115	90	90	---	90	90	115	115	90
Two-stage											
Flange length L [mm]	37.5	37.5	48	37.5	48	30.5	37.5	48	---	48	47.5
Flange diameter Q [mm]	70	90	115	70	90	70	70	90	---	115	90

8GF60-110 premium

Technical data

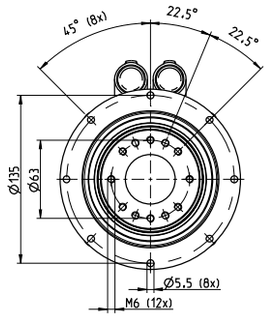
	8GF60-110hh004klmm	8GF60-110hh005klmm	8GF60-110hh008klmm	8GF60-110hh010klmm	8GF60-110hh016klmm	8GF60-110hh020klmm	8GF60-110hh025klmm	8GF60-110hh032klmm	8GF60-110hh040klmm	8GF60-110hh050klmm	8GF60-110hh064klmm	8GF60-110hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	50	64	100
Nominal output torque T_{2N} [Nm]	300	260	150	125	300	300	260	300	260	260	150	125
Max. output torque T_{2max} [Nm]	480	416	240	200	480	480	416	480	416	416	240	200
E-stop torque T_{2stop} [Nm]	650	650	380	480	650	650	650	650	650	650	380	480
Idle torque [Nm] at 20°C and 3000 rpm	3.65	2.6	1.4	1.15	0.95	0.7	0.6	0.45	0.4	0.35	0.35	0.3
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1300	1650	2650	3150	3150	3750	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1000	1300	2250	2750	2350	2800	3450	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	8500											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	90	90	90	90	80	80	80	80	80	80	80	80
Tilting rigidity C_{2K} [Nm/arcmin]	590											
Max. breakdown torque M_{2Kmax} [Nm]	534											
Max. radial force Fr_{max} [N] for 30,000 h	4800											
Max. radial force Fr_{max} [N] for 20,000 h	5500											
Max. axial force Fa_{max} [N] for 30,000 h	8400											
Max. axial force Fa_{max} [N] for 20,000 h	9500											
Operating noise L_{PA} [dB(A)]	68											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	6.5	6.5	6.5	6.5	8	8	8	8	8	8	8	8
Moment of inertia J_1 [kgcm^2]	2.94	2.51	2.08	2	1.73	1.65	1.3	1.6	1.24	0.8	0.85	0.75

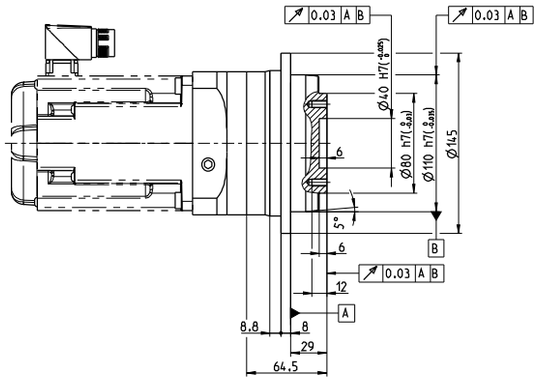
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

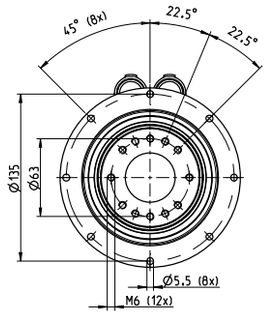
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

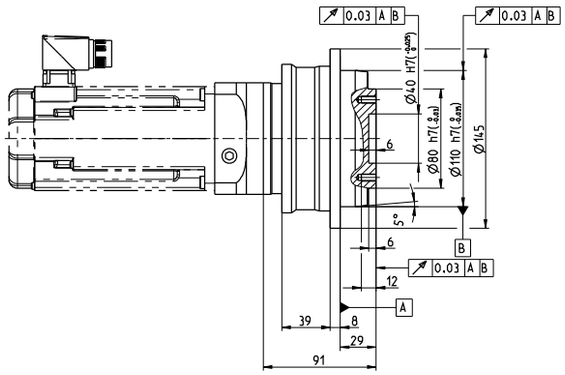
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF60-110	8LSA3	8LSA4	8LSA5	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
One-stage												
Flange length L [mm]	43.4	43.4	53.4	---	43.4	---	43.4	53.4	64.5	43.4	53.4	43.4
Flange diameter Q [mm]	115	115	142	---	115	---	115	115	142	120	142	115
Two-stage												
Flange length L [mm]	38.8	48.8	58.9	38.8	48.8	38.8	48.8	58.9	---	48.8	58.9	48.8
Flange diameter Q [mm]	90	115	142	90	90	90	90	115	---	115	142	90

8GF60-140 premium

Technical data

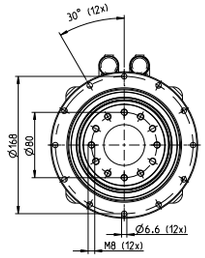
	8GF60-140hh004klmm	8GF60-140hh005klmm	8GF60-140hh008klmm	8GF60-140hh010klmm	8GF60-140hh016klmm	8GF60-140hh020klmm	8GF60-140hh025klmm	8GF60-140hh032klmm	8GF60-140hh040klmm	8GF60-140hh050klmm	8GF60-140hh064klmm	8GF60-140hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	8	10	16	20	25	32	40	50	64	100
Nominal output torque T_{2N} [Nm]	600	750	450	305	1000	1000	900	600	750	620	450	305
Max. output torque T_{2max} [Nm]	960	1200	720	488	1600	1600	1440	960	1200	992	720	488
E-stop torque T_{2stop} [Nm]	1300	1500	1000	750	2000	2000	1800	1500	1500	1500	1000	750
Idle torque [Nm] at 20°C and 3000 rpm	9.35	6.35	3.3	2.55	2.95	2.05	1.85	1.1	1	0.85	0.85	0.75
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	850	950	1650	2050	1700	2100	2500	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	650	700	1350	1800	1200	1450	1800	2850	2950	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	200	200	200	200	180	180	180	180	180	180	180	180
Tilting rigidity C_{2K} [Nm/arcmin]	880											
Max. breakdown torque M_{2Kmax} [Nm]	1219											
Max. radial force Fr_{max} [N] for 30,000 h	11000											
Max. radial force Fr_{max} [N] for 20,000 h	12000											
Max. axial force Fa_{max} [N] for 30,000 h	7500											
Max. axial force Fa_{max} [N] for 20,000 h	8500											
Operating noise L_{PA} [dB(A)]	70											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	13	13	13	13	16	16	16	16	16	16	16	16
Moment of inertia J_1 [kgcm^2]	11.78	9.7	7.71	7.4	6.73	6.51	5	6.31	4.82	3.08	3.11	2.67

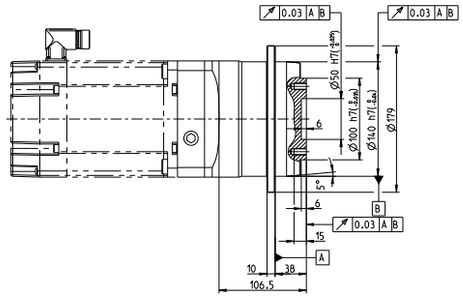
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

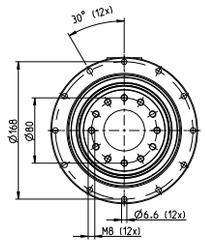
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

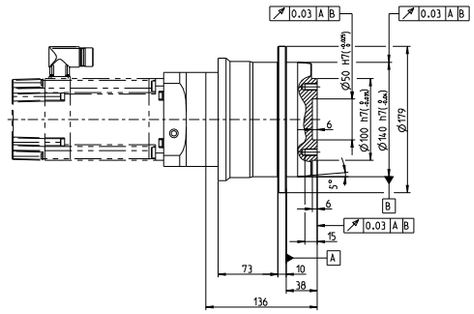
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF60-140	8LSA3	8LSA/ C4	8LSA/ C5	8LSA/ C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LVA3	8JSA4	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5	80MPH
One-stage														
Flange length L [mm]	---	50.5	50.5	50.5	60.5	88.5	---	---	50.5	60.5	88.5	50.5	50.5	---
Flange diameter Q [mm]	---	142	142	190	190	190	---	---	142	142	190	142	142	---
Two-stage														
Flange length L [mm]	51.5	51.5	61.5	61.5	71.4	---	51.5	51.5	61.5	71.4	---	51.5	61.5	51.5
Flange diameter Q [mm]	115	115	142	190	190	---	115	115	115	142	---	120	142	115

