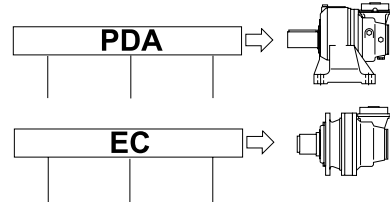
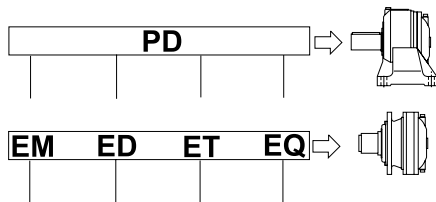


1. DESCRIZIONE RIDUTTORI

1. DESCRIPTION OF GEAR UNITS

1. GETRIEBE-BESCHREIBUNG

EM
Versione
Version
Ausführung



1
Stadi
Stages
Ettapes

1 2 3 4

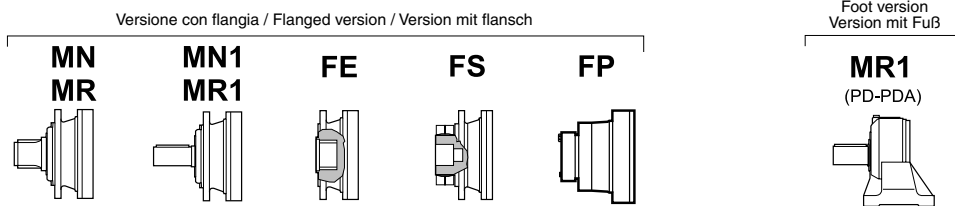
2 3 4

020
Grandezza
Size
Größe

010, 010, 010
020, 020, 020, 020

010, 010, 010
020, 020, 020

MR
Configurazione uscita
Output configuration
Abtriebsanordnung

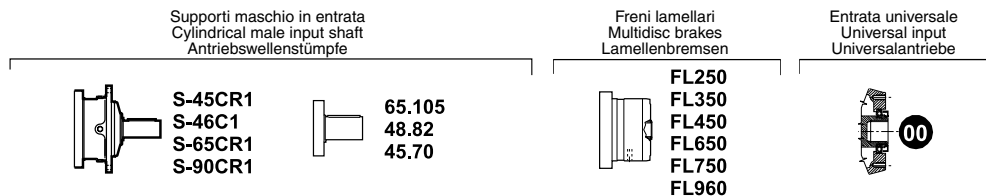


3.50
Rapporto effettivo
Effective ratio
Effektives Übersetzungsverhältnis

↓ Vedere tabelle dati tecnici / See data sheet / Siehe Tabelle der technischen Daten (i_{eff})

| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{max} [Nm] | P ₁ [kW] |
|------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|-----------------------|---------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |
| EM 1020 | | | | | | | | | | | |
| 3.08 | 487 | 888 | 45.3 | 325 | 1003 | 34.1 | 162 | 1235 | 21.0 | 2800 | |
| 3.50 | 429 | 972 | 43.6 | 286 | 1098 | 32.9 | 143 | 1351 | 20.2 | 2800 | |

S-45CR1
Configurazione entrata
Input configuration
Antriebsanordnung



B3
Posizione di montaggio
Mounting position
Einbaulage

B3 V5A V6A B3D B3A B3B B3C
B6 V5B V6B B6C B6A B6B B6D
B7 V5C V6C B7A B7B B7C B7D
B8 V5D V6D B8B B8A B8C B8D
V5
V6

Esempio di designazione
Model code example
Beispiel der kennzeichnung

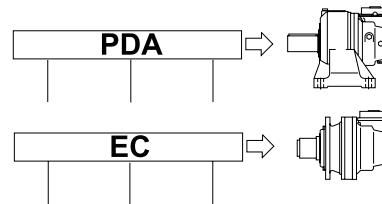
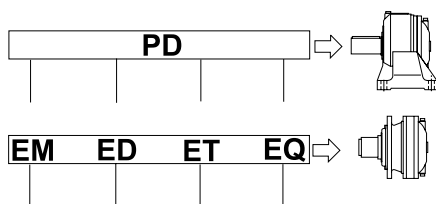
EM/1020/MR/3.50/S-45CR1/B3

1. DESCRIPTION DES RÉDUCTEURS

1. DESCRIPCIÓN DE LOS REDUCTORES

1. DESCRIÇÃO DOS REDUTORES

EM
Version
Versión
Versão



1
Étapes
Etapas
Estágio

1 2 3 4

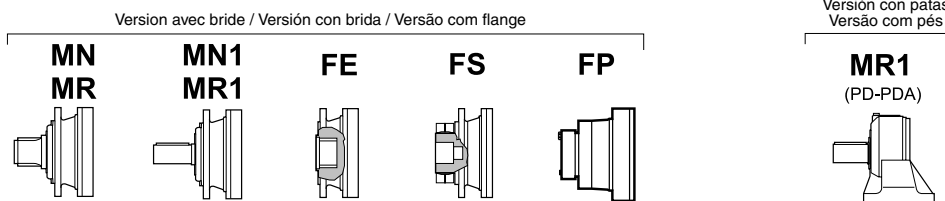
2 3 4

020
Grandeur
Tamaño
Tamanho

010, 010, 010
020, 020, 020, 020

010, 010, 010
020, 020, 020

MR
Configuration sortie
Configuración de la salida
Configuração de saída

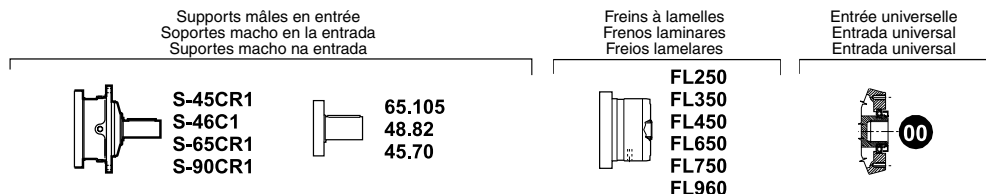


3.50
Rapport effectif
Relación efectiva
Relação efetiva

↓ Voir tableau des caractéristiques techniques / Véase la tabla de datos técnicos / Consultar a tabla de dados técnicos (i_{eff})

| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P ₂ [kW] |
|------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|------------------------|---------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |
| EM 1020 | | | | | | | | | | | |
| 3.08 | 487 | 888 | 45.3 | 325 | 1003 | 34.1 | 162 | 1235 | 21.0 | 2800 | |
| 3.50 | 429 | 972 | 43.6 | 286 | 1098 | 32.9 | 143 | 1351 | 20.2 | 2800 | |

S-45CR1
Configuration entrée
Configuración de la entrada
Configuração de entrada



B3
Position de montage
Posición de montaje
Posição de montagem

B3 V5A V6A B3D B3A B3B B3C
B6 V5B V6B B6C B6A B6B B6D
B7 V5C V6C B7A B7B B7C B7D
B8 V5D V6D B8B B8A B8C B8D
V5
V6

Exemple de désignation
Ejemplo de identificación
Exemplo de designação

EM/1020/MR/3.50/S-45CR1/B3

2. DESCRIZIONI TECNICHE

Rapporto di riduzione i_{eff}

Rappresenta la relazione fra la velocità in ingresso n_1 ed uscita del riduttore n_2 . La modularità della gamma proposta da Brevini Riduttori permette la disponibilità di altri rapporti oltre a quelli indicati: consultare Brevini Riduttori per la eventuale disponibilità di ulteriori rapporti.

Coppia in uscita T_2 [Nm]

Valore della coppia in uscita riduttore riferita ad una durata di 10000 ore di funzionamento, calcolata secondo I.S.O. (D.P. 6336).

Tale valore (fattore di applicazione uguale ad 1) è indicato sia per i riduttori con versione in linea che angolari in relazione alle diverse velocità in ingresso.

Coppia massima $T_{2\text{MAX}}$ [Nm]

Coppia massima d'uscita ammissibile, come punta o per brevi durate. Per azionamenti che comportano un elevato numero di avviamenti o inversioni, anche la coppia massima di impiego deve essere opportunamente limitata in relazione alla resistenza degli ingranaggi o degli alberi.

Coppia nominale T_N [Nm]

È la coppia convenzionale che caratterizza la grandezza del riduttore. Trova corrispondenza nella coppia limite secondo I.S.O. (D.P. 6336) del rapporto più forte di ogni grandezza.

Potenza in uscita P_2 [kW]

Combinazione del valore di coppia relativo ad una durata di 10000 h alla relativa velocità in uscita riduttore. Per le versioni angolari i suddetti valori fanno riferimento ad una versione con ingresso universale. Nei casi in cui il valore della potenza nominale nell'applicazione considerata superi il valore della potenza termica del riduttore in oggetto, occorre prevedere un apposito circuito ausiliario di raffreddamento dell'olio.

Potenza termica P_T [kW]

Potenza che può essere trasmessa in continuo dal riduttore, in determinate condizioni di funzionamento, relativamente alle massime temperature ammissibili per il riduttore. Vedere il capitolo: Potenza termica.

Velocità in ingresso n_1 [min^{-1}]

I valori di velocità in ingresso indicati nel catalogo sono tre per coprire la maggior parte delle applicazioni del settore industriale.

2. TECHNICAL DESCRIPTIONS

Reduction ratio i_{eff}

It represents the ratio between gear unit input and output speed.

The modularity of the Brevini Riduttori range offers the availability of other ratios in addition to those given: consult Brevini Riduttori for the availability of further ratios.

Output torque T_2 [Nm]

Gear unit output torque referred to 10000 hours of operation, calculated according to I.S.O. (D.P. 6336).

This value (application factor equal to 1) is given for gear units with inline and right-angle versions according to the different input speeds.

Max. torque $T_{2\text{MAX}}$ [Nm]

Max. permissible output torque, as peak or for short periods.

For drives involving a high number of starts or reversals, also the max. operational torque must be opportunely limited according to the fatigue resistance of the gears or shafts.

Nominal torque T_N [Nm]

The conventional torque characterizing the size of the gear unit.

It corresponds to the limit torque according to I.S.O. (D.P. 6336) of the strongest ratio of each size.

Nominal power P_2 [kW]

A combination of the torque value relevant to a duration of 10000 h at the relative gear unit output speed.

For right-angle units the above values refer to a version with universal input.

In those cases when the nominal power value in the application considered exceeds the relevant gear unit thermal rating, a special auxiliary oil cooling circuit must be provided.

Thermal rating P_T [kW]

The power that can be transmitted continuously by the gear unit, in given operating conditions, relevant to the max. permissible temperatures for the gear unit. See chapter: Thermal rating.

Input speed n_1 [min^{-1}]

The catalogue gives three input speed values to cover the majority of applications in the industrial sector.

2. TECHNISCHE BESCHREIBUNGEN

Übersetzungsverhältnis i_{eff}

Stellt das Verhältnis zwischen Antriebsdrehzahl n_1 und Abtriebsdrehzahl n_2 dar. Das Baukastensystem der Brevini Riduttori Getriebe bietet neben den aufgeführten weitere Übersetzungsverhältnisse an: wenden Sie sich an Brevini Riduttori für Auskünfte über weitere verfügbare Übersetzungsverhältnisse.

Abtriebsdrehzahl T_2 [Nm]

Wert der Abtriebsdrehzahl des Getriebes bezogen auf eine Dauer von 10000 Betriebsstunden, berechnet laut I.S.O. (D.P. 6336).

Dieser Wert (Anwendungsfaktor gleich 1) gilt sowohl für In-Line- wie auch für die Winkelgetriebe entsprechend den verschiedenen Antriebsdrehzahlen.

Maximales Drehmoment $T_{2\text{MAX}}$ [Nm]

Maximal zulässiges Abtriebsdrehmoment, sowohl als Spitze wie auch für kurze Dauer. Bei Antrieben mit einer hohen Anzahl von Starts oder Umsteuerungen muss auch das maximale Betriebsdrehmoment entsprechend der Ermüdungsbeständigkeit der Zahnräder oder Wellen begrenzt werden.

Nenn Drehmoment T_N [Nm]

Das konventionelle Drehmoment, das die Getriebegröße bezeichnet.

Es entspricht dem Grenzdrehmoment laut I.S.O. (D.P. 6336) des höchsten Drehmomentverhältnisses jeder Größe.

Abtriebsleistung P_2 [kW]

Kombination des Drehmomentwerts für eine Dauer von 10000 Stunden mit der Abtriebsdrehzahl des Getriebes. Bei Winkelgetrieben beziehen sich die Werte auf eine Ausführung mit Universalantrieb. Bei allen Fällen, in denen die Nennleistung bei der in Betracht gezogenen Anwendung den Wert der Wärmeleistung des Getriebes übertrifft, muss ein geeignetes zusätzliches Kühlsystem installiert werden.

Wärmeleistung P_T [kW]

Leistung, die kontinuierlich vom Getriebe unter bestimmten Betriebsbedingungen abgegeben werden kann in Bezug auf die für das Getriebe zulässigen Höchsttemperaturen. Siehe Kapitel: Wärmeleistung.

Antriebsdrehzahl n_1 [min^{-1}]

Die drei im Katalog angegebenen Werte der Antriebsdrehzahlen decken den größten Teil der Anwendungen des Industriebereichs ab.

2. DESCRIPTIONS TECHNIQUES

Rapport de réduction i_{eff}

Il représente la relation entre la vitesse en entrée n_1 et la vitesse en sortie du réducteur n_2 . La modularité de la gamme proposée par Brevini Riduttori permet de disposer d'autres rapports en plus de ceux indiqués: consulter Brevini Riduttori pour l'éventuelle disponibilité d'autres rapports.

Couple de sortie T_2 [Nm]

La valeur du couple de sortie se réfère à une durée de 10000 heures de fonctionnement, calculée selon I.S.O. (D.P. 6336).

Cette valeur (facteur d'application égal à 1) convient tant pour les réducteurs version en ligne que pour ceux angulaires en rapport avec les différentes vitesses en entrée.

Couple maximum $T_{2\text{MAX}}$ [Nm]

Couple maximum de sortie admissible, comme crête ou pour de courtes durées. Pour des entraînements qui comportent un nombre élevé de démarrages ou d'inversions, même le couple maximum doit être convenablement limité par rapport à la résistance des engrenages ou des arbres.

Couple nominal T_N [Nm]

C'est le couple conventionnel qui caractérise la grandeur du réducteur. Son correspondant est le couple limite selon I.S.O. (D.P. 6336) du rapport le plus élevé de chaque grandeur.

Puissance de sortie P_2 [kW]

Combinaison de la valeur de couple pour une durée de 10000 heures avec la vitesse de sortie du réducteur correspondant. Pour les versions angulaires, les valeurs sus-citées se réfèrent à une version avec prédisposition d'entrée universelle. Si la valeur de la puissance nominale de l'application concernée dépasse la valeur de la puissance thermique du réducteur en question, il faudra alors prévoir un circuit auxiliaire de refroidissement de l'huile.

Puissance thermique P_T [kW]

Puissance qui peut être transmise en continu par le réducteur, dans des conditions de fonctionnement données, relativement aux températures maximales admissibles pour le réducteur. Voir chapitre: Puissance thermique.

Vitesse d'entrée n_1 [min^{-1}]

Les valeurs de vitesse d'entrée indiquées dans le catalogue sont au nombre de trois et permettent une adaptation optimale à la plupart des applications du secteur industriel.

2. DESCRIPCIONES TÉCNICAS

Relación de reducción i_{er}

Es la relación entre las velocidades de entrada n_1 y de salida del reductor n_2 . La gama ofrece muchas otras relaciones además de las indicadas: contacte con Brevini Riduttori para obtener más información.

Par de salida T_2 [Nm]

Es el par de salida del reductor para 10000 horas de duración calculado según ISO (D.P. 6336).

El valor (factor de aplicación=1) se indica tanto para los reductores en línea como para los angulares en relación con distintas velocidades de entrada.

Par máximo $T_{2\text{MAX}}$ [Nm]

Es el máximo par de salida admisible, como pico o en intervalos cortos. Si el accionamiento realiza arranques o inversiones frecuentes es preciso limitarlo de acuerdo con la resistencia de los engranajes o de los ejes.

Par nominal T_N [Nm]

Es el par convencional que corresponde al tamaño del reductor. Coincide con el par límite ISO (D.P. 6336) de la relación más grande de cada tamaño.

Potencia de salida P_2 [kW]

Combina el par para 10000 horas de duración con la velocidad de salida del reductor. Los valores arriba indicados se refieren a una versión angular con entrada universal. Cuando la potencia nominal de la aplicación es mayor que la potencia térmica del reductor es preciso instalar un circuito auxiliar para enfriar el aceite.

Potencia térmica P_T [kW]

Potencia que el reductor puede transmitir de manera continua en determinadas condiciones de funcionamiento para la máxima temperatura admitida por el mismo. Véase el capítulo: Potencia térmica.

Velocidad de entrada n_1 [min^{-1}]

Los tres valores de velocidad que aparecen en el catálogo cubren la mayor parte de las aplicaciones industriales.

2. DESCRIÇÕES TÉCNICAS

Relação de redução i_{eff}

Representa a relação entre a velocidade de entrada n_1 e de saída do reductor n_2 . A modularidade da gama proposta pela Brevini Riduttori permite a disponibilidade de outras relações além daquelas indicadas: consultar a Brevini Riduttori para obter a eventual disponibilidade de relações adicionais.

Torque de saída T_2 [Nm]

Valor do torque de saída do reductor com referência a uma duração de 10000 horas de funcionamento, calculada conforme a ISO (D.P. 6336). Esse valor (fator de aplicação igual a 1) é indicado para os reductores nas versões em linha e angulares em relação às diversas velocidades de entrada.

Torque máximo $T_{2\text{MAX}}$ [Nm]

Torque máximo de saída admissível, como pontas ou para durações curtas. Para acionamentos que implicam um número elevado de partidas ou inversões, também o torque máximo de emprego deve ser limitado de forma adequada em relação à resistência das engrenagens ou dos eixos.

Torque nominal T_N [Nm]

É o torque convencional que caracteriza o tamanho do reductor. Encontra correspondência com o torque de limite conforme a ISO (D.P. 6336) da maior relação de cada tamanho.

Potência de saída P_2 [kW]

Combinação do valor de torque relativo a uma duração de 10000 horas à velocidade de saída respectiva do reductor. Para as versões angulares, os valores mencionados anteriormente fazem referência a uma versão com entrada universal. Nos casos em que o valor da potência nominal na aplicação considerada ultrapasse o valor da potência térmica do reductor em questão, será necessário prever um circuito auxiliar apropriado de arrefecimento do óleo.

Potência térmica P_T [kW]

Potência que pode ser transmitida de maneira contínua pelo reductor em determinadas condições de funcionamento em relação às temperaturas máximas admissíveis para o reductor. Consultar o capítulo: Potência térmica.

Velocidade de entrada n_1 [min^{-1}]

Os valores de velocidade de entrada indicados no catálogo são três para cobrir a maior parte das aplicações do setor industrial.

3. FATTORE DI SERVIZIO

Fattore di applicazione K_A

Il fattore di applicazione viene definito dal tipo di motore primo e dal tipo di macchina azionata dal riduttore. Si tratta di un valore empirico stabilito dalle norme attraverso l'esperienza storica delle diverse applicazioni e tiene conto delle variazioni di carico, degli urti della trasmissione e della incertezza relative alla variazione dei parametri che concorrono alla trasmissione della potenza.

L'importanza della macchina azionata è fondamentale nella individuazione del fattore K_A in quanto i motori utilizzati in combinazione con i riduttori sono normalmente elettrici oppure idraulici e quindi classificati come motorizzazioni ad azionamento uniforme.

Deve essere moltiplicato per la coppia (o la potenza) nominale di funzionamento per ottenere la coppia (o la potenza) di riferimento da confrontare con il valore a catalogo.

Nel caso di motori primi diversi da quelli indicati o nel caso si debbano calcolare durate diverse dalle 10000 ore previste, preghiamo consultare il Servizio Tecnico Commerciale di Brevini Riduttori.

La tabella seguente riporta alcuni valori del fattore di applicazione.

| MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K_A |
|--|-------|
| Agitatori/Mescolatori Agitators/Mixer Rühr-/Mischwerke | |
| Sostanze liquide Pure liquids Flüssige Stoffe | 1 |
| Sostanze semi-liquide Liquid and solids Halbflüssige Stoffe | 1.25 |
| Liquido non omogeneo Liquid- variable density Nicht homogene Flüssigkeiten | 1.25 |
| Lavorazione pietra ed argilla Clay working machine Stein- und Tonverarbeitung | |
| Pressa per mattoni Brick press Ziegelpressen | 1.75 |
| Macchina per mattonelle Briquette machine Maschinen zur Fliesenherstellung | 1.75 |
| Compattatori Compactors Müllverdichter | 2 |
| Convogliatori Conveyors-general purpose Förderer | |

3. SERVICE FACTOR

Application factor K_A

The application factor is defined by the type of prime mover and the type of machine driven by the gear unit. This is an empirical value fixed by the standards through the historic experience of the various applications and takes into account the variations of load, transmission impacts and uncertainty relative to the variation of parameters involved in the transmission of power.

The importance of the machine driven is essential in identifying the K_A factor, since the motors used in combination with the gear units are normally electric or hydraulic and therefore classed as uniform drive motorizations.

It must be multiplied by the nominal operating torque (or power) in order to obtain the reference torque (or power) to be compared with the catalogue value.

With prime movers different from those indicated or in the event durations other than the foreseen 10000 hours are to be calculated, please consult the Brevini Riduttori technical commercial assistance service.

The following table gives several application factor values.

| MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K_A |
|---|-------|
| A vite Worm conveyor Schneckenförderer | 1 |
| Alimentati uniformemente Uniformly loaded or fed Gleichmäßige Beschickung | 1 |
| Per ciclo continuo Heavy duty Dauerbetrieb | |
| non uniformemente alimentati not uniform fed Ungleichmäßige Beschickung | 1.25 |
| con inversione del moto Reciprocating or shaker mit Bewegungsumsteuerung | 1.75 |
| Gru Cranes Kran | |
| Da porto Dry dock Hafenkran | |
| Sollevamento carico Main Hoist Lastenheben | 2.5 |
| Sollevamento ausiliario Auxiliary Hoist Hilfskran | 2.5 |

3. BETRIEBSFAKTOR

Anwendungsfaktor K_A

Der Anwendungsfaktor hängt vom Typ des Primärmotors und der Art der vom Getriebe angetriebenen Maschine ab. Es handelt sich um einen empirischen Wert, der auf den für die verschiedenen Anwendungen durch Erfahrung festgelegte Normen beruht und der die Laständerungen, die Übertragungswucht und die Ungewissheit der Parameteränderung bei der Leistungsübertragung einbezieht. Die angetriebene Maschine ist bei der Festlegung des Faktors K_A von grundlegender Bedeutung, da es sich bei den mit den Getrieben eingesetzten Motoren meist um Elektro- oder Hydraulikmotoren handelt, die als gleichförmige Antriebsmotoren klassifiziert sind.

Er muss mit dem Nennbetriebsdrehmoment (oder der Nennleistung) multipliziert werden, um das Bezugsdrehmoment (oder die Bezugsleistung) für den Vergleich mit dem Katalogwert zu erhalten.

Bei anderen als den angegebenen Primärmotoren oder bei von 10000 Stunden abweichender Dauer bitten wir Sie, sich an den technischen Kundendienst von Brevini Riduttori zu wenden.

Die folgende Tabelle enthält einige Werte des Anwendungsfaktors.

| MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K_A |
|--|-------|
| Sollevamento braccio Boom Hoist Auslegerhub | 2.5 |
| Rotazione braccio Slewing Drive Auslegerdrehung | 2.5 |
| Traslazione gru Traction Drive Kranbewegung | 3 |
| Container Container Container | |
| Sollevamento container Main Hoist Container - Heben | 3 |
| Sollevamento braccio Boom Hoist Auslegerhub | 2 |
| Applicazione industriale Industrial Duty Industrieanwendung | |
| Sollevamento principale Main Hauptbezeuge | 2.5 |
| Sollevamento ausiliario Auxiliary Hilfsbezeuge | 2.5 |

3. FACTEUR DE SERVICE

Facteur d'application K_A

Le facteur d'application est défini par le type de moteur primaire et par le type de machine menée. Il s'agit d'une valeur empirique fixée par les normes par le biais de l'historique des différentes applications et tient compte des variations de charge, des chocs de la transmission et l'incertitude relative à la variation des paramètres qui participent à la transmission de la puissance.

L'importance de la machine menée est fondamentale pour la détermination du facteur K_A dans la mesure où les moteurs utilisés en combinaison avec les réducteurs sont normalement électriques ou hydrauliques et donc classés comme motorisations à entraînement uniforme. Elle doit être multipliée par le couple (ou la puissance) nominale de fonctionnement pour obtenir le couple (ou la puissance) de référence à comparer avec la valeur du catalogue.

Dans le cas de moteurs primaires différents de ceux indiqués ou dans le cas de calcul de durées différentes des 10000 heures prévues, consulter le service technico-commercial Brevini Riduttori.

Le tableau suivant donne quelques valeurs du facteur d'application.

| MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K_A |
|---|-------|
| Agitateurs/Mélangeurs Agitadores/Mezcladores Agitadores/Misturadores | |
| Substances liquides | |
| Líquidos | 1 |
| Substâncias líquidas | |
| Substances semi-liquides | |
| Semilíquidos | 1.25 |
| Substâncias semilíquidas | |
| Liquides de densité variable | |
| Líquidos no homogéneos | 1.25 |
| Líquido não homogêneo | |
| Briques, travail de l'argile Elaboración de piedra y arcilla Processamento de pedra e argila | |
| Presses à briques | |
| Prensas para ladrillos | 1.75 |
| Prensas para tijolos | |
| Machines à briquettes | |
| Máquinas para fabricar azulejos | 1.75 |
| Máquina para azulejos | |
| Compacteurs | |
| Compactadoras | 2 |
| Compactadores | |
| Convoyeurs Transportadores Transportadores | |

3. FACTOR DE SERVICIO

Factor de aplicación K_A

El factor de aplicación está definido por el tipo de motor principal y el tipo de máquina accionado por el reductor. Es un valor empírico que refleja las experiencias realizadas con numerosas aplicaciones. Toma en cuenta las variaciones de carga, los choques de la transmisión y la incertidumbre acerca de cómo varían los parámetros involucrados en la transmisión de potencia.

El tipo de máquina accionada es fundamental para determinar el factor K_A , ya que los motores que se combinan con reductores son normalmente eléctricos o hidráulicos y se considera que el accionamiento es uniforme.

El factor de aplicación se multiplica por el par (o por la potencia) nominal de funcionamiento para obtener un par (o una potencia) de referencia que se compara con el valor del catálogo.

Si los motores principales son diferentes de los indicados o la duración prevista no es 10000 horas, se ruega consultar con el servicio técnico de Brevini Riduttori.

La tabla indica algunos valores para el factor de aplicación.

| MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K_A |
|---|-------|
| À vis | |
| de tornillo | 1 |
| De parafuso | |
| Uniformément alimentés | |
| Alimentación uniforme | 1 |
| Alimentados uniformemente | |
| Pour cycle continu Para ciclo continuo Para ciclo contínuo | |
| non uniformément alimentés | |
| Alimentación no uniforme | 1.25 |
| alimentados não uniformemente | |
| réversibles | |
| con inversión del movimiento | 1.75 |
| com inversão de movimento | |
| Grue Grúas Guindaste | |
| Portuaire para puertos De porto | |
| Levage charge | |
| Elevación de la carga.5 | 2.5 |
| Içamento de carga | |
| Levage auxiliaire | |
| Elevación auxiliar.5 | 2.5 |
| Içamento auxiliar | |

3. FATOR DE SERVIÇO

Fator de aplicação K_A

O fator de aplicação é definido pelo tipo de máquina motriz e pelo tipo de máquina acionada pelo reductor. Trata-se de um valor empírico estabelecido pelas normas através da experiência histórica das diversas aplicações e leva em consideração as variações de carga, os impactos da transmissão e a incerteza relativas à variação dos parâmetros que concorrem para a transmissão da potência. A importância da máquina acionada é fundamental na determinação do fator K_A , porque os motores utilizados em combinação com os reductores normalmente são elétricos ou hidráulicos e, portanto, são classificados como motorizações com acionamento uniforme. Deve ser multiplicado pelo torque (ou a potência) nominal de funcionamento para obter o torque (ou a potência) de referência a ser comparado com o valor do catálogo.

No caso de máquinas motrizes diferentes daquelas indicadas ou caso seja necessário calcular durações diferentes das 10000 horas previstas, consultar o Serviço Técnico Comercial da Brevini Riduttori.

A tabela a seguir indica alguns valores do fator de aplicação.

| MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K_A |
|--|-------|
| Levage bras | |
| Elevación del brazo.5 | 2.5 |
| Içamento braço | |
| Rotation bras | |
| Rotación del brazo.5 | 2.5 |
| Rotação braço | |
| Translation grue | |
| Traslación de la grúa 3 | 3 |
| Translação guindaste | |
| Conteneurs Container Contêiner | |
| Levage conteneurs | |
| Elevación de un container 3 | 3 |
| Içamento de contêiner | |
| Levage bras | |
| Elevación del brazo | 2 |
| Içamento braço | |
| Application industrielle Aplicaciones industriales Aplicação industrial | |
| Levage principal | |
| Elevación principal.5 | 2.5 |
| Içamento principal | |
| Levage auxiliaire | |
| Elevación auxiliar.5 | 2.5 |
| Içamento auxiliar | |

| MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A | MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A | MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A |
|---|----------------|---|----------------|---|----------------|
| Bridge | | Ciclo continuo- a vite | | Lavorazione tronco | |
| Bridge | 3 | Continuous screw operation | 1.75 | Main log | 1.75 |
| Brückenkran | | Kontinuierlicher Schneckenbetrieb | | Verarbeitung von Baumstämmen | |
| Movimentazione carrello | | Ciclo intermittente- a vite | | Piallatrice | |
| Trolley Travel | 3 | Intermittent screw operation | 1.75 | Slab | 1.75 |
| Laufkatzen | | Schnecken - Aussetzbetrieb | | Hobelmaschine | |
| Trituratori | | Alimentatori | | Trasbordatore | |
| Crusher | | Feeders | | Transfer | 1.25 |
| Schredderanlagen | | Beschickungseinrichtungen | | Umlader | |
| Pietre e metalli | | A piastre | | Scortecciatrice | |
| Stone or ore | 1.75 | Apron | 1.25 | Debarking drums | 1.75 |
| Steine und Metall | | Platten | | Rindenschälmaschine | |
| Draghe | | A nastro | | Alimentazione piallatrice | |
| Dredges | | Belt | 1.25 | Planer feed | 1.25 |
| Nassbagger | | Band | | Hobelmaschinen - Zuführer | |
| Avvolgicavo | | A vite | | Trasbordatore a catena | |
| Cable reel | 1.25 | Screw | 1.25 | Transfers -chain | 1.5 |
| Kabelaufwickler | | Schnecken | | Kettenumlader | |
| Convogliatore | | Industria alimentare | | Lavorazione metalli | |
| Conveyors | 1.25 | Food industry | | Metal mills | |
| Förderer | | Lebensmittelindustrie | | Metallverarbeitung | |
| Testa portafresa | | Lavorazione cereali | | Ribaltatori | |
| Cutter head drives | 2 | Cereal cooker | 1 | Reversing | 2 |
| Fräskopf | | Getreideverarbeitung | | Kipper | |
| Setacci | | mescolatori per pasta | | Spingitore lingotti | |
| Screen drives | 1.75 | Dough mixer | 1.25 | Slab pushers | 1.5 |
| Siebe | | Teigmischer | | Barrenandrücker | |
| Convogliatore a tazze | | Triturazione carne | | Tranciatrici | |
| Stackers | 1.25 | Meat grinders | 1.25 | Shears | 2 |
| Eimerförderer | | Fleischmühlen | | Schneidpressen | |
| Verricelli di manovra | | Sollevatori/Elevatori | | Trafila | |
| Winches | 1.25 | Hoists | | Wire drawing | 1.25 |
| Winden | | Hebwerke | | Drahtziehmaschine | |
| Elevatori | | Ciclo continuo | | Aspo | |
| Elevators | | Heavy duty | 1.75 | Wire Winding machine | 1.5 |
| Hebwerke | | Dauerbetrieb | | Haspel | |
| A tazze | | Ciclo intermittente | | Lavorazione nastri | |
| Bucket | 1.25 | Medium duty | 1.25 | Metal strip processing machinery | |
| Becherwerke | | Aussetzbetrieb | | Bearbeitung von Metallbändern | |
| Scala mobile | | Sollevamento cassonetto | | Nastratrici | |
| Escalators | 1 | Skip hoist | 1.25 | Bridles 1.25 | |
| Rolltreppe | | Kippvorrichtungen | | Bandwickler | |
| Estrusori | | Macchine di lavaggio | | Avvolgitrice. Svolgitrice | |
| Extruders | | Laundry | | Coilers & uncoilers | 1 |
| Strangpressen | | Wäschereien | | Aufwickler. Abwickler | |
| In generale | | Bottali | | Rifilatrice | |
| General | 1.5 | Tumblers | 1.25 | Edge trimmers | 1.25 |
| Allgemein | | Tumbler | | Beschneidemaschine | |
| Plastica | | Lavatrice | | Spianatrice | |
| Plastics | | Washers | 1.5 | Flatteners | 1.25 |
| Kunststoff | | Waschmaschinen | | Planiermaschine | |
| A velocità variabile | | Macchine per legno | | Regolazione cilindri | |
| Variable speed drive | 1.5 | Lumber industry | | Pinch rolls | 1.25 |
| Mit regelbarer Drehzahl | | Holzbearbeitungsmaschinen | | Andrückrollen | |
| A velocità fissa | | Convogliatori | | Trattamento rottami | |
| Fixed speed drive | 1.75 | Conveyors-burner | 1.25 | Scrap choppers | 1.25 |
| Mit fester Drehzahl | | Förderer | | Abfallschere | |
| Gomma | | A ciclo continuo | | Tranciatrici | |
| Rubber | | Main or heavy duty | 1.5 | Shears | 2 |
| Gummi | | Dauerbetrieb | | Schneidpressen | |

| MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A | MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A | MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A |
|---|----------------|---|----------------|---|----------------|
| Ponts | | Cycle continu- à vis | | Machines à travailler les grumes | |
| Puente 3 | 3 | Ciclo continuo - de tornillo | 1.75 | Aserraderos | 1.75 |
| Ponte rolante | | Ciclo contínuo - de parafuso | | Processamento de tronco | |
| Manutention chariot | | Cycle intermittent- à vis | | Raboteuses | |
| Desplazamiento del carro 3 | 3 | Ciclo intermitente - de tornillo | 1.75 | Cepilladoras | 1.75 |
| Movimentação carrinho | | Ciclo intermitente - de parafuso | | Plaina | |
| Broyeurs | | Alimentateurs | | Transferts | |
| Trituradoras | | Alimentadores | | Transbordadores | 1.25 |
| Trituradores | | Alimentadores | | Transbordador | |
| Cailloux et métaux | | À plateaux | | Écorceuses | |
| Piedras y metales | 1.75 | Planchas | 1.25 | Descortezadoras | 1.75 |
| Pedras e metais | | De placas | | Descascador | |
| Dragues | | Bande transporteuse | | Chaînes d'alimentation des raboteuses | |
| Dragas | | Cinta | 1.25 | Alimentación de cepilladoras | 1.25 |
| Dragas | | De fita | | Alimentação plaina | |
| Bobine pour câble | | À vis | | Transferts à chaîne | |
| Bobina para el cable | 1.25 | Tornillo | 1.25 | Transbordadores de cadena | 1.5 |
| Enrolador de cabo | | De parafuso | | Transbordador a corrente | |
| Convoyeurs | | Industrie alimentaire | | Métallurgie | |
| Transportador | 1.25 | Industria alimentaria | | Mecanizado de metales | |
| Transportador | | Indústria alimentícia | | Processamento de metais | |
| Commande tête d'outil | | Traitement des céréales | | Retourneurs | |
| Cabezal portabroca | 2 | Elaboración de cereales | 1 | Volquetes | 2 |
| Cabeça portafresa | | Processamento de cereais | | Tombadores | |
| Tamis | | mélangeurs pour pâte à pain | | Pousseurs de lingots | |
| Cedazos | 1.75 | Mezcladoras para masa | 1.25 | Empujadores de lingotes | 1.5 |
| Peneiradores | | misturadores para massas | | Empurrador de lingotes | |
| Convoyeurs à godets | | Hâcheurs à viande | | Coupeurs ou fendeuses | |
| Transportador de cangilones | 1.25 | Trituradoras de carne | 1.25 | Cizalladoras | 2 |
| Transportador de canecas | | Trituração de carne | | Trançadores | |
| Treuil de manoeuvre | | Élévateurs | | Bancs à étirer | |
| Cabrestantes para maniobras | 1.25 | Elevadores/Suspensores | | Trafiladoras | 1.25 |
| Guinchos de manobra | | Elevadores | | Trefiladora | |
| Élévateurs | | Cycle continu | | Dévidoirs | |
| Elevadores | | Ciclo continuo | 1.75 | Aspos | 1.5 |
| Elevadores | | Ciclo contínuo | | Bobina | |
| À godets | | Cycle intermittent | | Rubans | |
| Cangilones | 1.25 | Ciclo intermitente | 1.25 | Fabricación de cintas | |
| De canecas | | Ciclo intermitente | | Procesamento de fitas | |
| Escalators | | Ciclo intermitente | | Tambours rubaniers ou rubaneuses | |
| Escaleras mecánicas | 1 | Levage benne | | Encintadoras | |
| Escada rolante | | Elevación de un cajón | 1.25 | Máquinas para fitas | |
| Extrudeuses | | Ïçamento de caixa | | Enrouleurs Dérouleurs | |
| Extrusores | | Machines à laver | | Enrolladoras Desenrolladoras | 1 |
| Extrusores | | Máquinas lavadoras | | Enrolador Desenrolador | |
| En général | | Máquinas de lavagem | | Rogneuses | |
| Todos los tipos | 1.5 | Tonneaux | | Cortadoras | 1.25 |
| Em geral | | Toneles | 1.25 | Tosquiador | |
| Plastique | | Tambores | | Planeuses | |
| Plástico | | Laveuses | | Aplanadoras | 1.25 |
| Plástico | | Lavadora | 1.5 | Nivelador | |
| À vitesse variable | | Lavadora | | Régulation des tambours | |
| Velocidad variable | 1.5 | Machines à bois | | Ajuste de los cilindros | 1.25 |
| De velocidade variável | | Máquinas para madera | | Regulação de cilindros | |
| À vitesse fixe | | Máquinas para madeira | | Traitement des déchets | |
| Velocidad fija | 1.75 | Convoyeurs | | Tratamiento de la chatarra | 1.25 |
| De velocidade fixa | | Transportadores | 1.25 | Tratamento de sucata | |
| Caoutchouc | | Transportadores | | Trancheuses | |
| Goma | | à cycle continu | | Cizalladoras | 2 |
| Borracha | | De ciclo continuo | 1.5 | Trançadores | |
| | | De ciclo contínuo | | | |

| MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A | MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A | MACCHINA COMANDATA DRIVEN MACHINE ANGETRIEBENE MASCHINE | K _A |
|--|----------------|---|----------------|--|----------------|
| Tranciatrici a striscia Slitters Streifenscheren | 1.25 | Truccioli Chip Späne | 1.5 | Alimentatori sostanze chimiche Chemical feeders Chemikalien - Beschicker | 1.25 |
| Lavorazione cemento Mills. rotary type Zementverarbeitung | | Rotativi Rotary Drehend | 1.5 | Schermi disidratatori Dewatering screens Entwässerungsfilter | 1.5 |
| Forno per cemento Cement Kilns Zementofen | 1.5 | Vibranti Vibrating Rüttler | 2 | Separatore parti pesanti Scum breakers Abscheider schwerer Partikel | 1.5 |
| Essicatoi Dryers & coolers Trockenofen | 1.5 | Size press Size press Size Press | 1.25 | Mescolatore Slow or rapid mixers Mischer | 1.5 |
| Mescolatori Mixer concrete Misch-/Knetmaschinen | 1.25 | Super calender Super calender Super-Kalender | 1.25 | Collettore dei fanghi Sludge collectors Schlamm-sammler | 1.25 |
| Lavorazione carta Paper mills Papierherstellung | | Ispestitrice (motore in a.c.) Thickener (AC motor) Eindickungsmaschine (GS-Motor) | 1.5 | Ispestitore Thickeners Eindicker | 1.5 |
| Agitatori, mescolatori Agitator (mixer) Rührwerke Mischer | 1.5 | Ispestitrice (motore in corrente cont.) Thickener (DC motor) Eindickungsmaschine (WS-Motor) | 1.25 | Filtri a vuoto Vacuum filters Vakuumfilter | 1.5 |
| Agitatori sostanze liquide Agitator for pure liquors Rührwerke für flüssige Stoffe | 1.25 | Lavatrice (motore in c.a.) Washer (AC motor) Waschmaschine (GS-Motor) | 1.5 | Schermi Screens Schirme | |
| Calandre Calender Kalender | 1.25 | Lavatrice (DC motore in corr. cont.) Washer (DC motor) Waschmaschine (WS-Motor) | 1.25 | Lavaggio ad aria Air washing Luftwaschen | 1 |
| Sminuzzatrice Chipper Brechanlage | 2 | Lavorazione plastica Plastic industry Kunststoffverarbeitung | | Rotativi per ghiaia Rotary-stone or gravel Kiesmaschinen | 1.25 |
| Alimentatore sminuzzatrice Chip feeder Beschicker der Brechanlage | 1.5 | Mescolatore per lotti Batch mixers Chargenmischer | 1.75 | Lavorazione zucchero Sugar industry Zuckerindustrie | |
| Rulli di lucidatura Coating rolls Polierwalzen | 1.25 | Mescolatore a ciclo continuo Continuous mixers HD - Mischer | 1.5 | Affettatrice barbabietole Beet slicer Zuckerrübenschnitzelmaschine | 2 |
| Convogliatori Conveyor Förderer | | Calandre Calenders Kalender | 1.5 | Frantoi per canna Cane knives Zuckerrohrmühle | 1.5 |
| Truciolli, corteccia Chip, bark, chemical Späne Rinde | 1.25 | Lavorazione gomma Rubber industry Gummiverarbeitung | | Trituratori Crushers Zerkleinerer | 1.5 |
| Tronchi Log (including slab) Baumstämme | 2 | Mescolatore per lotti Batch mixers Chargenmischer | 1.75 | Macinatori Mills (low speed end) Mahlmaschinen | 1.75 |
| Essicatoi Dryers Trockenofen | | Mescolatore a ciclo continuo Continuous mixers HD - Mischer | 1.5 | Lavorazione tessuti Textile industry Textilindustrie | |
| Tagliatrice Paper machine Schneidemaschine | 1.25 | Calandre Calenders Kalender | 1.5 | Impianti di dosatura batchers Dosieranlagen | 1.25 |
| Convogliatori Conveyor type Förderer | 1.5 | Riscaldamento sabbia Sand muller Formsandaufbereiter | 1.25 | Calandre calenders Kalender | 1.25 |
| Estrusori Extruder Strangpressen | 1.5 | Trattamento acque Sewage disposal equipment Wasseraufbereitung | | Essicatoi Dryers Trockenofen | 1.25 |
| Vagli Screen Siebanlagen | | Schermo a barre Bar screens Stabsiebrost | 1.25 | | |

| MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A | MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A | MACHINES MENÉES MÁQUINA GOBERNADA MÁQUINA COMANDADA | K _A |
|---|----------------|---|----------------|---|----------------|
| Trancheuses à bande | | Copeaux | | Alimentateurs substances chimiques | |
| Cizalladoras de cintas | 1.25 | Virutas | 1.5 | Alimentadores de sustancias químicas | 1.25 |
| Trançadores de faixa | | Cavacos | | Alimentadores de produtos químicos | |
| Traitement du ciment | | Rotatifs | | Écrans déshydrateurs | |
| Producción de cemento | | Giratorios | 1.5 | Pantallas deshidratadoras | 1.5 |
| Processamento de cimento | | Rotativos | | Telas desidratadores | |
| Fours de cimenterie | | Vibrants | | Séparateurs parties lourdes | |
| Hornos para cemento | 1.5 | Vibradores | 2 | Separadores de partes pesadas | 1.5 |
| Forno para cimento | | Vibração | | Separador partes pesadas | |
| Séchoirs | | Size press | | Mélangeurs | |
| Secadores | 1.5 | Size press | 1.25 | Mezcladoras | 1.5 |
| Secadores | | Size press | | Misturador | |
| Mélangeurs | | Super calendar | | Collecteurs de boues | |
| Mezcladoras | 1.25 | Super calendar | 1.25 | Colectores para lodos | 1.25 |
| Misturadores | | Super calendar | | Coletor de lama | |
| Papier | | Épaisseurs (moteur à c.a.) | | Épaisseurs | |
| Industria papelera | | Espesadores (motor de corriente alternada) | 1.5 | Espesadores | 1.5 |
| Processamento de papel | | Espessador (motor CA) | | Espessador | |
| Agitateurs mélangeurs | | Épaisseurs (moteur à courant continu) | | Filtres à vide | |
| Agitadores Mezcladoras | 1.5 | Espesadores (motor de corriente continua) | 1.25 | Filtros en vacío | 1.5 |
| Agitadores Misturadores | | Espessador (motor CC) | | Filtros a vácuo | |
| Agitateurs de liquides | | Laveurs (moteur à c.a.) | | Écrans | |
| Agitadores para líquidos | 1.25 | Lavadora (motor de corriente alternada) | 1.5 | Pantallas | |
| Agitadores de substâncias líquidas | | Lavadora (motor CA) | | Telas | |
| Calandres | | Laveurs (CC moteur à cour. cont.) | | Lavage à air | |
| Calandras | 1.25 | Lavadora (motor de corriente continua) | 1.25 | Limpieza con aire | 1 |
| Calandras | | Lavadora (motor CC) | | Lavagem a ar | |
| Déchiqueteuses | | Plastique | | Rotatifs pour gravier | |
| Trituradoras | 2 | Industria del plástico | | Giratorias para grava | 1.25 |
| Triturador | | Processamento de plástico | | Rotativos para cascalho | |
| Chaînes d'alimentation des déchiqueteuses | | Mélangeurs pour lots | | Sucre | |
| Alimentadores de trituradoras | 1.5 | Mezcladora por lotes | 1.75 | Industria azucarera | |
| Alimentador triturador | | Misturador por lotes | | Processamento de açúcar | |
| Glaceuses | | Mélangeurs à cycle continu | | Coupeur de betteraves | |
| Rodillos para pulir | 1.25 | Mezcladora de ciclo continuo | 1.5 | Cortadoras de remolachas | 2 |
| Rolos de polimento | | Misturador de ciclo contínuo | | Cortador de beterraba | |
| Convoyeurs | | Calandres | | Broyeurs de cannes à sucre | |
| Transportadores | | Calandras | 1.5 | Molinos de caña | 1.5 |
| Transportadores | | Calandras | | Moendas para cana | |
| copeaux écorce | | Caoutchouc | | Broyeurs | |
| Virutas Corteza | 1.25 | Industria del caucho | | Trituradoras | 1.5 |
| Cavacos casca | | Processamento de borracha | | Trituradores | |
| Grumes | | Mélangeurs pour lots | | Moulins | |
| Troncos | 2 | Mezcladora por lotes | 1.75 | Muelas | 1.75 |
| Troncos | | Misturador por lotes | | Moinhos | |
| Séchoirs | | Mélangeurs à cycle continu | | Textile | |
| Secadores | | Mezcladora de ciclo continuo | 1.5 | Industria textil | |
| Secadores | | Misturador de ciclo contínuo | | Processamento de tecidos | |
| Trancheuses | | Calandres | | Gâcheurs ou bacs de dosage | |
| Cortadoras | 1.25 | Calandras | 1.5 | Sistemas de dosificación | 1.25 |
| Cortadora | | Calandras | | Sistemas de dosagem | |
| Convoyeurs | | Chauffage du sable | | Calandres | |
| Transportadores | 1.5 | Calentamiento de arena | 1.25 | Calandras | 1.25 |
| Transportadores | | Aquecimento de areia | | Calandras | |
| Extrudeuses | | Traitement des eaux | | Sécheurs | |
| Extrusores | 1.5 | Tratamiento de aguas | | Secadores | 1.25 |
| Extrusores | | Tratamento de águas residuais | | Secadores | |
| Cribles ou tamis | | Écran à barres | | | |
| Tamices | | Pantallas de barras | 1.25 | | |
| Peneiras | | Tela de barras | | | |

Fattore Cs

Fattore che considera il numero di avviamenti nell'unità di tempo.

Cs factor

This factor considers the number of starts in the unit of time.

Faktor Cs

Dieser Faktor berücksichtigt die Anzahl der Starts pro Zeiteinheit.

| Cs | Avviamenti orari / Starts per hour / Starts pro Stunde | | | |
|----|--|------|--------|---------|
| | 1-5 | 6-25 | 26-100 | 101-200 |
| Cs | 1 | 1.05 | 1.15 | 1.25 |

Temperatura [°C]

La temperatura di funzionamento ideale è compresa tra 50 °C e 70 °C.

Per brevi periodi si possono raggiungere 80 °C. Il sistema migliore per tenere sotto controllo la temperatura è quello di ricorrere ad un sistema ausiliario di scambio termico.

Per temperature ambiente molto basse, inferiori a -15 °C, o di funzionamento superiori a 80 °C, si impongono oli adeguati assieme a guarnizioni e materiali speciali che possono essere forniti a richiesta. E' comunque consigliabile consultare il Servizio Tecnico Commerciale Brevini. Vedere il Capitolo: Lubrificazione.

Temperature [°C]

The ideal operating temperature is between 50 °C and 70 °C. For short periods 80 °C can be reached. The best system for keeping the temperature under control is to use an auxiliary cooling system. For very low ambient temperatures, below -15 °C, or operating temperatures above 80 °C, the use of suitable oils together with special seals and materials (supplied by request) is required. In any case it is advisable to consult the Brevini technical commercial service. See chapter: Lubrication.

Temperatur [°C]

Die ideale Betriebstemperatur liegt im Bereich von 50 °C bis 70 °C. Für kurze Zeiten können 80 °C erreicht werden. Das einfachste System der Temperaturregelung ist die Installation eines zusätzlichen Kühlsystems.

Bei sehr niedrigen Umgebungstemperaturen (unter -15 °C) oder bei Betriebstemperaturen über 80 °C sind Spezialschmieröle zusammen mit Spezialdichtungen und Werkstoffen einzusetzen, die auf Anfrage lieferbar sind. Sie sollten sich in solchen Fällen jedoch immer an den technischen Kundendienst Brevini wenden. Siehe Kapitel: Schmierung.

4. CARICHI RADIALI E ASSIALI

Carichi sugli alberi in uscita / entrata Fr [N]

Per ogni grandezza di riduttore vengono riportati a catalogo i diagrammi dei carichi radiali Fr ammessi sugli alberi in uscita riferiti a $n_2 \times h = 10^5$ dei cuscinetti. Per durate diverse, i carichi dovranno essere moltiplicati per il coefficiente C (rilevabile dal diagramma 2) il quale non deve eccedere il valore di 1.5 indipendentemente dalla durata.

4. RADIAL AND AXIAL LOADS

Loads on output / input shafts Fr [N]

The catalogue gives the diagrams of permissible Fr radial loads on the output shafts referred $n_2 \times h = 10^5$ of bearings. For different durations, the loads must be multiplied by the coefficient C (obtained from diagram 2) which must not exceed the value of 1.5 regardless of the life.

4. RADIALLAST UND AXIALLAST

Lasten auf den Abtriebs- / Antriebswellen Fr [N]

Der Katalog enthält für jede Getriebegröße die Diagramme der zulässigen Radiallasten Fr auf den Abtriebsachsen bezogen auf $n_2 \times h = 10^5$ der Lager. Bei unterschiedlicher Dauer sind die Lasten mit dem Koeffizienten C (der dem Diagramm 2 entnommen werden kann) zu multiplizieren, der jedoch unabhängig von der Dauer nicht den Wert 1,5 übersteigen darf.

Esempio:

Example:

Beispiel:

Diagramma Diagram 1 Diagramm

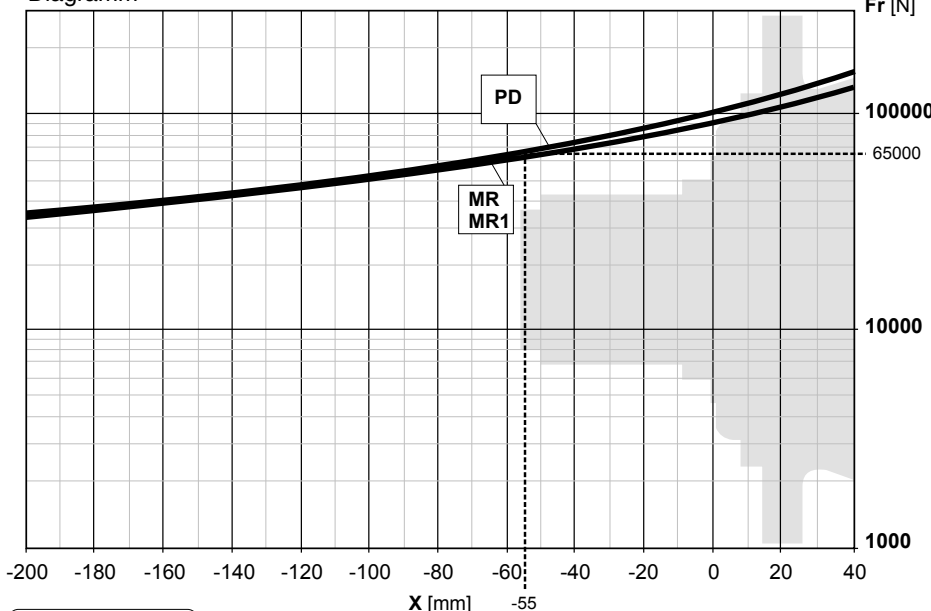
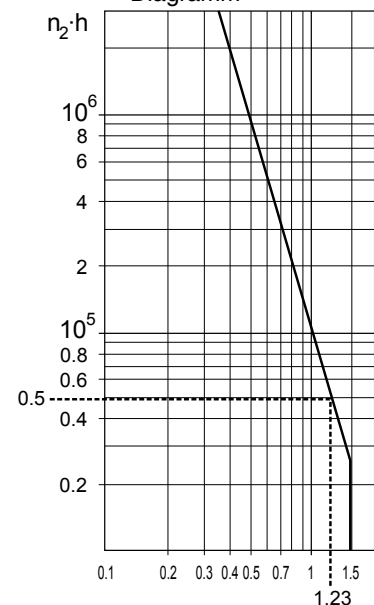


Diagramma Diagram 2 Diagramm



Facteur Cs

Facteur tenant compte du nombre de démarrages dans l'unité de temps.

Factor Cs

Este factor toma en cuenta el número de arranques por unidad de tiempo.

Fator Cs

Fator que considera o número de partidas na unidade de tempo.

| Cs | Démarrages par heure / Arranques por hora / Partidas horárias | | | |
|----|---|------|--------|---------|
| | 1-5 | 6-25 | 26-100 | 101-200 |
| Cs | 1 | 1.05 | 1.15 | 1.25 |

Température [°C]

La température de fonctionnement idéale est comprise entre 50 °C et 70 °C. Pour de courtes périodes de fonctionnement, il est possible d'atteindre une température de 80 °C. Le meilleur système pour surveiller la température est celui d'adopter un système auxiliaire d'échange thermique. Pour des températures ambiantes très basses, inférieures à -15 °C par exemple, ou de fonctionnement supérieures à 80 °C, il est nécessaire d'utiliser des huiles appropriées, ainsi que des joints et matériaux spéciaux qui peuvent être fournis sur demande. Toutefois, il est préférable de prendre contact avec le service technicommercial Brevini. Voir chapitre: Graissage.

Temperatura [°C]

La temperatura de funcionamiento ideal está entre 50 y 70 °C. Por periodos breves se puede llegar a 80 °C. El mejor método para regular la temperatura es instalar un sistema auxiliar de intercambio térmico. Si la temperatura ambiente está por debajo de -15 °C o la temperatura de funcionamiento sobrepasa los 80 °C es preciso utilizar aceites, guarniciones y materiales especiales que Brevini Riduttori suministra bajo pedido. Se aconseja contactar con el Servicio Técnico de Brevini. Véase el capítulo: Lubricación.

Temperatura [°C]

A temperatura de funcionamento ideal está compreendida entre 50 °C e 70 °C. Por períodos curtos é possível atingir 80 °C. O melhor sistema para manter a temperatura sob controle é recorrer a um sistema auxiliar de troca térmica. Para temperaturas ambientes muito baixas, inferiores a -15 °C, ou temperaturas de funcionamento superiores a 80 °C, são necessários óleos adequados, junto com guarnições e materiais especiais que podem ser fornecidos a pedido. De qualquer modo é aconselhável consultar o Serviço Técnico Comercial da Brevini. Consultar o capítulo: Lubrificação.

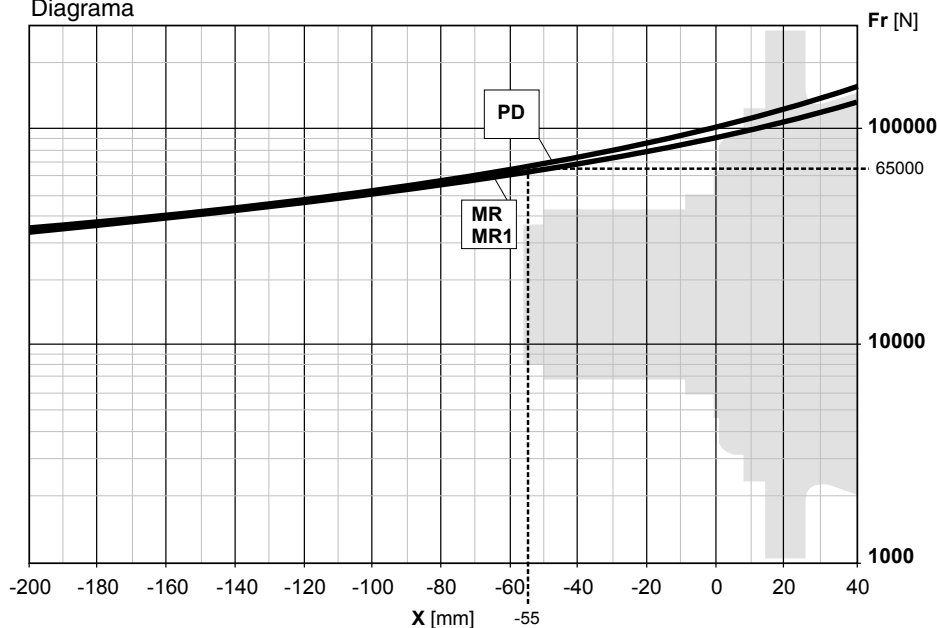
4. CHARGES RADIALES ET AXIALES

Charges sur les arbres en sortie / entrée Fr [N]

Sur le catalogue, pour chaque grandeur de réducteur, sont reportés les diagrammes des charges radiales Fr admissibles sur les arbres de sortie référées à $n_2 \times h = 10^5$ des roulements. Pour des durées différentes, les charges devront être multipliées par le coefficient C (que l'on peut tirer du diagramme 2) qui ne doit pas dépasser la valeur de 1,5, et ce indépendamment de la durée.

Exemple:

Diagramme
Diagrama 1
Diagrama



4. CARGAS RADIALES Y AXIALES

Cargas sobre los ejes de salida / entrada Fr [N]

Para cada tamaño de reductor el catálogo trae los diagramas de las cargas radiales Fr admitidas en los ejes de salida para $n_2 \times h = 10^5$ de los cojinetes. Si la duración es diferente, las cargas se deben multiplicar por el coeficiente C (tomándolo del diagrama 2). De todas maneras, independientemente de la duración, C no puede ser mayor que 1.5.

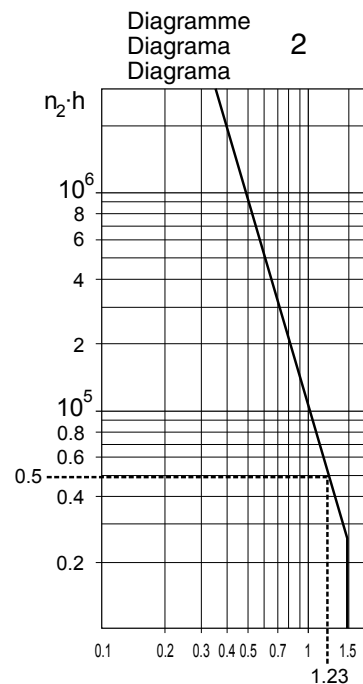
Ejemplo:

4. CARGAS RADIAIS E AXIAIS

Cargas nos eixos de saída/entrada Fr [N]

Para cada tamanho de reductor são indicados no catálogo os diagramas das cargas radiais Fr admissíveis nos eixos de saída referidos a $n_2 \times h = 10^5$ dos coxins. Para durações diferentes, as cargas deverão ser multiplicadas pelo coeficiente C (obtido no diagrama 2), o qual não deverá ultrapassar o valor de 1.5, independentemente da duração.

Exemplo:



Dati:
 Riduttore ED2065 MR
 Carico radiale applicato F = 80 kN
 Posizione del carico X = - 55 mm
 Giri uscita $n_2 = 20 \text{ min}^{-1}$

Data:
 Gear unit size ED2065 MR
 Radial load F = 80 kN
 Load position X = - 55 mm
 Output speed $n_2 = 20 \text{ min}^{-1}$

Daten:
 Getriebe ED2065 MR
 Angelegte Radiallast F = 80 kN
 Laststellung X = - 55 mm
 Abtriebsdrehzahl $n_2 = 20 \text{ min}^{-1}$

Con i quali calcoliamo:

To be calculated:

Berechnung:

Carico radiale ammissibile
 Fr = 65 kN (vedi diagramma 1)

Radial load capacity
 Fr = 65 kN (as per diagram 1)

Zulässige Radiallast
 Fr = 65 kN (siehe Diagramm 1)

$$c = \frac{F}{F_r} = 1.23 \quad (\text{vedi diagramma 2})$$

$$c = \frac{F}{F_r} = 1.23 \quad (\text{as per diagram 2})$$

$$c = \frac{F}{F_r} = 1.23 \quad (\text{siehe Diagramm 2})$$

$$1.23 < 1.5 = C_{\max}$$

$$1.23 < 1.5 = C_{\max}$$

$$1.23 < 1.5 = C_{\max}$$

Durata cuscinetti $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ ore}$$

Bearing life $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ hours}$$

Lagerlebensdauer $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ Stunden}$$

In presenza di carico assiale, si consiglia di contattare il Servizio Tecnico Commerciale Brevini.

Per gli alberi in ingresso vedere le rispettive tabelle. I riduttori con uscita albero femmina (FE - FS) sono impiegati normalmente per la trasmissione di sola coppia e non sono adatti a sopportare nessun carico radiale.

Per eventuali informazioni consultare il Servizio Tecnico Commerciale Brevini.

In the event of axial load, it is advisable to contact the Brevini technical commercial service.

For input shafts, see the respective tables.

Gear units with female shaft output are used for the transmission of torque only, and are unsuitable for supporting any radial load.

For information contact the Brevini technical commercial service.

Sollten Axiallastenanliegen, wenden Sie sich bitte an den technischen Kundendienst Brevini.

Für Antriebswellen siehe die betreffenden Tabellen.

Die Getriebe mit Hohlwellenabtrieb (FE - FS) werden normalerweise nur für die Übertragung des Drehmoments eingesetzt und sind absolut ungeeignet für Radiallasten.

Wenden Sie sich bei Rückfragen an den technischen Kundendienst Brevini.

Carichi sugli alberi di uscita versione FS

Nel montaggio di tipo pendolare si possono generare forze dovute a tre diverse cause:

- A - forza di reazione dovuta all'ancoraggio
- B - forza peso prodotta da riduttore e motore (di solito ininfluyente)
- C - eventuale presenza di un tiro cinghia.

Ognuno dei succitati carichi dà origine ad un momento flettente; la risultante vettoriale di tali momenti influisce su:

- durata cuscinetti
- resistenza dell'albero
- efficacia del serraggio mediante giunto.

Nel caso in cui la condizione di carico B assuma una certa rilevanza (p.es. riduttori a due stadi azionati da grossi motori elettrici) e/o si presenti la condizione C, come qualora siano presenti carichi assiali, si raccomanda di consultare il servizio tecnico BREVINI.

Per quanto riguarda i carichi dovuti alla sola reazione, condizione A, nelle tabelle dimensionali sono state riportate le lunghezze minime $L_{1\min}$ dei bracci di reazione tali da consentire sia la durata ISO L_{10} dei cuscinetti $n_2 \cdot h > 10^6$, che la resistenza dell'albero e l'efficacia del serraggio.

Loads on output shafts FS version

The torque arm mounting is normally accompanied by three types of forces:

- A - reaction force given by the anchoring
- B - weight of gearbox and motor (usually negligible)
- C - belt-tension force, in case of belt and pulley drive at gear unit input.

Each one of such loading conditions generates a bending moment.

The vector resultant of these moments affects:

- bearing life
- shaft fatigue resistance
- efficiency of the shafts shrink fit.

In case load condition B becomes relevant (for instance 2 stages gearbox driven by large electric motors) and/or in presence of load condition C as well when there are axial loads it is recommended to consult BREVINI technical staff.

Concerning the load due to the reaction force, condition A, the minimum torque arm lengths, $L_{1\min}$, have been tabulated in correspondence to the dimensional sheets. Such lengths grant an ISO L_{10} bearings life $n_2 \cdot h > 10^6$ as well as shaft resistance under fatigue and efficiency of the shrink fit.

Belastungen auf den Abtriebswellen Version FS

Bei Aufsteckgetrieben können Kräfte erzeugt werden, die auf drei unterschiedlichen Ursachen beruhen:

- A - Reaktionskraft infolge der Verankerung
- B - Gewicht von Getriebe und Motor (kann in der Regel vernachlässigt werden)
- C - Riemenzugkraft, falls auf der Eingangsseite ein Riemenantrieb vorhanden ist.

Jede dieser drei Belastungen erzeugt ein Biegemoment. Das Vektorialprodukt wirkt sich aus auf:

- Lebensdauer der Lager
- Festigkeit der Welle
- Wirksamkeit der Schrumpfpassung der Welle.

Falls der Lastfall B eine gewisse Bedeutung erhält (Bsp.: zweistufige Getriebe, die durch große Elektromotoren betätigt werden) und/oder der Lastfall C eintritt, sollte man sich beim Vorliegen von axialen Beanspruchungen an das BREVINI-Konstruktionsbüro wenden.

Was Beanspruchungen betrifft, die lediglich auf Lastfall A, also der Reaktionskraft beruhen, stehen in den Dimensionstabellen die Mindestlängen $L_{1\min}$ der Drehmomentstützen, die sowohl die Lebensdauer ISO L_{10} der Lager $n_2 \cdot h > 10^6$ als auch die Festigkeit der Welle und die Wirksamkeit der Schrumpfpassung geben.

Données :
 Réducteur ED2065 MR
 Charge radiale appliquée $F = 80 \text{ kN}$
 Position de la charge $X = -55 \text{ mm}$
 Vitesse de rotation en sortie $n_2 = 20 \text{ min}^{-1}$

Pour calculer :

Charge radiale admissible
 $Fr = 65 \text{ kN}$ (voir diagramme 1)

$$c = \frac{F}{Fr} = 1.23 \quad (\text{voir diagramme 2})$$

$$1,23 < 1,5 = C \text{ max}$$

Durée des roulements $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ heures}$$

En présence d'une charge axiale, il est conseillé de prendre contact avec le service technico-commercial Brevini.

Pour les arbres en entrée, consulter les tableaux correspondants.

Les réducteurs avec sortie à arbre femelle (FE - FS) sont normalement utilisés pour la transmission du couple uniquement et ne sont pas adaptés à supporter des charges radiales.

Pour de plus amples informations, prendre contact avec le service technico-commercial Brevini.

Charges sur les arbres de sortie version FS

Dans l'application de type pendulaire trois conditions différentes de charge peuvent se vérifier:

- A - force de réaction due à l'ancrage
- B - force-poids produite par le réducteur et le moteur (en général sans influence)
- C - présence éventuelle d'une traction de la courroie.

Chacune de ces conditions de charge produit un moment de flexion.

La résultante vectorielle de ces moments a une influence sur:

- la durée de vie des roulements
- la résistance de l'arbre
- l'efficacité du serrage de l'accouplement

Si la charge B est d'une certaine importance (par ex. réducteurs à deux étages actionnés par de gros moteurs électriques) ou en présence de la condition C, mais encore en présence de charges axiales, il est recommandé de consulter le service technique BREVINI.

En ce qui concerne les charges dues seulement à la réaction (condition A), dans les tableaux des dimensions sont reportées les longueurs minimales L_{1min} des bras de réaction aptes à garantir tant la durée ISO L_{10} des roulements $n_2 \cdot h > 10^6$ que la résistance de l'arbre et l'efficacité du serrage.

Datos:
 Reductor ED2065 MR
 Carga radial aplicada $F = 80 \text{ kN}$
 Posición de la carga $X = -55 \text{ mm}$
 Velocidad de salida $n_2 = 20 \text{ min}^{-1}$

Sirven para calcular:

Carga radial admisible
 $Fr = 65 \text{ kN}$ (véase el diagrama 1)

$$c = \frac{F}{Fr} = 1.23 \quad (\text{véase el diagrama 2})$$

$$1.23 < 1.5 = C \text{ máx}$$

Duración de los rodamientos $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ horas}$$

Si la carga es axial, se ruega contactar con el Servicio Técnico de Brevini.

Los ejes de entrada se encuentran en las tablas correspondientes.

Los reductores con salida hembra (FE - FS) se emplean generalmente para transmitir sólo el par y no admiten cargas radiales.

Se aconseja contactar con el Servicio Técnico de Brevini.

Carga sobre los ejes en salida Versión FS

En el montaje del tipo pendular se pueden generar fuerzas debidas a varias causas:

- A - la fuerza de reacción debida al anclaje
- B - la fuerza del peso producida por el reductor y el motor (que normalmente no influye)
- C - la posible presencia de un tirón de correa.

Cada una de las cargas mencionadas da lugar a un momento de flexión; el resultado vectorial de tales momentos influye sobre:

- duración de los cojinetes
- resistencia del eje
- eficacia de la fijación mediante la unión.

En el caso en que las condiciones de carga B asumieran cierta importancia (por ej. reductores de dos etapas accionados por grandes motores eléctricos) o que se presentara la condición C, al igual que con las cargas coaxiales, se recomienda ponerse en contacto con el Servicio Técnico BREVINI.

Por lo que respecta a las cargas debidas por la mera reacción, condición A, en las tablas de dimensiones se encuentran indicadas las larguras mínimas de los brazos de reacción, L_{1min} , de manera que se consienta tanto la duración ISO L_{10} de los cojinetes $n_2 \cdot h > 10^6$, como la resistencia del eje y la eficacia de la fijación.

Dados:
 Redutor ED2065 MR
 Carga radial aplicada $F = 80 \text{ kN}$
 Posição da carga $X = -55 \text{ mm}$
 Rotação na saída $n_2 = 20 \text{ min}^{-1}$

Com os quais calculamos:

Carga radial admissível
 $Fr = 65 \text{ kN}$ (ver o diagrama 1)

$$c = \frac{F}{Fr} = 1.23 \quad (\text{ver o diagrama 2})$$

$$1,23 < 1,5 = C \text{ máx}$$

Duração dos coxins $n_2 \cdot h = 0.5 \cdot 10^5$

$$\frac{0.5 \cdot 10^5}{n_2} = 2500 \text{ horas}$$

Em presença de carga axial, é aconselhável entrar em contato com o Serviço Técnico Comercial da Brevini.

Para os eixos de entrada, ver as respectivas tabelas. Os reductores com saída de eixo fêmea (FE - FS) são empregados normalmente para a transmissão exclusiva de torque e não são adequados a suportar nenhuma carga radial.

Para obter informações eventuais, consultar o Serviço Técnico Commercial da Brevini.

Cargas nos eixos de saída versão FS

Na montagem de tipo pendular podem-se gerar forças devido a três causas diferentes:

- A - força de reação devido à ancoragem
- B - força do peso produzida por reductor e motor (geralmente não influente)
- C - eventual presença de uma tensão da correa

Cada uma das acima citadas cargas origina um momento de flexão; a resultante vectorial destes momentos influencia na:

- duração dos rolamentos
- resistência do eixo
- eficácia do aperto mediante disco.

No caso em que a condição de carga B assumir uma certa relevância (por ex.: reductores com dois estágios accionados por grandes motores elétricos) e/ou se apresentar a condição C, como também no caso em que se apresentarem cargas axiais, recomenda-se consultar o serviço técnico BREVINI.

Em relação às cargas devido só à reação, condição A, nas tabelas dimensionais foram indicados os comprimentos mínimos L_{1min} dos braços de reação que correspondem tanto à duração ISO L_{10} dos rolamentos $n_2 \cdot h > 10^6$, quanto à resistência da árvore e à eficácia do aperto.

Tali valori sono riferiti ai dati di coppia limite e alla posizione di ancoraggio del braccio di reazione definita dalla quota L_5 (riportata nelle tavole dimensionali).

Nel calcolo delle lunghezze minime dei bracci di reazione non si è tenuto conto della presenza di eventuali carichi assiali.

Qualora si verificasse che:

The tabulated L_{1min} are referred to the limit torques as well as to the anchoring position of the torque arm. Such position is defined by measure L_5 (stated on the dimensional sheets). When calculating L_{1min} no axial load has been considered.

In case of an axial load:

$$F_a > \frac{0.1 T_{2lim}}{L_{1min}}$$

consultare il servizio tecnico BREVINI.

consult BREVINI technical staff.

AVVERTENZA

Onde non generare carichi anomali sugli alberi, tali da compromettere la resistenza a fatica, si raccomanda di realizzare un ancoraggio del giunto braccio di reazione libero secondo l'asse dell'albero.

Si raccomanda inoltre che il vincolo tangenziale venga ammortizzato mediante elementi in gomma e/o ammortizzatori.

Tenere conto che il senso secondo cui agisce la forza di reazione, A, dipende dal senso di rotazione dell'albero di uscita.

Verificare sempre che il giunto di serraggio sia in grado di trasmettere la coppia massima prevista per la specifica applicazione.

WARNING

We strongly recommend that the anchoring point of the torque arm is allowed to float axially to avoid the possibility of any additional side load on the output shaft, which may create excessive stresses.

The torque arm should incorporate a flexible element in the tangential direction to reduce shock loads.

Take into account that the way of the reaction force, A, depends on the direction of rotation of the output shaft.

Remember always to check the shrink disc coupling can transmit the max. torque for each specific application.

Verifica dell'accoppiamento mediante giunto di serraggio

1. Impiego del secondo centraggio Za.

- a) Si deve utilizzare il secondo centraggio (avente diametro Za) quando non è verificata la seguente relazione:

$$X3 > 0,5 D_3$$

Za = diametro dell'albero condotto (vedi tab. a pag. 26)

X3 = parte di albero interessata al serraggio

- b) Nel caso venga utilizzato il secondo centraggio è opportuno che l'albero maschio porti una boccia di bronzo o simile per evitare corrosioni che rendono difficoltoso lo smontaggio. (N.B.: questa zona non deve essere lubrificata)

2. Lunghezza utile di accoppiamento

X3. La parte di albero femmina interessata all'accoppiamento deve soddisfare la seguente relazione:

$$X3 < 1.1 \cdot l$$

l = lunghezza del cono del giunto.

Nel caso questo non venga rispettato, si avranno difficoltà di smontaggio.

(N.B.: questa zona NON deve essere lubrificata).

Clamping capacity of the shrink disc

1. When to use the second pilot Za.

- a) Additional pilot (dia. Za) should be used in cases where the following conditions is not met:

$$X3 > 0,5 D_3$$

Za = driven shaft dia. (see table on pag. 26)

X3 = driven shaft clamping length

- b) When the second pilot is used, it is better to fit a bronze bush on the corresponding mating part of the male shaft. This to prevent corrosion which would make demounting difficult. (This area should not be lubricated)

2. Clamping length X3. The clamping length of gearbox hollow shaft shall must comply with the following condition:

$$X3 < 1.1 \cdot l$$

l = length of shrink disc cone.

This is to avoid demounting problems.

(This area should not be lubricated)

Diese Werte beziehen sich auf die Tabellendaten des Grenzdrehmoments und die Verankerungsposition der Drehmomentstütze, die durch den Wert L_5 gegeben ist (steht in den Dimensionstabellen).

Bei der Berechnung der Mindestlängen der Drehmomentstützen wurde das Vorliegen eventueller Axialbeanspruchungen nicht berücksichtigt.

Falls:

wenden Sie sich bitte an das BREVINI-Konstruktionsbüro.

ACHTUNG

Um eine zusätzliche Belastung auf den Abtriebswellen zu vermeiden, die zur Überschreitung der Ermüdungsgrenze führen könnte, sollte die Verankerungsstelle der Drehmomentstütze unbedingt so beschaffen sein, daß diese sich in der Längsrichtung der Welle frei bewegen kann.

Die Drehmomentstütze sollte in der Tangentialrichtung mit Gummielementen und/oder Stoßdämpfern versehen werden, um die Stoßbelastungen zu verringern.

Auch berücksichtigen, daß die Richtung, in der die Reaktionskraft A wirkt, von der Drehrichtung der Abtriebswelle abhängt. Immer sicherstellen, daß die Schrumpfscheibe in der Lage ist, das für die spezifische Anwendung vorgesehene Höchstdrehmoment zu übertragen.

Prüfung der Schrumpfscheiben-Ausführung

1. Verwendung der zweiten Zentrierung Za.

- a) Die zweite Zentrierung (mit Durchmesser Za) muß dann verwendet werden, wenn die folgende Bedingung nicht vorliegt:

$$X3 > 0,5 D_3$$

wobei Za = Durchmesser der Abtriebswelle (vgl. Tabelle auf Seite 26) und

X3 = Länge der Welle in der Schrumpfpasung ist.

- b) Wenn die zweite Zentrierung verwendet wird, sollte die Vollwelle mit Bronzebuchse oder ähnlichem versehen sein, damit Korrosionserscheinungen vermieden werden, die beim Auseinandernehmen Schwierigkeiten bereiten könnten (Anm.: Dieser Bereich darf nicht geschmiert werden).

2. Nützliche Schrumpflänge X3. Der Teil der hohlen Zylinderwelle, der in der Schrumpfscheibe sitzt, muß der folgenden Beziehung gerecht werden:

$$X3 < 1.1 \cdot l$$

wobei l = Länge des Schrumpfscheibenkonus. Wenn diese Bedingung nicht eingehalten wird, ergeben sich Schwierigkeiten beim Auseinandernehmen.

(Anm.: Dieser Bereich darf NICHT geschmiert werden.)

Ces valeurs se réfèrent aux données de couple limite et à la position d'ancrage du bras de réaction définie par la cote L_5 (indiquée dans les tableaux des dimensions).

Dans le calcul des longueurs minimales des bras de réaction il n'a pas été tenu compte de la présence éventuelle de charges axiales.

Au cas où se vérifierait la condition:

$$F_a > \frac{0.1 T_{2lim}}{L_{1min}}$$

contacter le service technique BREVINI.

IMPORTANT

Afin de ne pas générer des charges anormales sur les arbres qui pourraient compromettre la résistance à la fatigue, il est recommandé de réaliser un accouplement libre suivant l'axe de l'arbre. Il est également recommandé d'amortir la force tangentielle par Silentbloks en caoutchouc ou des amortisseurs.

Ne pas oublier que le sens de la force de réaction, A, dépend du sens de rotation de l'arbre de sortie.

Vérifier toujours que l'accouplement est en mesure de transmettre le couple maximum prévue pour l'application.

Vérification de l'accouplement par disque de serrage

1. Utilisation du deuxième centrage Z_a .

- a) Le deuxième centrage (ayant un diamètre Z_a) doit être utilisé quand la formule suivante ne se vérifie pas:

$$X3 > 0,5 D_3$$

Z_a = diamètre de l'arbre mené (voir tab. page 27)

$X3$ = partie de l'arbre intéressée par le serrage

- b) Si on utilise le deuxième centrage, il faut que l'arbre mâle porte une bague en bronze ou similaire pour éviter les corrosions rendant le démontage difficile.

(N.B.: cette zone ne doit pas être lubrifiée)

2. Longueur utile d'accouplement $X3$.

La partie d'arbre femelle intéressée par l'accouplement doit satisfaire la formule suivante:

$$X3 < 1.1 \cdot l$$

l = longueur du cône de l'accouplement

Si cela ne se vérifie pas, le démontage sera difficile.

(N.B.: cette zone ne doit pas être lubrifiée)

Dichos valores se refieren a los datos del par límite y a la posición de anclaje del brazo de reacción definida como cota L_5 (indicada en las tablas de dimensiones). Para el cálculo de las larguras mínimas de los brazos de reacción, no se ha tenido en cuenta la presencia de cargas coaxiales.

En el caso en que se verificase:

ponerse en contacto con el Servicio Técnico BREVINI

ADVERTENCIA

Para no generar cargas anómalas sobre los ejes que pudieran comprometer tanto la resistencia de fatiga, se recomienda realizar un anclaje de la unión del brazo de reacción libre según el eje del árbol. También se recomienda que el vínculo tangencial se amortice mediante elementos de goma y/o amortiguadores.

Tener presente el sentido en el cual actúa la fuerza de reacción A, que depende del sentido de giro del eje en salida.

Recordarse además de comprobar que la unión de fijación sea capaz de transmitir el par máximo previsto para la aplicación en específico.

Verificación del acoplamiento mediante anillo de contracción

1. Utilización del segundo centrado Z_a .

- a) El centrado adicional (con diámetro Z_a), se utiliza cuando no se verifique la siguiente relación:

$$X3 > 0,5 D_3$$

Z_a = diámetro del árbol guiado. (Ver tabla de la pág. 27)

$X3$ = parte del árbol comprendida en la fijación

- b) En el caso en que se utilice el centrado adicional, es oportuno que el árbol macho lleve un casquillo de bronce o similares, para evitar posibles corrosiones que complicarían el desmontaje.

(N.B.: esta zona no tiene que estar lubricada).

2. Largura útil de acoplamiento $X3$.

La parte hembra del eje comprendida en el acoplamiento, tiene que satisfacer las siguiente relación:

$$X3 < 1.1 \cdot l$$

l = largura del cono de la unión.

Si esto no se respeta, se encontrarán dificultades a la hora de desmontar.

(N.B.: esta zona NO tiene que estar lubricada)

Estes valores referem-se aos dados de torque limite reação definida da cota L_5 (indicada nas tabelas dimensionais).

No cálculo dos comprimentos mínimos dos braços de reação não foi considerada a presença de eventuais cargas axiais.

Ao se verificar que:

Consultar o serviço técnico BREVINI.

AVISO

Para não gerar cargas anormais nos eixos, que comprometam a resistência por fadiga, recomenda-se realizar a ancoragem do braço de reação livre no sentido axial do eixo. Recomenda-se também que o vínculo tangencial seja amortecido com elementos de borracha e/ou amortecedores. Lembre-se que o sentido no qual atua a força de reação A, depende do sentido de giro do eixo de saída.

Verificar sempre que o disco de contração seja capaz de transmitir o torque máximo previsto para a específica aplicação.

Verificação do acoplamento mediante disco de contração

1. Emprego da segunda centragem Z_a .

- a) Deve-se utilizar a segunda centragem (com diámetro Z_a) quando não se verificar a seguinte relação:

$$X3 > 0,5 D_3$$

Z_a = diámetro do eixo conduzida (vide tab. na pág. 27)

$X3$ = parte interessada do eixo destinado

- b) Ser for utilizada a segunda centragem é oportuno montar no eixo macho uma bucha de bronze ou similar para evitar corrosões que dificultem a desmontagem.

(N.B.: esta zona não deve ser lubrificada)

2. Comprimento útil de acoplamento $X3$.

A parte de eixo fêmea interessada ao acoplamento deve satisfazer a seguinte relação:

$$X3 < 1.1 \cdot l$$

l = comprimento do cone do disco.

Se este não for respeitado, ocorrerá dificuldades na desmontagem.

(N.B.: esta zona NÃO deve ser lubrificada).

3. Coppia trasmissibile T_2 . I valori di coppia trasmissibile mediante il giunto di serraggio vengono definiti dal costruttore del giunto di serraggio stesso. Normalmente le tolleranze raccomandate nell'accoppiamento tra i due alberi per una corretta trasmissione della coppia sono H7-h6

4. Carico assiale F_a . La forza di attrito che permette la trasmissione della coppia è evidentemente la stessa che si oppone allo sfilamento assiale del riduttore, pertanto:

3. Transmissible torque T_2 . The values of transmissible torques are stated by the shrink disc manufacturer. Normally the tolerances of the mating shafts granting proper torque transmission are: H7-h6

4. Axial load F_a . The friction resistance, which makes torque transmission possible, prevents the mating shafts from sliding axially, consequently:

$$F_a \text{ max} = \frac{T_2 \cdot 2}{Z_a} \text{ (kN)}$$

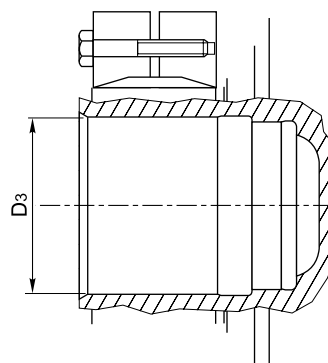
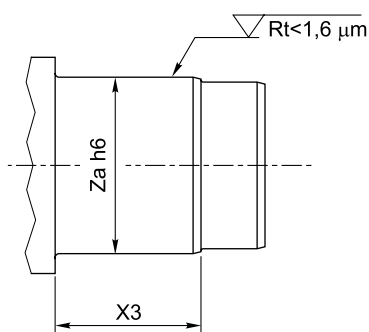
Nel caso in cui si manifesti un carico assiale la coppia trasmissibile si riduce.

In the presence of an axial load the transmissible torque will be reduced with a vector effect.

3. Übertragbares Drehmoment T_2 . Die Werte des übertragbaren Drehmoments werden vom Hersteller der Schrumpfscheibe angegeben. Für eine korrekte Übertragung des Drehmoments wird für die Passung der beiden Wellen in der Regel eine Toleranz H7-h6 empfohlen.

4. Axiale Belastung F_a . Die Reibungskraft, die die Übertragung des Drehmoments gestattet, ist offensichtlich die gleiche, die sich dem axialen Herausziehen des Getriebes widersetzt, d.h.:

Falls eine axiale Belastung vorliegt, reduziert sich das übertragbare Drehmoment.



5. POTENZA TERMICA P_T [kW]

Le potenze termiche dei riduttori sono indicate nelle tabelle che riassumono le prestazioni tecniche dei vari stadi di riduzione. I valori pubblicati fanno riferimento ad un impiego continuo del riduttore:

- Con lubrificazione a sbattimento
- Montato orizzontalmente
- Ad una velocità di ingresso riduttore di 1500 min⁻¹
- Per una temperatura massima dell'olio di 80 °C (olio VG150)
- Ad una temperatura ambiente di 20 °C
- Nella condizione di impiego "ambiente grande".

5. THERMAL RATING P_T [kW]

The thermal ratings of the gear units are given in the tables summarizing the technical performance of the various reduction stages.

The values given refer to a continuous use of the gear unit:

- With splash lubrication
- Horizontally mounted
- At a gear unit input speed of 1500 min⁻¹
- For a max. oil temperature of 80 °C (oil VG150)
- At an ambient temperature of 20 °C
- In the "large ambient" condition of use.

5. WÄRMELEISTUNG P_T [kW]

Die Wärmeleistungen der Getriebe sind in den Tabellen aufgeführt, die die technischen Leistungen der verschiedenen Übersetzungsstufen zusammenfassen.

Die angegebenen Daten beziehen sich auf einen kontinuierlichen Getriebeeinsatz:

- Spritzschmierung
- Horizontale Einbaulage
- Antriebsdrehzahl des Getriebes 1500 min⁻¹
- Für eine Höchsttemperatur des Öls von 80 °C (Öl VG150)
- Raumtemperatur von 20 °C
- Einsatzbedingung "großes Arbeitsumfeld".

3. Couple transmissible T_2 . Les valeurs de couple transmissible par le disque de serrage sont définies par le constructeur du disque de serrage. Normalement les tolérances recommandées dans l'accouplement entre les deux arbres pour une transmission correcte du couple sont H7-h6

4. Charge axiale F_a . La force de friction qui permet la transmission du couple est bien entendu la même qui s'oppose au déboîtement axial du réducteur, donc:

3. Par transmissible T_2 . Los valores del par que se pueden transmitir mediante anillo de contracción tienen que ser definidos por el fabricante de la misma unión. Normalmente, las tolerancias recomendadas para el acoplamiento entre los dos ejes, manteniendo una transmisión correcta del par, son: H7-h6

4. Carga axial F_a . La fuerza de fricción que permite la transmisión del par es, evidentemente, la misma que se opone al deslizamiento axial del reductor y, por lo tanto:

3. Torque transmissível T_2 . Os valores de torque transmissível mediante o disco de contração são definidos pelo próprio fabricante do disco de aperto. Geralmente as tolerâncias recomendadas no acoplamento entre os dois eixos para uma correta transmissão do torque são H7-h6

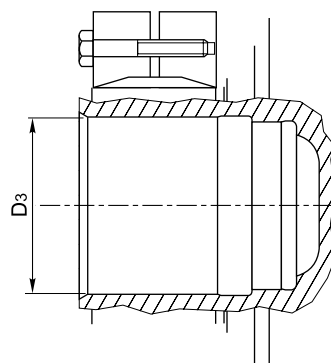
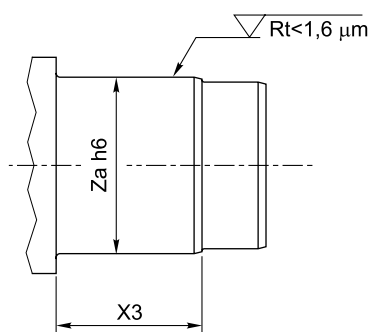
4. Carga axial F_a . A força de atrito que permite a transmissão do torque é evidentemente a mesma que se opõe ao deslizamento axial do reductor, portanto:

$$F_a \text{ max} = \frac{T_2 \cdot 2}{Z_a} \text{ (kN)}$$

En présence d'une charge axiale, le couple transmissible diminue.

Si no se manifestara una carga axial el par transmissible se reduciría.

Em presença de uma carga axial o torque transmissível se reduz.



5. PUISSANCE THERMIQUE P_T [kW]

Les puissances thermiques des réducteurs sont indiquées dans les tableaux qui résument les performances techniques des différents étages de réduction. Les valeurs données se réfèrent à un service continu du réducteur:

- Avec une lubrification par barbotage
- Monté horizontalement
- Avec une vitesse d'entrée du réducteur de 1500 min⁻¹
- Pour une température maximale de l'huile de 80 °C (huile VG150)
- Avec une température ambiante de 20 °C
- Dans la condition d'emploi "milieu ambiant grand".

5. POTENCIA TÉRMICA P_T [kW]

Las potencias térmicas de los reductores se indican en las tablas que sintetizan las prestaciones técnicas de las diferentes etapas.

Los valores se refieren a reductores para uso continuo con las siguientes características:

- Lubricación por borboteo
- Montaje horizontal
- Velocidad de entrada 1500 min⁻¹
- Temperatura máxima del aceite 80 °C (aceite VG150)
- Temperatura ambiente 20 °C
- Funcionamiento en un "ambiente grande"

5. POTÊNCIA TÉRMICA P_T [kW]

As potências térmicas dos redutores são indicadas nas tabelas que sintetizam o desempenho técnico dos vários estágios de redução.

Os valores publicados fazem referência a um emprego contínuo do reductor:

- Com lubrificação por agitação
- Montado horizontalmente
- A uma velocidade de entrada no reductor de 1500 min⁻¹
- Para uma temperatura máxima do óleo de 80 °C (óleo VG150)
- A uma temperatura ambiente de 20 °C
- Na condição de emprego "ambiente grande".

Fattore K

Nel caso di cicli di lavoro che prevedono un impiego intermittente del riduttore e/ o alla presenza di una temperatura ambiente diversa da 20 °C, la potenza termica del riduttore può essere adeguata all'applicazione specifica tramite il fattore K

K Factor

With work cycles requiring an intermittent use of the gear unit and/or the presence of an ambient temperature different from 20 °C, the gear unit thermal rating can be adjusted to the specific application by means of the K factor.