8GF60-200 premium

Technical data

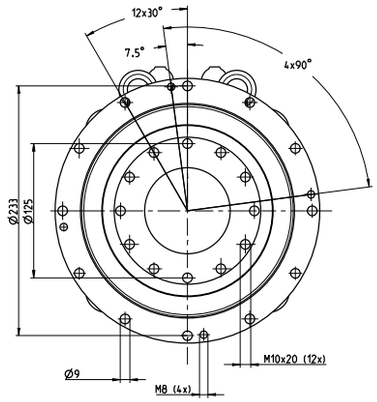
	8GF60-200hh004klmm	8GF60-200hh040klmm	8GF60-200hh005klmm	8GF60-200hh008klmm	8GF60-200hh010klmm	8GF60-200hh016klmm	8GF60-200hh020klmm	8GF60-200hh025klmm	8GF60-200hh032klmm	8GF60-200hh050klmm	8GF60-200hh064klmm	8GF60-200hh100klmm
Gearbox												
Number of gear stages	1	2	1	1	1	2	2	2	2	2	2	2
Gear ratio i	4	40	5	8	10	16	20	25	32	50	64	100
Nominal output torque T_{2N} [Nm]	1300	1800	1600	1000	630	1800	1800	1800	1800	1525	1000	630
Max. output torque T_{2max} [Nm]	2080	2880	2560	1600	1008	2880	2880	2880	2880	2440	1600	1008
E-stop torque T_{2stop} [Nm]	2700	3600	3200	2600	1350	3600	3600	3600	3600	3600	2600	1350
Idle torque [Nm] at 20°C and 3000 rpm	25.75	2.5	17.1	7.9	5.95	7.8	5.25	4.7	2.75	2	2.15	1.6
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	500	2250	600	1000	1300	1100	1350	1550	2000	2750	3000	3000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	400	1650	450	800	1150	800	950	1100	1400	2100	2650	3000
Max. drive speed n_{1max} [rpm]	6000											
Max. backlash J_t [arcmin]	3	5	3	3	3	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	650	550	650	650	650	550	550	550	550	550	550	550
Tilting rigidity C_{2K} [Nm/arcmin]	2200											
Max. breakdown torque M_{2Kmax} [Nm]	4928											
Max. radial force Fr_{max} [N] for 30,000 h	29500											
Max. radial force Fr_{max} [N] for 20,000 h	33000											
Max. axial force Fa_{max} [N] for 30,000 h	13500											
Max. axial force Fa_{max} [N] for 20,000 h	15000											
Operating noise L_{PA} [dB(A)]	76											
Efficiency at full load ŋ [%]	98	95	98	98	98	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	35.5	42.5	35.5	35.5	35.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5
Moment of inertia J_1 [kgcm^2]	56.66	28.49	43.67	29.1	25.8	42.55	40.78	29.7	39.8	28.27	15.89	12.12

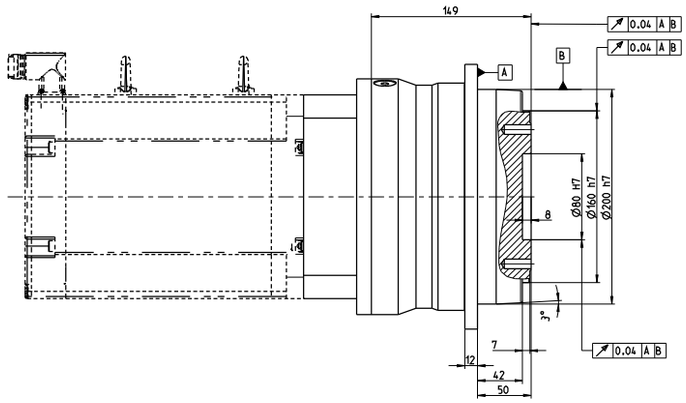
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

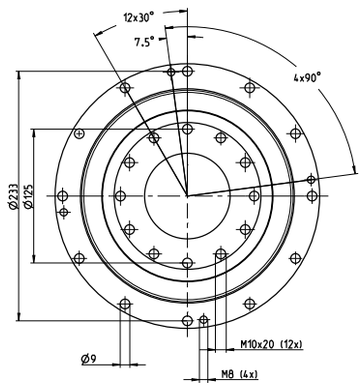
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

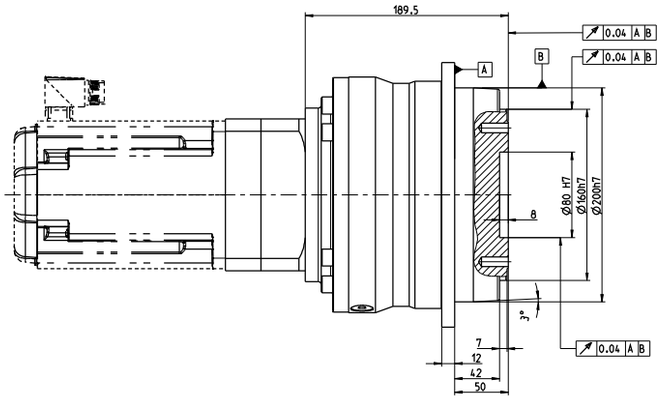
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF60-200	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LSA/ C83/84	8LSA/ C85/86	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5
One-stage												
Flange length L [mm]	---	63.5	63.5	63.5	83.5	83.5	113.5	63.5	63.5	83.5	---	63.5
Flange diameter Q [mm]	---	190	190	190	190	240	240	190	190	190	---	190
Two-stage												
Flange length L [mm]	74.5	74.5	74.5	84.5	112.5	112.5	142.5	74.5	84.5	112.5	74.5	74.5
Flange diameter Q [mm]	142	142	190	190	190	240	240	142	190	190	142	142

8GF70-064 premium

Technical data

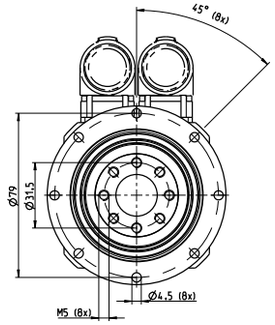
	8GF70-064hh004klmm	8GF70-064hh005klmm	8GF70-064hh007klmm	8GF70-064hh010klmm	8GF70-064hh016klmm	8GF70-064hh020klmm	8GF70-064hh025klmm	8GF70-064hh035klmm	8GF70-064hh040klmm	8GF70-064hh050klmm	8GF70-064hh070klmm	8GF70-064hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	7	10	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	39	40	37	28	39	39	40	40	39	40	37	28
Max. output torque T_{2max} [Nm]	62	64	59	45	62	62	64	64	62	64	59	45
E-stop torque T_{2stop} [Nm]	120	130	80	90	150	150	150	150	150	150	80	90
Idle torque [Nm] at 20°C and 3000 rpm	0.65	0.5	0.35	0.25	0.45	0.3	0.3	0.2	0.15	0.15	0.15	0.15
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	3200	3800	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3000	3600	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	14000											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	2											
Torsional rigidity C_{t21} [Nm/arcmin]	16	16	16	16	14	14	14	14	14	14	14	14
Tilting rigidity C_{2K} [Nm/arcmin]	117											
Max. breakdown torque M_{2Kmax} [Nm]	148											
Max. radial force Fr_{max} [N] for 30,000 h	2100											
Max. radial force Fr_{max} [N] for 20,000 h	2400											
Max. axial force Fa_{max} [N] for 30,000 h	3800											
Max. axial force Fa_{max} [N] for 20,000 h	4300											
Operating noise L_{PA} [dB(A)]	57											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	1.5	1.5	1.5	1.5	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Moment of inertia J_1 [kgcm^2]	0.192	0.163	0.138	0.125	0.175	0.152	0.151	0.131	0.123	0.122	0.122	0.122

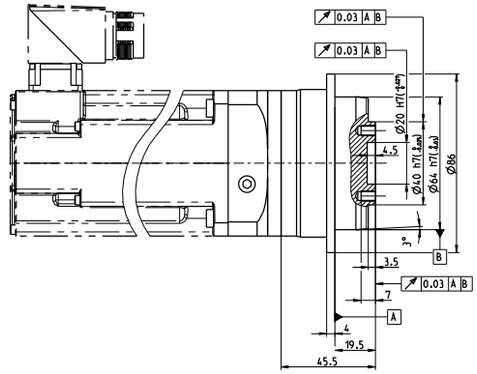
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

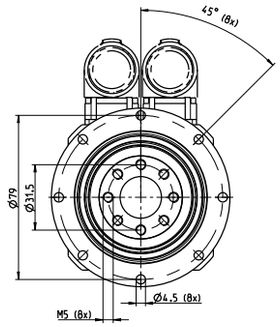
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

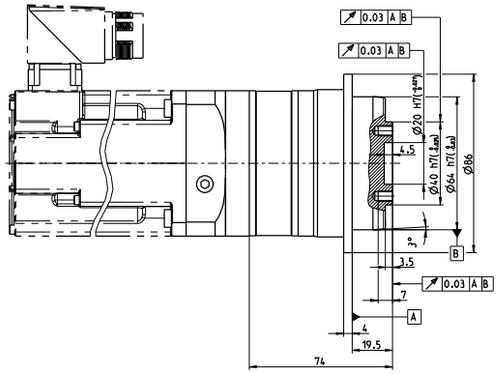
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF70-064	8LSA2	8LSA3	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	80MPH
One-stage								
Flange length L [mm]	32.5	32.5	32.5	42.8	25.5	32.5	42.8	42.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90
Two-stage								
Flange length L [mm]	32.5	32.5	32.5	42.8	25.5	32.5	42.8	42.5
Flange diameter Q [mm]	70	90	70	90	70	70	90	90

8GF70-090 premium

Technical data

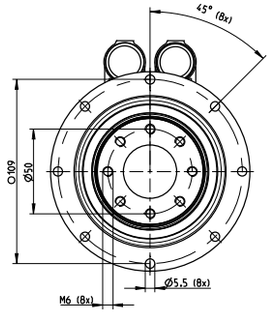
	8GF70-090hh004klmm	8GF70-090hh005klmm	8GF70-090hh007klmm	8GF70-090hh010klmm	8GF70-090hh016klmm	8GF70-090hh020klmm	8GF70-090hh025klmm	8GF70-090hh035klmm	8GF70-090hh040klmm	8GF70-090hh050klmm	8GF70-090hh070klmm	8GF70-090hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	7	10	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	80	80	78	59	80	80	80	80	80	80	78	59
Max. output torque T_{2max} [Nm]	128	128	125	94	128	128	128	128	128	128	125	94
E-stop torque T_{2stop} [Nm]	280	280	175	200	300	300	300	300	300	300	175	200
Idle torque [Nm] at 20°C and 3000 rpm	1.65	1.15	0.75	0.5	0.6	0.45	0.45	0.3	0.25	0.25	0.25	0.25
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	2400	2950	3800	4000	4500	4500	4500	4500	4500	4500	4500	4500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2250	2750	3550	4000	4500	4500	4500	4500	4500	4500	4500	4500
Max. drive speed n_{1max} [rpm]	10000											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	35	35	35	35	30	30	30	30	30	30	30	30
Tilting rigidity C_{2K} [Nm/arcmin]	316											
Max. breakdown torque M_{2Kmax} [Nm]	363											
Max. radial force Fr_{max} [N] for 30,000 h	3900											
Max. radial force Fr_{max} [N] for 20,000 h	4400											
Max. axial force Fa_{max} [N] for 30,000 h	7200											
Max. axial force Fa_{max} [N] for 20,000 h	8200											
Operating noise L_{PA} [dB(A)]	58											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	3	3	3	3	4	4	4	4	4	4	4	4
Moment of inertia J_1 [kgcm^2]	0.63	0.484	0.376	0.319	0.195	0.165	0.159	0.136	0.126	0.124	0.123	0.123

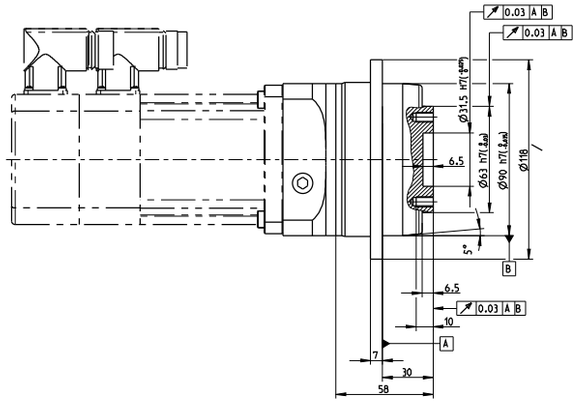
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

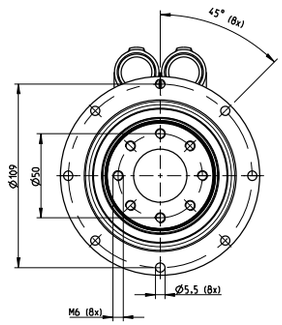
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

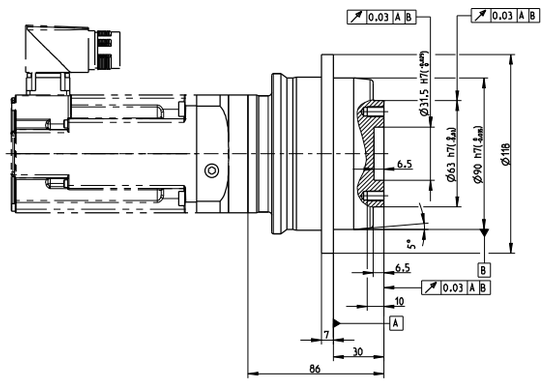
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF70-090	8LSA2	8LSA3	8LSA/C4	8LVA2	8LVA3	8JSA2	8JSA3	8JSA4	8JSA5	8LSN4	80MPH
One-stage											
Flange length L [mm]	---	31.6	41.6	31.6	41.6	---	31.6	41.6	51.7	41.6	41.6
Flange diameter Q [mm]	---	90	115	90	90	---	90	90	115	115	90
Two-stage											
Flange length L [mm]	32.5	32.5	42.8	32.5	42.8	25.5	32.5	42.8	---	42.8	42.5
Flange diameter Q [mm]	70	90	115	70	90	70	70	90	---	115	90

8GF70-110 premium

Technical data

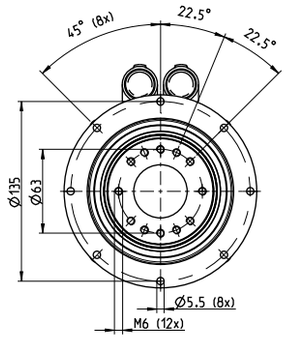
	8GF70-110hh004klmm	8GF70-110hh005klmm	8GF70-110hh007klmm	8GF70-110hh010klmm	8GF70-110hh016klmm	8GF70-110hh020klmm	8GF70-110hh025klmm	8GF70-110hh035klmm	8GF70-110hh040klmm	8GF70-110hh050klmm	8GF70-110hh070klmm	8GF70-110hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	7	10	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	180	175	175	140	180	180	175	175	180	175	175	140
Max. output torque T_{2max} [Nm]	288	280	280	224	288	288	280	280	288	280	280	224
E-stop torque T_{2stop} [Nm]	650	650	340	480	650	650	650	650	650	650	340	480
Idle torque [Nm] at 20°C and 3000 rpm	3.8	2.6	1.6	1	1.45	1.05	0.95	0.65	0.5	0.5	0.45	0.45
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1800	2250	2950	3500	3800	4000	4000	4000	4000	4000	4000	4000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1700	2050	2750	3500	3550	4000	4000	4000	4000	4000	4000	4000
Max. drive speed n_{1max} [rpm]	8500											
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	90	90	90	90	80	80	80	80	80	80	80	80
Tilting rigidity C_{2K} [Nm/arcmin]	590											
Max. breakdown torque M_{2Kmax} [Nm]	534											
Max. radial force Fr_{max} [N] for 30,000 h	4800											
Max. radial force Fr_{max} [N] for 20,000 h	5500											
Max. axial force Fa_{max} [N] for 30,000 h	8400											
Max. axial force Fa_{max} [N] for 20,000 h	9500											
Operating noise L_{PA} [dB(A)]	63											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	6.5	6.5	6.5	6.5	8	8	8	8	8	8	8	8
Moment of inertia J_1 [kgcm^2]	1.811	1.347	1.044	0.862	0.581	0.453	0.434	0.35	0.311	0.307	0.304	0.302