K - Faktor

Bei Arbeitszyklen des Getriebes mit Aussetzbetrieb und/oder bei Raumtemperaturen, die von 20 °C abweichen, kann die Wärmeleistung des Getriebes mithilfe des K - Faktors an die spezifische Anwendung angepasst werden

K

| Ore di lavoro giornaliere Hours of work per day Arbeitsstunden pro Tag | Temperatura ambiente / Ambient temperature / Umgebungstemperatur [°C] | | | | |
|--|---|------|------|------|------|
| | 10° | 20° | 30° | 40° | 50° |
| 10 | 1.15 | 1 | 0.85 | 0.7 | 0.6 |
| 8 | 1.25 | 1.1 | 1 | 0.85 | 0.7 |
| 6 | 1.4 | 1.25 | 1.1 | 1 | 0.85 |
| 4 | 1.6 | 1.4 | 1.25 | 1.1 | 1 |
| 2 | 1.8 | 1.6 | 1.4 | 1.25 | 1.1 |

Fattore S

Nel caso in cui la velocità in ingresso sia diversa da 1500 rpm, l'adeguamento della potenza termica alla situazione specifica può avvenire tramite l'impiego del fattore S

S Factor

If the input speed is different from 1500 rpm, the thermal rating can be adjusted to the specific situation by means of the S factor

S - Faktor

Bei einer von 1500 U/min abweichenden Antriebsdrehzahl kann die Wärmeleistung der spezifischen Situation mithilfe des Faktors S angepasst werden

S

| S | n ₁ [rpm] | | | |
|---|----------------------|------|------|-----|
| | 1750 | 1500 | 1000 | 500 |
| S | 0.94 | 1 | 1.05 | 1.1 |

Fattore R

Nel caso in cui il riduttore sia collocato in un ambiente ristretto oppure all'aperto, la potenza termica può essere modificata con l'ausilio del fattore R

R Factor

If the gear unit is located in a confined space or outdoors, the thermal rating can be modified with the aid of the R factor

R - Faktor

Falls das Getriebe in einer engen Umgebung oder im Freien aufgestellt ist, kann die Wärmeleistung mithilfe des Faktors R geändert werden

R

| R | Ambiente piccolo Small space Kleiner Raum | Ambiente grande Large space Großer Raum | All'aperto Outdoors Im Freien |
|---|---|---|-------------------------------------|
| R | 0.70 | 1.00 | 1.35 |

Nel caso più generale la adeguata potenza termica del riduttore risulterà:

In the most general case the adequate thermal rating of the gear unit will be:

Ganz allgemein folgt die geeignete Wärmeleistung aus der folgenden Formel:

$$P_{T1} = P_T \cdot K \cdot S \cdot R$$

La potenza termica deve essere superiore alla potenza P da trasmettere in tutte le condizioni del ciclo di impiego.

The thermal rating must be higher than the power P to be transmitted in all operating cycle conditions.

Unter allen Bedingungen des Arbeitszyklus muss die Wärmeleistung höher sein als die zu übertragende Leistung P.

Nel caso in cui la potenza termica del riduttore risulti inferiore alla potenza da trasmettere, anche solo in una condizione dell'eventuale ciclo di impiego, occorre prevedere la presenza di un circuito ausiliario di raffreddamento.

If the thermal rating of the gear unit is less than the power to be transmitted, even in just one condition of the possible operating cycle, an auxiliary cooling circuit must be provided.

Falls die Wärmeleistung des Getriebes niedriger als die zu übertragende Leistung ist, selbst in einer einzigen Bedingung des Zyklus, muss ein zusätzliches Kühlsystem installiert werden.

Per la selezione di tale circuiti, rimandiamo al Capitolo: Lubrificazione.

For selecting the circuits, see the Chapter: Lubrication.

Für die Auswahl des Kühlsystems siehe Kapitel: Schmierung.

$$P < P_{T1}$$

Facteur K

Dans le cas de cycles de fonctionnement qui prévoient un service intermittent du réducteur et/ou une température ambiante différente de 20 °C, la puissance thermique du réducteur pourra être adaptée à l'application spécifique avec le facteur K

Factor K

Si el ciclo de lavoro contempla un uso intermitente del reductor o una temperatura ambiente distinta de 20 °C, la potencia térmica del reductor se puede corregir por medio del factor K

Fator K

No caso de ciclos de trabalho que prevejam um emprego intermitente do redutor e/ou na presença de uma temperatura ambiente diferente de 20 °C, a potência térmica do redutor poderá ser adequada à aplicação específica através do fator K

K

| Heures de fonctionnement par jour Horas de trabajo diarias Horas de trabalho diárias | Température ambiante / Temperatura ambiente / Temperatura ambiente [°C] | | | | |
|--|---|------|------|------|------|
| | 10° | 20° | 30° | 40° | 50° |
| 10 | 1.15 | 1 | 0.85 | 0.7 | 0.6 |
| 8 | 1.25 | 1.1 | 1 | 0.85 | 0.7 |
| 6 | 1.4 | 1.25 | 1.1 | 1 | 0.85 |
| 4 | 1.6 | 1.4 | 1.25 | 1.1 | 1 |
| 2 | 1.8 | 1.6 | 1.4 | 1.25 | 1.1 |

Facteur S

Dans les cas où la vitesse d'entrée est différente de 1 500 tr/min, l'adaptation de la puissance thermique au cas spécifique pourra se faire en utilisant le facteur S

Factor S

Si la velocidad de entrada es distinta de 1500 rpm la potencia térmica corregir por medio del factor S

Fator S

Caso a velocidade de entrada seja diferente de 1500 rpm, a adequação da potência térmica à situação específica poderá ocorrer através do emprego do fator S

S

| S | n ₁ [rpm] | | | |
|---|----------------------|------|------|-----|
| | 1750 | 1500 | 1000 | 500 |
| S | 0.94 | 1 | 1.05 | 1.1 |

Facteur R

Dans le cas où le réducteur serait placé en un milieu ambiant restreint ou à l'extérieur, la puissance thermique pourra être modifiée en appliquant le facteur R

Factor R

Si el reductor está colocado en un ambiente pequeño o a la intemperie la potencia térmica se puede corregir por medio del factor R

Fator R

Caso o redutor seja colocado em um ambiente fechado ou ao ar livre, a potência térmica poderá ser modificada com o auxílio do fator R

R

| R | Milieu ambiant petit Ambiente pequeño Ambiente pequeno | Milieu ambiant grand Ambiente grande Ambiente grande | En plein air Al aire libre Área aberta |
|---|--|--|--|
| R | 0.70 | 1.00 | 1.35 |

En général, la puissance thermique du réducteur sera:

En el caso más general la potencia térmica del reductor será:

No caso mais geral, a potência térmica adequada do redutor será:

$$P_{T1} = P_T \cdot K \cdot S \cdot R$$

La puissance thermique doit être supérieure à la puissance à transmettre P dans toutes les conditions du cycle de fonctionnement.

Si la puissance thermique du réducteur est inférieure à la puissance à transmettre, même en une seule condition du cycle de fonctionnement, il faudra prévoir la mise en place d'un circuit auxiliaire de refroidissement.

Pour la sélection de ce circuit, se référer au chapitre : Graissage.

La potencia térmica debe ser mayor que la que se debe transmitir P en cualquier condición del ciclo de utilización.

Cuando es menor aunque sea en una sola condición del ciclo, es preciso instalar un circuito de enfriamiento auxiliar.

Antes de hacerlo conviene consultar el capítulo: Lubricación.

A potência térmica deve ser superior à potência a ser transmitida P em todas as condições do ciclo de trabalho.

Caso a potência térmica do redutor seja inferior à potência a ser transmitida, mesmo que somente em uma condição do eventual ciclo de trabalho, será necessário prever a presença de um circuito auxiliar de arrefecimento.

Para efetuar a seleção desses circuitos, consultar o Capítulo: Lubrificação.

$$P < P_{T1}$$

6. ESEMPIO SELEZIONE RIDUTTORE

Dati per la selezione

Motore primo:
Elettrico 1.5 kW a 1500 min⁻¹

Macchina azionata:
nastro trasportatore non uniformemente alimentato
Servizio: continuo 10 ore al giorno
Numero di avviamenti all'ora: 1
Coppia richiesta di funzionamento: 4900 Nm
Coppia massima all'avviamento: 9800 Nm
Velocità di rotazione: 1.85 min⁻¹
Vita richiesta per la trasmissione: 10000 h
Posizione di funzionamento: orizzontale
Temperatura ambiente: 30 °C
Ambiente di lavoro: grande.

Selezione del riduttore

Rapporto richiesto: 1500 / 1.85 = 810
Fattore di applicazione K_A: 1.25
Coppia per la selezione del riduttore:

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

Il riduttore da selezionare deve avere una T₂ > T_{2R} coppia di riferimento per la selezione del riduttore.

Quindi andare a pag. 33 e dalla tabella selezionare nella colonna T_N il valore immediatamente più grande del valore ottenuto (T_{2R}=6125) e cioè 6400 Nm; sulla stessa riga nella colonna "Tipo" si leggerà che il riduttore idoneo sarà una grandezza 065; dalla corrispondente pag. 104 nella tabella "Dati tecnici" selezionare il rapporto "ieff" più vicino a quello richiesto di i=810, che sarà ieff=771.8, quindi alla colonna corrispondente a 1500 min⁻¹ in corrispondenza del rapporto selezionato si leggerà un T₂=7348 Nm e di conseguenza il riduttore sarà in configurazione di "EQ4065".

La coppia massima del riduttore EQ4065
T_{2max} = 10000 Nm > 9500 Nm
La capacità termica del riduttore EQ4065
P_T = 8 kW.

Causa la temperatura ambiente occorre considerare il coefficiente K per cui la capacità termica del riduttore diventa:
P_{T1} = 8 x 0.85 = 6.8 kW
Essendo la velocità in ingresso pari a 1500 min⁻¹ il fattore S = 1

Potenza richiesta dalla applicazione:
P = 4900 x 1.9 / 9550 = 0.97 kW
Essendo 6.8 kW > 0.97 kW non risulta essere necessario alcun sistema di raffreddamento ausiliario del riduttore.

N.B. Importante

Applicazioni che:

- richiedono valori di durata diverse dalle 10000 ore
- presentano velocità in entrata diverse da quelle indicate a catalogo
- sono caratterizzate da cicli di lavoro con carichi e velocità variabili
- prevedono la presenza di carichi assiali sull'albero in ingresso / uscita del riduttore devono essere analizzate specificatamente, tramite l'ausilio di programmi di calcolo dedicati, disponibili presso l'organizzazione di vendita di Brevini Riduttori.

6. EXAMPLE SELECTION GEAR UNIT

Selection data

Prime mover:
Electric 1.5 kW a 1500 min⁻¹

Machine driven:
conveyor belt not uniformly fed
Duty: continuous 10 hours a day
Number of starts per hour: 1
Required operating torque: 4900 Nm
Max. torque on start: 9800 Nm
Rotation speed: 1.85 min⁻¹
Required transmission life: 10000 h
Operating position: horizontal
Ambient temperature: 30 °C
Working site large space

Gear unit selection

Ratio required: 1500 / 1.85 = 810
Application factor K_A: 1.25
Torque for gear unit selection:

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

The gear unit to be selected must have a T₂ > T_{2R} reference torque for gear unit selection.

Then go to page 33, from the table choose in column T_N the value immediately higher than the value obtained (T_{2R}=6125), that is 6400 Nm; in the same line of the "Type" column you can read that the right gearbox is size 065; from the corresponding page 104 in the table "Technical data" choose the "ieff" value that is nearest to the requested i=810: this ieff will be 771.8. Then from the column corresponding to 1500 min⁻¹, in correspondence to the selected ratio, you will read T₂=7348 Nm: therefore the correct gearbox will have a "EQ4065" configuration.

Max. torque of gear unit EQ4065
T_{2max} = 10000 Nm > 9500 Nm
Thermal capacity of gear unit EQ4065
P_T = 8 kW.
Due to the ambient temperature the K factor must be considered, therefore the thermal capacity of the gear unit becomes:
P_{T1} = 8 x 0.85 = 6.8 kW
As the input speed is equal to 1500 min⁻¹ the S factor = 1

Power required by the application:
P = 4900 x 1.9 / 9550 = 0.97 kW
As 6.8 kW > 0.97 kW no gear unit auxiliary cooling system is required.

NOTE Important

Applications that:

- require duration values different from 10000 h
- have different input speeds from those given in the catalogue
- are characterized by work cycles with variable speeds and loads
- foresee the presence of axial loads on the gear unit input / output shaft must be examined separately, with the aid of dedicated calculation programs, available from the Brevini Riduttori sales organization.

6. BEISPIEL EINER GETRIEBEAUSWAHL

Auswahldaten

Primärmotor:
Elektromotor 1.5 kW bei 1500 min⁻¹

Angetriebene Maschine:
Transportband mit ungleichmäßiger Beschickung
Betrieb: kontinuierlich 10 Stundentäglich
Anzahl der Starts pro Stunde: 1
Erforderliches Betriebsdrehmoment: 4900 Nm
Maximales Anfahrtdrehmoment: 9800 Nm
Drehzahl: 1.85 min⁻¹
Gewünschte Dauer: 10000 h
Einbaulage: horizontal
Umgebungstemperatur 30°C
Arbeitsumfeld groß

Getriebeauswahl

Gewünschte Übersetzung: 1500 / 1.85 = 810
Anwendungsfaktor K_A: 1.25
Drehmoment für die Getriebeauswahl:

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

Das auszuwählende Getriebe muss ein Bezugsdrehmoment von T₂ > T_{2R} für die Getriebeauswahl aufweisen.

Wählen Sie in der Tabelle auf Seite 33 in Spalte T_N den unmittelbar höheren Wert nach dem zuvor errechneten Wert (T_{2R}=6125), d.h. 6400 Nm; in derselben Zeile können Sie in der Spalte "Typ" ablesen, dass die geeignete Getriebegröße 065 ist; wählen Sie jetzt auf Seite 104 in der Tabelle "Technische Daten" den Wert "ieff", der dem gewünschten von i = 810 am nächsten kommt, d.h. ieff=771.8; in der 1500 min⁻¹ entsprechenden Spalte können Sie auf Höhe des gewünschten Verhältnisses T₂=7348 Nm ablesen; die korrekte Getriebekonfiguration ist demnach "EQ4065".

Das maximale Drehmoment des Getriebes EQ4065
T_{2max} = 10000 Nm > 9500 Nm
Wärmeleistung des Getriebes EQ4065
P_T = 8 kW
Aufgrund der Raumtemperatur muss der K - Faktor berücksichtigt werden; die Wärmeleistung des Getriebes wird demnach:
P_{T1} = 8 x 0.85 = 6.8 kW
Da die Antriebsdrehzahl 1500 min⁻¹ beträgt, ist der Faktor S = 1

Für die Anwendung erforderliche Leistung:
P = 4900 x 1.9 / 9550 = 0.97 kW
Da 6.8 kW > 0.97 kW ist kein zusätzliches Kühlsystem des Getriebes erforderlich.

Hinweis Wichtig

Anwendungen mit:

- von 10000 Betriebsstunden abweichenden Werten
- Antriebsdrehzahlen, die von den im Katalog aufgeführten Werten abweichen
- regelbaren Arbeitszyklen und Drehzahlen
- Axiallasten auf der Antriebs-/ Abtriebswelle des Getriebes müssen separat mithilfe von spezifischen Rechenprogrammen analysiert werden, die von der Vertriebsorganisation Brevini Riduttori bezogen werden können.

6. EXEMPLE DE SÉLECTION DU RÉDUCTEUR

Renseignements utiles pour la sélection

Moteur primaire :
Électrique 1,5 kW à 1500 min⁻¹

Machine menée :
bande transporteuse non uniformément alimentée
Service : continu 10 heures par jour
Nombre de démarrages par heure : 1
Couple de fonctionnement requis : 4900 Nm
Couple maximum au démarrage : 9800 Nm
Vitesse de rotation : 1.85 min⁻¹
Durée de vie requise pour la transmission : 10000 h
Position de fonctionnement : horizontale
Température ambiante 30 °C
Milieu de travail grand

Sélection du réducteur

Rapport requis: 1500 / 1,85 = 810
Facteur d'application K_A : 1,25
Couple pour la sélection du réducteur :

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

Le réducteur à sélectionner doit avoir un $T_2 > T_{2R}$ couple de référence pour la sélection du réducteur.

Donc, aller à la page 33 et sélectionner dans la colonne T_N du tableau la valeur immédiatement plus grande de la valeur obtenue ($T_{2R}=6125$), à savoir 6400 Nm; sur la même ligne dans la colonne "Type" on pourra déduire que le réducteur adapté sera de grandeur 065; dans le tableau "Caractéristiques techniques" de la page 104, sélectionner le rapport "ieff" le plus près de celui requis de $i=810$, qui sera $ieff=771.8$, donc, dans la colonne correspondant à 1500 min⁻¹ à la hauteur du rapport sélectionné, on lira un $T_2=7348$ Nm et, par conséquent, la configuration du réducteur sera "EQ4065".

Le couple maximum du réducteur EQ4065
 $T_{2max} = 10000 \text{ Nm} > 9500 \text{ Nm}$

La capacité thermique du réducteur EQ4065
 $P_T = 8 \text{ kW}$.
Il faut tenir compte du coefficient K à cause de la température ambiante, raison pour laquelle la capacité thermique du réducteur résultera:
 $P_{T1} = 8 \times 0.85 = 6.8 \text{ kW}$
La vitesse en entrée étant égale à 1500 min⁻¹, le facteur $S = 1$

Puissance requise par l'application:
 $P = 4900 \times 1.9 / 9550 = 0.97 \text{ kW}$
Puisque $6.8 \text{ kW} > 0.97 \text{ kW}$ aucun système de refroidissement auxiliaire du réducteur n'est nécessaire.

N.B. Important

Applications qui :

- demandent des durées de fonctionnement différentes de 10000 h,
- présentent des vitesses en entrée différentes de celles indiquées au catalogue
- sont caractérisées par des cycles de fonctionnement à charges et vitesses variables
- prévoient des charges axiales sur l'arbre en entrée/sortie du réducteur, doivent être examinées séparément, à l'aide de programmes de calcul dédiés, disponibles auprès du réseau de vente Brevini Riduttori.

6. EJEMPLO DE SELECCIÓN DEL REDUCTOR

Datos necesarios

Motor principal:
Eléctrico 1,5 kW a 1500 min⁻¹

Máquina accionada:
cinta transportadora con alimentación no uniforme
Servicio: continuo 10 horas diarias
Arranques por hora: 1
Par de funcionamiento objetivo: 4900 Nm
Par máximo de arranque: 9800 Nm
Velocidad de rotación: 1.85 min⁻¹
Vida mínima de la transmisión: 10000 h
Posición de funcionamiento: horizontal
Temperatura ambiente 30 °C
Ambiente de trabajo grande

Selección del reductor

Relación necesaria: 1500 / 1,85 = 810
Factor de aplicación K_A : 1.25
Par para seleccionar el reductor:

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

El reductor debe tener una $T_2 > T_{2R}$ par de referencia para seleccionar el reductor.
Ir a la pág. 33 y en la columna T_N de la tabla seleccionar el valor mayor más cercano al resultado obtenido ($T_{2R}=6125$), es decir 6400

Nm; en el mismo renglón en la columna "Tipo" se encuentra el reductor idóneo para el 065; ir a la pág. 104 y en la tabla "Datos técnicos" seleccionar la relación "ieff" más cercana a $i=810$, que será $ieff=771.8$; en la columna de 1500 min⁻¹ para la relación seleccionada aparecerá un $T_2=7348$ Nm y el reductor tendrá una configuración "EQ4065".

Par máximo del reductor EQ4065 $T_{2max} = 10000 \text{ Nm} > 9500 \text{ Nm}$

Capacidad térmica del reductor EQ4065
 $P_T = 8 \text{ kW}$.
Debido a la temperatura ambiente hay que aplicar el coeficiente K.
La capacidad térmica del reductor será:
 $P_{T1} = 8 \times 0.85 = 6.8 \text{ kW}$
Como la velocidad de entrada es 1500 min⁻¹, hay que aplicar un factor $S = 1$

Potencia objetivo de la aplicación:
 $P = 4900 \times 1.9 / 9550 = 0.97 \text{ kW}$
Como $6.8 \text{ kW} > 0.97 \text{ kW}$ no es necesario añadir sistema auxiliar de enfriamiento del reductor.

N.B. Importante

Las aplicaciones que:

- contemplan una duración mayor o menor que 10000 horas
- tienen velocidades de entrada diferentes de las que indica el catálogo
- se caracterizan porque los ciclos de trabajo tienen cargas y velocidades variables
- contemplan la presencia de cargas axiales en el eje de entrada o de salida del reductor se deben analizar por separado, por medio de programas de cálculo especiales que pueden solicitarse a la oficina comercial de Brevini Riduttori.

6. EXEMPLO DE SELEÇÃO DE REDUTOR

Dados para a seleção

Primeiro motor:
Elétrico 1,5 kW a 1500 min⁻¹

Máquina accionada:
fita transportadora não uniformemente alimentada
Serviço: contínuo de 10 horas por dia
Número de partidas por hora: 1
Torque de funcionamento requerido: 4900 Nm
Torque máximo na partida: 9800 Nm
Velocidade de rotação: 1.85 min⁻¹
Vida útil requerida para a transmissão: 10000 h
Posição de funcionamento: horizontal
Temperatura ambiente 30 °C
Ambiente de trabalho grande

Seleção do reductor

Relação requerida: 1500 / 1,85 = 810
Fator de aplicação K_A : 1.25
Torque para a seleção do reductor:

$$T_{2R} = 5000 \times K_A \times CS = 6125 \text{ Nm}$$

O reductor a ser selecionado deve ter um $T_2 > T_{2R}$ torque de referência para a seleção do reductor.

Portanto, ir à pág. 33 e, na tabela, selecionar na coluna T_N o valor imediatamente maior que o valor obtido ($T_{2R}=6125$), isto é, 6400 Nm; na mesma linha da coluna "Tipo" se lerá que o reductor idóneo terá um tamanho de 065; na pág. 104 correspondente, na tabela "Dados técnicos", selecionar a relação "ieff" mais próxima àquela solicitada de $i=810$, que será $ieff=771.8$, assim, ir à coluna equivalente a 1500 min⁻¹. Em correspondência à relação selecionada, será lido $T_2=7348$ Nm e, assim, o reductor terá uma configuração de "EQ4065".

O torque máximo do reductor EQ4065 $T_{2max} = 10000 \text{ Nm} > 9500 \text{ Nm}$

A capacidade térmica do reductor EQ4065
 $P_T = 8 \text{ kW}$.
Em função da temperatura ambiente, é necessário considerar o coeficiente K, em função do qual a capacidade térmica do reductor tornase:
 $P_{T1} = 8 \times 0.85 = 6.8 \text{ kW}$
Sendo a velocidade na entrada igual a 1500 min⁻¹, o fator $S = 1$

Potência requerida pela aplicação:
 $P = 4900 \times 1.9 / 9550 = 0.97 \text{ kW}$
Sendo $6.8 \text{ kW} > 0.97 \text{ kW}$ não é necessário nenhum sistema de arrefecimento auxiliar para o reductor.

OBS. Importante

Aplicações que:



- requerem valores de duração diferentes das 10000 horas
- apresentem velocidades na entrada diferentes daquelas indicadas no catálogo
- são caracterizadas por ciclos de trabalho com cargas e velocidades variáveis
- preveem a presença de cargas axiais no eixo de entrada/saída do reductor devem ser analisadas especificamente com o auxílio de programas de cálculo dedicado, disponíveis na organização de vendas da Brevini Riduttori.

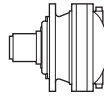
7. DATI TECNICI E TAVOLE DIMENSIONALI
TECHNICAL DATA AND DIMENSIONAL DRAWINGS
TECHNISCHE DATEN UND MASSBILDER
CARACTERISTIQUES TECHNIQUES ET PLANCHES DES DIMENSIONS
DATOS TÉCNICOS Y DISEÑOS DIMENSIONALES
DADOS TÉCNICOS E TABELAS DIMENSIONAIS



Serie Standard / Standard Series
Serie Standard / Série Standard
Serie Standard / Série Standard

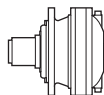
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| Type | i_{eff} | T_N [Nm] |  |  | |
|------------|--------------|---------------|---|---|------------|
| 010 | 3.38 - 3282 | <i>1000</i> | B40x36 DIN5482 | 42 | <i>34</i> |
| 020 | 3.08 - 3235 | <i>2100</i> | B58x53 DIN5482 | 65 | <i>46</i> |
| 030 | 15.37 - 3097 | <i>3800</i> | B58x53 DIN5482 | 65 | <i>60</i> |
| 040 | 15.37 - 3170 | <i>3800</i> | B58x53 DIN5482 | 65 | <i>72</i> |
| 045 | 3.50 - 3301 | <i>3800</i> | B58x53 DIN5482 | 65 | <i>80</i> |
| 046 | 3.50 - 3301 | <i>3800</i> | B58x53 DIN5482 | 65 | <i>94</i> |
| 065 | 3.50 - 3170 | <i>6400</i> | B70x64 DIN5482 | 65 | <i>104</i> |
| 067 | 12.25-201.0 | <i>6400</i> | B70x64 DIN5482 | 65 | <i>118</i> |
| 090 | 4.08 - 3207 | <i>9200</i> | B80x74 DIN5482 | 90 | <i>132</i> |
| 091 | 11.22-42.37 | <i>9200</i> | B80x74 DIN5482 | 90 | <i>146</i> |
| 150 | 3.90-3460 | <i>13000</i> | B80x74 DIN5482 | 100 | <i>156</i> |
| 155 | 19.50-272.7 | <i>13000</i> | B80x74 DIN5482 | 100 | <i>170</i> |
| 250 | 4.04 - 2741 | <i>20000</i> | B100x94 DIN5482 | 110 | <i>184</i> |
| 255 | 16.48-2744 | <i>20000</i> | B100x94 DIN5482 | 110 | <i>196</i> |
| 320 | 19.95-245.3 | <i>25000</i> | B100x94 DIN5482 | 110 | <i>208</i> |



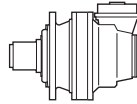
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1010 | | | | | | | | | | | |
| 3.38 | 444 | 410 | 19.1 | 296 | 463 | 14.4 | 148 | 570 | 8.8 | 1600 | 12 |
| 4.39 | 342 | 431 | 15.4 | 228 | 487 | 11.6 | 114 | 600 | 7.2 | 1600 | |
| 6.00 | 250 | 412 | 10.8 | 167 | 453 | 7.9 | 83 | 510 | 4.5 | 1600 | |
| 6.94 | 216 | 387 | 8.8 | 144 | 407 | 6.2 | 72 | 457 | 3.5 | 1600 | |
| 10.50 | 143 | 206 | 3.1 | 95 | 213 | 2.1 | 47.6 | 224 | 1.1 | 1600 | |
| ED 2010 | | | | | | | | | | | |
| 11.42 | 131 | 591 | 8.1 | 88 | 667 | 6.1 | 43.8 | 821 | 3.8 | 1600 | 8 |
| 14.84 | 101 | 639 | 6.8 | 67 | 722 | 5.1 | 33.7 | 889 | 3.1 | 1600 | |
| 19.27 | 78 | 672 | 5.5 | 52 | 759 | 4.1 | 25.9 | 816 | 2.2 | 1600 | |
| 20.28 | 74 | 702 | 5.4 | 49.3 | 793 | 4.1 | 24.7 | 916 | 2.4 | 1600 | |
| 23.46 | 64 | 733 | 4.9 | 42.6 | 828 | 3.7 | 21.3 | 921 | 2.1 | 1600 | |
| 26.34 | 57 | 738 | 4.4 | 38.0 | 803 | 3.2 | 19.0 | 825 | 1.6 | 1600 | |
| 30.47 | 49.2 | 771 | 4.0 | 32.8 | 808 | 2.8 | 16.4 | 829 | 1.4 | 1600 | |
| 36.00 | 41.7 | 561 | 2.4 | 27.8 | 589 | 1.7 | 13.9 | 636 | 0.93 | 1600 | |
| 41.64 | 36.0 | 571 | 2.2 | 24.0 | 599 | 1.5 | 12.0 | 646 | 0.81 | 1600 | |
| 48.16 | 31.1 | 512 | 1.7 | 20.8 | 537 | 1.2 | 10.4 | 581 | 0.63 | 1600 | |
| ET 3010 | | | | | | | | | | | |
| 65.14 | 23.0 | 918 | 2.2 | 15.4 | 931 | 1.5 | 7.7 | 952 | 0.77 | 1600 | 5 |
| 68.55 | 21.9 | 920 | 2.1 | 14.6 | 933 | 1.4 | 7.3 | 954 | 0.73 | 1600 | |
| 79.29 | 18.9 | 925 | 1.8 | 12.6 | 937 | 1.2 | 6.3 | 958 | 0.63 | 1600 | |
| 89.03 | 16.8 | 928 | 1.6 | 11.2 | 941 | 1.1 | 5.6 | 961 | 0.57 | 1600 | |
| 103.0 | 14.6 | 933 | 1.4 | 9.7 | 945 | 1.0 | 4.9 | 966 | 0.49 | 1600 | |
| 115.6 | 13.0 | 836 | 1.1 | 8.6 | 847 | 0.77 | 4.3 | 865 | 0.39 | 1600 | |
| 121.7 | 12.3 | 938 | 1.2 | 8.2 | 950 | 0.82 | 4.1 | 970 | 0.42 | 1600 | |
| 140.7 | 10.7 | 943 | 1.1 | 7.1 | 955 | 0.71 | 3.6 | 975 | 0.36 | 1600 | |
| 162.8 | 9.2 | 947 | 0.91 | 6.1 | 959 | 0.62 | 3.1 | 979 | 0.32 | 1600 | |
| 182.8 | 8.2 | 848 | 0.73 | 5.5 | 859 | 0.49 | 2.7 | 877 | 0.25 | 1600 | |
| 211.4 | 7.1 | 852 | 0.63 | 4.7 | 863 | 0.43 | 2.4 | 880 | 0.22 | 1600 | |
| 216.0 | 6.9 | 684 | 0.50 | 4.6 | 732 | 0.36 | 2.3 | 799 | 0.19 | 1600 | |
| 246.3 | 6.1 | 959 | 0.61 | 4.1 | 971 | 0.41 | 2.0 | 990 | 0.21 | 1600 | |
| 276.6 | 5.4 | 859 | 0.49 | 3.6 | 870 | 0.33 | 1.8 | 887 | 0.17 | 1600 | |
| 319.9 | 4.7 | 863 | 0.42 | 3.1 | 873 | 0.29 | 1.6 | 900 | 0.15 | 1600 | |
| 372.6 | 4.0 | 824 | 0.35 | 2.7 | 846 | 0.24 | 1.3 | 883 | 0.12 | 1600 | |
| 378.0 | 4.0 | 759 | 0.32 | 2.6 | 796 | 0.22 | 1.3 | 854 | 0.12 | 1600 | |
| 437.2 | 3.4 | 786 | 0.28 | 2.3 | 800 | 0.19 | 1.1 | 873 | 0.11 | 1600 | |
| 484.0 | 3.1 | 874 | 0.28 | 2.1 | 884 | 0.19 | 1.0 | 961 | 0.10 | 1600 | |
| 661.5 | 2.3 | 800 | 0.19 | 1.5 | 836 | 0.13 | 0.76 | 930 | 0.07 | 1600 | |
| 765.1 | 2.0 | 772 | 0.16 | 1.3 | 823 | 0.11 | 0.65 | 915 | 0.06 | 1600 | |

1500
HOURS LIFE



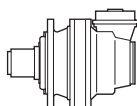
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| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1010 | | | | | | | | | | | |
| 3.38 | 444 | 724 | 33.7 | 296 | 810 | 25.1 | 148 | 877 | 13.6 | 1600 | 12 |
| 4.39 | 342 | 707 | 25.3 | 228 | 750 | 17.9 | 114 | 800 | 9.5 | 1600 | |
| 6.00 | 250 | 522 | 13.7 | 167 | 565 | 9.9 | 83 | 628 | 5.5 | 1600 | |
| 6.94 | 216 | 476 | 10.8 | 144 | 512 | 7.7 | 72 | 567 | 4.3 | 1600 | |
| 10.50 | 143 | 232 | 3.5 | 95 | 240 | 2.4 | 47.6 | 252 | 1.3 | 1600 | |
| ED 2010 | | | | | | | | | | | |
| 11.42 | 131 | 886 | 12.2 | 88 | 911 | 8.4 | 43.8 | 944 | 4.3 | 1600 | 8 |
| 14.84 | 101 | 903 | 9.6 | 67 | 925 | 6.5 | 33.7 | 955 | 3.4 | 1600 | |
| 19.27 | 78 | 819 | 6.7 | 52 | 837 | 4.5 | 25.9 | 861 | 2.3 | 1600 | |
| 20.28 | 74 | 920 | 7.1 | 49.3 | 939 | 4.9 | 24.7 | 966 | 2.5 | 1600 | |
| 23.46 | 64 | 927 | 6.2 | 42.6 | 945 | 4.2 | 21.3 | 971 | 2.2 | 1600 | |
| 26.34 | 57 | 833 | 5.0 | 38.0 | 848 | 3.4 | 19.0 | 871 | 1.7 | 1600 | |
| 30.47 | 49.2 | 839 | 4.3 | 32.8 | 853 | 2.9 | 16.4 | 875 | 1.5 | 1600 | |
| 36.00 | 41.7 | 684 | 3.0 | 27.8 | 745 | 2.2 | 13.9 | 799 | 1.2 | 1600 | |
| 41.64 | 36.0 | 698 | 2.6 | 24.0 | 772 | 1.9 | 12.0 | 811 | 1.0 | 1600 | |
| 48.16 | 31.1 | 628 | 2.0 | 20.8 | 696 | 1.5 | 10.4 | 799 | 0.87 | 1600 | |
| ET 3010 | | | | | | | | | | | |
| 65.14 | 23.0 | 969 | 2.3 | 15.4 | 982 | 1.6 | 7.7 | 1027 | 0.83 | 1600 | 5 |
| 68.55 | 21.9 | 971 | 2.2 | 14.6 | 984 | 1.5 | 7.3 | 1036 | 0.79 | 1600 | |
| 79.29 | 18.9 | 976 | 1.9 | 12.6 | 989 | 1.3 | 6.3 | 1060 | 0.70 | 1600 | |
| 89.03 | 16.8 | 979 | 1.7 | 11.2 | 993 | 1.2 | 5.6 | 1080 | 0.64 | 1600 | |
| 103.0 | 14.6 | 984 | 1.5 | 9.7 | 997 | 1.0 | 4.9 | 1105 | 0.56 | 1600 | |
| 115.6 | 13.0 | 882 | 1.2 | 8.6 | 925 | 0.84 | 4.3 | 1032 | 0.47 | 1600 | |
| 121.7 | 12.3 | 990 | 1.3 | 8.2 | 1016 | 0.88 | 4.1 | 1134 | 0.49 | 1600 | |
| 140.7 | 10.7 | 994 | 1.1 | 7.1 | 1040 | 0.77 | 3.6 | 1160 | 0.43 | 1600 | |
| 162.8 | 9.2 | 999 | 0.96 | 6.1 | 1064 | 0.69 | 3.1 | 1186 | 0.38 | 1600 | |
| 182.8 | 8.2 | 932 | 0.80 | 5.5 | 994 | 0.57 | 2.7 | 1107 | 0.32 | 1600 | |
| 211.4 | 7.1 | 954 | 0.71 | 4.7 | 1017 | 0.50 | 2.4 | 1132 | 0.28 | 1600 | |
| 216.0 | 6.9 | 884 | 0.64 | 4.6 | 942 | 0.46 | 2.3 | 1045 | 0.25 | 1600 | |
| 246.3 | 6.1 | 1066 | 0.68 | 4.1 | 1136 | 0.48 | 2.0 | 1263 | 0.27 | 1600 | |
| 276.6 | 5.4 | 996 | 0.57 | 3.6 | 1061 | 0.40 | 1.8 | 1178 | 0.22 | 1600 | |
| 319.9 | 4.7 | 1019 | 0.50 | 3.1 | 1085 | 0.36 | 1.6 | 1204 | 0.20 | 1600 | |
| 372.6 | 4.0 | 957 | 0.40 | 2.7 | 1018 | 0.29 | 1.3 | 1131 | 0.16 | 1600 | |
| 378.0 | 4.0 | 964 | 0.40 | 2.6 | 1025 | 0.28 | 1.3 | 1135 | 0.16 | 1600 | |
| 437.2 | 3.4 | 985 | 0.35 | 2.3 | 1047 | 0.25 | 1.1 | 1160 | 0.14 | 1600 | |
| 484.0 | 3.1 | 1086 | 0.35 | 2.1 | 1155 | 0.25 | 1.0 | 1281 | 0.14 | 1600 | |
| 661.5 | 2.3 | 1049 | 0.25 | 1.5 | 1113 | 0.18 | 0.76 | 1231 | 0.10 | 1600 | |
| 765.1 | 2.0 | 1032 | 0.21 | 1.3 | 1095 | 0.15 | 0.65 | 1211 | 0.08 | 1600 | |



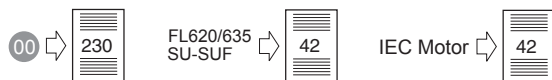
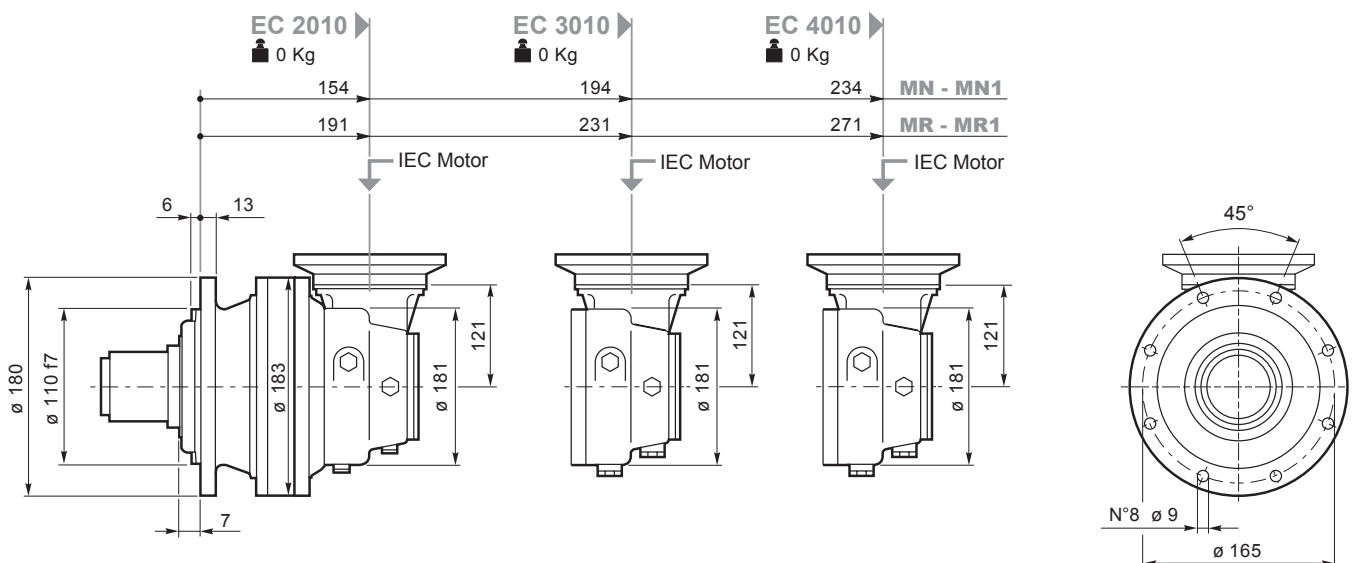
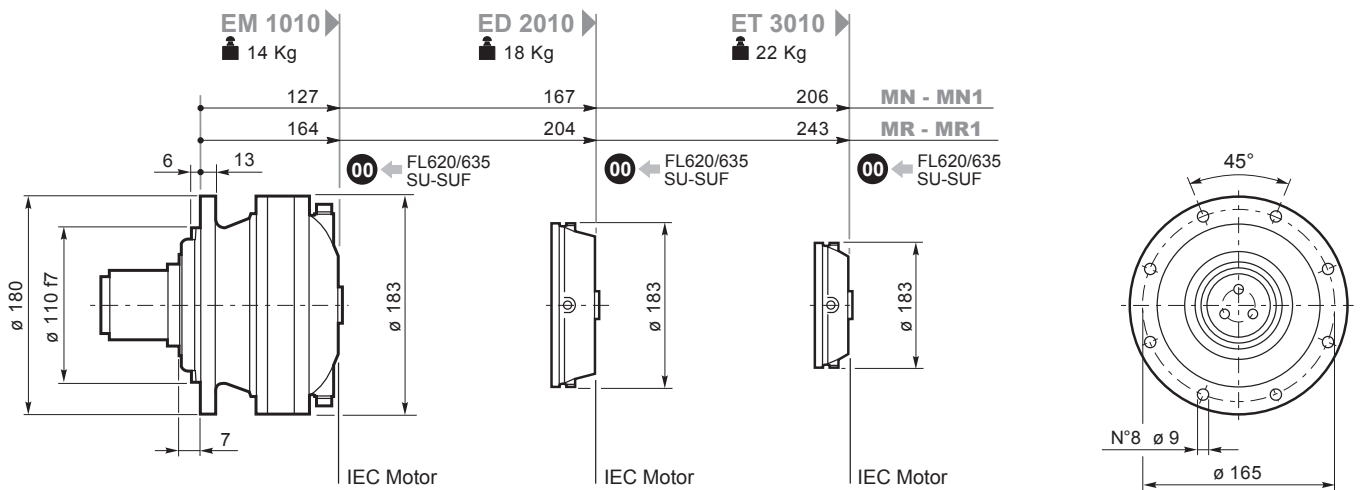
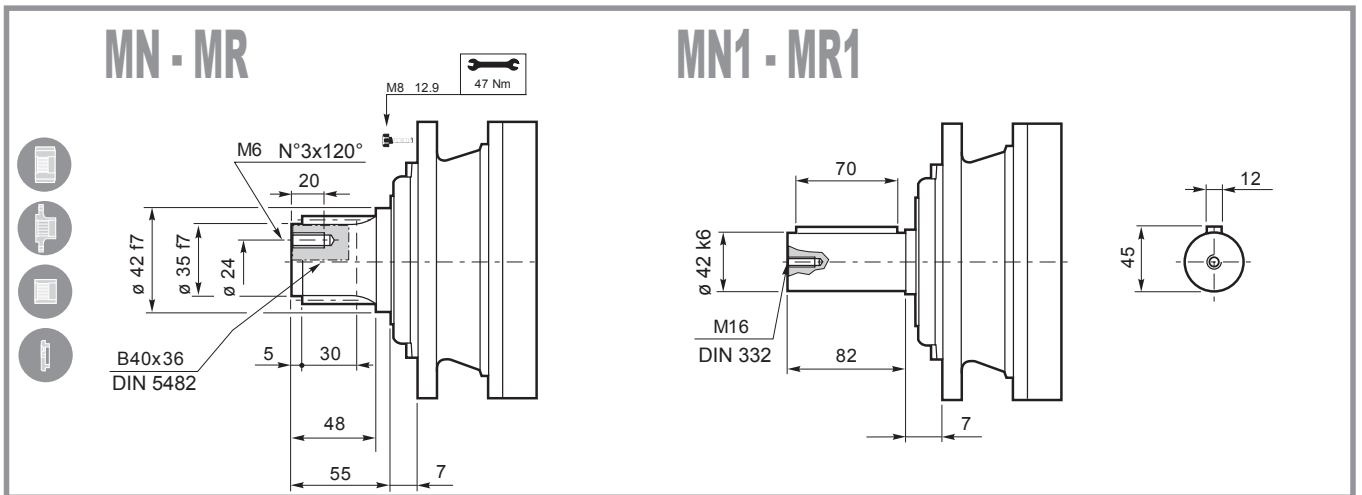
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|---------------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 2010 - PDA 2010 | | | | | | | | | | | |
| 10.14 | 148 | 331 | 5.1 | 99 | 374 | 3.9 | 49.3 | 460 | 2.4 | 1600 | 5 |
| 13.17 | 114 | 430 | 5.1 | 76 | 486 | 3.9 | 38.0 | 598 | 2.4 | 1600 | |
| 16.53 | 91 | 330 | 3.1 | 61 | 373 | 2.4 | 30.3 | 459 | 1.5 | 1600 | |
| 18.00 | 83 | 510 | 4.5 | 56 | 540 | 3.1 | 27.8 | 589 | 1.7 | 1600 | |
| 21.47 | 70 | 429 | 3.1 | 46.6 | 485 | 2.4 | 23.3 | 597 | 1.5 | 1600 | |
| 29.34 | 51 | 546 | 2.9 | 34.1 | 575 | 2.1 | 17.0 | 622 | 1.1 | 1600 | |
| 33.94 | 44.2 | 489 | 2.3 | 29.5 | 515 | 1.6 | 14.7 | 559 | 0.86 | 1600 | |
| 40.68 | 36.9 | 524 | 2.0 | 24.6 | 592 | 1.5 | 12.3 | 645 | 0.83 | 1600 | |
| 47.05 | 31.9 | 510 | 1.7 | 21.3 | 536 | 1.2 | 10.6 | 580 | 0.65 | 1600 | |
| EC 3010 - PDA 3010 | | | | | | | | | | | |
| 34.27 | 43.8 | 821 | 3.8 | 29.2 | 910 | 2.8 | 14.6 | 933 | 1.4 | 1600 | 4 |
| 44.51 | 33.7 | 889 | 3.1 | 22.5 | 919 | 2.2 | 11.2 | 941 | 1.1 | 1600 | |
| 55.87 | 26.9 | 913 | 2.6 | 17.9 | 926 | 1.7 | 9.0 | 948 | 0.89 | 1600 | |
| 60.84 | 24.7 | 916 | 2.4 | 16.4 | 929 | 1.6 | 8.2 | 950 | 0.82 | 1600 | |
| 72.56 | 20.7 | 922 | 2.0 | 13.8 | 935 | 1.4 | 6.9 | 955 | 0.69 | 1600 | |
| 77.46 | 19.4 | 924 | 1.9 | 12.9 | 937 | 1.3 | 6.5 | 957 | 0.65 | 1600 | |
| 91.40 | 16.4 | 829 | 1.4 | 10.9 | 841 | 0.96 | 5.5 | 859 | 0.49 | 1600 | |
| 99.17 | 15.1 | 932 | 1.5 | 10.1 | 944 | 1.0 | 5.0 | 965 | 0.51 | 1600 | |
| 114.7 | 13.1 | 936 | 1.3 | 8.7 | 949 | 0.87 | 4.4 | 969 | 0.44 | 1600 | |
| 128.8 | 11.6 | 839 | 1.0 | 7.8 | 850 | 0.69 | 3.9 | 868 | 0.35 | 1600 | |
| 137.5 | 10.9 | 942 | 1.1 | 7.3 | 954 | 0.73 | 3.6 | 974 | 0.37 | 1600 | |
| 159.0 | 9.4 | 946 | 0.94 | 6.3 | 958 | 0.63 | 3.1 | 978 | 0.32 | 1600 | |
| 173.5 | 8.6 | 785 | 0.71 | 5.8 | 806 | 0.49 | 2.9 | 842 | 0.25 | 1600 | |
| 206.6 | 7.3 | 852 | 0.65 | 4.8 | 862 | 0.44 | 2.4 | 880 | 0.22 | 1600 | |
| 225.4 | 6.7 | 854 | 0.60 | 4.4 | 864 | 0.40 | 2.2 | 882 | 0.21 | 1600 | |
| 240.6 | 6.2 | 801 | 0.52 | 4.2 | 823 | 0.36 | 2.1 | 859 | 0.19 | 1600 | |
| 282.3 | 5.3 | 708 | 0.39 | 3.5 | 780 | 0.29 | 1.8 | 815 | 0.15 | 1600 | |
| 312.5 | 4.8 | 862 | 0.43 | 3.2 | 873 | 0.29 | 1.6 | 896 | 0.15 | 1600 | |
| 356.3 | 4.2 | 650 | 0.29 | 2.8 | 718 | 0.21 | 1.4 | 813 | 0.12 | 1600 | |
| 427.1 | 3.5 | 782 | 0.29 | 2.3 | 799 | 0.20 | 1.2 | 870 | 0.11 | 1600 | |
| 494.1 | 3.0 | 704 | 0.22 | 2.0 | 769 | 0.16 | 1.0 | 856 | 0.09 | 1600 | |
| EC 4010 - PDA 4010 | | | | | | | | | | | |
| 150.5 | 10.0 | 945 | 0.99 | 6.6 | 957 | 0.67 | 3.3 | 976 | 0.34 | 1600 | 2.2 |
| 188.8 | 7.9 | 951 | 0.79 | 5.3 | 963 | 0.53 | 2.6 | 983 | 0.27 | 1600 | |
| 205.6 | 7.3 | 954 | 0.73 | 4.9 | 966 | 0.49 | 2.4 | 985 | 0.25 | 1600 | |
| 261.8 | 5.7 | 961 | 0.58 | 3.8 | 973 | 0.39 | 1.9 | 992 | 0.20 | 1600 | |
| 267.1 | 5.6 | 961 | 0.57 | 3.7 | 973 | 0.38 | 1.9 | 993 | 0.20 | 1600 | |
| 318.5 | 4.7 | 967 | 0.48 | 3.1 | 978 | 0.32 | 1.6 | 998 | 0.16 | 1600 | |
| 359.9 | 4.2 | 970 | 0.42 | 2.8 | 982 | 0.29 | 1.4 | 1001 | 0.15 | 1600 | |
| 387.7 | 3.9 | 972 | 0.39 | 2.6 | 984 | 0.27 | 1.3 | 1011 | 0.14 | 1600 | |
| 441.6 | 3.4 | 976 | 0.35 | 2.3 | 987 | 0.23 | 1.1 | 1032 | 0.12 | 1600 | |
| 503.6 | 3.0 | 980 | 0.31 | 2.0 | 991 | 0.21 | 0.99 | 1054 | 0.11 | 1600 | |
| 537.6 | 2.8 | 981 | 0.29 | 1.9 | 993 | 0.19 | 0.93 | 1065 | 0.10 | 1600 | |
| 638.8 | 2.3 | 986 | 0.24 | 1.6 | 998 | 0.16 | 0.78 | 1094 | 0.09 | 1600 | |
| 688.2 | 2.2 | 988 | 0.23 | 1.5 | 1000 | 0.15 | 0.73 | 1106 | 0.08 | 1600 | |
| 813.3 | 1.8 | 993 | 0.19 | 1.2 | 1019 | 0.13 | 0.61 | 1135 | 0.07 | 1600 | |
| 893.9 | 1.7 | 890 | 0.16 | 1.1 | 949 | 0.11 | 0.56 | 1057 | 0.06 | 1600 | |
| 1056 | 1.4 | 1001 | 0.15 | 0.95 | 1062 | 0.11 | 0.47 | 1182 | 0.06 | 1600 | |
| 1104 | 1.4 | 1003 | 0.14 | 0.91 | 1069 | 0.10 | 0.45 | 1190 | 0.06 | 1600 | |
| 1204 | 1.2 | 1017 | 0.13 | 0.83 | 1084 | 0.09 | 0.42 | 1206 | 0.05 | 1600 | |
| 1444 | 1.0 | 1046 | 0.11 | 0.69 | 1115 | 0.08 | 0.35 | 1239 | 0.05 | 1600 | |
| 1670 | 0.90 | 1070 | 0.10 | 0.60 | 1140 | 0.07 | 0.30 | 1267 | 0.04 | 1600 | |
| 1822 | 0.82 | 914 | 0.08 | 0.55 | 972 | 0.06 | 0.27 | 1080 | 0.03 | 1600 | |
| 1959 | 0.77 | 929 | 0.07 | 0.51 | 987 | 0.05 | 0.26 | 1094 | 0.03 | 1600 | |
| 2169 | 0.69 | 1023 | 0.07 | 0.46 | 1088 | 0.05 | 0.23 | 1208 | 0.03 | 1600 | |
| 2527 | 0.59 | 961 | 0.06 | 0.40 | 1022 | 0.04 | 0.20 | 1135 | 0.02 | 1600 | |
| 2964 | 0.51 | 989 | 0.05 | 0.34 | 1050 | 0.04 | 0.17 | 1163 | 0.02 | 1600 | |
| 3282 | 0.46 | 1090 | 0.05 | 0.30 | 1158 | 0.04 | 0.15 | 1284 | 0.02 | 1600 | |

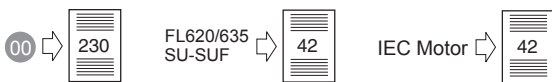
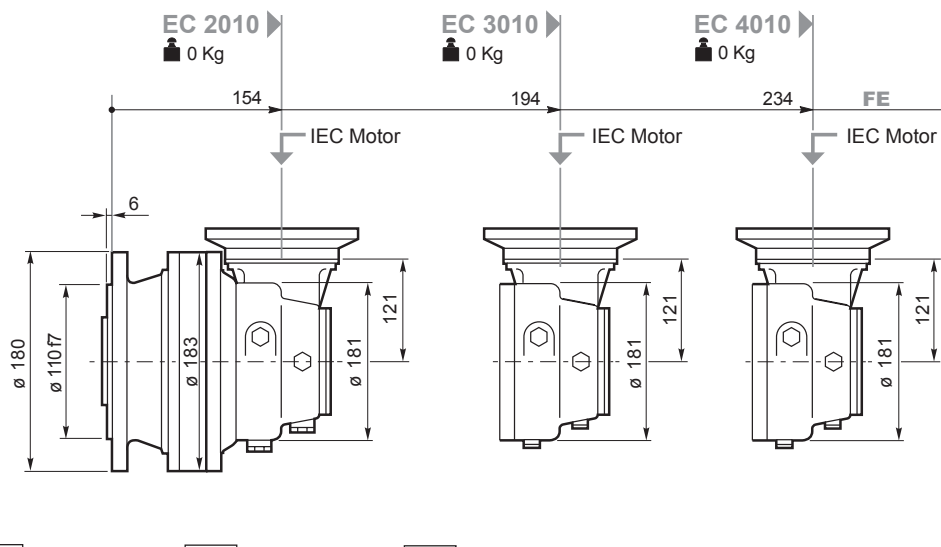
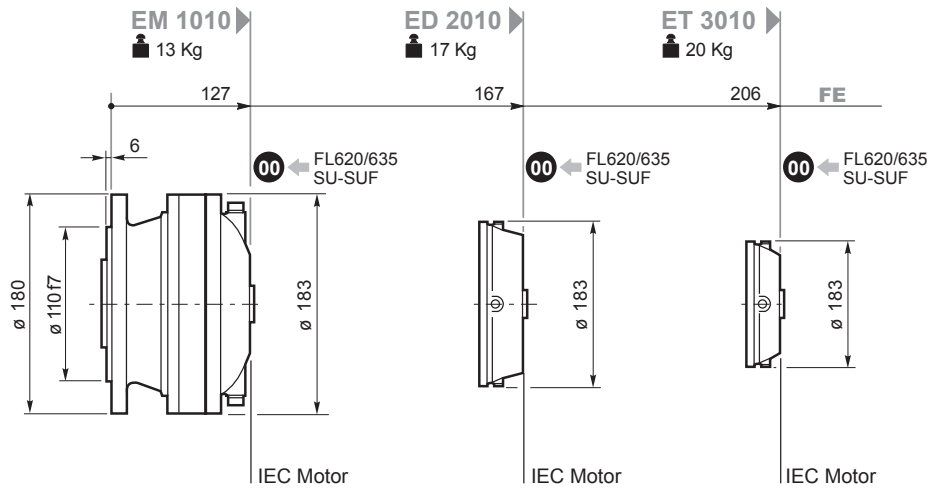
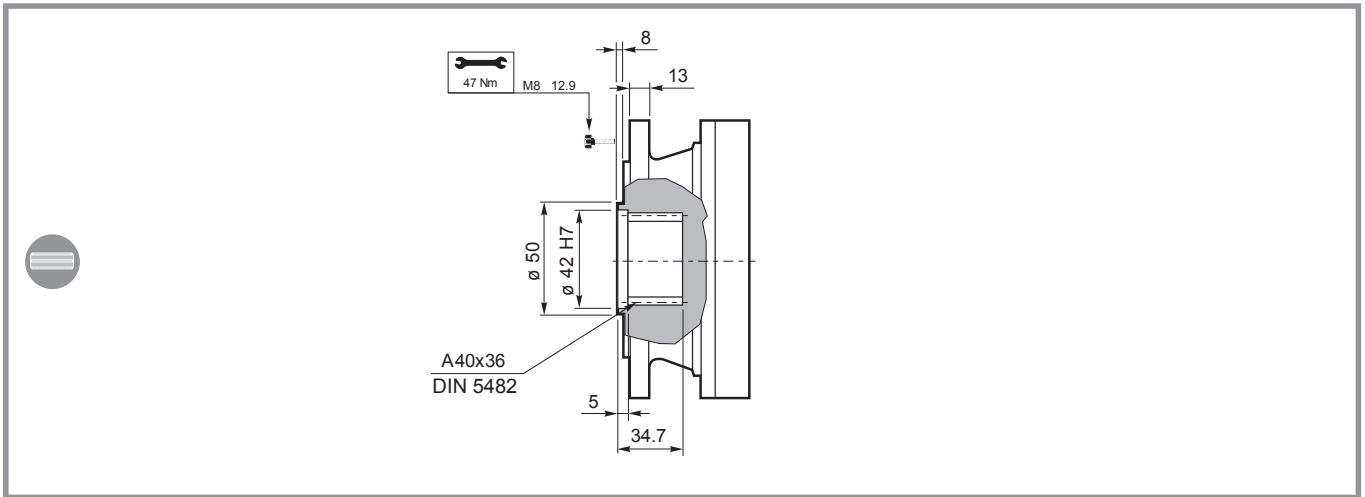
1500
HOURS LIFE

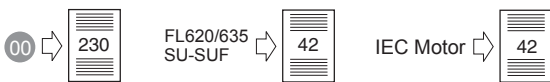
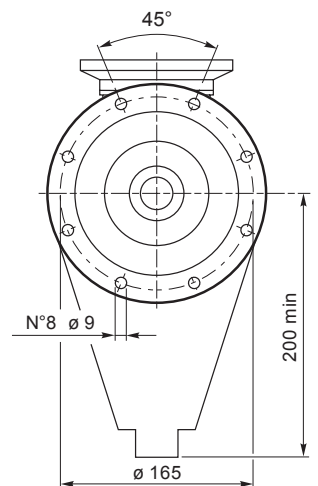
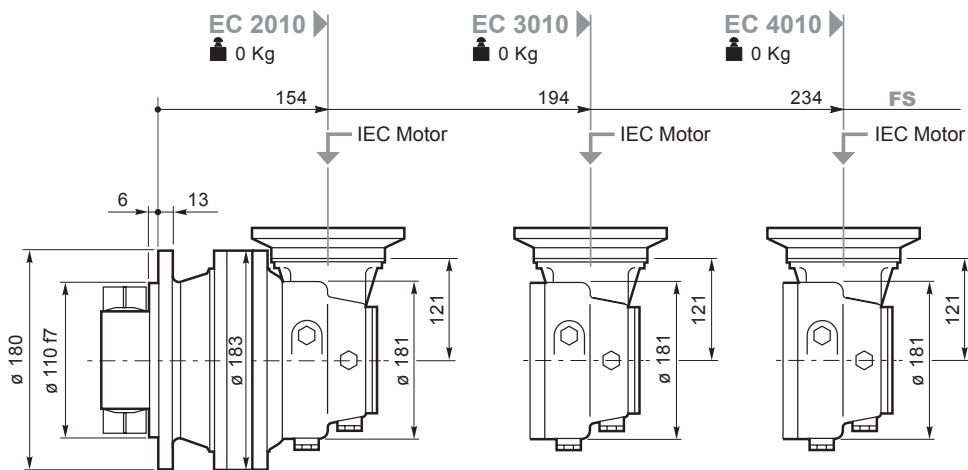
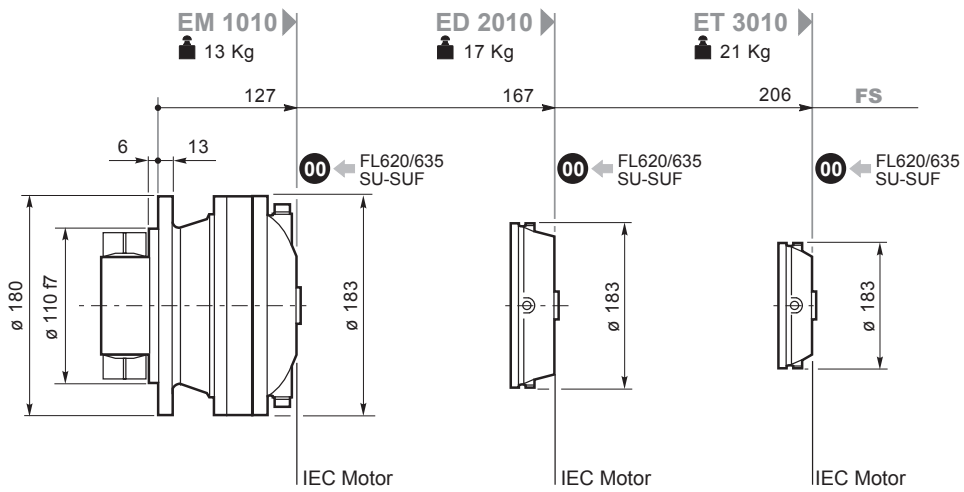
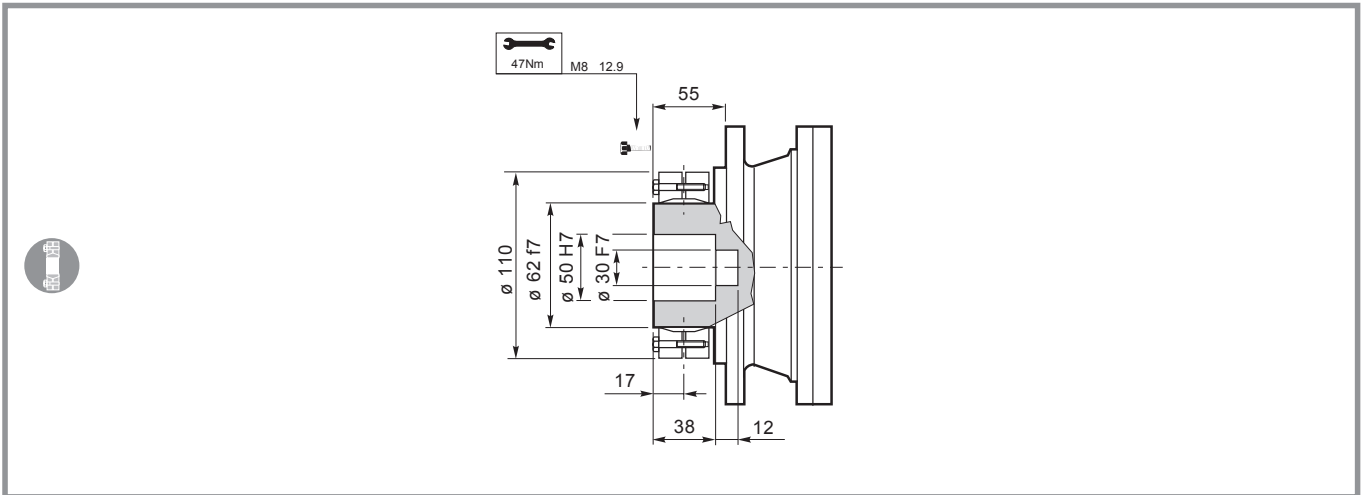


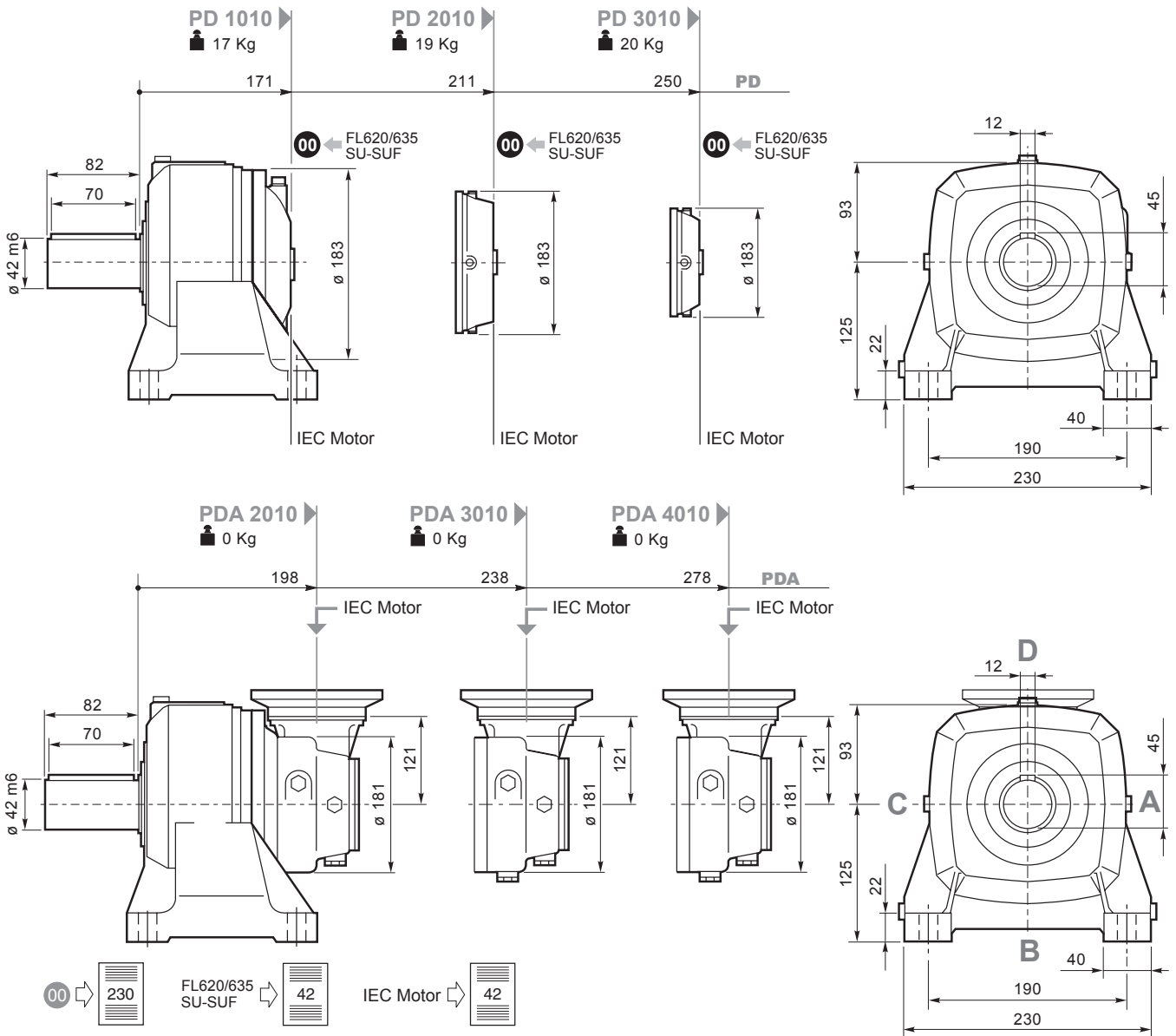
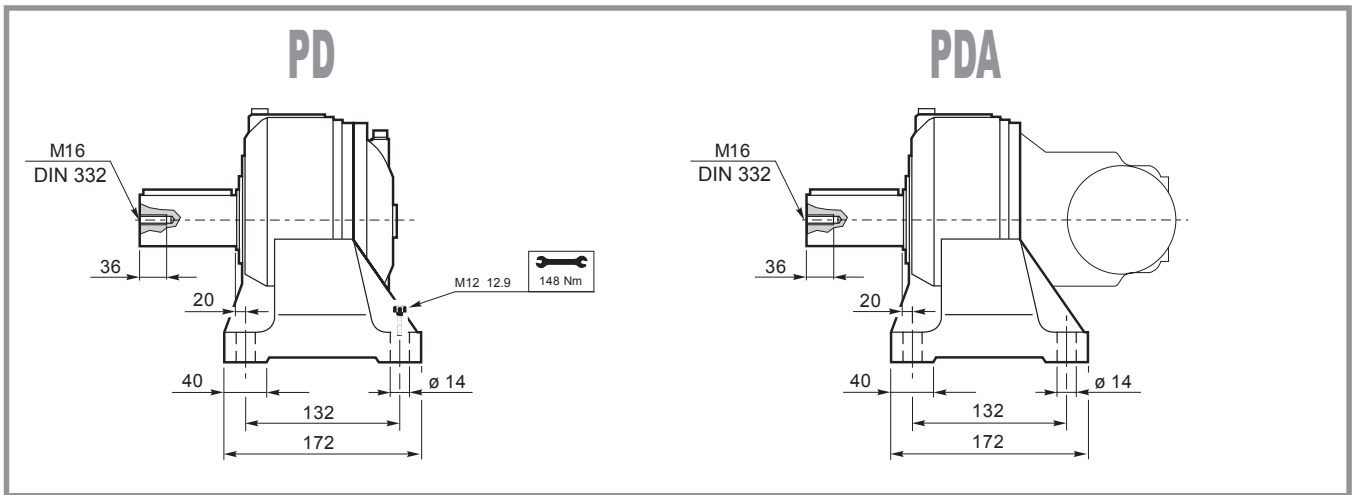
010

| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P _T [kW] |
|---------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|---------------------------|------------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |
| EC 2010 - PDA 2010 | | | | | | | | | | | |
| 10.14 | 148 | 585 | 9.1 | 99 | 661 | 6.8 | 49.3 | 814 | 4.2 | 1600 | 5 |
| 13.17 | 114 | 760 | 9.1 | 76 | 820 | 6.5 | 38.0 | 848 | 3.4 | 1600 | |
| 16.53 | 91 | 584 | 5.6 | 61 | 659 | 4.2 | 30.3 | 812 | 2.6 | 1600 | |
| 18.00 | 83 | 628 | 5.5 | 56 | 661 | 3.9 | 27.8 | 745 | 2.2 | 1600 | |
| 21.47 | 70 | 759 | 5.6 | 46.6 | 841 | 4.1 | 23.3 | 865 | 2.1 | 1600 | |
| 29.34 | 51 | 668 | 3.6 | 34.1 | 708 | 2.5 | 17.0 | 794 | 1.4 | 1600 | |
| 33.94 | 44.2 | 603 | 2.8 | 29.5 | 637 | 2.0 | 14.7 | 757 | 1.2 | 1600 | |
| 40.68 | 36.9 | 694 | 2.7 | 24.6 | 768 | 2.0 | 12.3 | 808 | 1.0 | 1600 | |
| 47.05 | 31.9 | 626 | 2.1 | 21.3 | 692 | 1.5 | 10.6 | 796 | 0.89 | 1600 | |
| EC 3010 - PDA 3010 | | | | | | | | | | | |
| 34.27 | 43.8 | 944 | 4.3 | 29.2 | 960 | 2.9 | 14.6 | 984 | 1.5 | 1600 | 4 |
| 44.51 | 33.7 | 955 | 3.4 | 22.5 | 970 | 2.3 | 11.2 | 993 | 1.2 | 1600 | |
| 55.87 | 26.9 | 963 | 2.7 | 17.9 | 977 | 1.8 | 9.0 | 1002 | 0.94 | 1600 | |
| 60.84 | 24.7 | 966 | 2.5 | 16.4 | 980 | 1.7 | 8.2 | 1016 | 0.88 | 1600 | |
| 72.56 | 20.7 | 972 | 2.1 | 13.8 | 986 | 1.4 | 6.9 | 1045 | 0.76 | 1600 | |
| 77.46 | 19.4 | 975 | 2.0 | 12.9 | 988 | 1.3 | 6.5 | 1056 | 0.71 | 1600 | |
| 91.40 | 16.4 | 875 | 1.5 | 10.9 | 890 | 1.0 | 5.5 | 994 | 0.57 | 1600 | |
| 99.17 | 15.1 | 983 | 1.6 | 10.1 | 996 | 1.1 | 5.0 | 1098 | 0.58 | 1600 | |
| 114.7 | 13.1 | 988 | 1.4 | 8.7 | 1006 | 0.92 | 4.4 | 1123 | 0.51 | 1600 | |
| 128.8 | 11.6 | 885 | 1.1 | 7.8 | 941 | 0.77 | 3.9 | 1049 | 0.43 | 1600 | |
| 137.5 | 10.9 | 993 | 1.1 | 7.3 | 1036 | 0.79 | 3.6 | 1155 | 0.44 | 1600 | |
| 159.0 | 9.4 | 998 | 0.99 | 6.3 | 1061 | 0.70 | 3.1 | 1182 | 0.39 | 1600 | |
| 173.5 | 8.6 | 881 | 0.80 | 5.8 | 905 | 0.55 | 2.9 | 1007 | 0.30 | 1600 | |
| 206.6 | 7.3 | 951 | 0.72 | 4.8 | 1014 | 0.51 | 2.4 | 1128 | 0.29 | 1600 | |
| 225.4 | 6.7 | 964 | 0.67 | 4.4 | 1028 | 0.48 | 2.2 | 1143 | 0.27 | 1600 | |
| 240.6 | 6.2 | 900 | 0.59 | 4.2 | 952 | 0.41 | 2.1 | 1058 | 0.23 | 1600 | |
| 282.3 | 5.3 | 922 | 0.51 | 3.5 | 981 | 0.36 | 1.8 | 1088 | 0.20 | 1600 | |
| 312.5 | 4.8 | 1015 | 0.51 | 3.2 | 1081 | 0.36 | 1.6 | 1200 | 0.20 | 1600 | |
| 356.3 | 4.2 | 919 | 0.41 | 2.8 | 978 | 0.29 | 1.4 | 1084 | 0.16 | 1600 | |
| 427.1 | 3.5 | 982 | 0.36 | 2.3 | 1044 | 0.26 | 1.2 | 1156 | 0.14 | 1600 | |
| 494.1 | 3.0 | 966 | 0.31 | 2.0 | 1027 | 0.22 | 1.0 | 1137 | 0.12 | 1600 | |
| EC 4010 - PDA 4010 | | | | | | | | | | | |
| 150.5 | 10.0 | 996 | 1.0 | 6.6 | 1051 | 0.73 | 3.3 | 1172 | 0.41 | 1600 | 2.2 |
| 188.8 | 7.9 | 1022 | 0.85 | 5.3 | 1090 | 0.61 | 2.6 | 1213 | 0.34 | 1600 | |
| 205.6 | 7.3 | 1036 | 0.79 | 4.9 | 1104 | 0.56 | 2.4 | 1229 | 0.31 | 1600 | |
| 261.8 | 5.7 | 1076 | 0.65 | 3.8 | 1147 | 0.46 | 1.9 | 1275 | 0.26 | 1600 | |
| 267.1 | 5.6 | 1080 | 0.64 | 3.7 | 1150 | 0.45 | 1.9 | 1279 | 0.25 | 1600 | |
| 318.5 | 4.7 | 1110 | 0.55 | 3.1 | 1182 | 0.39 | 1.6 | 1313 | 0.22 | 1600 | |
| 359.9 | 4.2 | 1131 | 0.49 | 2.8 | 1204 | 0.35 | 1.4 | 1337 | 0.20 | 1600 | |
| 387.7 | 3.9 | 1144 | 0.46 | 2.6 | 1218 | 0.33 | 1.3 | 1352 | 0.18 | 1600 | |
| 441.6 | 3.4 | 1168 | 0.42 | 2.3 | 1242 | 0.30 | 1.1 | 1378 | 0.16 | 1600 | |
| 503.6 | 3.0 | 1192 | 0.37 | 2.0 | 1267 | 0.26 | 0.99 | 1405 | 0.15 | 1600 | |
| 537.6 | 2.8 | 1204 | 0.35 | 1.9 | 1280 | 0.25 | 0.93 | 1419 | 0.14 | 1600 | |
| 638.8 | 2.3 | 1236 | 0.30 | 1.6 | 1313 | 0.22 | 0.78 | 1455 | 0.12 | 1600 | |
| 688.2 | 2.2 | 1250 | 0.29 | 1.5 | 1328 | 0.20 | 0.73 | 1471 | 0.11 | 1600 | |
| 813.3 | 1.8 | 1282 | 0.25 | 1.2 | 1362 | 0.18 | 0.61 | 1507 | 0.10 | 1600 | |
| 893.9 | 1.7 | 1192 | 0.21 | 1.1 | 1266 | 0.15 | 0.56 | 1400 | 0.08 | 1600 | |
| 1056 | 1.4 | 1333 | 0.20 | 0.95 | 1415 | 0.14 | 0.47 | 1565 | 0.08 | 1600 | |
| 1104 | 1.4 | 1341 | 0.19 | 0.91 | 1424 | 0.14 | 0.45 | 1575 | 0.08 | 1600 | |
| 1204 | 1.2 | 1359 | 0.18 | 0.83 | 1443 | 0.13 | 0.42 | 1595 | 0.07 | 1600 | |
| 1444 | 1.0 | 1396 | 0.15 | 0.69 | 1481 | 0.11 | 0.35 | 1637 | 0.06 | 1600 | |
| 1670 | 0.90 | 1426 | 0.13 | 0.60 | 1513 | 0.10 | 0.30 | 1671 | 0.05 | 1600 | |
| 1822 | 0.82 | 1218 | 0.11 | 0.55 | 1311 | 0.08 | 0.27 | 1575 | 0.05 | 1600 | |
| 1959 | 0.77 | 1229 | 0.10 | 0.51 | 1302 | 0.07 | 0.26 | 1436 | 0.04 | 1600 | |
| 2169 | 0.69 | 1358 | 0.10 | 0.46 | 1440 | 0.07 | 0.23 | 1589 | 0.04 | 1600 | |
| 2527 | 0.59 | 1283 | 0.08 | 0.40 | 1432 | 0.06 | 0.20 | 1709 | 0.04 | 1600 | |
| 2964 | 0.51 | 1304 | 0.07 | 0.34 | 1381 | 0.05 | 0.17 | 1521 | 0.03 | 1600 | |
| 3282 | 0.46 | 1442 | 0.07 | 0.30 | 1528 | 0.05 | 0.15 | 1684 | 0.03 | 1600 | |



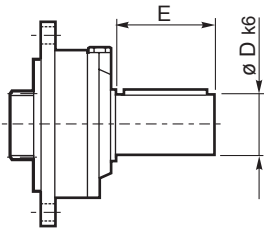




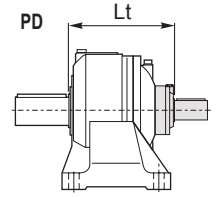
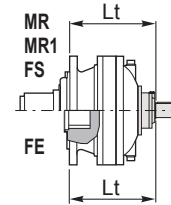


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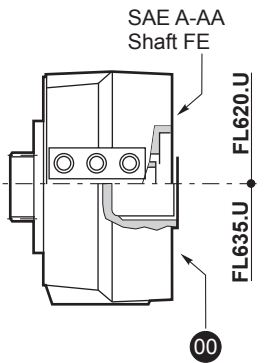
SU2



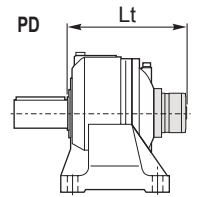
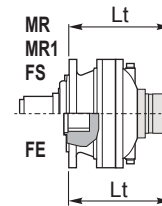
| | D k6 | E | Lt | | | |
|------|---------|----|-----------------|-----------|-----|-----|
| | | | MN-MN1 FE-FS | MR MR1 | PD | |
| SU 2 | 40 | 58 | EM1010 | 187 | 224 | 231 |
| | | | ED2010 | 227 | 264 | 271 |
| | | | ET3010 | 266 | 303 | 310 |



FL620/10 - FL635/10 FL620U - FL635U

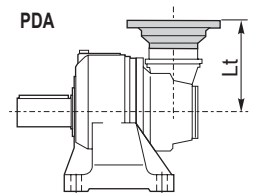
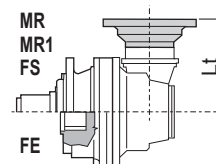
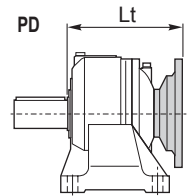
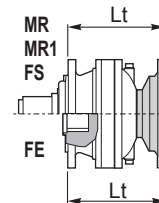


| | | Lt | | |
|----------|---------|--------------|--------|-------|
| | | MN-MN1-FE-FS | MR-MR1 | PD |
| FL620/U | EM 1010 | 231.5 | 268.5 | 275.5 |
| | ED 2010 | 271.5 | 308.5 | 315.5 |
| | ET 3010 | 310.5 | 347.5 | 354.5 |
| FL635U | EM 1010 | 218 | 255 | 262 |
| | ED 2010 | 258 | 295 | 302 |
| | ET 3010 | 297 | 334 | 341 |
| FL620/10 | EM 1010 | 190.5 | 227.5 | 234.5 |
| | ED 2010 | 230.5 | 267.5 | 274 |
| | ET 3010 | 269.5 | 306.5 | 320.3 |
| FL635/10 | EM 1010 | 172 | 209 | 172 |
| | ED 2010 | 212 | 249 | 212 |
| | ET 3010 | 251 | 288 | 251 |



IEC Motor

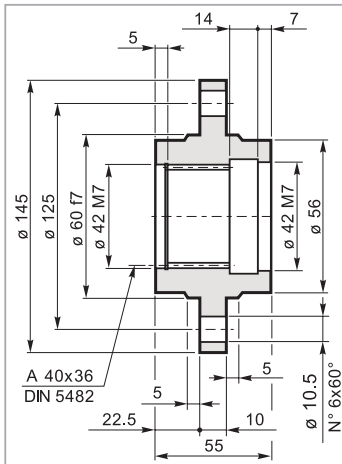
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| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 |
| EM 1010 | MN-MN1-FE-FS | 147 | 149 | 154 | 155 | 222 |
| EM 1010 | MR-MR1 | 184 | 186 | 191 | 192 | 259 |
| ED 2010 | MN-MN1-FE-FS | 187 | 189 | 194 | 195 | 262 |
| ED 2010 | MR-MR1 | 224 | 226 | 231 | 232 | 299 |
| ET 3010 | MN-MN1-FE-FS | 226 | 228 | 233 | 234 | 301 |
| ET 3010 | MR-MR1 | 263 | 265 | 270 | 271 | 338 |
| PD 1010 | PD | 191 | 193 | 198 | 199 | 266 |
| PD 2010 | PD | 230.5 | 232.5 | 238 | 239 | 306 |
| PD 3010 | PD | 270 | 272 | 277 | 278 | |
| EC 2010 | MN-MN1-FE-FS-PDA | 151 | 151 | 151 | 151 | 238 |
| EC 3010 | MN-MN1-FE-FS-PDA | 151 | 151 | 151 | 151 | 238 |
| EC 4010 | MN-MN1-FE-FS-PDA | 151 | 151 | 151 | 151 | 238 |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 010

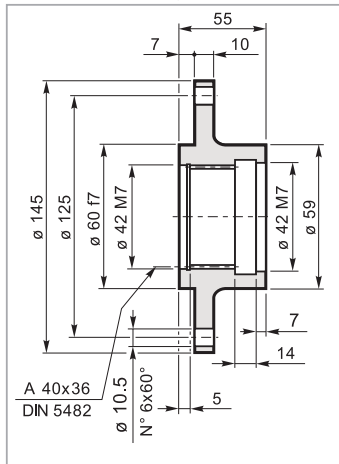


Mat. C40 UNI EN 10083
Code: 34700231800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 010

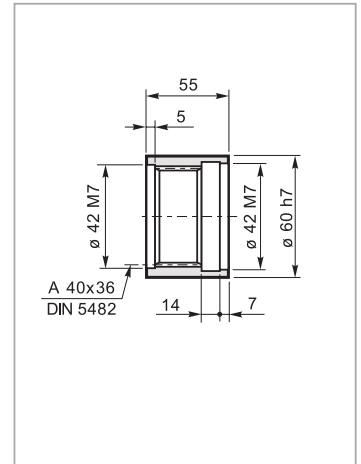


Mat. C40 UNI EN 10083
Code: 34700331800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 010

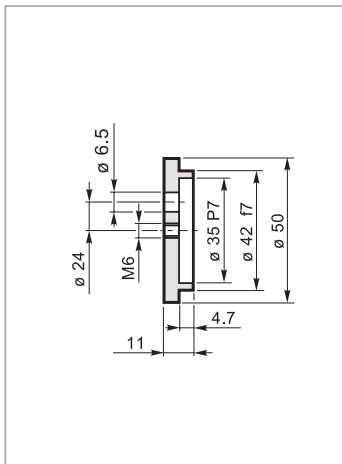


Mat. 39NiCrMo3 UNI EN 10083
Code: 39105740800



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 010

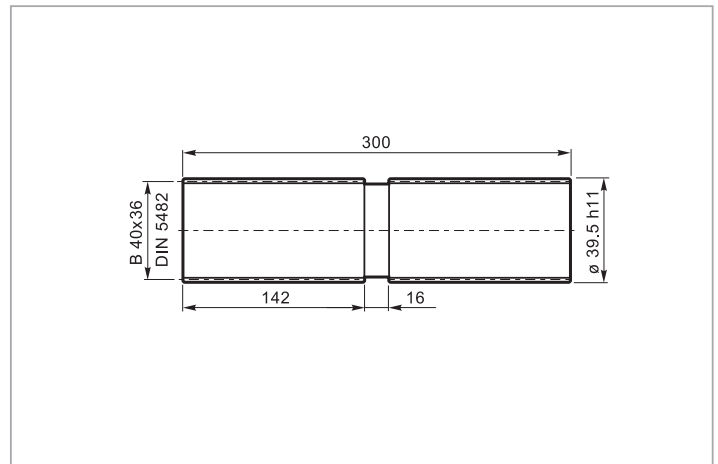


Mat. C40 UNI EN 10083
Code: 37201840800



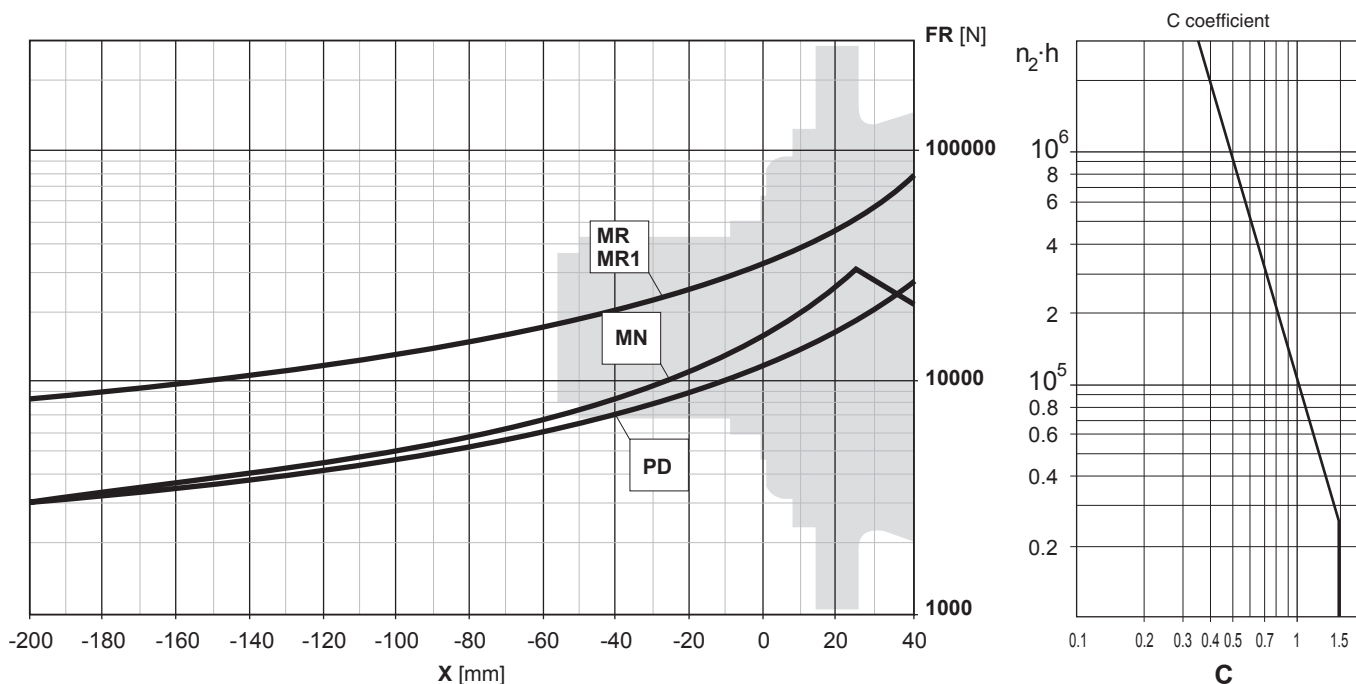
Flangia ruota
Driving flange
Radnabenflansch
Barre cannelée
Barra acanalada
Barra ranhurada

BS 010

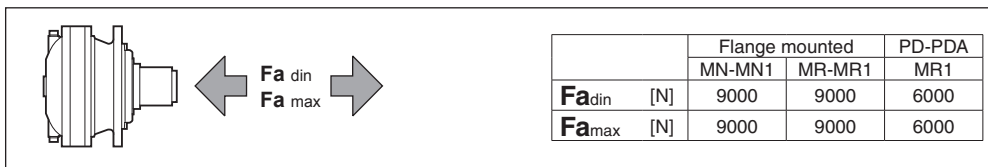


Mat. 39NiCrMo3 UNI EN 10083
Code: 39126730100

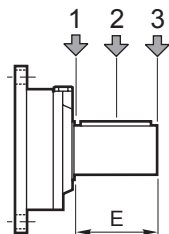
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



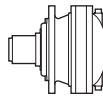
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada