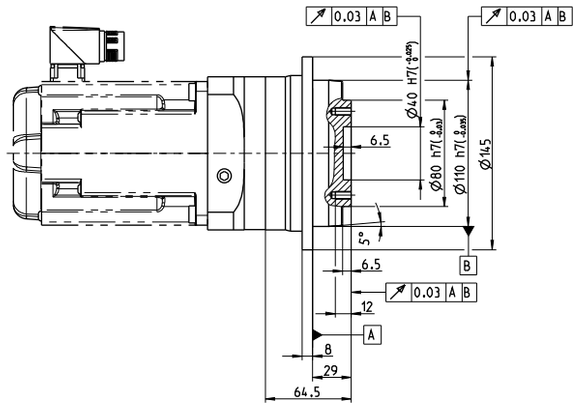
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

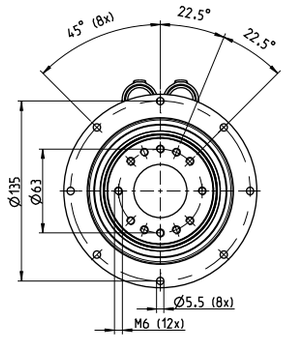
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

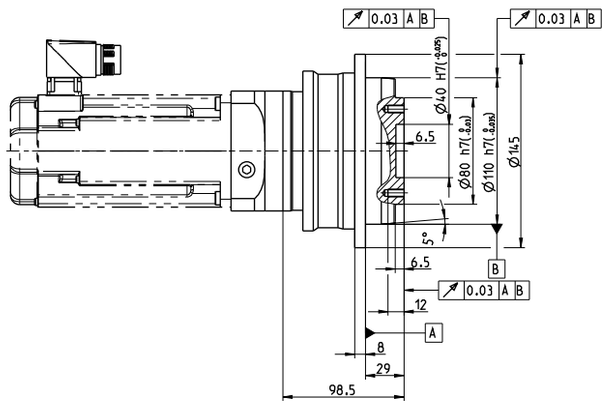
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF70-110	8LSA3	8LSA4	8LSA5	8LVA2	8LVA3	8JSA3	8JSA4	8JSA5	8JSA6	8LSN4	8LSN5	80MPH
One-stage												
Flange length L [mm]	43.4	43.4	53.4	---	43.4	---	43.4	53.4	64.5	43.4	53.4	43.4
Flange diameter Q [mm]	115	115	142	---	115	---	115	115	150	120	142	115
Two-stage												
Flange length L [mm]	31.6	41.6	51.7	31.6	41.6	31.6	41.6	51.7	---	41.6	51.7	41.6
Flange diameter Q [mm]	90	115	142	90	90	90	90	115	---	115	142	90

8GF70-140 premium

Technical data

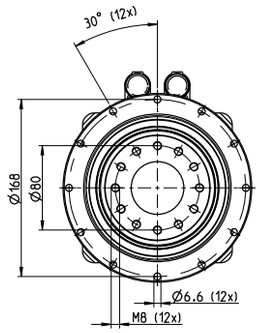
	8GF70-140hh004klmm	8GF70-140hh005klmm	8GF70-140hh007klmm	8GF70-140hh010klmm	8GF70-140hh016klmm	8GF70-140hh020klmm	8GF70-140hh025klmm	8GF70-140hh035klmm	8GF70-140hh040klmm	8GF70-140hh050klmm	8GF70-140hh070klmm	8GF70-140hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	7	10	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	470	405	355	305	450	450	405	405	470	405	355	305
Max. output torque T_{2max} [Nm]	752	648	568	488	720	720	648	648	752	648	568	488
E-stop torque T_{2stop} [Nm]	1650	1650	1300	600	1650	1650	1650	1650	1650	1650	1300	600
Idle torque [Nm] at 20°C and 3000 rpm	9.1	6.3	3.95	2.6	3.35	2.25	2.05	1.25	0.9	0.85	0.75	0.75
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	1100	1350	1800	2300	2450	3050	3350	3500	3500	3500	3500	3500
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	1000	1250	1650	2150	2250	2750	3100	3500	3500	3500	3500	3500
Max. drive speed n_{1max} [rpm]	6500	6500	6500	6500	8500	8500	8500	8500	8500	8500	8500	8500
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	200	200	200	200	180	180	180	180	180	180	180	180
Tilting rigidity C_{2K} [Nm/arcmin]	621											
Max. breakdown torque M_{2Kmax} [Nm]	1018											
Max. radial force Fr_{max} [N] for 30,000 h	11000											
Max. radial force Fr_{max} [N] for 20,000 h	12000											
Max. axial force Fa_{max} [N] for 30,000 h	7500											
Max. axial force Fa_{max} [N] for 20,000 h	8500											
Operating noise L_{PA} [dB(A)]	66											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	12	12	12	12	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
Moment of inertia J_1 [kgcm^2]	10.647	9.063	7.733	7.048	1.913	1.437	1.348	1.058	0.911	0.892	0.891	0.884

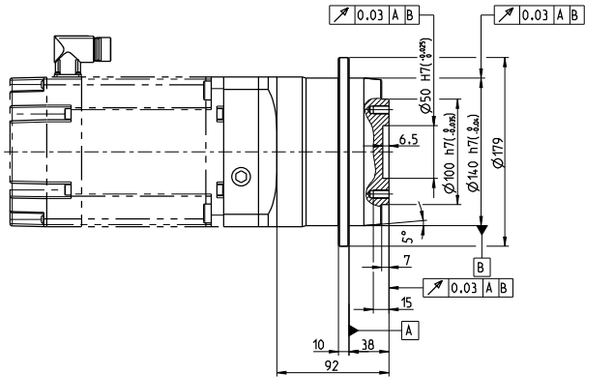
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

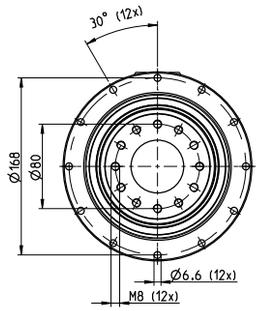
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

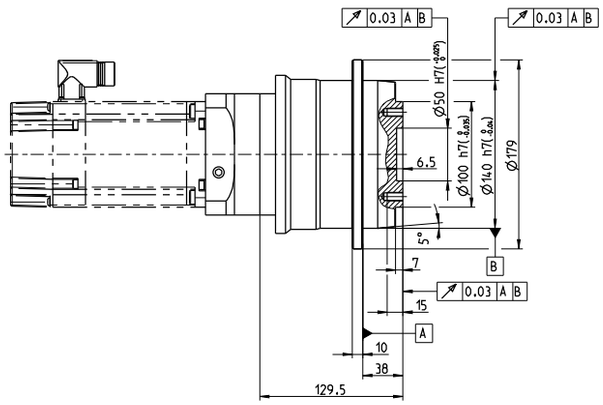
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF70-140	8LSA3	8LSA/ C4	8LSA/ C5	8LSA/ C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LVA3	8JSA4	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5	80MPH
One-stage														
Flange length L [mm]	---	50.5	50.5	50.5	60.5	82	---	---	50.5	60.5	82	50.5	50.5	---
Flange diameter Q [mm]	---	150	150	210	210	210	---	---	150	150	210	150	150	---
Two-stage														
Flange length L [mm]	43.4	43.4	53.4	53.4	64.5	---	43.4	43.4	53.4	64.5	---	43.4	53.4	43.4
Flange diameter Q [mm]	115	115	142	190	190	---	115	115	115	150	---	120	142	115

8GF70-200 premium

Technical data

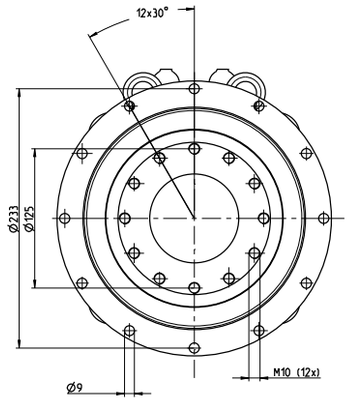
	8GF70-200hh004klmm	8GF70-200hh005klmm	8GF70-200hh007klmm	8GF70-200hh010klmm	8GF70-200hh016klmm	8GF70-200hh020klmm	8GF70-200hh025klmm	8GF70-200hh035klmm	8GF70-200hh040klmm	8GF70-200hh050klmm	8GF70-200hh070klmm	8GF70-200hh100klmm
Gearbox												
Number of gear stages	1	1	1	1	2	2	2	2	2	2	2	2
Gear ratio i	4	5	7	10	16	20	25	35	40	50	70	100
Nominal output torque T_{2N} [Nm]	950	950	900	750	950	950	950	950	950	950	900	750
Max. output torque T_{2max} [Nm]	1520	1520	1440	1200	1520	1520	1520	1520	1520	1520	1440	1200
E-stop torque T_{2stop} [Nm]	3200	3200	3200	1700	3200	3200	3200	3200	3200	3200	3200	1700
Idle torque [Nm] at 20°C and 3000 rpm	26.85	18.05	10.7	6.65	7.95	5.5	4.85	3.05	2.3	2.1	1.9	1.8
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1	750	950	1250	1700	1550	1900	2050	2650	3000	3000	3000	3000
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	700	850	1150	1550	1400	1700	1900	2450	2800	3000	3000	3000
Max. drive speed n_{1max} [rpm]	6000	6000	6000	6000	6500	6500	6500	6500	6500	6500	6500	6500
Max. backlash J_t [arcmin]	3	3	3	3	5	5	5	5	5	5	5	5
Reduced backlash J_t [arcmin] less than	1											
Torsional rigidity C_{t21} [Nm/arcmin]	650	650	650	650	550	550	550	550	550	550	550	550
Tilting rigidity C_{2K} [Nm/arcmin]	1150											
Max. breakdown torque M_{2Kmax} [Nm]	2475											
Max. radial force Fr_{max} [N] for 30,000 h	21000											
Max. radial force Fr_{max} [N] for 20,000 h	23000											
Max. axial force Fa_{max} [N] for 30,000 h	14000											
Max. axial force Fa_{max} [N] for 20,000 h	16000											
Operating noise L_{PA} [dB(A)]	68											
Efficiency at full load ŋ [%]	98	98	98	98	95	95	95	95	95	95	95	95
Min. operating temperature $B_{Tempmin}$ [°C]	-25											
Max. operating temperature $B_{Tempmax}$ [°C]	90											
Mounting orientation	Any											
Protection	IP65											
Weight m [kg]	28.3	28.3	28.3	28.3	32	32	32	32	32	32	32	32
Moment of inertia J_1 [kgcm^2]	45.173	36.268	28.706	24.718	10.876	9.208	8.852	7.652	7.084	6.995	6.922	6.88

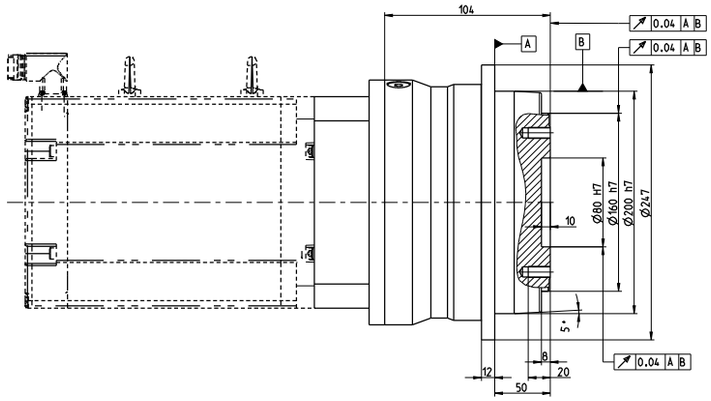
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

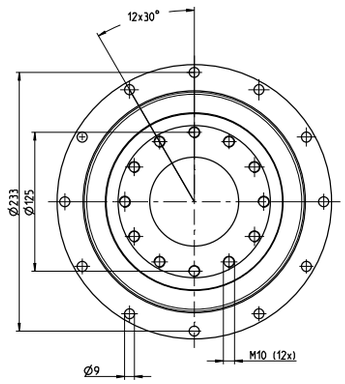
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

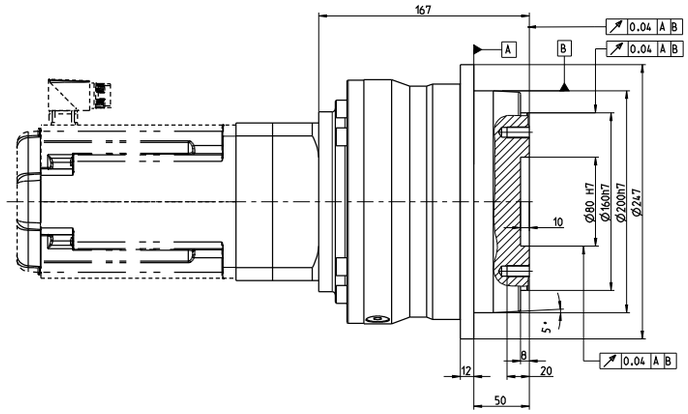
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GF70-200	8LSA/C4	8LSA/C5	8LSA/C6	8LSA/ C7(3-5)	8LSA/ C7(6-8)	8LSA/ C83/84	8LSA/ C85/86	8JSA5	8JSA6	8JSA7	8LSN4	8LSN5
One-stage												
Flange length L [mm]	---	68	68	68	88	88	118	68	68	88	---	68
Flange diameter Q [mm]	---	210	210	210	210	240	240	210	210	210	---	210
Two-stage												
Flange length L [mm]	50.5	50.5	50.5	60.5	82	82	112	50.5	60.5	82	50.5	50.5
Flange diameter Q [mm]	152	150	210	210	210	240	240	150	150	210	150	150

Economy planetary gearboxes

Economy planetary gearboxes

The cost-optimized version of the standard series
Simplifying the clamping system between motor shaft and gear, reducing the output torque to a level standard on the market and reducing gear ratios has enabled B&R to offer a cost-optimized gearbox. The economy series is available with gear ratios of 5,10 and 25, and exclusively with a keyed shaft.