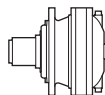


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



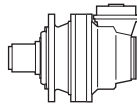
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1020 | | | | | | | | | | | |
| 3.08 | 487 | 888 | 45.3 | 325 | 1003 | 34.1 | 162 | 1235 | 21.0 | 2800 | 20 |
| 3.50 | 429 | 972 | 43.6 | 286 | 1098 | 32.9 | 143 | 1351 | 20.2 | 2800 | |
| 4.13 | 363 | 1005 | 38.2 | 242 | 1135 | 28.8 | 121 | 1397 | 17.7 | 2800 | |
| 5.17 | 290 | 1045 | 31.8 | 193 | 1159 | 23.5 | 97 | 1287 | 13.0 | 2800 | |
| 6.00 | 250 | 1001 | 26.2 | 167 | 1077 | 18.8 | 83 | 1187 | 10.4 | 2800 | |
| 7.25 | 207 | 863 | 18.7 | 138 | 924 | 13.3 | 69 | 1015 | 7.3 | 2800 | |
| ED 2020 | | | | | | | | | | | |
| 10.41 | 144 | 1263 | 19.1 | 96 | 1427 | 14.4 | 48.0 | 1756 | 8.8 | 2800 | 12 |
| 11.83 | 127 | 1401 | 18.6 | 85 | 1582 | 14.0 | 42.3 | 1948 | 8.6 | 2800 | |
| 13.52 | 111 | 1329 | 15.4 | 74 | 1501 | 11.6 | 37.0 | 1848 | 7.2 | 2800 | |
| 15.37 | 98 | 1510 | 15.4 | 65 | 1705 | 11.6 | 32.5 | 2036 | 6.9 | 2800 | |
| 18.13 | 83 | 1566 | 13.6 | 55 | 1715 | 9.9 | 27.6 | 1840 | 5.3 | 2800 | |
| 21.00 | 71 | 1445 | 10.8 | 47.6 | 1585 | 7.9 | 23.8 | 1787 | 4.5 | 2800 | |
| 22.70 | 66 | 1348 | 9.3 | 44.1 | 1411 | 6.5 | 22.0 | 1515 | 3.5 | 2800 | |
| 24.78 | 61 | 1697 | 10.8 | 40.4 | 1772 | 7.5 | 20.2 | 1895 | 4.0 | 2800 | |
| 28.66 | 52 | 1600 | 8.8 | 34.9 | 1683 | 6.2 | 17.4 | 1890 | 3.5 | 2800 | |
| 31.02 | 48.4 | 1397 | 7.1 | 32.2 | 1458 | 4.9 | 16.1 | 1561 | 2.6 | 2800 | |
| 35.88 | 41.8 | 1419 | 6.2 | 27.9 | 1480 | 4.3 | 13.9 | 1582 | 2.3 | 2800 | |
| 41.64 | 36.0 | 1305 | 4.9 | 24.0 | 1360 | 3.4 | 12.0 | 1453 | 1.8 | 2800 | |
| 50.32 | 29.8 | 1116 | 3.5 | 19.9 | 1164 | 2.4 | 9.9 | 1246 | 1.3 | 2800 | |
| ET 3020 | | | | | | | | | | | |
| 59.36 | 25.3 | 2071 | 5.5 | 16.8 | 2276 | 4.0 | 8.4 | 2514 | 2.2 | 2800 | |
| 61.28 | 24.5 | 1861 | 4.8 | 16.3 | 1933 | 3.3 | 8.2 | 2078 | 1.8 | 2800 | |
| 70.98 | 21.1 | 2121 | 4.7 | 14.1 | 2201 | 3.2 | 7.0 | 2471 | 1.8 | 2800 | |
| 82.10 | 18.3 | 2150 | 4.1 | 12.2 | 2229 | 2.8 | 6.1 | 2545 | 1.6 | 2800 | |
| 92.19 | 16.3 | 2172 | 3.7 | 10.8 | 2259 | 2.6 | 5.4 | 2606 | 1.5 | 2800 | |
| 106.6 | 14.1 | 2201 | 3.2 | 9.4 | 2329 | 2.3 | 4.7 | 2683 | 1.3 | 2800 | |
| 108.8 | 13.8 | 1963 | 2.8 | 9.2 | 2035 | 2.0 | 4.6 | 2341 | 1.1 | 2800 | |
| 126.0 | 11.9 | 1963 | 2.4 | 7.9 | 2062 | 1.7 | 4.0 | 2228 | 0.93 | 2800 | |
| 145.7 | 10.3 | 1999 | 2.2 | 6.9 | 2097 | 1.5 | 3.4 | 2263 | 0.81 | 2800 | |
| 161.3 | 9.3 | 2333 | 2.3 | 6.2 | 2536 | 1.6 | 3.1 | 2912 | 0.95 | 2800 | |
| 172.0 | 8.7 | 2049 | 1.9 | 5.8 | 2231 | 1.4 | 2.9 | 2567 | 0.78 | 2800 | |
| 198.9 | 7.5 | 2113 | 1.7 | 5.0 | 2221 | 1.2 | 2.5 | 2401 | 0.63 | 2800 | |
| 220.5 | 6.8 | 2099 | 1.5 | 4.5 | 2196 | 1.0 | 2.3 | 2364 | 0.56 | 2800 | |
| 260.2 | 5.8 | 2235 | 1.3 | 3.8 | 2428 | 0.98 | 1.9 | 2785 | 0.56 | 2800 | |
| 289.0 | 5.2 | 1583 | 0.86 | 3.5 | 1727 | 0.63 | 1.7 | 1994 | 0.36 | 2800 | |
| 325.7 | 4.6 | 1833 | 0.88 | 3.1 | 1995 | 0.64 | 1.5 | 2297 | 0.37 | 2800 | |
| EQ 4020 | | | | | | | | | | | |
| 360.4 | 4.2 | 2748 | 1.2 | 2.8 | 2976 | 0.87 | 1.4 | 3157 | 0.46 | 2800 | 4 |
| 404.7 | 3.7 | 2812 | 1.1 | 2.5 | 2966 | 0.77 | 1.2 | 3029 | 0.39 | 2800 | |
| 468.1 | 3.2 | 2893 | 0.97 | 2.1 | 2979 | 0.67 | 1.1 | 3042 | 0.34 | 2800 | |
| 502.5 | 3.0 | 2554 | 0.80 | 2.0 | 2766 | 0.58 | 0.99 | 3063 | 0.32 | 2800 | |
| 569.8 | 2.6 | 3006 | 0.83 | 1.8 | 3120 | 0.57 | 0.88 | 3358 | 0.31 | 2800 | |
| 639.8 | 2.3 | 2971 | 0.73 | 1.6 | 3008 | 0.49 | 0.78 | 3070 | 0.25 | 2800 | |
| 708.2 | 2.1 | 2980 | 0.66 | 1.4 | 3017 | 0.45 | 0.71 | 3079 | 0.23 | 2800 | |
| 835.7 | 1.8 | 2822 | 0.53 | 1.2 | 2988 | 0.37 | 0.60 | 3279 | 0.21 | 2800 | |
| 892.1 | 1.7 | 2828 | 0.50 | 1.1 | 3014 | 0.35 | 0.56 | 3303 | 0.19 | 2800 | |
| 1032 | 1.5 | 2870 | 0.44 | 0.97 | 3074 | 0.31 | 0.48 | 3317 | 0.17 | 2800 | |
| 1120 | 1.3 | 3022 | 0.42 | 0.89 | 3058 | 0.29 | 0.45 | 3150 | 0.15 | 2800 | |
| 1323 | 1.1 | 2659 | 0.32 | 0.76 | 2789 | 0.22 | 0.38 | 2989 | 0.12 | 2800 | |
| 1380 | 1.1 | 2641 | 0.30 | 0.72 | 2920 | 0.22 | 0.36 | 3328 | 0.13 | 2800 | |
| 1561 | 0.96 | 3077 | 0.31 | 0.64 | 3249 | 0.22 | 0.32 | 3527 | 0.12 | 2800 | |
| 1806 | 0.83 | 3138 | 0.27 | 0.55 | 3304 | 0.19 | 0.28 | 3607 | 0.11 | 2800 | |
| 1999 | 0.75 | 3181 | 0.25 | 0.50 | 3358 | 0.18 | 0.25 | 3680 | 0.10 | 2800 | |
| 2315 | 0.65 | 2801 | 0.19 | 0.43 | 2927 | 0.13 | 0.22 | 3258 | 0.07 | 2800 | |
| 2615 | 0.57 | 2783 | 0.17 | 0.38 | 3004 | 0.12 | 0.19 | 3417 | 0.07 | 2800 | |
| 2732 | 0.55 | 3305 | 0.19 | 0.37 | 3454 | 0.13 | 0.18 | 3834 | 0.07 | 2800 | |
| 3160 | 0.47 | 3189 | 0.16 | 0.32 | 3399 | 0.11 | 0.16 | 3782 | 0.06 | 2800 | |

1500
HOURS LIFE



020

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|---|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1020 | | | | | | | | | | | | |
| 3.08 | 487 | 1570 | 80 | 325 | 1773 | 60 | 162 | 2117 | 36.0 | 2800 | 20 | |
| 3.50 | 429 | 1683 | 76 | 286 | 1837 | 55 | 143 | 2045 | 30.6 | 2800 | | |
| 4.13 | 363 | 1549 | 59 | 242 | 1678 | 42.6 | 121 | 1857 | 23.5 | 2800 | | |
| 5.17 | 290 | 1304 | 39.6 | 193 | 1401 | 28.4 | 97 | 1539 | 15.6 | 2800 | | |
| 6.00 | 250 | 1219 | 31.9 | 167 | 1301 | 22.7 | 83 | 1421 | 12.4 | 2800 | | |
| 7.25 | 207 | 1058 | 22.9 | 138 | 1123 | 16.2 | 69 | 1223 | 8.8 | 2800 | | |
| ED 2020 | | | | | | | | | | | | |
| 10.41 | 144 | 2151 | 32.5 | 96 | 2258 | 22.7 | 48.0 | 2616 | 13.2 | 2800 | 12 | |
| 11.83 | 127 | 2077 | 27.6 | 85 | 2177 | 19.3 | 42.3 | 2502 | 11.1 | 2800 | | |
| 13.52 | 111 | 2180 | 25.3 | 74 | 2311 | 17.9 | 37.0 | 2464 | 9.5 | 2800 | | |
| 15.37 | 98 | 2142 | 21.9 | 65 | 2275 | 15.5 | 32.5 | 2644 | 9.0 | 2800 | | |
| 18.13 | 83 | 1942 | 16.8 | 55 | 2046 | 11.8 | 27.6 | 2378 | 6.9 | 2800 | | |
| 21.00 | 71 | 1829 | 13.7 | 47.6 | 1980 | 9.9 | 23.8 | 2200 | 5.5 | 2800 | | |
| 22.70 | 66 | 1608 | 11.1 | 44.1 | 1679 | 7.7 | 22.0 | 1956 | 4.5 | 2800 | | |
| 24.78 | 61 | 2008 | 12.7 | 40.4 | 2193 | 9.3 | 20.2 | 2537 | 5.4 | 2800 | | |
| 28.66 | 52 | 1967 | 10.8 | 34.9 | 2118 | 7.7 | 17.4 | 2344 | 4.3 | 2800 | | |
| 31.02 | 48.4 | 1661 | 8.4 | 32.2 | 1801 | 6.1 | 16.1 | 2089 | 3.5 | 2800 | | |
| 35.88 | 41.8 | 1699 | 7.4 | 27.9 | 1860 | 5.4 | 13.9 | 2153 | 3.1 | 2800 | | |
| 41.64 | 36.0 | 1557 | 5.9 | 24.0 | 1704 | 4.3 | 12.0 | 1974 | 2.5 | 2800 | | |
| 50.32 | 29.8 | 1336 | 4.2 | 19.9 | 1464 | 3.0 | 9.9 | 1703 | 1.8 | 2800 | | |
| ET 3020 | | | | | | | | | | | | |
| 59.36 | 25.3 | 2525 | 6.7 | 16.8 | 2578 | 4.5 | 8.4 | 2654 | 2.3 | 2800 | | 8 |
| 61.28 | 24.5 | 2438 | 6.3 | 16.3 | 2648 | 4.5 | 8.2 | 2974 | 2.5 | 2800 | | |
| 70.98 | 21.1 | 2888 | 6.4 | 14.1 | 3098 | 4.6 | 7.0 | 3271 | 2.4 | 2800 | | |
| 82.10 | 18.3 | 2973 | 5.7 | 12.2 | 3110 | 4.0 | 6.1 | 3336 | 2.1 | 2800 | | |
| 92.19 | 16.3 | 2917 | 5.0 | 10.8 | 2971 | 3.4 | 5.4 | 3050 | 1.7 | 2800 | | |
| 106.6 | 14.1 | 2937 | 4.3 | 9.4 | 2988 | 2.9 | 4.7 | 3065 | 1.5 | 2800 | | |
| 108.8 | 13.8 | 2739 | 4.0 | 9.2 | 2926 | 2.8 | 4.6 | 3215 | 1.5 | 2800 | | |
| 126.0 | 11.9 | 2395 | 3.0 | 7.9 | 2610 | 2.2 | 4.0 | 2799 | 1.2 | 2800 | | |
| 145.7 | 10.3 | 2444 | 2.6 | 6.9 | 2705 | 1.9 | 3.4 | 2840 | 1.0 | 2800 | | |
| 161.3 | 9.3 | 2989 | 2.9 | 6.2 | 3035 | 2.0 | 3.1 | 3121 | 1.0 | 2800 | | |
| 172.0 | 8.7 | 2884 | 2.6 | 5.8 | 3115 | 1.9 | 2.9 | 3351 | 1.0 | 2800 | | |
| 198.9 | 7.5 | 2594 | 2.0 | 5.0 | 2878 | 1.5 | 2.5 | 3300 | 0.87 | 2800 | | |
| 220.5 | 6.8 | 2711 | 1.9 | 4.5 | 2787 | 1.3 | 2.3 | 3033 | 0.72 | 2800 | | |
| 260.2 | 5.8 | 3118 | 1.9 | 3.8 | 3288 | 1.3 | 1.9 | 3579 | 0.72 | 2800 | | |
| 289.0 | 5.2 | 2337 | 1.3 | 3.5 | 2529 | 0.92 | 1.7 | 2885 | 0.52 | 2800 | | |
| 325.7 | 4.6 | 2683 | 1.3 | 3.1 | 2900 | 0.93 | 1.5 | 3301 | 0.53 | 2800 | | |
| EQ 4020 | | | | | | | | | | | | |
| 360.4 | 4.2 | 3446 | 1.5 | 2.8 | 3491 | 1.0 | 1.4 | 3868 | 0.56 | 2800 | 4 | |
| 404.7 | 3.7 | 3089 | 1.2 | 2.5 | 3238 | 0.84 | 1.2 | 3612 | 0.47 | 2800 | | |
| 468.1 | 3.2 | 3104 | 1.0 | 2.1 | 3314 | 0.74 | 1.1 | 3694 | 0.41 | 2800 | | |
| 502.5 | 3.0 | 3406 | 1.1 | 2.0 | 3595 | 0.75 | 0.99 | 3937 | 0.41 | 2800 | | |
| 569.8 | 2.6 | 3497 | 0.96 | 1.8 | 3727 | 0.69 | 0.88 | 4152 | 0.38 | 2800 | | |
| 639.8 | 2.3 | 3265 | 0.80 | 1.6 | 3482 | 0.57 | 0.78 | 3876 | 0.32 | 2800 | | |
| 708.2 | 2.1 | 3319 | 0.74 | 1.4 | 3538 | 0.52 | 0.71 | 3936 | 0.29 | 2800 | | |
| 835.7 | 1.8 | 3644 | 0.69 | 1.2 | 3843 | 0.48 | 0.60 | 4206 | 0.26 | 2800 | | |
| 892.1 | 1.7 | 3654 | 0.64 | 1.1 | 3876 | 0.46 | 0.56 | 4242 | 0.25 | 2800 | | |
| 1032 | 1.5 | 3738 | 0.57 | 0.97 | 3950 | 0.40 | 0.48 | 4322 | 0.22 | 2800 | | |
| 1120 | 1.3 | 3567 | 0.50 | 0.89 | 3797 | 0.36 | 0.45 | 4217 | 0.20 | 2800 | | |
| 1323 | 1.1 | 3375 | 0.40 | 0.76 | 3588 | 0.28 | 0.38 | 3975 | 0.16 | 2800 | | |
| 1380 | 1.1 | 3762 | 0.43 | 0.72 | 4001 | 0.30 | 0.36 | 4436 | 0.17 | 2800 | | |
| 1561 | 0.96 | 3955 | 0.40 | 0.64 | 4169 | 0.28 | 0.32 | 4558 | 0.15 | 2800 | | |
| 1806 | 0.83 | 4031 | 0.35 | 0.55 | 4248 | 0.25 | 0.28 | 4644 | 0.14 | 2800 | | |
| 1999 | 0.75 | 4084 | 0.32 | 0.50 | 4304 | 0.23 | 0.25 | 4705 | 0.12 | 2800 | | |
| 2315 | 0.65 | 3671 | 0.25 | 0.43 | 3898 | 0.18 | 0.22 | 4310 | 0.10 | 2800 | | |
| 2615 | 0.57 | 3948 | 0.24 | 0.38 | 4217 | 0.17 | 0.19 | 4607 | 0.09 | 2800 | | |
| 2732 | 0.55 | 4253 | 0.25 | 0.37 | 4481 | 0.17 | 0.18 | 4896 | 0.09 | 2800 | | |
| 3160 | 0.47 | 4262 | 0.21 | 0.32 | 4525 | 0.15 | 0.16 | 4988 | 0.08 | 2800 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2020 - PDA 2020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|-----|------|
| 10.50 | 143 | 1351 | 20.2 | 95 | 1526 | 15.2 | 47.6 | 1879 | 9.4 | 2800 |
| 12.39 | 121 | 1397 | 17.7 | 81 | 1578 | 13.3 | 40.4 | 1772 | 7.5 | 2800 |
| 14.23 | 105 | 1392 | 15.4 | 70 | 1572 | 11.6 | 35.1 | 1936 | 7.1 | 2800 |
| 16.17 | 93 | 1538 | 14.9 | 62 | 1737 | 11.3 | 30.9 | 2047 | 6.6 | 2800 |
| 18.00 | 83 | 1187 | 10.4 | 56 | 1245 | 7.2 | 27.8 | 1340 | 3.9 | 2800 |
| 19.08 | 79 | 1590 | 13.1 | 52 | 1724 | 9.5 | 26.2 | 1849 | 5.1 | 2800 |
| 21.75 | 69 | 1015 | 7.3 | 46.0 | 1064 | 5.1 | 23.0 | 1147 | 2.8 | 2800 |
| 23.89 | 63 | 1357 | 8.9 | 41.9 | 1419 | 6.2 | 20.9 | 1522 | 3.3 | 2800 |
| 27.72 | 54 | 1249 | 7.1 | 36.1 | 1305 | 4.9 | 18.0 | 1398 | 2.6 | 2800 |
| 33.50 | 44.8 | 1067 | 5.0 | 29.9 | 1116 | 3.5 | 14.9 | 1198 | 1.9 | 2800 |

8

EC 3020 - PDA 3020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 46.09 | 32.5 | 1507 | 5.1 | 21.7 | 1702 | 3.9 | 10.8 | 2095 | 2.4 | 2800 |
| 52.42 | 28.6 | 1476 | 4.4 | 19.1 | 1536 | 3.1 | 9.5 | 1639 | 1.6 | 2800 |
| 57.85 | 25.9 | 1157 | 3.1 | 17.3 | 1307 | 2.4 | 8.6 | 1609 | 1.5 | 2800 |
| 63.00 | 23.8 | 1787 | 4.5 | 15.9 | 1892 | 3.1 | 7.9 | 2062 | 1.7 | 2800 |
| 68.26 | 22.0 | 1366 | 3.1 | 14.6 | 1542 | 2.4 | 7.3 | 1899 | 1.5 | 2800 |
| 75.13 | 20.0 | 1503 | 3.1 | 13.3 | 1698 | 2.4 | 6.7 | 2090 | 1.5 | 2800 |
| 88.66 | 16.9 | 1774 | 3.1 | 11.3 | 1998 | 2.4 | 5.6 | 2245 | 1.3 | 2800 |
| 102.7 | 14.6 | 1913 | 2.9 | 9.7 | 2013 | 2.1 | 4.9 | 2179 | 1.1 | 2800 |
| 111.0 | 13.5 | 1587 | 2.2 | 9.0 | 1647 | 1.6 | 4.5 | 1841 | 0.87 | 2800 |
| 121.2 | 12.4 | 1982 | 2.6 | 8.3 | 2073 | 1.8 | 4.1 | 2393 | 1.0 | 2800 |
| 142.4 | 10.5 | 1835 | 2.0 | 7.0 | 2073 | 1.5 | 3.5 | 2258 | 0.83 | 2800 |
| 168.0 | 8.9 | 2040 | 1.9 | 6.0 | 2220 | 1.4 | 3.0 | 2555 | 0.80 | 2800 |
| 175.5 | 8.5 | 1655 | 1.5 | 5.7 | 1751 | 1.0 | 2.8 | 2026 | 0.61 | 2800 |
| 194.3 | 7.7 | 2103 | 1.7 | 5.1 | 2215 | 1.2 | 2.6 | 2395 | 0.65 | 2800 |
| 210.3 | 7.1 | 1682 | 1.3 | 4.8 | 1820 | 0.91 | 2.4 | 2103 | 0.52 | 2800 |
| 243.3 | 6.2 | 1722 | 1.1 | 4.1 | 1877 | 0.81 | 2.1 | 2166 | 0.47 | 2800 |
| 282.3 | 5.3 | 1575 | 0.88 | 3.5 | 1718 | 0.64 | 1.8 | 1985 | 0.37 | 2800 |
| 308.1 | 4.9 | 1393 | 0.71 | 3.2 | 1430 | 0.49 | 1.6 | 1495 | 0.25 | 2800 |
| 368.1 | 4.1 | 1226 | 0.52 | 2.7 | 1259 | 0.36 | 1.4 | 1315 | 0.19 | 2800 |
| 427.1 | 3.5 | 1423 | 0.52 | 2.3 | 1461 | 0.36 | 1.2 | 1526 | 0.19 | 2800 |
| 516.1 | 2.9 | 1478 | 0.45 | 1.9 | 1613 | 0.33 | 0.97 | 1844 | 0.19 | 2800 |

5

EC 4020 - PDA 4020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 276.6 | 5.4 | 2606 | 1.5 | 3.6 | 2825 | 1.1 | 1.8 | 2995 | 0.57 | 2800 |
| 319.9 | 4.7 | 2683 | 1.3 | 3.1 | 2907 | 0.95 | 1.6 | 3008 | 0.49 | 2800 |
| 347.1 | 4.3 | 2727 | 1.2 | 2.9 | 2954 | 0.89 | 1.4 | 3141 | 0.47 | 2800 |
| 401.5 | 3.7 | 2807 | 1.1 | 2.5 | 3039 | 0.79 | 1.2 | 3203 | 0.42 | 2800 |
| 450.8 | 3.3 | 2872 | 1.0 | 2.2 | 2976 | 0.69 | 1.1 | 3039 | 0.35 | 2800 |
| 521.4 | 2.9 | 2952 | 0.89 | 1.9 | 2989 | 0.60 | 0.96 | 3052 | 0.31 | 2800 |
| 556.6 | 2.7 | 2993 | 0.85 | 1.8 | 3118 | 0.59 | 0.90 | 3347 | 0.32 | 2800 |
| 625.0 | 2.4 | 2969 | 0.75 | 1.6 | 3006 | 0.50 | 0.80 | 3068 | 0.26 | 2800 |
| 712.7 | 2.1 | 2382 | 0.53 | 1.4 | 2526 | 0.37 | 0.70 | 2795 | 0.21 | 2800 |
| 788.9 | 1.9 | 2990 | 0.60 | 1.3 | 3027 | 0.40 | 0.63 | 3089 | 0.21 | 2800 |
| 853.1 | 1.8 | 2496 | 0.46 | 1.2 | 2604 | 0.32 | 0.59 | 3072 | 0.19 | 2800 |
| 988.1 | 1.5 | 2478 | 0.39 | 1.0 | 2732 | 0.29 | 0.51 | 2855 | 0.15 | 2800 |
| 1094 | 1.4 | 3020 | 0.43 | 0.91 | 3056 | 0.29 | 0.46 | 3139 | 0.15 | 2800 |
| 1247 | 1.2 | 2275 | 0.29 | 0.80 | 2513 | 0.21 | 0.40 | 2848 | 0.12 | 2800 |
| 1495 | 1.0 | 2737 | 0.29 | 0.67 | 2798 | 0.20 | 0.33 | 3046 | 0.11 | 2800 |
| 1616 | 0.93 | 2536 | 0.25 | 0.62 | 2742 | 0.18 | 0.31 | 3126 | 0.10 | 2800 |
| 1729 | 0.87 | 2466 | 0.22 | 0.58 | 2693 | 0.16 | 0.29 | 2997 | 0.09 | 2800 |
| 2040 | 0.74 | 2909 | 0.22 | 0.49 | 3178 | 0.16 | 0.25 | 3537 | 0.09 | 2800 |
| 2208 | 0.68 | 2694 | 0.19 | 0.45 | 2910 | 0.14 | 0.23 | 3312 | 0.08 | 2800 |
| 2554 | 0.59 | 2770 | 0.17 | 0.39 | 2991 | 0.12 | 0.20 | 3402 | 0.07 | 2800 |
| 2787 | 0.54 | 1399 | 0.08 | 0.36 | 1487 | 0.06 | 0.18 | 1652 | 0.03 | 2800 |
| 3235 | 0.46 | 1623 | 0.08 | 0.31 | 1726 | 0.06 | 0.15 | 1918 | 0.03 | 2800 |

3

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

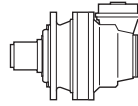
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2020 - PDA 2020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 10.50 | 143 | 2045 | 30.6 | 95 | 2149 | 21.4 | 47.6 | 2439 | 12.2 | 2800 |
| 12.39 | 121 | 1857 | 23.5 | 81 | 1947 | 16.5 | 40.4 | 2193 | 9.3 | 2800 |
| 14.23 | 105 | 2235 | 24.7 | 70 | 2405 | 17.7 | 35.1 | 2794 | 10.3 | 2800 |
| 16.17 | 93 | 2155 | 20.9 | 62 | 2302 | 14.9 | 30.9 | 2672 | 8.7 | 2800 |
| 18.00 | 83 | 1421 | 12.4 | 56 | 1485 | 8.6 | 27.8 | 1651 | 4.8 | 2800 |
| 19.08 | 79 | 1953 | 16.1 | 52 | 2070 | 11.4 | 26.2 | 2404 | 6.6 | 2800 |
| 21.75 | 69 | 1223 | 8.8 | 46.0 | 1278 | 6.2 | 23.0 | 1417 | 3.4 | 2800 |
| 23.89 | 63 | 1616 | 10.6 | 41.9 | 1699 | 7.4 | 20.9 | 1978 | 4.3 | 2800 |
| 27.72 | 54 | 1489 | 8.4 | 36.1 | 1557 | 5.9 | 18.0 | 1813 | 3.4 | 2800 |
| 33.50 | 44.8 | 1282 | 6.0 | 29.9 | 1336 | 4.2 | 14.9 | 1560 | 2.4 | 2800 |

8

EC 3020 - PDA 3020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 46.09 | 32.5 | 2644 | 9.0 | 21.7 | 2873 | 6.5 | 10.8 | 2971 | 3.4 | 2800 |
| 52.42 | 28.6 | 1849 | 5.5 | 19.1 | 2017 | 4.0 | 9.5 | 2325 | 2.3 | 2800 |
| 57.85 | 25.9 | 2045 | 5.6 | 17.3 | 2309 | 4.2 | 8.6 | 2843 | 2.6 | 2800 |
| 63.00 | 23.8 | 2200 | 5.5 | 15.9 | 2316 | 3.9 | 7.9 | 2610 | 2.2 | 2800 |
| 68.26 | 22.0 | 2413 | 5.6 | 14.6 | 2706 | 4.2 | 7.3 | 3019 | 2.3 | 2800 |
| 75.13 | 20.0 | 2656 | 5.6 | 13.3 | 2944 | 4.1 | 6.7 | 3028 | 2.1 | 2800 |
| 88.66 | 16.9 | 2629 | 4.7 | 11.3 | 2849 | 3.4 | 5.6 | 3128 | 1.8 | 2800 |
| 102.7 | 14.6 | 2339 | 3.6 | 9.7 | 2479 | 2.5 | 4.9 | 2780 | 1.4 | 2800 |
| 111.0 | 13.5 | 2167 | 3.1 | 9.0 | 2352 | 2.2 | 4.5 | 2695 | 1.3 | 2800 |
| 121.2 | 12.4 | 2760 | 3.6 | 8.3 | 2926 | 2.5 | 4.1 | 3262 | 1.4 | 2800 |
| 142.4 | 10.5 | 2430 | 2.7 | 7.0 | 2690 | 2.0 | 3.5 | 2829 | 1.0 | 2800 |
| 168.0 | 8.9 | 2867 | 2.7 | 6.0 | 3105 | 1.9 | 3.0 | 3339 | 1.0 | 2800 |
| 175.5 | 8.5 | 2377 | 2.1 | 5.7 | 2575 | 1.5 | 2.8 | 2941 | 0.88 | 2800 |
| 194.3 | 7.7 | 2587 | 2.1 | 5.1 | 2861 | 1.5 | 2.6 | 3288 | 0.89 | 2800 |
| 210.3 | 7.1 | 2464 | 1.8 | 4.8 | 2667 | 1.3 | 2.4 | 3043 | 0.76 | 2800 |
| 243.3 | 6.2 | 2535 | 1.6 | 4.1 | 2743 | 1.2 | 2.1 | 3127 | 0.67 | 2800 |
| 282.3 | 5.3 | 2326 | 1.3 | 3.5 | 2517 | 0.93 | 1.8 | 2872 | 0.53 | 2800 |
| 308.1 | 4.9 | 1565 | 0.80 | 3.2 | 1607 | 0.55 | 1.6 | 1788 | 0.30 | 2800 |
| 368.1 | 4.1 | 1378 | 0.59 | 2.7 | 1456 | 0.41 | 1.4 | 1619 | 0.23 | 2800 |
| 427.1 | 3.5 | 1599 | 0.59 | 2.3 | 1690 | 0.41 | 1.2 | 1879 | 0.23 | 2800 |
| 516.1 | 2.9 | 1932 | 0.59 | 1.9 | 2042 | 0.41 | 0.97 | 2271 | 0.23 | 2800 |

5

EC 4020 - PDA 4020

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 276.6 | 5.4 | 3050 | 1.7 | 3.6 | 3091 | 1.2 | 1.8 | 3403 | 0.64 | 2800 |
| 319.9 | 4.7 | 3065 | 1.5 | 3.1 | 3116 | 1.0 | 1.6 | 3482 | 0.57 | 2800 |
| 347.1 | 4.3 | 3442 | 1.6 | 2.9 | 3487 | 1.1 | 1.4 | 3845 | 0.58 | 2800 |
| 401.5 | 3.7 | 3458 | 1.4 | 2.5 | 3524 | 0.92 | 1.2 | 3933 | 0.51 | 2800 |
| 450.8 | 3.3 | 3099 | 1.1 | 2.2 | 3294 | 0.77 | 1.1 | 3673 | 0.43 | 2800 |
| 521.4 | 2.9 | 3159 | 0.95 | 1.9 | 3371 | 0.68 | 0.96 | 3756 | 0.38 | 2800 |
| 556.6 | 2.7 | 3494 | 0.99 | 1.8 | 3713 | 0.70 | 0.90 | 4137 | 0.39 | 2800 |
| 625.0 | 2.4 | 3253 | 0.82 | 1.6 | 3469 | 0.58 | 0.80 | 3862 | 0.32 | 2800 |
| 712.7 | 2.1 | 3068 | 0.68 | 1.4 | 3267 | 0.48 | 0.70 | 3628 | 0.27 | 2800 |
| 788.9 | 1.9 | 3376 | 0.67 | 1.3 | 3598 | 0.48 | 0.63 | 4001 | 0.27 | 2800 |
| 853.1 | 1.8 | 3492 | 0.64 | 1.2 | 3718 | 0.46 | 0.59 | 4130 | 0.25 | 2800 |
| 988.1 | 1.5 | 3228 | 0.51 | 1.0 | 3434 | 0.36 | 0.51 | 3808 | 0.20 | 2800 |
| 1094 | 1.4 | 3554 | 0.51 | 0.91 | 3784 | 0.36 | 0.46 | 4202 | 0.20 | 2800 |
| 1247 | 1.2 | 3219 | 0.41 | 0.80 | 3423 | 0.29 | 0.40 | 3795 | 0.16 | 2800 |
| 1495 | 1.0 | 3438 | 0.36 | 0.67 | 3654 | 0.26 | 0.33 | 4046 | 0.14 | 2800 |
| 1616 | 0.93 | 3620 | 0.35 | 0.62 | 3895 | 0.25 | 0.31 | 4333 | 0.14 | 2800 |
| 1729 | 0.87 | 3383 | 0.31 | 0.58 | 3595 | 0.22 | 0.29 | 3980 | 0.12 | 2800 |
| 2040 | 0.74 | 3992 | 0.31 | 0.49 | 4242 | 0.22 | 0.25 | 4697 | 0.12 | 2800 |
| 2208 | 0.68 | 3830 | 0.27 | 0.45 | 4119 | 0.20 | 0.23 | 4509 | 0.11 | 2800 |
| 2554 | 0.59 | 3932 | 0.24 | 0.39 | 4204 | 0.17 | 0.20 | 4593 | 0.09 | 2800 |
| 2787 | 0.54 | 1864 | 0.11 | 0.36 | 2006 | 0.08 | 0.18 | 2409 | 0.05 | 2800 |
| 3235 | 0.46 | 2163 | 0.11 | 0.31 | 2328 | 0.08 | 0.15 | 2796 | 0.05 | 2800 |

3

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

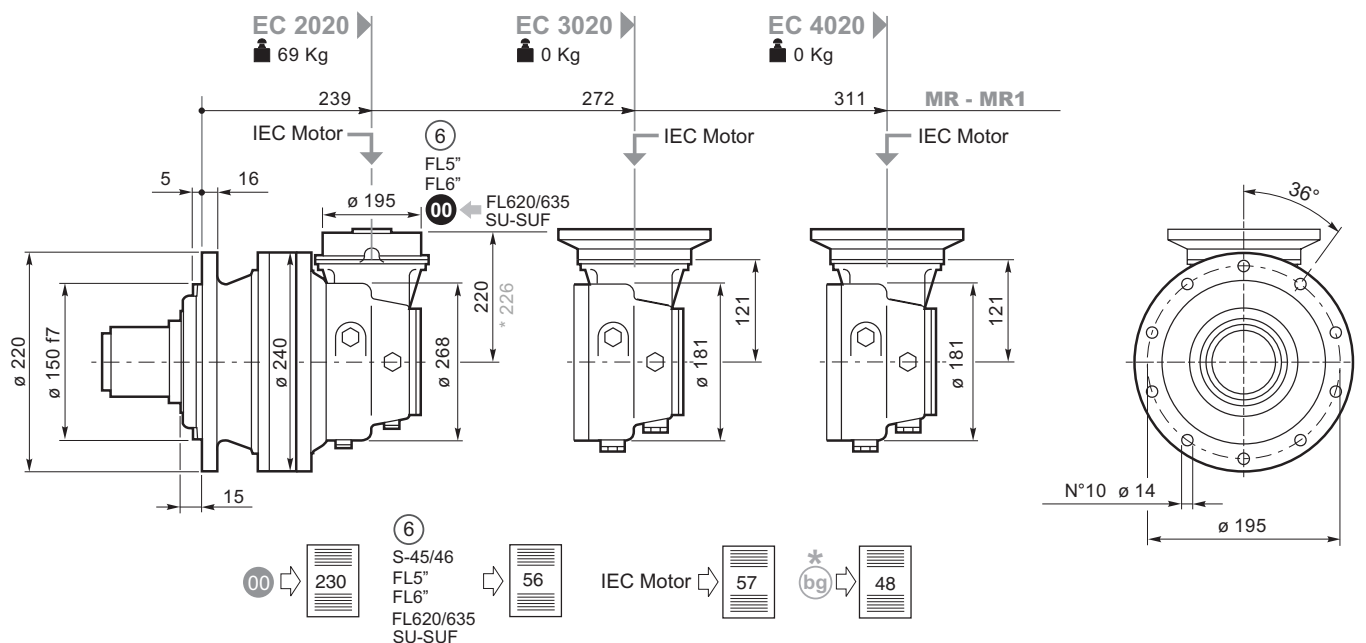
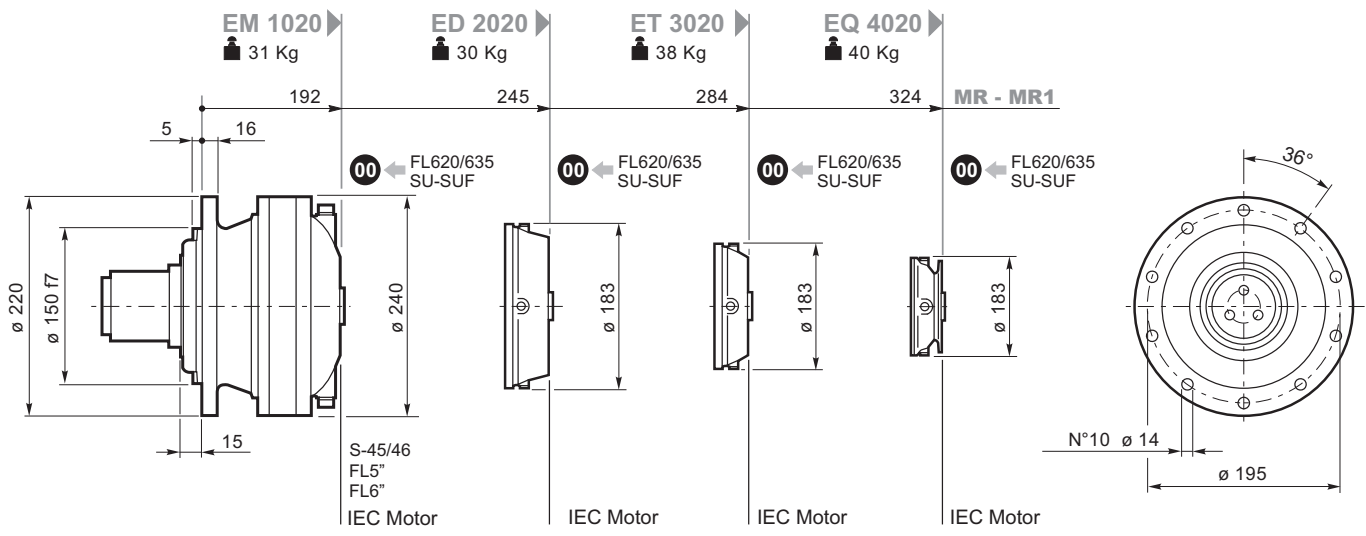
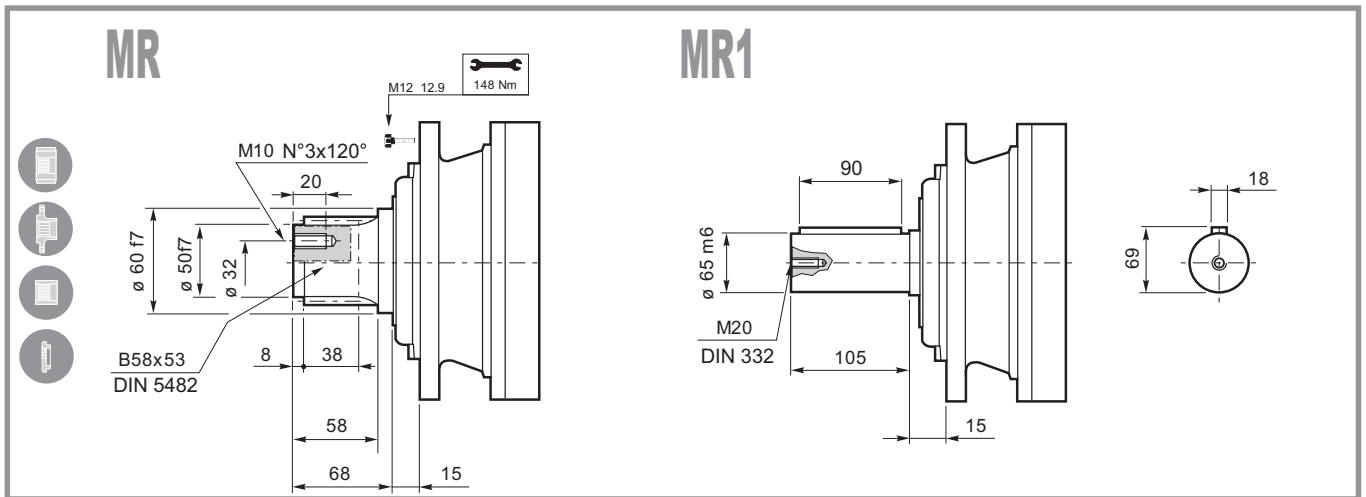
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

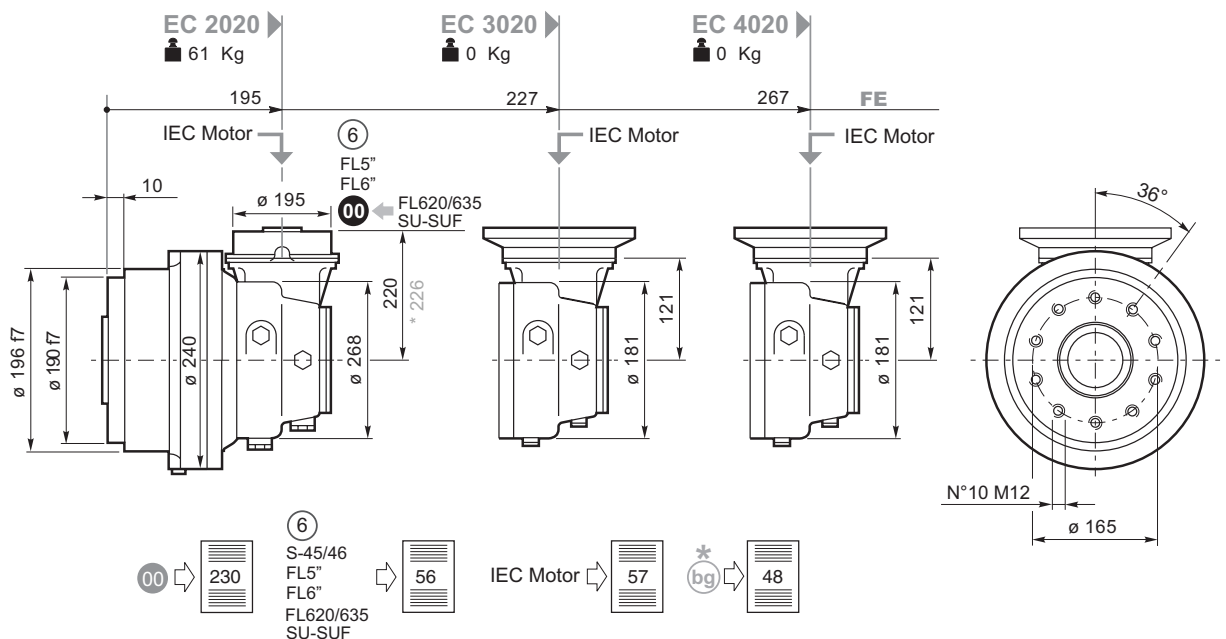
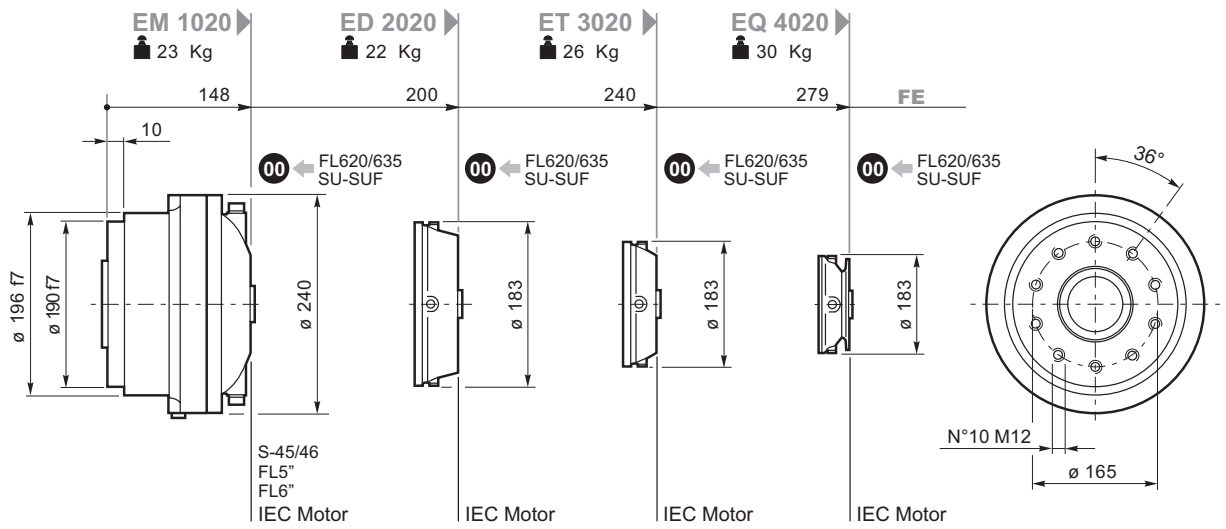
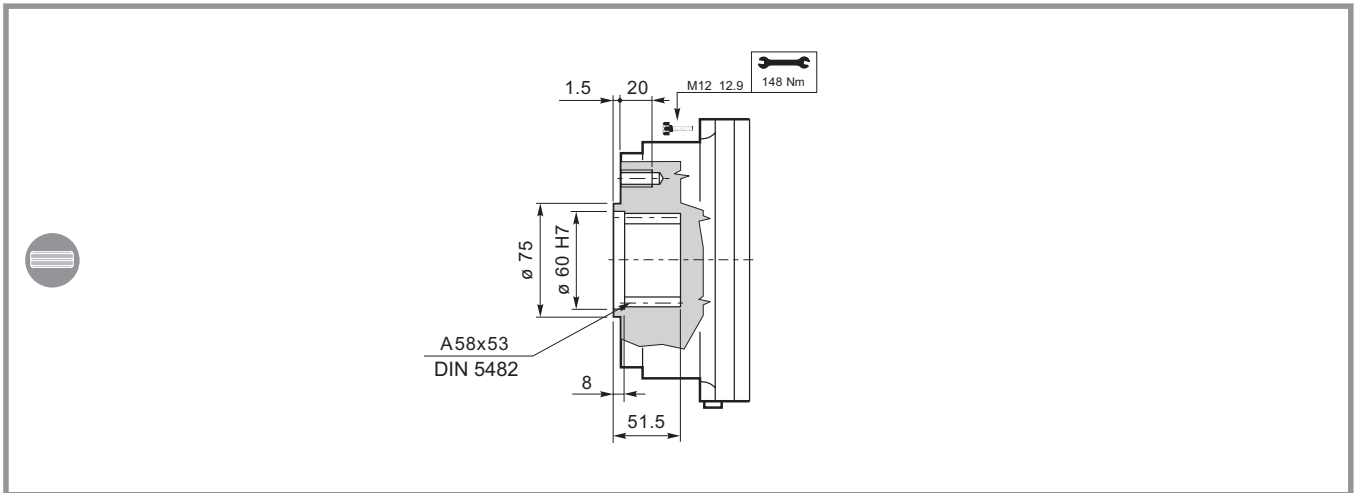
Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

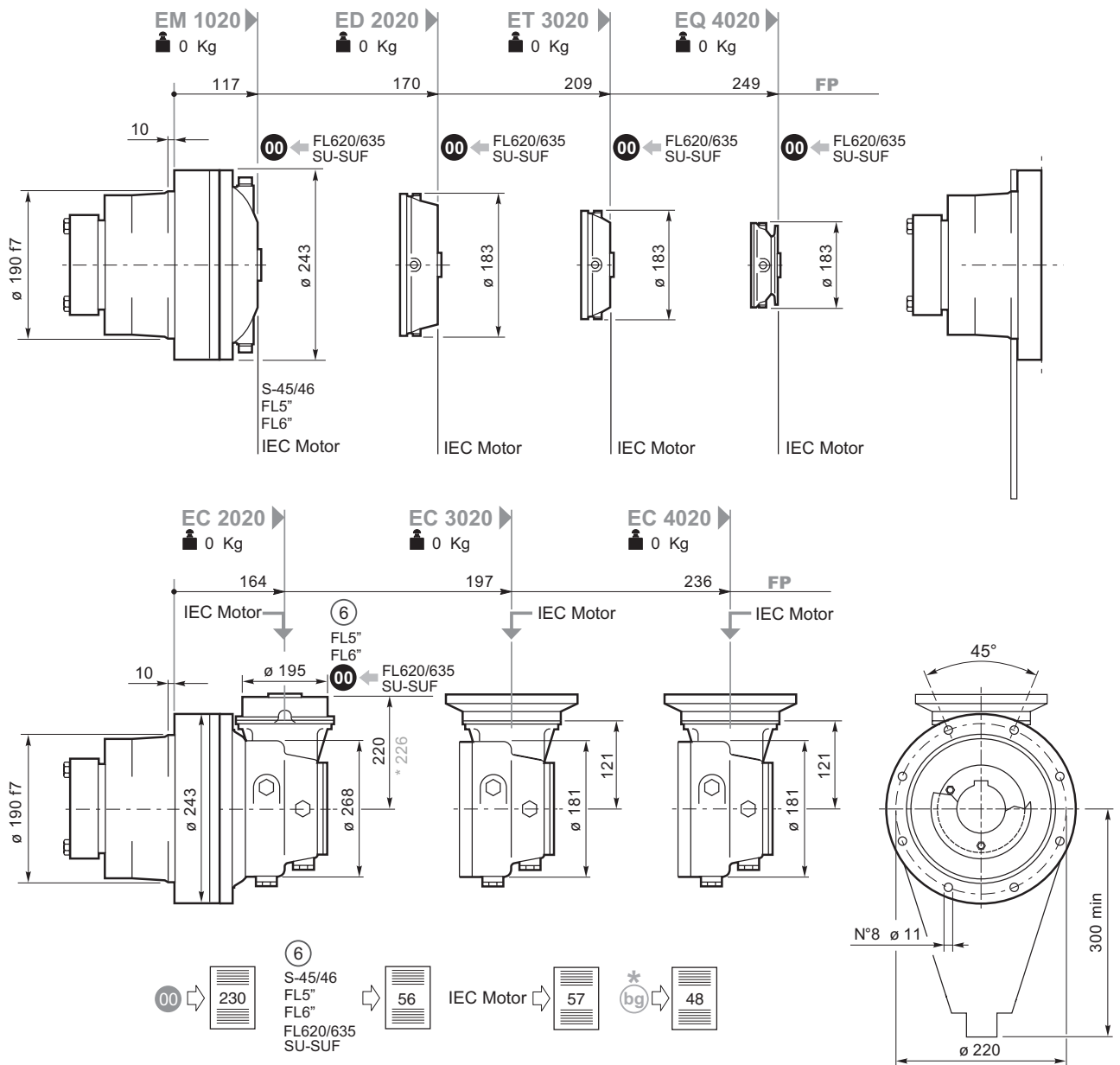
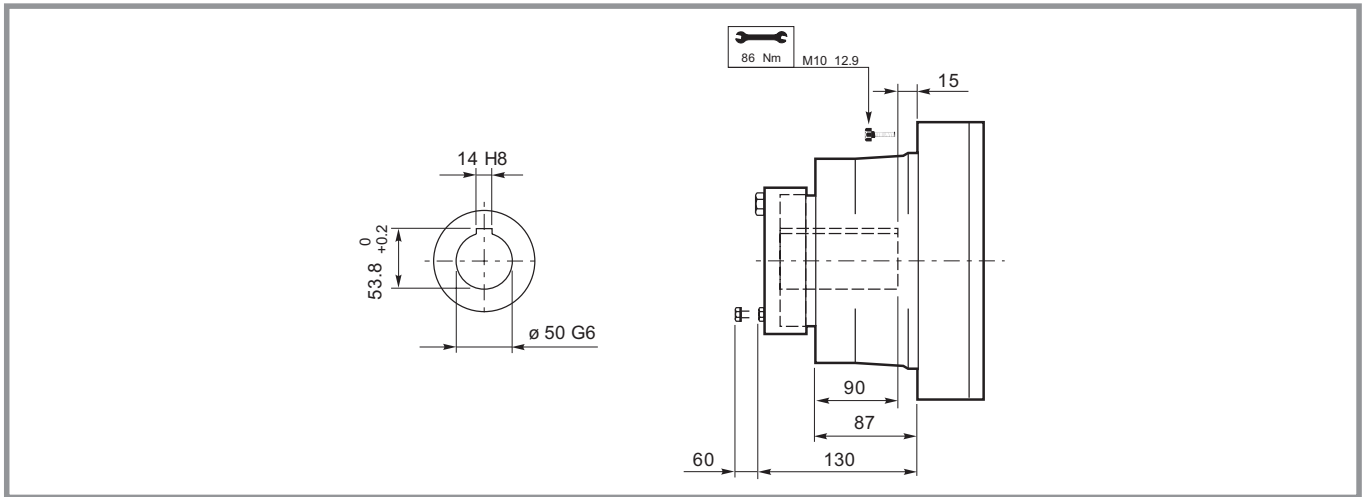
Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

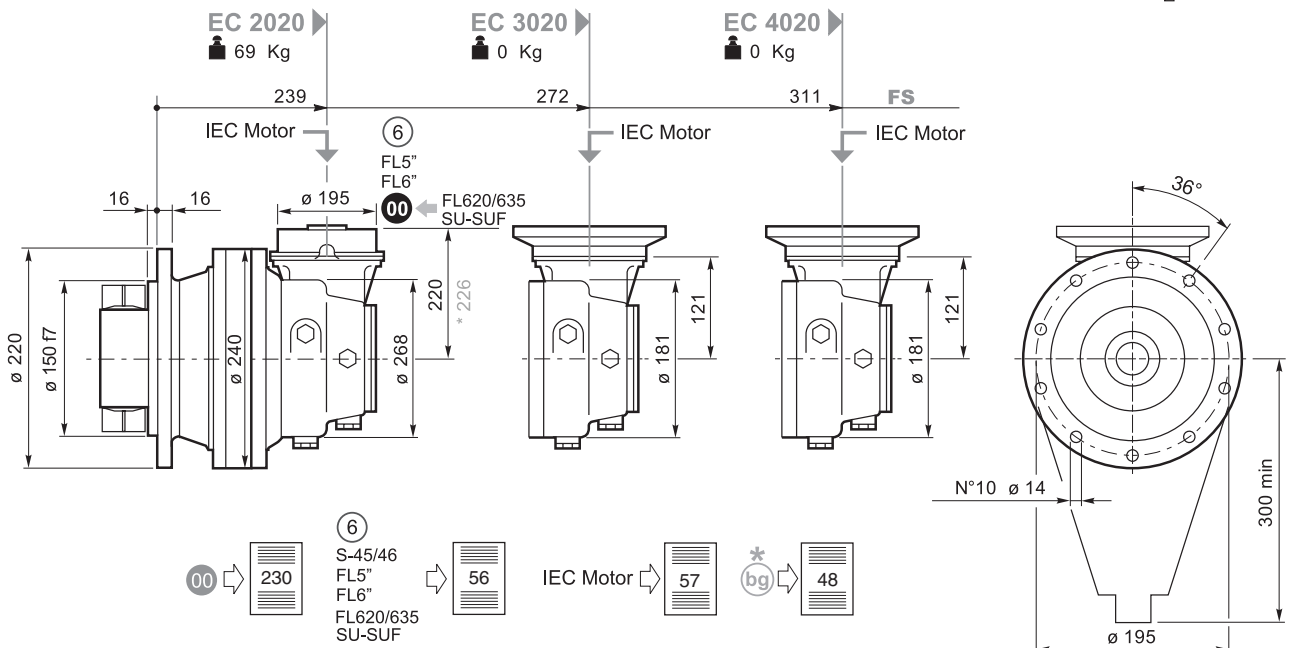
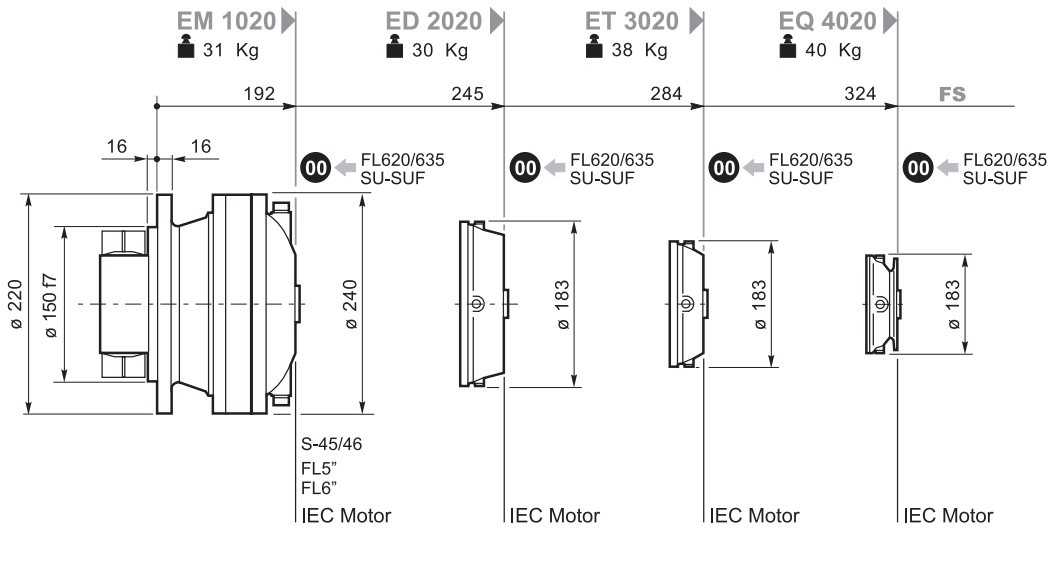
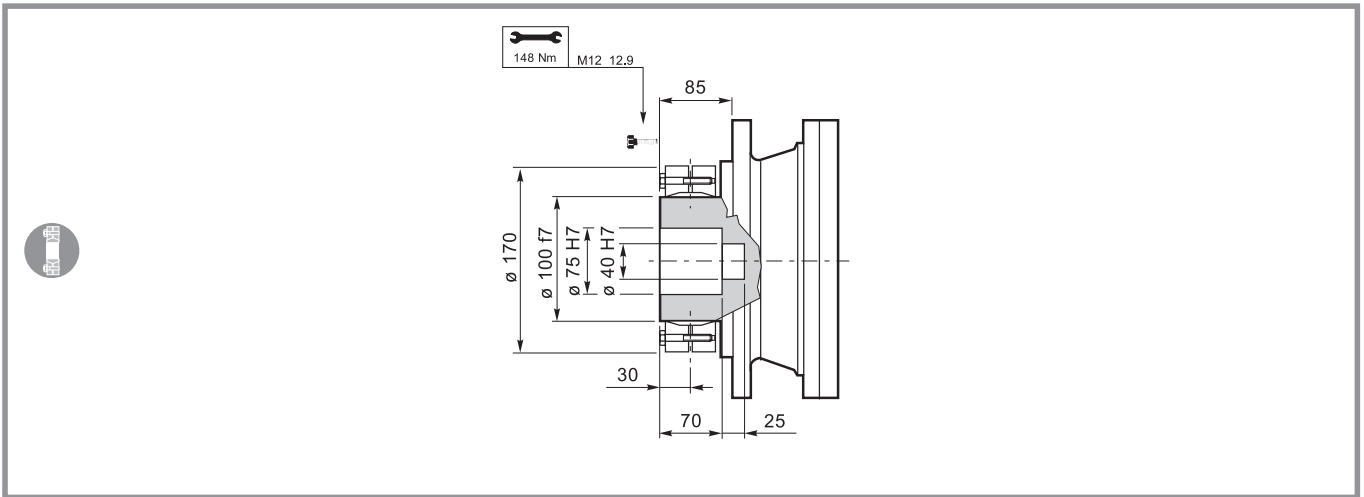
As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

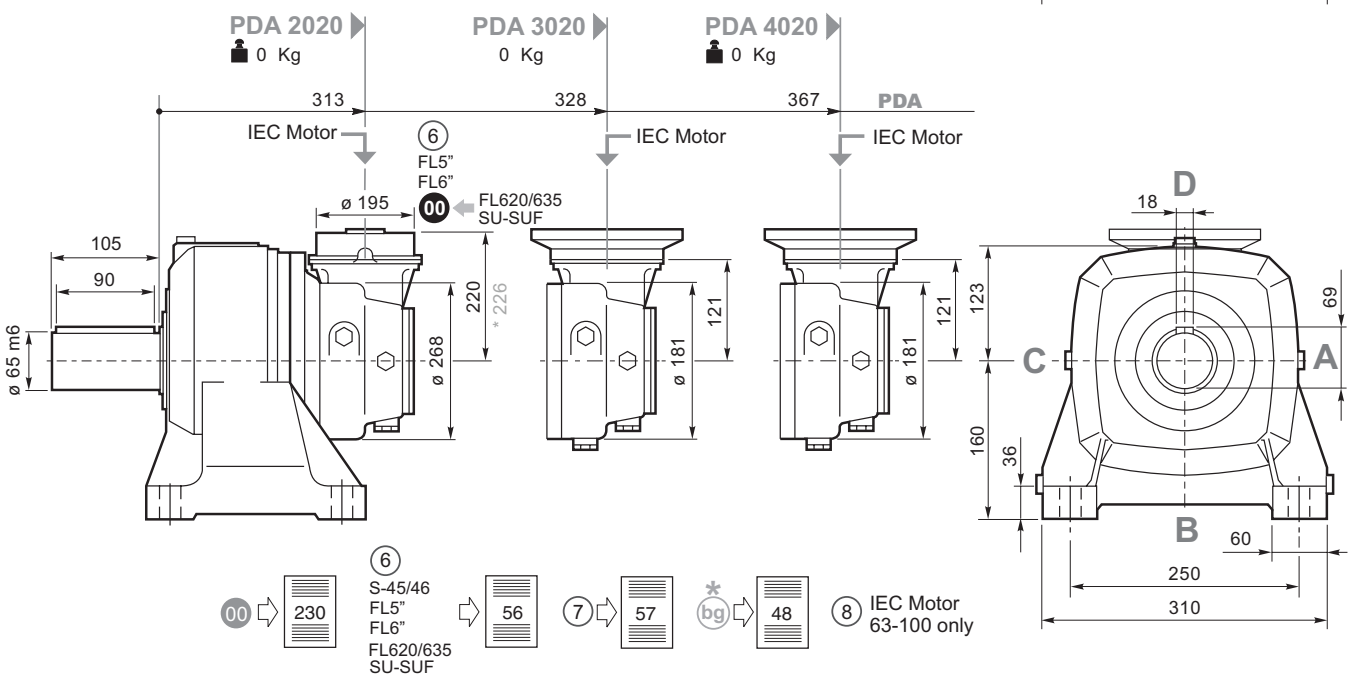
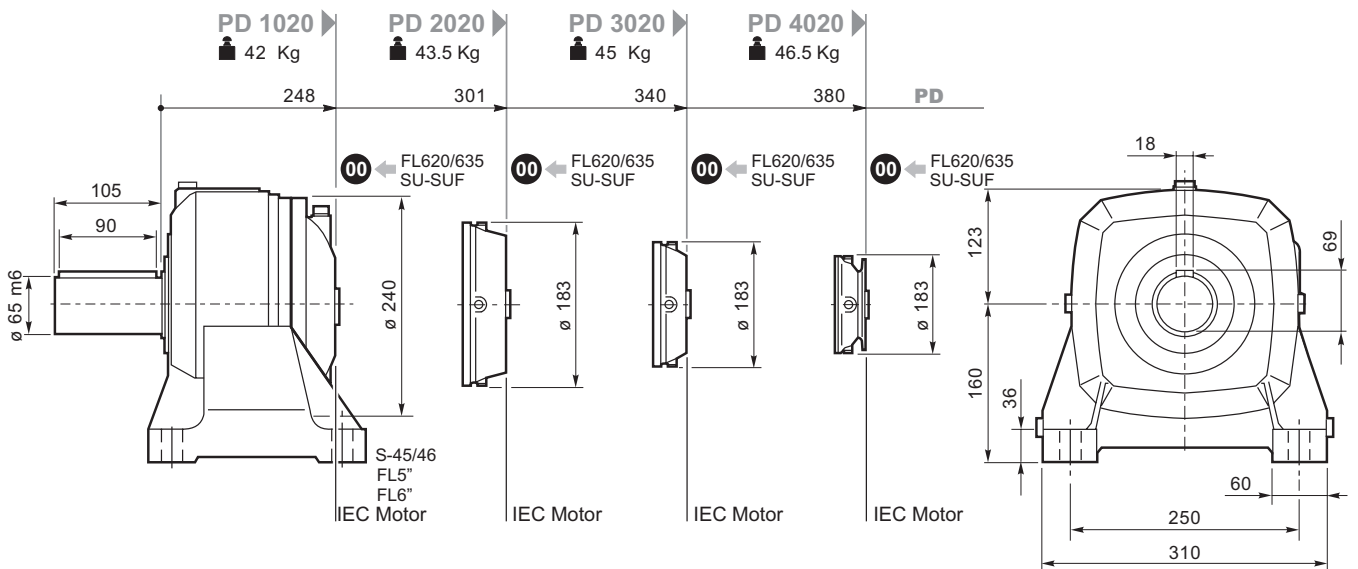
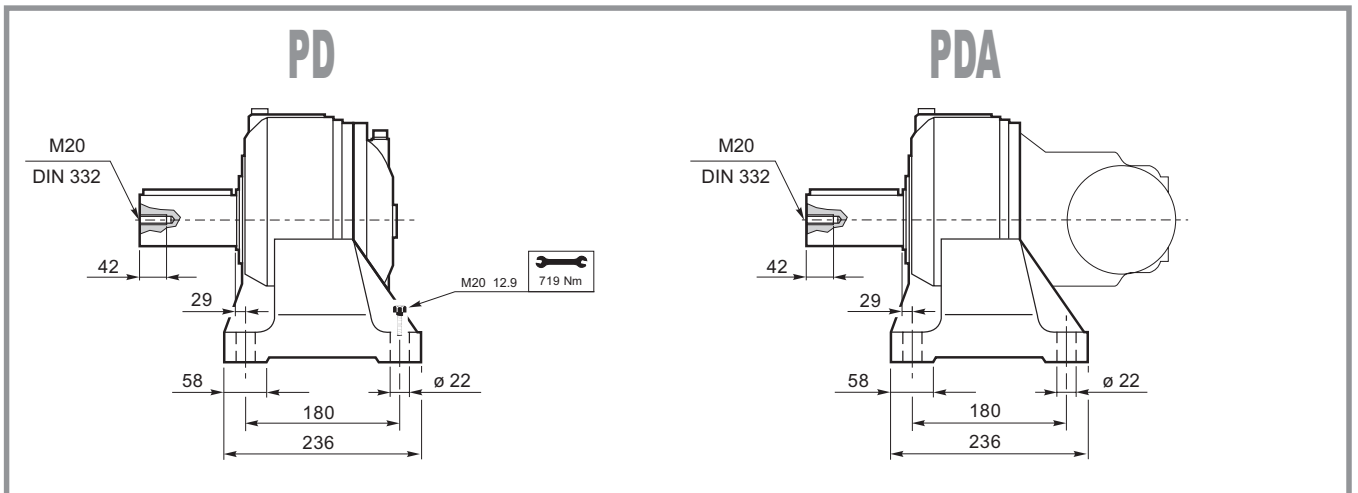






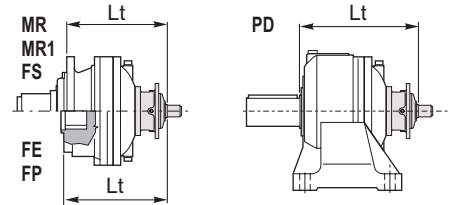
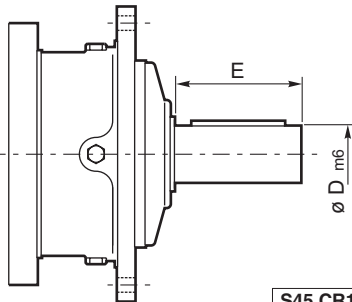






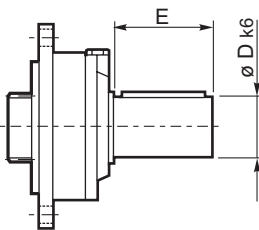
020

S45CR1-S46C1

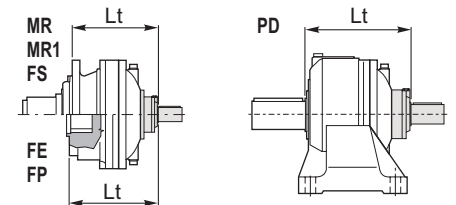


| | D m6 | E | | Lt | | | |
|----------------|---------|-----|----------------|-----------|-----|-----|-----|
| | | | | MR-MR1-FS | FE | FP | PD |
| S45 CR1 | 65 | 105 | EM 1020 | 255 | 211 | 185 | 401 |
| S46 C1 | 65 | 105 | EM 1020 | 296 | 252 | 226 | 352 |

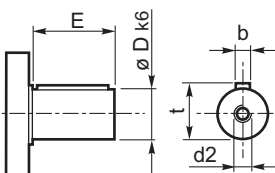
SU2



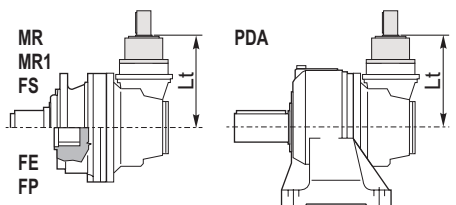
| | D k6 | E | | Lt | | | |
|-------------|---------|----|----------------|-----------|-----|-----|-----|
| | | | | MR-MR1-FS | FE | FP | PD |
| SU 2 | 40 | 58 | EM 1020 | 252 | 208 | 182 | 308 |
| | | | ED 2020 | 305 | 260 | 235 | 361 |
| | | | ET 3020 | 344 | 300 | 274 | 400 |
| | | | EQ 4020 | 384 | 339 | 314 | 440 |



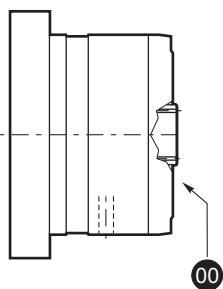
⑥ 48.82



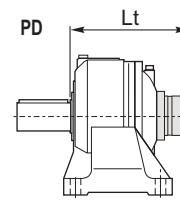
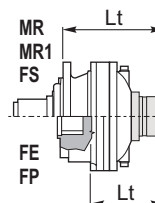
| | D | E | | Lt |
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| | | | | MR-MR1-FS-FE-FP-PDA |
| 48.82 | 48 | 82 | EC 2020 | 280 |



FL250-FL350-FL450



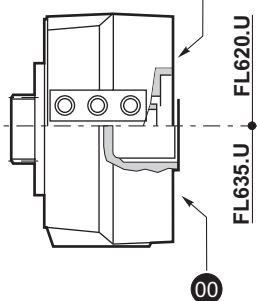
| | | Lt | | | |
|----------------------|----------|-----------|-----|-----|--------|
| | | MR-MR1-FS | FE | FP | PD-PDA |
| FL250-FL350 FL450 | EM 1020 | 285 | 241 | 215 | 342 |
| | EC 2020 | 280 | 280 | 280 | 280 |
| | EC 2020* | 377 | 377 | 377 | 377 |



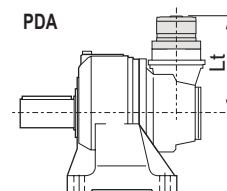
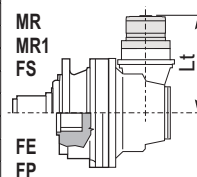
FL620/10
FL635/10

FL620U-FL635U

SAE A-AA
Shaft FE

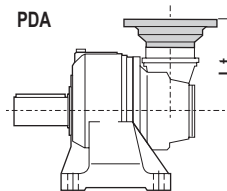
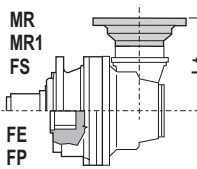
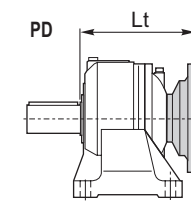
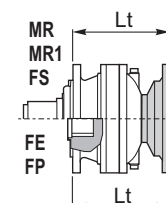


| | | Lt | | | |
|----------|----------|-----------|-------|-------|-------|
| | | MR-MR1-FS | FE | FP | PD |
| FL620/U | EM 1020 | 296.5 | 252.5 | 226.5 | 352.5 |
| | ED 2020 | 349.5 | 304.5 | 279.5 | 405.5 |
| | ET 3020 | 388.5 | 344.5 | 318.5 | 444.5 |
| | EQ 4020 | 428.5 | 383.5 | 358.5 | 484.5 |
| | EC 2020 | 324.5 | 324.5 | 324.5 | 324.5 |
| FL635U | EC 2020* | 330.5 | 330.5 | 330.5 | 330.5 |
| | EM 1020 | 283 | 329 | 213 | 339 |
| | ED 2020 | 336 | 291 | 266 | 392 |
| | ET 3020 | 375 | 331 | 305 | 431 |
| | EQ 4020 | 415 | 370 | 345 | 471 |
| FL620/10 | EC 2020 | 311 | 311 | 311 | 311 |
| | EC 2020* | 317 | 317 | 317 | 317 |
| | ED 2020 | 308.5 | 263.5 | — | 364 |
| FL620/10 | ET 3020 | 347.5 | 303.5 | — | 404 |
| | EQ 4020 | 387.5 | 342.5 | — | 443 |
| FL635/10 | ED 2020 | 290 | 184 | 220 | 346 |
| | ET 3020 | 329 | 285 | 259 | 385 |
| | EQ 4020 | 369 | 325 | 299 | 425 |



IEC Motor

| | | Lt | | | | | | | |
|----------|---------------------|--------|--------|-----------|-------------|---------|-------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| EM 1020 | MR-MR1-FS | 212 | 214 | 219 | 220 | 287 | 328 | 328 | 359 |
| EM 1020 | FE | 168 | 170 | 175 | 176 | 243 | 274 | 284 | 315 |
| EM 1020 | FP | | | | | | | | |
| ED 2020 | MR-MR1-FS | 265 | 267 | 272 | 273 | 340 | | | |
| ED 2020 | FE | 220 | 222 | 227 | 228 | 295 | | | |
| ED 2020 | FP | | | | | | | | |
| ET 3020 | MR-MR1-FS | 304 | 306 | 311 | 312 | 379 | | | |
| ET 3020 | FE | 260 | 262 | 267 | 268 | 335 | | | |
| ET 3020 | FP | | | | | | | | |
| EQ 4020 | MR-MR1-FS | 344 | 346 | 351 | 352 | 419 | | | |
| EQ 4020 | FE | 299 | 301 | 306 | 307 | 374 | | | |
| EQ 4020 | FP | | | | | | | | |
| PD 1020 | PD | 268 | 270 | 275 | 276 | 343 | 374 | 384 | 415 |
| PD 2020 | PD | 321 | 323 | 328 | 379 | 396 | 427 | | |
| PD 3020 | PD | 360 | 362 | 367 | 373 | 435 | | | |
| PD 4020 | PD | 400 | 402 | 407 | 408 | 475 | | | |
| EC 2020 | MR-MR1-FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | | | |
| EC 2020* | MR-MR1-FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | | | |
| EC 3020 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 | | | |
| EC 4020 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 | | | |

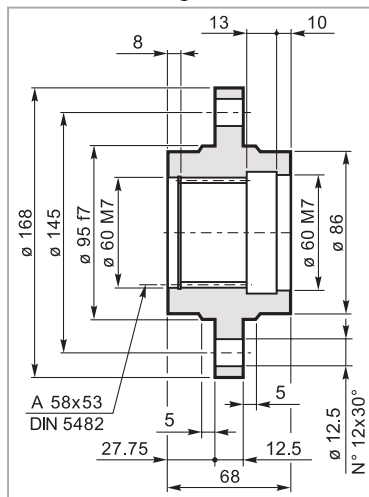


* (bg) 48



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 020

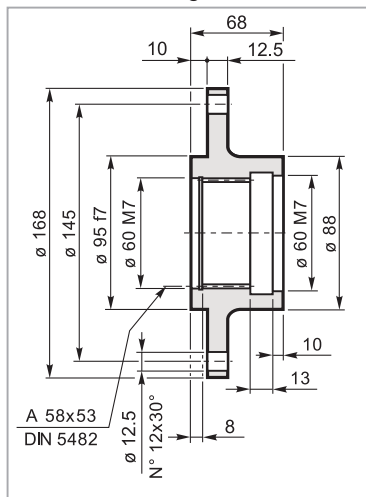


Mat. C40 UNI EN 10083
Code: 34700641800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 020

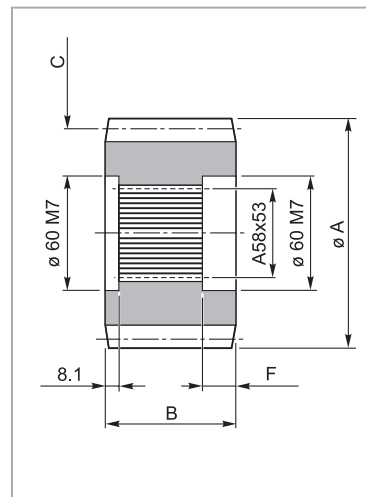


Mat. C40 UNI EN 10083
Code: 34700131800



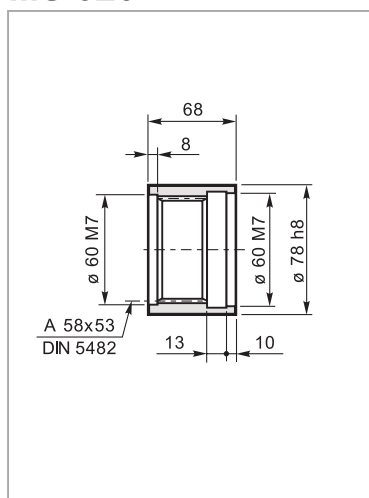
Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 020



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 020

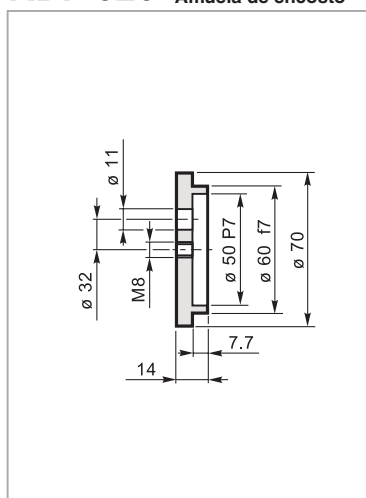


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102840600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 020



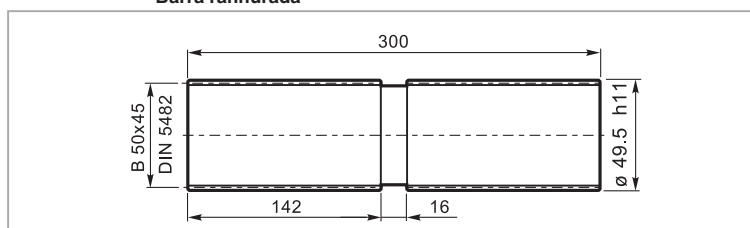
Mat. C40 UNI EN 10083
Code: 37201040800

| code | A | B | C | F |
|---------------|-------|----|------------------|------|
| 335.0143.0800 | 114.8 | 68 | M=8 Z=12 X=0.3 | 23.5 |
| 335.0174.0800 | 99.6 | 68 | M=6 Z=14 X=0.3 | 24 |
| 335.0184.0800 | 114.8 | 80 | M=8 Z=12 X=0.3 | 24 |
| 335.0274.0800 | 143 | 80 | M=10 Z=12 X=0.35 | 23.5 |
| 335.0324.0800 | 136.2 | 80 | M=8 Z=15 | 23.5 |
| 335.0344.0800 | 152 | 80 | M=10 Z=13 X=0.3 | 23.5 |
| 335.0353.000K | 127.6 | 68 | M=8 Z=13 X=0.54 | 23.5 |
| 335.2133.0600 | 143.4 | 80 | M=8 Z=15 X=0.4 | 23.5 |
| 335.3473.0600 | 156 | 80 | M=6 Z=24 | 23 |
| 335.4273.0600 | 142 | 80 | M=8 Z=16 | 23.5 |
| 335.5193.060 | 115 | 68 | M=5 Z=21 | 24 |
| 335.5942.000 | 136 | 80 | M=8 Z=14 X=0.4 | 23.5 |
| 335.6273.000 | 120 | 68 | M=8 Z=13 | 24 |



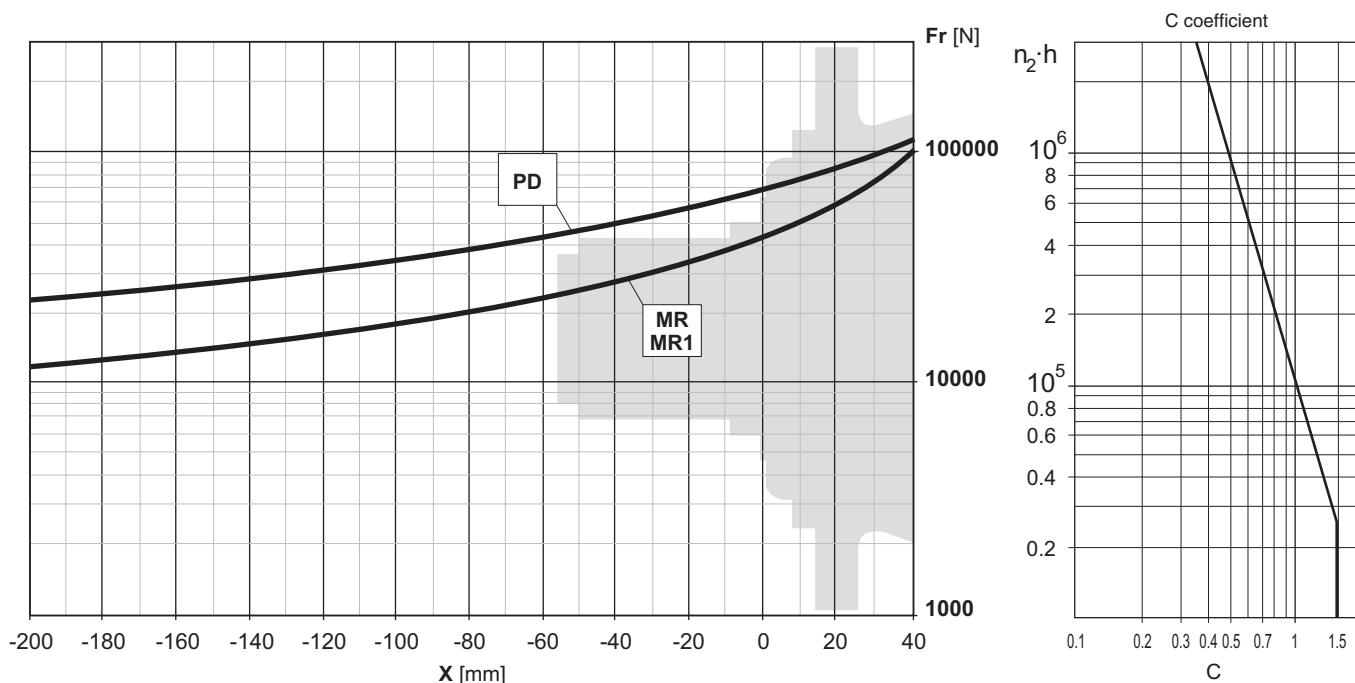
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 020

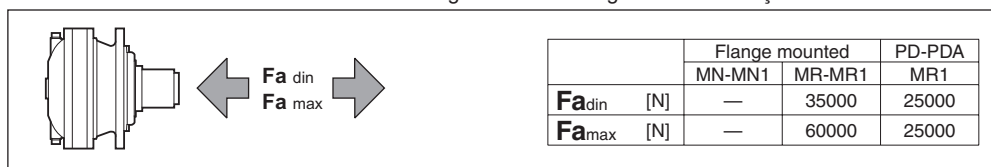


Mat. 39NiCrMo3 UNI EN 10083
Code: 39126930100

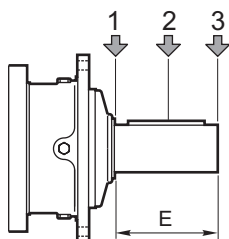
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saída



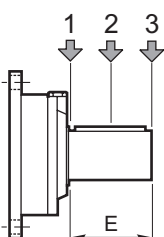
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



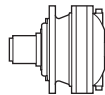
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |

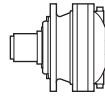


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



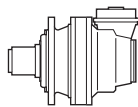
| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| ED 2030 | | | | | | | | | | | |
| 15.37 | 98 | 1510 | 15.4 | 65 | 1705 | 11.6 | 32.5 | 2100 | 7.2 | 5600 | 12 |
| 17.47 | 86 | 2121 | 19.1 | 57 | 2395 | 14.4 | 28.6 | 2732 | 8.2 | 6000 | |
| 20.28 | 74 | 2206 | 17.1 | 49.3 | 2314 | 12.0 | 24.7 | 2494 | 6.4 | 6000 | |
| 22.70 | 66 | 2231 | 15.4 | 44.1 | 2519 | 11.6 | 22.0 | 2805 | 6.5 | 6000 | |
| 26.34 | 57 | 2276 | 13.6 | 38.0 | 2383 | 9.5 | 19.0 | 2560 | 5.1 | 6000 | |
| 31.02 | 48.4 | 2134 | 10.8 | 32.2 | 2342 | 7.9 | 16.1 | 2639 | 4.5 | 6000 | |
| 36.00 | 41.7 | 2358 | 10.3 | 27.8 | 2463 | 7.2 | 13.9 | 2640 | 3.8 | 6000 | |
| 41.64 | 36.0 | 2325 | 8.8 | 24.0 | 2446 | 6.2 | 12.0 | 2678 | 3.4 | 6000 | |
| 43.50 | 34.5 | 2027 | 7.3 | 23.0 | 2119 | 5.1 | 11.5 | 2276 | 2.7 | 6000 | |
| 50.32 | 29.8 | 2060 | 6.4 | 19.9 | 2152 | 4.5 | 9.9 | 2309 | 2.4 | 6000 | |
| ET 3030 | | | | | | | | | | | |
| 59.06 | 25.4 | 2765 | 7.4 | 16.9 | 2879 | 5.1 | 8.5 | 3076 | 2.7 | 6000 | 8 |
| 61.28 | 24.5 | 2640 | 6.8 | 16.3 | 2982 | 5.1 | 8.2 | 3671 | 3.1 | 6000 | |
| 70.98 | 21.1 | 2457 | 5.4 | 14.1 | 2775 | 4.1 | 7.0 | 3206 | 2.4 | 6000 | |
| 83.76 | 17.9 | 2900 | 5.4 | 11.9 | 3275 | 4.1 | 6.0 | 3783 | 2.4 | 6000 | |
| 89.03 | 16.8 | 2591 | 4.6 | 11.2 | 2695 | 3.2 | 5.6 | 2876 | 1.7 | 6000 | |
| 96.88 | 15.5 | 3029 | 4.9 | 10.3 | 3421 | 3.7 | 5.2 | 3803 | 2.1 | 6000 | |
| 108.8 | 13.8 | 3051 | 4.4 | 9.2 | 3320 | 3.2 | 4.6 | 3410 | 1.6 | 6000 | |
| 124.2 | 12.1 | 2447 | 3.1 | 8.1 | 2528 | 2.1 | 4.0 | 2658 | 1.1 | 6000 | |
| 146.6 | 10.2 | 2888 | 3.1 | 6.8 | 2983 | 2.1 | 3.4 | 3137 | 1.1 | 6000 | |
| 157.5 | 9.5 | 3042 | 3.0 | 6.3 | 3179 | 2.1 | 3.2 | 3695 | 1.2 | 6000 | |
| 186.1 | 8.1 | 2901 | 2.4 | 5.4 | 3046 | 1.7 | 2.7 | 3292 | 0.93 | 6000 | |
| 198.9 | 7.5 | 2115 | 1.7 | 5.0 | 2221 | 1.2 | 2.5 | 2401 | 0.63 | 6000 | |
| 215.3 | 7.0 | 2953 | 2.2 | 4.6 | 3098 | 1.5 | 2.3 | 3343 | 0.81 | 6000 | |
| 249.0 | 6.0 | 2648 | 1.7 | 4.0 | 2780 | 1.2 | 2.0 | 3006 | 0.63 | 6000 | |
| 289.0 | 5.2 | 2924 | 1.6 | 3.5 | 3197 | 1.2 | 1.7 | 3489 | 0.63 | 6000 | |
| 325.7 | 4.6 | 3101 | 1.5 | 3.1 | 3244 | 1.0 | 1.5 | 3492 | 0.56 | 6000 | |
| EQ 4030 | | | | | | | | | | | |
| 367.7 | 4.1 | 3835 | 1.6 | 2.7 | 3888 | 1.1 | 1.4 | 3972 | 0.57 | 6000 | 4 |
| 404.7 | 3.7 | 2928 | 1.1 | 2.5 | 2966 | 0.77 | 1.2 | 3029 | 0.39 | 6000 | |
| 460.3 | 3.3 | 3674 | 1.3 | 2.2 | 4000 | 0.91 | 1.1 | 4605 | 0.52 | 6000 | |
| 495.4 | 3.0 | 3874 | 1.2 | 2.0 | 3925 | 0.83 | 1.0 | 4008 | 0.42 | 6000 | |
| 581.3 | 2.6 | 3894 | 1.1 | 1.7 | 3944 | 0.71 | 0.86 | 4027 | 0.36 | 6000 | |
| 643.5 | 2.3 | 3907 | 0.95 | 1.6 | 3956 | 0.64 | 0.78 | 4039 | 0.33 | 6000 | |
| 691.5 | 2.2 | 4002 | 0.91 | 1.4 | 4348 | 0.66 | 0.72 | 4494 | 0.34 | 6000 | |
| 817.1 | 1.8 | 4142 | 0.80 | 1.2 | 4424 | 0.57 | 0.61 | 4516 | 0.29 | 6000 | |
| 879.4 | 1.7 | 3945 | 0.71 | 1.1 | 3994 | 0.48 | 0.57 | 4075 | 0.24 | 6000 | |
| 1017 | 1.5 | 3963 | 0.61 | 0.98 | 4011 | 0.41 | 0.49 | 4092 | 0.21 | 6000 | |
| 1142 | 1.3 | 3550 | 0.49 | 0.88 | 3593 | 0.33 | 0.44 | 3666 | 0.17 | 6000 | |
| 1304 | 1.2 | 2886 | 0.35 | 0.77 | 2961 | 0.24 | 0.38 | 3092 | 0.12 | 6000 | |
| 1430 | 1.0 | 4445 | 0.49 | 0.70 | 4498 | 0.33 | 0.35 | 4589 | 0.17 | 6000 | |
| 1539 | 0.97 | 3406 | 0.35 | 0.65 | 3494 | 0.24 | 0.32 | 3649 | 0.12 | 6000 | |
| 1806 | 0.83 | 3248 | 0.28 | 0.55 | 3304 | 0.19 | 0.28 | 3607 | 0.11 | 6000 | |
| 1999 | 0.75 | 3610 | 0.28 | 0.50 | 3652 | 0.19 | 0.25 | 3969 | 0.10 | 6000 | |
| 2268 | 0.66 | 4502 | 0.31 | 0.44 | 4781 | 0.22 | 0.22 | 5124 | 0.12 | 6000 | |
| 2502 | 0.60 | 4519 | 0.28 | 0.40 | 4572 | 0.19 | 0.20 | 4969 | 0.10 | 6000 | |
| 2904 | 0.52 | 4726 | 0.26 | 0.34 | 5112 | 0.18 | 0.17 | 5767 | 0.10 | 6000 | |
| 3170 | 0.47 | 4042 | 0.20 | 0.32 | 4382 | 0.15 | 0.16 | 5013 | 0.08 | 6000 | |

1500
HOURS LIFE



030

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|---|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2030 | | | | | | | | | | | | |
| 15.37 | 98 | 2477 | 25.3 | 65 | 2626 | 17.9 | 32.5 | 2800 | 9.5 | 5600 | 12 | |
| 17.47 | 86 | 2896 | 26.0 | 57 | 3031 | 18.2 | 28.6 | 3443 | 10.3 | 6000 | | |
| 20.28 | 74 | 2654 | 20.6 | 49.3 | 2774 | 14.3 | 24.7 | 3136 | 8.1 | 6000 | | |
| 22.70 | 66 | 2984 | 20.7 | 44.1 | 3119 | 14.4 | 22.0 | 3648 | 8.4 | 6000 | | |
| 26.34 | 57 | 2732 | 16.3 | 38.0 | 2850 | 11.3 | 19.0 | 3323 | 6.6 | 6000 | | |
| 31.02 | 48.4 | 2703 | 13.7 | 32.2 | 2925 | 9.9 | 16.1 | 3250 | 5.5 | 6000 | | |
| 36.00 | 41.7 | 2823 | 12.3 | 27.8 | 3053 | 8.9 | 13.9 | 3555 | 5.2 | 6000 | | |
| 41.64 | 36.0 | 2857 | 10.8 | 24.0 | 3077 | 7.7 | 12.0 | 3406 | 4.3 | 6000 | | |
| 43.50 | 34.5 | 2444 | 8.8 | 23.0 | 2636 | 6.3 | 11.5 | 3082 | 3.7 | 6000 | | |
| 50.32 | 29.8 | 2480 | 7.7 | 19.9 | 2726 | 5.7 | 9.9 | 3181 | 3.3 | 6000 | | |
| ET 3030 | | | | | | | | | | | | |
| 59.06 | 25.4 | 3536 | 9.4 | 16.9 | 3860 | 6.8 | 8.5 | 4457 | 4.0 | 6000 | | 8 |
| 61.28 | 24.5 | 3729 | 9.6 | 16.3 | 3821 | 6.5 | 8.2 | 3945 | 3.4 | 6000 | | |
| 70.98 | 21.1 | 3221 | 7.1 | 14.1 | 3289 | 4.9 | 7.0 | 3383 | 2.5 | 6000 | | |
| 83.76 | 17.9 | 3801 | 7.1 | 11.9 | 3881 | 4.9 | 6.0 | 3993 | 2.5 | 6000 | | |
| 89.03 | 16.8 | 3410 | 6.0 | 11.2 | 3718 | 4.4 | 5.6 | 4287 | 2.5 | 6000 | | |
| 96.88 | 15.5 | 3831 | 6.2 | 10.3 | 3906 | 4.2 | 5.2 | 4014 | 2.2 | 6000 | | |
| 108.8 | 13.8 | 3442 | 5.0 | 9.2 | 3505 | 3.4 | 4.6 | 3599 | 1.7 | 6000 | | |
| 124.2 | 12.1 | 2749 | 3.5 | 8.1 | 2840 | 2.4 | 4.0 | 2986 | 1.3 | 6000 | | |
| 146.6 | 10.2 | 3244 | 3.5 | 6.8 | 3351 | 2.4 | 3.4 | 3524 | 1.3 | 6000 | | |
| 157.5 | 9.5 | 4339 | 4.3 | 6.3 | 4414 | 2.9 | 3.2 | 4527 | 1.5 | 6000 | | |
| 186.1 | 8.1 | 3538 | 3.0 | 5.4 | 3856 | 2.2 | 2.7 | 4134 | 1.2 | 6000 | | |
| 198.9 | 7.5 | 2594 | 2.0 | 5.0 | 2878 | 1.5 | 2.5 | 3300 | 0.87 | 6000 | | |
| 215.3 | 7.0 | 3611 | 2.6 | 4.6 | 3996 | 1.9 | 2.3 | 4195 | 1.0 | 6000 | | |
| 249.0 | 6.0 | 3248 | 2.0 | 4.0 | 3603 | 1.5 | 2.0 | 4131 | 0.87 | 6000 | | |
| 289.0 | 5.2 | 3769 | 2.0 | 3.5 | 4181 | 1.5 | 1.7 | 4794 | 0.87 | 6000 | | |
| 325.7 | 4.6 | 4004 | 1.9 | 3.1 | 4117 | 1.3 | 1.5 | 4480 | 0.72 | 6000 | | |
| EQ 4030 | | | | | | | | | | | | |
| 367.7 | 4.1 | 4047 | 1.7 | 2.7 | 4101 | 1.2 | 1.4 | 4461 | 0.64 | 6000 | 4 | |
| 404.7 | 3.7 | 3089 | 1.2 | 2.5 | 3238 | 0.84 | 1.2 | 3612 | 0.47 | 6000 | | |
| 460.3 | 3.3 | 5066 | 1.7 | 2.2 | 5133 | 1.2 | 1.1 | 5584 | 0.64 | 6000 | | |
| 495.4 | 3.0 | 4087 | 1.3 | 2.0 | 4188 | 0.89 | 1.0 | 4674 | 0.49 | 6000 | | |
| 581.3 | 2.6 | 4107 | 1.1 | 1.7 | 4297 | 0.77 | 0.86 | 4791 | 0.43 | 6000 | | |
| 643.5 | 2.3 | 4121 | 1.0 | 1.6 | 4367 | 0.71 | 0.78 | 4867 | 0.40 | 6000 | | |
| 691.5 | 2.2 | 4585 | 1.0 | 1.4 | 4895 | 0.74 | 0.72 | 5458 | 0.41 | 6000 | | |
| 817.1 | 1.8 | 4711 | 0.91 | 1.2 | 5027 | 0.64 | 0.61 | 5599 | 0.36 | 6000 | | |
| 879.4 | 1.7 | 4303 | 0.77 | 1.1 | 4588 | 0.55 | 0.57 | 5105 | 0.30 | 6000 | | |
| 1017 | 1.5 | 4404 | 0.68 | 0.98 | 4693 | 0.48 | 0.49 | 5218 | 0.27 | 6000 | | |
| 1142 | 1.3 | 4114 | 0.57 | 0.88 | 4382 | 0.40 | 0.44 | 4869 | 0.22 | 6000 | | |
| 1304 | 1.2 | 3349 | 0.40 | 0.77 | 3564 | 0.29 | 0.38 | 3960 | 0.16 | 6000 | | |
| 1430 | 1.0 | 5151 | 0.57 | 0.70 | 5486 | 0.40 | 0.35 | 6095 | 0.22 | 6000 | | |
| 1539 | 0.97 | 3952 | 0.40 | 0.65 | 4205 | 0.29 | 0.32 | 4673 | 0.16 | 6000 | | |
| 1806 | 0.83 | 4071 | 0.35 | 0.55 | 4327 | 0.25 | 0.28 | 4791 | 0.14 | 6000 | | |
| 1999 | 0.75 | 4487 | 0.35 | 0.50 | 4772 | 0.25 | 0.25 | 5290 | 0.14 | 6000 | | |
| 2268 | 0.66 | 5786 | 0.40 | 0.44 | 6151 | 0.28 | 0.22 | 6814 | 0.16 | 6000 | | |
| 2502 | 0.60 | 5617 | 0.35 | 0.40 | 5974 | 0.25 | 0.20 | 6623 | 0.14 | 6000 | | |
| 2904 | 0.52 | 6519 | 0.35 | 0.34 | 6933 | 0.25 | 0.17 | 7612 | 0.14 | 6000 | | |
| 3170 | 0.47 | 5827 | 0.29 | 0.32 | 6280 | 0.21 | 0.16 | 7121 | 0.12 | 6000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3030 - PDA 3030