Economy planetary gearboxes

Motor - gearbox combinations

Series		8LSA						8LSA/ 8LSC									8LSC			8LSA/ 8LSC												8LVA			8JSA							8LSN		80M		
	Size	2	3					4				5					5			6				7				8				1	2	3	2	3	4	5	6	7	4	5	PD	PF	PH
	Length		3	4	5	6	7	3	4	5	6	3	4	5	6	7	A	B	C	3	4	5	6	3	4	5	6	7	8	3	4	5	6													
8GP30	040	•																															•			•							•	•	
8GP30	060	•	•	•	•	•	■																											•		•	•						•	•	•
8GP30	080		•	•	•	•	•	•	•	•	•																						•	•		•	•								•
8GP30	120		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	■	■																		•	•							•

- • combination available, for horizontal installation no support structure necessary, max. acceleration 1,2g
- ■ combination available, support structure necessary for horizontal installation
- 4 combination available, support structure necessary for horizontal installation from motor size “**figure**”
- C combination available, support structure necessary for horizontal installation of 8LS**C**, 8LSA possible without support structure

8GP30-040 economy

Technical data

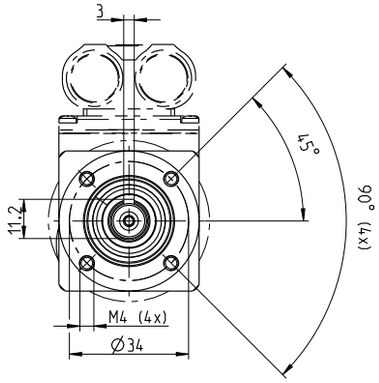
	8GP30-040hh005klmm	8GP30-040hh010klmm	8GP30-040hh025klmm
Gearbox			
Number of gear stages	1	1	2
Gear ratio i	5	10	25
Nominal output torque T_{2N} [Nm]	13	5	13
Max. output torque T_{2max} [Nm]	21	8	21
E-stop torque T_{2stop} [Nm]	26	10	26
Idle torque [Nm] at 20°C and 3000 rpm		0.05	
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1		5000	
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1		5000	
Max. drive speed n_{1max} [rpm]		18000	
Max. backlash J_t [arcmin]	15	15	19
Reduced backlash J_t [arcmin] less than		0	
Torsional rigidity C_{t21} [Nm/arcmin]	1	1	1.1
Tilting rigidity C_{2K} [Nm/arcmin]		0	
Max. breakdown torque M_{2Kmax} [Nm]		0	
Max. radial force Fr_{max} [N] for 30,000 h		160	
Max. radial force Fr_{max} [N] for 20,000 h		200	
Max. axial force Fa_{max} [N] for 30,000 h		160	
Max. axial force Fa_{max} [N] for 20,000 h		200	
Operating noise L_{PA} [dB(A)]		58	
Efficiency at full load η [%]	96	96	94
Min. operating temperature $B_{Tempmin}$ [°C]		-25	
Max. operating temperature $B_{Tempmax}$ [°C]		90	
Mounting orientation		Any	
Protection		IP54	
Weight m [kg]	0.35	0.35	0.45
Moment of inertia J_1 [kgcm^2]	0.032	0.03	0.032

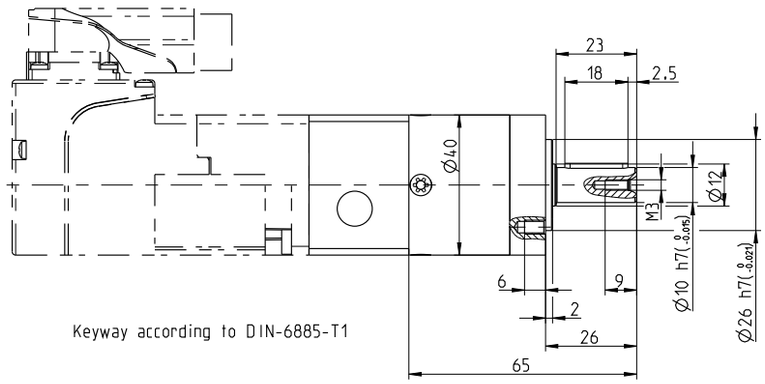
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

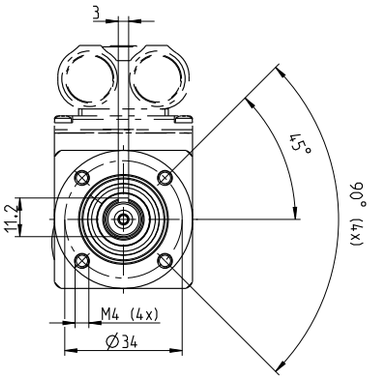
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

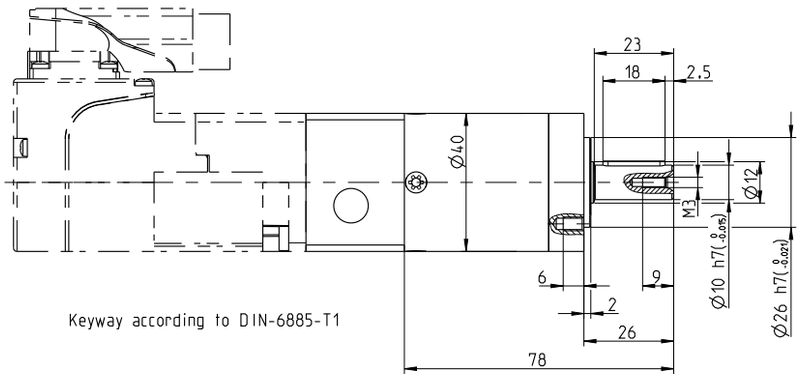
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP30-040	8LSA2	8LVA1	8JSA2	80MPD	80MPF
Flange length L [mm]	27.4	28.4	24.4	24.4	24.4
Flange diameter Q [mm]	55	40	60	60	60

8GP30-060 economy

Technical data

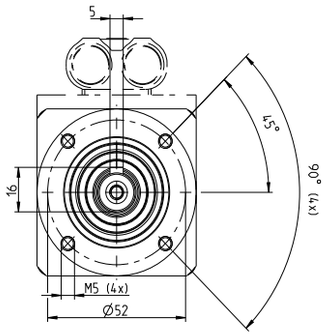
	8GP30-060hh005klmm	8GP30-060hh010klmm	8GP30-060hh025klmm
Gearbox			
Number of gear stages	1	1	2
Gear ratio i	5	10	25
Nominal output torque T_{2N} [Nm]	30	15	30
Max. output torque T_{2max} [Nm]	48	24	48
E-stop torque T_{2stop} [Nm]	60	30	60
Idle torque [Nm] at 20°C and 3000 rpm		0.1	
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1		4500	
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1		4500	
Max. drive speed n_{1max} [rpm]		13000	
Max. backlash J_t [arcmin]	10	10	12
Reduced backlash J_t [arcmin] less than		0	
Torsional rigidity C_{t21} [Nm/arcmin]	2.3	2.3	2.5
Tilting rigidity C_{2K} [Nm/arcmin]		0	
Max. breakdown torque M_{2Kmax} [Nm]		0	
Max. radial force Fr_{max} [N] for 30,000 h		340	
Max. radial force Fr_{max} [N] for 20,000 h		400	
Max. axial force Fa_{max} [N] for 30,000 h		450	
Max. axial force Fa_{max} [N] for 20,000 h		500	
Operating noise L_{PA} [dB(A)]		58	
Efficiency at full load η [%]	96	96	94
Min. operating temperature $B_{Tempmin}$ [°C]		-25	
Max. operating temperature $B_{Tempmax}$ [°C]		90	
Mounting orientation		Any	
Protection		IP54	
Weight m [kg]	0.9	0.9	1.1
Moment of inertia J_1 [kgcm^2]	0.197	0.177	0.186

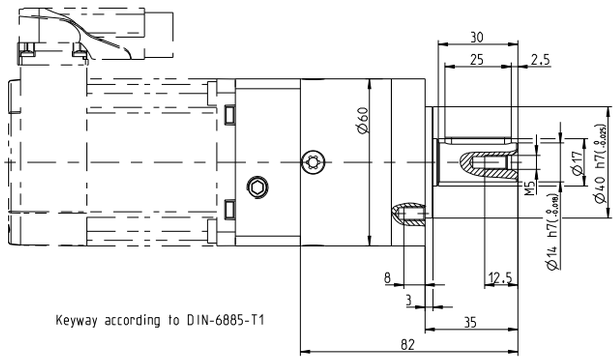
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

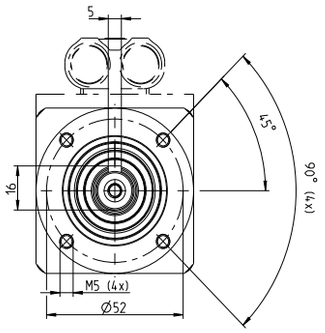
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