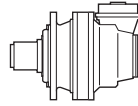
| | | | | | | | | | | |
|-------|------|------|-----|------|------|-----|------|------|------|------|
| 35.49 | 42.3 | 1160 | 5.1 | 28.2 | 1310 | 3.9 | 14.1 | 1613 | 2.4 | 6000 |
| 41.88 | 35.8 | 1369 | 5.1 | 23.9 | 1546 | 3.9 | 11.9 | 1903 | 2.4 | 6000 |
| 46.09 | 32.5 | 1507 | 5.1 | 21.7 | 1702 | 3.9 | 10.8 | 2095 | 2.4 | 6000 |
| 52.42 | 28.6 | 1714 | 5.1 | 19.1 | 1935 | 3.9 | 9.5 | 2383 | 2.4 | 6000 |
| 54.39 | 27.6 | 1778 | 5.1 | 18.4 | 2008 | 3.9 | 9.2 | 2472 | 2.4 | 6000 |
| 60.84 | 24.7 | 1989 | 5.1 | 16.4 | 2246 | 3.9 | 8.2 | 2765 | 2.4 | 6000 |
| 68.09 | 22.0 | 2226 | 5.1 | 14.7 | 2514 | 3.9 | 7.3 | 3095 | 2.4 | 6000 |
| 79.02 | 19.0 | 2560 | 5.1 | 12.7 | 2664 | 3.5 | 6.3 | 2845 | 1.9 | 6000 |
| 88.66 | 16.9 | 1774 | 3.1 | 11.3 | 2003 | 2.4 | 5.6 | 2467 | 1.5 | 6000 |
| 99.17 | 15.1 | 1984 | 3.1 | 10.1 | 2241 | 2.4 | 5.0 | 2759 | 1.5 | 6000 |
| 111.0 | 13.5 | 2221 | 3.1 | 9.0 | 2508 | 2.4 | 4.5 | 3088 | 1.5 | 6000 |
| 128.8 | 11.6 | 2577 | 3.1 | 7.8 | 2791 | 2.3 | 3.9 | 3118 | 1.3 | 6000 |
| 140.2 | 10.7 | 2023 | 2.3 | 7.1 | 2130 | 1.6 | 3.6 | 2310 | 0.86 | 6000 |
| 151.7 | 9.9 | 2826 | 2.9 | 6.6 | 2973 | 2.1 | 3.3 | 3219 | 1.1 | 6000 |
| 176.0 | 8.5 | 2767 | 2.5 | 5.7 | 2873 | 1.7 | 2.8 | 3336 | 0.99 | 6000 |
| 203.6 | 7.4 | 2805 | 2.2 | 4.9 | 2960 | 1.5 | 2.5 | 3356 | 0.86 | 6000 |
| 215.8 | 7.0 | 2391 | 1.7 | 4.6 | 2486 | 1.2 | 2.3 | 2894 | 0.70 | 6000 |
| 244.1 | 6.1 | 2853 | 1.8 | 4.1 | 3081 | 1.3 | 2.0 | 3576 | 0.77 | 6000 |
| 282.3 | 5.3 | 2908 | 1.6 | 3.5 | 3181 | 1.2 | 1.8 | 3480 | 0.65 | 6000 |

5

EC 4030 - PDA 4030

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 319.9 | 4.7 | 3817 | 1.9 | 3.1 | 3870 | 1.3 | 1.6 | 3956 | 0.65 | 6000 |
| 347.1 | 4.3 | 3262 | 1.5 | 2.9 | 3306 | 1.0 | 1.4 | 3377 | 0.51 | 6000 |
| 401.5 | 3.7 | 3278 | 1.3 | 2.5 | 3321 | 0.87 | 1.2 | 3392 | 0.44 | 6000 |
| 473.7 | 3.2 | 3868 | 1.3 | 2.1 | 3919 | 0.87 | 1.1 | 4002 | 0.44 | 6000 |
| 481.2 | 3.1 | 3298 | 1.1 | 2.1 | 3340 | 0.73 | 1.0 | 3410 | 0.37 | 6000 |
| 567.9 | 2.6 | 3891 | 1.1 | 1.8 | 3941 | 0.73 | 0.88 | 4024 | 0.37 | 6000 |
| 656.8 | 2.3 | 3909 | 0.94 | 1.5 | 3959 | 0.63 | 0.76 | 4041 | 0.32 | 6000 |
| 716.7 | 2.1 | 3242 | 0.71 | 1.4 | 3329 | 0.49 | 0.70 | 3479 | 0.25 | 6000 |
| 822.2 | 1.8 | 4147 | 0.79 | 1.2 | 4502 | 0.57 | 0.61 | 5059 | 0.32 | 6000 |
| 930.9 | 1.6 | 3528 | 0.60 | 1.1 | 3572 | 0.40 | 0.54 | 3645 | 0.21 | 6000 |
| 993.8 | 1.5 | 3312 | 0.52 | 1.0 | 3399 | 0.36 | 0.50 | 3551 | 0.19 | 6000 |
| 1165 | 1.3 | 4417 | 0.60 | 0.86 | 4471 | 0.40 | 0.43 | 4563 | 0.21 | 6000 |
| 1291 | 1.2 | 3563 | 0.43 | 0.77 | 3606 | 0.29 | 0.39 | 3704 | 0.15 | 6000 |
| 1352 | 1.1 | 4059 | 0.47 | 0.74 | 4403 | 0.34 | 0.37 | 5043 | 0.20 | 6000 |
| 1616 | 0.93 | 4461 | 0.43 | 0.62 | 4514 | 0.29 | 0.31 | 4637 | 0.15 | 6000 |
| 1848 | 0.81 | 4322 | 0.37 | 0.54 | 4683 | 0.27 | 0.27 | 4963 | 0.14 | 6000 |
| 1959 | 0.77 | 3815 | 0.31 | 0.51 | 4218 | 0.23 | 0.26 | 4817 | 0.13 | 6000 |
| 2208 | 0.68 | 4043 | 0.29 | 0.45 | 4134 | 0.20 | 0.23 | 4500 | 0.11 | 6000 |
| 2563 | 0.59 | 4611 | 0.28 | 0.39 | 4798 | 0.20 | 0.20 | 5222 | 0.11 | 6000 |
| 2964 | 0.51 | 4227 | 0.22 | 0.34 | 4616 | 0.16 | 0.17 | 5138 | 0.09 | 6000 |
| 3097 | 0.48 | 4023 | 0.20 | 0.32 | 4362 | 0.15 | 0.16 | 4991 | 0.08 | 6000 |

3



| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P _T [kW] |
|------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|---------------------------|------------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |

EC 3030 - PDA 3030

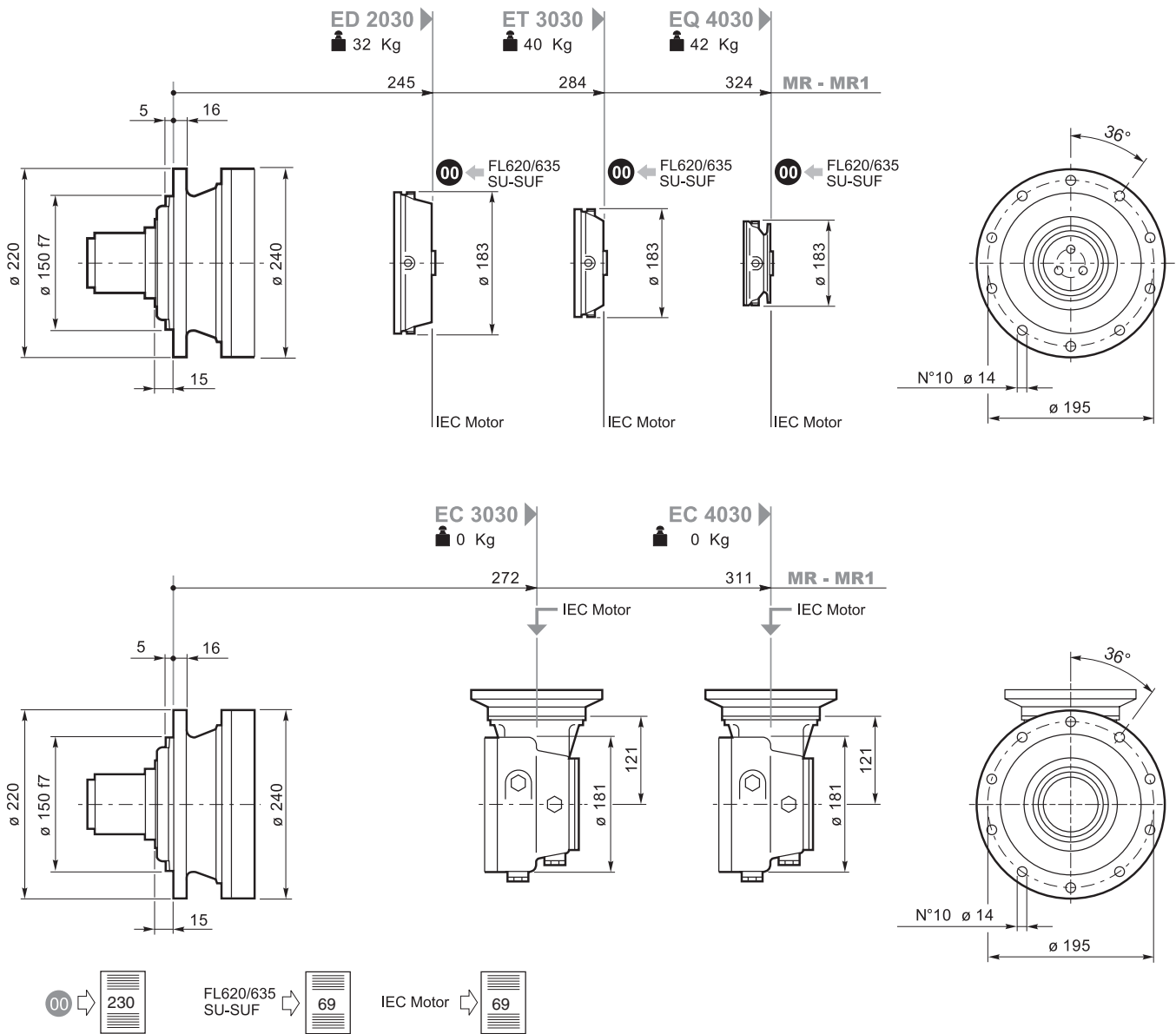
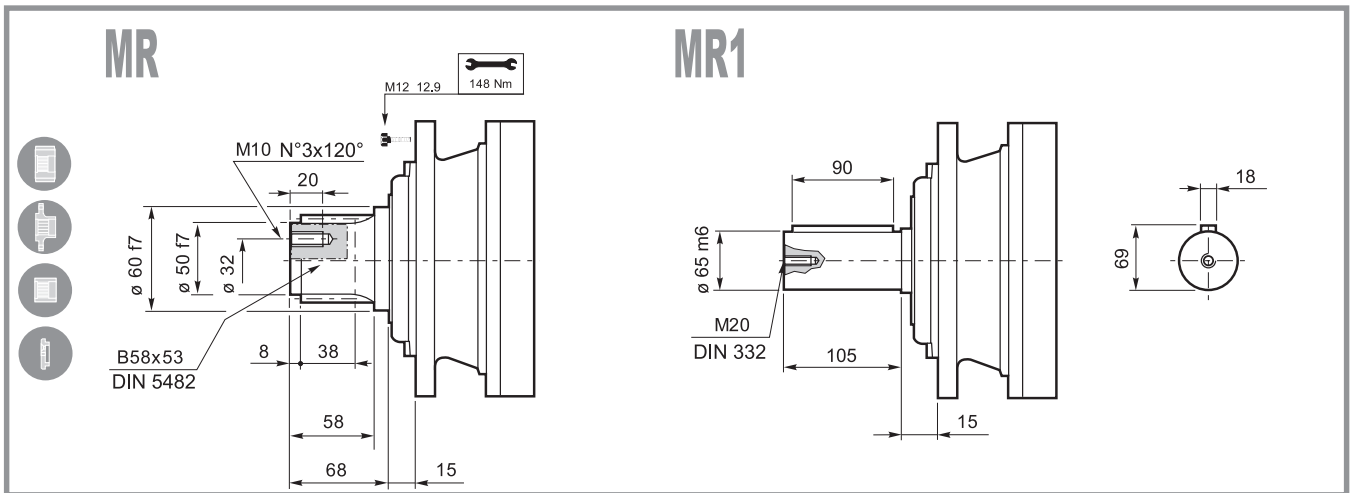
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|-------|------|------|-----|------|------|-----|------|------|------|------|
| 35.49 | 42.3 | 2050 | 9.1 | 28.2 | 2315 | 6.8 | 14.1 | 2850 | 4.2 | 6000 |
| 41.88 | 35.8 | 2419 | 9.1 | 23.9 | 2731 | 6.8 | 11.9 | 3363 | 4.2 | 6000 |
| 46.09 | 32.5 | 2662 | 9.1 | 21.7 | 2873 | 6.5 | 10.8 | 2971 | 3.4 | 6000 |
| 52.42 | 28.6 | 3028 | 9.1 | 19.1 | 3419 | 6.8 | 9.5 | 4210 | 4.2 | 6000 |
| 54.39 | 27.6 | 3141 | 9.1 | 18.4 | 3390 | 6.5 | 9.2 | 3505 | 3.4 | 6000 |
| 60.84 | 24.7 | 3136 | 8.1 | 16.4 | 3429 | 5.9 | 8.2 | 3967 | 3.4 | 6000 |
| 68.09 | 22.0 | 3648 | 8.4 | 14.7 | 3978 | 6.1 | 7.3 | 4388 | 3.4 | 6000 |
| 79.02 | 19.0 | 3323 | 6.6 | 12.7 | 3626 | 4.8 | 6.3 | 4185 | 2.8 | 6000 |
| 88.66 | 16.9 | 3134 | 5.6 | 11.3 | 3474 | 4.1 | 5.6 | 3573 | 2.1 | 6000 |
| 99.17 | 15.1 | 3491 | 5.5 | 10.1 | 3803 | 4.0 | 5.0 | 4380 | 2.3 | 6000 |
| 111.0 | 13.5 | 3924 | 5.6 | 9.0 | 4350 | 4.1 | 4.5 | 4472 | 2.1 | 6000 |
| 128.8 | 11.6 | 3690 | 4.5 | 7.8 | 4014 | 3.3 | 3.9 | 4614 | 1.9 | 6000 |
| 140.2 | 10.7 | 2491 | 2.8 | 7.1 | 2632 | 2.0 | 3.6 | 3129 | 1.2 | 6000 |
| 151.7 | 9.9 | 3455 | 3.6 | 6.6 | 3662 | 2.5 | 3.3 | 4107 | 1.4 | 6000 |
| 176.0 | 8.5 | 3938 | 3.5 | 5.7 | 4251 | 2.5 | 2.8 | 4767 | 1.4 | 6000 |
| 203.6 | 7.4 | 3619 | 2.8 | 4.9 | 3824 | 2.0 | 2.5 | 4546 | 1.2 | 6000 |
| 215.8 | 7.0 | 3433 | 2.5 | 4.6 | 3736 | 1.8 | 2.3 | 4298 | 1.0 | 6000 |
| 244.1 | 6.1 | 4166 | 2.7 | 4.1 | 4565 | 2.0 | 2.0 | 4851 | 1.0 | 6000 |
| 282.3 | 5.3 | 3759 | 2.1 | 3.5 | 4157 | 1.5 | 1.8 | 4777 | 0.89 | 6000 |

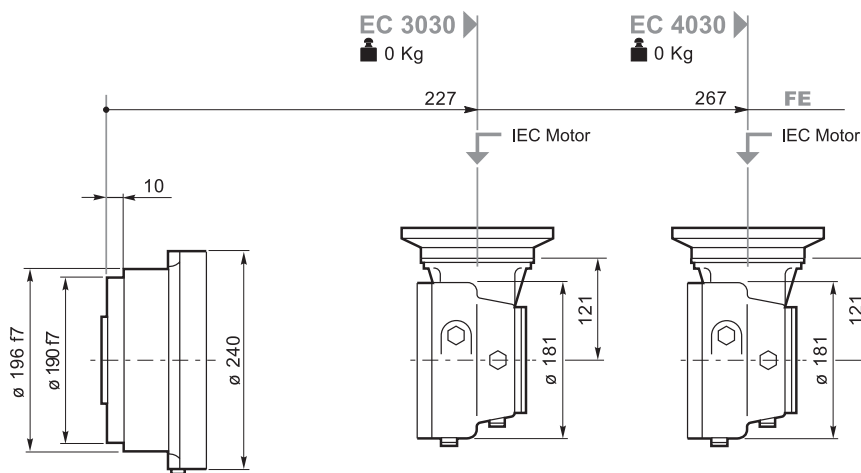
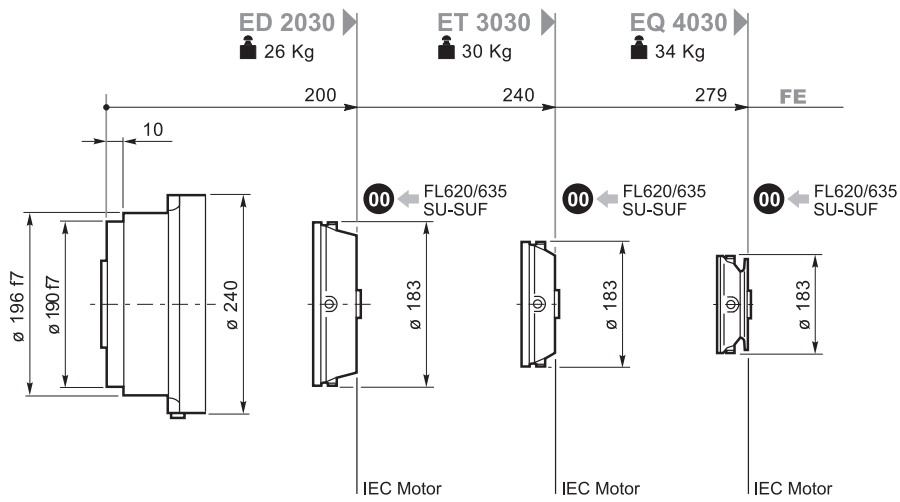
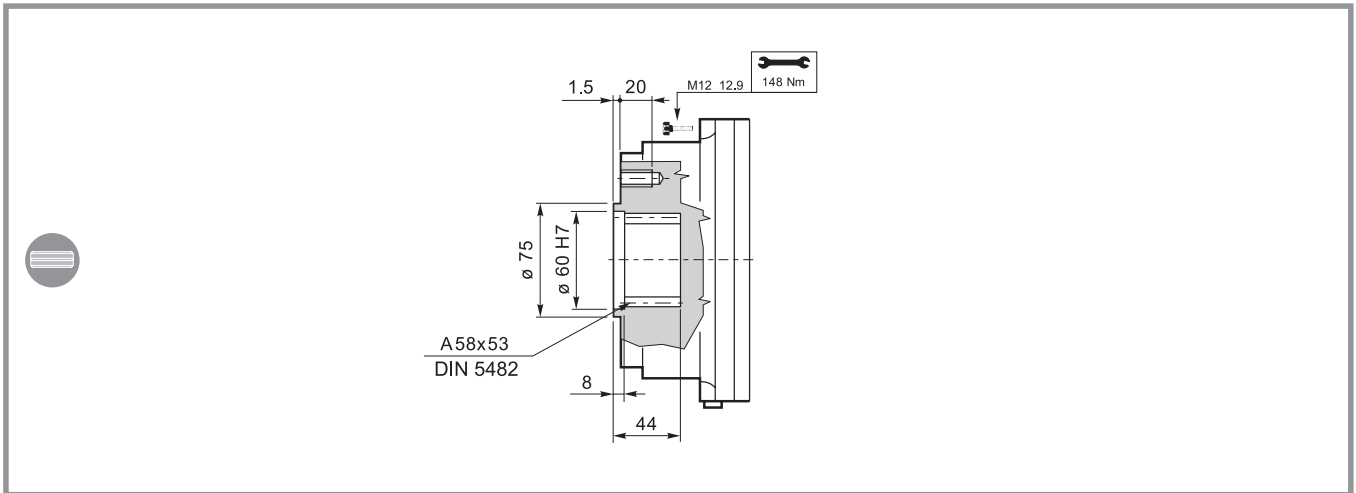
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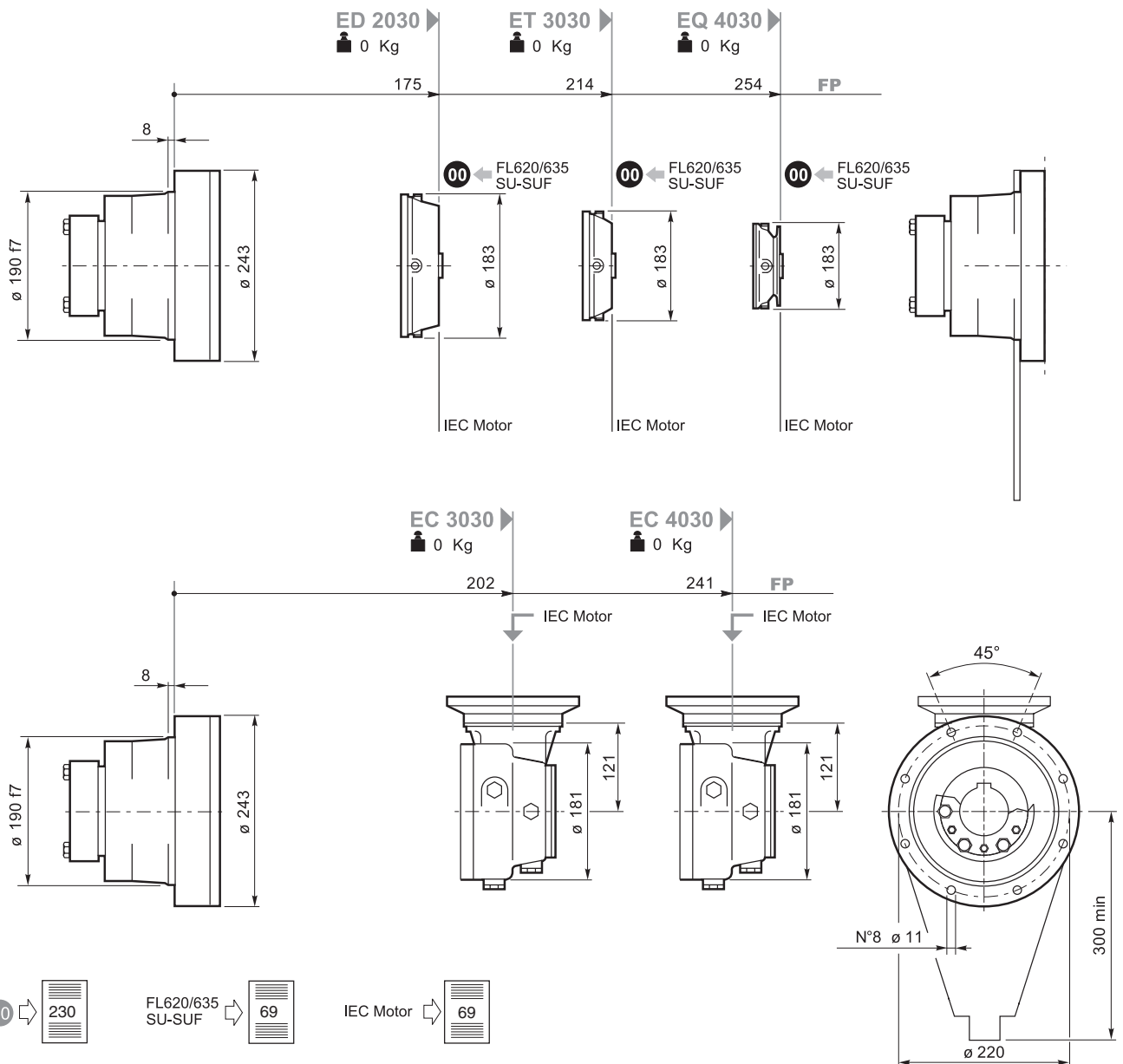
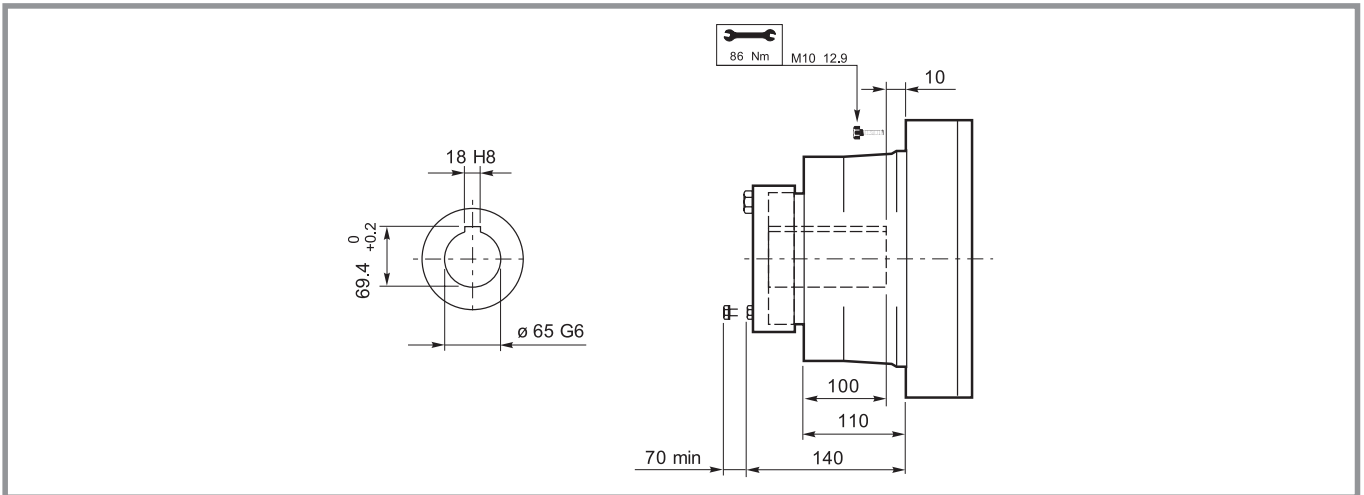
EC 4030 - PDA 4030

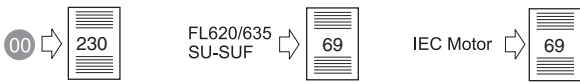
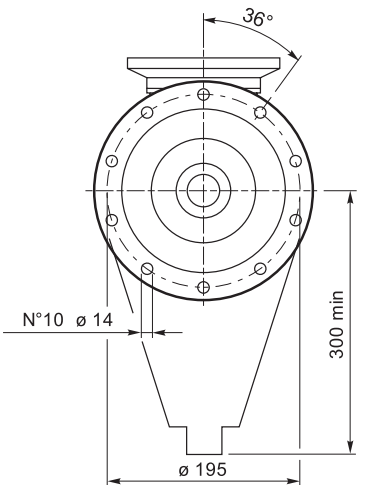
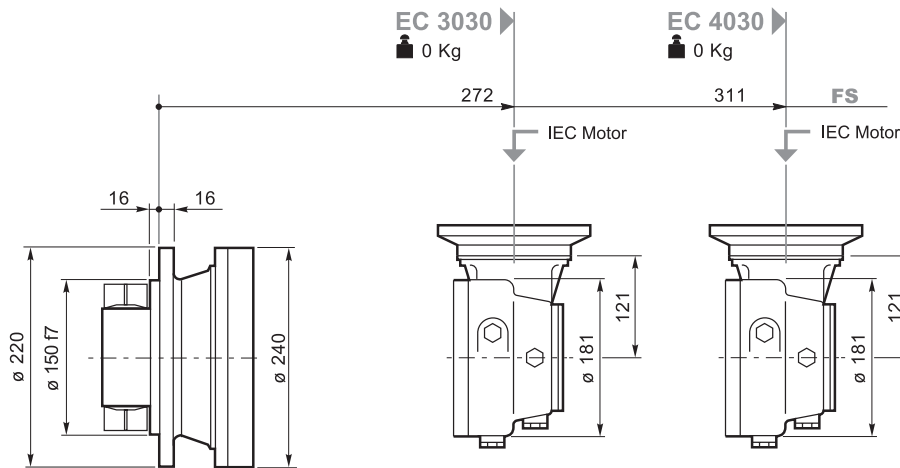
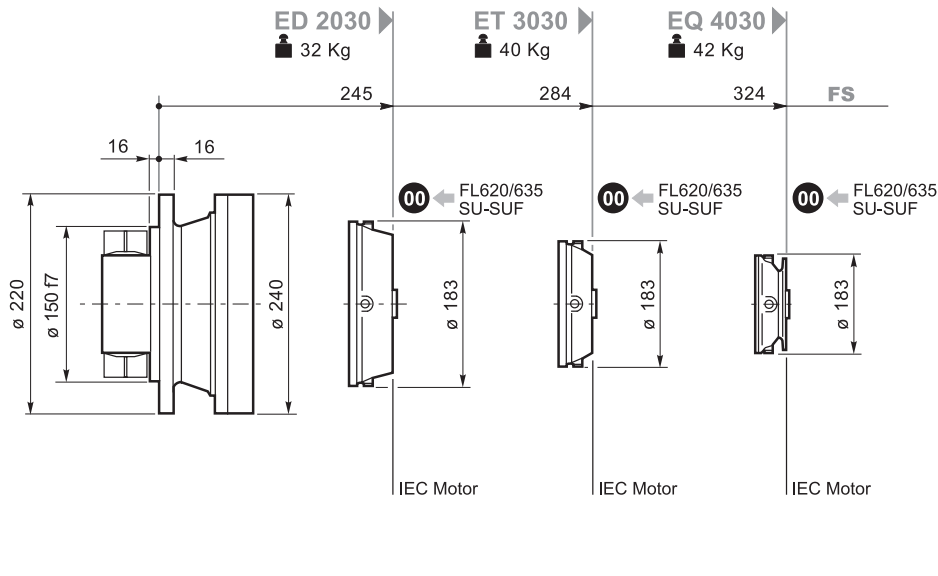
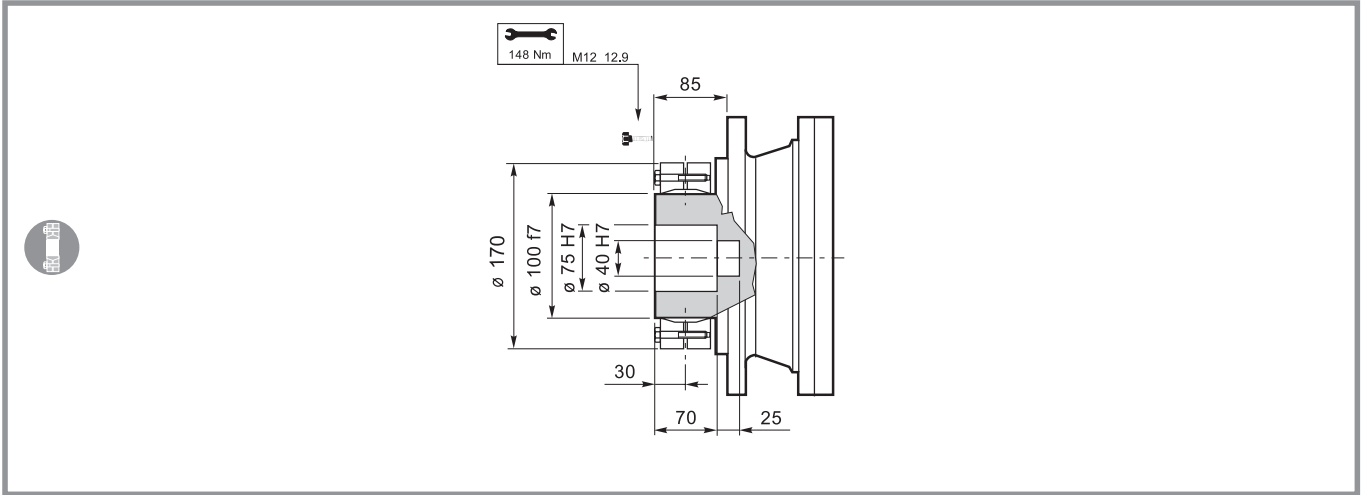
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|-------|------|------|------|------|------|------|------|------|------|------|
| 319.9 | 4.7 | 4027 | 2.0 | 3.1 | 4082 | 1.3 | 1.6 | 4363 | 0.71 | 6000 |
| 347.1 | 4.3 | 3442 | 1.6 | 2.9 | 3487 | 1.1 | 1.4 | 3845 | 0.58 | 6000 |
| 401.5 | 3.7 | 3458 | 1.4 | 2.5 | 3524 | 0.92 | 1.2 | 3933 | 0.51 | 6000 |
| 473.7 | 3.2 | 4081 | 1.4 | 2.1 | 4158 | 0.92 | 1.1 | 4641 | 0.51 | 6000 |
| 481.2 | 3.1 | 3478 | 1.1 | 2.1 | 3628 | 0.79 | 1.0 | 4045 | 0.44 | 6000 |
| 567.9 | 2.6 | 4104 | 1.1 | 1.8 | 4281 | 0.79 | 0.88 | 4774 | 0.44 | 6000 |
| 656.8 | 2.3 | 4123 | 0.99 | 1.5 | 4381 | 0.70 | 0.76 | 4882 | 0.39 | 6000 |
| 716.7 | 2.1 | 3642 | 0.80 | 1.4 | 3740 | 0.55 | 0.70 | 4160 | 0.30 | 6000 |
| 822.2 | 1.8 | 5162 | 0.99 | 1.2 | 5485 | 0.70 | 0.61 | 6112 | 0.39 | 6000 |
| 930.9 | 1.6 | 3984 | 0.67 | 1.1 | 4246 | 0.48 | 0.54 | 4721 | 0.27 | 6000 |
| 993.8 | 1.5 | 3720 | 0.59 | 1.0 | 3933 | 0.41 | 0.50 | 4372 | 0.23 | 6000 |
| 1165 | 1.3 | 4987 | 0.67 | 0.86 | 5315 | 0.48 | 0.43 | 5910 | 0.27 | 6000 |
| 1291 | 1.2 | 4194 | 0.51 | 0.77 | 4465 | 0.36 | 0.39 | 4958 | 0.20 | 6000 |
| 1352 | 1.1 | 5788 | 0.67 | 0.74 | 6168 | 0.48 | 0.37 | 6859 | 0.27 | 6000 |
| 1616 | 0.93 | 5250 | 0.51 | 0.62 | 5590 | 0.36 | 0.31 | 6207 | 0.20 | 6000 |
| 1848 | 0.81 | 5608 | 0.48 | 0.54 | 5965 | 0.34 | 0.27 | 6613 | 0.19 | 6000 |
| 1959 | 0.77 | 5446 | 0.44 | 0.51 | 5792 | 0.31 | 0.26 | 6423 | 0.17 | 6000 |
| 2208 | 0.68 | 5079 | 0.36 | 0.45 | 5397 | 0.26 | 0.23 | 5977 | 0.14 | 6000 |
| 2563 | 0.59 | 5894 | 0.36 | 0.39 | 6264 | 0.26 | 0.20 | 6937 | 0.14 | 6000 |
| 2964 | 0.51 | 5800 | 0.31 | 0.34 | 6163 | 0.22 | 0.17 | 6824 | 0.12 | 6000 |
| 3097 | 0.48 | 5802 | 0.29 | 0.32 | 6253 | 0.21 | 0.16 | 7092 | 0.12 | 6000 |

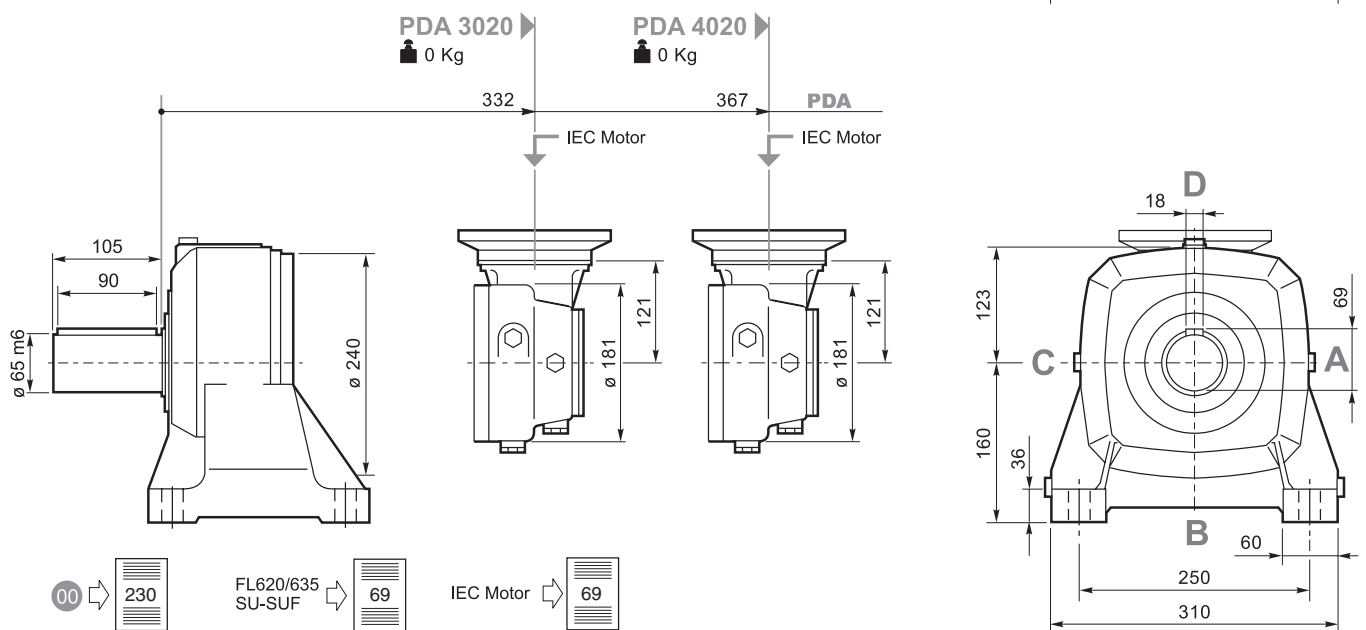
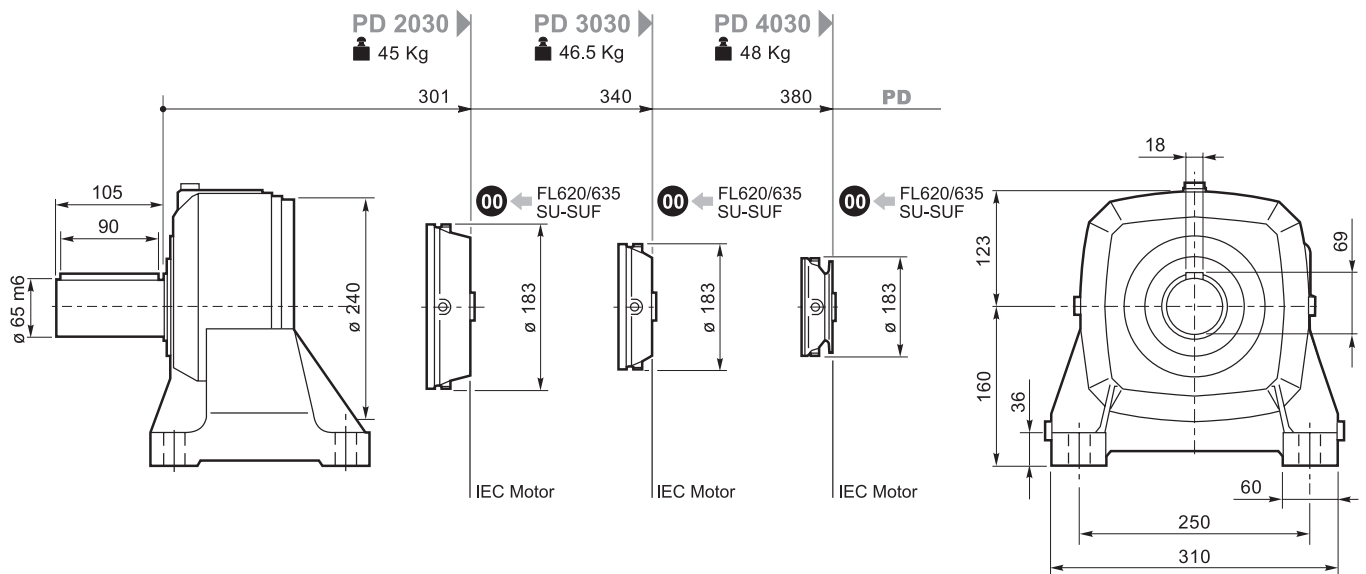
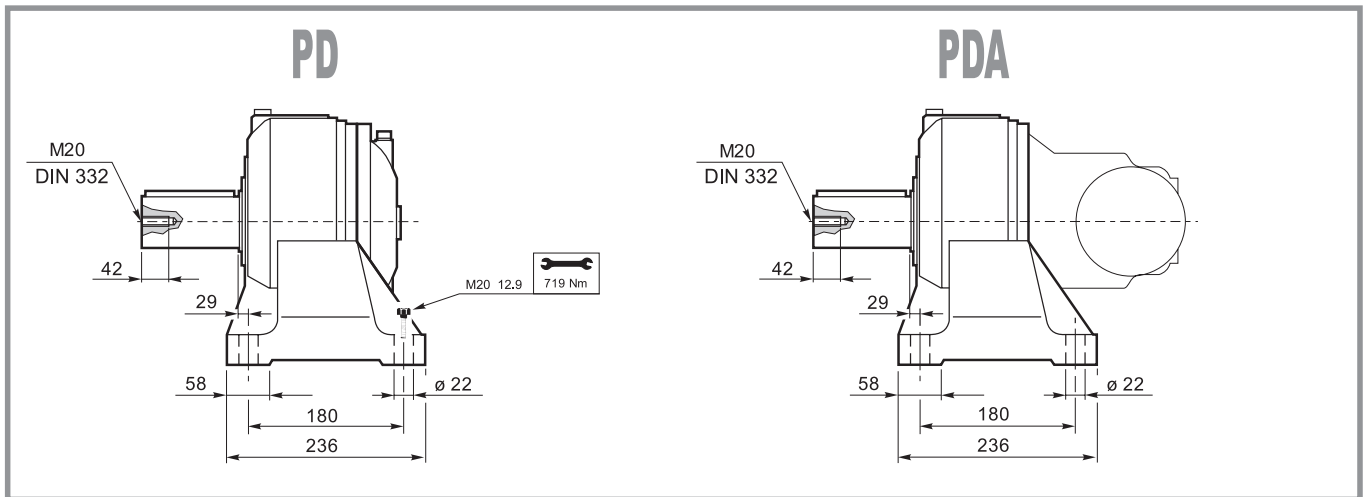
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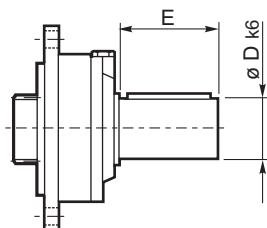




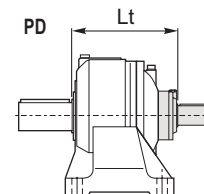
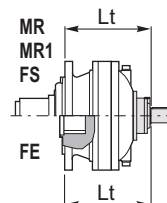




SU2

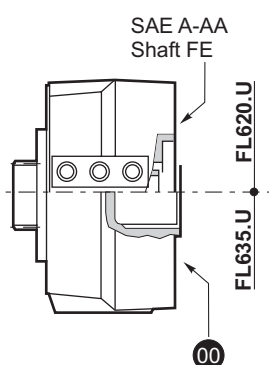


| | D k6 | E | Lt | | | |
|------|---------|----|-----------|-----|-----|-----|
| | | | MR-MR1-FS | FE | PD | |
| SU 2 | 40 | 58 | ED 2030 | 305 | 260 | 361 |
| | | | ET 3030 | 344 | 300 | 400 |
| | | | EQ 4030 | 401 | 339 | 440 |

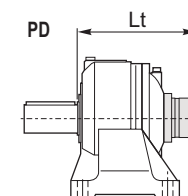
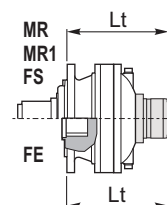


FL620/10-FL635/10

FL620U-FL635U

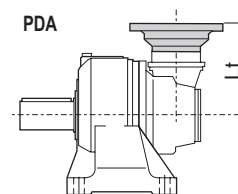
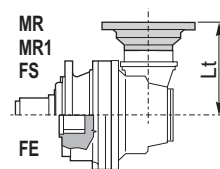
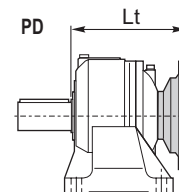
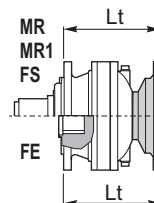


| | | Lt | | |
|----------|---------|-----------|-------|-------|
| | | MR-MR1-FS | FE | PD |
| FL620/U | ED 2030 | 349.5 | 304.5 | 405.5 |
| | ED 3030 | 388.5 | 344.5 | 444.5 |
| | EQ 4030 | 428.5 | 383.5 | 484.5 |
| FL635U | ED 2030 | 336 | 291 | 392 |
| | ET 3030 | 375 | 331 | 431 |
| | EQ 4030 | 415 | 370 | 471 |
| FL620/10 | ED 2030 | 309 | 264 | 470 |
| | ET 3030 | 348 | 304 | 510 |
| | EQ 4030 | 388 | 343 | 550 |
| FL635/10 | ED 2030 | 290 | 245 | 451 |
| | ET 3030 | 329 | 285 | 491 |
| | EQ 4030 | 369 | 324 | 531.1 |



IEC Motor

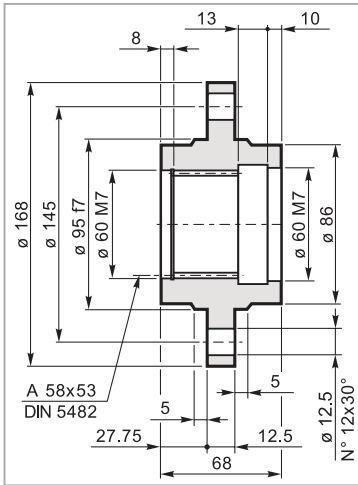
| | | Lt | | | | |
|---------|---------------------|-----------|-----------|-----------------|-------------------|------------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 |
| ED 2030 | MR-MR1-FS | 265 | 267 | 272 | 273 | 340 |
| ET 3030 | MR-MR1-FS | 304 | 306 | 311 | 312 | 379 |
| EQ 4030 | MR-MR1-FS | 344 | 346 | 351 | 352 | 419 |
| ED 2030 | FE | 220 | 222 | 227 | 228 | 295 |
| ET 3030 | FE | 260 | 262 | 267 | 268 | 335 |
| EQ 4030 | FE | 299 | 301 | 306 | 307 | 374 |
| PD 2030 | PD | 426 | 428 | 463 | 434 | 395.5 |
| PD 3030 | PD | 465 | 467 | 472 | 473 | 540 |
| PD 4030 | PD | 505 | 507 | 512 | 513 | 580 |
| EC 3030 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 |
| EC 4030 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 045

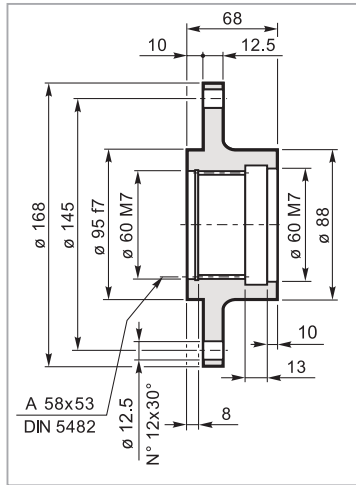


Mat. C40 UNI EN 10083
Code: 34700641800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 045

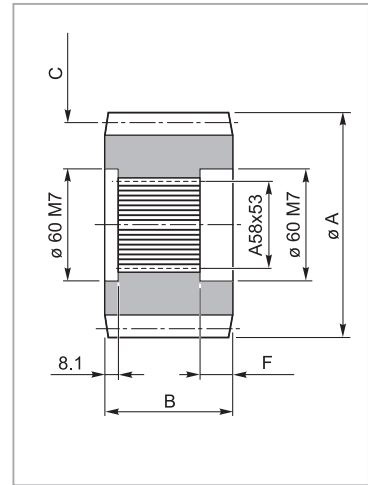


Mat. C40 UNI EN 10083
Code: 34700131800



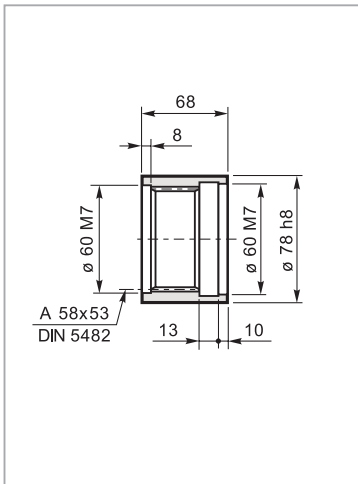
Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 045



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 045

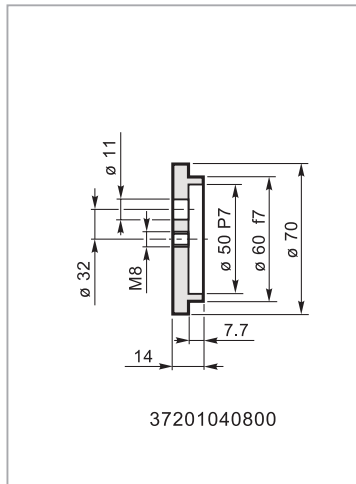


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102840600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 045



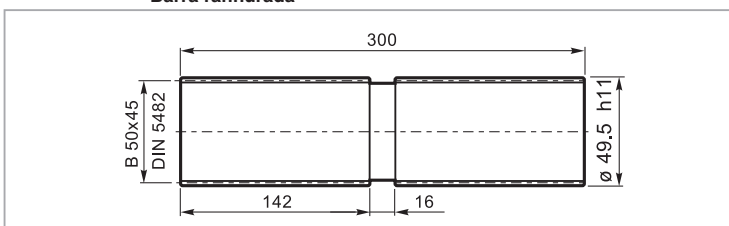
Mat. C40 UNI EN 10083
Code:
37201040800

| code | A | B | C | F |
|---------------|-------|----|------------------|------|
| 335.0143.0800 | 114.8 | 68 | M=8 Z=12 X=0.3 | 23.5 |
| 335.0174.0800 | 99.6 | 68 | M=6 Z=14 X=0.3 | 24 |
| 335.0184.0800 | 114.8 | 80 | M=8 Z=12 X=0.3 | 24 |
| 335.0274.0800 | 143 | 80 | M=10 Z=12 X=0.35 | 23.5 |
| 335.0324.0800 | 136.2 | 80 | M=8 Z=15 | 23.5 |
| 335.0344.0800 | 152 | 80 | M=10 Z=13 X=0.3 | 23.5 |
| 335.0353.000K | 127.6 | 68 | M=8 Z=13 X=0.54 | 23.5 |
| 335.2133.0600 | 143.4 | 80 | M=8 Z=15 X=0.4 | 23.5 |
| 335.3473.0600 | 156 | 80 | M=6 Z=24 | 23 |
| 335.4273.0600 | 142 | 80 | M=8 Z=16 | 23.5 |
| 335.5193.060 | 115 | 68 | M=5 Z=21 | 24 |
| 335.5942.000 | 136 | 80 | M=8 Z=14 X=0.4 | 23.5 |
| 335.6273.000 | 120 | 68 | M=8 Z=13 | 24 |



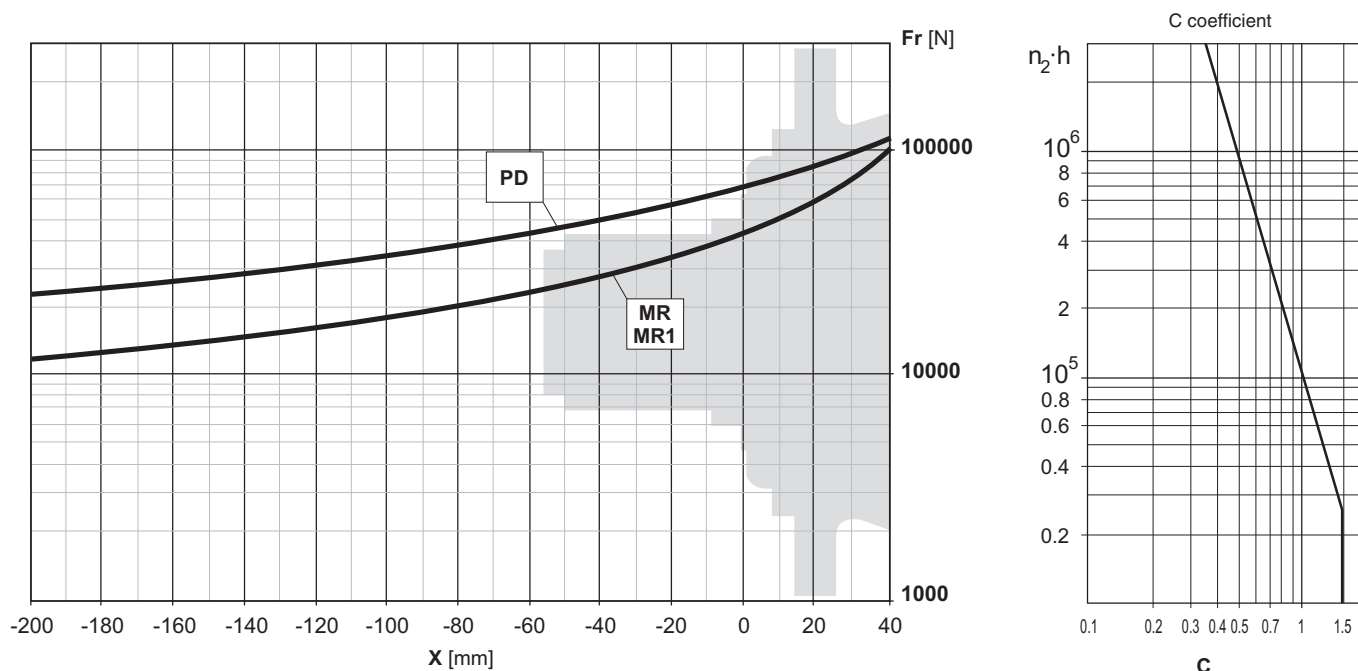
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 045



Mat. 39NiCrMo3 UNI EN 10083
Code: 39126930100

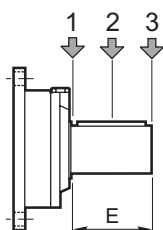
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



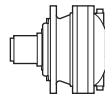
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais

| | | Flange mounted | | PD-PDA |
|-------------------------|-----|----------------|--------|--------|
| | | MN-MN1 | MR-MR1 | MR1 |
| Fa_{din} | [N] | — | 35000 | 25000 |
| Fa_{max} | [N] | — | 60000 | 25000 |

Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada

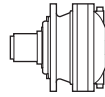


| Type | E | Fr [N] | | | | | |
|------------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



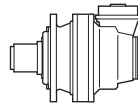
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|---|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2040 | | | | | | | | | | | | |
| 15.37 | 98 | 1510 | 15.4 | 65 | 1705 | 11.6 | 32.5 | 2100 | 7.2 | 5600 | 12 | |
| 17.47 | 86 | 2121 | 19.1 | 57 | 2395 | 14.4 | 28.6 | 2732 | 8.2 | 6000 | | |
| 20.28 | 74 | 2206 | 17.1 | 49.3 | 2314 | 12.0 | 24.7 | 2494 | 6.4 | 6000 | | |
| 22.70 | 66 | 2231 | 15.4 | 44.1 | 2519 | 11.6 | 22.0 | 2805 | 6.5 | 6000 | | |
| 26.34 | 57 | 2276 | 13.6 | 38.0 | 2383 | 9.5 | 19.0 | 2560 | 5.1 | 6000 | | |
| 31.02 | 48.4 | 2134 | 10.8 | 32.2 | 2342 | 7.9 | 16.1 | 2639 | 4.5 | 6000 | | |
| 36.00 | 41.7 | 2358 | 10.3 | 27.8 | 2463 | 7.2 | 13.9 | 2640 | 3.8 | 6000 | | |
| 41.64 | 36.0 | 2325 | 8.8 | 24.0 | 2446 | 6.2 | 12.0 | 2678 | 3.4 | 6000 | | |
| 43.50 | 34.5 | 2027 | 7.3 | 23.0 | 2119 | 5.1 | 11.5 | 2276 | 2.7 | 6000 | | |
| 50.32 | 29.8 | 2060 | 6.4 | 19.9 | 2152 | 4.5 | 9.9 | 2309 | 2.4 | 6000 | | |
| ET 3040 | | | | | | | | | | | | |
| 59.06 | 25.4 | 2765 | 7.4 | 16.9 | 2879 | 5.1 | 8.5 | 3076 | 2.7 | 6000 | | 8 |
| 61.28 | 24.5 | 2640 | 6.8 | 16.3 | 2982 | 5.1 | 8.2 | 3671 | 3.1 | 6000 | | |
| 70.98 | 21.1 | 2457 | 5.4 | 14.1 | 2775 | 4.1 | 7.0 | 3206 | 2.4 | 6000 | | |
| 83.76 | 17.9 | 2900 | 5.4 | 11.9 | 3275 | 4.1 | 6.0 | 3783 | 2.4 | 6000 | | |
| 89.03 | 16.8 | 2591 | 4.6 | 11.2 | 2695 | 3.2 | 5.6 | 2876 | 1.7 | 6000 | | |
| 96.88 | 15.5 | 3029 | 4.9 | 10.3 | 3421 | 3.7 | 5.2 | 3803 | 2.1 | 6000 | | |
| 108.8 | 13.8 | 3051 | 4.4 | 9.2 | 3320 | 3.2 | 4.6 | 3410 | 1.6 | 6000 | | |
| 124.2 | 12.1 | 2447 | 3.1 | 8.1 | 2528 | 2.1 | 4.0 | 2658 | 1.1 | 6000 | | |
| 146.6 | 10.2 | 2888 | 3.1 | 6.8 | 2983 | 2.1 | 3.4 | 3137 | 1.1 | 6000 | | |
| 157.5 | 9.5 | 3042 | 3.0 | 6.3 | 3179 | 2.1 | 3.2 | 3695 | 1.2 | 6000 | | |
| 186.1 | 8.1 | 2901 | 2.4 | 5.4 | 3046 | 1.7 | 2.7 | 3292 | 0.93 | 6000 | | |
| 198.9 | 7.5 | 2115 | 1.7 | 5.0 | 2221 | 1.2 | 2.5 | 2401 | 0.63 | 6000 | | |
| 215.3 | 7.0 | 2953 | 2.2 | 4.6 | 3098 | 1.5 | 2.3 | 3343 | 0.81 | 6000 | | |
| 249.0 | 6.0 | 2648 | 1.7 | 4.0 | 2780 | 1.2 | 2.0 | 3006 | 0.63 | 6000 | | |
| 289.0 | 5.2 | 2924 | 1.6 | 3.5 | 3197 | 1.2 | 1.7 | 3489 | 0.63 | 6000 | | |
| 325.7 | 4.6 | 3101 | 1.5 | 3.1 | 3244 | 1.0 | 1.5 | 3492 | 0.56 | 6000 | | |
| EQ 4040 | | | | | | | | | | | | |
| 367.7 | 4.1 | 3835 | 1.6 | 2.7 | 3888 | 1.1 | 1.4 | 3972 | 0.57 | 6000 | 4 | |
| 404.7 | 3.7 | 2928 | 1.1 | 2.5 | 2966 | 0.77 | 1.2 | 3029 | 0.39 | 6000 | | |
| 460.3 | 3.3 | 3674 | 1.3 | 2.2 | 4000 | 0.91 | 1.1 | 4605 | 0.52 | 6000 | | |
| 495.4 | 3.0 | 3874 | 1.2 | 2.0 | 3925 | 0.83 | 1.0 | 4008 | 0.42 | 6000 | | |
| 581.3 | 2.6 | 3894 | 1.1 | 1.7 | 3944 | 0.71 | 0.86 | 4027 | 0.36 | 6000 | | |
| 643.5 | 2.3 | 3907 | 0.95 | 1.6 | 3956 | 0.64 | 0.78 | 4039 | 0.33 | 6000 | | |
| 691.5 | 2.2 | 4002 | 0.91 | 1.4 | 4348 | 0.66 | 0.72 | 4494 | 0.34 | 6000 | | |
| 817.1 | 1.8 | 4142 | 0.80 | 1.2 | 4424 | 0.57 | 0.61 | 4516 | 0.29 | 6000 | | |
| 879.4 | 1.7 | 3945 | 0.71 | 1.1 | 3994 | 0.48 | 0.57 | 4075 | 0.24 | 6000 | | |
| 1017 | 1.5 | 3963 | 0.61 | 0.98 | 4011 | 0.41 | 0.49 | 4092 | 0.21 | 6000 | | |
| 1142 | 1.3 | 3550 | 0.49 | 0.88 | 3593 | 0.33 | 0.44 | 3666 | 0.17 | 6000 | | |
| 1304 | 1.2 | 2886 | 0.35 | 0.77 | 2961 | 0.24 | 0.38 | 3092 | 0.12 | 6000 | | |
| 1430 | 1.0 | 4445 | 0.49 | 0.70 | 4498 | 0.33 | 0.35 | 4589 | 0.17 | 6000 | | |
| 1539 | 0.97 | 3406 | 0.35 | 0.65 | 3494 | 0.24 | 0.32 | 3649 | 0.12 | 6000 | | |
| 1806 | 0.83 | 3248 | 0.28 | 0.55 | 3304 | 0.19 | 0.28 | 3607 | 0.11 | 6000 | | |
| 1999 | 0.75 | 3610 | 0.28 | 0.50 | 3652 | 0.19 | 0.25 | 3969 | 0.10 | 6000 | | |
| 2268 | 0.66 | 4502 | 0.31 | 0.44 | 4781 | 0.22 | 0.22 | 5124 | 0.12 | 6000 | | |
| 2502 | 0.60 | 4519 | 0.28 | 0.40 | 4572 | 0.19 | 0.20 | 4969 | 0.10 | 6000 | | |
| 2904 | 0.52 | 4726 | 0.26 | 0.34 | 5112 | 0.18 | 0.17 | 5767 | 0.10 | 6000 | | |
| 3170 | 0.47 | 4042 | 0.20 | 0.32 | 4382 | 0.15 | 0.16 | 5013 | 0.08 | 6000 | | |

1500
HOURS LIFE



040

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|---|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2040 | | | | | | | | | | | | |
| 15.37 | 98 | 2477 | 25.3 | 65 | 2626 | 17.9 | 32.5 | 2800 | 9.5 | 5600 | 12 | |
| 17.47 | 86 | 2896 | 26.0 | 57 | 3031 | 18.2 | 28.6 | 3443 | 10.3 | 6000 | | |
| 20.28 | 74 | 2654 | 20.6 | 49.3 | 2774 | 14.3 | 24.7 | 3136 | 8.1 | 6000 | | |
| 22.70 | 66 | 2984 | 20.7 | 44.1 | 3119 | 14.4 | 22.0 | 3648 | 8.4 | 6000 | | |
| 26.34 | 57 | 2732 | 16.3 | 38.0 | 2850 | 11.3 | 19.0 | 3323 | 6.6 | 6000 | | |
| 31.02 | 48.4 | 2703 | 13.7 | 32.2 | 2925 | 9.9 | 16.1 | 3250 | 5.5 | 6000 | | |
| 36.00 | 41.7 | 2823 | 12.3 | 27.8 | 3053 | 8.9 | 13.9 | 3555 | 5.2 | 6000 | | |
| 41.64 | 36.0 | 2857 | 10.8 | 24.0 | 3077 | 7.7 | 12.0 | 3406 | 4.3 | 6000 | | |
| 43.50 | 34.5 | 2444 | 8.8 | 23.0 | 2636 | 6.3 | 11.5 | 3082 | 3.7 | 6000 | | |
| 50.32 | 29.8 | 2480 | 7.7 | 19.9 | 2726 | 5.7 | 9.9 | 3181 | 3.3 | 6000 | | |
| ET 3040 | | | | | | | | | | | | |
| 59.06 | 25.4 | 3536 | 9.4 | 16.9 | 3860 | 6.8 | 8.5 | 4457 | 4.0 | 6000 | | 8 |
| 61.28 | 24.5 | 3729 | 9.6 | 16.3 | 3821 | 6.5 | 8.2 | 3945 | 3.4 | 6000 | | |
| 70.98 | 21.1 | 3221 | 7.1 | 14.1 | 3289 | 4.9 | 7.0 | 3383 | 2.5 | 6000 | | |
| 83.76 | 17.9 | 3801 | 7.1 | 11.9 | 3881 | 4.9 | 6.0 | 3993 | 2.5 | 6000 | | |
| 89.03 | 16.8 | 3410 | 6.0 | 11.2 | 3718 | 4.4 | 5.6 | 4287 | 2.5 | 6000 | | |
| 96.88 | 15.5 | 3831 | 6.2 | 10.3 | 3906 | 4.2 | 5.2 | 4014 | 2.2 | 6000 | | |
| 108.8 | 13.8 | 3442 | 5.0 | 9.2 | 3505 | 3.4 | 4.6 | 3599 | 1.7 | 6000 | | |
| 124.2 | 12.1 | 2749 | 3.5 | 8.1 | 2840 | 2.4 | 4.0 | 2986 | 1.3 | 6000 | | |
| 146.6 | 10.2 | 3244 | 3.5 | 6.8 | 3351 | 2.4 | 3.4 | 3524 | 1.3 | 6000 | | |
| 157.5 | 9.5 | 4339 | 4.3 | 6.3 | 4414 | 2.9 | 3.2 | 4527 | 1.5 | 6000 | | |
| 186.1 | 8.1 | 3538 | 3.0 | 5.4 | 3856 | 2.2 | 2.7 | 4134 | 1.2 | 6000 | | |
| 198.9 | 7.5 | 2594 | 2.0 | 5.0 | 2878 | 1.5 | 2.5 | 3300 | 0.87 | 6000 | | |
| 215.3 | 7.0 | 3611 | 2.6 | 4.6 | 3996 | 1.9 | 2.3 | 4195 | 1.0 | 6000 | | |
| 249.0 | 6.0 | 3248 | 2.0 | 4.0 | 3603 | 1.5 | 2.0 | 4131 | 0.87 | 6000 | | |
| 289.0 | 5.2 | 3769 | 2.0 | 3.5 | 4181 | 1.5 | 1.7 | 4794 | 0.87 | 6000 | | |
| 325.7 | 4.6 | 4004 | 1.9 | 3.1 | 4117 | 1.3 | 1.5 | 4480 | 0.72 | 6000 | | |
| EQ 4040 | | | | | | | | | | | | |
| 367.7 | 4.1 | 4047 | 1.7 | 2.7 | 4101 | 1.2 | 1.4 | 4461 | 0.64 | 6000 | 4 | |
| 404.7 | 3.7 | 3089 | 1.2 | 2.5 | 3238 | 0.84 | 1.2 | 3612 | 0.47 | 6000 | | |
| 460.3 | 3.3 | 5066 | 1.7 | 2.2 | 5133 | 1.2 | 1.1 | 5584 | 0.64 | 6000 | | |
| 495.4 | 3.0 | 4087 | 1.3 | 2.0 | 4188 | 0.89 | 1.0 | 4674 | 0.49 | 6000 | | |
| 581.3 | 2.6 | 4107 | 1.1 | 1.7 | 4297 | 0.77 | 0.86 | 4791 | 0.43 | 6000 | | |
| 643.5 | 2.3 | 4121 | 1.0 | 1.6 | 4367 | 0.71 | 0.78 | 4867 | 0.40 | 6000 | | |
| 691.5 | 2.2 | 4585 | 1.0 | 1.4 | 4895 | 0.74 | 0.72 | 5458 | 0.41 | 6000 | | |
| 817.1 | 1.8 | 4711 | 0.91 | 1.2 | 5027 | 0.64 | 0.61 | 5599 | 0.36 | 6000 | | |
| 879.4 | 1.7 | 4303 | 0.77 | 1.1 | 4588 | 0.55 | 0.57 | 5105 | 0.30 | 6000 | | |
| 1017 | 1.5 | 4404 | 0.68 | 0.98 | 4693 | 0.48 | 0.49 | 5218 | 0.27 | 6000 | | |
| 1142 | 1.3 | 4114 | 0.57 | 0.88 | 4382 | 0.40 | 0.44 | 4869 | 0.22 | 6000 | | |
| 1304 | 1.2 | 3349 | 0.40 | 0.77 | 3564 | 0.29 | 0.38 | 3960 | 0.16 | 6000 | | |
| 1430 | 1.0 | 5151 | 0.57 | 0.70 | 5486 | 0.40 | 0.35 | 6095 | 0.22 | 6000 | | |
| 1539 | 0.97 | 3952 | 0.40 | 0.65 | 4205 | 0.29 | 0.32 | 4673 | 0.16 | 6000 | | |
| 1806 | 0.83 | 4071 | 0.35 | 0.55 | 4327 | 0.25 | 0.28 | 4791 | 0.14 | 6000 | | |
| 1999 | 0.75 | 4487 | 0.35 | 0.50 | 4772 | 0.25 | 0.25 | 5290 | 0.14 | 6000 | | |
| 2268 | 0.66 | 5786 | 0.40 | 0.44 | 6151 | 0.28 | 0.22 | 6814 | 0.16 | 6000 | | |
| 2502 | 0.60 | 5617 | 0.35 | 0.40 | 5974 | 0.25 | 0.20 | 6623 | 0.14 | 6000 | | |
| 2904 | 0.52 | 6519 | 0.35 | 0.34 | 6933 | 0.25 | 0.17 | 7612 | 0.14 | 6000 | | |
| 3170 | 0.47 | 5827 | 0.29 | 0.32 | 6280 | 0.21 | 0.16 | 7121 | 0.12 | 6000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3040 - PDA 3040

| | | | | | | | | | | |
|-------|------|------|-----|------|------|-----|------|------|------|------|
| 35.49 | 42.3 | 1160 | 5.1 | 28.2 | 1310 | 3.9 | 14.1 | 1613 | 2.4 | 6000 |
| 41.88 | 35.8 | 1369 | 5.1 | 23.9 | 1546 | 3.9 | 11.9 | 1903 | 2.4 | 6000 |
| 46.09 | 32.5 | 1507 | 5.1 | 21.7 | 1702 | 3.9 | 10.8 | 2095 | 2.4 | 6000 |
| 52.42 | 28.6 | 1714 | 5.1 | 19.1 | 1935 | 3.9 | 9.5 | 2383 | 2.4 | 6000 |
| 54.39 | 27.6 | 1778 | 5.1 | 18.4 | 2008 | 3.9 | 9.2 | 2472 | 2.4 | 6000 |
| 60.84 | 24.7 | 1989 | 5.1 | 16.4 | 2246 | 3.9 | 8.2 | 2765 | 2.4 | 6000 |
| 68.09 | 22.0 | 2226 | 5.1 | 14.7 | 2514 | 3.9 | 7.3 | 3095 | 2.4 | 6000 |
| 79.02 | 19.0 | 2560 | 5.1 | 12.7 | 2664 | 3.5 | 6.3 | 2845 | 1.9 | 6000 |
| 88.66 | 16.9 | 1774 | 3.1 | 11.3 | 2003 | 2.4 | 5.6 | 2467 | 1.5 | 6000 |
| 99.17 | 15.1 | 1984 | 3.1 | 10.1 | 2241 | 2.4 | 5.0 | 2759 | 1.5 | 6000 |
| 111.0 | 13.5 | 2221 | 3.1 | 9.0 | 2508 | 2.4 | 4.5 | 3088 | 1.5 | 6000 |
| 128.8 | 11.6 | 2577 | 3.1 | 7.8 | 2791 | 2.3 | 3.9 | 3118 | 1.3 | 6000 |
| 140.2 | 10.7 | 2023 | 2.3 | 7.1 | 2130 | 1.6 | 3.6 | 2310 | 0.86 | 6000 |
| 151.7 | 9.9 | 2826 | 2.9 | 6.6 | 2973 | 2.1 | 3.3 | 3219 | 1.1 | 6000 |
| 176.0 | 8.5 | 2767 | 2.5 | 5.7 | 2873 | 1.7 | 2.8 | 3336 | 0.99 | 6000 |
| 203.6 | 7.4 | 2805 | 2.2 | 4.9 | 2960 | 1.5 | 2.5 | 3356 | 0.86 | 6000 |
| 215.8 | 7.0 | 2391 | 1.7 | 4.6 | 2486 | 1.2 | 2.3 | 2894 | 0.70 | 6000 |
| 244.1 | 6.1 | 2853 | 1.8 | 4.1 | 3081 | 1.3 | 2.0 | 3576 | 0.77 | 6000 |
| 282.3 | 5.3 | 2908 | 1.6 | 3.5 | 3181 | 1.2 | 1.8 | 3480 | 0.65 | 6000 |

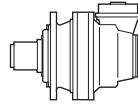
5

EC 4040 - PDA 4040

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 319.9 | 4.7 | 3817 | 1.9 | 3.1 | 3870 | 1.3 | 1.6 | 3956 | 0.65 | 6000 |
| 347.1 | 4.3 | 3262 | 1.5 | 2.9 | 3306 | 1.0 | 1.4 | 3377 | 0.51 | 6000 |
| 401.5 | 3.7 | 3278 | 1.3 | 2.5 | 3321 | 0.87 | 1.2 | 3392 | 0.44 | 6000 |
| 473.7 | 3.2 | 3868 | 1.3 | 2.1 | 3919 | 0.87 | 1.1 | 4002 | 0.44 | 6000 |
| 481.2 | 3.1 | 3298 | 1.1 | 2.1 | 3340 | 0.73 | 1.0 | 3410 | 0.37 | 6000 |
| 567.9 | 2.6 | 3891 | 1.1 | 1.8 | 3941 | 0.73 | 0.88 | 4024 | 0.37 | 6000 |
| 656.8 | 2.3 | 3909 | 0.94 | 1.5 | 3959 | 0.63 | 0.76 | 4041 | 0.32 | 6000 |
| 716.7 | 2.1 | 3242 | 0.71 | 1.4 | 3329 | 0.49 | 0.70 | 3479 | 0.25 | 6000 |
| 822.2 | 1.8 | 4147 | 0.79 | 1.2 | 4502 | 0.57 | 0.61 | 5059 | 0.32 | 6000 |
| 930.9 | 1.6 | 3528 | 0.60 | 1.1 | 3572 | 0.40 | 0.54 | 3645 | 0.21 | 6000 |
| 993.8 | 1.5 | 3312 | 0.52 | 1.0 | 3399 | 0.36 | 0.50 | 3551 | 0.19 | 6000 |
| 1165 | 1.3 | 4417 | 0.60 | 0.86 | 4471 | 0.40 | 0.43 | 4563 | 0.21 | 6000 |
| 1291 | 1.2 | 3563 | 0.43 | 0.77 | 3606 | 0.29 | 0.39 | 3704 | 0.15 | 6000 |
| 1352 | 1.1 | 4059 | 0.47 | 0.74 | 4403 | 0.34 | 0.37 | 5043 | 0.20 | 6000 |
| 1616 | 0.93 | 4461 | 0.43 | 0.62 | 4514 | 0.29 | 0.31 | 4637 | 0.15 | 6000 |
| 1848 | 0.81 | 4322 | 0.37 | 0.54 | 4683 | 0.27 | 0.27 | 4963 | 0.14 | 6000 |
| 1959 | 0.77 | 3815 | 0.31 | 0.51 | 4218 | 0.23 | 0.26 | 4817 | 0.13 | 6000 |
| 2208 | 0.68 | 4043 | 0.29 | 0.45 | 4134 | 0.20 | 0.23 | 4500 | 0.11 | 6000 |
| 2563 | 0.59 | 4611 | 0.28 | 0.39 | 4798 | 0.20 | 0.20 | 5222 | 0.11 | 6000 |
| 2964 | 0.51 | 4227 | 0.22 | 0.34 | 4616 | 0.16 | 0.17 | 5138 | 0.09 | 6000 |
| 3097 | 0.48 | 4023 | 0.20 | 0.32 | 4362 | 0.15 | 0.16 | 4991 | 0.08 | 6000 |

3

1500
HOURS LIFE



040

| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P _T [kW] |
|------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|---------------------------|------------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |

EC 3040 - PDA 3040

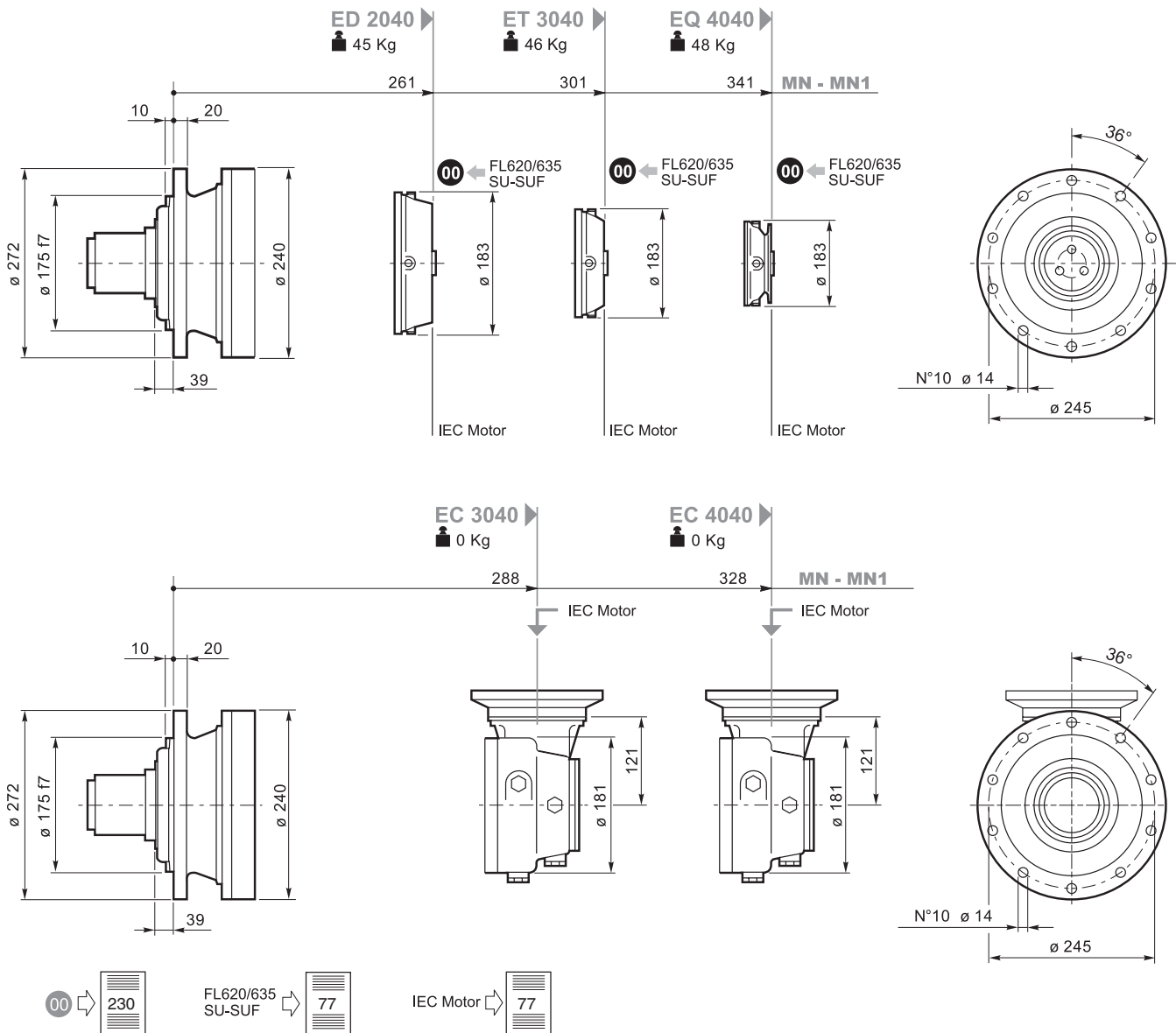
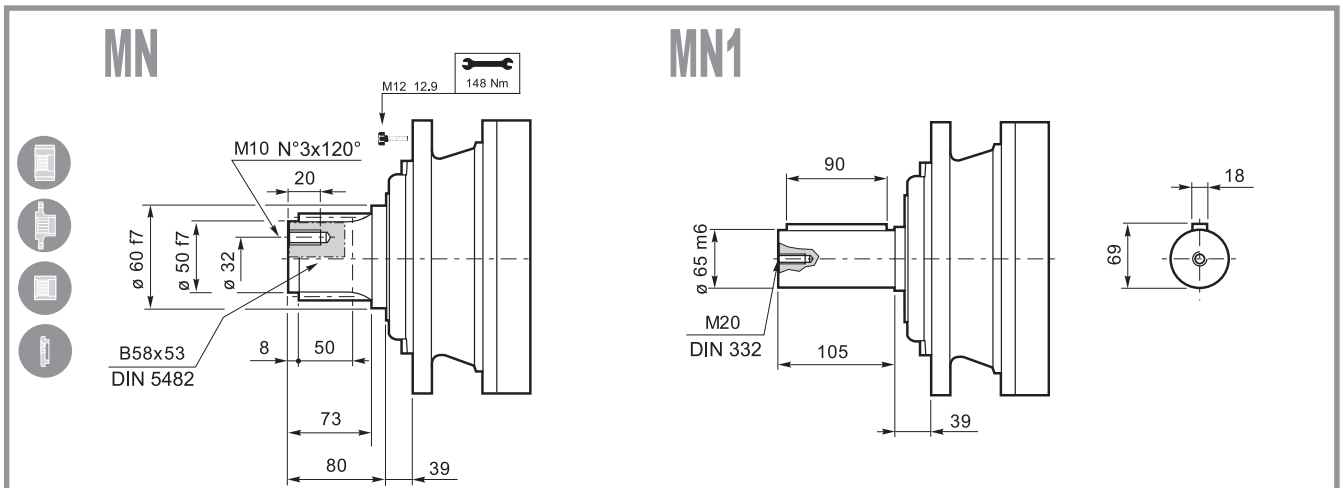
| | | | | | | | | | | |
|-------|------|------|-----|------|------|-----|------|------|------|------|
| 35.49 | 42.3 | 2050 | 9.1 | 28.2 | 2315 | 6.8 | 14.1 | 2850 | 4.2 | 6000 |
| 41.88 | 35.8 | 2419 | 9.1 | 23.9 | 2731 | 6.8 | 11.9 | 3363 | 4.2 | 6000 |
| 46.09 | 32.5 | 2662 | 9.1 | 21.7 | 2873 | 6.5 | 10.8 | 2971 | 3.4 | 6000 |
| 52.42 | 28.6 | 3028 | 9.1 | 19.1 | 3419 | 6.8 | 9.5 | 4210 | 4.2 | 6000 |
| 54.39 | 27.6 | 3141 | 9.1 | 18.4 | 3390 | 6.5 | 9.2 | 3505 | 3.4 | 6000 |
| 60.84 | 24.7 | 3136 | 8.1 | 16.4 | 3429 | 5.9 | 8.2 | 3967 | 3.4 | 6000 |
| 68.09 | 22.0 | 3648 | 8.4 | 14.7 | 3978 | 6.1 | 7.3 | 4388 | 3.4 | 6000 |
| 79.02 | 19.0 | 3323 | 6.6 | 12.7 | 3626 | 4.8 | 6.3 | 4185 | 2.8 | 6000 |
| 88.66 | 16.9 | 3134 | 5.6 | 11.3 | 3474 | 4.1 | 5.6 | 3573 | 2.1 | 6000 |
| 99.17 | 15.1 | 3491 | 5.5 | 10.1 | 3803 | 4.0 | 5.0 | 4380 | 2.3 | 6000 |
| 111.0 | 13.5 | 3924 | 5.6 | 9.0 | 4350 | 4.1 | 4.5 | 4472 | 2.1 | 6000 |
| 128.8 | 11.6 | 3690 | 4.5 | 7.8 | 4014 | 3.3 | 3.9 | 4614 | 1.9 | 6000 |
| 140.2 | 10.7 | 2491 | 2.8 | 7.1 | 2632 | 2.0 | 3.6 | 3129 | 1.2 | 6000 |
| 151.7 | 9.9 | 3455 | 3.6 | 6.6 | 3662 | 2.5 | 3.3 | 4107 | 1.4 | 6000 |
| 176.0 | 8.5 | 3938 | 3.5 | 5.7 | 4251 | 2.5 | 2.8 | 4767 | 1.4 | 6000 |
| 203.6 | 7.4 | 3619 | 2.8 | 4.9 | 3824 | 2.0 | 2.5 | 4546 | 1.2 | 6000 |
| 215.8 | 7.0 | 3433 | 2.5 | 4.6 | 3736 | 1.8 | 2.3 | 4298 | 1.0 | 6000 |
| 244.1 | 6.1 | 4166 | 2.7 | 4.1 | 4565 | 2.0 | 2.0 | 4851 | 1.0 | 6000 |
| 282.3 | 5.3 | 3759 | 2.1 | 3.5 | 4157 | 1.5 | 1.8 | 4777 | 0.89 | 6000 |

5

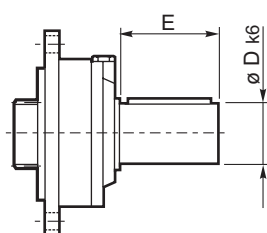
EC 4040 - PDA 4040

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|
| 319.9 | 4.7 | 4027 | 2.0 | 3.1 | 4082 | 1.3 | 1.6 | 4363 | 0.71 | 6000 |
| 347.1 | 4.3 | 3442 | 1.6 | 2.9 | 3487 | 1.1 | 1.4 | 3845 | 0.58 | 6000 |
| 401.5 | 3.7 | 3458 | 1.4 | 2.5 | 3524 | 0.92 | 1.2 | 3933 | 0.51 | 6000 |
| 473.7 | 3.2 | 4081 | 1.4 | 2.1 | 4158 | 0.92 | 1.1 | 4641 | 0.51 | 6000 |
| 481.2 | 3.1 | 3478 | 1.1 | 2.1 | 3628 | 0.79 | 1.0 | 4045 | 0.44 | 6000 |
| 567.9 | 2.6 | 4104 | 1.1 | 1.8 | 4281 | 0.79 | 0.88 | 4774 | 0.44 | 6000 |
| 656.8 | 2.3 | 4123 | 0.99 | 1.5 | 4381 | 0.70 | 0.76 | 4882 | 0.39 | 6000 |
| 716.7 | 2.1 | 3642 | 0.80 | 1.4 | 3740 | 0.55 | 0.70 | 4160 | 0.30 | 6000 |
| 822.2 | 1.8 | 5162 | 0.99 | 1.2 | 5485 | 0.70 | 0.61 | 6112 | 0.39 | 6000 |
| 930.9 | 1.6 | 3984 | 0.67 | 1.1 | 4246 | 0.48 | 0.54 | 4721 | 0.27 | 6000 |
| 993.8 | 1.5 | 3720 | 0.59 | 1.0 | 3933 | 0.41 | 0.50 | 4372 | 0.23 | 6000 |
| 1165 | 1.3 | 4987 | 0.67 | 0.86 | 5315 | 0.48 | 0.43 | 5910 | 0.27 | 6000 |
| 1291 | 1.2 | 4194 | 0.51 | 0.77 | 4465 | 0.36 | 0.39 | 4958 | 0.20 | 6000 |
| 1352 | 1.1 | 5788 | 0.67 | 0.74 | 6168 | 0.48 | 0.37 | 6859 | 0.27 | 6000 |
| 1616 | 0.93 | 5250 | 0.51 | 0.62 | 5590 | 0.36 | 0.31 | 6207 | 0.20 | 6000 |
| 1848 | 0.81 | 5608 | 0.48 | 0.54 | 5965 | 0.34 | 0.27 | 6613 | 0.19 | 6000 |
| 1959 | 0.77 | 5446 | 0.44 | 0.51 | 5792 | 0.31 | 0.26 | 6423 | 0.17 | 6000 |
| 2208 | 0.68 | 5079 | 0.36 | 0.45 | 5397 | 0.26 | 0.23 | 5977 | 0.14 | 6000 |
| 2563 | 0.59 | 5894 | 0.36 | 0.39 | 6264 | 0.26 | 0.20 | 6937 | 0.14 | 6000 |
| 2964 | 0.51 | 5800 | 0.31 | 0.34 | 6163 | 0.22 | 0.17 | 6824 | 0.12 | 6000 |
| 3097 | 0.48 | 5802 | 0.29 | 0.32 | 6253 | 0.21 | 0.16 | 7092 | 0.12 | 6000 |

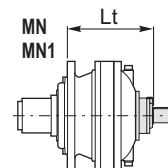
3



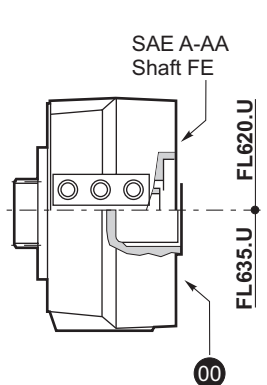
SU2



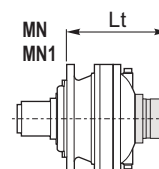
| SU 2 | D k6 | E | Lt | |
|------|---------|----|---------|--------|
| | | | ED 2040 | MN-MN1 |
| | 40 | 58 | ET 3040 | 321 |
| | | | EQ 4040 | 372 |
| | | | | 412 |



FL620/10-FL635/10 FL620U-FL635U

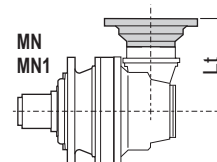
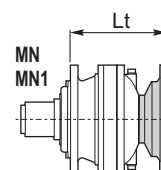


| | | Lt | |
|----------|---------|---------|--------|
| | | ED 2040 | MN-MN1 |
| FL620/U | ED 2040 | 365.5 | |
| | ET 3040 | 405.5 | |
| | EQ 4040 | 445.5 | |
| FL635U | ED 2040 | 352 | |
| | ET 3040 | 392 | |
| | EQ 4040 | 432 | |
| FL620/10 | ED 2040 | 325 | |
| | ET 3040 | 365 | |
| | EQ 4040 | 405 | |
| FL635/10 | ED 2040 | 306 | |
| | ET 3040 | 346 | |
| | EQ 4040 | 386 | |