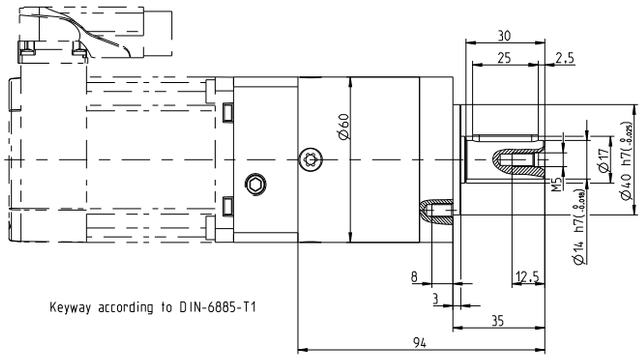
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP30-060	8LSA2	8LSA3	8LVA2	8JSA2	8JSA3	80MPD	80MPF	80MPH
Flange length L [mm]	26.1	31.1	31.1	26.6	31.1	26.1	26.1	33.1
Flange diameter Q [mm]	61	91	61	61	70	61	61	90

8GP30-080 economy

Technical data

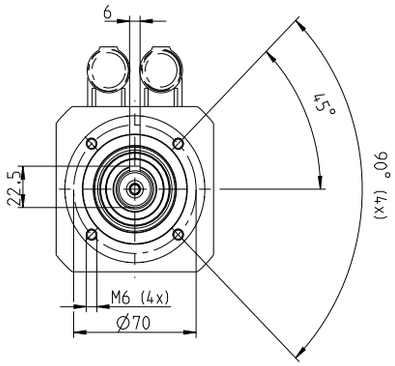
	8GP30-080hh005klmm	8GP30-080hh010klmm	8GP30-080hh025klmm
Gearbox			
Number of gear stages	1	1	2
Gear ratio i	5	10	25
Nominal output torque T_{2N} [Nm]	82	38	82
Max. output torque T_{2max} [Nm]	131	61	131
E-stop torque T_{2stop} [Nm]	164	76	164
Idle torque [Nm] at 20°C and 3000 rpm	0.25	0.2	0.2
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1		4000	
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	3900	4000	4000
Max. drive speed n_{1max} [rpm]		7000	
Max. backlash J_t [arcmin]	7	7	9
Reduced backlash J_t [arcmin] less than		0	
Torsional rigidity C_{t21} [Nm/arcmin]	6	6	6.5
Tilting rigidity C_{2K} [Nm/arcmin]		0	
Max. breakdown torque M_{2Kmax} [Nm]		0	
Max. radial force Fr_{max} [N] for 30,000 h		650	
Max. radial force Fr_{max} [N] for 20,000 h		750	
Max. axial force Fa_{max} [N] for 30,000 h		900	
Max. axial force Fa_{max} [N] for 20,000 h		1000	
Operating noise L_{PA} [dB(A)]		60	
Efficiency at full load η [%]	96	96	94
Min. operating temperature $B_{Tempmin}$ [°C]		-25	
Max. operating temperature $B_{Tempmax}$ [°C]		90	
Mounting orientation		Any	
Protection		IP54	
Weight m [kg]	2.1	2.1	2.6
Moment of inertia J_1 [kgcm^2]	0.899	0.819	0.859

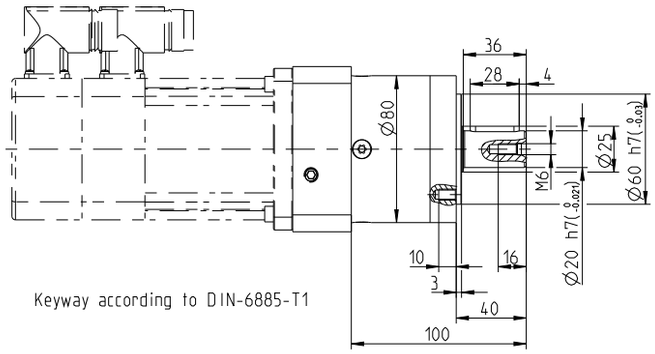
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

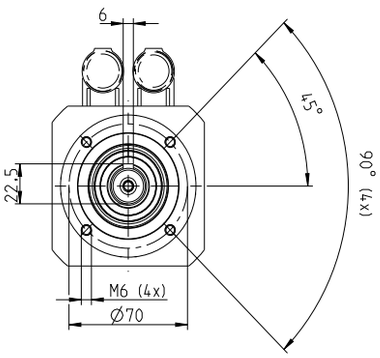
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

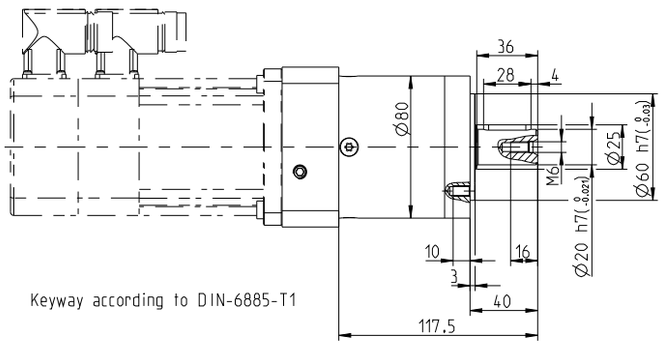
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP30-080	8LSA3	8LSA/C4	8LVA2	8LVA 3	8JSA3	8JSA4	80MPH
Flange length L [mm]	33.5	43.5	33.5	43.5	33.5	43.5	35.5
Flange diameter Q [mm]	90	100	80	90	80	90	90

8GP30-120 economy

Technical data

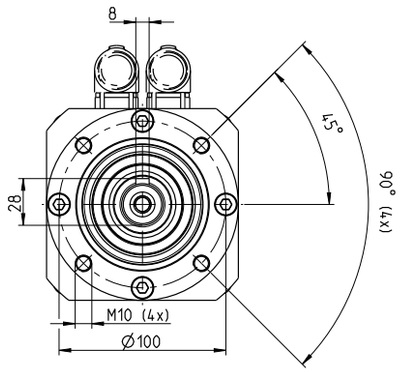
	8GP30-120hh005klmm	8GP30-120hh010klmm	8GP30-120hh025klmm
Gearbox			
Number of gear stages	1	1	2
Gear ratio i	5	10	25
Nominal output torque T_{2N} [Nm]	172	95	172
Max. output torque T_{2max} [Nm]	275	152	275
E-stop torque T_{2stop} [Nm]	344	190	344
Idle torque [Nm] at 20°C and 3000 rpm	0.7	0.5	0.55
Max. average drive speed $n_{1N50\%}$ [rpm] at 50% T_{2N} and S1		3500	
Max. average drive speed $n_{1N100\%}$ [rpm] at 100% T_{2N} and S1	2900	3500	3500
Max. drive speed n_{1max} [rpm]		6500	
Max. backlash J_t [arcmin]	7	7	9
Reduced backlash J_t [arcmin] less than		0	
Torsional rigidity C_{t21} [Nm/arcmin]	12	12	13
Tilting rigidity C_{2K} [Nm/arcmin]		0	
Max. breakdown torque M_{2Kmax} [Nm]		0	
Max. radial force Fr_{max} [N] for 30,000 h		1500	
Max. radial force Fr_{max} [N] for 20,000 h		1750	
Max. axial force Fa_{max} [N] for 30,000 h		2100	
Max. axial force Fa_{max} [N] for 20,000 h		2500	
Operating noise L_{PA} [dB(A)]		65	
Efficiency at full load η [%]	96	96	94
Min. operating temperature $B_{Tempmin}$ [°C]		-25	
Max. operating temperature $B_{Tempmax}$ [°C]		90	
Mounting orientation		Any	
Protection		IP54	
Weight m [kg]	6	6	8
Moment of inertia J_1 [kgcm^2]	3.42	2.85	3.27