IEC Motor

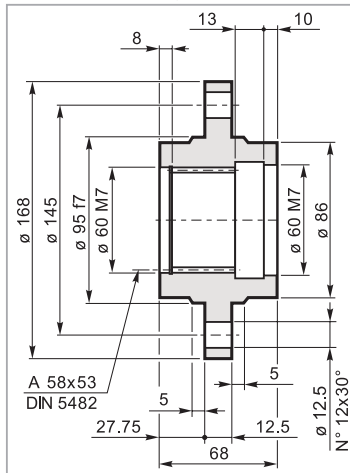
| | | Lt | | | | |
|---------|--------|--------|--------|--------------|----------------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 |
| ED 2040 | MN-MN1 | 281 | 283 | 288 | 289 | 356 |
| ET 3040 | MN-MN1 | 321 | 323 | 328 | 329 | 396 |
| EQ 4040 | MN-MN1 | 361 | 363 | 368 | 369 | 436 |
| EC 3040 | MN-MN1 | 151 | 151 | 151 | 151 | 238 |
| EC 4040 | MN-MN1 | 151 | 151 | 151 | 151 | 238 |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 045

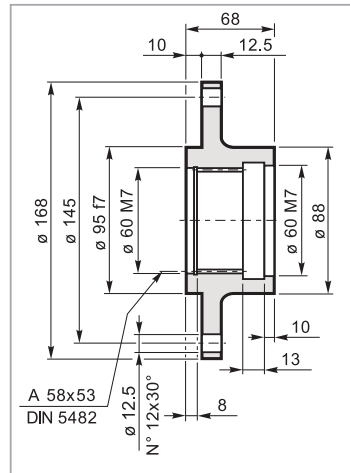


Mat. C40 UNI EN 10083
Code: 34700641800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 045

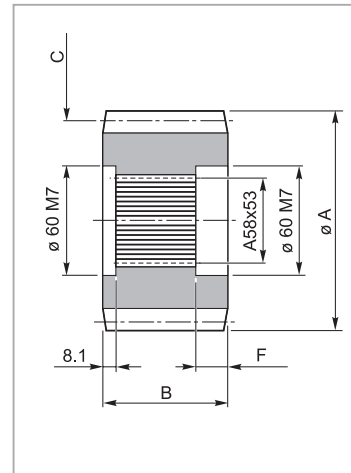


Mat. C40 UNI EN 10083
Code: 34700131800



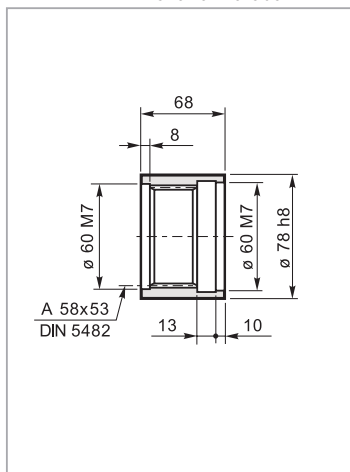
Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 045



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 045

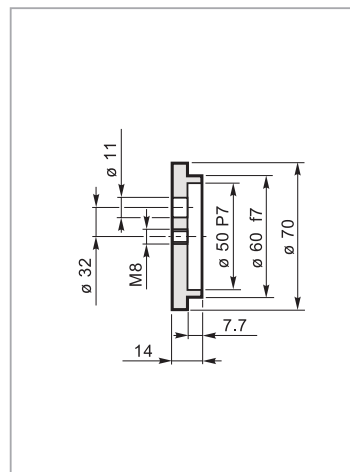


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102840600



Rondella di fermo
Shaft cover
Gegenseibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 045



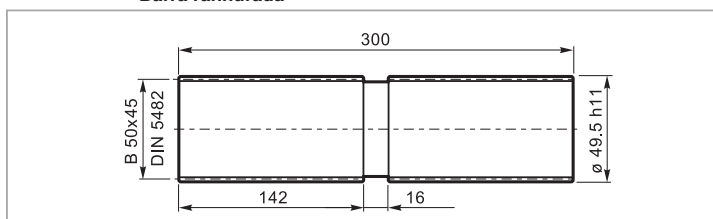
Mat. C40 UNI EN 10083
Code: 37201040800

| code | A | B | C | F |
|---------------|-------|----|------------------|------|
| 335.0143.0800 | 114.8 | 68 | M=8 Z=12 X=0.3 | 23.5 |
| 335.0174.0800 | 99.6 | 68 | M=6 Z=14 X=0.3 | 24 |
| 335.0184.0800 | 114.8 | 80 | M=8 Z=12 X=0.3 | 24 |
| 335.0274.0800 | 143 | 80 | M=10 Z=12 X=0.35 | 23.5 |
| 335.0324.0800 | 136.2 | 80 | M=8 Z=15 — | 23.5 |
| 335.0344.0800 | 152 | 80 | M=10 Z=13 X=0.3 | 23.5 |
| 335.0353.000K | 127.6 | 68 | M=8 Z=13 X=0.54 | 23.5 |
| 335.2133.0600 | 143.4 | 80 | M=8 Z=15 X=0.4 | 23.5 |
| 335.3473.0600 | 156 | 80 | M=6 Z=24 — | 23 |
| 335.4273.0600 | 142 | 80 | M=8 Z=16 — | 23.5 |
| 335.5193.060 | 115 | 68 | M=5 Z=21 — | 24 |
| 335.5942.000 | 136 | 80 | M=8 Z=14 X=0.4 | 23.5 |
| 335.6273.000 | 120 | 68 | M=8 Z=13 — | 24 |



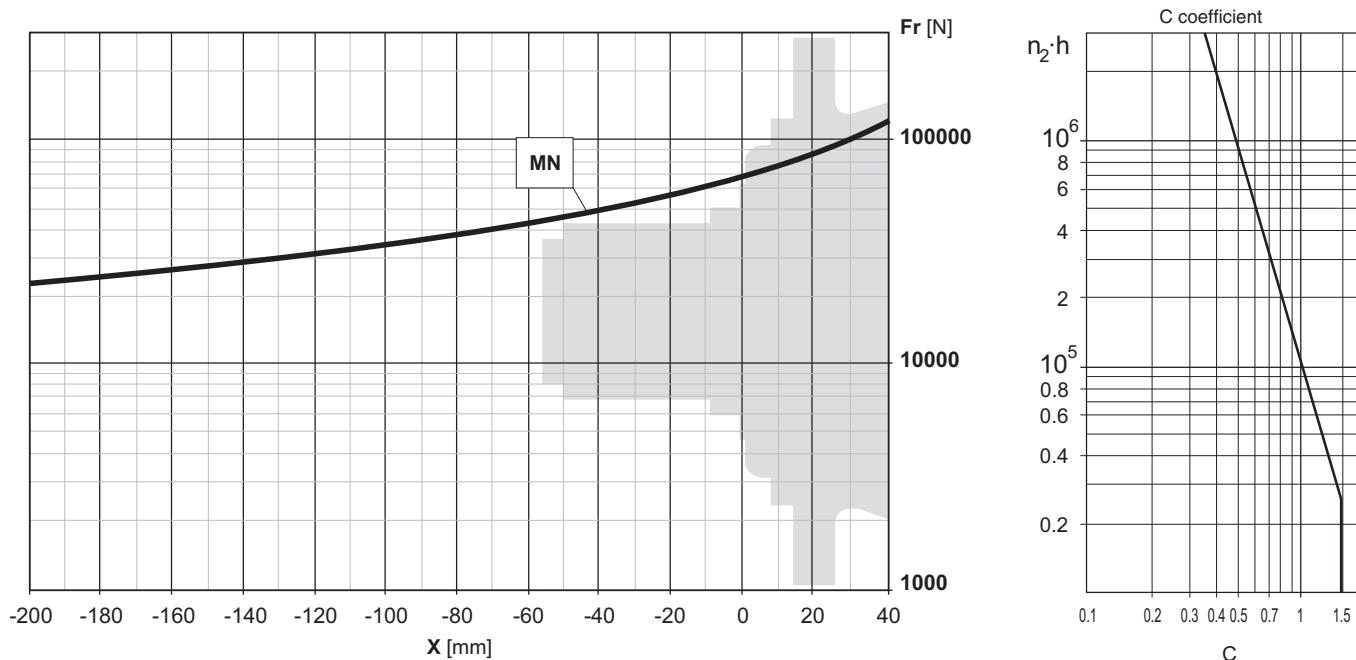
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 045

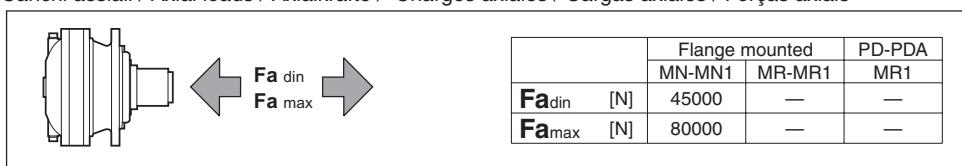


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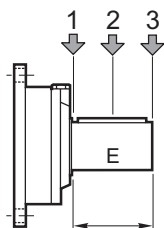
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



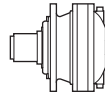
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



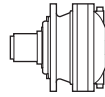
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



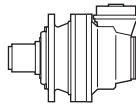
| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P _T [kW] |
|------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|---------------------------|------------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |
| EM 1045 | | | | | | | | | | | |
| 3.50 | 429 | 1565 | 70 | 286 | 1767 | 53 | 143 | 2175 | 32.6 | 6000 | 20 |
| 4.13 | 363 | 1617 | 62 | 242 | 1827 | 46.3 | 121 | 2249 | 28.5 | 6000 | |
| 5.17 | 290 | 1682 | 51 | 193 | 1900 | 38.5 | 97 | 2339 | 23.7 | 6000 | |
| 6.00 | 250 | 1732 | 45.4 | 167 | 1956 | 34.1 | 83 | 2173 | 19.0 | 6000 | |
| 7.25 | 207 | 1582 | 34.3 | 138 | 1695 | 24.5 | 69 | 1868 | 13.5 | 6000 | |
| ED 2045 | | | | | | | | | | | |
| 10.78 | 139 | 2193 | 32.0 | 93 | 2476 | 24.1 | 46.4 | 3049 | 14.8 | 6000 | 15 |
| 12.25 | 122 | 2278 | 29.2 | 82 | 2573 | 22.0 | 40.8 | 3168 | 13.5 | 6000 | |
| 14.46 | 104 | 2394 | 26.0 | 69 | 2704 | 19.6 | 34.6 | 3329 | 12.1 | 6000 | |
| 17.06 | 88 | 2475 | 22.8 | 59 | 2795 | 17.2 | 29.3 | 3393 | 10.4 | 6000 | |
| 18.10 | 83 | 2561 | 22.2 | 55 | 2893 | 16.7 | 27.6 | 3562 | 10.3 | 6000 | |
| 21.00 | 71 | 2678 | 20.0 | 47.6 | 3025 | 15.1 | 23.8 | 3724 | 9.3 | 6000 | |
| 25.38 | 59 | 2835 | 17.6 | 39.4 | 3202 | 13.2 | 19.7 | 3553 | 7.3 | 6000 | |
| 29.94 | 50 | 2931 | 15.4 | 33.4 | 3310 | 11.6 | 16.7 | 3583 | 6.3 | 6000 | |
| 31.02 | 48.4 | 2582 | 13.1 | 32.2 | 2698 | 9.1 | 16.1 | 2893 | 4.9 | 6000 | |
| 36.00 | 41.7 | 2358 | 10.3 | 27.8 | 2463 | 7.2 | 13.9 | 2640 | 3.8 | 6000 | |
| 43.50 | 34.5 | 2407 | 8.7 | 23.0 | 2511 | 6.0 | 11.5 | 2689 | 3.2 | 6000 | |
| 52.56 | 28.5 | 2070 | 6.2 | 19.0 | 2161 | 4.3 | 9.5 | 2319 | 2.3 | 6000 | |
| ET 3045 | | | | | | | | | | | |
| 53.78 | 27.9 | 3552 | 10.4 | 18.6 | 3961 | 7.7 | 9.3 | 4314 | 4.2 | 6000 | 10 |
| 63.46 | 23.6 | 3732 | 9.2 | 15.8 | 4022 | 6.6 | 7.9 | 4469 | 3.7 | 6000 | |
| 73.50 | 20.4 | 3901 | 8.3 | 13.6 | 4077 | 5.8 | 6.8 | 4609 | 3.3 | 6000 | |
| 79.44 | 18.9 | 3955 | 7.8 | 12.6 | 4106 | 5.4 | 6.3 | 4684 | 3.1 | 6000 | |
| 92.19 | 16.3 | 4010 | 6.8 | 10.8 | 4174 | 4.7 | 5.4 | 4831 | 2.7 | 6000 | |
| 100.3 | 15.0 | 4042 | 6.3 | 10.0 | 4250 | 4.4 | 5.0 | 4915 | 2.6 | 6000 | |
| 108.6 | 13.8 | 4071 | 5.9 | 9.2 | 4323 | 4.2 | 4.6 | 4996 | 2.4 | 6000 | |
| 125.6 | 11.9 | 4125 | 5.2 | 8.0 | 4459 | 3.7 | 4.0 | 5146 | 2.1 | 6000 | |
| 145.7 | 10.3 | 4221 | 4.6 | 6.9 | 4601 | 3.3 | 3.4 | 5088 | 1.8 | 6000 | |
| 152.3 | 9.9 | 3846 | 4.0 | 6.6 | 4014 | 2.8 | 3.3 | 4302 | 1.5 | 6000 | |
| 176.1 | 8.5 | 3907 | 3.5 | 5.7 | 4074 | 2.4 | 2.8 | 4363 | 1.3 | 6000 | |
| 207.8 | 7.2 | 3970 | 3.0 | 4.8 | 4326 | 2.2 | 2.4 | 4941 | 1.2 | 6000 | |
| 224.2 | 6.7 | 4035 | 2.8 | 4.5 | 4395 | 2.1 | 2.2 | 4798 | 1.1 | 6000 | |
| 260.2 | 5.8 | 4165 | 2.5 | 3.8 | 4532 | 1.8 | 1.9 | 4970 | 1.0 | 6000 | |
| 280.7 | 5.3 | 3302 | 1.8 | 3.6 | 3605 | 1.3 | 1.8 | 4167 | 0.78 | 6000 | |
| 314.4 | 4.8 | 4334 | 2.2 | 3.2 | 4711 | 1.6 | 1.6 | 5022 | 0.84 | 6000 | |
| 364.8 | 4.1 | 2542 | 1.1 | 2.7 | 2788 | 0.80 | 1.4 | 3244 | 0.47 | 6000 | |
| EQ 4045 | | | | | | | | | | | |
| 404.7 | 3.7 | 5051 | 2.0 | 2.5 | 5245 | 1.4 | 1.2 | 5615 | 0.73 | 6000 | 6 |
| 441.0 | 3.4 | 5312 | 1.9 | 2.3 | 5418 | 1.3 | 1.1 | 5684 | 0.68 | 6000 | |
| 510.1 | 2.9 | 5382 | 1.7 | 2.0 | 5439 | 1.1 | 0.98 | 5803 | 0.60 | 6000 | |
| 551.3 | 2.7 | 5393 | 1.5 | 1.8 | 5449 | 1.0 | 0.91 | 5867 | 0.56 | 6000 | |
| 639.8 | 2.3 | 5270 | 1.3 | 1.6 | 5470 | 0.90 | 0.78 | 5992 | 0.49 | 6000 | |
| 696.2 | 2.2 | 5425 | 1.2 | 1.4 | 5495 | 0.83 | 0.72 | 6064 | 0.46 | 6000 | |
| 773.1 | 1.9 | 4524 | 0.92 | 1.3 | 4698 | 0.64 | 0.65 | 5463 | 0.37 | 6000 | |
| 913.5 | 1.6 | 4595 | 0.79 | 1.1 | 4866 | 0.56 | 0.55 | 5662 | 0.33 | 6000 | |
| 1011 | 1.5 | 5477 | 0.85 | 0.99 | 5796 | 0.60 | 0.49 | 6389 | 0.33 | 6000 | |
| 1140 | 1.3 | 5565 | 0.77 | 0.88 | 5895 | 0.54 | 0.44 | 6496 | 0.30 | 6000 | |
| 1222 | 1.2 | 4743 | 0.61 | 0.82 | 5190 | 0.45 | 0.41 | 6021 | 0.26 | 6000 | |
| 1442 | 1.0 | 5337 | 0.58 | 0.69 | 5652 | 0.41 | 0.35 | 6226 | 0.23 | 6000 | |
| 1599 | 0.94 | 5036 | 0.50 | 0.63 | 5502 | 0.36 | 0.31 | 6366 | 0.21 | 6000 | |
| 1849 | 0.81 | 5200 | 0.44 | 0.54 | 5676 | 0.32 | 0.27 | 6559 | 0.19 | 6000 | |
| 1995 | 0.75 | 4415 | 0.35 | 0.50 | 4530 | 0.24 | 0.25 | 4730 | 0.12 | 6000 | |
| 2315 | 0.65 | 5124 | 0.35 | 0.43 | 5257 | 0.24 | 0.22 | 5489 | 0.12 | 6000 | |
| 2623 | 0.57 | 4633 | 0.28 | 0.38 | 5013 | 0.20 | 0.19 | 5720 | 0.11 | 6000 | |
| 2798 | 0.54 | 5687 | 0.32 | 0.36 | 6193 | 0.23 | 0.18 | 6633 | 0.12 | 6000 | |
| 3301 | 0.45 | 5997 | 0.29 | 0.30 | 6343 | 0.20 | 0.15 | 6975 | 0.11 | 6000 | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1045 | | | | | | | | | | | | |
| 3.50 | 429 | 2764 | 124 | 286 | 3122 | 93 | 143 | 3773 | 56 | 6000 | 20 | |
| 4.13 | 363 | 2858 | 109 | 242 | 3112 | 79 | 121 | 3449 | 43.7 | 6000 | | |
| 5.17 | 290 | 2411 | 73 | 193 | 2592 | 53 | 97 | 2855 | 28.9 | 6000 | | |
| 6.00 | 250 | 2238 | 59 | 167 | 2391 | 41.7 | 83 | 2618 | 22.8 | 6000 | | |
| 7.25 | 207 | 1953 | 42.3 | 138 | 2077 | 30.0 | 69 | 2267 | 16.4 | 6000 | | |
| ED 2045 | | | | | | | | | | | | |
| 10.78 | 139 | 3786 | 55 | 93 | 3980 | 38.7 | 46.4 | 4542 | 22.1 | 6000 | 15 | |
| 12.25 | 122 | 3849 | 49.4 | 82 | 4038 | 34.5 | 40.8 | 4671 | 20.0 | 6000 | | |
| 14.46 | 104 | 3928 | 42.7 | 69 | 4147 | 30.0 | 34.6 | 4841 | 17.5 | 6000 | | |
| 17.06 | 88 | 3585 | 33.0 | 59 | 3753 | 23.0 | 29.3 | 4381 | 13.5 | 6000 | | |
| 18.10 | 83 | 4031 | 35.0 | 55 | 4368 | 25.3 | 27.6 | 5077 | 14.7 | 6000 | | |
| 21.00 | 71 | 4116 | 30.8 | 47.6 | 4516 | 22.5 | 23.8 | 4974 | 12.4 | 6000 | | |
| 25.38 | 59 | 3705 | 22.9 | 39.4 | 3933 | 16.2 | 19.7 | 4283 | 8.8 | 6000 | | |
| 29.94 | 50 | 3892 | 20.4 | 33.4 | 4260 | 14.9 | 16.7 | 4921 | 8.6 | 6000 | | |
| 31.02 | 48.4 | 3085 | 15.6 | 32.2 | 3352 | 11.3 | 16.1 | 3901 | 6.6 | 6000 | | |
| 36.00 | 41.7 | 2823 | 12.3 | 27.8 | 3053 | 8.9 | 13.9 | 3555 | 5.2 | 6000 | | |
| 43.50 | 34.5 | 2905 | 10.5 | 23.0 | 3186 | 7.7 | 11.5 | 3700 | 4.5 | 6000 | | |
| 52.56 | 28.5 | 2504 | 7.5 | 19.0 | 2753 | 5.5 | 9.5 | 3211 | 3.2 | 6000 | | |
| ET 3045 | | | | | | | | | | | | |
| 53.78 | 27.9 | 5067 | 14.8 | 18.6 | 5371 | 10.5 | 9.3 | 5509 | 5.4 | 6000 | | 10 |
| 63.46 | 23.6 | 5244 | 13.0 | 15.8 | 5397 | 8.9 | 7.9 | 5643 | 4.7 | 6000 | | |
| 73.50 | 20.4 | 5356 | 11.4 | 13.6 | 5419 | 7.7 | 6.8 | 5763 | 4.1 | 6000 | | |
| 79.44 | 18.9 | 5369 | 10.6 | 12.6 | 5431 | 7.2 | 6.3 | 5828 | 3.8 | 6000 | | |
| 92.19 | 16.3 | 5186 | 8.8 | 10.8 | 5404 | 6.1 | 5.4 | 5953 | 3.4 | 6000 | | |
| 100.3 | 15.0 | 5405 | 8.5 | 10.0 | 5466 | 5.7 | 5.0 | 6024 | 3.1 | 6000 | | |
| 108.6 | 13.8 | 5417 | 7.8 | 9.2 | 5517 | 5.3 | 4.6 | 6092 | 2.9 | 6000 | | |
| 125.6 | 11.9 | 5439 | 6.8 | 8.0 | 5634 | 4.7 | 4.0 | 6218 | 2.6 | 6000 | | |
| 145.7 | 10.3 | 5452 | 5.9 | 6.9 | 5756 | 4.1 | 3.4 | 6350 | 2.3 | 6000 | | |
| 152.3 | 9.9 | 4609 | 4.8 | 6.6 | 4961 | 3.4 | 3.3 | 5779 | 2.0 | 6000 | | |
| 176.1 | 8.5 | 4677 | 4.2 | 5.7 | 5127 | 3.0 | 2.8 | 5961 | 1.8 | 6000 | | |
| 207.8 | 7.2 | 5299 | 4.0 | 4.8 | 5616 | 2.8 | 2.4 | 6189 | 1.6 | 6000 | | |
| 224.2 | 6.7 | 4963 | 3.5 | 4.5 | 5127 | 2.4 | 2.2 | 5390 | 1.3 | 6000 | | |
| 260.2 | 5.8 | 5473 | 3.3 | 3.8 | 5797 | 2.3 | 1.9 | 6256 | 1.3 | 6000 | | |
| 280.7 | 5.3 | 4887 | 2.7 | 3.6 | 5290 | 2.0 | 1.8 | 6039 | 1.1 | 6000 | | |
| 314.4 | 4.8 | 5622 | 2.8 | 3.2 | 5953 | 2.0 | 1.6 | 6554 | 1.1 | 6000 | | |
| 364.8 | 4.1 | 3829 | 1.6 | 2.7 | 4156 | 1.2 | 1.4 | 4763 | 0.68 | 6000 | | |
| EQ 4045 | | | | | | | | | | | | |
| 404.7 | 3.7 | 6281 | 2.4 | 2.5 | 6647 | 1.7 | 1.2 | 7312 | 0.95 | 6000 | 6 | |
| 441.0 | 3.4 | 6357 | 2.3 | 2.3 | 6727 | 1.6 | 1.1 | 7398 | 0.88 | 6000 | | |
| 510.1 | 2.9 | 6488 | 2.0 | 2.0 | 6863 | 1.4 | 0.98 | 7546 | 0.78 | 6000 | | |
| 551.3 | 2.7 | 6559 | 1.9 | 1.8 | 6937 | 1.3 | 0.91 | 7626 | 0.72 | 6000 | | |
| 639.8 | 2.3 | 6696 | 1.6 | 1.6 | 7080 | 1.2 | 0.78 | 7781 | 0.64 | 6000 | | |
| 696.2 | 2.2 | 6774 | 1.5 | 1.4 | 7163 | 1.1 | 0.72 | 7870 | 0.59 | 6000 | | |
| 773.1 | 1.9 | 6455 | 1.3 | 1.3 | 7012 | 0.95 | 0.65 | 7982 | 0.54 | 6000 | | |
| 913.5 | 1.6 | 6680 | 1.1 | 1.1 | 7251 | 0.83 | 0.55 | 8163 | 0.47 | 6000 | | |
| 1011 | 1.5 | 7132 | 1.1 | 0.99 | 7537 | 0.78 | 0.49 | 8275 | 0.43 | 6000 | | |
| 1140 | 1.3 | 7249 | 1.0 | 0.88 | 7660 | 0.70 | 0.44 | 8408 | 0.39 | 6000 | | |
| 1222 | 1.2 | 7086 | 0.91 | 0.82 | 7682 | 0.66 | 0.41 | 8487 | 0.36 | 6000 | | |
| 1442 | 1.0 | 6946 | 0.76 | 0.69 | 7338 | 0.53 | 0.35 | 8053 | 0.29 | 6000 | | |
| 1599 | 0.94 | 7477 | 0.74 | 0.63 | 8018 | 0.53 | 0.31 | 8795 | 0.29 | 6000 | | |
| 1849 | 0.81 | 7695 | 0.65 | 0.54 | 8176 | 0.46 | 0.27 | 8966 | 0.25 | 6000 | | |
| 1995 | 0.75 | 5123 | 0.40 | 0.50 | 5451 | 0.29 | 0.25 | 6058 | 0.16 | 6000 | | |
| 2315 | 0.65 | 5945 | 0.40 | 0.43 | 6326 | 0.29 | 0.22 | 7031 | 0.16 | 6000 | | |
| 2623 | 0.57 | 6490 | 0.39 | 0.38 | 6852 | 0.27 | 0.19 | 7511 | 0.15 | 6000 | | |
| 2798 | 0.54 | 7184 | 0.40 | 0.36 | 7644 | 0.29 | 0.18 | 8495 | 0.16 | 6000 | | |
| 3301 | 0.45 | 7767 | 0.37 | 0.30 | 8199 | 0.26 | 0.15 | 8984 | 0.14 | 6000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2045 - PDA 2045

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|----|
| 10.50 | 143 | 2175 | 32.6 | 95 | 2457 | 24.5 | 47.6 | 3025 | 15.1 | 6000 | 10 |
| 12.39 | 121 | 2249 | 28.5 | 81 | 2540 | 21.5 | 40.4 | 3127 | 13.2 | 6000 | |
| 16.17 | 93 | 1582 | 15.4 | 62 | 1787 | 11.6 | 30.9 | 2200 | 7.1 | 6000 | |
| 18.00 | 83 | 2173 | 19.0 | 56 | 2283 | 13.3 | 27.8 | 2463 | 7.2 | 6000 | |
| 19.08 | 79 | 1867 | 15.4 | 52 | 2109 | 11.6 | 26.2 | 2596 | 7.1 | 6000 | |
| 21.75 | 69 | 1868 | 13.5 | 46.0 | 1962 | 9.4 | 23.0 | 2119 | 5.1 | 6000 | |
| 23.89 | 63 | 2337 | 15.4 | 41.9 | 2624 | 11.5 | 20.9 | 2820 | 6.2 | 6000 | |
| 27.72 | 54 | 2290 | 13.0 | 36.1 | 2396 | 9.1 | 18.0 | 2573 | 4.9 | 6000 | |
| 33.50 | 44.8 | 1968 | 9.2 | 29.9 | 2060 | 6.4 | 14.9 | 2216 | 3.5 | 6000 | |

EC 3045 - PDA 3045

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 36.75 | 40.8 | 3168 | 13.5 | 27.2 | 3578 | 10.2 | 13.6 | 4077 | 5.8 | 6000 | 7 |
| 43.37 | 34.6 | 3329 | 12.1 | 23.1 | 3760 | 9.1 | 11.5 | 4138 | 5.0 | 6000 | |
| 49.80 | 30.1 | 3471 | 10.9 | 20.1 | 3920 | 8.2 | 10.0 | 4244 | 4.5 | 6000 | |
| 56.60 | 26.5 | 3606 | 10.0 | 17.7 | 3980 | 7.4 | 8.8 | 4362 | 4.0 | 6000 | |
| 63.00 | 23.8 | 3724 | 9.3 | 15.9 | 4020 | 6.7 | 7.9 | 4462 | 3.7 | 6000 | |
| 73.57 | 20.4 | 2827 | 6.0 | 13.6 | 2941 | 4.2 | 6.8 | 3139 | 2.2 | 6000 | |
| 83.60 | 17.9 | 3974 | 7.5 | 12.0 | 4125 | 5.2 | 6.0 | 4734 | 3.0 | 6000 | |
| 89.83 | 16.7 | 3583 | 6.3 | 11.1 | 3719 | 4.3 | 5.6 | 4196 | 2.4 | 6000 | |
| 97.02 | 15.5 | 4029 | 6.5 | 10.3 | 4220 | 4.6 | 5.2 | 4882 | 2.6 | 6000 | |
| 114.5 | 13.1 | 3664 | 5.0 | 8.7 | 3810 | 3.5 | 4.4 | 4414 | 2.0 | 6000 | |
| 123.5 | 12.1 | 2973 | 3.8 | 8.1 | 3088 | 2.6 | 4.0 | 3508 | 1.5 | 6000 | |
| 138.3 | 10.8 | 3728 | 4.2 | 7.2 | 3969 | 3.0 | 3.6 | 4590 | 1.7 | 6000 | |
| 166.3 | 9.0 | 2752 | 2.6 | 6.0 | 2858 | 1.8 | 3.0 | 3296 | 1.0 | 6000 | |
| 173.2 | 8.7 | 3069 | 2.8 | 5.8 | 3246 | 2.0 | 2.9 | 3770 | 1.1 | 6000 | |
| 201.0 | 7.5 | 2801 | 2.2 | 5.0 | 2951 | 1.5 | 2.5 | 3432 | 0.89 | 6000 | |
| 242.8 | 6.2 | 2419 | 1.6 | 4.1 | 2541 | 1.1 | 2.1 | 2970 | 0.64 | 6000 | |

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| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 276.6 | 5.4 | 4831 | 2.7 | 3.6 | 5063 | 1.9 | 1.8 | 5396 | 1.0 | 6000 | 3 |
| 310.3 | 4.8 | 4946 | 2.5 | 3.2 | 5369 | 1.8 | 1.6 | 5466 | 0.92 | 6000 | |
| 347.1 | 4.3 | 4978 | 2.3 | 2.9 | 5171 | 1.6 | 1.4 | 5493 | 0.83 | 6000 | |
| 414.7 | 3.6 | 5246 | 2.0 | 2.4 | 5410 | 1.4 | 1.2 | 5635 | 0.71 | 6000 | |
| 450.8 | 3.3 | 5103 | 1.8 | 2.2 | 5297 | 1.2 | 1.1 | 5702 | 0.66 | 6000 | |
| 498.3 | 3.0 | 5379 | 1.7 | 2.0 | 5435 | 1.1 | 1.0 | 5784 | 0.61 | 6000 | |
| 570.0 | 2.6 | 4066 | 1.1 | 1.8 | 4179 | 0.77 | 0.88 | 4372 | 0.40 | 6000 | |
| 625.0 | 2.4 | 5259 | 1.3 | 1.6 | 5456 | 0.91 | 0.80 | 5972 | 0.50 | 6000 | |
| 712.7 | 2.1 | 5322 | 1.2 | 1.4 | 5514 | 0.81 | 0.70 | 6084 | 0.45 | 6000 | |
| 799.3 | 1.9 | 4538 | 0.89 | 1.3 | 4722 | 0.62 | 0.63 | 5502 | 0.36 | 6000 | |
| 929.1 | 1.6 | 4202 | 0.71 | 1.1 | 4315 | 0.49 | 0.54 | 4509 | 0.25 | 6000 | |
| 988.1 | 1.5 | 5474 | 0.87 | 1.0 | 5777 | 0.61 | 0.51 | 6368 | 0.34 | 6000 | |
| 1078 | 1.4 | 4877 | 0.71 | 0.93 | 5008 | 0.49 | 0.46 | 5233 | 0.25 | 6000 | |
| 1194 | 1.3 | 4718 | 0.62 | 0.84 | 5164 | 0.45 | 0.42 | 5991 | 0.26 | 6000 | |
| 1409 | 1.1 | 5319 | 0.59 | 0.71 | 5633 | 0.42 | 0.35 | 6206 | 0.23 | 6000 | |
| 1593 | 0.94 | 4738 | 0.47 | 0.63 | 5130 | 0.34 | 0.31 | 5859 | 0.19 | 6000 | |
| 1806 | 0.83 | 5174 | 0.45 | 0.55 | 5648 | 0.33 | 0.28 | 6455 | 0.19 | 6000 | |
| 1925 | 0.78 | 4918 | 0.40 | 0.52 | 5322 | 0.29 | 0.26 | 6072 | 0.17 | 6000 | |
| 2208 | 0.68 | 5052 | 0.36 | 0.45 | 5465 | 0.26 | 0.23 | 6231 | 0.15 | 6000 | |
| 2563 | 0.59 | 4611 | 0.28 | 0.39 | 4990 | 0.20 | 0.20 | 5695 | 0.12 | 6000 | |
| 2668 | 0.56 | 5242 | 0.31 | 0.37 | 5666 | 0.22 | 0.19 | 6428 | 0.13 | 6000 | |
| 3097 | 0.48 | 4785 | 0.24 | 0.32 | 5176 | 0.18 | 0.16 | 5900 | 0.10 | 6000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

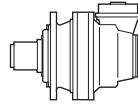
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

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| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|----|
| 10.50 | 143 | 3773 | 56 | 95 | 3968 | 39.6 | 47.6 | 4516 | 22.5 | 6000 | 10 |
| 12.39 | 121 | 3449 | 43.7 | 81 | 3620 | 30.6 | 40.4 | 4086 | 17.3 | 6000 | |
| 16.17 | 93 | 2796 | 27.2 | 62 | 3157 | 20.5 | 30.9 | 3887 | 12.6 | 6000 | |
| 18.00 | 83 | 2618 | 22.8 | 56 | 2739 | 15.9 | 27.8 | 3053 | 8.9 | 6000 | |
| 19.08 | 79 | 3299 | 27.2 | 52 | 3726 | 20.5 | 26.2 | 4488 | 12.3 | 6000 | |
| 21.75 | 69 | 2267 | 16.4 | 46.0 | 2371 | 11.4 | 23.0 | 2636 | 6.3 | 6000 | |
| 23.89 | 63 | 3001 | 19.7 | 41.9 | 3156 | 13.8 | 20.9 | 3688 | 8.1 | 6000 | |
| 27.72 | 54 | 2747 | 15.6 | 36.1 | 2875 | 10.9 | 18.0 | 3360 | 6.3 | 6000 | |
| 33.50 | 44.8 | 2378 | 11.2 | 29.9 | 2480 | 7.8 | 14.9 | 2908 | 4.5 | 6000 | |

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| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 36.75 | 40.8 | 4671 | 20.0 | 27.2 | 5093 | 14.5 | 13.6 | 5419 | 7.7 | 6000 | 7 |
| 43.37 | 34.6 | 4841 | 17.5 | 23.1 | 5271 | 12.7 | 11.5 | 5444 | 6.6 | 6000 | |
| 49.80 | 30.1 | 4986 | 15.7 | 20.1 | 5359 | 11.3 | 10.0 | 5465 | 5.7 | 6000 | |
| 56.60 | 26.5 | 5121 | 14.2 | 17.7 | 5379 | 10.0 | 8.8 | 5550 | 5.1 | 6000 | |
| 63.00 | 23.8 | 4974 | 12.4 | 15.9 | 5200 | 8.6 | 7.9 | 5637 | 4.7 | 6000 | |
| 73.57 | 20.4 | 3709 | 7.9 | 13.6 | 4043 | 5.8 | 6.8 | 4659 | 3.3 | 6000 | |
| 83.60 | 17.9 | 5377 | 10.1 | 12.0 | 5439 | 6.8 | 6.0 | 5870 | 3.7 | 6000 | |
| 89.83 | 16.7 | 4921 | 8.6 | 11.1 | 4977 | 5.8 | 5.6 | 5500 | 3.2 | 6000 | |
| 97.02 | 15.5 | 5214 | 8.4 | 10.3 | 5450 | 5.9 | 5.2 | 5996 | 3.2 | 6000 | |
| 114.5 | 13.1 | 4955 | 6.8 | 8.7 | 5155 | 4.7 | 4.4 | 5693 | 2.6 | 6000 | |
| 123.5 | 12.1 | 4139 | 5.3 | 8.1 | 4497 | 3.8 | 4.0 | 5161 | 2.2 | 6000 | |
| 138.3 | 10.8 | 4995 | 5.7 | 7.2 | 5298 | 4.0 | 3.6 | 5847 | 2.2 | 6000 | |
| 166.3 | 9.0 | 3892 | 3.7 | 6.0 | 4228 | 2.7 | 3.0 | 4851 | 1.5 | 6000 | |
| 173.2 | 8.7 | 4437 | 4.0 | 5.8 | 4813 | 2.9 | 2.9 | 5509 | 1.7 | 6000 | |
| 201.0 | 7.5 | 4046 | 3.2 | 5.0 | 4392 | 2.3 | 2.5 | 5032 | 1.3 | 6000 | |
| 242.8 | 6.2 | 3520 | 2.3 | 4.1 | 3828 | 1.7 | 2.1 | 4399 | 0.95 | 6000 | |

EC 4045 - PDA 4045

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 276.6 | 5.4 | 5953 | 3.4 | 3.6 | 6303 | 2.4 | 1.8 | 6940 | 1.3 | 6000 | 3 |
| 310.3 | 4.8 | 6050 | 3.1 | 3.2 | 6406 | 2.2 | 1.6 | 7051 | 1.2 | 6000 | |
| 347.1 | 4.3 | 6147 | 2.8 | 2.9 | 6507 | 2.0 | 1.4 | 7160 | 1.1 | 6000 | |
| 414.7 | 3.6 | 6303 | 2.4 | 2.4 | 6669 | 1.7 | 1.2 | 7336 | 0.93 | 6000 | |
| 450.8 | 3.3 | 6377 | 2.2 | 2.2 | 6747 | 1.6 | 1.1 | 7420 | 0.86 | 6000 | |
| 498.3 | 3.0 | 6467 | 2.0 | 2.0 | 6841 | 1.4 | 1.0 | 7522 | 0.79 | 6000 | |
| 570.0 | 2.6 | 4568 | 1.3 | 1.8 | 4695 | 0.86 | 0.88 | 5003 | 0.46 | 6000 | |
| 625.0 | 2.4 | 6674 | 1.7 | 1.6 | 7058 | 1.2 | 0.80 | 7756 | 0.65 | 6000 | |
| 712.7 | 2.1 | 6796 | 1.5 | 1.4 | 7186 | 1.1 | 0.70 | 7895 | 0.58 | 6000 | |
| 799.3 | 1.9 | 6406 | 1.3 | 1.3 | 6584 | 0.86 | 0.63 | 7016 | 0.46 | 6000 | |
| 929.1 | 1.6 | 4721 | 0.80 | 1.1 | 4848 | 0.55 | 0.54 | 5392 | 0.30 | 6000 | |
| 988.1 | 1.5 | 7109 | 1.1 | 1.0 | 7513 | 0.80 | 0.51 | 8249 | 0.44 | 6000 | |
| 1078 | 1.4 | 5479 | 0.80 | 0.93 | 5626 | 0.55 | 0.46 | 6258 | 0.30 | 6000 | |
| 1194 | 1.3 | 7053 | 0.93 | 0.84 | 7647 | 0.67 | 0.42 | 8460 | 0.37 | 6000 | |
| 1409 | 1.1 | 6924 | 0.77 | 0.71 | 7315 | 0.54 | 0.35 | 8028 | 0.30 | 6000 | |
| 1593 | 0.94 | 6678 | 0.66 | 0.63 | 7052 | 0.46 | 0.31 | 7734 | 0.25 | 6000 | |
| 1806 | 0.83 | 6763 | 0.59 | 0.55 | 7149 | 0.41 | 0.28 | 7948 | 0.23 | 6000 | |
| 1925 | 0.78 | 6850 | 0.56 | 0.52 | 7233 | 0.39 | 0.26 | 7929 | 0.22 | 6000 | |
| 2208 | 0.68 | 6978 | 0.50 | 0.45 | 7367 | 0.35 | 0.23 | 8074 | 0.19 | 6000 | |
| 2563 | 0.59 | 6470 | 0.40 | 0.39 | 6831 | 0.28 | 0.20 | 7488 | 0.15 | 6000 | |
| 2668 | 0.56 | 7157 | 0.42 | 0.37 | 7554 | 0.30 | 0.19 | 8277 | 0.16 | 6000 | |
| 3097 | 0.48 | 6636 | 0.34 | 0.32 | 7005 | 0.24 | 0.16 | 7677 | 0.13 | 6000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

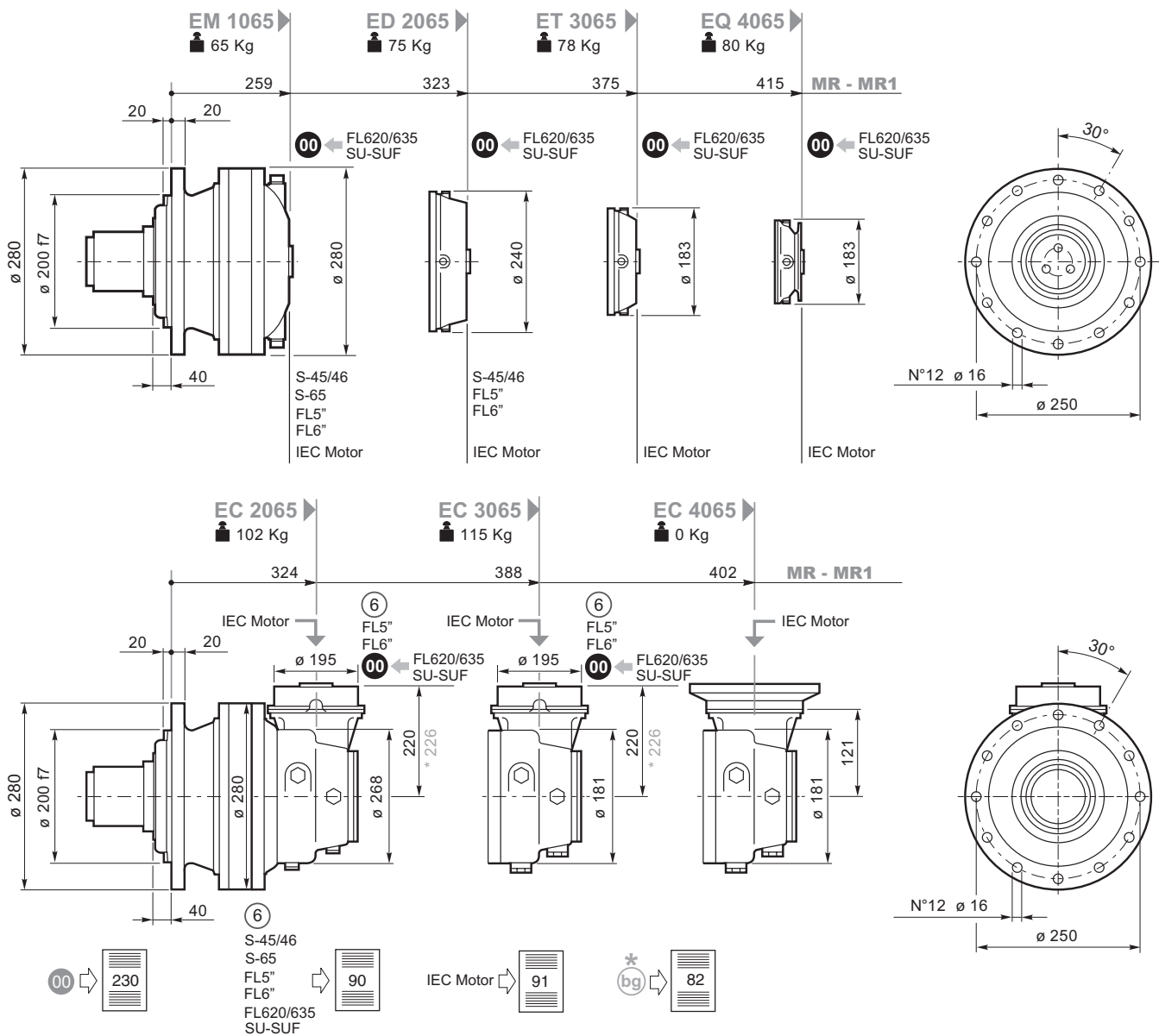
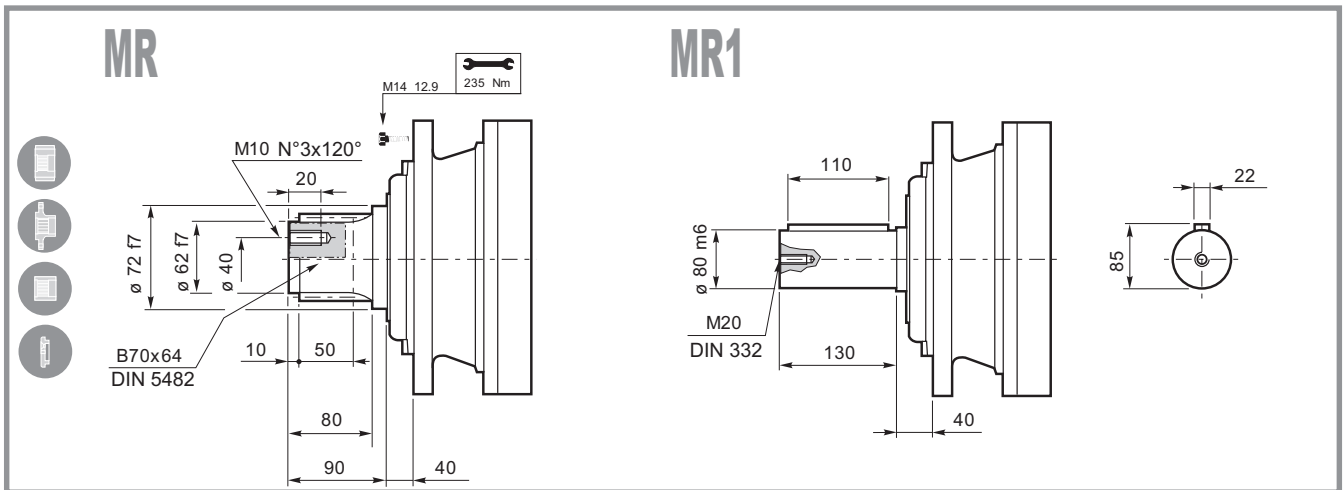
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

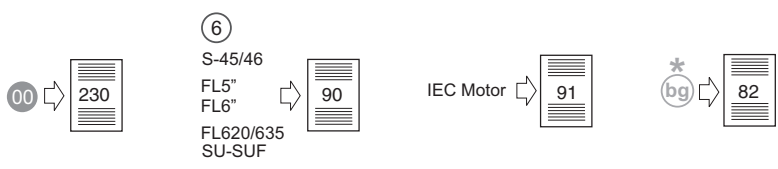
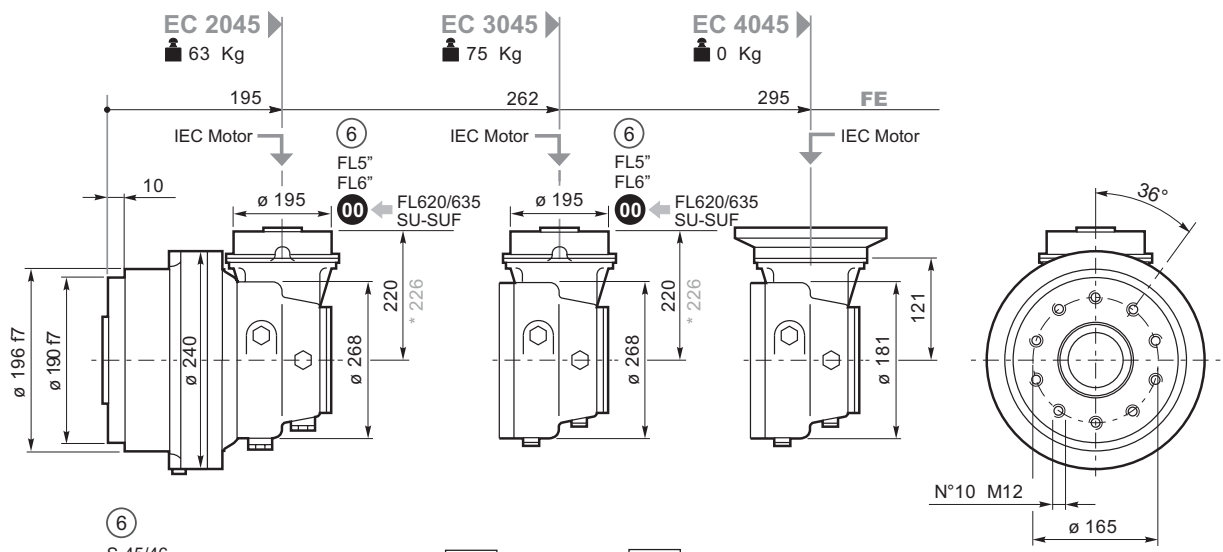
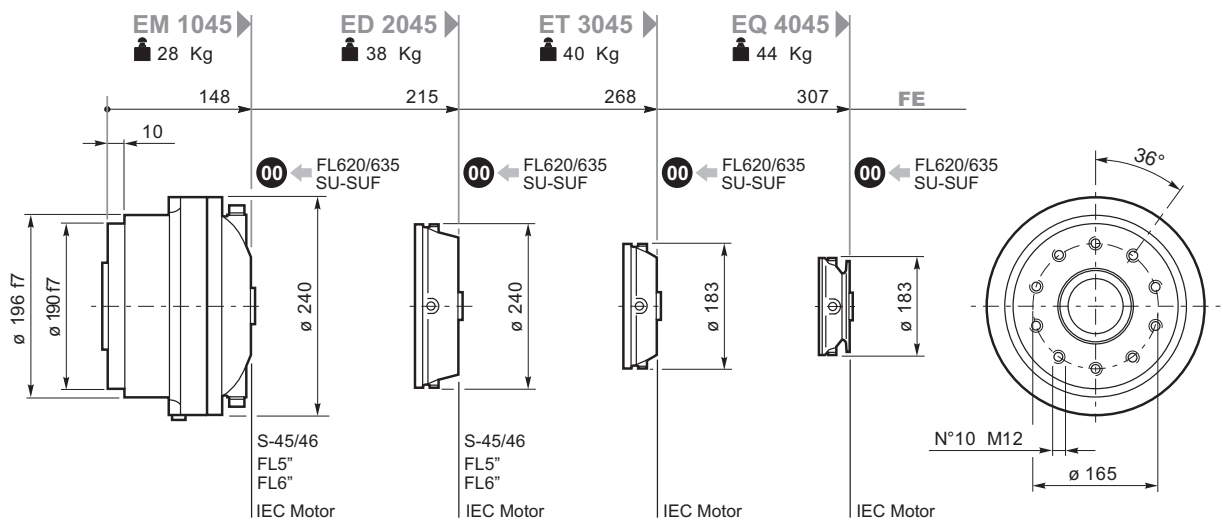
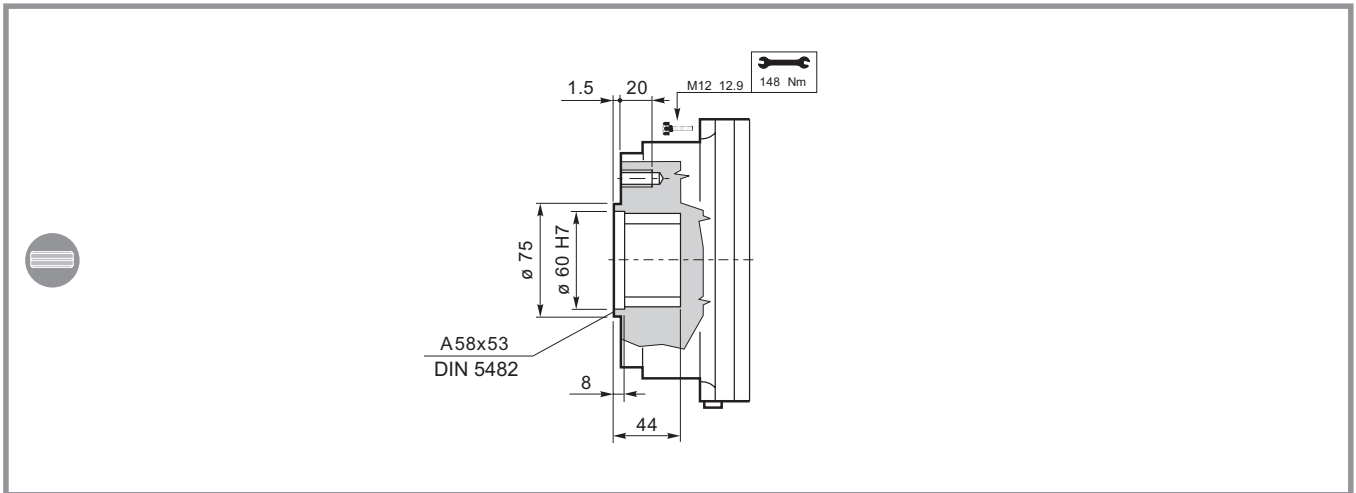
Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

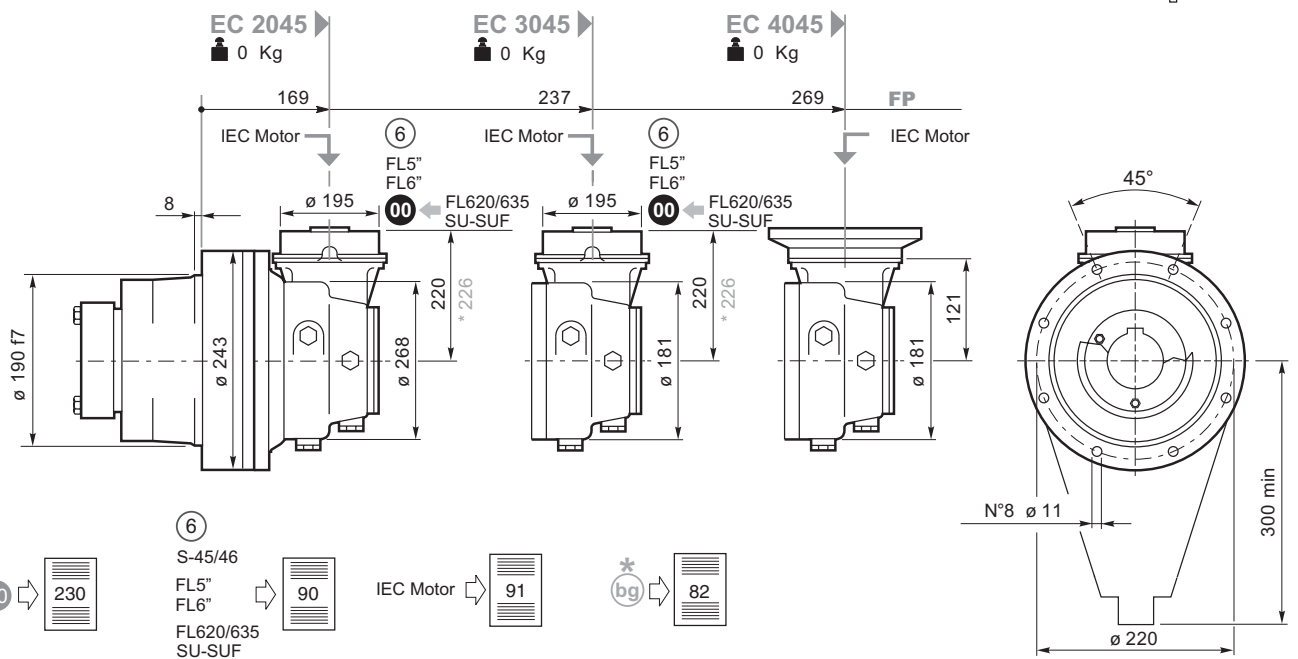
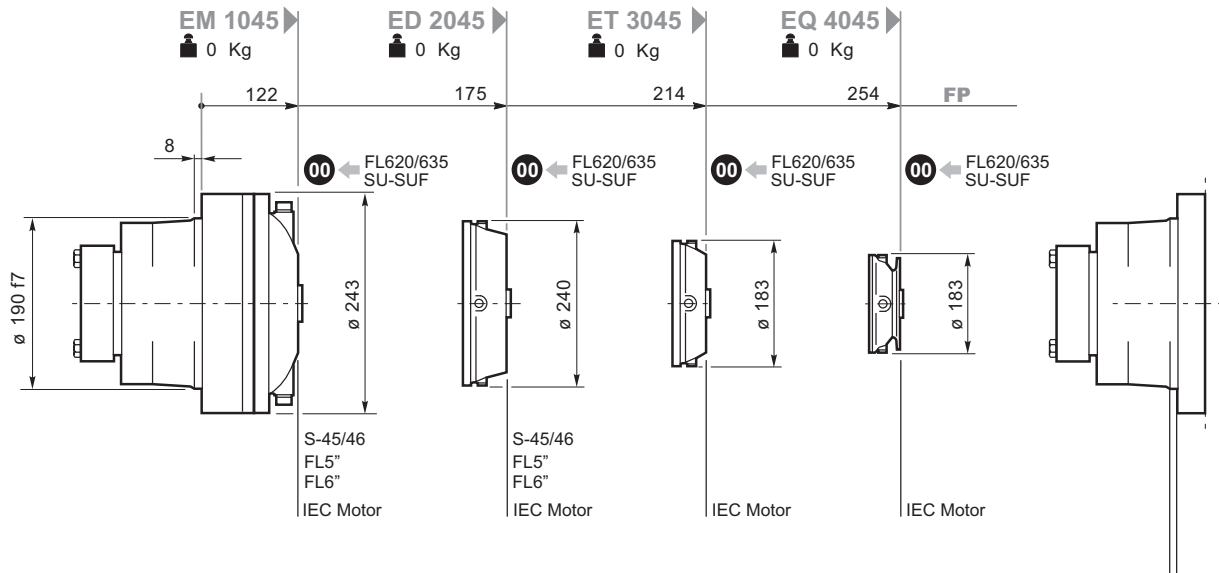
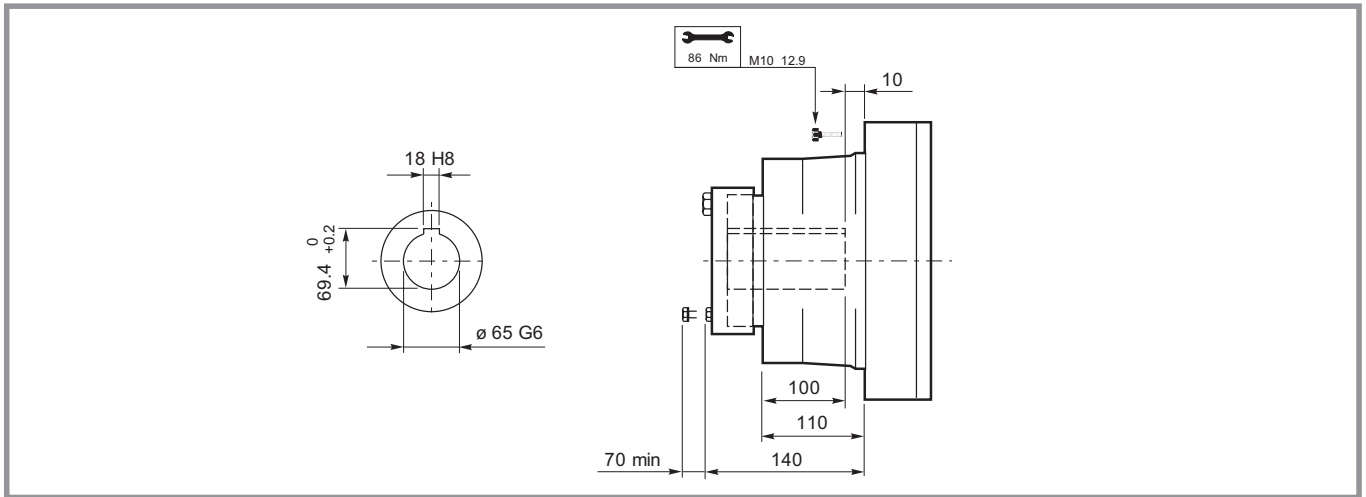
Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

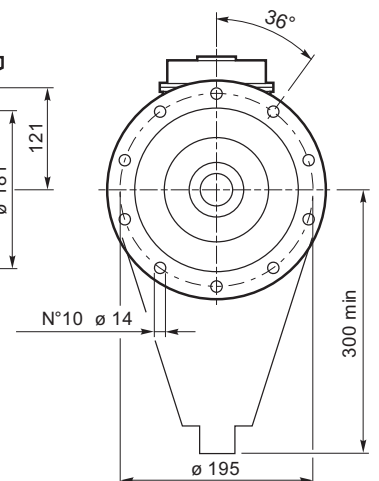
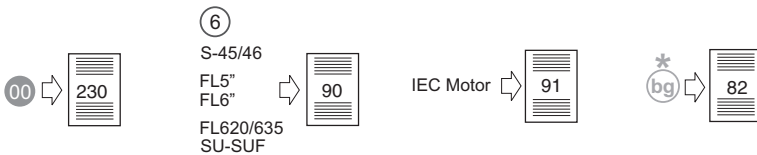
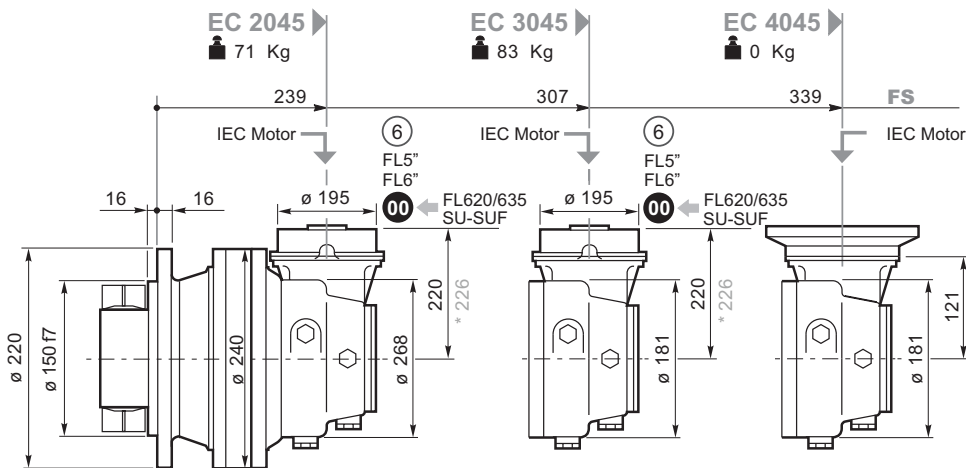
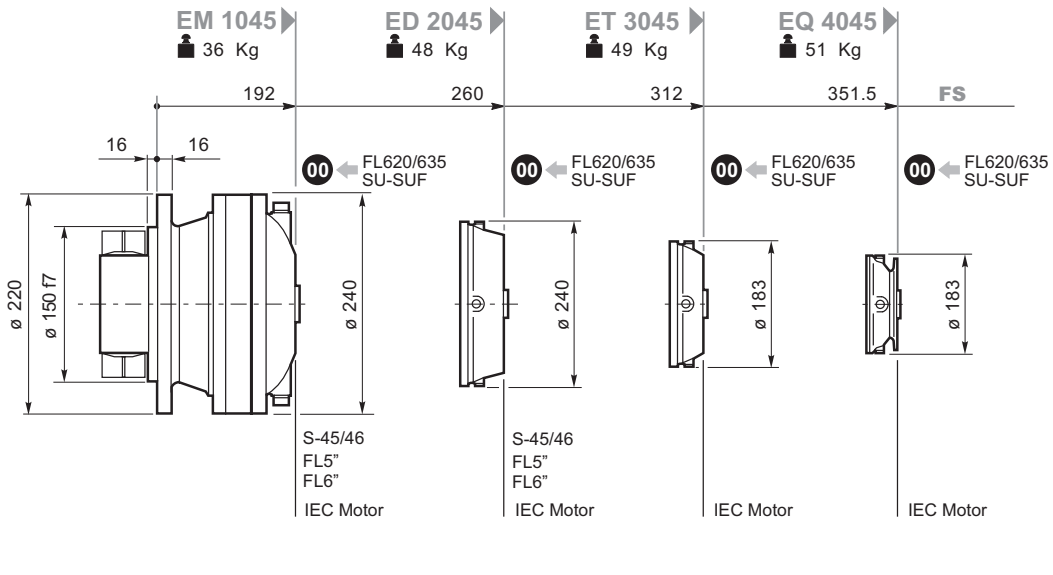
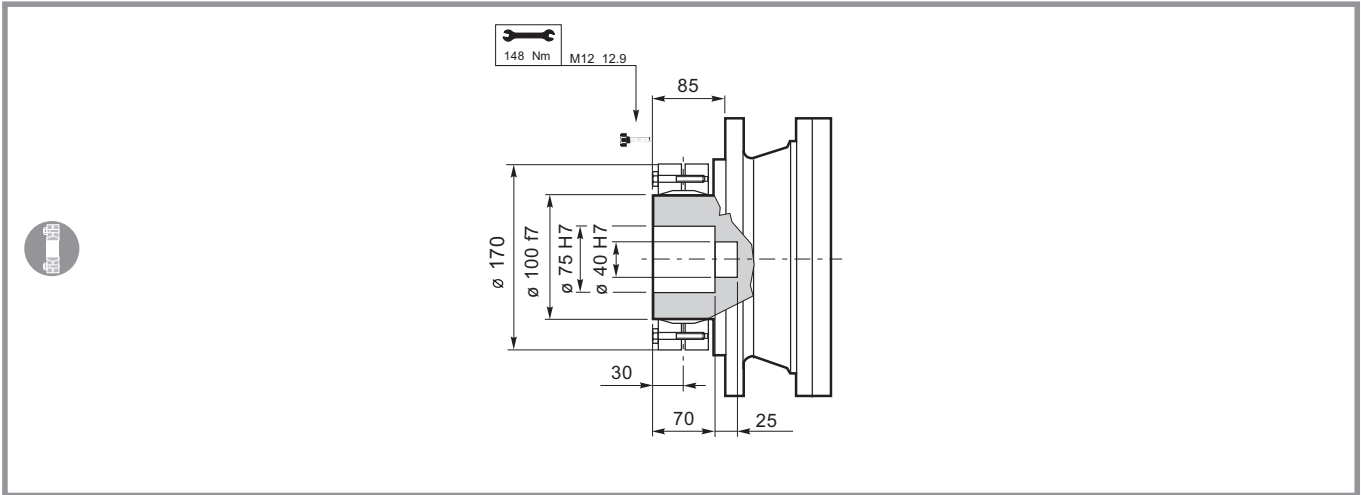
As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

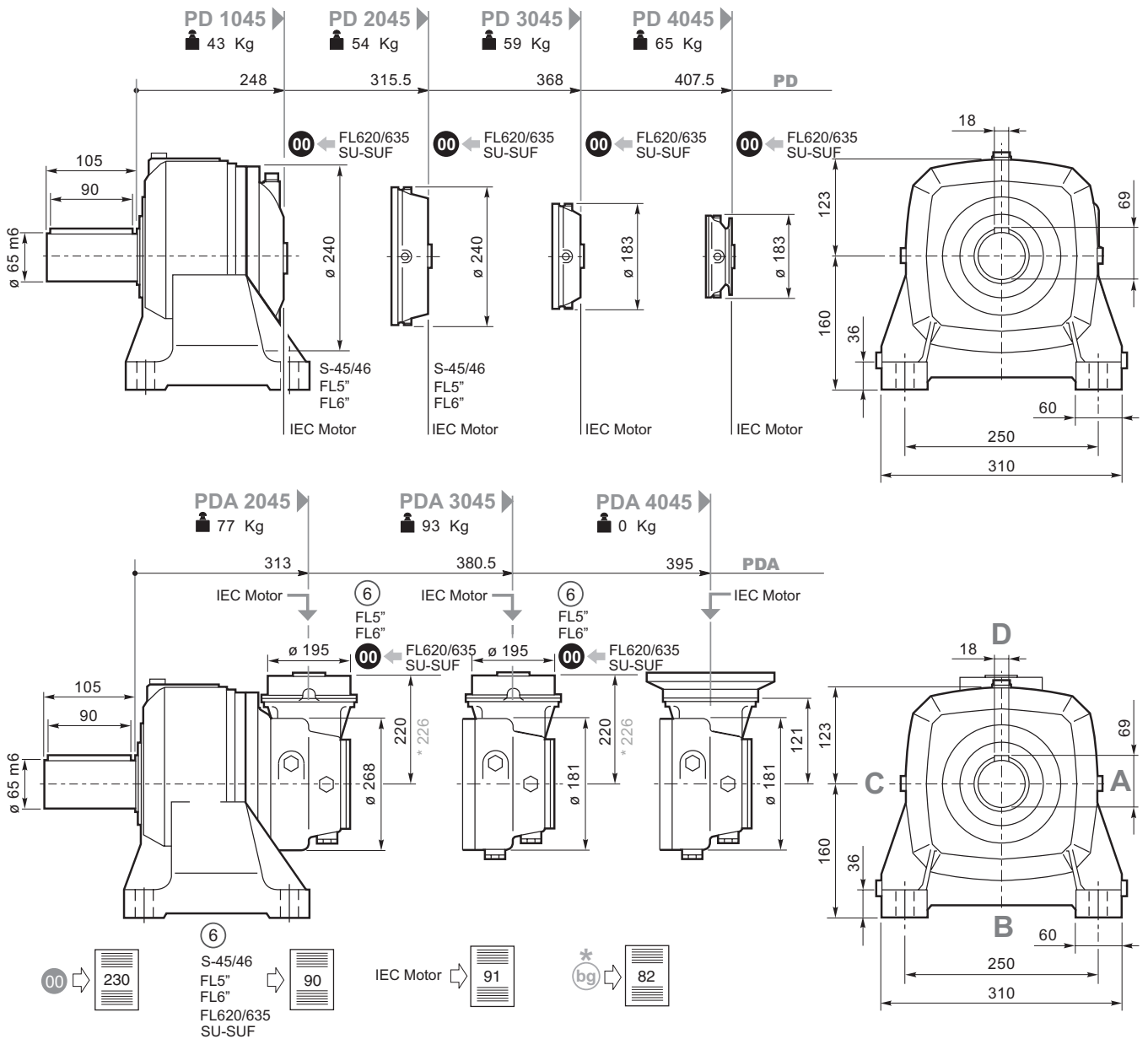
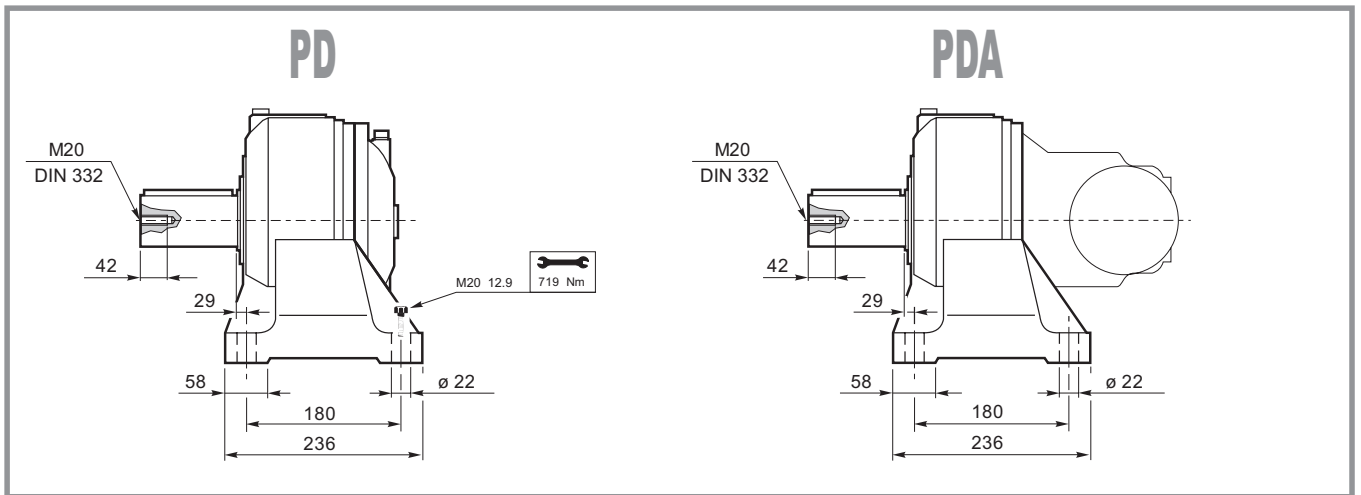






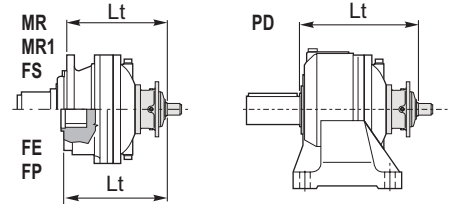
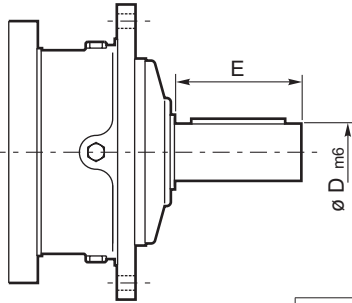






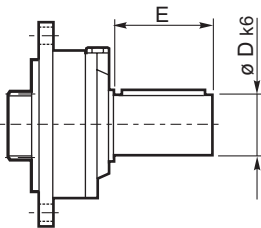
045

S45CR1-S46C1

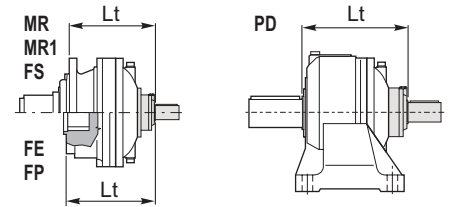


| | D m6 | E | | Lt | | | |
|---------|---------|----|---------|-----------|-----|-----|-------|
| | | | | MR-MR1-FS | FE | FP | PD |
| S45 CR1 | 65 | 58 | EM 1045 | 255 | 211 | 185 | 311 |
| | | | ED 2045 | 323 | 278 | 253 | 378.5 |
| S46 C1 | 65 | 58 | EM 1045 | 252 | 252 | 226 | 352 |
| | | | ED 2045 | 364 | 319 | 294 | 419.5 |

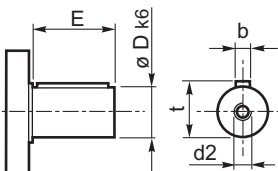
SU2



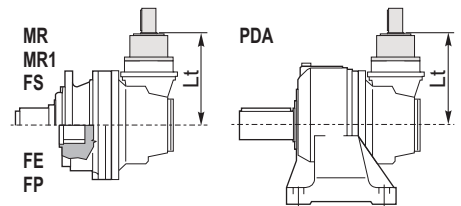
| | D k6 | E | | Lt | | | | |
|------|---------|----|---------|-----------|-----|-------|-----|-------|
| | | | | MR MR1 | FE | FS | FP | PD |
| SU 2 | 40 | 58 | EM 1045 | 252 | 208 | 252 | 182 | 308 |
| | | | ED 2045 | 320 | 275 | 320 | 250 | 375.5 |
| | | | ET 3045 | 372 | 328 | 372 | 302 | 428 |
| | | | EQ 4045 | 429 | 367 | 411.5 | 342 | 467.5 |



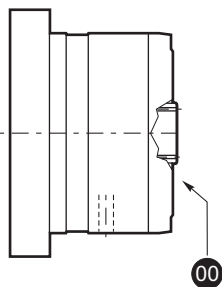
⑥ 48.82



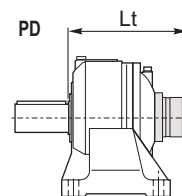
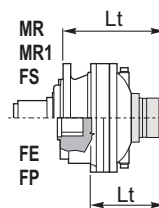
| | D | E | | Lt |
|-------|----|----|---------|---------------------|
| | | | | MR-MR1-FS-FE-FP-PDA |
| 48.82 | 48 | 82 | EC 2045 | 280 |
| | | | EC 3045 | 280 |



FL250-FL350-FL450 FL750



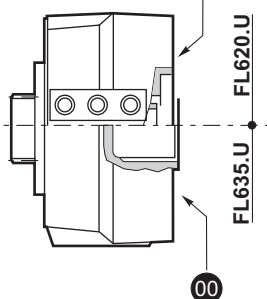
| | | Lt | | | |
|-------------------------|----------|-----------|-----|-----|-----|
| | | MR-MR1-FS | FE | FP | PD |
| FL250 FL350 FL450 | EM 1045 | 285 | 241 | 215 | 342 |
| | ED 2045 | 353 | 309 | 283 | 410 |
| | EC 2045 | 280 | 280 | 280 | 280 |
| | EC 2045* | 377 | 377 | 377 | 377 |
| | EC 3045 | 280 | 280 | 280 | 280 |
| | EC 3045* | 377 | 377 | 377 | 377 |
| FL750 | EM 1045 | 297 | 254 | 228 | 355 |
| | ED 2045 | 366 | 322 | 296 | 423 |



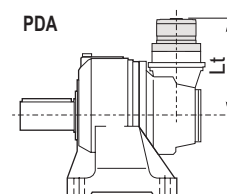
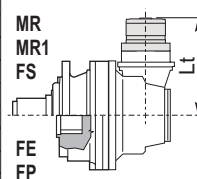
**FL620/10
FL635/10**

FL620U-FL635U

SAE A-AA
Shaft FE

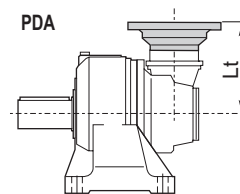
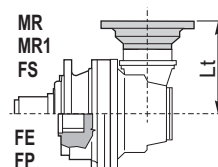
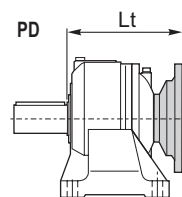
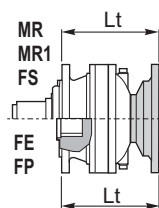


| | | Lt | | | | |
|----------|----------|-----------|-------|-------|-------|-------|
| | | MR-MR1-FS | FE | FP | PD | |
| FL620/U | EM 1045 | 296.5 | 252.5 | 226.5 | 352.5 | |
| | ED 2045 | 364.5 | 319.5 | 294.5 | 420 | |
| | ET 3045 | 416.5 | 372.5 | 346.5 | 472.5 | |
| | EQ 4045 | 456.5 | 411.5 | 386.5 | 512 | |
| | EC 2045 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 2045* | 330.5 | 330.5 | 330.5 | 330.5 | |
| | EC 3045 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 3045* | 330.5 | 330.5 | 330.5 | 330.5 | |
| | FL635U | EM 1045 | 283 | 329 | 213 | 339 |
| | | ED 2045 | 351 | 306 | 281 | 406.5 |
| ET 3045 | | 403 | 359 | 333 | 459 | |
| EQ 4045 | | 443 | 398 | 373 | 498.5 | |
| EC 2045 | | 311 | 311 | 311 | 311 | |
| EC 2045* | | 317 | 317 | 317 | 317 | |
| EC 3045 | | 311 | 311 | 311 | 311 | |
| EC 3045* | | 317 | 317 | 317 | 317 | |
| FL620/10 | | ET 3045 | 376 | 332 | 306 | 432 |
| | | EQ 4045 | 416 | 371 | 346 | 492 |
| FL635/10 | ET 3045 | 357 | 313 | 287 | 413 | |
| | EQ 4045 | 397 | 352 | 327 | 473 | |



IEC Motor

| | | Lt | | | | | | | |
|----------|---------------------|--------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| EM 1045 | MR-MR1-FS | 212 | 214 | 219 | 220 | 287 | 318 | 328 | 359 |
| EM1045 | FE | 168 | 170 | 175 | 176 | 243 | 274 | 284 | 315 |
| EM1045 | FP | | | | | | | | |
| ED 2045 | MR-MR1-FS | 280 | 282 | 287 | 288 | 355 | 386 | 396 | 427 |
| ED 2045 | FE | 235 | 237 | 242 | 243 | 310 | 341 | 351 | 382 |
| ED 2045 | FP | | | | | | | | |
| ET 3045 | MR-MR1-FS | 332 | 334 | 339 | 340 | 407 | | | |
| ET 3045 | FE | 288 | 290 | 295 | 296 | 363 | | | |
| ET 3045 | FP | | | | | | | | |
| EQ 4045 | MR-MR1-FS | 372 | 374 | 379 | 380 | 447 | | | |
| EQ 4045 | FE | 327 | 329 | 334 | 335 | 402 | | | |
| EQ 4045 | FP | | | | | | | | |
| PD 1045 | PD | 268 | 270 | 275 | 276 | 343 | 374 | 384 | 415 |
| PD 2045 | PD | 336 | 338 | 343 | 344 | 411 | 442 | 452 | |
| PD 3045 | PD | 388 | 390 | 395 | 396 | 463 | | | |
| PD 4045 | PD | 428 | 430 | 435 | 436 | 503 | | | |
| EC 2045 | MR-MR1-FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 2045* | MR-MR1-FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 3045 | MR-MR1-FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3045* | MR-MR1-FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 4045 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 | | | |



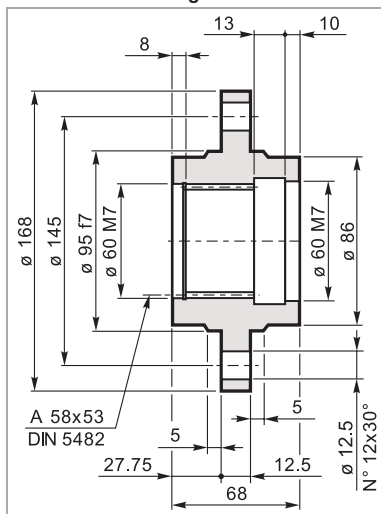
* bg





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 045

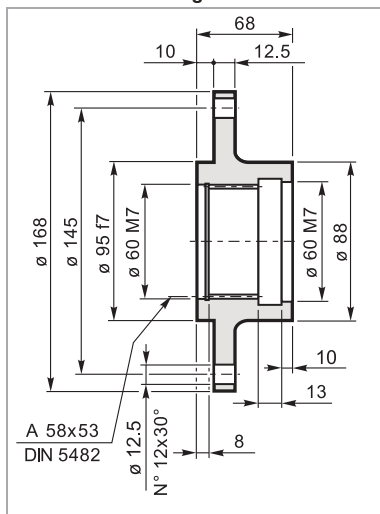


Mat. C40 UNI EN 10083
Code: 34700641800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 045

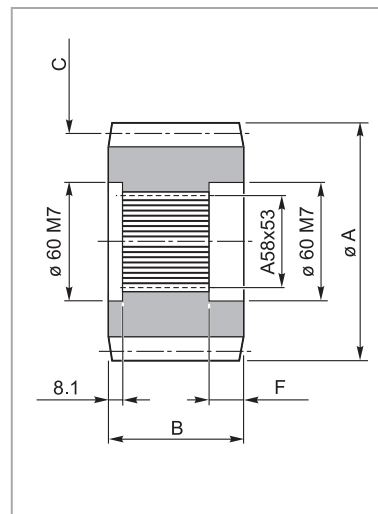


Mat. C40 UNI EN 10083
Code: 34700131800



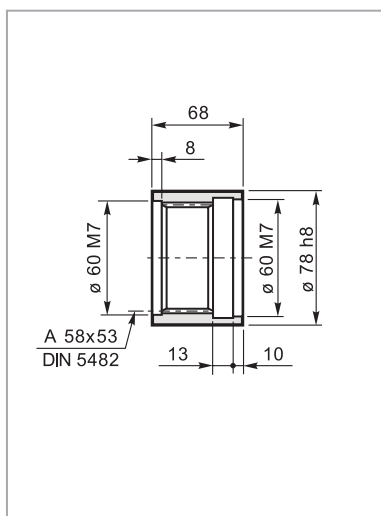
Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 045



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 045

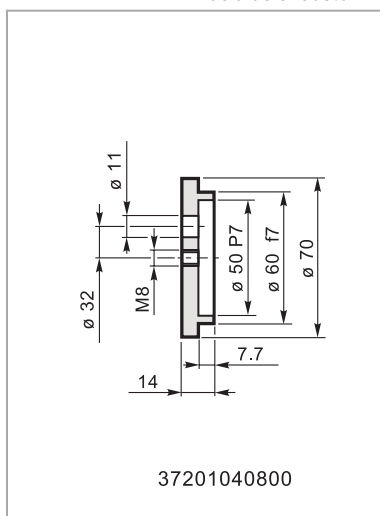


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102840600



Rondella di fermo
Shaft cover
Gegenseibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 045



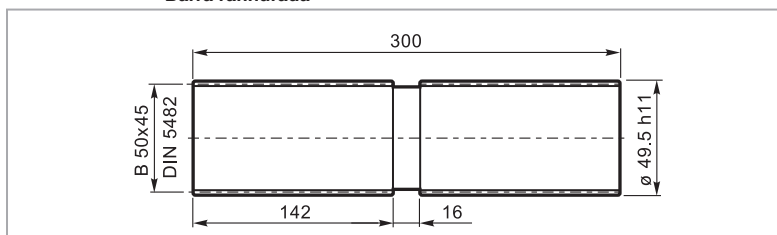
Mat. C40 UNI EN 10083
Code: 37201040800

| code | A | B | C | F |
|---------------|-------|----|------------------|------|
| 335.0143.0800 | 114.8 | 68 | M=8 Z=12 X=0.3 | 23.5 |
| 335.0174.0800 | 99.6 | 68 | M=6 Z=14 X=0.3 | 24 |
| 335.0184.0800 | 114.8 | 80 | M=8 Z=12 X=0.3 | 24 |
| 335.0274.0800 | 143 | 80 | M=10 Z=12 X=0.35 | 23.5 |
| 335.0324.0800 | 136.2 | 80 | M=8 Z=15 | 23.5 |
| 335.0344.0800 | 152 | 80 | M=10 Z=13 X=0.3 | 23.5 |
| 335.0353.000K | 127.6 | 68 | M=8 Z=13 X=0.54 | 23.5 |
| 335.2133.0600 | 143.4 | 80 | M=8 Z=15 X=0.4 | 23.5 |
| 335.3473.0600 | 156 | 80 | M=6 Z=24 | 23 |
| 335.4273.0600 | 142 | 80 | M=8 Z=16 | 23.5 |
| 335.5193.060 | 115 | 68 | M=5 Z=21 | 24 |
| 335.5942.000 | 136 | 80 | M=8 Z=14 X=0.4 | 23.5 |
| 335.6273.000 | 120 | 68 | M=8 Z=13 | 24 |



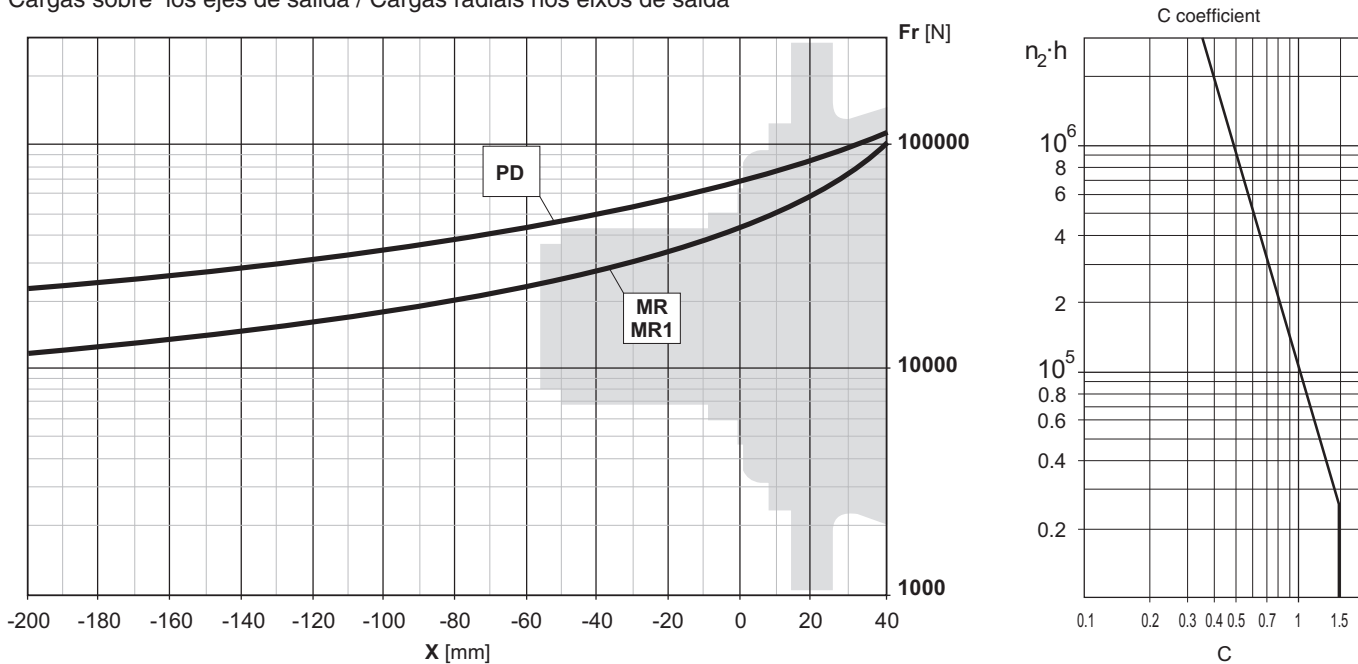
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 045

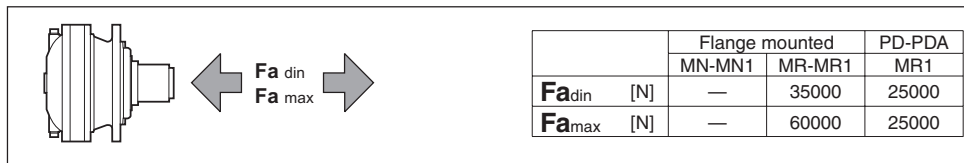


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Code: 39126930100

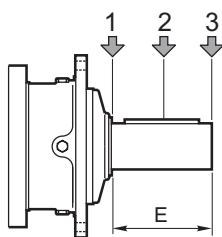
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



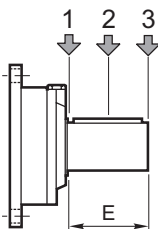
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



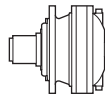
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



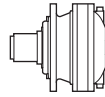
| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 104000 | 8800 | 6400 | 7000 | 4400 | 3200 |