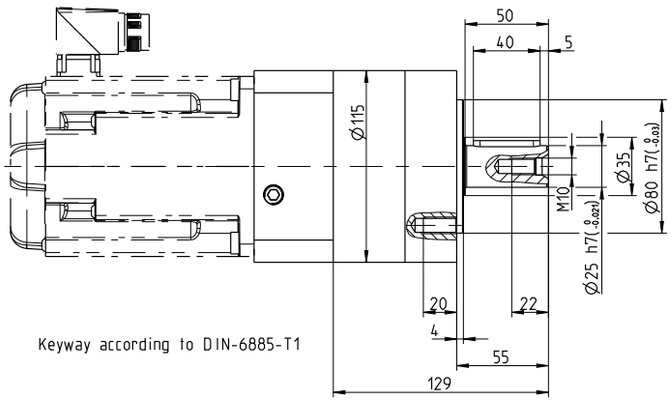
NOTE – Output torque / Max. output torque: This refers to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C, depending on the diameter of the motor shaft. The maximum output torque is only permissible for 30,000 revolutions!
NOTE – E-stop torque: Approved for 1000x

NOTE – Axial / radial force: With reference to the middle of the output shaft; the entries refer to an output shaft speed of n_2 = 100 rpm and application factor K_A = 1 as well as S1 operating mode for electrical machines and T = 30°C

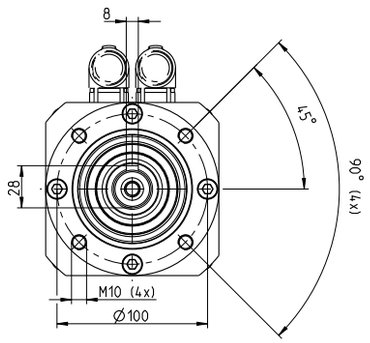
NOTE – Running noise: Noise level at a distance of 1 m; at an output speed of n_1 = 3000 rpm without a load; i = 5
NOTE – Operating temperature: With reference to the middle of the housing surface
NOTE – Weight: Planetary gearbox including universal flange (specific weight upon request)

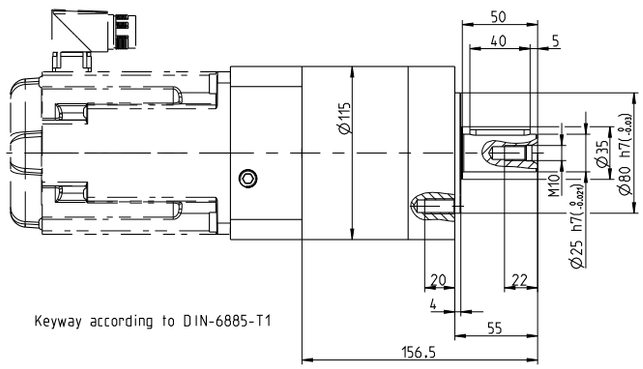
1-stage gear





2-stage gear





Adapter flange - Overview of dimensions

The flange length L completes the diagram for determining the gearbox length.

8GP30-120	8LSA3	8LSA/C4	8LSA/C5	8JSA4	8JSA5	80MPH
Flange length L [mm]	47.3	47.3	57.3	47.3	57.3	47.3
Flange diameter Q [mm]	116.5	116.5	140	116.5	116.5	116.5

Gearbox glossary

Number of gear stages

Multiple gear stages are needed starting at a certain gear ratio. A higher number of stages means a longer gearbox. However, the output geometry stays the same.

Gear ratio i

The gear ratio (or perhaps "gear reduction" to be more precise) is determined by the geometry of the gearing parts. It determines the factor used to convert torque, rotary speed and inertia.

Maximum output torque T_{2max} [Nm]

The maximum output torque T_{2max} is the maximum torque on the gearbox output that can occur in one cycle. The gearings are within the finite fatigue life range between T_{2N} and T_{2max} (i.e. this level of torque cannot be maintained for continuous operation).

Idle torque [Nm]

Idle torque is the torque required to drive the gearbox when idling (i.e. without load) at a drive speed (n1) = 3000 rpm and a gearbox temperature of 20°C.

Maximum output speed $n1_{max}$ [rpm]

The maximum drive speed is the gear's mechanical limit speed. This speed cannot be exceeded (risk of damage to the gearbox).

Tilting rigidity C_{2K} [Nm/arcmin]

Resistance to tilt defines the rigidity of the output bearings with regard to tilting of the output shaft when subjected to radial forces. A larger value indicates a more rigid bearing, and a smaller bearing indicates less tilting of the output shaft under the same load.

Breakdown torque M_{2Kmax} [Nm]

M_{2KMax} is equal to the maximum external breakdown torque on the gearbox output. The actual occurring breakdown torque on the gearbox output must be less than or equal to the maximum breakdown torque M_{2Kmax}.

Operating noise L_{PA} [dB(A)]

Gearbox operating noise, measured one meter from the gearbox at a drive speed of 3000 rpm and a gear ratio of i = 5 without load.

Efficiency at full load

Efficiency refers to the ratio between input and output power. The efficiency is specified at 100% output torque (T_{2N}) and an output speed of 100 rpm.

Nominal output torque T_{2N} [Nm]

The nominal output torque T_{2N} is the maximum torque permitted on the gearbox output for continuous operation (S1). The gearing has an infinite fatigue life when operated below this value (i.e. the backlash does not increase over time).

Emergency stop torque T_{2Estop} [Nm]

The maximum torque permitted on the gearbox output. This torque is permitted 1000x during the gearbox lifespan (T_{2Estop} = 2 x T_{2N}). This torque must not be exceeded (risk of damage to gearbox).

Maximum average drive speed $n_{1N50\%}$ [rpm]

The maximum average drive speed $n_{1N50\%}$ at 50% of the nominal output torque T_{2N} is the speed that is permissible at 50% of the nominal output torque during continuous operation (S1) without thermally overloading the gearbox.

Maximum average drive speed $n_{1N100\%}$ [rpm]

The maximum average drive speed $n_{1N100\%}$ at 100% of the nominal output torque T_{2N} is the speed that is permissible at 100% of the nominal output torque during continuous operation (S1) without thermally overloading the gearbox.

Maximum backlash J_t [arcmin]

Backlash is the maximum angle of rotation between the output shaft and the drive. This measurement is made with a blocked drive shaft and a low testing torque to overcome internal gear friction. The main cause of backlash is the gear play between the teeth.

Torsional rigidity C_{t21} [Nm/arcmin]

The torsional rigidity is defined as the ratio of torque to generated torsional angle. It determines how much torque is needed for actions such as rotating an output shaft by one arcminute.

Radial force F_{rmax} [N]

F_{rmax} is the maximum radial force in relation to the middle of the shaft at which a certain lifespan can be achieved according to L_{10h} (e.g. 20,000h) at an output speed of n_2=100 rpm, an ambient temperature of 30°C and S1 operating mode.

Maximum axial force F_{amax} [N]

F_{amax} is the maximum axial force in relation to the gear's rotating axis at which a certain lifespan can be achieved according to L_{10h} (e.g. 20,000h) at an output speed of n_2=100 rpm, an ambient temperature of 30°C and S1 operating mode.

Operating temperature [°C]

The minimum / maximum operating temperature is the gearbox temperature that is permitted without damaging it. The gearbox temperature is measured on the surface of the ring gear.

Mounting orientation

B&R planetary gearboxes can be installed with any mounting orientation

Protection

The level of protection provided determines how well electrical equipment is suited for various environmental conditions. This has to do with personnel, foreign objects or water coming into contact with the system. Classified in accordance with DIN EN 60529.

Mass moment of inertia J

The mass moment of inertia J is a measurement for a body's tendency to maintain its state of motion. The greater the inertia of a body, the less effect an external force will have on its motion. A body's moment of inertia depends primarily on the distribution of mass in relation to the axis of rotation.

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Index

Index

Index

Index

Index

Index

X

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B&R Product Catalog, 2016 Edition

Publisher:
Bernecker + Rainer Industrie-Elektronik Ges.m.b.H
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Austria

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www.br-automation.com

Issued: Yearly

Photo credits: B&R

Printing:
Vorarlberger Verlagsanstalt GmbH
Dornbirn, Austria
www.vva.at

MM-CA-PC-EN-01