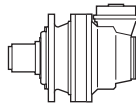
| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



| i _{eff} | 1500 | | | 1000 | | | 500 | | | T _{2max} [Nm] | P _T [kW] |
|------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|---------------------------|------------------------|
| | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | n ₂ [rpm] | T ₂ [Nm] | P ₂ [kW] | | |
| EM 1046 | | | | | | | | | | | |
| 3.50 | 429 | 1565 | 70 | 286 | 1767 | 53 | 143 | 2175 | 32.6 | 6000 | 20 |
| 4.13 | 363 | 1617 | 62 | 242 | 1827 | 46.3 | 121 | 2249 | 28.5 | 6000 | |
| 5.17 | 290 | 1682 | 51 | 193 | 1900 | 38.5 | 97 | 2339 | 23.7 | 6000 | |
| 6.00 | 250 | 1732 | 45.4 | 167 | 1956 | 34.1 | 83 | 2173 | 19.0 | 6000 | |
| 7.25 | 207 | 1582 | 34.3 | 138 | 1695 | 24.5 | 69 | 1868 | 13.5 | 6000 | |
| ED 2046 | | | | | | | | | | | |
| 10.78 | 139 | 2193 | 32.0 | 93 | 2476 | 24.1 | 46.4 | 3049 | 14.8 | 6000 | 15 |
| 12.25 | 122 | 2278 | 29.2 | 82 | 2573 | 22.0 | 40.8 | 3168 | 13.5 | 6000 | |
| 14.46 | 104 | 2394 | 26.0 | 69 | 2704 | 19.6 | 34.6 | 3329 | 12.1 | 6000 | |
| 17.06 | 88 | 2475 | 22.8 | 59 | 2795 | 17.2 | 29.3 | 3393 | 10.4 | 6000 | |
| 18.10 | 83 | 2561 | 22.2 | 55 | 2893 | 16.7 | 27.6 | 3562 | 10.3 | 6000 | |
| 21.00 | 71 | 2678 | 20.0 | 47.6 | 3025 | 15.1 | 23.8 | 3724 | 9.3 | 6000 | |
| 25.38 | 59 | 2835 | 17.6 | 39.4 | 3202 | 13.2 | 19.7 | 3553 | 7.3 | 6000 | |
| 29.94 | 50 | 2931 | 15.4 | 33.4 | 3310 | 11.6 | 16.7 | 3583 | 6.3 | 6000 | |
| 31.02 | 48.4 | 2582 | 13.1 | 32.2 | 2698 | 9.1 | 16.1 | 2893 | 4.9 | 6000 | |
| 36.00 | 41.7 | 2358 | 10.3 | 27.8 | 2463 | 7.2 | 13.9 | 2640 | 3.8 | 6000 | |
| 43.50 | 34.5 | 2407 | 8.7 | 23.0 | 2511 | 6.0 | 11.5 | 2689 | 3.2 | 6000 | |
| 52.56 | 28.5 | 2070 | 6.2 | 19.0 | 2161 | 4.3 | 9.5 | 2319 | 2.3 | 6000 | |
| ET 3046 | | | | | | | | | | | |
| 53.78 | 27.9 | 3552 | 10.4 | 18.6 | 3961 | 7.7 | 9.3 | 4314 | 4.2 | 6000 | 10 |
| 63.46 | 23.6 | 3732 | 9.2 | 15.8 | 4022 | 6.6 | 7.9 | 4469 | 3.7 | 6000 | |
| 73.50 | 20.4 | 3901 | 8.3 | 13.6 | 4077 | 5.8 | 6.8 | 4609 | 3.3 | 6000 | |
| 79.44 | 18.9 | 3955 | 7.8 | 12.6 | 4106 | 5.4 | 6.3 | 4684 | 3.1 | 6000 | |
| 92.19 | 16.3 | 4010 | 6.8 | 10.8 | 4174 | 4.7 | 5.4 | 4831 | 2.7 | 6000 | |
| 100.3 | 15.0 | 4042 | 6.3 | 10.0 | 4250 | 4.4 | 5.0 | 4915 | 2.6 | 6000 | |
| 108.6 | 13.8 | 4071 | 5.9 | 9.2 | 4323 | 4.2 | 4.6 | 4996 | 2.4 | 6000 | |
| 125.6 | 11.9 | 4125 | 5.2 | 8.0 | 4459 | 3.7 | 4.0 | 5146 | 2.1 | 6000 | |
| 145.7 | 10.3 | 4221 | 4.6 | 6.9 | 4601 | 3.3 | 3.4 | 5088 | 1.8 | 6000 | |
| 152.3 | 9.9 | 3846 | 4.0 | 6.6 | 4014 | 2.8 | 3.3 | 4302 | 1.5 | 6000 | |
| 176.1 | 8.5 | 3907 | 3.5 | 5.7 | 4074 | 2.4 | 2.8 | 4363 | 1.3 | 6000 | |
| 207.8 | 7.2 | 3970 | 3.0 | 4.8 | 4326 | 2.2 | 2.4 | 4941 | 1.2 | 6000 | |
| 224.2 | 6.7 | 4035 | 2.8 | 4.5 | 4395 | 2.1 | 2.2 | 4798 | 1.1 | 6000 | |
| 260.2 | 5.8 | 4165 | 2.5 | 3.8 | 4532 | 1.8 | 1.9 | 4970 | 1.0 | 6000 | |
| 280.7 | 5.3 | 3302 | 1.8 | 3.6 | 3605 | 1.3 | 1.8 | 4167 | 0.78 | 6000 | |
| 314.4 | 4.8 | 4334 | 2.2 | 3.2 | 4711 | 1.6 | 1.6 | 5022 | 0.84 | 6000 | |
| 364.8 | 4.1 | 2542 | 1.1 | 2.7 | 2788 | 0.80 | 1.4 | 3244 | 0.47 | 6000 | |
| EQ 4046 | | | | | | | | | | | |
| 404.7 | 3.7 | 5051 | 2.0 | 2.5 | 5245 | 1.4 | 1.2 | 5615 | 0.73 | 6000 | 6 |
| 441.0 | 3.4 | 5312 | 1.9 | 2.3 | 5418 | 1.3 | 1.1 | 5684 | 0.68 | 6000 | |
| 510.1 | 2.9 | 5382 | 1.7 | 2.0 | 5439 | 1.1 | 0.98 | 5803 | 0.60 | 6000 | |
| 551.3 | 2.7 | 5393 | 1.5 | 1.8 | 5449 | 1.0 | 0.91 | 5867 | 0.56 | 6000 | |
| 639.8 | 2.3 | 5270 | 1.3 | 1.6 | 5470 | 0.90 | 0.78 | 5992 | 0.49 | 6000 | |
| 696.2 | 2.2 | 5425 | 1.2 | 1.4 | 5495 | 0.83 | 0.72 | 6064 | 0.46 | 6000 | |
| 773.1 | 1.9 | 4524 | 0.92 | 1.3 | 4698 | 0.64 | 0.65 | 5463 | 0.37 | 6000 | |
| 913.5 | 1.6 | 4595 | 0.79 | 1.1 | 4866 | 0.56 | 0.55 | 5662 | 0.33 | 6000 | |
| 1011 | 1.5 | 5477 | 0.85 | 0.99 | 5796 | 0.60 | 0.49 | 6389 | 0.33 | 6000 | |
| 1140 | 1.3 | 5565 | 0.77 | 0.88 | 5895 | 0.54 | 0.44 | 6496 | 0.30 | 6000 | |
| 1222 | 1.2 | 4743 | 0.61 | 0.82 | 5190 | 0.45 | 0.41 | 6021 | 0.26 | 6000 | |
| 1442 | 1.0 | 5337 | 0.58 | 0.69 | 5652 | 0.41 | 0.35 | 6226 | 0.23 | 6000 | |
| 1599 | 0.94 | 5036 | 0.50 | 0.63 | 5502 | 0.36 | 0.31 | 6366 | 0.21 | 6000 | |
| 1849 | 0.81 | 5200 | 0.44 | 0.54 | 5676 | 0.32 | 0.27 | 6559 | 0.19 | 6000 | |
| 1995 | 0.75 | 4415 | 0.35 | 0.50 | 4530 | 0.24 | 0.25 | 4730 | 0.12 | 6000 | |
| 2315 | 0.65 | 5124 | 0.35 | 0.43 | 5257 | 0.24 | 0.22 | 5489 | 0.12 | 6000 | |
| 2623 | 0.57 | 4633 | 0.28 | 0.38 | 5013 | 0.20 | 0.19 | 5720 | 0.11 | 6000 | |
| 2798 | 0.54 | 5687 | 0.32 | 0.36 | 6193 | 0.23 | 0.18 | 6633 | 0.12 | 6000 | |
| 3301 | 0.45 | 5997 | 0.29 | 0.30 | 6343 | 0.20 | 0.15 | 6975 | 0.11 | 6000 | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1046 | | | | | | | | | | | |
| 3.50 | 429 | 2764 | 124 | 286 | 3122 | 93 | 143 | 3773 | 56 | 6000 | 20 |
| 4.13 | 363 | 2858 | 109 | 242 | 3112 | 79 | 121 | 3449 | 43.7 | 6000 | |
| 5.17 | 290 | 2411 | 73 | 193 | 2592 | 53 | 97 | 2855 | 28.9 | 6000 | |
| 6.00 | 250 | 2238 | 59 | 167 | 2391 | 41.7 | 83 | 2618 | 22.8 | 6000 | |
| 7.25 | 207 | 1953 | 42.3 | 138 | 2077 | 30.0 | 69 | 2267 | 16.4 | 6000 | |
| ED 2046 | | | | | | | | | | | |
| 10.78 | 139 | 3786 | 55 | 93 | 3980 | 38.7 | 46.4 | 4542 | 22.1 | 6000 | 15 |
| 12.25 | 122 | 3849 | 49.4 | 82 | 4038 | 34.5 | 40.8 | 4671 | 20.0 | 6000 | |
| 14.46 | 104 | 3928 | 42.7 | 69 | 4147 | 30.0 | 34.6 | 4841 | 17.5 | 6000 | |
| 17.06 | 88 | 3585 | 33.0 | 59 | 3753 | 23.0 | 29.3 | 4381 | 13.5 | 6000 | |
| 18.10 | 83 | 4031 | 35.0 | 55 | 4368 | 25.3 | 27.6 | 5077 | 14.7 | 6000 | |
| 21.00 | 71 | 4116 | 30.8 | 47.6 | 4516 | 22.5 | 23.8 | 4974 | 12.4 | 6000 | |
| 25.38 | 59 | 3705 | 22.9 | 39.4 | 3933 | 16.2 | 19.7 | 4283 | 8.8 | 6000 | |
| 29.94 | 50 | 3892 | 20.4 | 33.4 | 4260 | 14.9 | 16.7 | 4921 | 8.6 | 6000 | |
| 31.02 | 48.4 | 3085 | 15.6 | 32.2 | 3352 | 11.3 | 16.1 | 3901 | 6.6 | 6000 | |
| 36.00 | 41.7 | 2823 | 12.3 | 27.8 | 3053 | 8.9 | 13.9 | 3555 | 5.2 | 6000 | |
| 43.50 | 34.5 | 2905 | 10.5 | 23.0 | 3186 | 7.7 | 11.5 | 3700 | 4.5 | 6000 | |
| 52.56 | 28.5 | 2504 | 7.5 | 19.0 | 2753 | 5.5 | 9.5 | 3211 | 3.2 | 6000 | |
| ET 3046 | | | | | | | | | | | |
| 53.78 | 27.9 | 5067 | 14.8 | 18.6 | 5371 | 10.5 | 9.3 | 5509 | 5.4 | 6000 | 10 |
| 63.46 | 23.6 | 5244 | 13.0 | 15.8 | 5397 | 8.9 | 7.9 | 5643 | 4.7 | 6000 | |
| 73.50 | 20.4 | 5356 | 11.4 | 13.6 | 5419 | 7.7 | 6.8 | 5763 | 4.1 | 6000 | |
| 79.44 | 18.9 | 5369 | 10.6 | 12.6 | 5431 | 7.2 | 6.3 | 5828 | 3.8 | 6000 | |
| 92.19 | 16.3 | 5186 | 8.8 | 10.8 | 5404 | 6.1 | 5.4 | 5953 | 3.4 | 6000 | |
| 100.3 | 15.0 | 5405 | 8.5 | 10.0 | 5466 | 5.7 | 5.0 | 6024 | 3.1 | 6000 | |
| 108.6 | 13.8 | 5417 | 7.8 | 9.2 | 5517 | 5.3 | 4.6 | 6092 | 2.9 | 6000 | |
| 125.6 | 11.9 | 5439 | 6.8 | 8.0 | 5634 | 4.7 | 4.0 | 6218 | 2.6 | 6000 | |
| 145.7 | 10.3 | 5452 | 5.9 | 6.9 | 5756 | 4.1 | 3.4 | 6350 | 2.3 | 6000 | |
| 152.3 | 9.9 | 4609 | 4.8 | 6.6 | 4961 | 3.4 | 3.3 | 5779 | 2.0 | 6000 | |
| 176.1 | 8.5 | 4677 | 4.2 | 5.7 | 5127 | 3.0 | 2.8 | 5961 | 1.8 | 6000 | |
| 207.8 | 7.2 | 5299 | 4.0 | 4.8 | 5616 | 2.8 | 2.4 | 6189 | 1.6 | 6000 | |
| 224.2 | 6.7 | 4963 | 3.5 | 4.5 | 5127 | 2.4 | 2.2 | 5390 | 1.3 | 6000 | |
| 260.2 | 5.8 | 5473 | 3.3 | 3.8 | 5797 | 2.3 | 1.9 | 6256 | 1.3 | 6000 | |
| 280.7 | 5.3 | 4887 | 2.7 | 3.6 | 5290 | 2.0 | 1.8 | 6039 | 1.1 | 6000 | |
| 314.4 | 4.8 | 5622 | 2.8 | 3.2 | 5953 | 2.0 | 1.6 | 6554 | 1.1 | 6000 | |
| 364.8 | 4.1 | 3829 | 1.6 | 2.7 | 4156 | 1.2 | 1.4 | 4763 | 0.68 | 6000 | |
| EQ 4046 | | | | | | | | | | | |
| 404.7 | 3.7 | 6281 | 2.4 | 2.5 | 6647 | 1.7 | 1.2 | 7312 | 0.95 | 6000 | 6 |
| 441.0 | 3.4 | 6357 | 2.3 | 2.3 | 6727 | 1.6 | 1.1 | 7398 | 0.88 | 6000 | |
| 510.1 | 2.9 | 6488 | 2.0 | 2.0 | 6863 | 1.4 | 0.98 | 7546 | 0.78 | 6000 | |
| 551.3 | 2.7 | 6559 | 1.9 | 1.8 | 6937 | 1.3 | 0.91 | 7626 | 0.72 | 6000 | |
| 639.8 | 2.3 | 6696 | 1.6 | 1.6 | 7080 | 1.2 | 0.78 | 7781 | 0.64 | 6000 | |
| 696.2 | 2.2 | 6774 | 1.5 | 1.4 | 7163 | 1.1 | 0.72 | 7870 | 0.59 | 6000 | |
| 773.1 | 1.9 | 6455 | 1.3 | 1.3 | 7012 | 0.95 | 0.65 | 7982 | 0.54 | 6000 | |
| 913.5 | 1.6 | 6680 | 1.1 | 1.1 | 7251 | 0.83 | 0.55 | 8163 | 0.47 | 6000 | |
| 1011 | 1.5 | 7132 | 1.1 | 0.99 | 7537 | 0.78 | 0.49 | 8275 | 0.43 | 6000 | |
| 1140 | 1.3 | 7249 | 1.0 | 0.88 | 7660 | 0.70 | 0.44 | 8408 | 0.39 | 6000 | |
| 1222 | 1.2 | 7086 | 0.91 | 0.82 | 7682 | 0.66 | 0.41 | 8487 | 0.36 | 6000 | |
| 1442 | 1.0 | 6946 | 0.76 | 0.69 | 7338 | 0.53 | 0.35 | 8053 | 0.29 | 6000 | |
| 1599 | 0.94 | 7477 | 0.74 | 0.63 | 8018 | 0.53 | 0.31 | 8795 | 0.29 | 6000 | |
| 1849 | 0.81 | 7695 | 0.65 | 0.54 | 8176 | 0.46 | 0.27 | 8966 | 0.25 | 6000 | |
| 1995 | 0.75 | 5123 | 0.40 | 0.50 | 5451 | 0.29 | 0.25 | 6058 | 0.16 | 6000 | |
| 2315 | 0.65 | 5945 | 0.40 | 0.43 | 6326 | 0.29 | 0.22 | 7031 | 0.16 | 6000 | |
| 2623 | 0.57 | 6490 | 0.39 | 0.38 | 6852 | 0.27 | 0.19 | 7511 | 0.15 | 6000 | |
| 2798 | 0.54 | 7184 | 0.40 | 0.36 | 7644 | 0.29 | 0.18 | 8495 | 0.16 | 6000 | |
| 3301 | 0.45 | 7767 | 0.37 | 0.30 | 8199 | 0.26 | 0.15 | 8984 | 0.14 | 6000 | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2046 - PDA 2046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|----|
| 10.50 | 143 | 2175 | 32.6 | 95 | 2457 | 24.5 | 47.6 | 3025 | 15.1 | 6000 | |
| 12.39 | 121 | 2249 | 28.5 | 81 | 2540 | 21.5 | 40.4 | 3127 | 13.2 | 6000 | |
| 16.17 | 93 | 1582 | 15.4 | 62 | 1787 | 11.6 | 30.9 | 2200 | 7.1 | 6000 | |
| 18.00 | 83 | 2173 | 19.0 | 56 | 2283 | 13.3 | 27.8 | 2463 | 7.2 | 6000 | |
| 19.08 | 79 | 1867 | 15.4 | 52 | 2109 | 11.6 | 26.2 | 2596 | 7.1 | 6000 | 12 |
| 21.75 | 69 | 1868 | 13.5 | 46.0 | 1962 | 9.4 | 23.0 | 2119 | 5.1 | 6000 | |
| 23.89 | 63 | 2337 | 15.4 | 41.9 | 2624 | 11.5 | 20.9 | 2820 | 6.2 | 6000 | |
| 27.72 | 54 | 2290 | 13.0 | 36.1 | 2396 | 9.1 | 18.0 | 2573 | 4.9 | 6000 | |
| 33.50 | 44.8 | 1968 | 9.2 | 29.9 | 2060 | 6.4 | 14.9 | 2216 | 3.5 | 6000 | |

EC 3046 - PDA 3046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 36.75 | 40.8 | 3168 | 13.5 | 27.2 | 3578 | 10.2 | 13.6 | 4077 | 5.8 | 6000 | |
| 43.37 | 34.6 | 3329 | 12.1 | 23.1 | 3760 | 9.1 | 11.5 | 4138 | 5.0 | 6000 | |
| 49.80 | 30.1 | 3471 | 10.9 | 20.1 | 3920 | 8.2 | 10.0 | 4244 | 4.5 | 6000 | |
| 56.60 | 26.5 | 3606 | 10.0 | 17.7 | 3980 | 7.4 | 8.8 | 4362 | 4.0 | 6000 | |
| 63.00 | 23.8 | 3724 | 9.3 | 15.9 | 4020 | 6.7 | 7.9 | 4462 | 3.7 | 6000 | |
| 73.57 | 20.4 | 2827 | 6.0 | 13.6 | 2941 | 4.2 | 6.8 | 3139 | 2.2 | 6000 | |
| 83.60 | 17.9 | 3974 | 7.5 | 12.0 | 4125 | 5.2 | 6.0 | 4734 | 3.0 | 6000 | |
| 89.83 | 16.7 | 3583 | 6.3 | 11.1 | 3719 | 4.3 | 5.6 | 4196 | 2.4 | 6000 | 7 |
| 97.02 | 15.5 | 4029 | 6.5 | 10.3 | 4220 | 4.6 | 5.2 | 4882 | 2.6 | 6000 | |
| 114.5 | 13.1 | 3664 | 5.0 | 8.7 | 3810 | 3.5 | 4.4 | 4414 | 2.0 | 600c | |
| 123.5 | 12.1 | 2973 | 3.8 | 8.1 | 3088 | 2.6 | 4.0 | 3508 | 1.5 | 6000 | |
| 138.3 | 10.8 | 3728 | 4.2 | 7.2 | 3969 | 3.0 | 3.6 | 4590 | 1.7 | 6000 | |
| 166.3 | 9.0 | 2752 | 2.6 | 6.0 | 2858 | 1.8 | 3.0 | 3296 | 1.0 | 6000 | |
| 173.2 | 8.7 | 3069 | 2.8 | 5.8 | 3246 | 2.0 | 2.9 | 3770 | 1.1 | 6000 | |
| 201.0 | 7.5 | 2801 | 2.2 | 5.0 | 2951 | 1.5 | 2.5 | 3432 | 0.89 | 6000 | |
| 242.8 | 6.2 | 2419 | 1.6 | 4.1 | 2541 | 1.1 | 2.1 | 2970 | 0.64 | 6000 | |

EC 4046 - PDA 4046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 276.6 | 5.4 | 4831 | 2.7 | 3.6 | 5063 | 1.9 | 1.8 | 5396 | 1.0 | 6000 | |
| 310.3 | 4.8 | 4946 | 2.5 | 3.2 | 5369 | 1.8 | 1.6 | 5466 | 0.92 | 6000 | |
| 347.1 | 4.3 | 4978 | 2.3 | 2.9 | 5171 | 1.6 | 1.4 | 5493 | 0.83 | 6000 | |
| 414.7 | 3.6 | 5246 | 2.0 | 2.4 | 5410 | 1.4 | 1.2 | 5635 | 0.71 | 6000 | |
| 450.8 | 3.3 | 5103 | 1.8 | 2.2 | 5297 | 1.2 | 1.1 | 5702 | 0.66 | 6000 | |
| 498.3 | 3.0 | 5379 | 1.7 | 2.0 | 5435 | 1.1 | 1.0 | 5784 | 0.61 | 6000 | |
| 570.0 | 2.6 | 4066 | 1.1 | 1.8 | 4179 | 0.77 | 0.88 | 4372 | 0.40 | 6000 | |
| 625.0 | 2.4 | 5259 | 1.3 | 1.6 | 5456 | 0.91 | 0.80 | 5972 | 0.50 | 6000 | |
| 712.7 | 2.1 | 5322 | 1.2 | 1.4 | 5514 | 0.81 | 0.70 | 6084 | 0.45 | 6000 | |
| 799.3 | 1.9 | 4538 | 0.89 | 1.3 | 4722 | 0.62 | 0.63 | 5502 | 0.36 | 6000 | |
| 929.1 | 1.6 | 4202 | 0.71 | 1.1 | 4315 | 0.49 | 0.54 | 4509 | 0.25 | 6000 | 3 |
| 988.1 | 1.5 | 5474 | 0.87 | 1.0 | 5777 | 0.61 | 0.51 | 6368 | 0.34 | 6000 | |
| 1078 | 1.4 | 4877 | 0.71 | 0.93 | 5008 | 0.49 | 0.46 | 5233 | 0.25 | 6000 | |
| 1194 | 1.3 | 4718 | 0.62 | 0.84 | 5164 | 0.45 | 0.42 | 5991 | 0.26 | 6000 | |
| 1409 | 1.1 | 5319 | 0.59 | 0.71 | 5633 | 0.42 | 0.35 | 6206 | 0.23 | 6000 | |
| 1593 | 0.94 | 4738 | 0.47 | 0.63 | 5130 | 0.34 | 0.31 | 5859 | 0.19 | 6000 | |
| 1806 | 0.83 | 5174 | 0.45 | 0.55 | 5648 | 0.33 | 0.28 | 6455 | 0.19 | 6000 | |
| 1925 | 0.78 | 4918 | 0.40 | 0.52 | 5322 | 0.29 | 0.26 | 6072 | 0.17 | 6000 | |
| 2208 | 0.68 | 5052 | 0.36 | 0.45 | 5465 | 0.26 | 0.23 | 6231 | 0.15 | 6000 | |
| 2563 | 0.59 | 4611 | 0.28 | 0.39 | 4990 | 0.20 | 0.20 | 5695 | 0.12 | 6000 | |
| 2668 | 0.56 | 5242 | 0.31 | 0.37 | 5666 | 0.22 | 0.19 | 6428 | 0.13 | 6000 | |
| 3097 | 0.48 | 4785 | 0.24 | 0.32 | 5176 | 0.18 | 0.16 | 5900 | 0.10 | 6000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

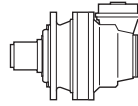
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2046 - PDA 2046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|----|
| 10.50 | 143 | 3773 | 56 | 95 | 3968 | 39.6 | 47.6 | 4516 | 22.5 | 6000 | 12 |
| 12.39 | 121 | 3449 | 43.7 | 81 | 3620 | 30.6 | 40.4 | 4086 | 17.3 | 6000 | |
| 16.17 | 93 | 2796 | 27.2 | 62 | 3157 | 20.5 | 30.9 | 3887 | 12.6 | 6000 | |
| 18.00 | 83 | 2618 | 22.8 | 56 | 2739 | 15.9 | 27.8 | 3053 | 8.9 | 6000 | |
| 19.08 | 79 | 3299 | 27.2 | 52 | 3726 | 20.5 | 26.2 | 4488 | 12.3 | 6000 | |
| 21.75 | 69 | 2267 | 16.4 | 46.0 | 2371 | 11.4 | 23.0 | 2636 | 6.3 | 6000 | |
| 23.89 | 63 | 3001 | 19.7 | 41.9 | 3156 | 13.8 | 20.9 | 3688 | 8.1 | 6000 | |
| 27.72 | 54 | 2747 | 15.6 | 36.1 | 2875 | 10.9 | 18.0 | 3360 | 6.3 | 6000 | |
| 33.50 | 44.8 | 2378 | 11.2 | 29.9 | 2480 | 7.8 | 14.9 | 2908 | 4.5 | 6000 | |

EC 3046 - PDA 3046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 36.75 | 40.8 | 4671 | 20.0 | 27.2 | 5093 | 14.5 | 13.6 | 5419 | 7.7 | 6000 | 7 |
| 43.37 | 34.6 | 4841 | 17.5 | 23.1 | 5271 | 12.7 | 11.5 | 5444 | 6.6 | 6000 | |
| 49.80 | 30.1 | 4986 | 15.7 | 20.1 | 5359 | 11.3 | 10.0 | 5465 | 5.7 | 6000 | |
| 56.60 | 26.5 | 5121 | 14.2 | 17.7 | 5379 | 10.0 | 8.8 | 5550 | 5.1 | 6000 | |
| 63.00 | 23.8 | 4974 | 12.4 | 15.9 | 5200 | 8.6 | 7.9 | 5637 | 4.7 | 6000 | |
| 73.57 | 20.4 | 3709 | 7.9 | 13.6 | 4043 | 5.8 | 6.8 | 4659 | 3.3 | 6000 | |
| 83.60 | 17.9 | 5377 | 10.1 | 12.0 | 5439 | 6.8 | 6.0 | 5870 | 3.7 | 6000 | |
| 89.83 | 16.7 | 4921 | 8.6 | 11.1 | 4977 | 5.8 | 5.6 | 5500 | 3.2 | 6000 | |
| 97.02 | 15.5 | 5214 | 8.4 | 10.3 | 5450 | 5.9 | 5.2 | 5996 | 3.2 | 6000 | |
| 114.5 | 13.1 | 4955 | 6.8 | 8.7 | 5155 | 4.7 | 4.4 | 5693 | 2.6 | 6000 | |
| 123.5 | 12.1 | 4139 | 5.3 | 8.1 | 4497 | 3.8 | 4.0 | 5161 | 2.2 | 6000 | |
| 138.3 | 10.8 | 4995 | 5.7 | 7.2 | 5298 | 4.0 | 3.6 | 5847 | 2.2 | 6000 | |
| 166.3 | 9.0 | 3892 | 3.7 | 6.0 | 4228 | 2.7 | 3.0 | 4851 | 1.5 | 6000 | |
| 173.2 | 8.7 | 4437 | 4.0 | 5.8 | 4813 | 2.9 | 2.9 | 5509 | 1.7 | 6000 | |
| 201.0 | 7.5 | 4046 | 3.2 | 5.0 | 4392 | 2.3 | 2.5 | 5032 | 1.3 | 6000 | |
| 242.8 | 6.2 | 3520 | 2.3 | 4.1 | 3828 | 1.7 | 2.1 | 4399 | 0.95 | 6000 | |

EC 4046 - PDA 4046

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|---|
| 276.6 | 5.4 | 5953 | 3.4 | 3.6 | 6303 | 2.4 | 1.8 | 6940 | 1.3 | 6000 | 3 |
| 310.3 | 4.8 | 6050 | 3.1 | 3.2 | 6406 | 2.2 | 1.6 | 7051 | 1.2 | 6000 | |
| 347.1 | 4.3 | 6147 | 2.8 | 2.9 | 6507 | 2.0 | 1.4 | 7160 | 1.1 | 6000 | |
| 414.7 | 3.6 | 6303 | 2.4 | 2.4 | 6669 | 1.7 | 1.2 | 7336 | 0.93 | 6000 | |
| 450.8 | 3.3 | 6377 | 2.2 | 2.2 | 6747 | 1.6 | 1.1 | 7420 | 0.86 | 6000 | |
| 498.3 | 3.0 | 6467 | 2.0 | 2.0 | 6841 | 1.4 | 1.0 | 7522 | 0.79 | 6000 | |
| 570.0 | 2.6 | 4568 | 1.3 | 1.8 | 4695 | 0.86 | 0.88 | 5003 | 0.46 | 6000 | |
| 625.0 | 2.4 | 6674 | 1.7 | 1.6 | 7058 | 1.2 | 0.80 | 7756 | 0.65 | 6000 | |
| 712.7 | 2.1 | 6796 | 1.5 | 1.4 | 7186 | 1.1 | 0.70 | 7895 | 0.58 | 6000 | |
| 799.3 | 1.9 | 6406 | 1.3 | 1.3 | 6584 | 0.86 | 0.63 | 7016 | 0.46 | 6000 | |
| 929.1 | 1.6 | 4721 | 0.80 | 1.1 | 4848 | 0.55 | 0.54 | 5392 | 0.30 | 6000 | |
| 988.1 | 1.5 | 7109 | 1.1 | 1.0 | 7513 | 0.80 | 0.51 | 8249 | 0.44 | 6000 | |
| 1078 | 1.4 | 5479 | 0.80 | 0.93 | 5626 | 0.55 | 0.46 | 6258 | 0.30 | 6000 | |
| 1194 | 1.3 | 7053 | 0.93 | 0.84 | 7647 | 0.67 | 0.42 | 8460 | 0.37 | 6000 | |
| 1409 | 1.1 | 6924 | 0.77 | 0.71 | 7315 | 0.54 | 0.35 | 8028 | 0.30 | 6000 | |
| 1593 | 0.94 | 6678 | 0.66 | 0.63 | 7052 | 0.46 | 0.31 | 7734 | 0.25 | 6000 | |
| 1806 | 0.83 | 6763 | 0.59 | 0.55 | 7149 | 0.41 | 0.28 | 7948 | 0.23 | 6000 | |
| 1925 | 0.78 | 6850 | 0.56 | 0.52 | 7233 | 0.39 | 0.26 | 7929 | 0.22 | 6000 | |
| 2208 | 0.68 | 6978 | 0.50 | 0.45 | 7367 | 0.35 | 0.23 | 8074 | 0.19 | 6000 | |
| 2563 | 0.59 | 6470 | 0.40 | 0.39 | 6831 | 0.28 | 0.20 | 7488 | 0.15 | 6000 | |
| 2668 | 0.56 | 7157 | 0.42 | 0.37 | 7554 | 0.30 | 0.19 | 8277 | 0.16 | 6000 | |
| 3097 | 0.48 | 6636 | 0.34 | 0.32 | 7005 | 0.24 | 0.16 | 7677 | 0.13 | 6000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

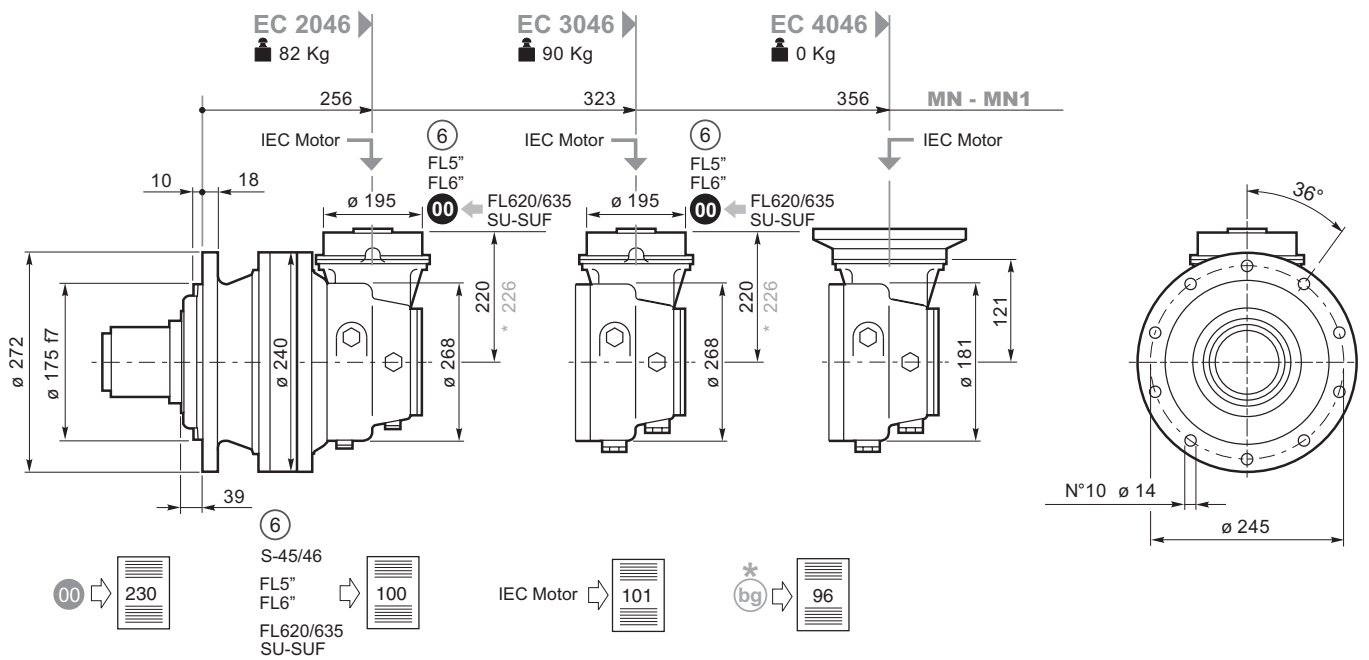
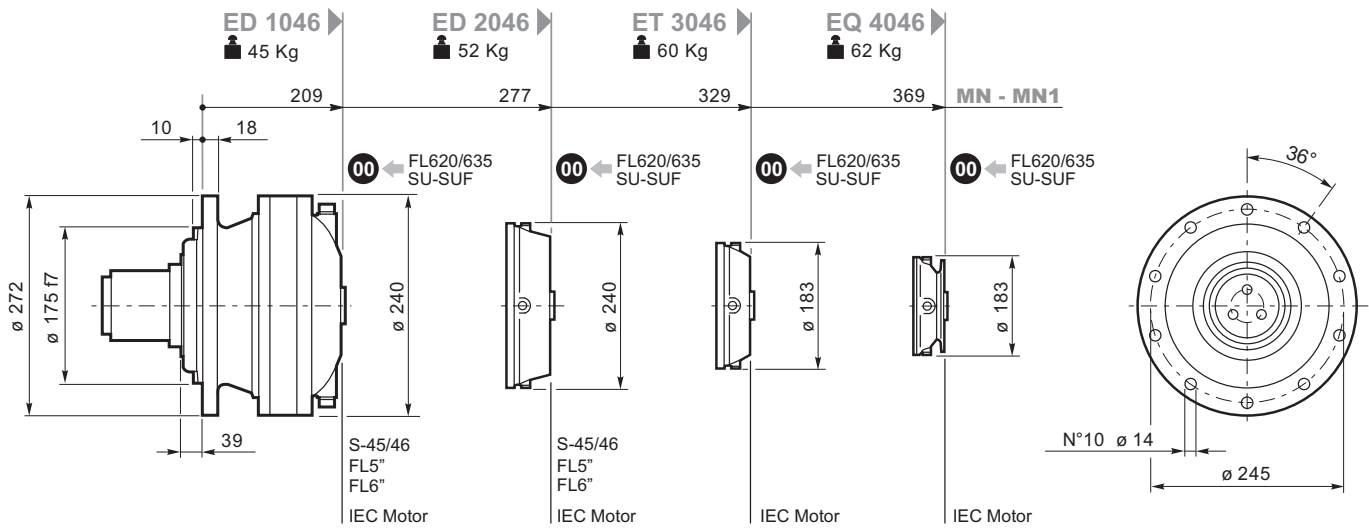
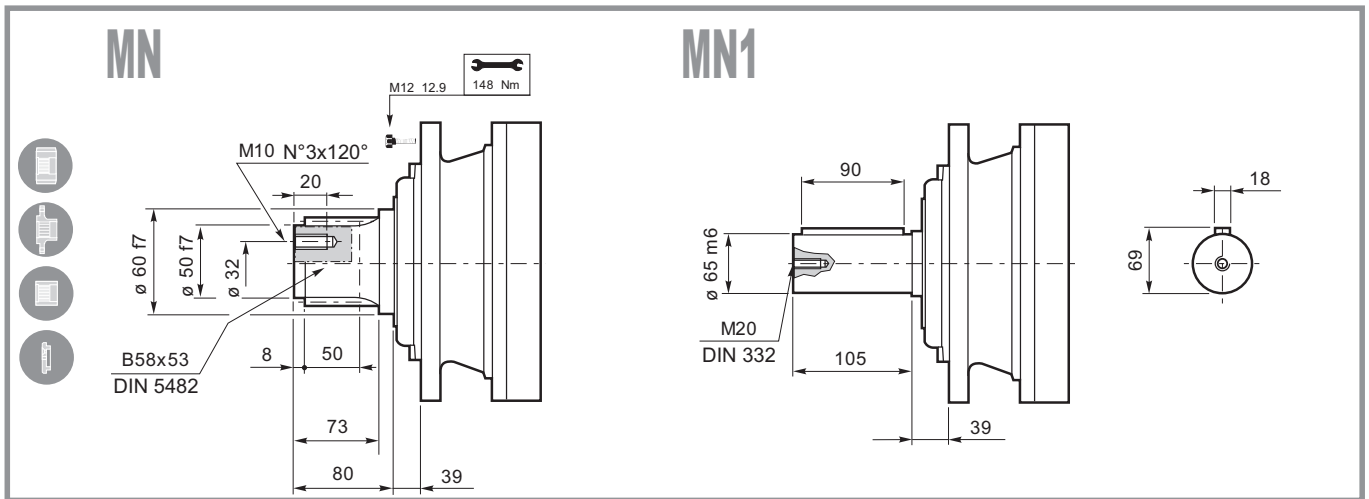
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

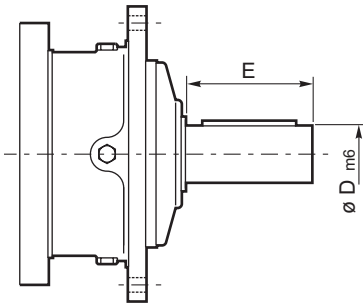
As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.



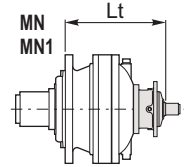


046

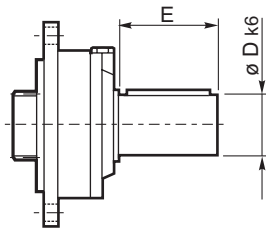
S45CR1-S46C1



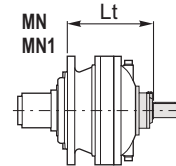
| | D m6 | E | | Lt |
|---------|---------|-----|---------|--------|
| | | | | MN-MN1 |
| S45 CR1 | 65 | 105 | ED 2046 | 272 |
| | | | ET 3046 | 340 |
| S46 C1 | 65 | 105 | ED 2046 | 313 |
| | | | ET 3046 | 381 |



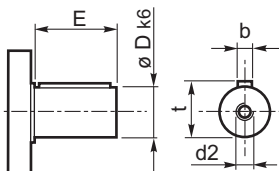
SU2



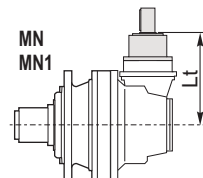
| | D k6 | E | | Lt |
|------|---------|----|---------|--------|
| | | | | MN-MN1 |
| SU 2 | 40 | 58 | EM 1046 | 269 |
| | | | ED 2046 | 337 |
| | | | ET 3046 | 389 |
| | | | EQ 4046 | 429 |



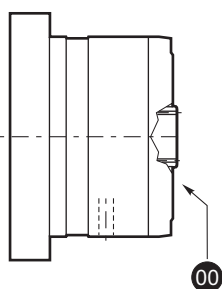
⑥ 48.82



| | D | E | | Lt |
|-------|----|----|---------|--------|
| | | | | MN-MN1 |
| 48.82 | 48 | 82 | EC 2046 | 280 |
| | | | EC 3046 | 280 |



FL250-FL350-FL450 FL750

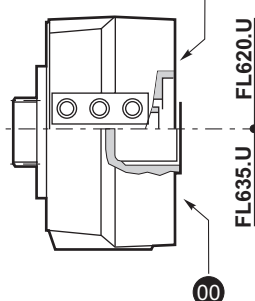


| | | Lt |
|-------|----------|--------|
| | | MN-MN1 |
| FL250 | EM 1046 | 302 |
| | ED 2046 | 370 |
| | EC 2046 | 280 |
| FL350 | EC 2046* | 377 |
| | EC 3046 | 280 |
| FL450 | EC 3046* | 377 |
| | EM 1046 | 315 |
| FL750 | ED 2046 | 383 |

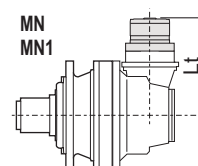
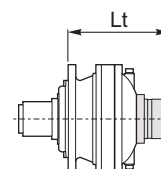
FL620/10
FL635/10

FL620U-FL635U

SAE A-AA
Shaft FE

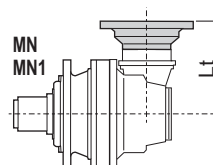
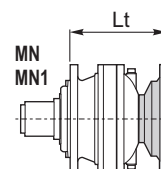


| | | Lt |
|----------|----------|--------|
| | | MN-MN1 |
| FL620/U | EM 1046 | 313.5 |
| | ED 2046 | 381.5 |
| | ET 3046 | 433.5 |
| | EQ 4046 | 473.5 |
| | EC 2046 | 324.5 |
| | EC 2046* | 330.5 |
| | EC 3046 | 324.5 |
| FL635U | EC 3046* | 330.5 |
| | EM 1046 | 300 |
| | ED 2046 | 368 |
| | ET 3046 | 420 |
| | EQ 4046 | 460 |
| | EC 2046 | 311 |
| | EC 2046* | 317 |
| FL620/10 | EC 3046 | 311 |
| | EC 3046* | 317 |
| | ED 2046 | 393 |
| FL635/10 | ET 3046 | 433 |
| | ED 2046 | 374 |
| | ET 3046 | 414 |



IEC Motor

| | | Lt | | | | | | | |
|----------|--------|--------|--------|-----------|-------------|---------|-------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| EM 1046 | MN-MN1 | 229 | 231 | 236 | 237 | 304 | 335 | 345 | 376 |
| ED 2046 | MN-MN1 | 297 | 299 | 304 | 305 | 372 | 403 | 413 | 444 |
| ET 3046 | MN-MN1 | 349 | 351 | 356 | 357 | 424 | | | |
| EQ 4046 | MN-MN1 | 389 | 391 | 396 | 397 | 464 | | | |
| EC 2046 | MN-MN1 | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 2046* | MN-MN1 | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 3046 | MN-MN1 | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3046* | MN-MN1 | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 4046* | MN-MN1 | 151 | 151 | 151 | 151 | 238 | | | |



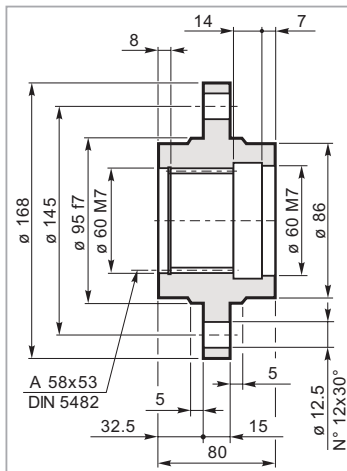
* bg





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 046

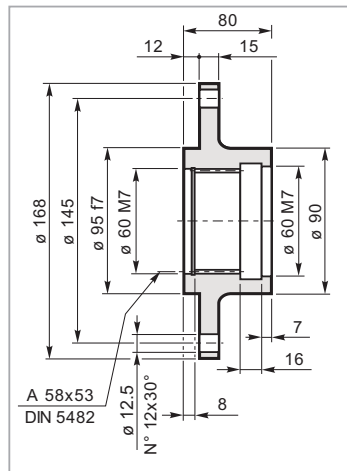


Mat. C40 UNI EN 10083
Code: 34701241800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 046

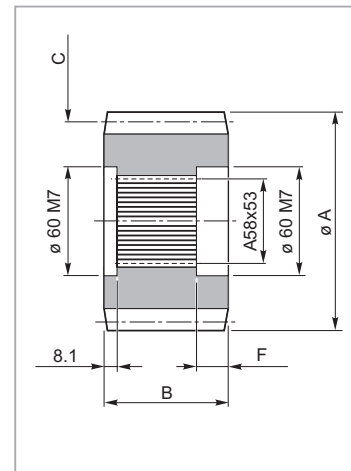


Mat. C40 UNI EN 10083
Code: 34701141800



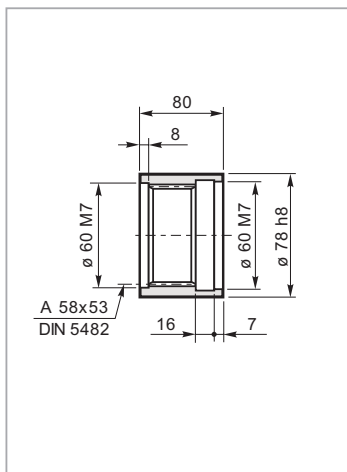
Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 046



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 046

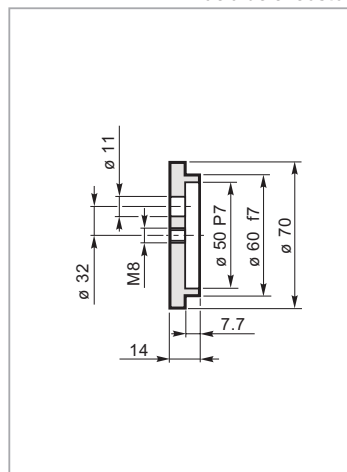


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102940600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 046



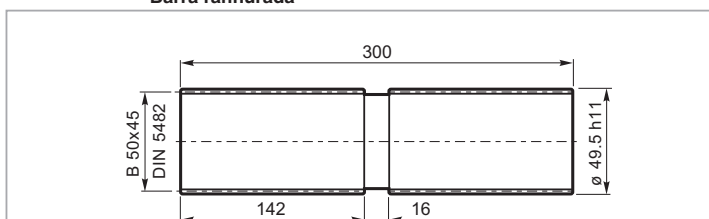
Mat. C40 UNI EN 10083
Code: 37201040800

| code | A | B | C | | | F |
|---------------|-------|----|------|------|--------|------|
| 335.0143.0800 | 114.8 | 68 | M=8 | Z=12 | X=0.3 | 23.5 |
| 335.0174.0800 | 99.6 | 68 | M=6 | Z=14 | X=0.3 | 24 |
| 335.0184.0800 | 114.8 | 80 | M=8 | Z=12 | X=0.3 | 24 |
| 335.0274.0800 | 143 | 80 | M=10 | Z=12 | X=0.35 | 23.5 |
| 335.0324.0800 | 136.2 | 80 | M=8 | Z=15 | — | 23.5 |
| 335.0344.0800 | 152 | 80 | M=10 | Z=13 | X=0.3 | 23.5 |
| 335.0353.000K | 127.6 | 68 | M=8 | Z=13 | X=0.54 | 23.5 |
| 335.2133.0600 | 143.4 | 80 | M=8 | Z=15 | X=0.4 | 23.5 |
| 335.3473.0600 | 156 | 80 | M=6 | Z=24 | — | 23 |
| 335.4273.0600 | 142 | 80 | M=8 | Z=16 | — | 23.5 |
| 335.5193.060 | 115 | 68 | M=5 | Z=21 | — | 24 |
| 335.5942.000 | 136 | 80 | M=8 | Z=14 | X=0.4 | 23.5 |
| 335.6273.000 | 120 | 68 | M=8 | Z=13 | — | 24 |



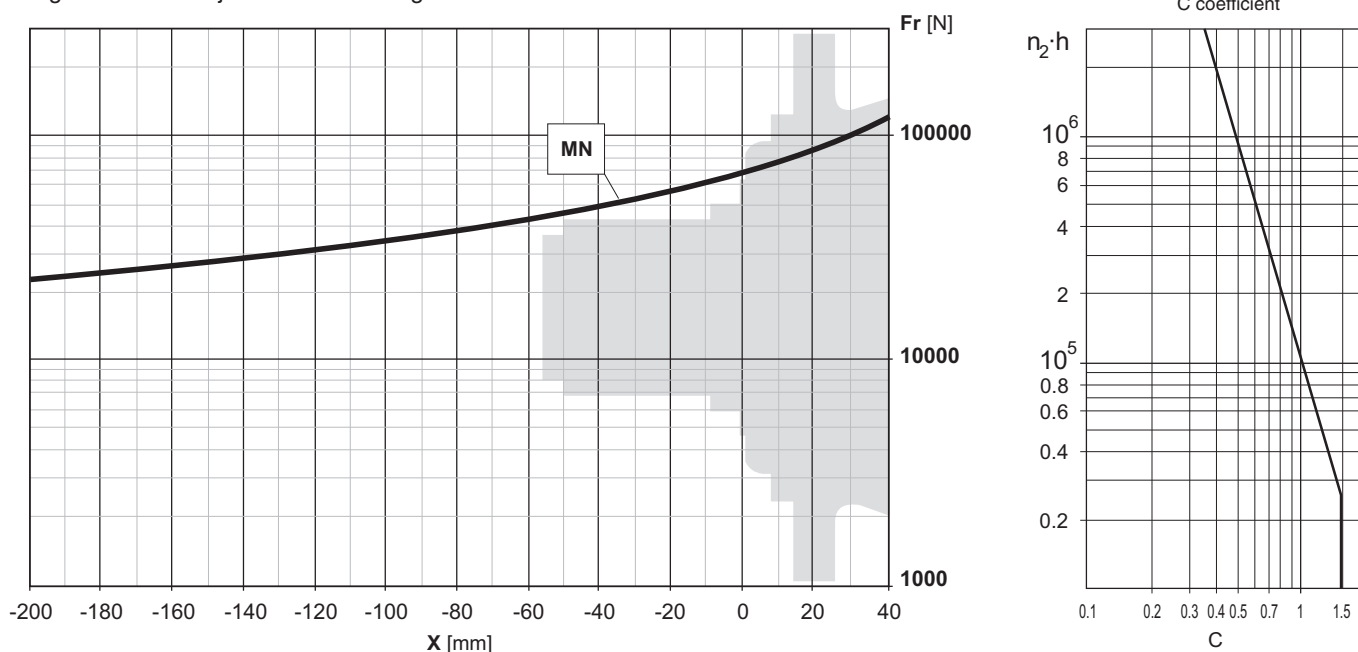
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 046

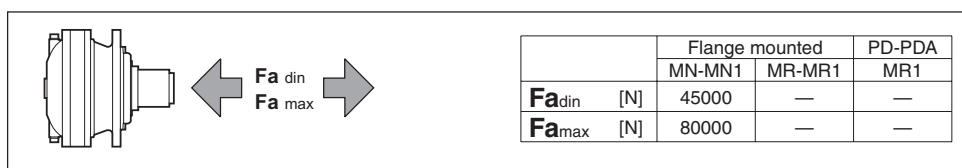


Mat. 39NiCrMo3 UNI EN 10083
Code: 39126930100

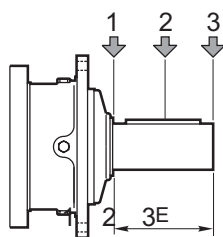
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



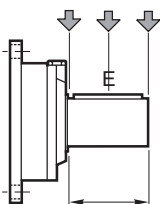
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



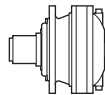
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 104000 | 8800 | 6400 | 7000 | 4400 | 3200 |

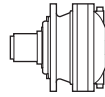


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



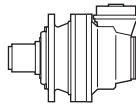
| i _{eff} | n ₁ [min ⁻¹] | | | | | | | | | T _{2max} [Nm] | P _T [kW] | |
|------------------|-------------------------------------|---------------------|---------------------|-------------------------------------|---------------------|---------------------|-------------------------------------|---------------------|---------------------|------------------------|---------------------|----|
| | 1500 | | | 1000 | | | 500 | | | | | |
| | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | | | |
| EM 1065 | | | | | | | | | | | | |
| 3.50 | 429 | 2241 | 101 | 286 | 2531 | 76 | 143 | 3116 | 46.6 | 10000 | 30 | |
| 3.86 | 389 | 2307 | 94 | 259 | 2605 | 71 | 130 | 3207 | 43.5 | 10000 | | |
| 4.33 | 346 | 2346 | 85 | 231 | 2650 | 64 | 115 | 3262 | 39.5 | 10000 | | |
| 5.00 | 300 | 2401 | 75 | 200 | 2712 | 57 | 100 | 3338 | 35.0 | 10000 | | |
| 6.00 | 250 | 2502 | 66 | 167 | 2826 | 49.3 | 83 | 3480 | 30.4 | 10000 | | |
| ED 2065 | | | | | | | | | | | | |
| 10.78 | 139 | 3110 | 45.3 | 93 | 3512 | 34.1 | 46.4 | 4324 | 21.0 | 9800 | 18 | |
| 12.25 | 122 | 3264 | 41.9 | 82 | 3686 | 31.5 | 40.8 | 4538 | 19.4 | 9800 | | |
| 13.51 | 111 | 3359 | 39.1 | 74 | 3794 | 29.4 | 37.0 | 4671 | 18.1 | 10000 | | |
| 15.16 | 99 | 3417 | 35.4 | 66 | 3859 | 26.7 | 33.0 | 4751 | 16.4 | 10000 | | |
| 17.88 | 84 | 3590 | 31.5 | 56 | 4055 | 23.8 | 28.0 | 4992 | 14.6 | 10000 | | |
| 20.65 | 73 | 3674 | 28.0 | 48.4 | 4150 | 21.0 | 24.2 | 5109 | 13.0 | 10000 | | |
| 22.39 | 67 | 3841 | 27.0 | 44.7 | 4338 | 20.3 | 22.3 | 5340 | 12.5 | 10000 | | |
| 25.98 | 58 | 4016 | 24.3 | 38.5 | 4536 | 18.3 | 19.2 | 5140 | 10.4 | 10000 | | |
| 27.99 | 54 | 3334 | 18.7 | 35.7 | 3567 | 13.3 | 17.9 | 3918 | 7.3 | 10000 | | |
| 30.00 | 50 | 4110 | 21.5 | 33.3 | 4642 | 16.2 | 16.7 | 5479 | 9.6 | 10000 | | |
| 36.25 | 41.4 | 4319 | 18.7 | 27.6 | 4620 | 13.3 | 13.8 | 5075 | 7.3 | 10000 | | |
| 43.50 | 34.5 | 3971 | 14.3 | 23.0 | 4137 | 10.0 | 11.5 | 4422 | 5.3 | 10000 | | |
| ET 3065 | | | | | | | | | | | | |
| 51.22 | 29.3 | 4924 | 15.1 | 19.5 | 5561 | 11.4 | 9.8 | 6150 | 6.3 | 10000 | | 14 |
| 53.78 | 27.9 | 5087 | 14.9 | 18.6 | 5745 | 11.2 | 9.3 | 7073 | 6.9 | 10000 | | |
| 60.44 | 24.8 | 5174 | 13.4 | 16.5 | 5844 | 10.1 | 8.3 | 6246 | 5.4 | 10000 | | |
| 73.50 | 20.4 | 5058 | 10.8 | 13.6 | 5549 | 7.9 | 6.8 | 6254 | 4.5 | 10000 | | |
| 78.51 | 19.1 | 5597 | 11.2 | 12.7 | 6005 | 8.0 | 6.4 | 6603 | 4.4 | 10000 | | |
| 90.93 | 16.5 | 5849 | 10.1 | 11.0 | 6085 | 7.0 | 5.5 | 6810 | 3.9 | 10000 | | |
| 98.27 | 15.3 | 5841 | 9.3 | 10.2 | 6112 | 6.5 | 5.1 | 6560 | 3.5 | 10000 | | |
| 110.6 | 13.6 | 6079 | 8.6 | 9.0 | 6361 | 6.0 | 4.5 | 7297 | 3.5 | 10000 | | |
| 123.9 | 12.1 | 5642 | 7.2 | 8.1 | 5851 | 4.9 | 4.0 | 6651 | 2.8 | 10000 | | |
| 134.3 | 11.2 | 6051 | 7.1 | 7.4 | 6315 | 4.9 | 3.7 | 6760 | 2.6 | 10000 | | |
| 155.1 | 9.7 | 5757 | 5.8 | 6.4 | 6024 | 4.1 | 3.2 | 6968 | 2.4 | 10000 | | |
| 180.0 | 8.3 | 5834 | 5.1 | 5.6 | 6219 | 3.6 | 2.8 | 7170 | 2.1 | 10000 | | |
| 208.2 | 7.2 | 5910 | 4.5 | 4.8 | 6413 | 3.2 | 2.4 | 7269 | 1.8 | 10000 | | |
| 217.5 | 6.9 | 5495 | 4.0 | 4.6 | 5735 | 2.8 | 2.3 | 6146 | 1.5 | 10000 | | |
| 251.6 | 6.0 | 5581 | 3.5 | 4.0 | 5821 | 2.4 | 2.0 | 6233 | 1.3 | 10000 | | |
| 272.8 | 5.5 | 5375 | 3.1 | 3.7 | 5552 | 2.1 | 1.8 | 5838 | 1.1 | 10000 | | |
| EQ 4065 | | | | | | | | | | | | |
| 322.7 | 4.6 | 7604 | 3.7 | 3.1 | 7906 | 2.6 | 1.5 | 9121 | 1.5 | 10000 | 8 | |
| 373.2 | 4.0 | 7704 | 3.2 | 2.7 | 8152 | 2.3 | 1.3 | 9392 | 1.3 | 10000 | | |
| 411.6 | 3.6 | 7683 | 2.9 | 2.4 | 8332 | 2.1 | 1.2 | 9537 | 1.2 | 10000 | | |
| 441.0 | 3.4 | 6873 | 2.4 | 2.3 | 7218 | 1.7 | 1.1 | 7800 | 0.93 | 10000 | | |
| 510.1 | 2.9 | 6998 | 2.2 | 2.0 | 7341 | 1.5 | 0.98 | 7923 | 0.81 | 10000 | | |
| 555.3 | 2.7 | 7619 | 2.2 | 1.8 | 7992 | 1.5 | 0.90 | 8626 | 0.81 | 10000 | | |
| 631.1 | 2.4 | 8077 | 2.0 | 1.6 | 8750 | 1.5 | 0.79 | 9802 | 0.81 | 10000 | | |
| 696.2 | 2.2 | 7397 | 1.7 | 1.4 | 7774 | 1.2 | 0.72 | 8406 | 0.63 | 10000 | | |
| 771.8 | 1.9 | 7348 | 1.5 | 1.3 | 7688 | 1.0 | 0.65 | 8274 | 0.56 | 10000 | | |
| 892.7 | 1.7 | 6595 | 1.2 | 1.1 | 6907 | 0.81 | 0.56 | 7448 | 0.44 | 10000 | | |
| 994.6 | 1.5 | 8119 | 1.3 | 1.0 | 8789 | 0.93 | 0.50 | 10034 | 0.53 | 10000 | | |
| 1104 | 1.4 | 8159 | 1.2 | 0.91 | 8545 | 0.81 | 0.45 | 9215 | 0.44 | 10000 | | |
| 1303 | 1.2 | 9309 | 1.1 | 0.77 | 10058 | 0.81 | 0.38 | 10873 | 0.44 | 10000 | | |
| 1445 | 1.0 | 7916 | 0.86 | 0.69 | 8637 | 0.63 | 0.35 | 9973 | 0.36 | 10000 | | |
| 1631 | 0.92 | 8185 | 0.79 | 0.61 | 8905 | 0.57 | 0.31 | 10239 | 0.33 | 10000 | | |
| 1884 | 0.80 | 9194 | 0.77 | 0.53 | 9932 | 0.55 | 0.27 | 11303 | 0.31 | 10000 | | |
| 2095 | 0.72 | 7243 | 0.54 | 0.48 | 7839 | 0.39 | 0.24 | 8946 | 0.22 | 10000 | | |
| 2186 | 0.69 | 8653 | 0.62 | 0.46 | 9419 | 0.45 | 0.23 | 10840 | 0.26 | 10000 | | |
| 2468 | 0.61 | 5462 | 0.35 | 0.41 | 5604 | 0.24 | 0.20 | 5852 | 0.12 | 10000 | | |
| 2850 | 0.53 | 6307 | 0.35 | 0.35 | 6471 | 0.24 | 0.18 | 6757 | 0.12 | 10000 | | |
| 3170 | 0.47 | 7852 | 0.39 | 0.32 | 8486 | 0.28 | 0.16 | 9665 | 0.16 | 10000 | | |

1500
HOURS LIFE



065

| i _{eff} | n ₁ [min ⁻¹] | | | | | | | | | T _{2max} [Nm] | P _T [kW] | |
|------------------|-------------------------------------|---------------------|---------------------|-------------------------------------|---------------------|---------------------|-------------------------------------|---------------------|---------------------|------------------------|---------------------|----|
| | 1500 | | | 1000 | | | 500 | | | | | |
| | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | n ₂ [min ⁻¹] | T ₂ [Nm] | P ₂ [kW] | | | |
| EM 1065 | | | | | | | | | | | | |
| 3.50 | 429 | 3960 | 178 | 286 | 4472 | 134 | 143 | 5506 | 82 | 10000 | 30 | |
| 3.86 | 389 | 4076 | 166 | 259 | 4603 | 125 | 130 | 5667 | 77 | 10000 | | |
| 4.33 | 346 | 4145 | 150 | 231 | 4682 | 113 | 115 | 5715 | 69 | 10000 | | |
| 5.00 | 300 | 4242 | 133 | 200 | 4791 | 100 | 100 | 5438 | 57 | 10000 | | |
| 6.00 | 250 | 3746 | 98 | 167 | 3975 | 69 | 83 | 4323 | 37.7 | 10000 | | |
| ED 2065 | | | | | | | | | | | | |
| 10.78 | 139 | 5495 | 80 | 93 | 6205 | 60 | 46.4 | 7412 | 36.0 | 9800 | 18 | |
| 12.25 | 122 | 5767 | 74 | 82 | 6430 | 55 | 40.8 | 7159 | 30.6 | 9800 | | |
| 13.51 | 111 | 5836 | 68 | 74 | 6101 | 47.3 | 37.0 | 7004 | 27.1 | 10000 | | |
| 15.16 | 99 | 5816 | 60 | 66 | 6071 | 42.0 | 33.0 | 6924 | 23.9 | 10000 | | |
| 17.88 | 84 | 5921 | 52 | 56 | 6172 | 36.1 | 28.0 | 7171 | 21.0 | 10000 | | |
| 20.65 | 73 | 5627 | 42.8 | 48.4 | 5859 | 29.7 | 24.2 | 6775 | 17.2 | 10000 | | |
| 22.39 | 67 | 5648 | 39.6 | 44.7 | 6066 | 28.4 | 22.3 | 6667 | 15.6 | 10000 | | |
| 25.98 | 58 | 5282 | 31.9 | 38.5 | 5634 | 22.7 | 19.2 | 6154 | 12.4 | 10000 | | |
| 27.99 | 54 | 4086 | 22.9 | 35.7 | 4338 | 16.2 | 17.9 | 4724 | 8.8 | 10000 | | |
| 30.00 | 50 | 5841 | 30.6 | 33.3 | 6327 | 22.1 | 16.7 | 7107 | 12.4 | 10000 | | |
| 36.25 | 41.4 | 5292 | 22.9 | 27.6 | 5619 | 16.2 | 13.8 | 6119 | 8.8 | 10000 | | |
| 43.50 | 34.5 | 4777 | 17.3 | 23.0 | 5229 | 12.6 | 11.5 | 6061 | 7.3 | 10000 | | |
| ET 3065 | | | | | | | | | | | | |
| 51.22 | 29.3 | 7101 | 21.8 | 19.5 | 7725 | 15.8 | 9.8 | 8874 | 9.1 | 10000 | | 14 |
| 53.78 | 27.9 | 7500 | 21.9 | 18.6 | 7965 | 15.5 | 9.3 | 9256 | 9.0 | 10000 | | |
| 60.44 | 24.8 | 7352 | 19.1 | 16.5 | 7990 | 13.8 | 8.3 | 9165 | 7.9 | 10000 | | |
| 73.50 | 20.4 | 6404 | 13.7 | 13.6 | 6932 | 9.9 | 6.8 | 7700 | 5.5 | 10000 | | |
| 78.51 | 19.1 | 7759 | 15.5 | 12.7 | 8420 | 11.2 | 6.4 | 9640 | 6.4 | 10000 | | |
| 90.93 | 16.5 | 7923 | 13.7 | 11.0 | 8576 | 9.9 | 5.5 | 9526 | 5.5 | 10000 | | |
| 98.27 | 15.3 | 6962 | 11.1 | 10.2 | 7271 | 7.7 | 5.1 | 8473 | 4.5 | 10000 | | |
| 110.6 | 13.6 | 7593 | 10.8 | 9.0 | 8176 | 7.7 | 4.5 | 9050 | 4.3 | 10000 | | |
| 123.9 | 12.1 | 7813 | 9.9 | 8.1 | 8469 | 7.2 | 4.0 | 9684 | 4.1 | 10000 | | |
| 134.3 | 11.2 | 7195 | 8.4 | 7.4 | 7801 | 6.1 | 3.7 | 9049 | 3.5 | 10000 | | |
| 155.1 | 9.7 | 8172 | 8.3 | 6.4 | 8849 | 6.0 | 3.2 | 10105 | 3.4 | 10000 | | |
| 180.0 | 8.3 | 7649 | 6.7 | 5.6 | 8256 | 4.8 | 2.8 | 9578 | 2.8 | 10000 | | |
| 208.2 | 7.2 | 7788 | 5.9 | 4.8 | 8524 | 4.3 | 2.4 | 9872 | 2.5 | 10000 | | |
| 217.5 | 6.9 | 6585 | 4.8 | 4.6 | 7087 | 3.4 | 2.3 | 8256 | 2.0 | 10000 | | |
| 251.6 | 6.0 | 6681 | 4.2 | 4.0 | 7324 | 3.0 | 2.0 | 8516 | 1.8 | 10000 | | |
| 272.8 | 5.5 | 6039 | 3.5 | 3.7 | 6238 | 2.4 | 1.8 | 6559 | 1.3 | 10000 | | |
| EQ 4065 | | | | | | | | | | | | |
| 322.7 | 4.6 | 10210 | 5.0 | 3.1 | 10398 | 3.4 | 1.5 | 10675 | 1.7 | 10000 | 8 | |
| 373.2 | 4.0 | 10281 | 4.3 | 2.7 | 10460 | 2.9 | 1.3 | 10728 | 1.5 | 10000 | | |
| 411.6 | 3.6 | 11085 | 4.2 | 2.4 | 11536 | 2.9 | 1.2 | 11832 | 1.5 | 10000 | | |
| 441.0 | 3.4 | 8383 | 3.0 | 2.3 | 9136 | 2.2 | 1.1 | 9796 | 1.2 | 10000 | | |
| 510.1 | 2.9 | 8557 | 2.6 | 2.0 | 9469 | 1.9 | 0.98 | 9941 | 1.0 | 10000 | | |
| 555.3 | 2.7 | 9315 | 2.6 | 1.8 | 10308 | 1.9 | 0.90 | 10823 | 1.0 | 10000 | | |
| 631.1 | 2.4 | 10586 | 2.6 | 1.6 | 11714 | 1.9 | 0.79 | 12299 | 1.0 | 10000 | | |
| 696.2 | 2.2 | 9081 | 2.0 | 1.4 | 10074 | 1.5 | 0.72 | 11551 | 0.87 | 10000 | | |
| 771.8 | 1.9 | 9488 | 1.9 | 1.3 | 9754 | 1.3 | 0.65 | 10616 | 0.72 | 10000 | | |
| 892.7 | 1.7 | 8555 | 1.5 | 1.1 | 9394 | 1.1 | 0.56 | 10450 | 0.61 | 10000 | | |
| 994.6 | 1.5 | 11638 | 1.8 | 1.0 | 12531 | 1.3 | 0.50 | 14190 | 0.75 | 10000 | | |
| 1104 | 1.4 | 10584 | 1.5 | 0.91 | 11622 | 1.1 | 0.45 | 12928 | 0.61 | 10000 | | |
| 1303 | 1.2 | 12489 | 1.5 | 0.77 | 13715 | 1.1 | 0.38 | 15255 | 0.61 | 10000 | | |
| 1445 | 1.0 | 11686 | 1.3 | 0.69 | 12645 | 0.92 | 0.35 | 14425 | 0.52 | 10000 | | |
| 1631 | 0.92 | 11951 | 1.2 | 0.61 | 12908 | 0.83 | 0.31 | 14685 | 0.47 | 10000 | | |
| 1884 | 0.80 | 13070 | 1.1 | 0.53 | 14053 | 0.78 | 0.27 | 15880 | 0.44 | 10000 | | |
| 2095 | 0.72 | 10373 | 0.78 | 0.48 | 11167 | 0.56 | 0.24 | 12642 | 0.32 | 10000 | | |
| 2186 | 0.69 | 12666 | 0.91 | 0.46 | 13686 | 0.66 | 0.23 | 15579 | 0.37 | 10000 | | |
| 2468 | 0.61 | 6338 | 0.40 | 0.41 | 6744 | 0.29 | 0.20 | 7495 | 0.16 | 10000 | | |
| 2850 | 0.53 | 7319 | 0.40 | 0.35 | 7787 | 0.29 | 0.18 | 8655 | 0.16 | 10000 | | |
| 3170 | 0.47 | 11184 | 0.55 | 0.32 | 12029 | 0.40 | 0.16 | 13600 | 0.23 | 10000 | | |



| i_{eff} | n_1 [min ⁻¹] | | | | | | | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------------------|------------|------------|----------------------------|------------|------------|----------------------------|------------|------------|------------------------|------------|
| | 1500 | | | 1000 | | | 500 | | | | |
| | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | | |

EC 2065 - PDA 2065

| | | | | | | | | | | | |
|-------|-----|------|------|------|------|------|------|------|------|-------|----|
| 10.50 | 143 | 2368 | 35.4 | 95 | 2674 | 26.7 | 47.6 | 3292 | 16.4 | 10000 | 14 |
| 11.58 | 130 | 2611 | 35.4 | 86 | 2949 | 26.7 | 43.2 | 3631 | 16.4 | 10000 | |
| 12.99 | 115 | 2929 | 35.4 | 77 | 3308 | 26.7 | 38.5 | 4073 | 16.4 | 10000 | |
| 16.17 | 93 | 1582 | 15.4 | 62 | 1787 | 11.6 | 30.9 | 2200 | 7.1 | 10000 | |
| 17.83 | 84 | 1745 | 15.4 | 56 | 1971 | 11.6 | 28.0 | 2426 | 7.1 | 10000 | |
| 20.00 | 75 | 1957 | 15.4 | 50 | 2211 | 11.6 | 25.0 | 2722 | 7.1 | 10000 | |
| 23.10 | 65 | 2260 | 15.4 | 43.3 | 2553 | 11.6 | 21.6 | 3143 | 7.1 | 10000 | |
| 27.72 | 54 | 2713 | 15.4 | 36.1 | 3063 | 11.6 | 18.0 | 3772 | 7.1 | 10000 | |

EC 3065 - PDA 3065

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|-----|-------|----|
| 40.53 | 37.0 | 4671 | 18.1 | 24.7 | 5275 | 13.6 | 12.3 | 6131 | 7.9 | 10000 | 11 |
| 45.47 | 33.0 | 4751 | 16.4 | 22.0 | 5365 | 12.4 | 11.0 | 6085 | 7.0 | 10000 | |
| 49.80 | 30.1 | 4874 | 15.4 | 20.1 | 5504 | 11.6 | 10.0 | 6777 | 7.1 | 10000 | |
| 56.60 | 26.5 | 5166 | 14.3 | 17.7 | 5834 | 10.8 | 8.8 | 7164 | 6.6 | 10000 | |
| 62.42 | 24.0 | 5317 | 13.4 | 16.0 | 5987 | 10.0 | 8.0 | 6527 | 5.5 | 10000 | |
| 70.02 | 21.4 | 5408 | 12.1 | 14.3 | 5944 | 8.9 | 7.1 | 6445 | 4.8 | 10000 | |
| 80.85 | 18.6 | 5424 | 10.5 | 12.4 | 5631 | 7.3 | 6.2 | 6079 | 3.9 | 10000 | |
| 92.20 | 16.3 | 5238 | 8.9 | 10.8 | 5478 | 6.2 | 5.4 | 5877 | 3.3 | 10000 | |
| 103.4 | 14.5 | 5875 | 8.9 | 9.7 | 6145 | 6.2 | 4.8 | 6592 | 3.3 | 10000 | |
| 108.8 | 13.8 | 5075 | 7.3 | 9.2 | 5323 | 5.1 | 4.6 | 5735 | 2.8 | 10000 | |
| 120.0 | 12.5 | 5408 | 7.1 | 8.3 | 5650 | 4.9 | 4.2 | 6056 | 2.6 | 10000 | |
| 138.6 | 10.8 | 5699 | 6.5 | 7.2 | 5909 | 4.5 | 3.6 | 6808 | 2.6 | 10000 | |
| 166.3 | 9.0 | 4523 | 4.3 | 6.0 | 4695 | 3.0 | 3.0 | 5404 | 1.7 | 10000 | |
| 201.0 | 7.5 | 4603 | 3.6 | 5.0 | 4846 | 2.5 | 2.5 | 5624 | 1.5 | 10000 | |

EC 4065 - PDA 4065

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|-------|---|
| 220.5 | 6.8 | 6254 | 4.5 | 4.5 | 6623 | 3.1 | 2.3 | 7218 | 1.7 | 10000 | 7 |
| 255.0 | 5.9 | 5607 | 3.5 | 3.9 | 5936 | 2.4 | 2.0 | 6476 | 1.3 | 10000 | |
| 281.3 | 5.3 | 6184 | 3.5 | 3.6 | 6546 | 2.4 | 1.8 | 7142 | 1.3 | 10000 | |
| 315.5 | 4.8 | 6937 | 3.5 | 3.2 | 7343 | 2.4 | 1.6 | 8012 | 1.3 | 10000 | |
| 359.4 | 4.2 | 6696 | 2.9 | 2.8 | 7045 | 2.1 | 1.4 | 7629 | 1.1 | 10000 | |
| 415.7 | 3.6 | 6001 | 2.3 | 2.4 | 6318 | 1.6 | 1.2 | 6852 | 0.86 | 10000 | |
| 451.1 | 3.3 | 5815 | 2.0 | 2.2 | 6567 | 1.5 | 1.1 | 8085 | 0.94 | 10000 | |
| 498.3 | 3.0 | 6424 | 2.0 | 2.0 | 7255 | 1.5 | 1.0 | 7903 | 0.83 | 10000 | |
| 576.4 | 2.6 | 6257 | 1.7 | 1.7 | 6570 | 1.2 | 0.87 | 7105 | 0.65 | 10000 | |
| 635.7 | 2.4 | 6901 | 1.7 | 1.6 | 7246 | 1.2 | 0.79 | 7836 | 0.65 | 10000 | |
| 713.1 | 2.1 | 7741 | 1.7 | 1.4 | 8128 | 1.2 | 0.70 | 8791 | 0.65 | 10000 | |
| 823.4 | 1.8 | 7820 | 1.5 | 1.2 | 8472 | 1.1 | 0.61 | 9682 | 0.62 | 10000 | |
| 892.9 | 1.7 | 7513 | 1.3 | 1.1 | 7794 | 0.91 | 0.56 | 9031 | 0.53 | 10000 | |
| 1018 | 1.5 | 7603 | 1.2 | 0.98 | 8012 | 0.82 | 0.49 | 9281 | 0.48 | 10000 | |
| 1149 | 1.3 | 5199 | 0.71 | 0.87 | 5338 | 0.49 | 0.44 | 5579 | 0.25 | 10000 | |
| 1220 | 1.2 | 7729 | 1.0 | 0.82 | 8332 | 0.72 | 0.41 | 9635 | 0.41 | 10000 | |
| 1412 | 1.1 | 7876 | 0.88 | 0.71 | 8594 | 0.64 | 0.35 | 9926 | 0.37 | 10000 | |
| 1594 | 0.94 | 5311 | 0.52 | 0.63 | 5451 | 0.36 | 0.31 | 5694 | 0.19 | 10000 | |
| 1840 | 0.82 | 6133 | 0.52 | 0.54 | 6295 | 0.36 | 0.27 | 6575 | 0.19 | 10000 | |
| 1861 | 0.81 | 6874 | 0.58 | 0.54 | 7520 | 0.42 | 0.27 | 8717 | 0.25 | 10000 | |
| 2136 | 0.70 | 7118 | 0.52 | 0.47 | 7305 | 0.36 | 0.23 | 7631 | 0.19 | 10000 | |
| 2581 | 0.58 | 7391 | 0.45 | 0.39 | 8069 | 0.33 | 0.19 | 9221 | 0.19 | 10000 | |
| 3097 | 0.48 | 7817 | 0.40 | 0.32 | 8449 | 0.29 | 0.16 | 9623 | 0.16 | 10000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

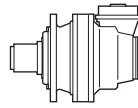
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | n_1 [min ⁻¹] | | | | | | | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------------------|------------|------------|----------------------------|------------|------------|----------------------------|------------|------------|-----------------|------------|
| | 1500 | | | 1000 | | | 500 | | | | |
| | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | n_2 [min ⁻¹] | T_2 [Nm] | P_2 [kW] | | |

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| | | | | | | | | | | | |
|-------|-----|------|------|------|------|------|------|------|------|-------|----|
| 10.50 | 143 | 4183 | 63 | 95 | 4724 | 47.1 | 47.6 | 5817 | 29.0 | 10000 | 14 |
| 11.58 | 130 | 4614 | 63 | 86 | 5210 | 47.1 | 43.2 | 6415 | 29.0 | 10000 | |
| 12.99 | 115 | 5175 | 63 | 77 | 5845 | 47.1 | 38.5 | 6698 | 27.0 | 10000 | |
| 16.17 | 93 | 2796 | 27.2 | 62 | 3157 | 20.5 | 30.9 | 3887 | 12.6 | 10000 | |
| 17.83 | 84 | 3083 | 27.2 | 56 | 3482 | 20.5 | 28.0 | 4287 | 12.6 | 10000 | |
| 20.00 | 75 | 3459 | 27.2 | 50.0 | 3906 | 20.5 | 25.0 | 4809 | 12.6 | 10000 | |
| 23.10 | 65 | 3994 | 27.2 | 43.3 | 4511 | 20.5 | 21.6 | 5553 | 12.6 | 10000 | |
| 27.72 | 54 | 4526 | 25.6 | 36.1 | 4728 | 17.9 | 18.0 | 5511 | 10.4 | 10000 | |

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| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|-------|----|
| 40.53 | 37.0 | 7004 | 27.1 | 24.7 | 7629 | 19.7 | 12.3 | 8775 | 11.3 | 10000 | 11 |
| 45.47 | 33.0 | 6924 | 23.9 | 22.0 | 7538 | 17.4 | 11.0 | 8668 | 10.0 | 10000 | |
| 49.80 | 30.1 | 7822 | 24.7 | 20.1 | 8419 | 17.7 | 10.0 | 9781 | 10.3 | 10000 | |
| 56.60 | 26.5 | 7544 | 20.9 | 17.7 | 8057 | 14.9 | 8.8 | 9355 | 8.7 | 10000 | |
| 62.42 | 24.0 | 7670 | 19.3 | 16.0 | 8330 | 14.0 | 8.0 | 9547 | 8.0 | 10000 | |
| 70.02 | 21.4 | 7579 | 17.0 | 14.3 | 8230 | 12.3 | 7.1 | 9430 | 7.1 | 10000 | |
| 80.85 | 18.6 | 7162 | 13.9 | 12.4 | 7780 | 10.1 | 6.2 | 8921 | 5.8 | 10000 | |
| 92.20 | 16.3 | 6241 | 10.6 | 10.8 | 6558 | 7.4 | 5.4 | 7636 | 4.3 | 10000 | |
| 103.4 | 14.5 | 7001 | 10.6 | 9.7 | 7356 | 7.4 | 4.8 | 8566 | 4.3 | 10000 | |
| 108.8 | 13.8 | 6119 | 8.8 | 9.2 | 6394 | 6.2 | 4.6 | 7087 | 3.4 | 10000 | |
| 120.0 | 12.5 | 6450 | 8.4 | 8.3 | 6742 | 5.9 | 4.2 | 7851 | 3.4 | 10000 | |
| 138.6 | 10.8 | 7449 | 8.4 | 7.2 | 7786 | 5.9 | 3.6 | 9066 | 3.4 | 10000 | |
| 166.3 | 9.0 | 6371 | 6.0 | 6.0 | 6915 | 4.4 | 3.0 | 7923 | 2.5 | 10000 | |
| 201.0 | 7.5 | 6621 | 5.2 | 5.0 | 7180 | 3.7 | 2.5 | 8217 | 2.1 | 10000 | |

EC 4065 - PDA 4065

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|------|-------|------|-------|---|
| 220.5 | 6.8 | 7700 | 5.5 | 4.5 | 8106 | 3.9 | 2.3 | 9136 | 2.2 | 10000 | 7 |
| 255.0 | 5.9 | 6954 | 4.3 | 3.9 | 7317 | 3.0 | 2.0 | 8230 | 1.7 | 10000 | |
| 281.3 | 5.3 | 7670 | 4.3 | 3.6 | 8070 | 3.0 | 1.8 | 9077 | 1.7 | 10000 | |
| 315.5 | 4.8 | 8604 | 4.3 | 3.2 | 9053 | 3.0 | 1.6 | 10182 | 1.7 | 10000 | |
| 359.4 | 4.2 | 8187 | 3.6 | 2.8 | 8679 | 2.5 | 1.4 | 9732 | 1.4 | 10000 | |
| 415.7 | 3.6 | 7390 | 2.8 | 2.4 | 7808 | 2.0 | 1.2 | 9283 | 1.2 | 10000 | |
| 451.1 | 3.3 | 9893 | 3.4 | 2.2 | 10291 | 2.4 | 1.1 | 11056 | 1.3 | 10000 | |
| 498.3 | 3.0 | 8505 | 2.7 | 2.0 | 9415 | 2.0 | 1.0 | 9904 | 1.0 | 10000 | |
| 576.4 | 2.6 | 7674 | 2.1 | 1.7 | 8487 | 1.5 | 0.87 | 9753 | 0.89 | 10000 | |
| 635.7 | 2.4 | 8464 | 2.1 | 1.6 | 9361 | 1.5 | 0.79 | 10756 | 0.89 | 10000 | |
| 713.1 | 2.1 | 9494 | 2.1 | 1.4 | 10500 | 1.5 | 0.70 | 12065 | 0.89 | 10000 | |
| 823.4 | 1.8 | 10963 | 2.1 | 1.2 | 12108 | 1.5 | 0.61 | 13721 | 0.87 | 10000 | |
| 892.9 | 1.7 | 10618 | 1.9 | 1.1 | 11513 | 1.4 | 0.56 | 13170 | 0.77 | 10000 | |
| 1018 | 1.5 | 10902 | 1.7 | 0.98 | 11813 | 1.2 | 0.49 | 13503 | 0.69 | 10000 | |
| 1149 | 1.3 | 5841 | 0.80 | 0.87 | 5998 | 0.55 | 0.44 | 6671 | 0.30 | 10000 | |
| 1220 | 1.2 | 11303 | 1.5 | 0.82 | 12239 | 1.1 | 0.41 | 13974 | 0.60 | 10000 | |
| 1412 | 1.1 | 11632 | 1.3 | 0.71 | 12588 | 0.93 | 0.35 | 14362 | 0.53 | 10000 | |
| 1594 | 0.94 | 5967 | 0.59 | 0.63 | 6307 | 0.41 | 0.31 | 7012 | 0.23 | 10000 | |
| 1840 | 0.82 | 6890 | 0.59 | 0.54 | 7283 | 0.41 | 0.27 | 8097 | 0.23 | 10000 | |
| 1861 | 0.81 | 9458 | 0.80 | 0.54 | 9712 | 0.55 | 0.27 | 10803 | 0.30 | 10000 | |
| 2136 | 0.70 | 7996 | 0.59 | 0.47 | 8452 | 0.41 | 0.23 | 9397 | 0.23 | 10000 | |
| 2581 | 0.58 | 9662 | 0.59 | 0.39 | 10213 | 0.41 | 0.19 | 11355 | 0.23 | 10000 | |
| 3097 | 0.48 | 11137 | 0.57 | 0.32 | 11979 | 0.41 | 0.16 | 13544 | 0.23 | 10000 | |

Tutti i rapporti evidenziati (es. 10.50) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.50) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

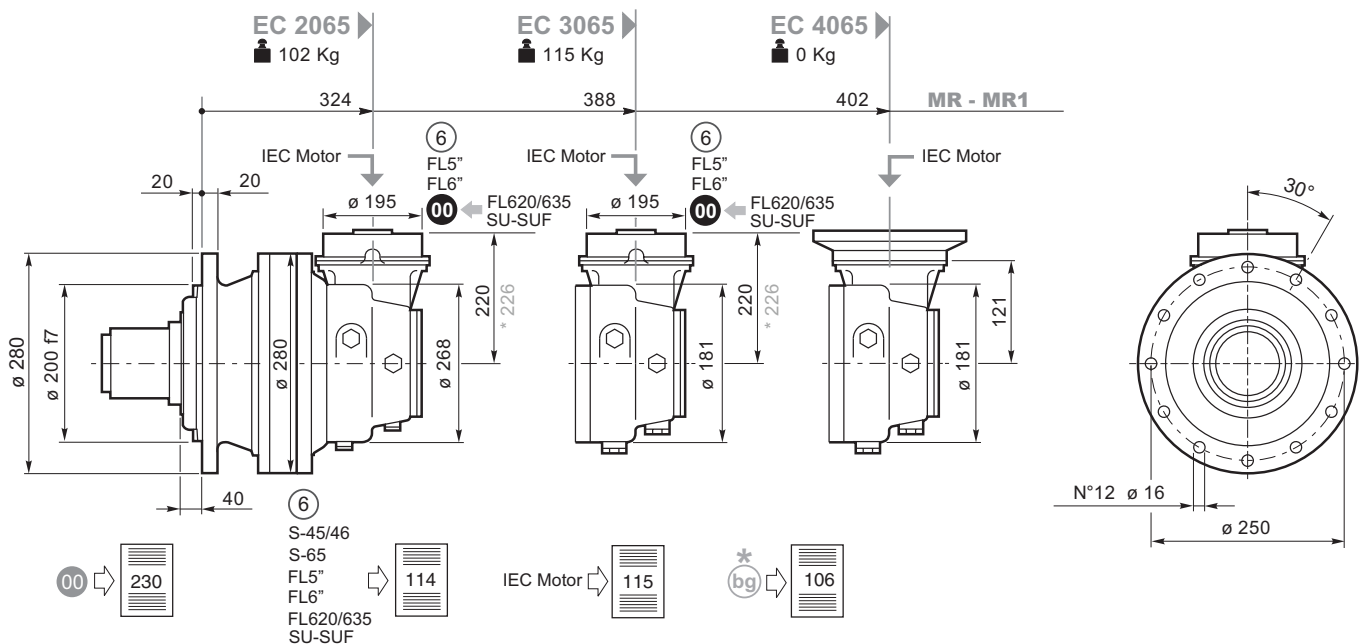
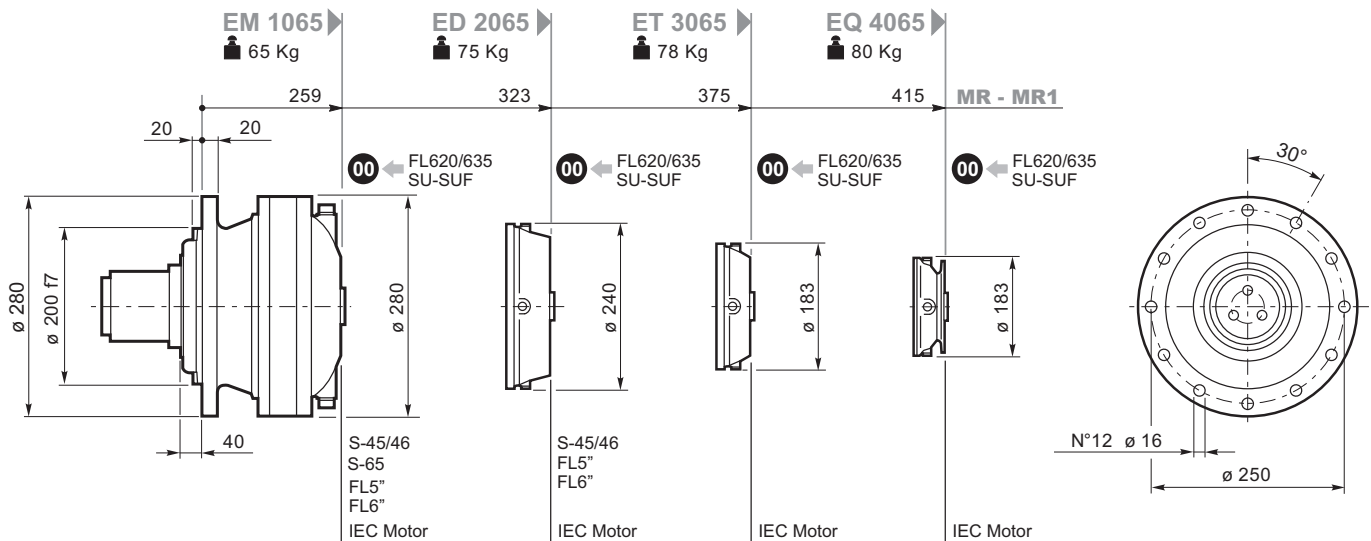
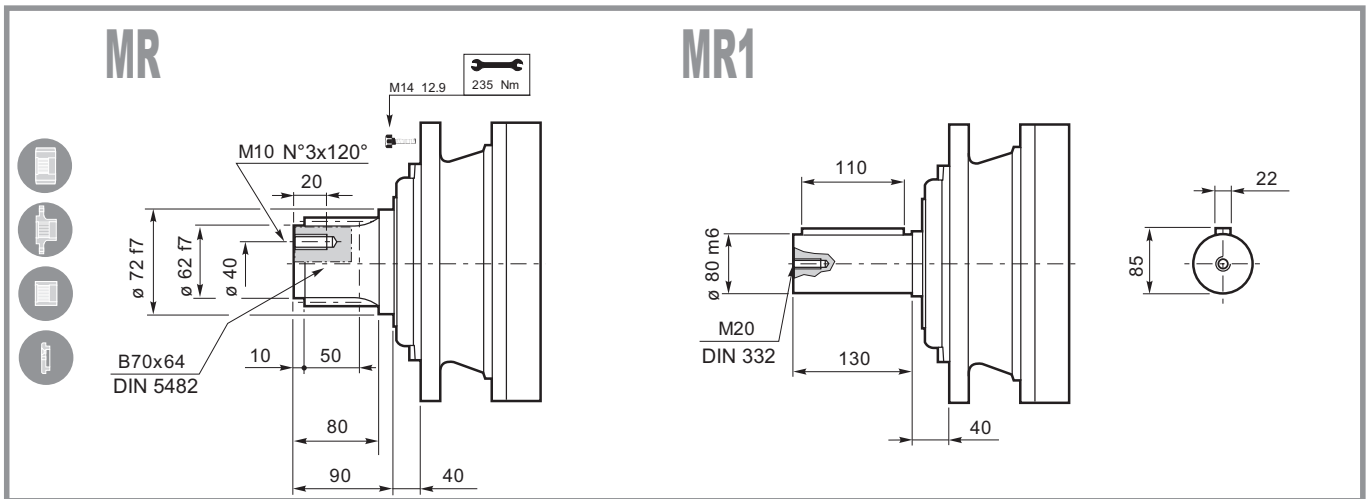
Alle mit (es. 10.50) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

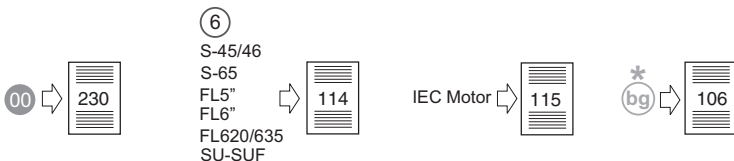
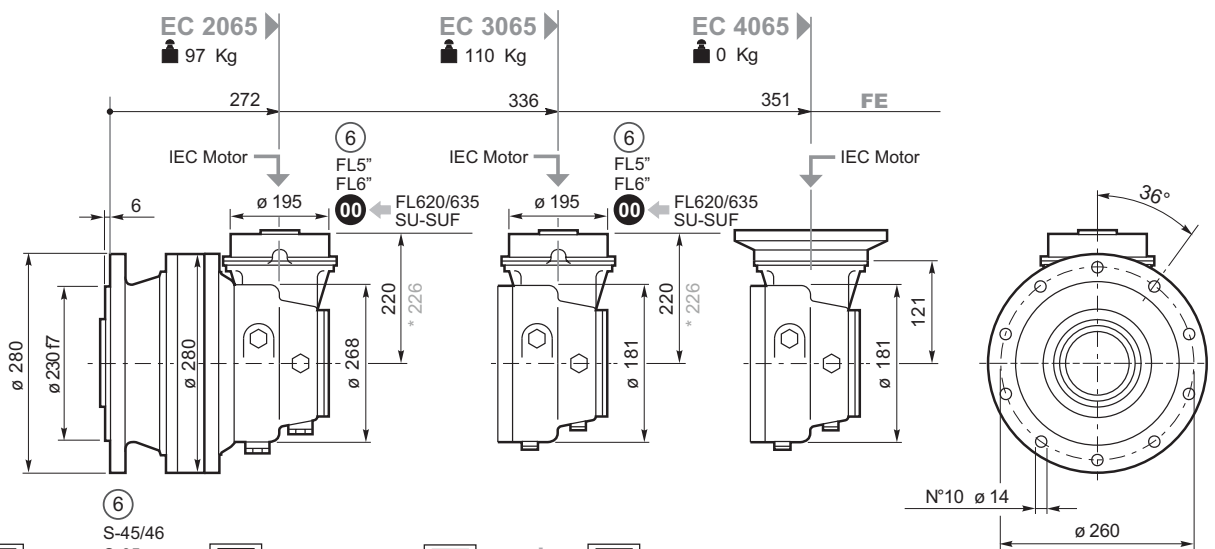
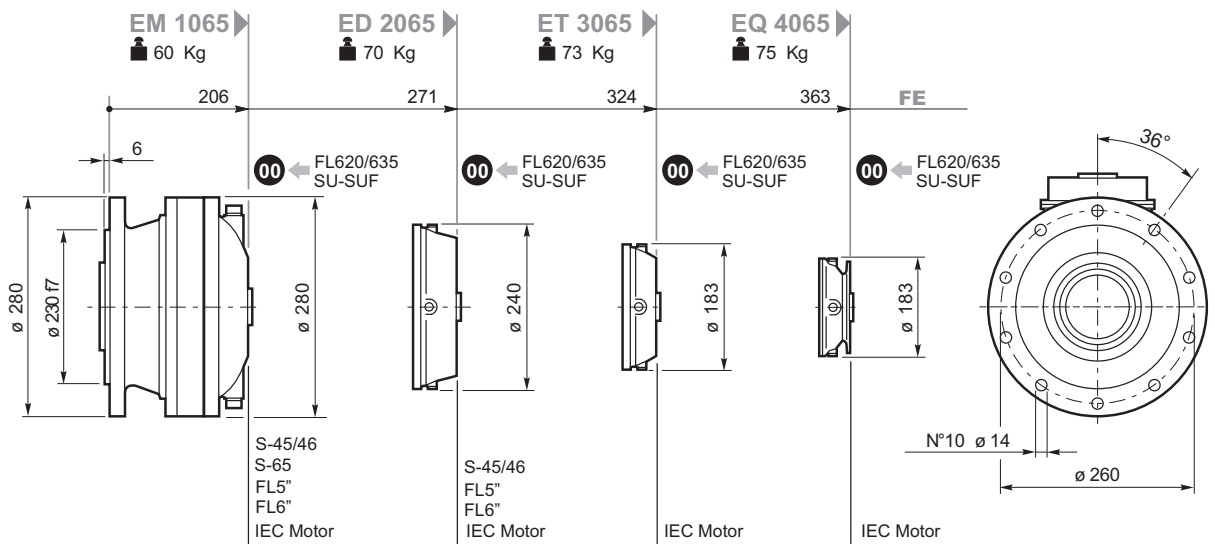
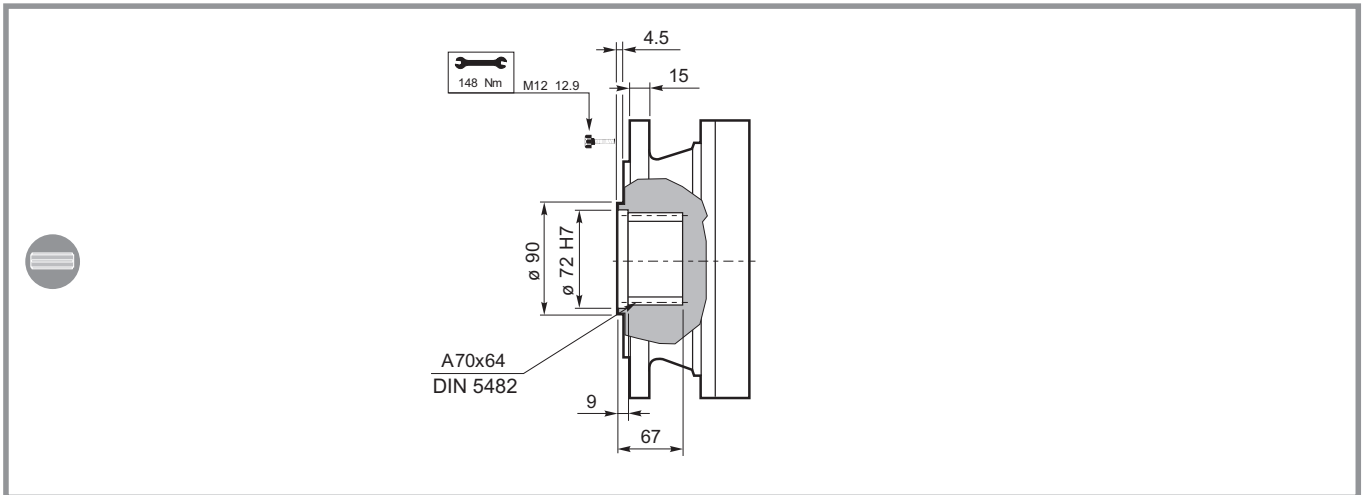
Les rapports repérés par (es. 10.50) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

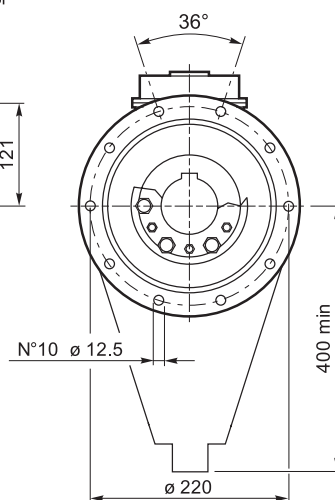
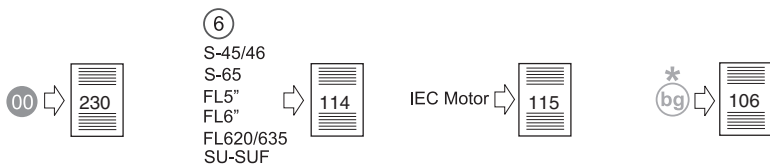
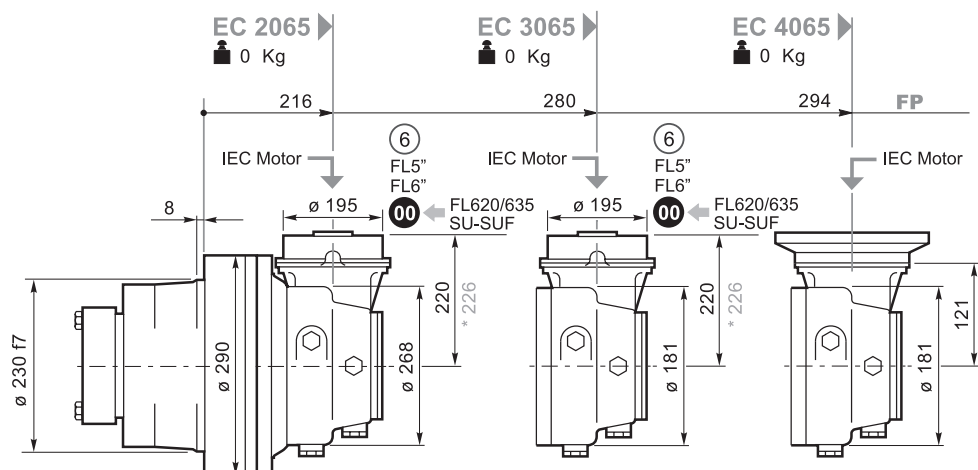
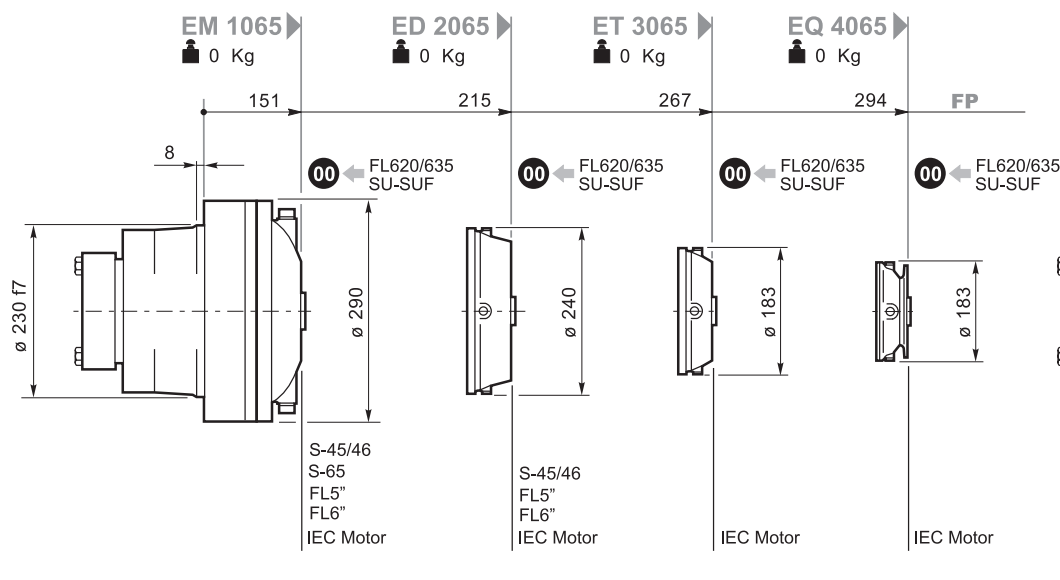
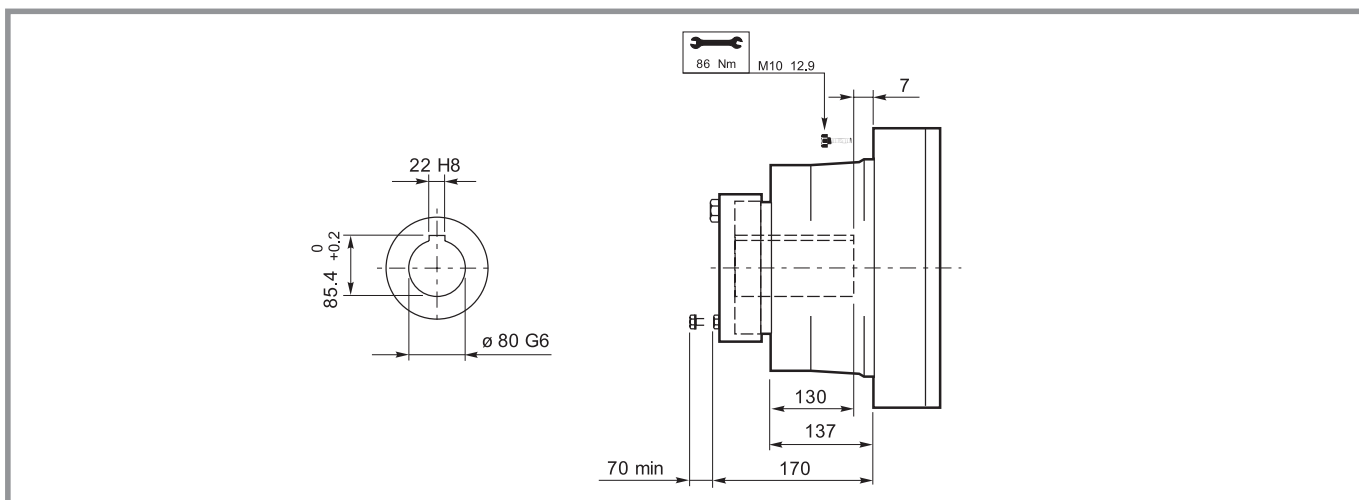
Todas las relaciones indicadas con (es. 10.50) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

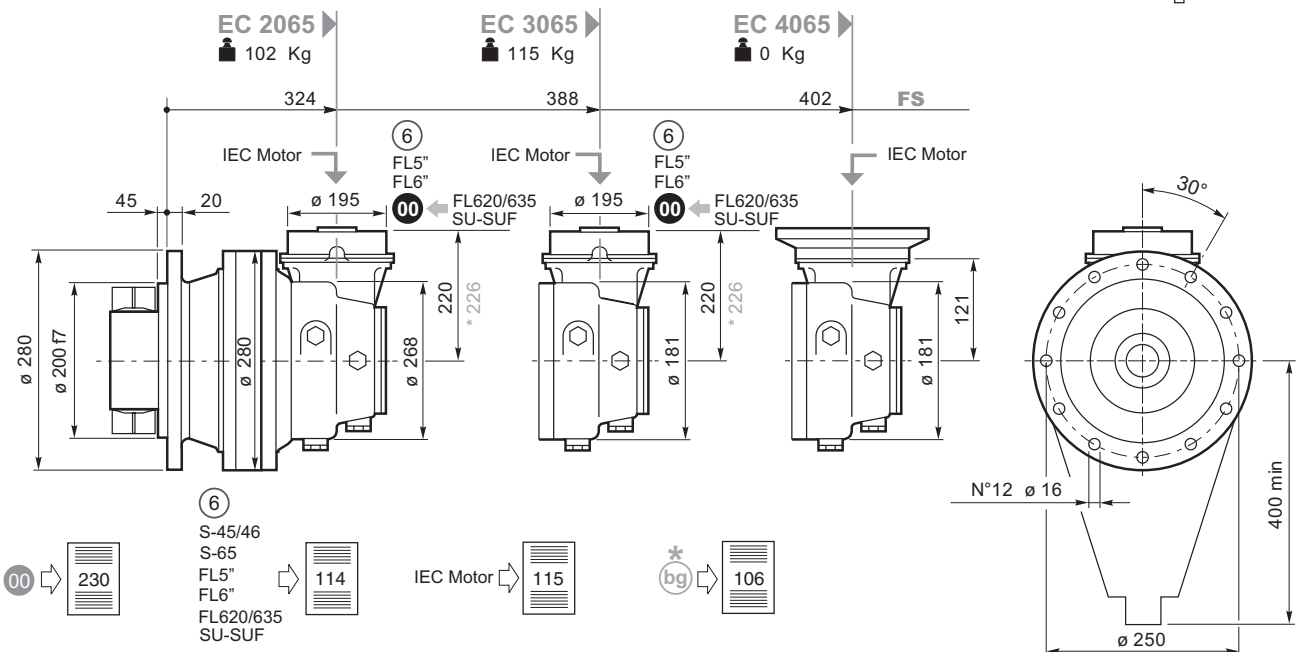
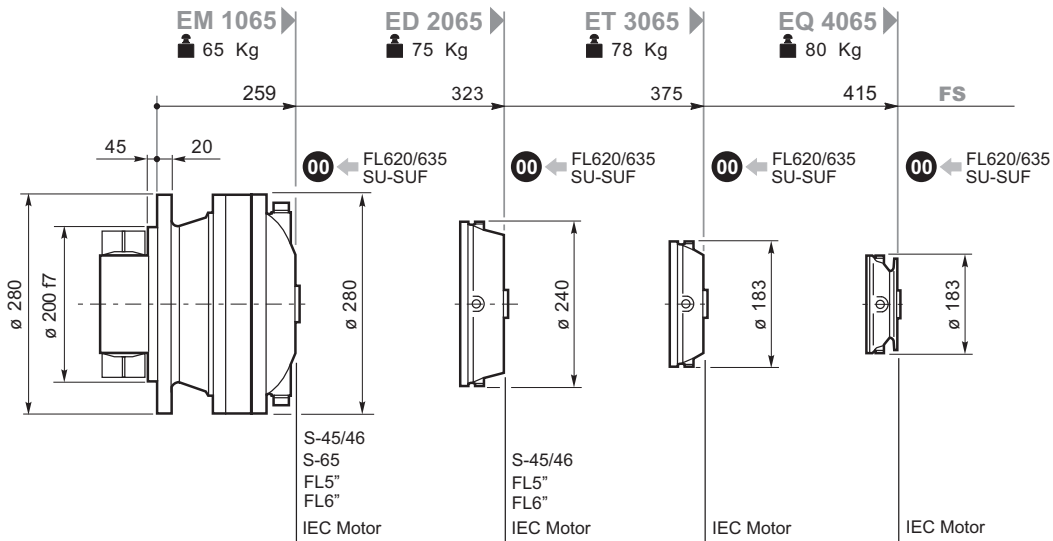
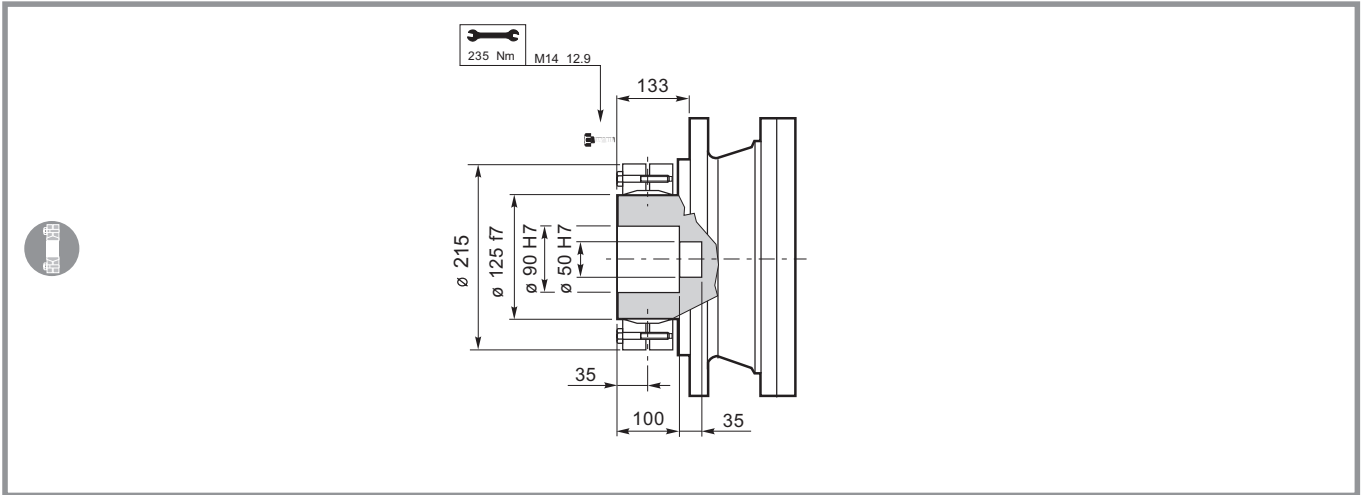
As relações marcadas com (es. 10.50) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

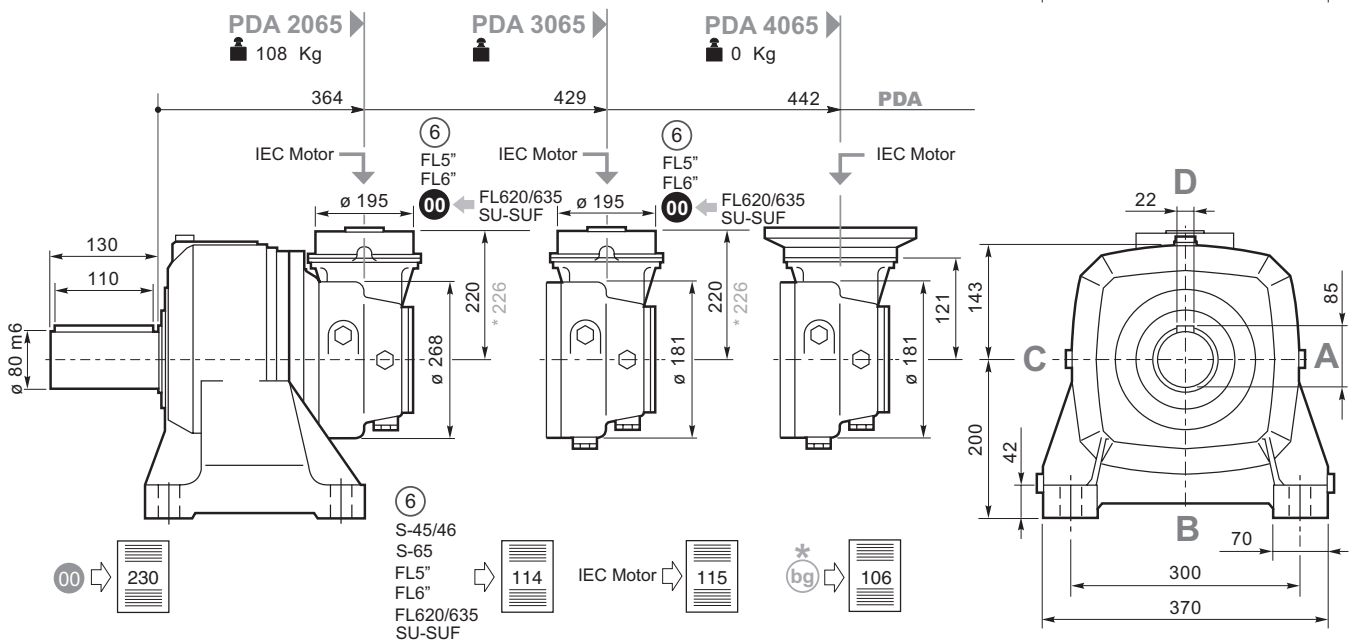
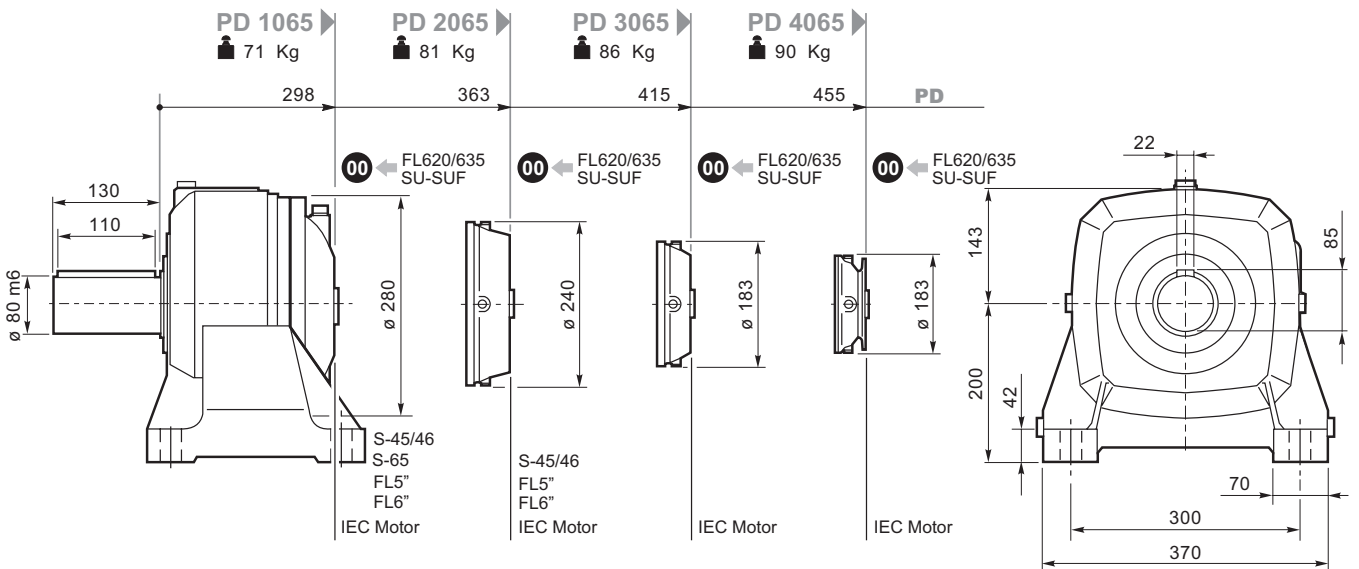
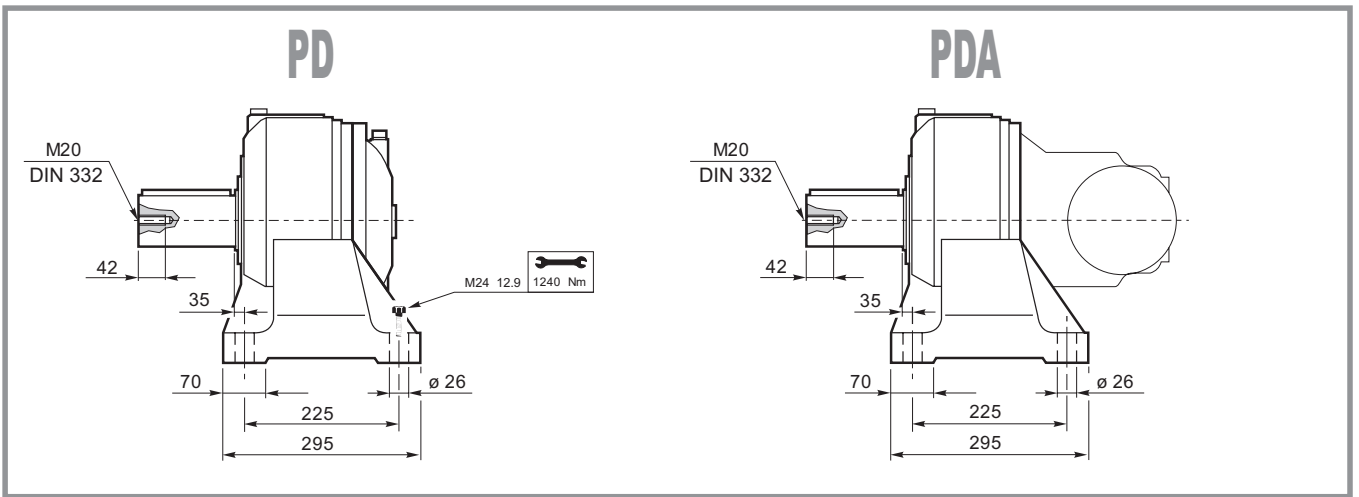








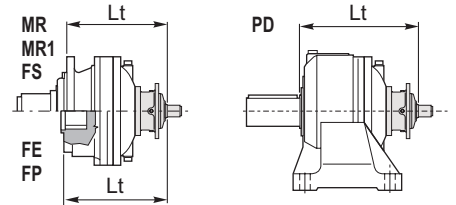
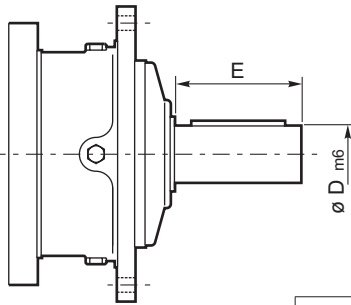




065

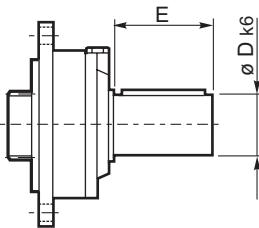
S45CR1-S46C1

S65CR1

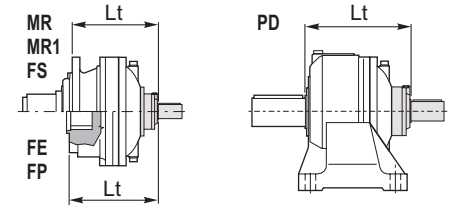


| | D m6 | E | | Lt | | | |
|----------------|---------|-----|----------------|-----------|-----|-----|-----|
| | | | | MR-MR1-FS | FE | FP | PD |
| S45 CR1 | 65 | 105 | EM 1065 | 386 | 334 | 278 | 426 |
| | | | ED 2065 | 386 | 334 | 278 | 426 |
| S46 C1 | 65 | 105 | EM 1065 | 427 | 375 | 319 | 467 |
| | | | ED 2065 | 318 | 375 | 319 | 467 |
| S65 CR1 | 80 | 130 | EM 1065 | 425 | 373 | 317 | 465 |

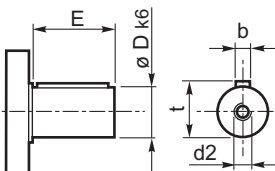
SU2



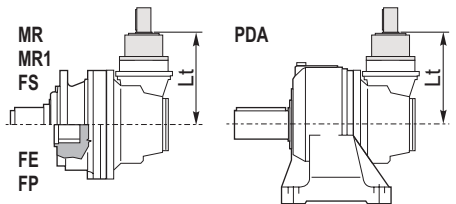
| | D k6 | E | | Lt | | | | |
|-------------|---------|----|----------------|-----------|-----|-----|-----|-----|
| | | | | MR MR1 | FE | FS | FP | PD |
| SU 2 | 40 | 58 | EM 1065 | 319 | 266 | 318 | 211 | 358 |
| | | | ED 2065 | 383 | 331 | 383 | 275 | 423 |
| | | | ET 3065 | 435 | 384 | 435 | 327 | 475 |
| | | | EQ 4065 | 475 | 423 | 462 | 354 | 515 |



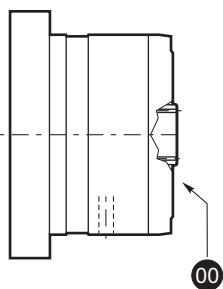
⑥ 48.82



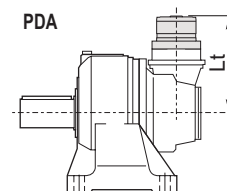
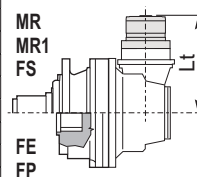
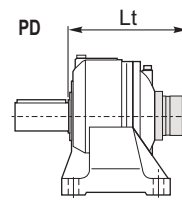
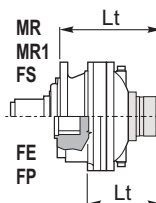
| | D | E | | Lt | |
|--------------|----|----|----------------|---------------------|--|
| | | | | MR-MR1-FS-FE-FP-PDA | |
| 48.82 | 48 | 82 | EC 2065 | 280 | |
| | | | EC 3065 | 280 | |



FL250-FL350-FL450 FL750 FL760-FL960



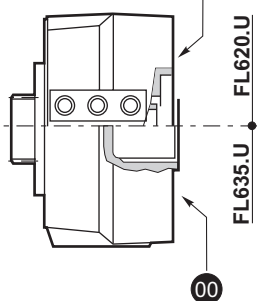
| | | Lt | | | |
|-------------------------|----------|-----------|-----|-----|--------|
| | | MR-MR1-FS | FE | FP | PD-PDA |
| FL250 FL350 FL450 | EM 1065 | 363 | 312 | 255 | 403 |
| | ED 2065 | 416 | 365 | 308 | 456 |
| | EC 2065 | 280 | 280 | 280 | 280 |
| | EC 2065* | 377 | 377 | 377 | 377 |
| | EC 3065 | 280 | 280 | 280 | 280 |
| FL750 | EM 1065 | 376 | 326 | 268 | 416 |
| | ED 2065 | 429 | 378 | 321 | 469 |
| FL760-FL960 | EM 1065 | — | 339 | — | — |



**FL620/10
FL635/10**

FL620U-FL635U

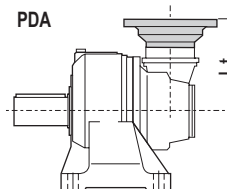
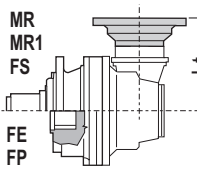
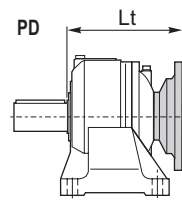
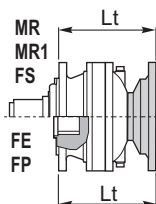
SAE A-AA
Shaft FE



| | | Lt | | | | | |
|----------|----------|---------|-------|-------|-------|-------|-----|
| | | MR-MR1 | FS | FE | FP | PD | |
| FL620/U | EM 1065 | 363.5 | 362.5 | 310.5 | 255.5 | 402.5 | |
| | ED 2065 | 427.5 | 427.5 | 375.5 | 319.5 | 467.5 | |
| | ET 3065 | 479.5 | 479.5 | 428.5 | 371.5 | 519.5 | |
| | EQ 4065 | 519.5 | 506.5 | 467.5 | 398.5 | 559.5 | |
| | EC 2065 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 2065* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 | |
| | EC 3065 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 3065* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 | |
| | FL635U | EM 1065 | 350 | 349 | 297 | 242 | 389 |
| | | ED 2065 | 414 | 414 | 362 | 306 | 454 |
| ET 3065 | | 466 | 466 | 415 | 358 | 506 | |
| EQ 4065 | | 506 | 493 | 454 | 385 | 546 | |
| EC 2065 | | 311 | 311 | 311 | 311 | 311 | |
| EC 2065* | | 317 | 317 | 317 | 317 | 317 | |
| EC 3065 | | 311 | 311 | 311 | 311 | 311 | |
| EC 3065* | | 317 | 317 | 317 | 317 | 317 | |
| FL620/10 | | ET3 065 | 439 | 439 | 388 | 331 | 479 |
| | | EQ 4065 | 479 | 479 | 428.8 | 371 | 519 |
| FL635/10 | ET 3065 | 420 | 420 | 369 | 312 | 460 | |
| | EQ 4065 | 460 | 460 | 408 | 352 | 500 | |

IEC Motor

| | | Lt | | | | | | | |
|----------|---------------------|--------|--------|-----------|-------------|---------|-------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| EM 1065 | MR-MR1-FS | 278 | 280 | 285 | 286 | 353 | | 394 | 424 |
| EM1065 | FE | 226 | 228 | 233 | 234 | 301 | | 342 | 372 |
| EM 1065 | FP | | | | | | | | |
| ED 2065 | MR-MR1-FS | 343 | 345 | 350 | 351 | 418 | 449 | 459 | 490 |
| ED 2065 | FE | 291 | 293 | 298 | 299 | 366 | 397 | 407 | 438 |
| ED 2065 | FP | | | | | | | | |
| ET 3065 | MR-MR1-FS | 395 | 397 | 402 | 403 | 470 | | | |
| ET 3065 | FE | 344 | 346 | 351 | 352 | 419 | | | |
| ET 3065 | FP | | | | | | | | |
| EQ 4065 | MR-MR1-FS | 435 | 437 | 442 | 443 | 510 | | | |
| EQ 4065 | FE | 383 | 385 | 390 | 391 | 458 | | | |
| EQ 4065 | FP | | | | | | | | |
| PD 1065 | PD | 318 | 320 | 325 | 326 | 393 | 424 | 434 | 508 |
| PD 2065 | PD | 383 | 385 | 390 | 391 | 458 | 489 | 490 | 530 |
| PD 3065 | PD | 435 | 437 | 442 | 443 | 510 | 541 | | |
| PD 4065 | PD | 475 | 477 | 482 | 483 | | | | |
| EC 2065 | MR-MR1-FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 2065* | MR-MR1-FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 3065 | MR-MR1-FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3065* | MR-MR1-FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 4065 | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 | | | |
| EC 4065* | MR-MR1-FE-FS-FP-PDA | 151 | 151 | 151 | 151 | 238 | | | |



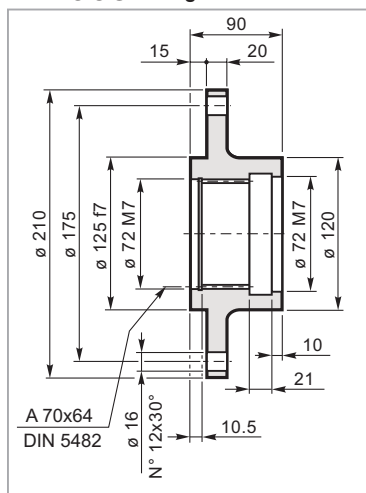
* bg





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 065

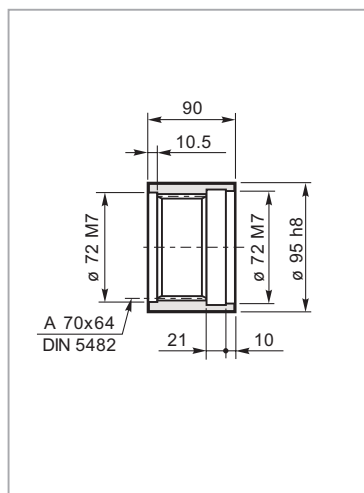


Mat. C40 UNI EN 10083
Code: 3702031800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 065

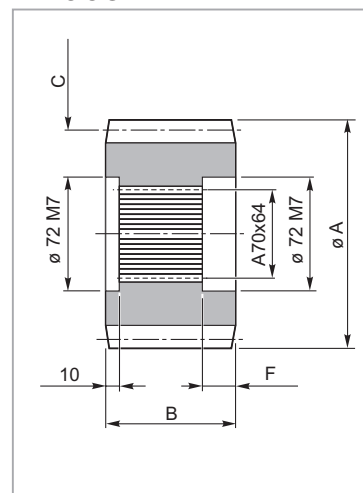


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102440600



Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 065

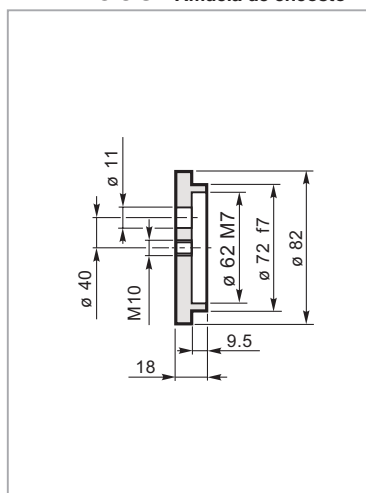


| code | A | B | C | F |
|---------------|-----|-------|------------------|----|
| 335.0463.0600 | 136 | 3.543 | M=8 Z=15 — | 31 |
| 335.2063.0600 | 160 | 3.543 | M=10 Z=13 X=0.5 | 31 |
| 335.3033.0600 | 165 | 3.543 | M=10 Z=13 X=0.95 | 31 |
| 335.3533.0600 | 149 | 3.543 | M=10 Z=12 X=0.5 | 31 |



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 065

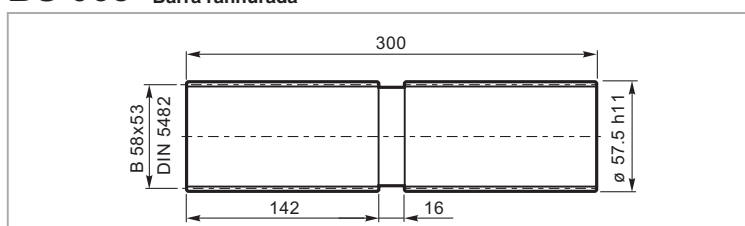


Mat. C40 UNI EN 10083
Code: 37201440800



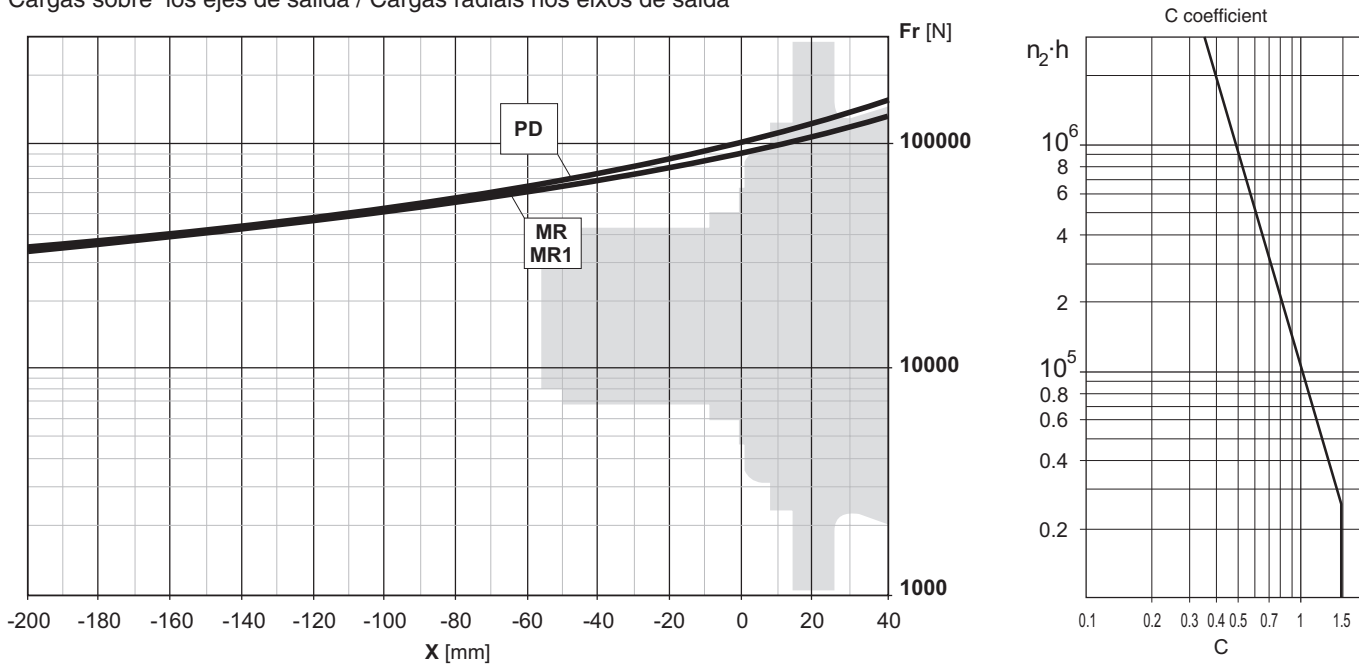
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 065

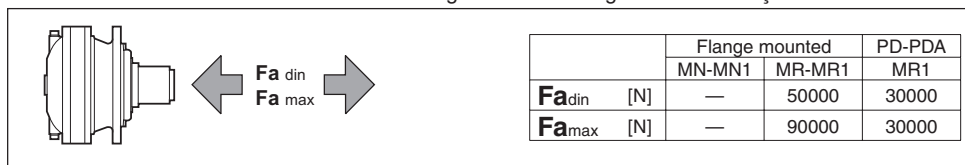


Mat. 39NiCrMo3 UNI EN 10083
Code: 39126930100

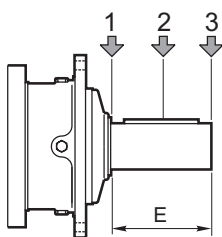
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



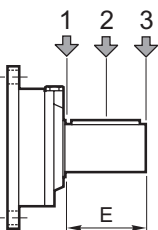
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



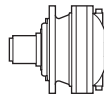
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

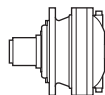


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



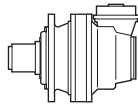
| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] | |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2067 | | | | | | | | | | | | |
| 12.25 | 122 | 3264 | 41.9 | 82 | 3686 | 31.5 | 40.8 | 4538 | 19.4 | 9800 | 18 | |
| 14.46 | 104 | 3430 | 37.3 | 69 | 3874 | 28.1 | 34.6 | 4769 | 17.3 | 9800 | | |
| 15.16 | 99 | 3417 | 35.4 | 66 | 3859 | 26.7 | 33.0 | 4751 | 16.4 | 10000 | | |
| 18.10 | 83 | 3669 | 31.9 | 55 | 4144 | 24.0 | 27.6 | 5102 | 14.8 | 10000 | | |
| 21.00 | 71 | 3837 | 28.7 | 47.6 | 4333 | 21.6 | 23.8 | 5335 | 13.3 | 10000 | | |
| 22.39 | 67 | 3841 | 27.0 | 44.7 | 4338 | 20.3 | 22.3 | 5340 | 12.5 | 10000 | | |
| 25.38 | 59 | 4061 | 25.1 | 39.4 | 4586 | 18.9 | 19.7 | 5646 | 11.7 | 10000 | | |
| 27.99 | 54 | 4179 | 23.5 | 35.7 | 4720 | 17.7 | 17.9 | 5811 | 10.9 | 10000 | | |
| 31.39 | 47.8 | 4251 | 21.3 | 31.9 | 4801 | 16.0 | 15.9 | 5885 | 9.8 | 10000 | | |
| 36.25 | 41.4 | 4350 | 18.9 | 27.6 | 4913 | 14.2 | 13.8 | 5575 | 8.1 | 10000 | | |
| 43.50 | 34.5 | 3971 | 14.3 | 23.0 | 4137 | 10.0 | 11.5 | 4422 | 5.3 | 10000 | | |
| ET 3067 | | | | | | | | | | | | |
| 50.59 | 29.6 | 4995 | 15.5 | 19.8 | 5641 | 11.7 | 9.9 | 6945 | 7.2 | 10000 | | 14 |
| 55.80 | 26.9 | 5141 | 14.5 | 17.9 | 5806 | 10.9 | 9.0 | 6373 | 6.0 | 10000 | | |
| 63.33 | 23.7 | 5343 | 13.3 | 15.8 | 6034 | 10.0 | 7.9 | 7366 | 6.1 | 10000 | | |
| 73.50 | 20.4 | 5587 | 11.9 | 13.6 | 6310 | 9.0 | 6.8 | 7597 | 5.4 | 10000 | | |
| 78.35 | 19.1 | 5593 | 11.2 | 12.8 | 6004 | 8.0 | 6.4 | 6600 | 4.4 | 10000 | | |
| 88.81 | 16.9 | 5914 | 10.5 | 11.3 | 6678 | 7.9 | 5.6 | 7898 | 4.7 | 10000 | | |
| 104.8 | 14.3 | 6215 | 9.3 | 9.5 | 7018 | 7.0 | 4.8 | 8169 | 4.1 | 10000 | | |
| 109.9 | 13.7 | 5968 | 8.5 | 9.1 | 6188 | 5.9 | 4.6 | 7082 | 3.4 | 10000 | | |
| 126.0 | 11.9 | 6568 | 8.2 | 7.9 | 7358 | 6.1 | 4.0 | 8478 | 3.5 | 10000 | | |
| 144.7 | 10.4 | 6227 | 6.8 | 6.9 | 6734 | 4.9 | 3.5 | 7766 | 2.8 | 10000 | | |
| 162.3 | 9.2 | 6180 | 6.0 | 6.2 | 6649 | 4.3 | 3.1 | 7668 | 2.5 | 10000 | | |
| 188.4 | 8.0 | 6297 | 5.3 | 5.3 | 6860 | 3.8 | 2.7 | 7901 | 2.2 | 10000 | | |
| 202.9 | 7.4 | 6639 | 5.1 | 4.9 | 7224 | 3.7 | 2.5 | 8308 | 2.1 | 10000 | | |
| 227.6 | 6.6 | 6556 | 4.5 | 4.4 | 7134 | 3.3 | 2.2 | 8205 | 1.9 | 10000 | | |
| 262.8 | 5.7 | 6183 | 3.7 | 3.8 | 6733 | 2.7 | 1.9 | 7753 | 1.5 | 10000 | | |
| 315.4 | 4.8 | 4894 | 2.4 | 3.2 | 5343 | 1.8 | 1.6 | 6175 | 1.0 | 10000 | | |

1500
HOURS LIFE



067

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2067 | | | | | | | | | | | | |
| 12.25 | 122 | 5767 | 74 | 82 | 6513 | 56 | 40.8 | 7713 | 33.0 | 9800 | 18 | |
| 14.46 | 104 | 6060 | 66 | 69 | 6844 | 49.6 | 34.6 | 7988 | 28.9 | 9800 | | |
| 15.16 | 99 | 5816 | 60 | 66 | 6071 | 42.0 | 33.0 | 6924 | 23.9 | 10000 | | |
| 18.10 | 83 | 6483 | 56 | 55 | 7223 | 41.8 | 27.6 | 8369 | 24.2 | 10000 | | |
| 21.00 | 71 | 6779 | 51 | 47.6 | 7462 | 37.2 | 23.8 | 8628 | 21.5 | 10000 | | |
| 22.39 | 67 | 6061 | 42.5 | 44.7 | 6484 | 30.3 | 22.3 | 7514 | 17.6 | 10000 | | |
| 25.38 | 59 | 6838 | 42.3 | 39.4 | 7271 | 30.0 | 19.7 | 7934 | 16.4 | 10000 | | |
| 27.99 | 54 | 6458 | 36.3 | 35.7 | 7057 | 26.4 | 17.9 | 8149 | 15.2 | 10000 | | |
| 31.39 | 47.8 | 6388 | 32.0 | 31.9 | 6976 | 23.3 | 15.9 | 8051 | 13.4 | 10000 | | |
| 36.25 | 41.4 | 6034 | 26.2 | 27.6 | 6590 | 19.0 | 13.8 | 7610 | 11.0 | 10000 | | |
| 43.50 | 34.5 | 4777 | 17.3 | 23.0 | 5229 | 12.6 | 11.5 | 6061 | 7.3 | 10000 | | |
| ET 3067 | | | | | | | | | | | | |
| 50.59 | 29.6 | 8249 | 25.6 | 19.8 | 8959 | 18.5 | 9.9 | 10267 | 10.6 | 10000 | | 14 |
| 55.80 | 26.9 | 7494 | 21.1 | 17.9 | 8144 | 15.3 | 9.0 | 9342 | 8.8 | 10000 | | |
| 63.33 | 23.7 | 8637 | 21.4 | 15.8 | 9369 | 15.5 | 7.9 | 10719 | 8.9 | 10000 | | |
| 73.50 | 20.4 | 8902 | 19.0 | 13.6 | 9648 | 13.7 | 6.8 | 11027 | 7.9 | 10000 | | |
| 78.35 | 19.1 | 7756 | 15.6 | 12.8 | 8416 | 11.3 | 6.4 | 9636 | 6.4 | 10000 | | |
| 88.81 | 16.9 | 9245 | 16.4 | 11.3 | 10011 | 11.8 | 5.6 | 11428 | 6.7 | 10000 | | |
| 104.8 | 14.3 | 9552 | 14.3 | 9.5 | 10337 | 10.3 | 4.8 | 11788 | 5.9 | 10000 | | |
| 109.9 | 13.7 | 8304 | 11.9 | 9.1 | 8996 | 8.6 | 4.6 | 10278 | 4.9 | 10000 | | |
| 126.0 | 11.9 | 9882 | 12.3 | 7.9 | 10687 | 8.9 | 4.0 | 12199 | 5.1 | 10000 | | |
| 144.7 | 10.4 | 9080 | 9.9 | 6.9 | 9821 | 7.1 | 3.5 | 11195 | 4.1 | 10000 | | |
| 162.3 | 9.2 | 8970 | 8.7 | 6.2 | 9702 | 6.3 | 3.1 | 11058 | 3.6 | 10000 | | |
| 188.4 | 8.0 | 9233 | 7.7 | 5.3 | 9981 | 5.6 | 2.7 | 11369 | 3.2 | 10000 | | |
| 202.9 | 7.4 | 9669 | 7.5 | 4.9 | 10474 | 5.4 | 2.5 | 11918 | 3.1 | 10000 | | |
| 227.6 | 6.6 | 9577 | 6.6 | 4.4 | 10346 | 4.8 | 2.2 | 11773 | 2.7 | 10000 | | |
| 262.8 | 5.7 | 9061 | 5.4 | 3.8 | 9793 | 3.9 | 1.9 | 11151 | 2.2 | 10000 | | |
| 315.4 | 4.8 | 7244 | 3.6 | 3.2 | 7842 | 2.6 | 1.6 | 8951 | 1.5 | 10000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3067 - PDA 3067

| | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|-----|-------|
| 40.53 | 37.0 | 4671 | 18.1 | 24.7 | 5275 | 13.6 | 12.3 | 6131 | 7.9 | 10000 |
| 43.37 | 34.6 | 4769 | 17.3 | 23.1 | 5386 | 13.0 | 11.5 | 6631 | 8.0 | 10000 |
| 47.83 | 31.4 | 4908 | 16.1 | 20.9 | 5543 | 12.1 | 10.5 | 6222 | 6.8 | 10000 |
| 56.60 | 26.5 | 5166 | 14.3 | 17.7 | 5834 | 10.8 | 8.8 | 7183 | 6.6 | 10000 |
| 62.42 | 24.0 | 5317 | 13.4 | 16.0 | 5987 | 10.0 | 8.0 | 6527 | 5.5 | 10000 |
| 70.02 | 21.4 | 5408 | 12.1 | 14.3 | 5944 | 8.9 | 7.1 | 6445 | 4.8 | 10000 |
| 83.60 | 17.9 | 5807 | 10.9 | 12.0 | 6558 | 8.2 | 6.0 | 7801 | 4.9 | 10000 |
| 92.20 | 16.3 | 5977 | 10.2 | 10.8 | 6202 | 7.0 | 5.4 | 7083 | 4.0 | 10000 |
| 97.02 | 15.5 | 6072 | 9.8 | 10.3 | 6858 | 7.4 | 5.2 | 8042 | 4.3 | 10000 |
| 117.2 | 12.8 | 6427 | 8.6 | 8.5 | 7211 | 6.4 | 4.3 | 7758 | 3.5 | 10000 |
| 120.0 | 12.5 | 6016 | 7.9 | 8.3 | 6237 | 5.4 | 4.2 | 7212 | 3.1 | 10000 |
| 145.0 | 10.3 | 6118 | 6.6 | 6.9 | 6493 | 4.7 | 3.4 | 7496 | 2.7 | 10000 |
| 167.5 | 9.0 | 5797 | 5.4 | 6.0 | 6124 | 3.8 | 3.0 | 7078 | 2.2 | 10000 |
| 201.0 | 7.5 | 4603 | 3.6 | 5.0 | 4846 | 2.5 | 2.5 | 5624 | 1.5 | 10000 |

11

Tutti i rapporti evidenziati (es. 40.53) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 40.53) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

Alle mit (es. 40.53) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 40.53) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

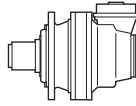
Todas las relaciones indicadas con (es. 40.53) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 40.53) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.



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1500
HOURS LIFE



067

| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3067 - PDA 3067

| | | | | | | | | | | |
|-------|------|------|------|------|-------|------|------|-------|------|-------|
| 40.53 | 37.0 | 7004 | 27.1 | 24.7 | 7629 | 19.7 | 12.3 | 8775 | 11.3 | 10000 |
| 43.37 | 34.6 | 7988 | 28.9 | 23.1 | 8684 | 21.0 | 11.5 | 9965 | 12.0 | 10000 |
| 47.83 | 31.4 | 7255 | 23.8 | 20.9 | 7893 | 17.3 | 10.5 | 9065 | 9.9 | 10000 |
| 56.60 | 26.5 | 8441 | 23.4 | 17.7 | 9162 | 17.0 | 8.8 | 10491 | 9.7 | 10000 |
| 62.42 | 24.0 | 7670 | 19.3 | 16.0 | 8330 | 14.0 | 8.0 | 9547 | 8.0 | 10000 |
| 70.02 | 21.4 | 7579 | 17.0 | 14.3 | 8230 | 12.3 | 7.1 | 9430 | 7.1 | 10000 |
| 83.60 | 17.9 | 9134 | 17.2 | 12.0 | 9894 | 12.4 | 6.0 | 11299 | 7.1 | 10000 |
| 92.20 | 16.3 | 8304 | 14.1 | 10.8 | 9000 | 10.2 | 5.4 | 10286 | 5.8 | 10000 |
| 97.02 | 15.5 | 9408 | 15.2 | 10.3 | 10062 | 10.9 | 5.2 | 11619 | 6.3 | 10000 |
| 117.2 | 12.8 | 8323 | 11.2 | 8.5 | 8682 | 7.8 | 4.3 | 10181 | 4.5 | 10000 |
| 120.0 | 12.5 | 8452 | 11.1 | 8.3 | 9153 | 8.0 | 4.2 | 10451 | 4.6 | 10000 |
| 145.0 | 10.3 | 8774 | 9.5 | 6.9 | 9494 | 6.9 | 3.4 | 10829 | 3.9 | 10000 |
| 167.5 | 9.0 | 8297 | 7.8 | 6.0 | 8982 | 5.6 | 3.0 | 10252 | 3.2 | 10000 |
| 201.0 | 7.5 | 6621 | 5.2 | 5.0 | 7180 | 3.7 | 2.5 | 8217 | 2.1 | 10000 |

11

Tutti i rapporti evidenziati (es. 40.53) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 40.53) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

Alle mit (es. 40.53) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

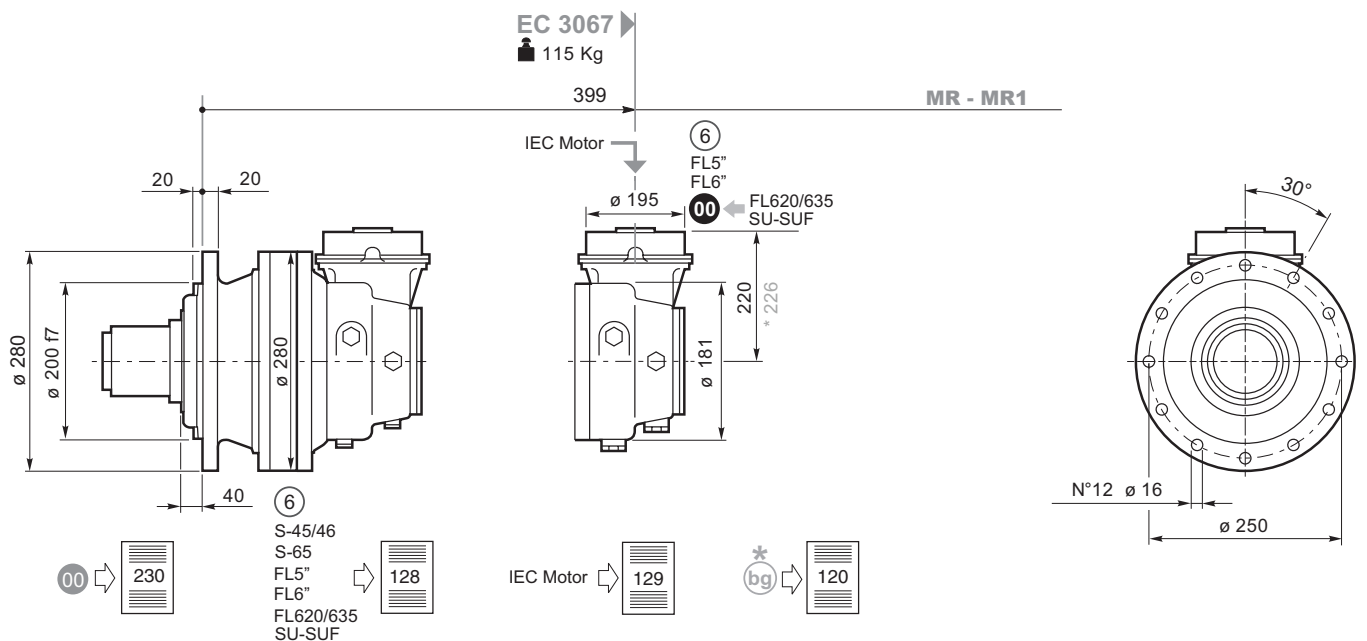
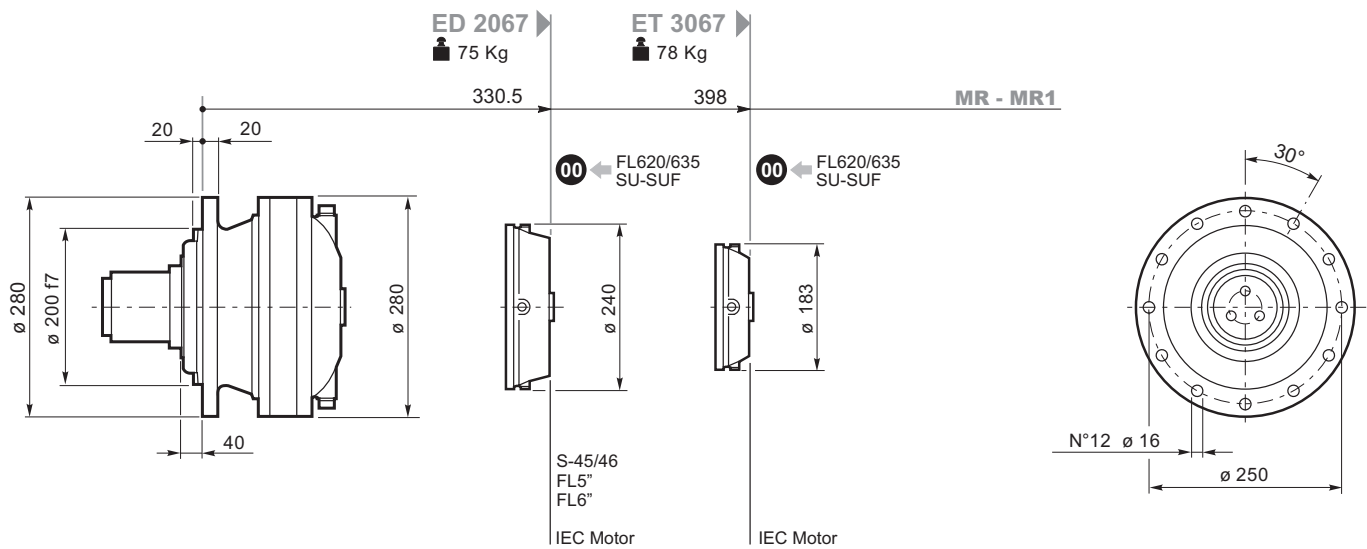
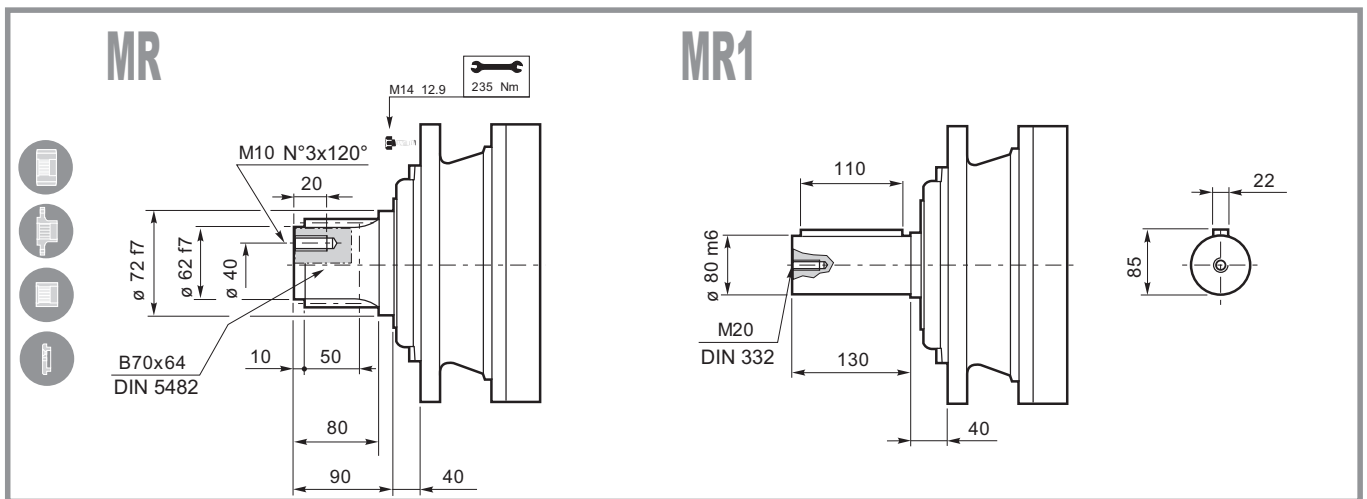
Les rapports repérés par (es. 40.53) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

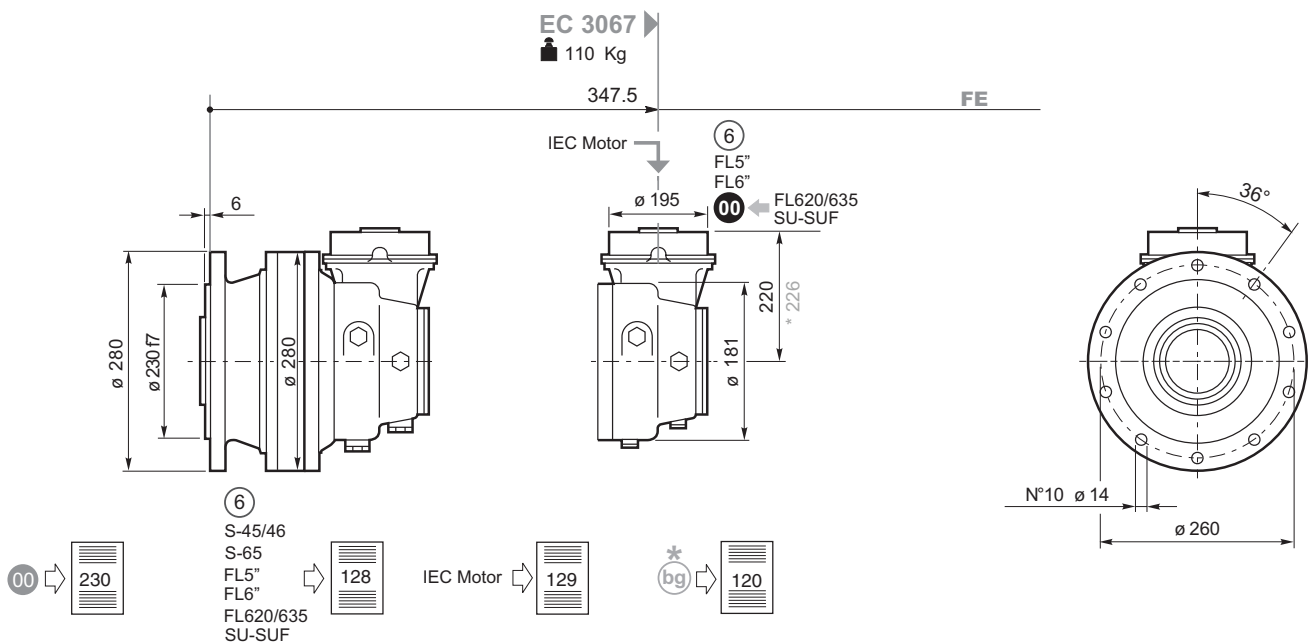
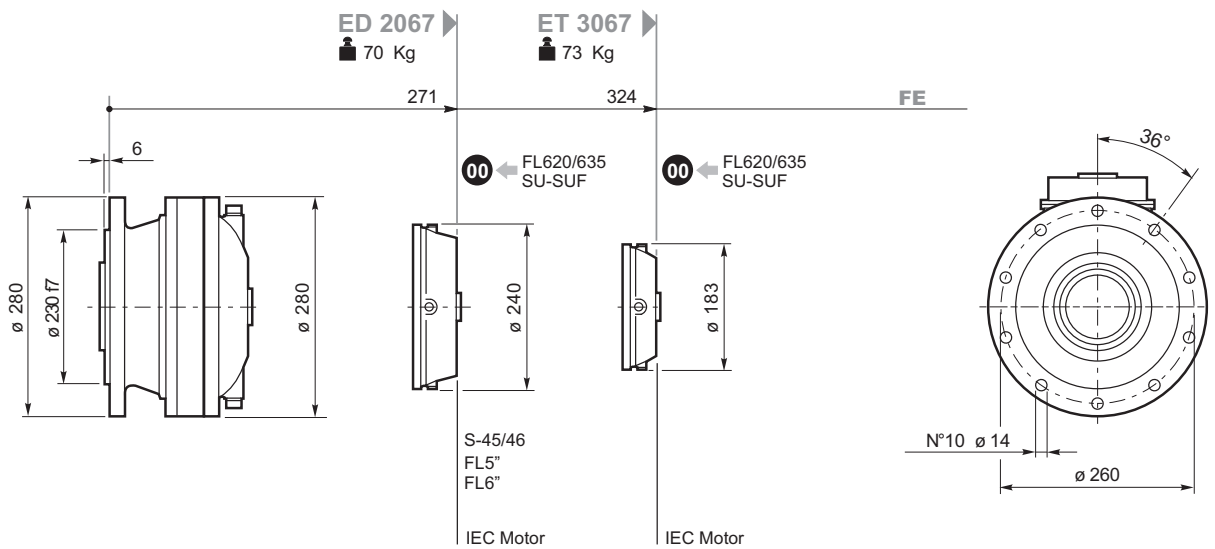
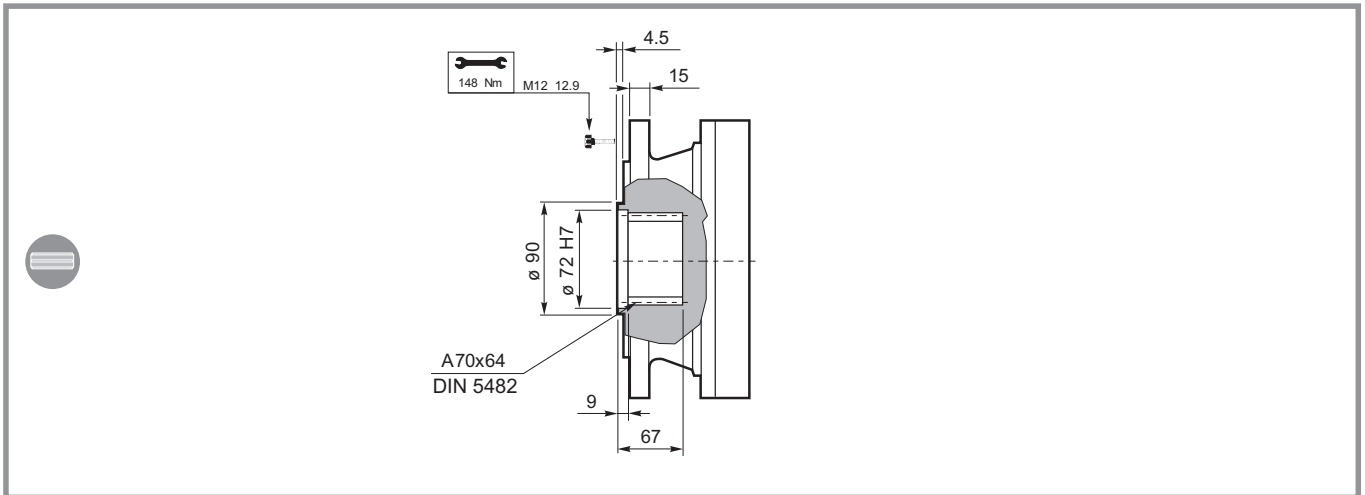
Todas las relaciones indicadas con (es. 40.53) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

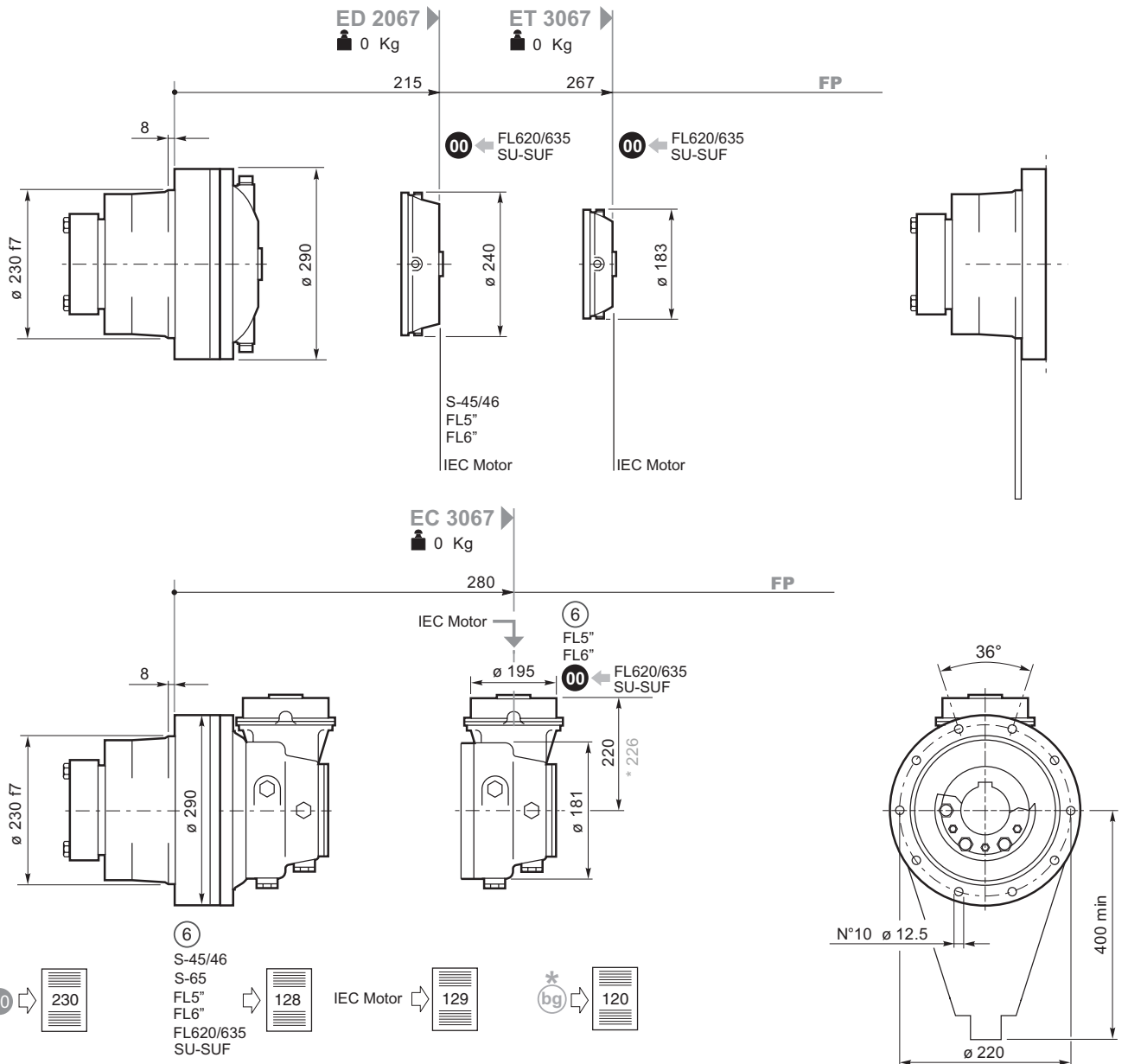
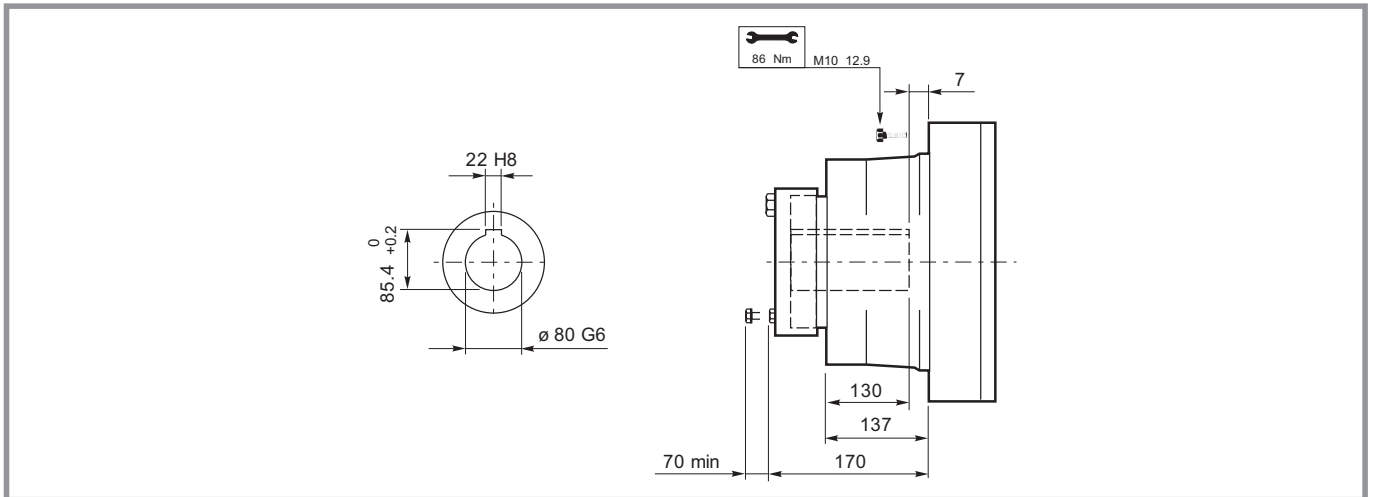
As relações marcadas com (es. 40.53) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

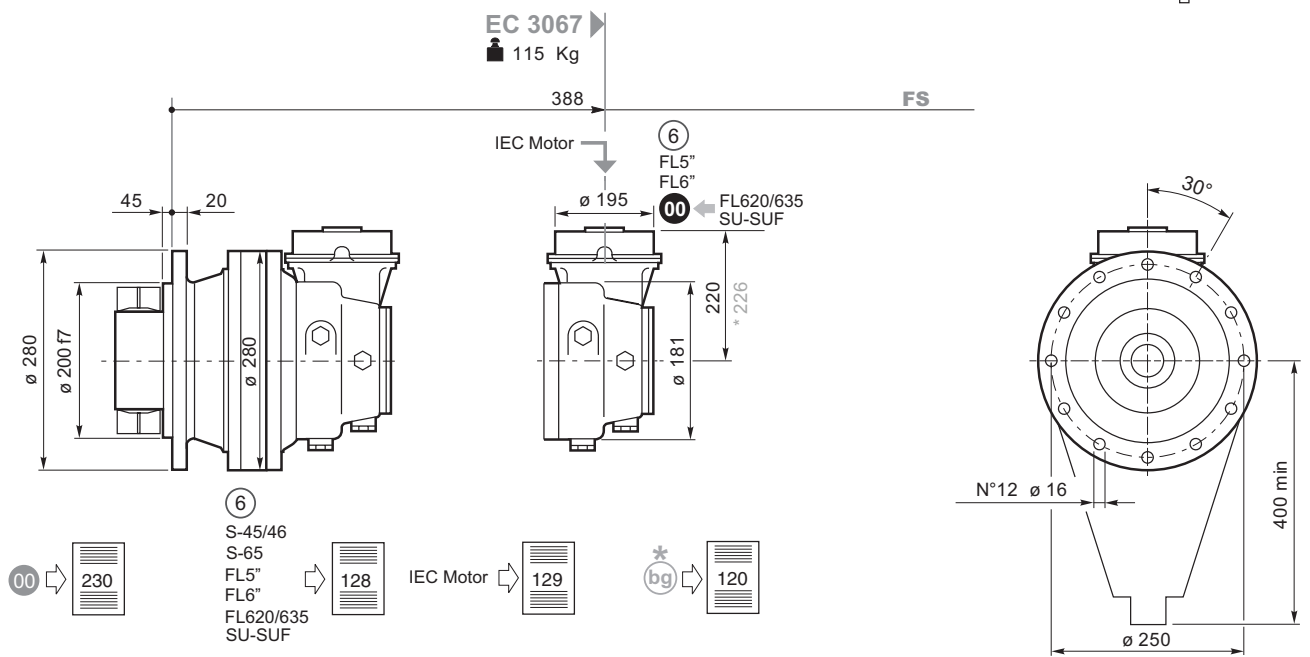
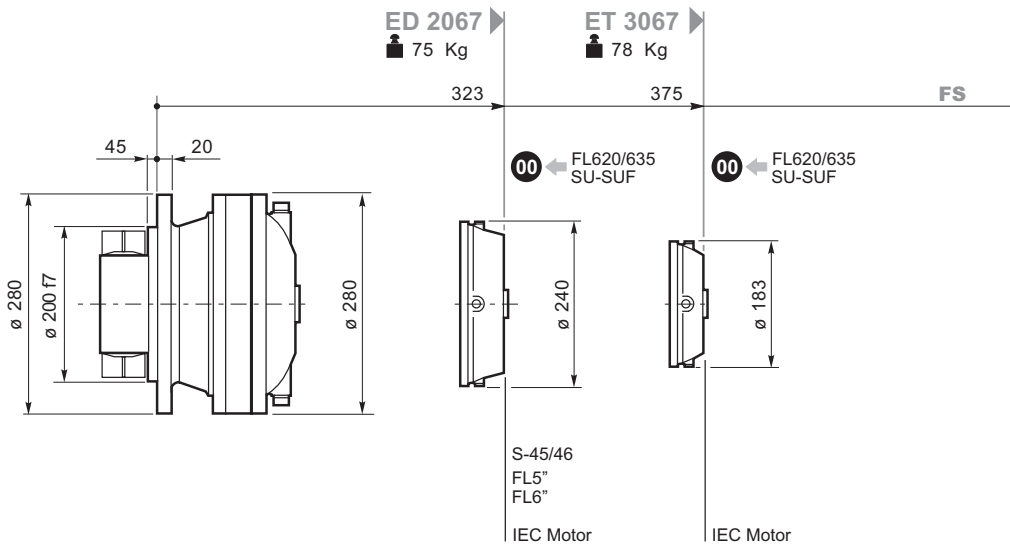
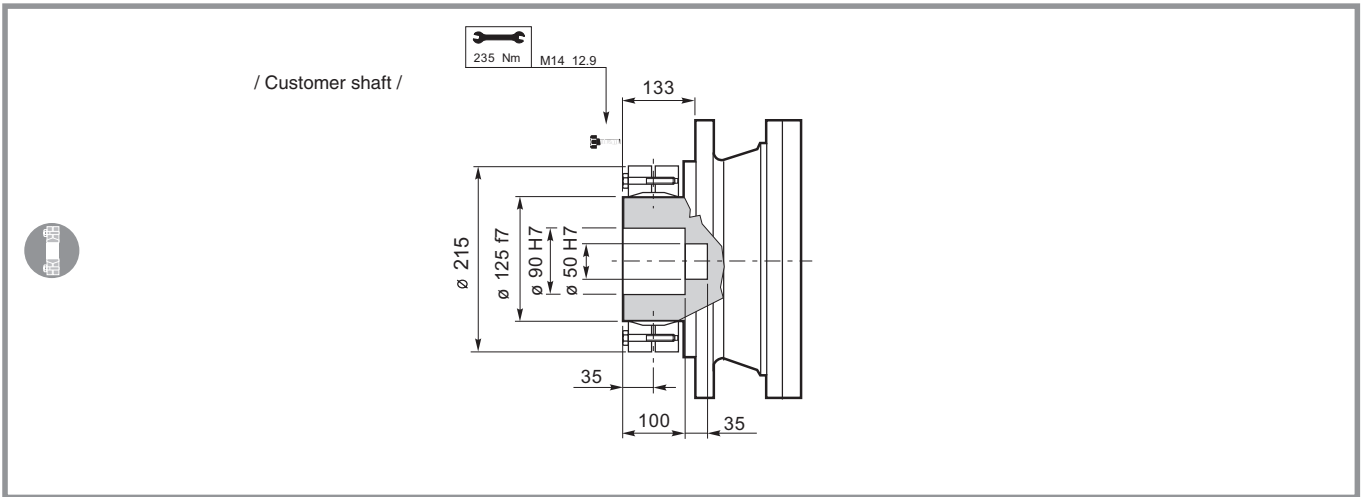


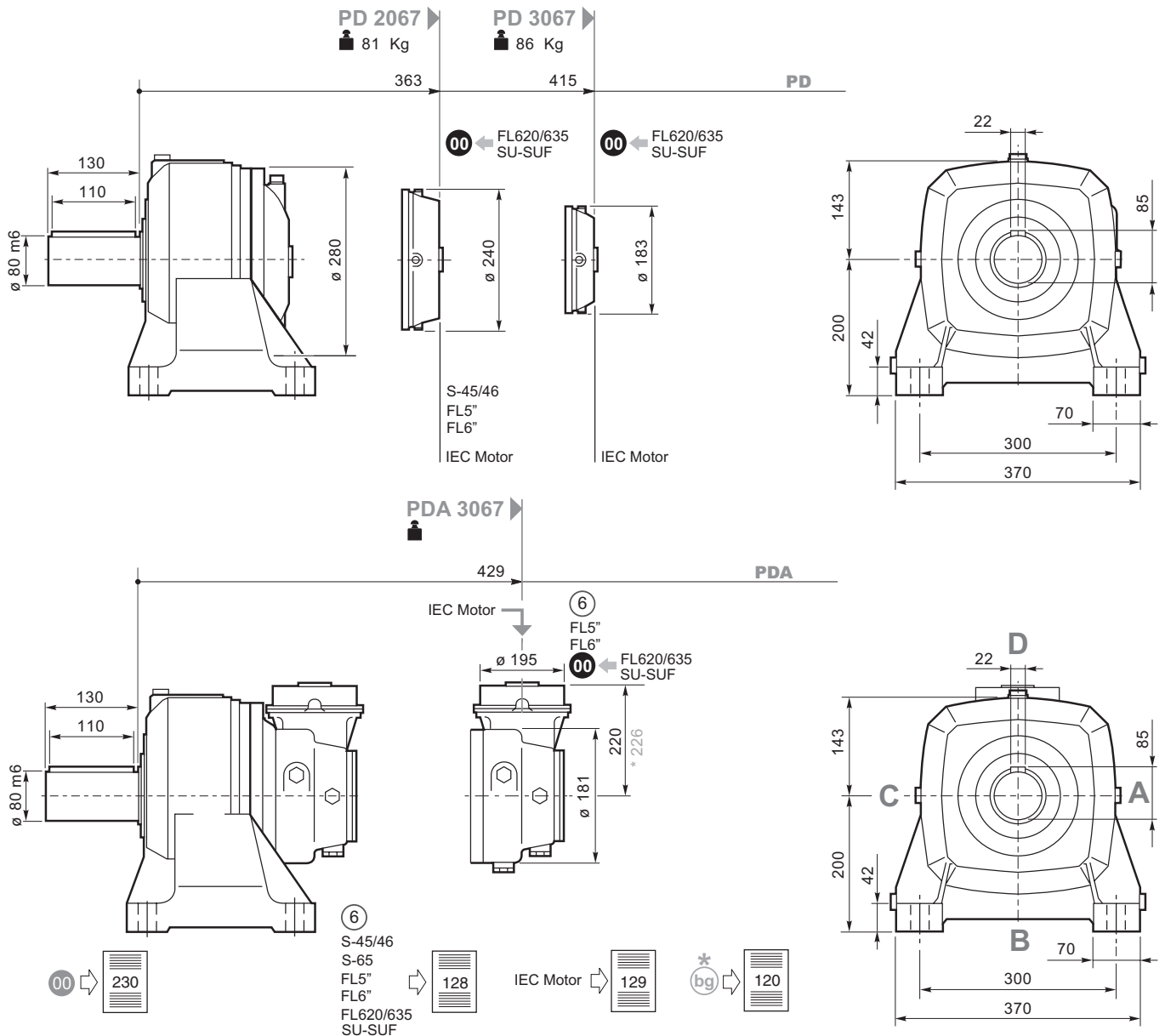
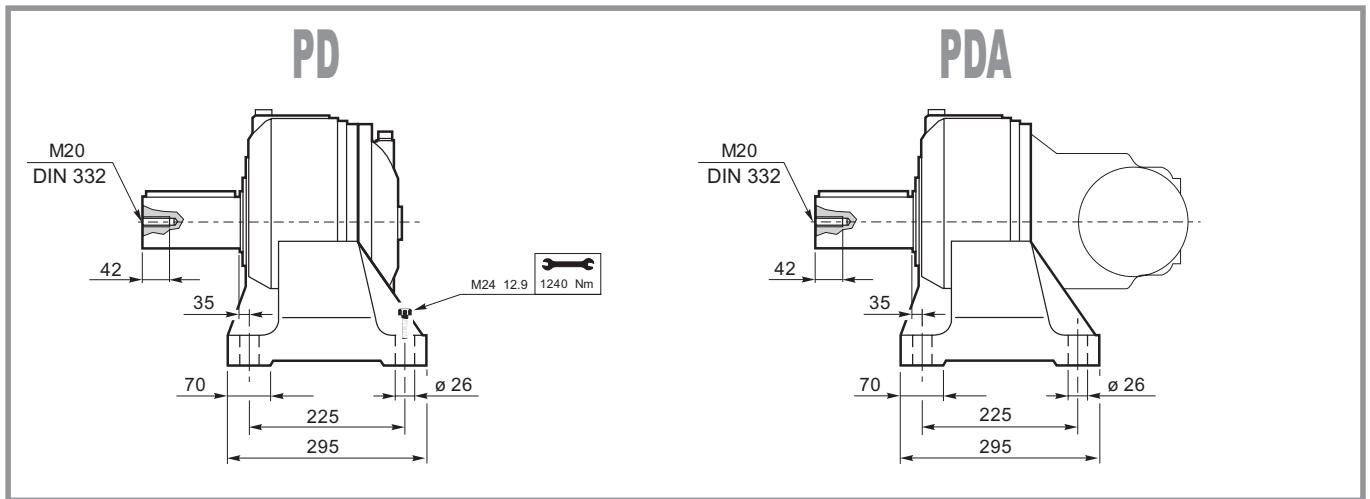
129



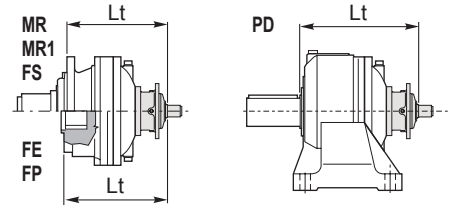
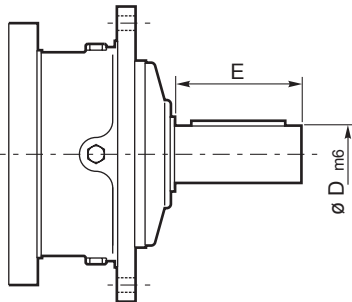






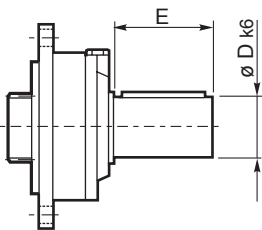


S45CR1-S46C1

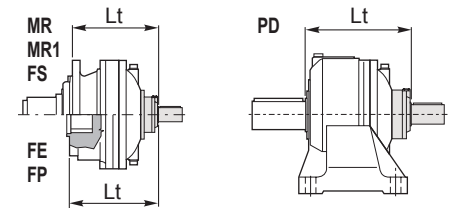


| | D m6 | E | | Lt | | | |
|----------------|---------|-----|----------------|-----------|-----|----|-----|
| | | | | MR-MR1-FS | FE | FP | PD |
| S45 CR1 | 65 | 105 | ED 2067 | 394 | 342 | | 434 |
| | | | ET 3067 | 461 | 409 | | 501 |
| S46 C1 | 65 | 105 | ED 2067 | 435 | 383 | | 475 |
| | | | ET 3067 | 502 | 455 | | 542 |

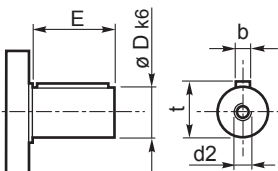
SU2



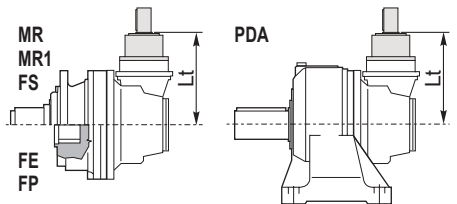
| | D k6 | E | | Lt | | | | |
|-------------|---------|----|----------------|-----------|-----|-----|-----|-----|
| | | | | MR MR1 | FE | FS | FP | PD |
| SU 2 | 40 | 58 | ED 2067 | 383 | 331 | 383 | 275 | 423 |
| | | | ET 3067 | 435 | 384 | 435 | 327 | 475 |



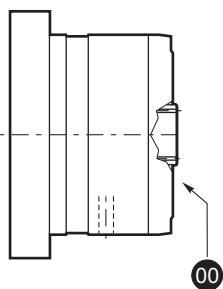
⑥ 48.82



| | D | E | | Lt |
|--------------|----|----|----------------|---------------------|
| | | | | MR-MR1-FS-FE-FP-PDA |
| 48.82 | 48 | 82 | EC 3067 | 280 |



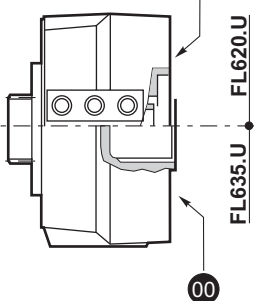
FL250-FL350-FL450 FL750



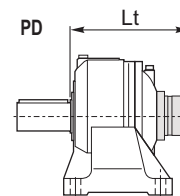
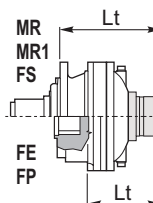
**FL620/10
FL635/10**

FL620U-FL635U

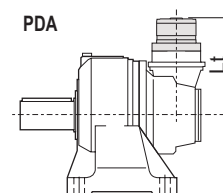
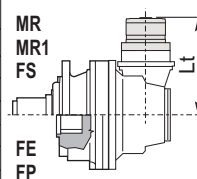
SAE A-AA
Shaft FE



| | | Lt | | | |
|-------|----------|-----------|-----|-----|--------|
| | | MR-MR1-FS | FE | FP | PD-PDA |
| FL250 | ED 2067 | 371 | 319 | 315 | 411 |
| | ET 3067 | 438 | 386 | 382 | 478 |
| FL350 | EC 3067 | 280 | 280 | 280 | 280 |
| FL450 | EC 3067* | 377 | 377 | 377 | 377 |
| FL750 | ED 2067 | 384 | 332 | 328 | 424 |
| | ET 3067 | 451 | 399 | 395 | 491 |

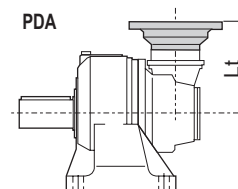
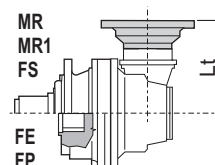
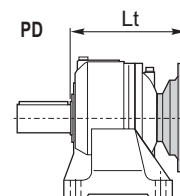
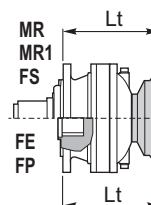


| | | Lt | | | | |
|----------|----------|--------|-------|-------|-------|-------|
| | | MR-MR1 | FS | FE | FP | PD |
| FL620/U | ED 2067 | 435 | 335 | 383 | 327 | 475 |
| | ET 3067 | 293.5 | 502.5 | 451 | 395 | 542.5 |
| | EC 3067 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 |
| | EC 3067* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 |
| FL635U | ED 2067 | 445 | 321.5 | 369.5 | 313.5 | 461.5 |
| | ET 3067 | 280 | 489 | 437.5 | 381.5 | 529 |
| | EC 3067 | 311 | 311 | 311 | 311 | 311 |
| | EC 3067* | 317 | 317 | 317 | 317 | 317 |
| FL620/10 | ET 3067 | 462 | 462 | 450 | 394 | 502 |
| FL635/10 | ET 3067 | 443 | 443 | 421 | 365 | 473 |



IEC Motor

| | | Lt | | | | | | | |
|-----------|-----------------|--------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2067 | MR-MR1-FS | | | | 359 | 425 | 457 | 467 | 497 |
| ED 2067 | FE | | | | 307 | 374 | 405 | 415 | 445 |
| ED 2067 | FP | | | | 303 | 369 | 401 | 411 | 441 |
| ET 3067 | MR-MR1-FS | 418 | 420 | 425 | 426 | 493 | 524 | 534 | 564 |
| ET 3067 | FE | 367 | 369 | 374 | 375 | 442 | 473 | 483 | 513 |
| ET 3067 | FP | 362 | 364 | 369 | 370 | 437 | 468 | 478 | 508 |
| PD 2067 | PD | | | | 399 | 466 | 497 | 507 | 537 |
| PD 3067 | PD | 458 | 460 | 465 | 466 | 533 | 564 | 574 | 604 |
| EC 3067 | MR-MR1-FE-FS-FP | 240 | 242 | 247 | 248 | 315 | 346 | 357 | |
| EC 3067* | MR-MR1-FE-FS-FP | 246 | 248 | 253 | 254 | 321 | 352 | 363 | |
| PDA3069 | PDA | 240 | 242 | 247 | 248 | 315 | 346 | 357 | |
| PDA 3069* | PDA | 246 | 248 | 253 | 254 | 321 | 352 | 363 | |

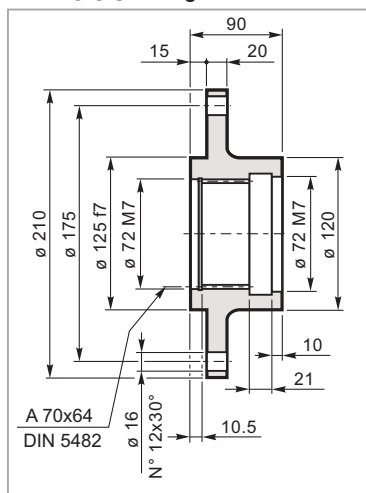


* (bg) 120



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 065

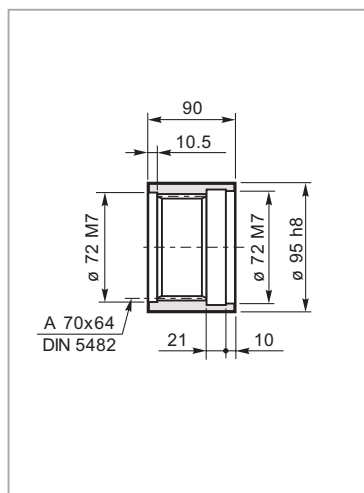


Mat. C40 UNI EN 10083
Code: 3702031800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 065

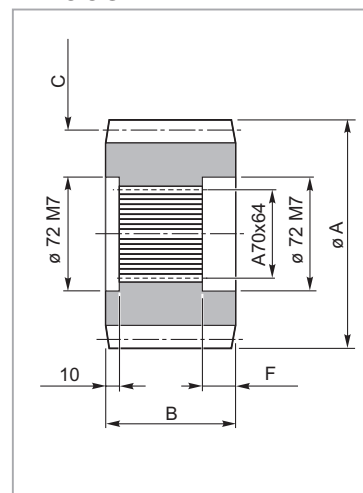


Mat. 39NiCrMo3 UNI EN 10083
Code: 39102440600



Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 065

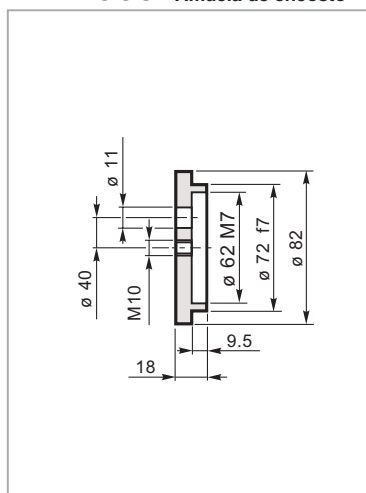


| code | A | B | C | F |
|---------------|-----|-------|------------------|----|
| 335.0463.0600 | 136 | 3.543 | M=8 Z=15 — | 31 |
| 335.2063.0600 | 160 | 3.543 | M=10 Z=13 X=0.5 | 31 |
| 335.3033.0600 | 165 | 3.543 | M=10 Z=13 X=0.95 | 31 |
| 335.3533.0600 | 149 | 3.543 | M=10 Z=12 X=0.5 | 31 |



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 065

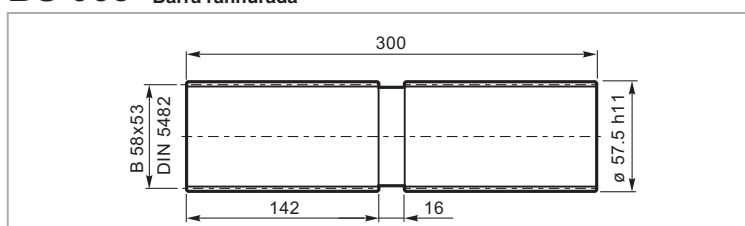


Mat. C40 UNI EN 10083
Code: 37201440800



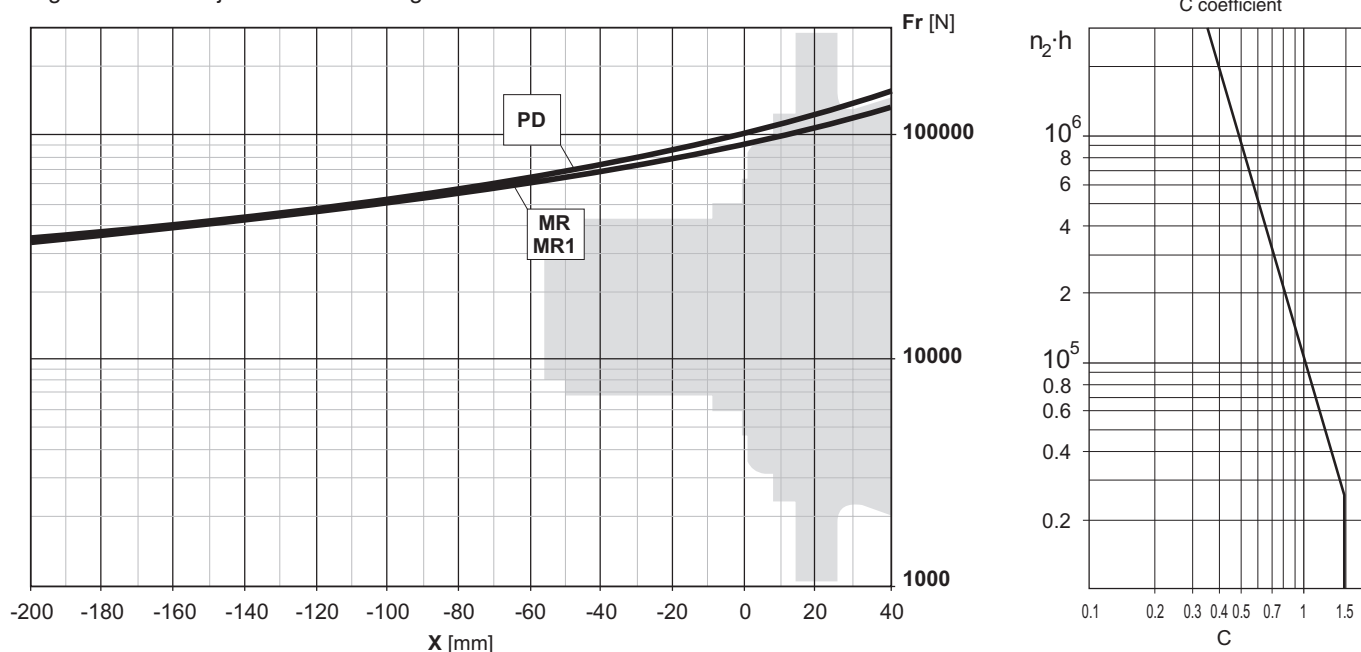
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 065

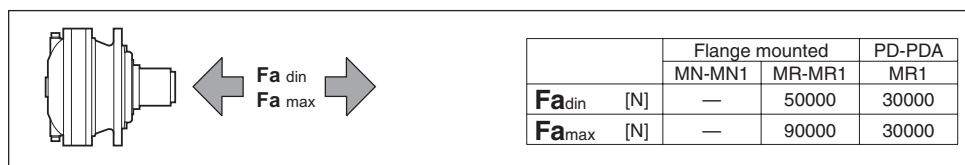


Mat. 39NiCrMo3 UNI EN 10083
Code: 39126930100

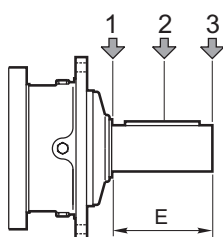
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saída



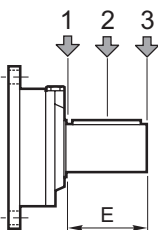
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



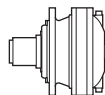
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

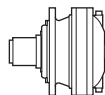


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



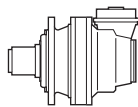
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1090 | | | | | | | | | | | | |
| 4.08 | 368 | 2936 | 113 | 245 | 3316 | 85 | 123 | 4082 | 52 | 15000 | 40 | |
| 5.05 | 297 | 3054 | 95 | 198 | 3449 | 72 | 99 | 4246 | 44.0 | 15000 | | |
| 5.81 | 258 | 3122 | 84 | 172 | 3526 | 64 | 86 | 4341 | 39.1 | 15000 | | |
| 6.92 | 217 | 3246 | 74 | 145 | 3666 | 55 | 72 | 4514 | 34.2 | 15000 | | |
| 8.70 | 172 | 2868 | 52 | 115 | 3077 | 37.0 | 57 | 3396 | 20.4 | 15000 | | |
| ED 2090 | | | | | | | | | | | | |
| 14.28 | 105 | 4276 | 47.0 | 70 | 4829 | 35.4 | 35.0 | 5945 | 21.8 | 15000 | 23 | |
| 16.85 | 89 | 4493 | 41.9 | 59 | 5075 | 31.5 | 29.7 | 6248 | 19.4 | 15000 | | |
| 17.68 | 85 | 4447 | 39.5 | 57 | 5022 | 29.8 | 28.3 | 6184 | 18.3 | 15000 | | |
| 21.09 | 71 | 4807 | 35.8 | 47.4 | 5428 | 27.0 | 23.7 | 6683 | 16.6 | 15000 | | |
| 24.48 | 61 | 5026 | 32.3 | 40.8 | 5676 | 24.3 | 20.4 | 6989 | 14.9 | 15000 | | |
| 29.58 | 51 | 5320 | 28.3 | 33.8 | 6008 | 21.3 | 16.9 | 7397 | 13.1 | 15000 | | |
| 30.30 | 49.5 | 5228 | 27.1 | 33.0 | 5904 | 20.4 | 16.5 | 7269 | 12.6 | 15000 | | |
| 36.61 | 41.0 | 5533 | 23.7 | 27.3 | 6249 | 17.9 | 13.7 | 7693 | 11.0 | 15000 | | |
| 41.52 | 36.1 | 4902 | 18.5 | 24.1 | 5107 | 12.9 | 12.0 | 5456 | 6.9 | 15000 | | |
| 44.98 | 33.3 | 3629 | 12.7 | 22.2 | 3800 | 8.8 | 11.1 | 4092 | 4.8 | 15000 | | |
| 50.17 | 29.9 | 4998 | 15.7 | 19.9 | 5202 | 10.9 | 10.0 | 5552 | 5.8 | 15000 | | |
| ET 3090 | | | | | | | | | | | | |
| 58.98 | 25.4 | 6543 | 17.4 | 17.0 | 7390 | 13.1 | 8.5 | 9098 | 8.1 | 15000 | | 15 |
| 61.86 | 24.2 | 6476 | 16.4 | 16.2 | 7314 | 12.4 | 8.1 | 8304 | 7.0 | 15000 | | |
| 73.83 | 20.3 | 7000 | 14.9 | 13.5 | 7905 | 11.2 | 6.8 | 9732 | 6.9 | 15000 | | |
| 75.40 | 19.9 | 7044 | 14.7 | 13.3 | 7955 | 11.1 | 6.6 | 9794 | 6.8 | 15000 | | |
| 87.12 | 17.2 | 7356 | 13.3 | 11.5 | 8308 | 10.0 | 5.7 | 10228 | 6.1 | 15000 | | |
| 101.1 | 14.8 | 7692 | 12.0 | 9.9 | 8687 | 9.0 | 4.9 | 10384 | 5.4 | 15000 | | |
| 109.1 | 13.8 | 7869 | 11.3 | 9.2 | 8887 | 8.5 | 4.6 | 10941 | 5.3 | 15000 | | |
| 126.6 | 11.9 | 8228 | 10.2 | 7.9 | 9293 | 7.7 | 4.0 | 11441 | 4.7 | 15000 | | |
| 146.9 | 10.2 | 8604 | 9.2 | 6.8 | 9717 | 6.9 | 3.4 | 10774 | 3.8 | 15000 | | |
| 152.9 | 9.8 | 8709 | 8.9 | 6.5 | 9835 | 6.7 | 3.3 | 12023 | 4.1 | 15000 | | |
| 177.5 | 8.5 | 9107 | 8.1 | 5.6 | 10248 | 6.0 | 2.8 | 10973 | 3.2 | 15000 | | |
| 209.2 | 7.2 | 7381 | 5.5 | 4.8 | 7820 | 3.9 | 2.4 | 8994 | 2.3 | 15000 | | |
| 219.7 | 6.8 | 8429 | 6.0 | 4.6 | 9159 | 4.4 | 2.3 | 10512 | 2.5 | 15000 | | |
| 252.7 | 5.9 | 7502 | 4.7 | 4.0 | 8129 | 3.4 | 2.0 | 9337 | 1.9 | 15000 | | |
| 265.4 | 5.7 | 8765 | 5.2 | 3.8 | 9515 | 3.8 | 1.9 | 10906 | 2.2 | 15000 | | |
| 305.4 | 4.9 | 7776 | 4.0 | 3.3 | 8446 | 2.9 | 1.6 | 9689 | 1.7 | 15000 | | |
| 363.7 | 4.1 | 6105 | 2.6 | 2.7 | 6649 | 1.9 | 1.4 | 7657 | 1.1 | 15000 | | |
| EQ 4090 | | | | | | | | | | | | |
| 409.3 | 3.7 | 11701 | 4.5 | 2.4 | 12828 | 3.3 | 1.2 | 13665 | 1.7 | 15000 | 11 | |
| 443.0 | 3.4 | 11982 | 4.2 | 2.3 | 12979 | 3.1 | 1.1 | 13813 | 1.6 | 15000 | | |
| 512.4 | 2.9 | 12392 | 3.8 | 2.0 | 13025 | 2.7 | 0.98 | 14090 | 1.4 | 15000 | | |
| 555.6 | 2.7 | 12244 | 3.5 | 1.8 | 12716 | 2.4 | 0.90 | 14246 | 1.3 | 15000 | | |
| 654.3 | 2.3 | 12434 | 3.0 | 1.5 | 13023 | 2.1 | 0.76 | 14565 | 1.2 | 15000 | | |
| 718.5 | 2.1 | 13004 | 2.8 | 1.4 | 13423 | 2.0 | 0.70 | 14750 | 1.1 | 15000 | | |
| 779.1 | 1.9 | 11377 | 2.3 | 1.3 | 11906 | 1.6 | 0.64 | 13853 | 0.93 | 15000 | | |
| 878.3 | 1.7 | 12778 | 2.3 | 1.1 | 13797 | 1.6 | 0.57 | 15155 | 0.90 | 15000 | | |
| 1019 | 1.5 | 11665 | 1.8 | 0.98 | 12638 | 1.3 | 0.49 | 14664 | 0.75 | 15000 | | |
| 1145 | 1.3 | 13474 | 1.8 | 0.87 | 14304 | 1.3 | 0.44 | 15703 | 0.72 | 15000 | | |
| 1232 | 1.2 | 12047 | 1.5 | 0.81 | 13170 | 1.1 | 0.41 | 15254 | 0.65 | 15000 | | |
| 1329 | 1.1 | 13813 | 1.6 | 0.75 | 14595 | 1.2 | 0.38 | 16018 | 0.63 | 15000 | | |
| 1606 | 0.93 | 14174 | 1.4 | 0.62 | 14973 | 0.98 | 0.31 | 16427 | 0.54 | 15000 | | |
| 1864 | 0.80 | 13195 | 1.1 | 0.54 | 14389 | 0.81 | 0.27 | 16606 | 0.47 | 15000 | | |
| 1988 | 0.75 | 12975 | 1.0 | 0.50 | 13987 | 0.74 | 0.25 | 15714 | 0.41 | 15000 | | |
| 2307 | 0.65 | 13340 | 0.91 | 0.43 | 14375 | 0.65 | 0.22 | 16026 | 0.36 | 15000 | | |
| 2524 | 0.59 | 9025 | 0.56 | 0.40 | 9751 | 0.41 | 0.20 | 11100 | 0.23 | 15000 | | |
| 2787 | 0.54 | 13815 | 0.78 | 0.36 | 14880 | 0.56 | 0.18 | 16430 | 0.31 | 15000 | | |
| 3207 | 0.47 | 12288 | 0.60 | 0.31 | 13240 | 0.43 | 0.16 | 15009 | 0.25 | 15000 | | |

1500
HOURS LIFE



090

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1090 | | | | | | | | | | | | |
| 4.08 | 368 | 5188 | 200 | 245 | 5859 | 150 | 123 | 7213 | 93 | 15000 | 40 | |
| 5.05 | 297 | 5396 | 168 | 198 | 6094 | 126 | 99 | 7502 | 78 | 15000 | | |
| 5.81 | 258 | 5516 | 149 | 172 | 6230 | 112 | 86 | 6866 | 62 | 15000 | | |
| 6.92 | 217 | 4667 | 106 | 145 | 4967 | 75 | 72 | 5411 | 40.9 | 15000 | | |
| 8.70 | 172 | 3564 | 64 | 115 | 3791 | 45.6 | 57 | 4142 | 24.9 | 15000 | | |
| ED 2090 | | | | | | | | | | | | |
| 14.28 | 105 | 7554 | 83 | 70 | 8532 | 63 | 35.0 | 10504 | 38.5 | 15000 | 23 | |
| 16.85 | 89 | 7939 | 74 | 59 | 8966 | 56 | 29.7 | 11038 | 34.3 | 15000 | | |
| 17.68 | 85 | 7814 | 69 | 57 | 8157 | 48.3 | 28.3 | 9233 | 27.4 | 15000 | | |
| 21.09 | 71 | 8492 | 63 | 47.4 | 9591 | 47.6 | 23.7 | 11648 | 28.9 | 15000 | | |
| 24.48 | 61 | 8880 | 57 | 40.8 | 9757 | 41.7 | 20.4 | 10681 | 22.8 | 15000 | | |
| 29.58 | 51 | 7971 | 42.3 | 33.8 | 8475 | 30.0 | 16.9 | 9249 | 16.4 | 15000 | | |
| 30.30 | 49.5 | 8266 | 42.9 | 33.0 | 8938 | 30.9 | 16.5 | 10306 | 17.8 | 15000 | | |
| 36.61 | 41.0 | 8533 | 36.6 | 27.3 | 9301 | 26.6 | 13.7 | 10701 | 15.3 | 15000 | | |
| 41.52 | 36.1 | 5815 | 22.0 | 24.1 | 6246 | 15.8 | 12.0 | 7230 | 9.1 | 15000 | | |
| 44.98 | 33.3 | 4402 | 15.4 | 22.2 | 4643 | 10.8 | 11.1 | 5460 | 6.4 | 15000 | | |
| 50.17 | 29.9 | 5956 | 18.6 | 19.9 | 6506 | 13.6 | 10.0 | 7515 | 7.8 | 15000 | | |
| ET 3090 | | | | | | | | | | | | |
| 58.98 | 25.4 | 11561 | 30.8 | 17.0 | 12687 | 22.5 | 8.5 | 13568 | 12.0 | 15000 | | 15 |
| 61.86 | 24.2 | 9533 | 24.2 | 16.2 | 10349 | 17.5 | 8.1 | 11850 | 10.0 | 15000 | | |
| 73.83 | 20.3 | 12245 | 26.1 | 13.5 | 12977 | 18.4 | 6.8 | 13995 | 9.9 | 15000 | | |
| 75.40 | 19.9 | 10714 | 22.3 | 13.3 | 11209 | 15.6 | 6.6 | 12532 | 8.7 | 15000 | | |
| 87.12 | 17.2 | 12649 | 22.8 | 11.5 | 13036 | 15.7 | 5.7 | 14316 | 8.6 | 15000 | | |
| 101.1 | 14.8 | 11074 | 17.2 | 9.9 | 11557 | 12.0 | 4.9 | 13379 | 6.9 | 15000 | | |
| 109.1 | 13.8 | 12394 | 17.9 | 9.2 | 13221 | 12.7 | 4.6 | 14761 | 7.1 | 15000 | | |
| 126.6 | 11.9 | 12590 | 15.6 | 7.9 | 13678 | 11.3 | 4.0 | 15062 | 6.2 | 15000 | | |
| 146.9 | 10.2 | 11519 | 12.3 | 6.8 | 12458 | 8.9 | 3.4 | 14505 | 5.2 | 15000 | | |
| 152.9 | 9.8 | 13016 | 13.4 | 6.5 | 14063 | 9.6 | 3.3 | 15452 | 5.3 | 15000 | | |
| 177.5 | 8.5 | 11854 | 10.5 | 5.6 | 12999 | 7.7 | 2.8 | 15098 | 4.5 | 15000 | | |
| 209.2 | 7.2 | 10493 | 7.9 | 4.8 | 11337 | 5.7 | 2.4 | 12901 | 3.2 | 15000 | | |
| 219.7 | 6.8 | 12238 | 8.8 | 4.6 | 13209 | 6.3 | 2.3 | 15010 | 3.6 | 15000 | | |
| 252.7 | 5.9 | 10881 | 6.8 | 4.0 | 11749 | 4.9 | 2.0 | 13357 | 2.8 | 15000 | | |
| 265.4 | 5.7 | 12649 | 7.5 | 3.8 | 13683 | 5.4 | 1.9 | 15470 | 3.1 | 15000 | | |
| 305.4 | 4.9 | 11280 | 5.8 | 3.3 | 12171 | 4.2 | 1.6 | 13826 | 2.4 | 15000 | | |
| 363.7 | 4.1 | 8950 | 3.9 | 2.7 | 9673 | 2.8 | 1.4 | 11016 | 1.6 | 15000 | | |
| EQ 4090 | | | | | | | | | | | | |
| 409.3 | 3.7 | 15216 | 5.8 | 2.4 | 16068 | 4.1 | 1.2 | 17617 | 2.3 | 15000 | 11 | |
| 443.0 | 3.4 | 15379 | 5.5 | 2.3 | 16239 | 3.8 | 1.1 | 17801 | 2.1 | 15000 | | |
| 512.4 | 2.9 | 15683 | 4.8 | 2.0 | 16557 | 3.4 | 0.98 | 18145 | 1.9 | 15000 | | |
| 555.6 | 2.7 | 15855 | 4.5 | 1.8 | 16736 | 3.2 | 0.90 | 18339 | 1.7 | 15000 | | |
| 654.3 | 2.3 | 16205 | 3.9 | 1.5 | 17103 | 2.7 | 0.76 | 18736 | 1.5 | 15000 | | |
| 718.5 | 2.1 | 16409 | 3.6 | 1.4 | 17316 | 2.5 | 0.70 | 18966 | 1.4 | 15000 | | |
| 779.1 | 1.9 | 16339 | 3.3 | 1.3 | 17502 | 2.4 | 0.64 | 19168 | 1.3 | 15000 | | |
| 878.3 | 1.7 | 16853 | 3.0 | 1.1 | 17781 | 2.1 | 0.57 | 19469 | 1.2 | 15000 | | |
| 1019 | 1.5 | 17189 | 2.6 | 0.98 | 18133 | 1.9 | 0.49 | 19850 | 1.0 | 15000 | | |
| 1145 | 1.3 | 17455 | 2.4 | 0.87 | 18411 | 1.7 | 0.44 | 20151 | 0.92 | 15000 | | |
| 1232 | 1.2 | 17624 | 2.2 | 0.81 | 18588 | 1.6 | 0.41 | 20343 | 0.87 | 15000 | | |
| 1329 | 1.1 | 17801 | 2.1 | 0.75 | 18774 | 1.5 | 0.38 | 20544 | 0.81 | 15000 | | |
| 1606 | 0.93 | 18249 | 1.8 | 0.62 | 19243 | 1.3 | 0.31 | 21052 | 0.69 | 15000 | | |
| 1864 | 0.80 | 18609 | 1.6 | 0.54 | 19620 | 1.1 | 0.27 | 21459 | 0.60 | 15000 | | |
| 1988 | 0.75 | 17448 | 1.4 | 0.50 | 18393 | 0.97 | 0.25 | 20113 | 0.53 | 15000 | | |
| 2307 | 0.65 | 17790 | 1.2 | 0.43 | 18751 | 0.85 | 0.22 | 20501 | 0.47 | 15000 | | |
| 2524 | 0.59 | 12839 | 0.80 | 0.40 | 13806 | 0.57 | 0.20 | 15603 | 0.32 | 15000 | | |
| 2787 | 0.54 | 18233 | 1.0 | 0.36 | 19215 | 0.72 | 0.18 | 21003 | 0.40 | 15000 | | |
| 3207 | 0.47 | 17289 | 0.85 | 0.31 | 18557 | 0.61 | 0.16 | 20383 | 0.33 | 15000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|---------------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 2090 - PDA 2090 | | | | | | | | | | | |
| 12.24 | 123 | 2760 | 35.4 | 82 | 3117 | 26.7 | 40.8 | 3838 | 16.4 | 15000 | 18 |
| 15.15 | 99 | 3416 | 35.4 | 66 | 3858 | 26.7 | 33.0 | 4750 | 16.4 | 15000 | |
| 17.43 | 86 | 3931 | 35.4 | 57 | 4439 | 26.7 | 28.7 | 5465 | 16.4 | 15000 | |
| 20.76 | 72 | 4514 | 34.2 | 48.2 | 4753 | 24.0 | 24.1 | 5107 | 12.9 | 15000 | |
| 23.33 | 64 | 2283 | 15.4 | 42.9 | 2578 | 11.6 | 21.4 | 3174 | 7.1 | 15000 | |
| 26.84 | 56 | 2627 | 15.4 | 37.3 | 2966 | 11.6 | 18.6 | 3652 | 7.1 | 15000 | |
| 31.97 | 46.9 | 3129 | 15.4 | 31.3 | 3533 | 11.6 | 15.6 | 4350 | 7.1 | 15000 | |
| 40.19 | 37.3 | 3582 | 14.0 | 24.9 | 3753 | 9.8 | 12.4 | 4045 | 5.3 | 15000 | |
| EC 3090 - PDA 3090 | | | | | | | | | | | |
| 42.84 | 35.0 | 5945 | 21.8 | 23.3 | 6714 | 16.4 | 11.7 | 8266 | 10.1 | 15000 | 15 |
| 50.55 | 29.7 | 6248 | 19.4 | 19.8 | 7056 | 14.6 | 9.9 | 8687 | 9.0 | 15000 | |
| 53.03 | 28.3 | 6184 | 18.3 | 18.9 | 6983 | 13.8 | 9.4 | 8194 | 8.1 | 15000 | |
| 65.97 | 22.7 | 6457 | 15.4 | 15.2 | 7292 | 11.6 | 7.6 | 8977 | 7.1 | 15000 | |
| 73.44 | 20.4 | 6989 | 14.9 | 13.6 | 7893 | 11.3 | 6.8 | 9717 | 6.9 | 15000 | |
| 77.85 | 19.3 | 7112 | 14.4 | 12.8 | 8032 | 10.8 | 6.4 | 9888 | 6.7 | 15000 | |
| 90.90 | 16.5 | 7269 | 12.6 | 11.0 | 8085 | 9.3 | 5.5 | 8813 | 5.1 | 15000 | |
| 97.45 | 15.4 | 7608 | 12.3 | 10.3 | 8592 | 9.2 | 5.1 | 10578 | 5.7 | 15000 | |
| 113.1 | 13.3 | 7955 | 11.1 | 8.8 | 8984 | 8.3 | 4.4 | 10501 | 4.9 | 15000 | |
| 120.6 | 12.4 | 7913 | 10.3 | 8.3 | 8286 | 7.2 | 4.1 | 9334 | 4.1 | 15000 | |
| 140.0 | 10.7 | 8104 | 9.1 | 7.1 | 8393 | 6.3 | 3.6 | 9617 | 3.6 | 15000 | |
| 161.1 | 9.3 | 7216 | 7.0 | 6.2 | 7474 | 4.9 | 3.1 | 8537 | 2.8 | 15000 | |
| 169.1 | 8.9 | 8238 | 7.7 | 5.9 | 8684 | 5.4 | 3.0 | 9985 | 3.1 | 15000 | |
| 194.6 | 7.7 | 7336 | 5.9 | 5.1 | 7704 | 4.1 | 2.6 | 8867 | 2.4 | 15000 | |
| 231.8 | 6.5 | 5772 | 3.9 | 4.3 | 6047 | 2.7 | 2.2 | 6990 | 1.6 | 15000 | |
| EC 4090 - PDA 4090 | | | | | | | | | | | |
| 285.8 | 5.2 | 8898 | 4.9 | 3.5 | 9657 | 3.5 | 1.7 | 11063 | 2.0 | 15000 | 10 |
| 321.5 | 4.7 | 10884 | 5.3 | 3.1 | 12248 | 4.0 | 1.6 | 13220 | 2.2 | 15000 | |
| 341.1 | 4.4 | 11078 | 5.1 | 2.9 | 12149 | 3.7 | 1.5 | 13144 | 2.0 | 15000 | |
| 395.8 | 3.8 | 11585 | 4.6 | 2.5 | 12747 | 3.4 | 1.3 | 13603 | 1.8 | 15000 | |
| 467.1 | 3.2 | 12173 | 4.1 | 2.1 | 12996 | 2.9 | 1.1 | 13913 | 1.6 | 15000 | |
| 503.8 | 3.0 | 12131 | 3.8 | 2.0 | 12602 | 2.6 | 0.99 | 14058 | 1.5 | 15000 | |
| 564.4 | 2.7 | 12624 | 3.5 | 1.8 | 13056 | 2.4 | 0.89 | 14276 | 1.3 | 15000 | |
| 623.6 | 2.4 | 10399 | 2.6 | 1.6 | 11250 | 1.9 | 0.80 | 12829 | 1.1 | 15000 | |
| 706.5 | 2.1 | 12523 | 2.8 | 1.4 | 13246 | 2.0 | 0.71 | 14717 | 1.1 | 15000 | |
| 820.0 | 1.8 | 11431 | 2.2 | 1.2 | 12043 | 1.5 | 0.61 | 14005 | 0.89 | 15000 | |
| 874.5 | 1.7 | 11105 | 2.0 | 1.1 | 12000 | 1.4 | 0.57 | 13661 | 0.82 | 15000 | |
| 1015 | 1.5 | 11427 | 1.8 | 0.99 | 12342 | 1.3 | 0.49 | 14042 | 0.72 | 15000 | |
| 1168 | 1.3 | 10154 | 1.4 | 0.86 | 10972 | 0.98 | 0.43 | 12491 | 0.56 | 15000 | |
| 1226 | 1.2 | 11847 | 1.5 | 0.82 | 12789 | 1.1 | 0.41 | 14537 | 0.62 | 15000 | |
| 1411 | 1.1 | 10530 | 1.2 | 0.71 | 11371 | 0.84 | 0.35 | 12934 | 0.48 | 15000 | |
| 1680 | 0.89 | 8340 | 0.78 | 0.60 | 9023 | 0.56 | 0.30 | 10291 | 0.32 | 15000 | |
| 1748 | 0.86 | 6325 | 0.57 | 0.57 | 6890 | 0.41 | 0.29 | 7939 | 0.24 | 15000 | |
| 2113 | 0.71 | 6585 | 0.49 | 0.47 | 7165 | 0.36 | 0.24 | 8245 | 0.20 | 15000 | |

Tutti i rapporti evidenziati (es. 12.24) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 12.24) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

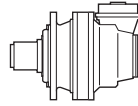
Alle mit (es. 12.24) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 12.24) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 12.24) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 12.24) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|---------------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 2090 - PDA 2090 | | | | | | | | | | | |
| 12.24 | 123 | 4877 | 63 | 82 | 5507 | 47.1 | 40.8 | 6781 | 29.0 | 5000 | 18 |
| 15.15 | 99 | 6036 | 63 | 66 | 6817 | 47.1 | 33.0 | 8393 | 29.0 | 5000 | |
| 17.43 | 86 | 6866 | 62 | 57 | 7169 | 43.1 | 28.7 | 7941 | 23.9 | 5000 | |
| 20.76 | 72 | 5411 | 40.9 | 48.2 | 5650 | 28.5 | 24.1 | 6246 | 15.8 | 5000 | |
| 23.33 | 64 | 4034 | 27.2 | 42.9 | 4556 | 20.5 | 21.4 | 5609 | 12.6 | 5000 | |
| 26.84 | 56 | 4641 | 27.2 | 37.3 | 5241 | 20.5 | 18.6 | 6453 | 12.6 | 5000 | |
| 31.97 | 46.9 | 5528 | 27.2 | 31.3 | 5896 | 19.3 | 15.6 | 6849 | 11.2 | 5000 | |
| 40.19 | 37.3 | 4349 | 17.0 | 24.9 | 4539 | 11.8 | 12.4 | 5322 | 6.9 | 5000 | |
| EC 3090 - PDA 3090 | | | | | | | | | | | |
| 42.84 | 35.0 | 10504 | 38.5 | 23.3 | 11863 | 29.0 | 11.7 | 13030 | 15.9 | 5000 | 15 |
| 50.55 | 29.7 | 11039 | 34.3 | 19.8 | 12309 | 25.5 | 9.9 | 13280 | 13.8 | 5000 | |
| 53.03 | 28.3 | 9233 | 27.4 | 18.9 | 10034 | 19.8 | 9.4 | 11504 | 11.4 | 5000 | |
| 65.97 | 22.7 | 11408 | 27.2 | 15.2 | 12883 | 20.5 | 7.6 | 13780 | 10.9 | 5000 | |
| 73.44 | 20.4 | 10681 | 22.8 | 13.6 | 11177 | 15.9 | 6.8 | 12458 | 8.9 | 5000 | |
| 77.85 | 19.3 | 12373 | 25.0 | 12.8 | 12996 | 17.5 | 6.4 | 14097 | 9.5 | 5000 | |
| 90.90 | 16.5 | 10306 | 17.8 | 11.0 | 11165 | 12.9 | 5.5 | 12749 | 7.3 | 5000 | |
| 97.45 | 15.4 | 12244 | 19.7 | 10.3 | 12880 | 13.8 | 5.1 | 14537 | 7.8 | 5000 | |
| 113.1 | 13.3 | 11209 | 15.6 | 8.8 | 11730 | 10.9 | 4.4 | 13711 | 6.3 | 5000 | |
| 120.6 | 12.4 | 10900 | 14.2 | 8.3 | 11792 | 10.2 | 4.1 | 13442 | 5.8 | 5000 | |
| 140.0 | 10.7 | 11222 | 12.6 | 7.1 | 12133 | 9.1 | 3.6 | 13818 | 5.2 | 5000 | |
| 161.1 | 9.3 | 9975 | 9.7 | 6.2 | 10788 | 7.0 | 3.1 | 12293 | 4.0 | 5000 | |
| 169.1 | 8.9 | 11641 | 10.8 | 5.9 | 12527 | 7.8 | 3.0 | 14309 | 4.4 | 5000 | |
| 194.6 | 7.7 | 10348 | 8.4 | 5.1 | 11184 | 6.0 | 2.6 | 12731 | 3.4 | 5000 | |
| 231.8 | 6.5 | 8194 | 5.6 | 4.3 | 8872 | 4.0 | 2.2 | 10128 | 2.3 | 5000 | |
| EC 4090 - PDA 4090 | | | | | | | | | | | |
| 285.8 | 5.2 | 12862 | 7.1 | 3.5 | 13871 | 5.1 | 1.7 | 15623 | 2.9 | 5000 | 10 |
| 321.5 | 4.7 | 14727 | 7.2 | 3.1 | 15556 | 5.1 | 1.6 | 17064 | 2.8 | 5000 | |
| 341.1 | 4.4 | 14845 | 6.8 | 2.9 | 15680 | 4.8 | 1.5 | 17198 | 2.6 | 5000 | |
| 395.8 | 3.8 | 15148 | 6.0 | 2.5 | 15996 | 4.2 | 1.3 | 17539 | 2.3 | 5000 | |
| 467.1 | 3.2 | 15489 | 5.2 | 2.1 | 16354 | 3.7 | 1.1 | 17926 | 2.0 | 5000 | |
| 503.8 | 3.0 | 15648 | 4.9 | 2.0 | 16520 | 3.4 | 0.99 | 18105 | 1.9 | 5000 | |
| 564.4 | 2.7 | 15888 | 4.4 | 1.8 | 16771 | 3.1 | 0.89 | 18377 | 1.7 | 5000 | |
| 623.6 | 2.4 | 14860 | 3.7 | 1.6 | 15804 | 2.7 | 0.80 | 17311 | 1.5 | 5000 | |
| 706.5 | 2.1 | 16372 | 3.6 | 1.4 | 17278 | 2.6 | 0.71 | 18925 | 1.4 | 5000 | |
| 820.0 | 1.8 | 16511 | 3.2 | 1.2 | 17621 | 2.3 | 0.61 | 19296 | 1.2 | 5000 | |
| 874.5 | 1.7 | 15664 | 2.8 | 1.1 | 16524 | 2.0 | 0.57 | 18090 | 1.1 | 5000 | |
| 1015 | 1.5 | 15975 | 2.5 | 0.99 | 16850 | 1.7 | 0.49 | 18443 | 0.95 | 5000 | |
| 1168 | 1.3 | 14446 | 1.9 | 0.86 | 15535 | 1.4 | 0.43 | 17558 | 0.79 | 5000 | |
| 1226 | 1.2 | 16379 | 2.1 | 0.82 | 17273 | 1.5 | 0.41 | 18901 | 0.81 | 5000 | |
| 1411 | 1.1 | 14946 | 1.7 | 0.71 | 16067 | 1.2 | 0.35 | 18149 | 0.67 | 5000 | |
| 1680 | 0.89 | 11926 | 1.1 | 0.60 | 12836 | 0.80 | 0.30 | 14526 | 0.45 | 5000 | |
| 1748 | 0.86 | 9290 | 0.84 | 0.57 | 10042 | 0.60 | 0.29 | 11440 | 0.34 | 5000 | |
| 2113 | 0.71 | 9636 | 0.72 | 0.47 | 10410 | 0.52 | 0.24 | 11847 | 0.29 | 5000 | |

Tutti i rapporti evidenziati (es. 12.24) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 12.24) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

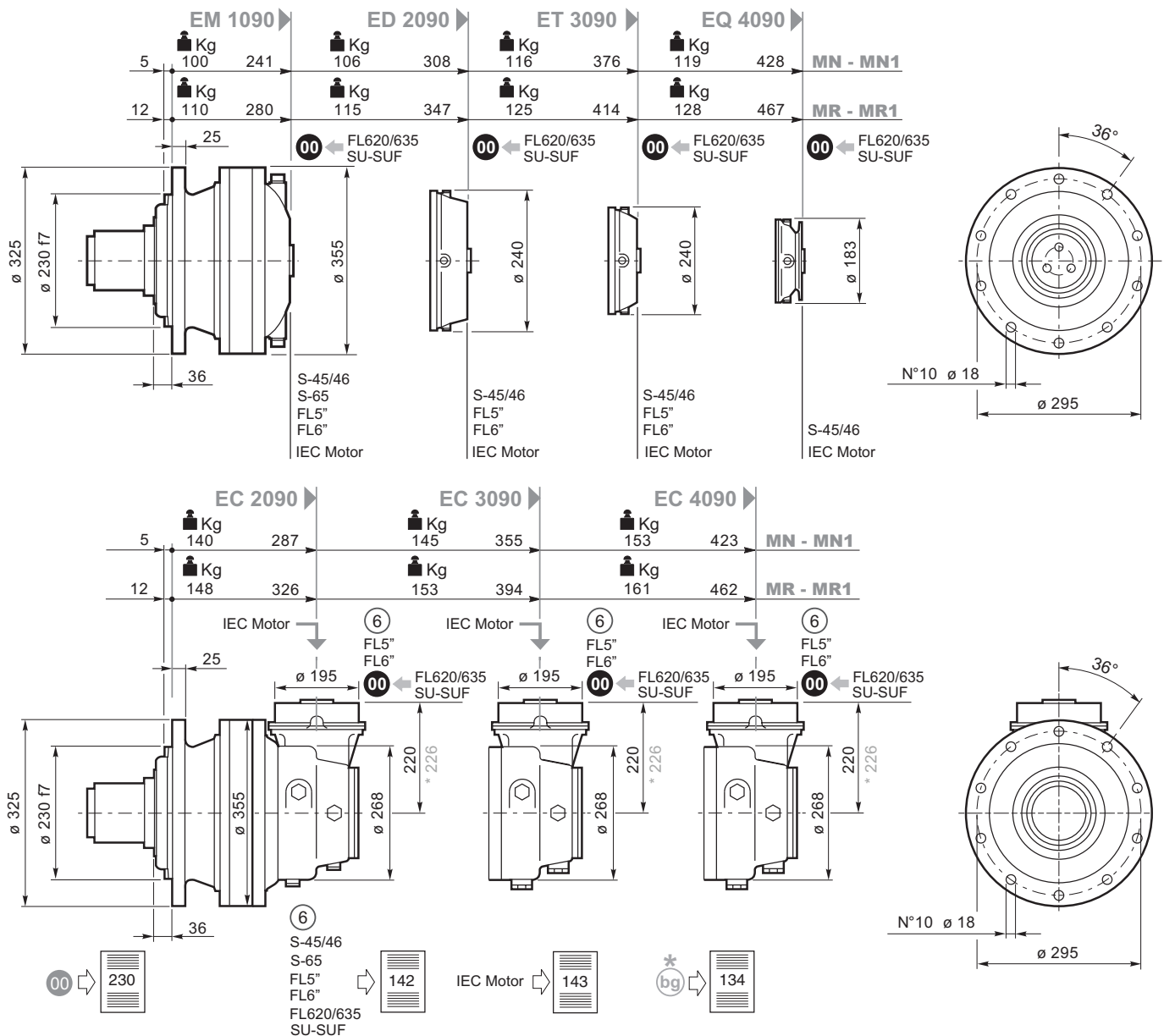
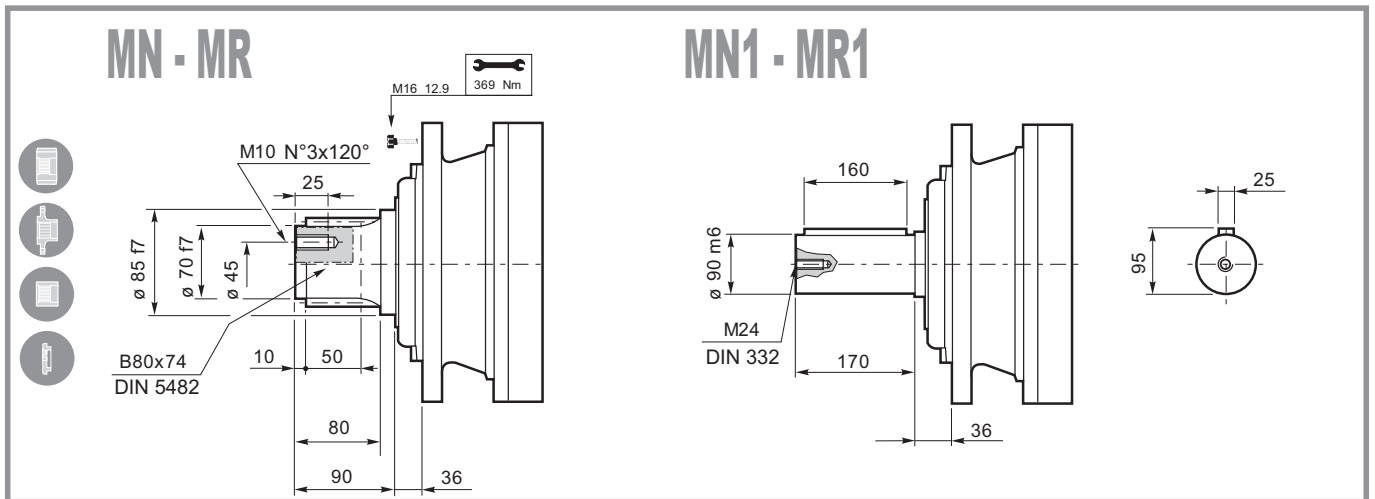
Alle mit (es. 12.24) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

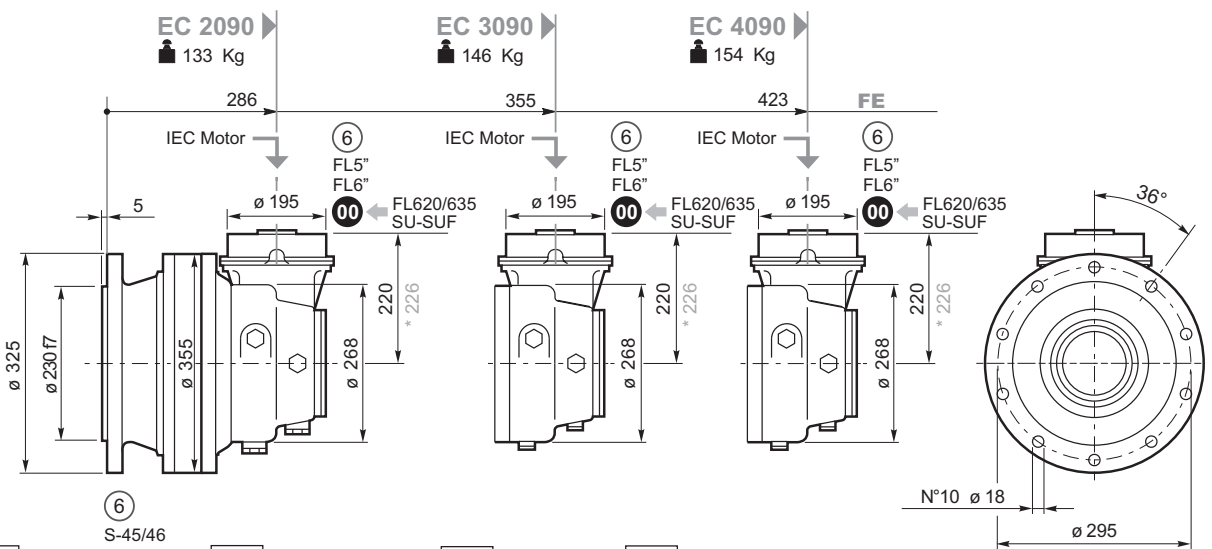
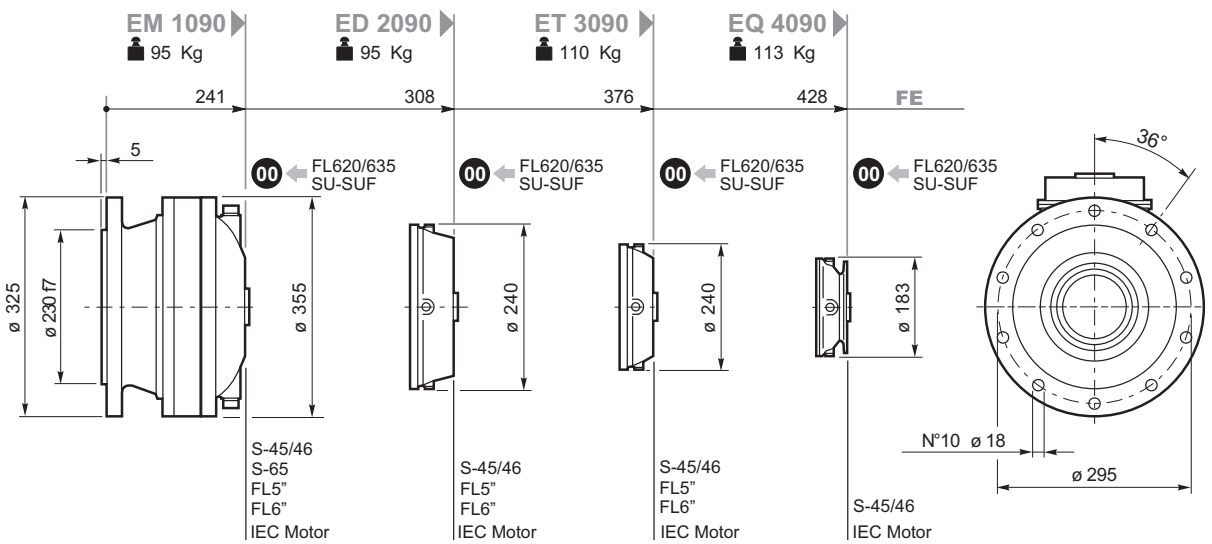
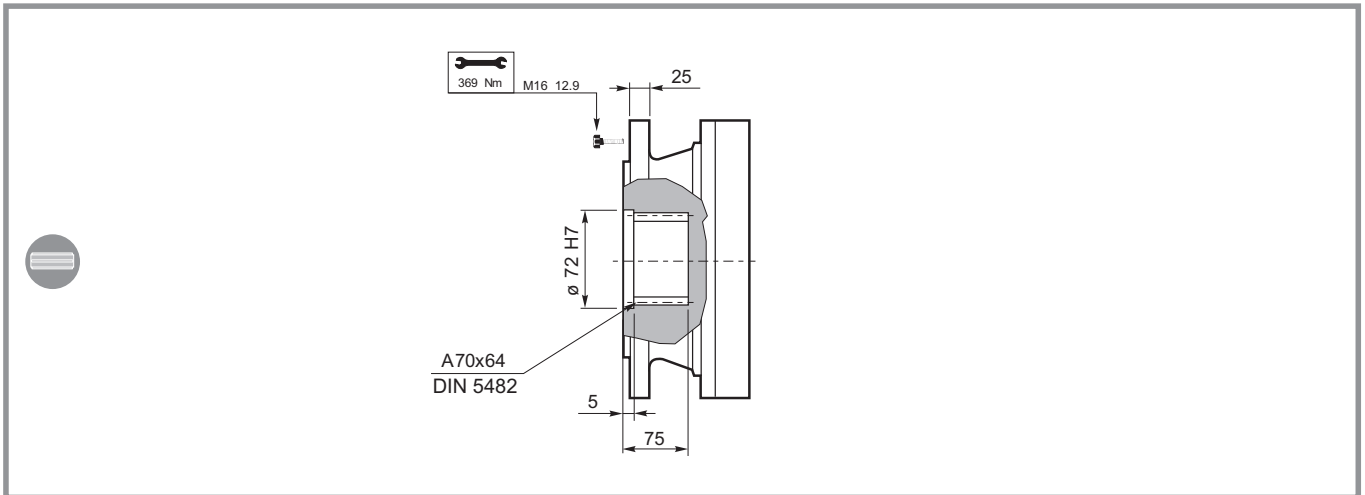
Les rapports repérés par (es. 12.24) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

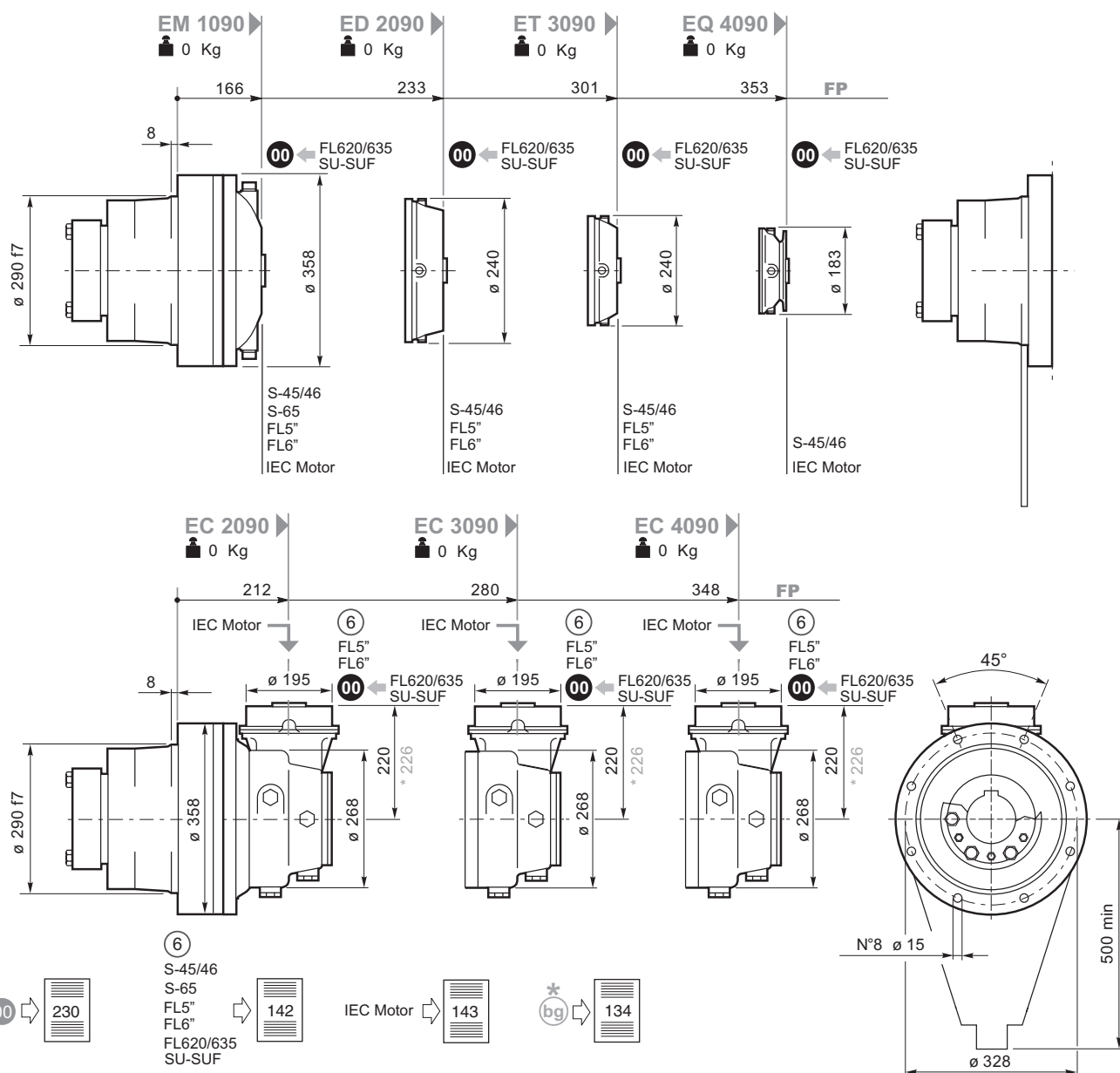
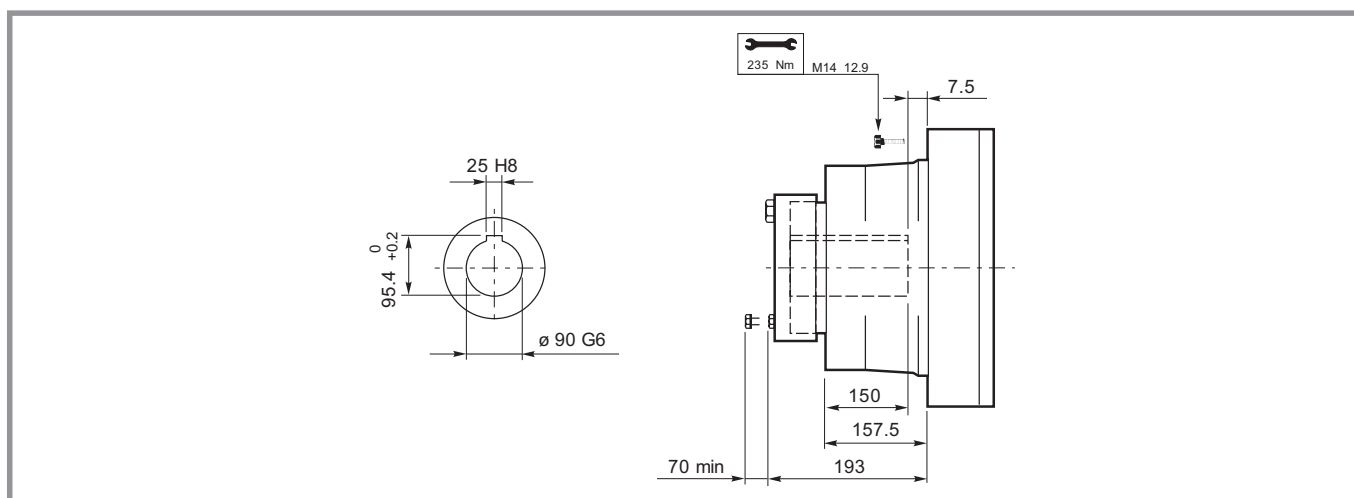
Todas las relaciones indicadas con (es. 12.24) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

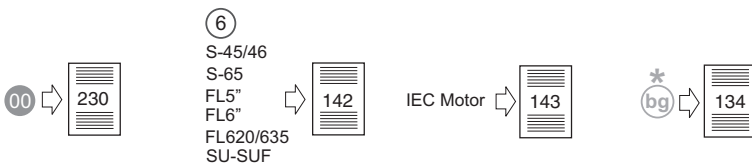
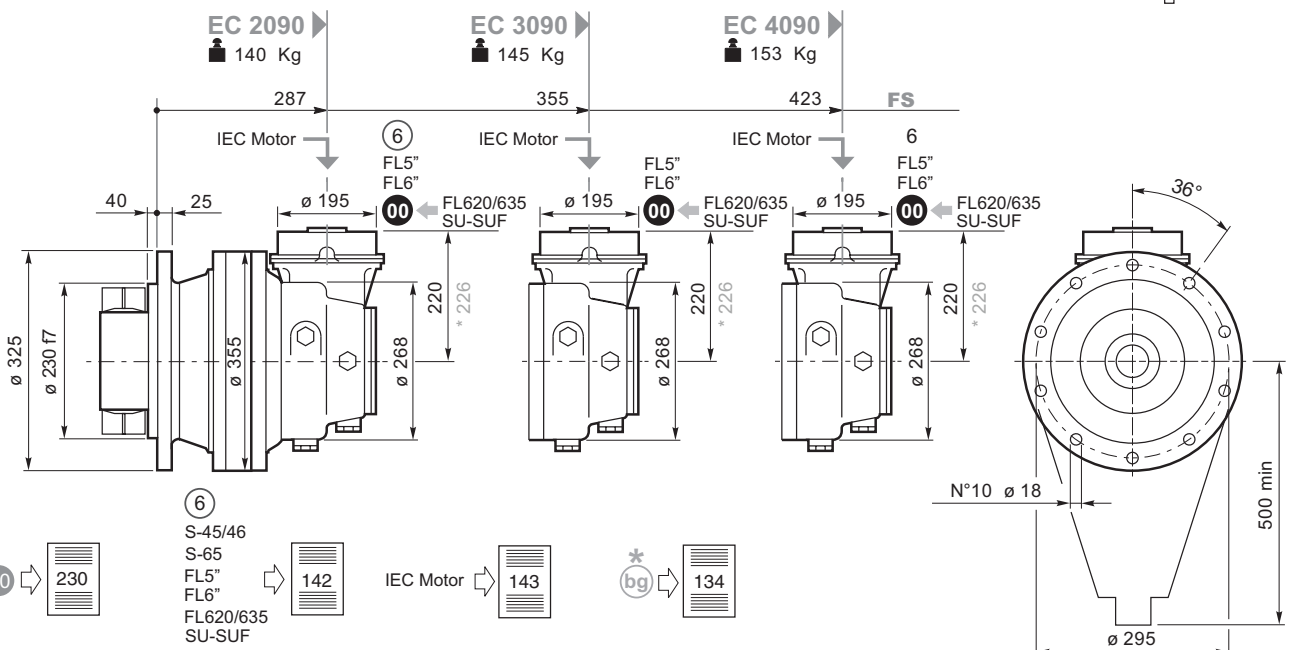
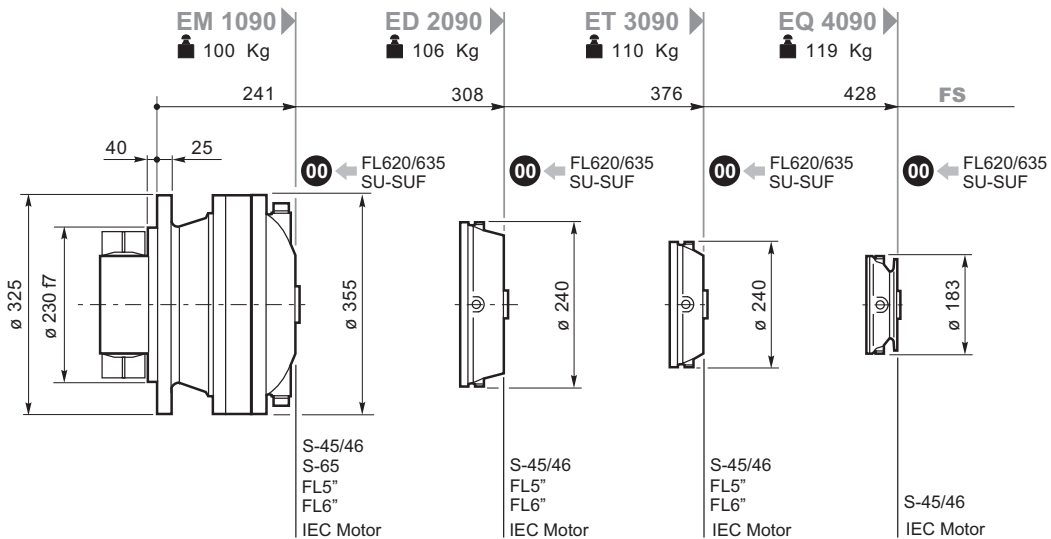
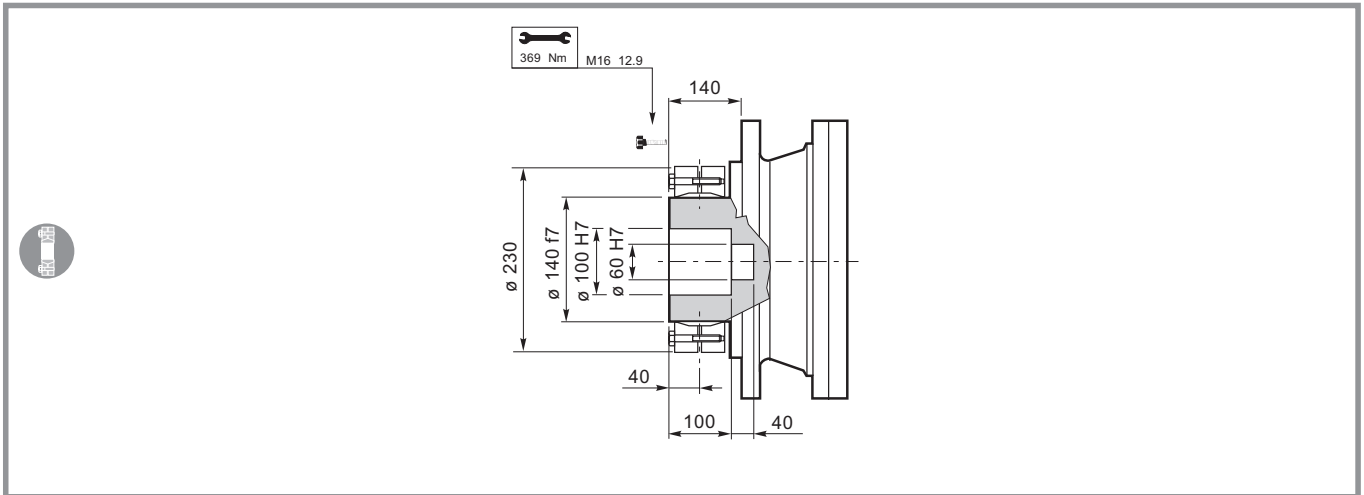
As relações marcadas com (es. 12.24) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

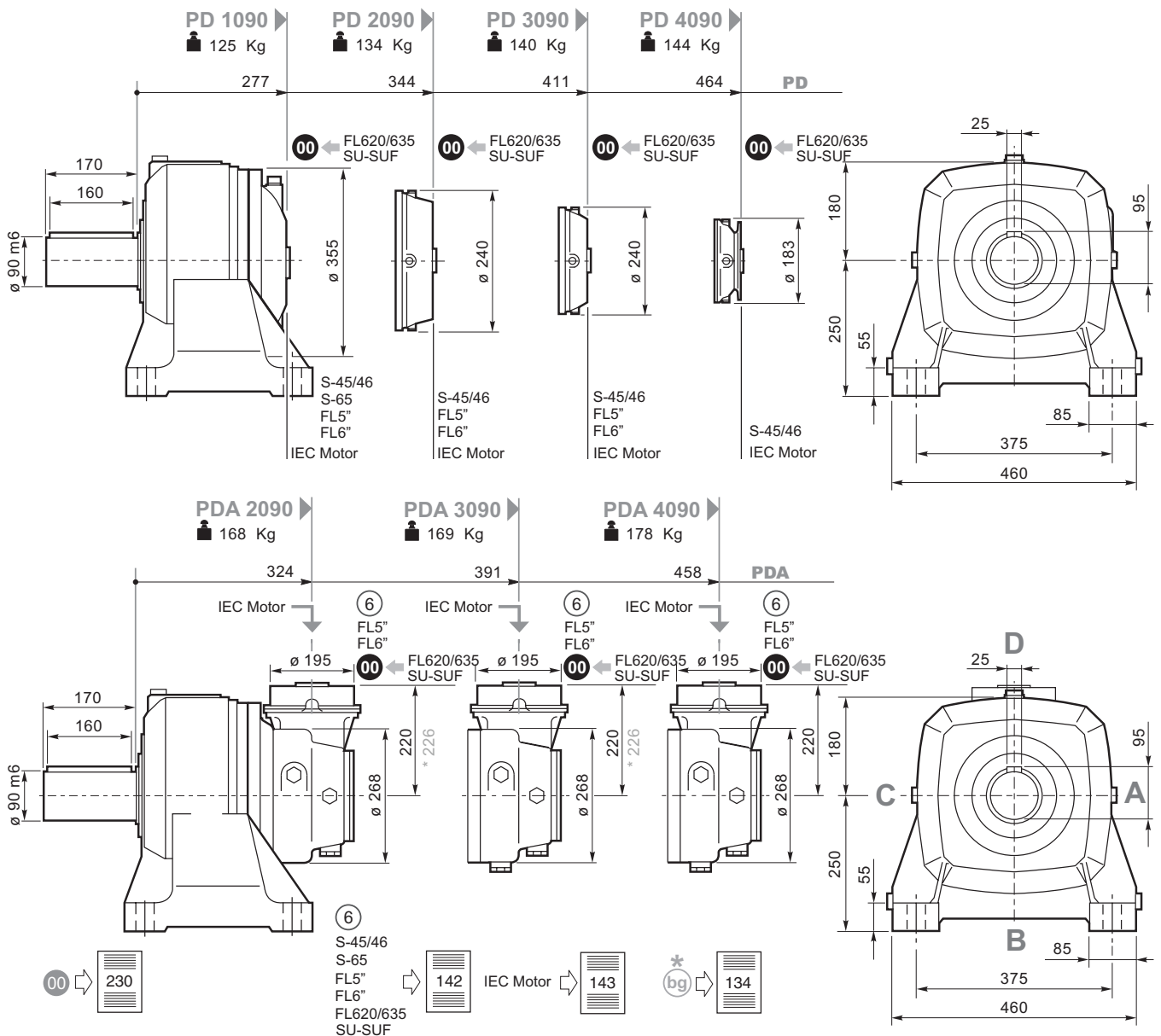
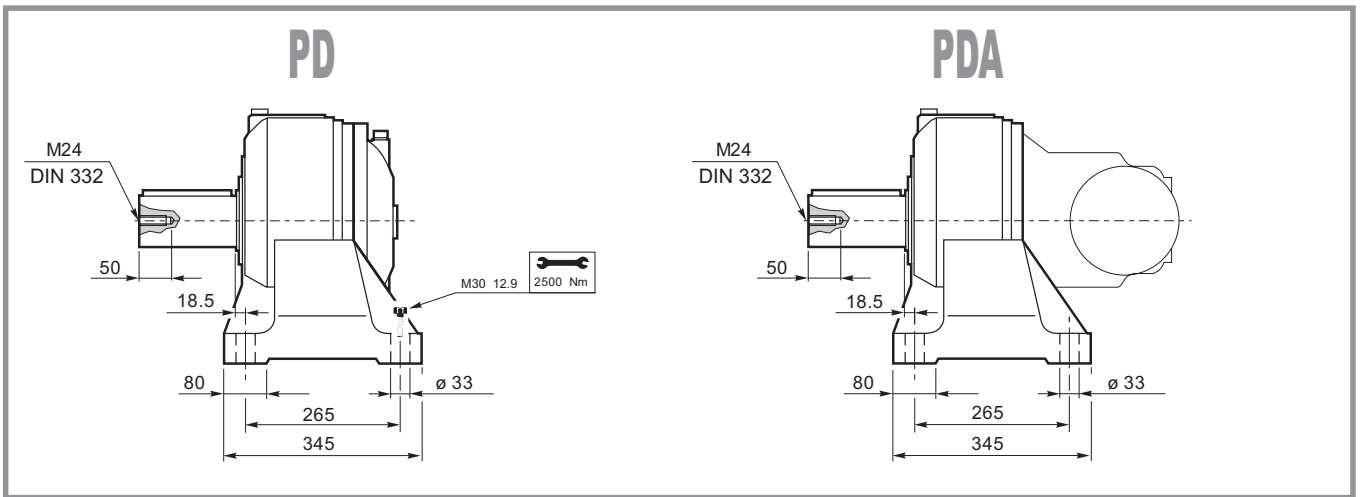




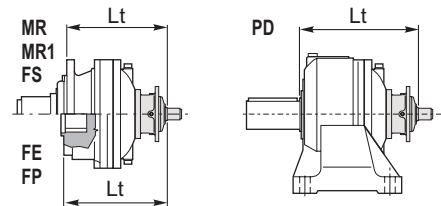
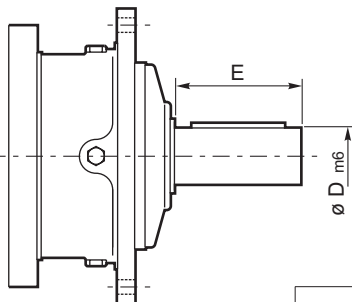






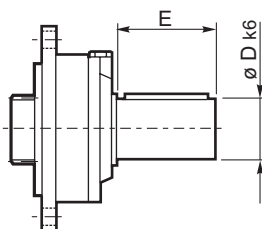


S45CR1-S46C1

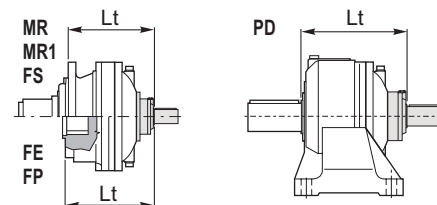


| | D m6 | E | | Lt | | | | |
|---------|---------|-----|---------|-----------|--------|-----|-----|-----|
| | | | | MN-MN1-FS | MR-MR1 | FE | FP | PD |
| S45 CR1 | 65 | 105 | EM 1090 | 371 | 410 | 371 | 296 | 407 |
| | | | ED 2090 | 371 | 410 | 371 | 296 | 407 |
| | | | ET 3090 | 439 | 477 | 439 | 364 | 564 |
| S46 C1 | 65 | 105 | EM 1090 | 412 | 451 | 412 | 337 | 514 |
| | | | ET 2090 | 412 | 451 | 412 | 337 | 447 |
| | | | ET 3090 | 480 | 518 | 518 | 405 | 581 |

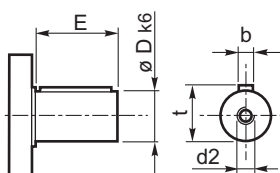
SU2



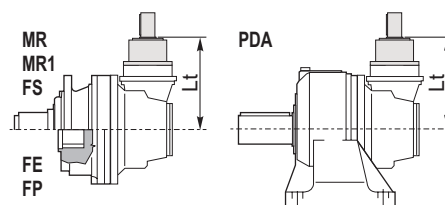
| | D k6 | E | | Lt | | | |
|------|---------|----|---------|-----------------|-----------|-----|-----|
| | | | | MN-MN1 FE-FS | MR MR1 | FP | PD |
| SU 2 | 40 | 58 | EM 1090 | 301 | 340 | 226 | 337 |
| | | | ED 2090 | 368 | 407 | 293 | 404 |
| | | | ET 3090 | 436 | 474 | 361 | 471 |
| | | | EQ 4090 | 488 | 527 | 413 | 524 |



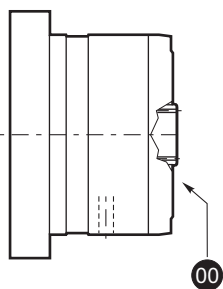
⑥ 48.82



| | D | E | | Lt |
|-------|----|----|---------|-------------------------|
| | | | | MN-MN1-MR-MR1-FS-FP-PDA |
| 48.82 | 48 | 82 | | 280 |
| | | | EC 2090 | 280 |
| | | | EC 4090 | 280 |



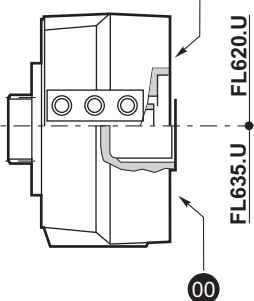
FL250-FL350-FL450 FL750 FL760-FL960



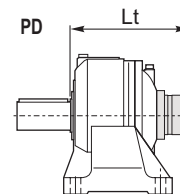
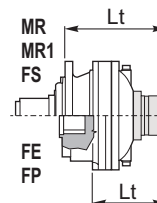
FL620/10
FL635/10

FL620U-FL635U

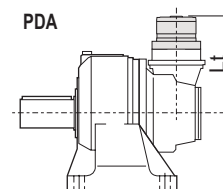
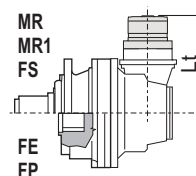
SAE A-AA
Shaft FE



| | | Lt | | | |
|-------------------------|----------|-----------------|--------|-------|--------|
| | | MN-MN1 FE-FS | MR-MR1 | FP | PD-PDA |
| FL250 FL350 FL450 | EM 1090 | 341 | 380 | 266 | 377 |
| | ED 2090 | 402 | 440 | 327 | 438 |
| | ET 3090 | 469 | 508 | 394 | 505 |
| | EC 2090 | 280 | 280 | 280 | 280 |
| | EC 2090* | 377 | 377 | 377 | 377 |
| | EC 3090 | 280 | 280 | 280 | 280 |
| | EC 3090* | 377 | 377 | 377 | 377 |
| FL750 | EM 1090 | 354 | 393 | 279 | 390 |
| | ED 2090 | 415 | 453 | 340 | 451 |
| | ET 3090 | 482 | 521 | 407 | 518 |
| FL760- FL960 | EM 1090 | 368 | 407 | 293 | 405 |
| | ED 2090 | 442 | 480 | 366.9 | — |

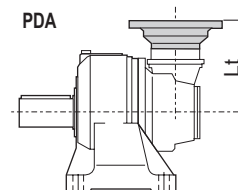
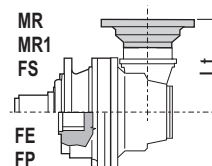
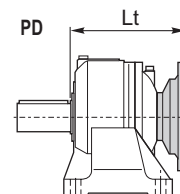
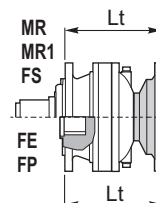


| | | Lt | | | | |
|----------|----------|-----------------|--------|-------|-------|-----|
| | | MN-MN1 FE-FS | MR-MR1 | FP | PD | |
| FL620/U | EM 1090 | 345.5 | 348.5 | 270.5 | 381.5 | |
| | ED 2090 | 412.5 | 451.5 | 337.5 | 448.5 | |
| | ET 3090 | 480.5 | 518.5 | 405.5 | 515.5 | |
| | EQ 4090 | 532.5 | 571.5 | 457.5 | 568.5 | |
| | EC 2090 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 2090* | 330.5 | 330.5 | 330.5 | 330.5 | |
| | EC 3090 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 3090* | 330.5 | 330.5 | 330.5 | 330.5 | |
| | EC 4090 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 4090* | 330.5 | 330.5 | 330.5 | 330.5 | |
| | FL635U | EM 1090 | 332 | 371 | 257 | 368 |
| | | ED 2090 | 399 | 438 | 342 | 435 |
| ET 3090 | | 467 | 505 | 392 | 502 | |
| EQ 4090 | | 519 | 558 | 444 | 555 | |
| EC 2090 | | 311 | 311 | 311 | 311 | |
| EC 2090* | | 317 | 317 | 317 | 317 | |
| EC 3090 | | 311 | 311 | 311 | 311 | |
| EC 3090* | | 317 | 317 | 317 | 317 | |
| EC 4090 | | 311 | 311 | 311 | 311 | |
| EC 4090* | | 317 | 317 | 317 | 317 | |
| FL620/10 | EQ 4090 | 492 | 531 | 417 | 475 | |
| FL635/10 | EQ 4090 | 474 | 512 | 398 | 456 | |



IEC Motor

| | | Lt | | | | | | | |
|----------|-------------------------------|-----------|-----------|-----------------|-------------------|------------|-------------------|------------|------------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| EM 1090 | MN-MN1-FE-FS | 261 | 263 | 268 | 269 | 336 | 367 | 380 | 408 |
| EM 1090 | MR-MR1 | 300 | 302 | 307 | 308 | 375 | 406 | 419 | 447 |
| EM 1090 | FP | | | | | | | | |
| ED 2090 | MN-MN1-FE-FS | 328 | 330 | 335 | 336 | 403 | 434 | 444 | 475 |
| ED 2090 | MR-MR1 | 367 | 369 | 374 | 375 | 442 | 473 | 483 | 514 |
| ED 2090 | FP | | | | | | | | |
| ET 3090 | MN-MN1-FE-FS | 396 | 389 | 403 | 404 | 471 | 502 | 512 | 543 |
| ET 3090 | MR-MR1 | 434 | 436 | 441 | 442 | 509 | 540 | 550 | 581 |
| ET 3090 | FP | | | | | | | | |
| EQ 4090 | MN-MN1-FE-FS | 448 | 450 | 455 | 456 | 523 | | | |
| EQ 4090 | MR-MR1 | 487 | 489 | 494 | 495 | 562 | | | |
| EQ 4090 | FP | | | | | | | | |
| PD 1090 | PD | 297 | 299 | 304 | 305 | 372 | 403 | 416 | 444 |
| PD 2090 | PD | 364 | 366 | 371 | 372 | 506 | 537 | 483 | 511 |
| PD 3090 | PD | 431 | 433 | 438 | 439 | 506 | 537 | 550 | 578 |
| PD 4090 | PD | 484 | 486 | 491 | 492 | 559 | 439 | 550 | 578 |
| EC 2090 | MN-MR-MN1-MR1 FE-FS-FP-PDA | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 2090* | | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 3090 | | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3090* | | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 4090 | | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 4090* | | 246 | 248 | 253 | 254 | 321 | 352 | | |



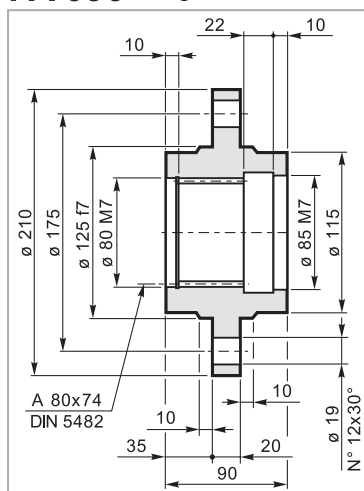
* (bg)





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 090

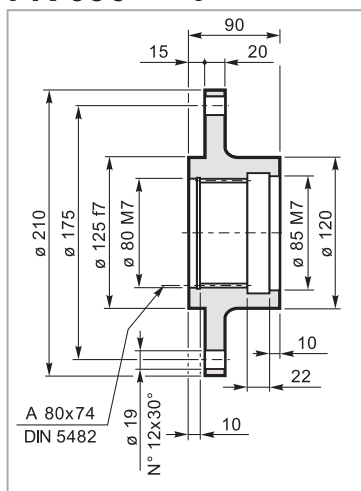


Mat. C40 UNI EN 10083
Code: 34701521800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 090

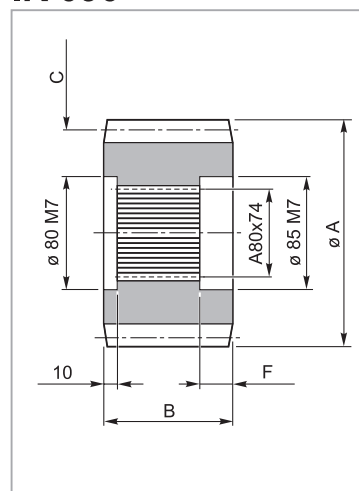


Mat. C40 UNI EN 10083
Code: 34701421800



Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 090

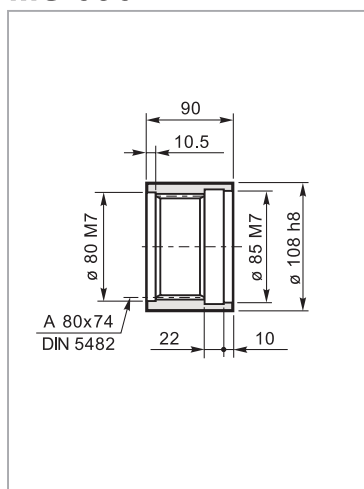


| code | A | B | C | F |
|---------------|-----|----|-----------------|----|
| 335.3543.0600 | 159 | 90 | M=10 Z=13 X=0.5 | 31 |



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 090

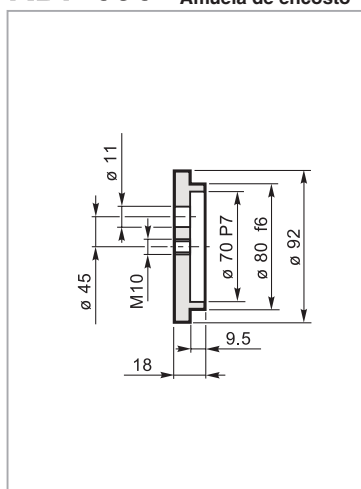


Mat. 39NiCrMo3 UNI EN 10083
Code: 39103040600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 090

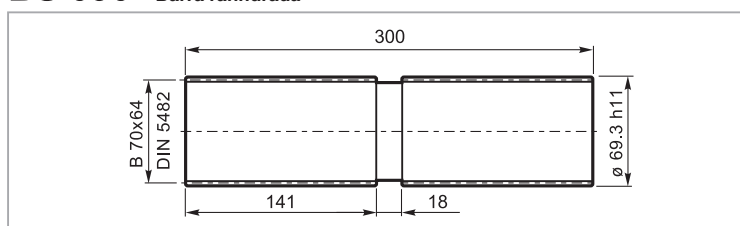


Mat. C40 UNI EN 10083
Code: 37200940800



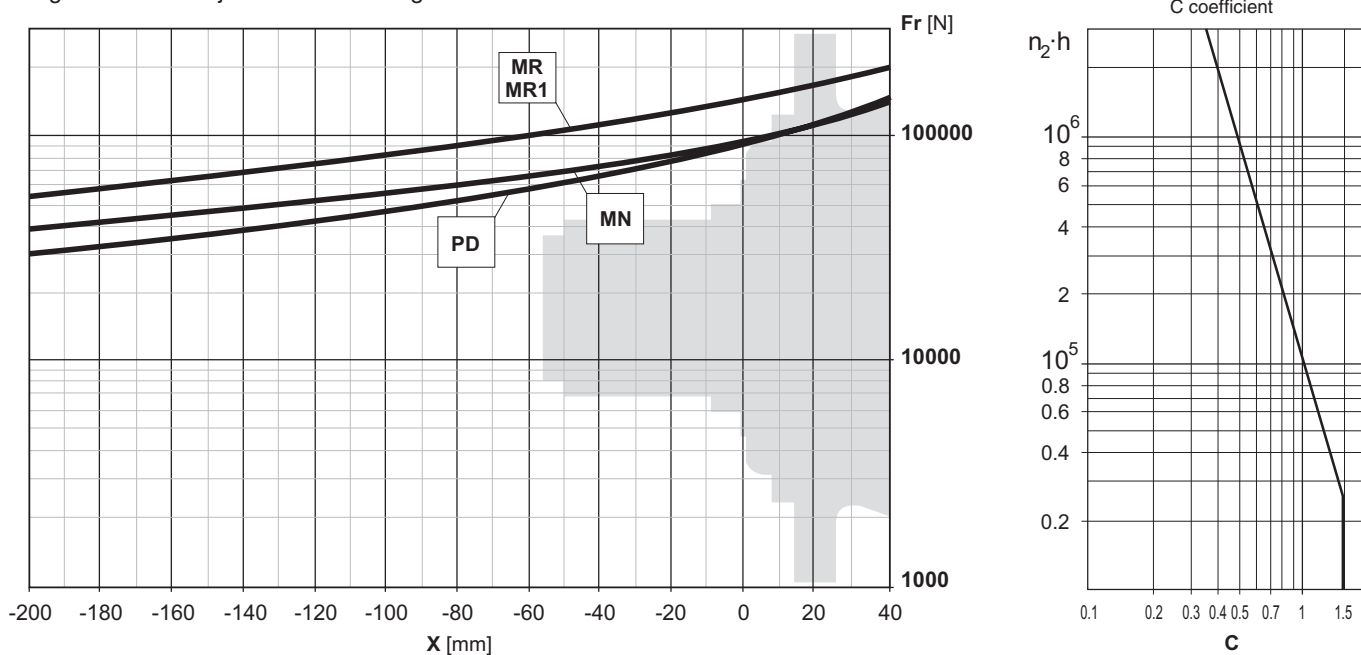
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 090



Mat. 39NiCrMo3 UNI EN 10083
Code: 39127130100

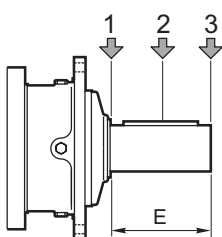
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



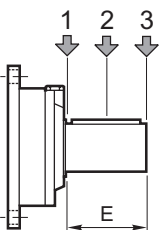
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais

| | | Flange mounted | | PD-PDA |
|------------|-----|----------------|--------|--------|
| | | MN-MN1 | MR-MR1 | MR1 |
| Fa_{din} | [N] | 48000 | 80000 | 35000 |
| Fa_{max} | [N] | 60000 | 90000 | 35000 |

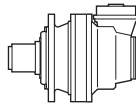
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |



| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |

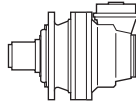


| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2091 - PDA 2091

| | | | | | | | | | | | |
|--------------|------|------|------|------|------|------|------|------|------|-------|----|
| 11.22 | 134 | 3977 | 56 | 89 | 4492 | 41.9 | 44.6 | 5530 | 25.8 | 15000 | |
| 13.89 | 108 | 4137 | 46.8 | 72 | 4672 | 35.2 | 36.0 | 5752 | 21.7 | 15000 | |
| 15.98 | 94 | 4229 | 41.6 | 63 | 4776 | 31.3 | 31.3 | 5880 | 19.3 | 15000 | |
| 17.68 | 85 | 3970 | 35.3 | 57 | 4484 | 26.6 | 28.3 | 5520 | 16.4 | 15000 | |
| 20.34 | 74 | 4547 | 35.1 | 49.2 | 5135 | 26.4 | 24.6 | 6322 | 16.3 | 15000 | 18 |
| 24.59 | 61 | 3971 | 25.4 | 40.7 | 4485 | 19.1 | 20.3 | 5522 | 11.8 | 15000 | |
| 28.29 | 53 | 4569 | 25.4 | 35.3 | 5160 | 19.1 | 17.7 | 6353 | 11.8 | 15000 | |
| 33.70 | 44.5 | 4794 | 22.4 | 29.7 | 5002 | 15.5 | 14.8 | 5351 | 8.3 | 15000 | |
| 42.37 | 35.4 | 3604 | 13.4 | 23.6 | 3775 | 9.3 | 11.8 | 4067 | 5.0 | 15000 | |

1500
HOURS LIFE

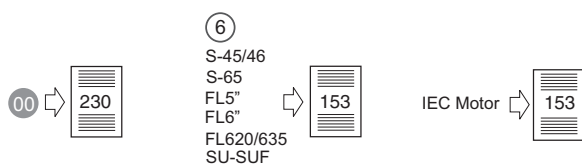
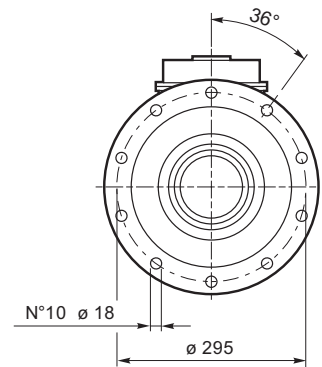
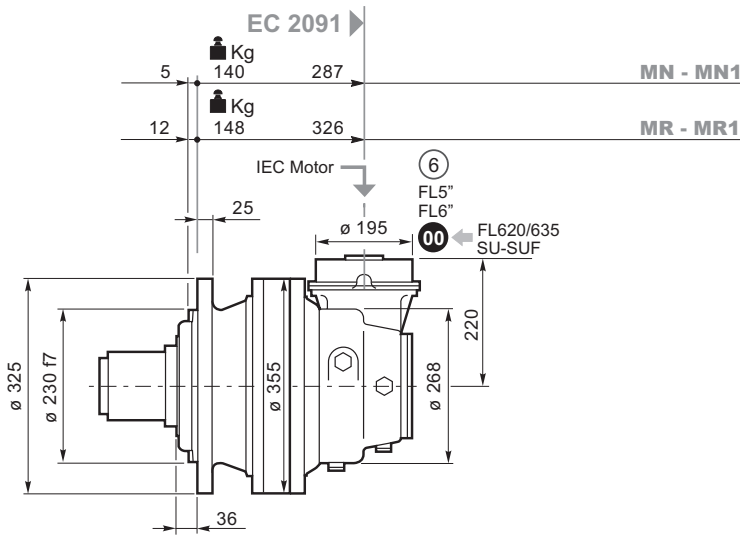
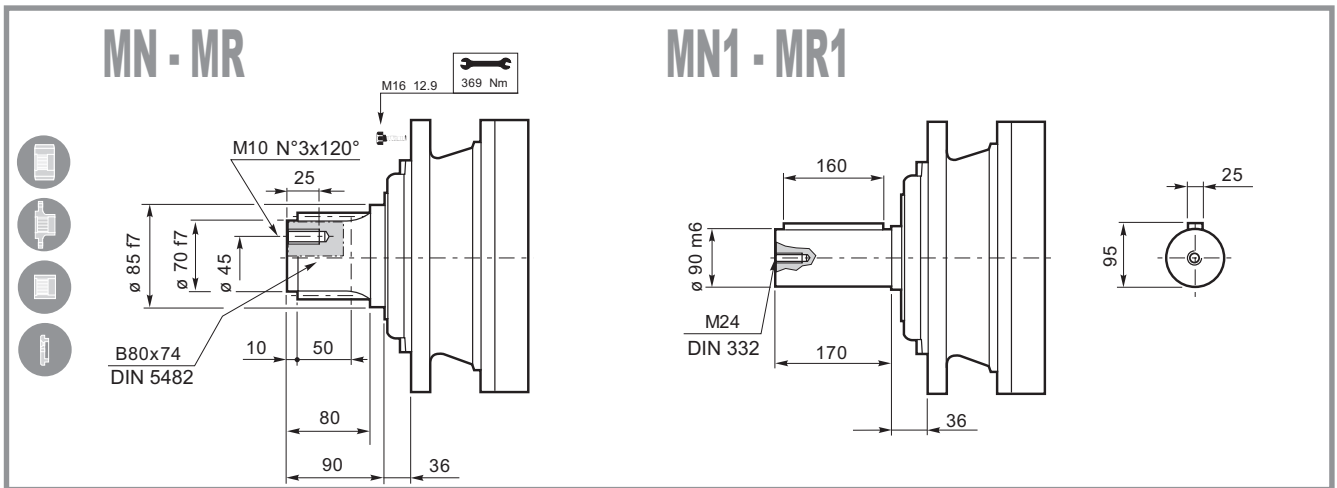


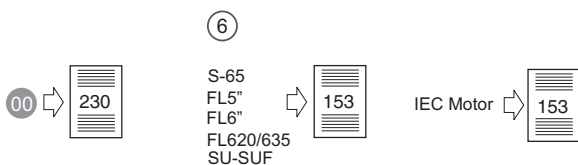
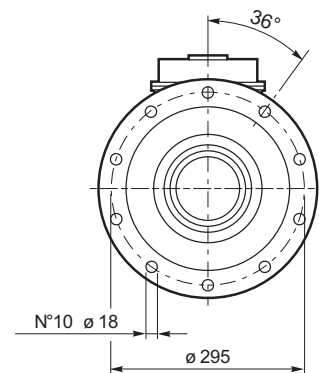
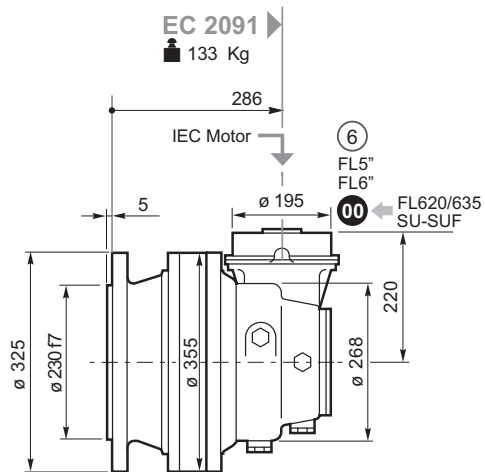
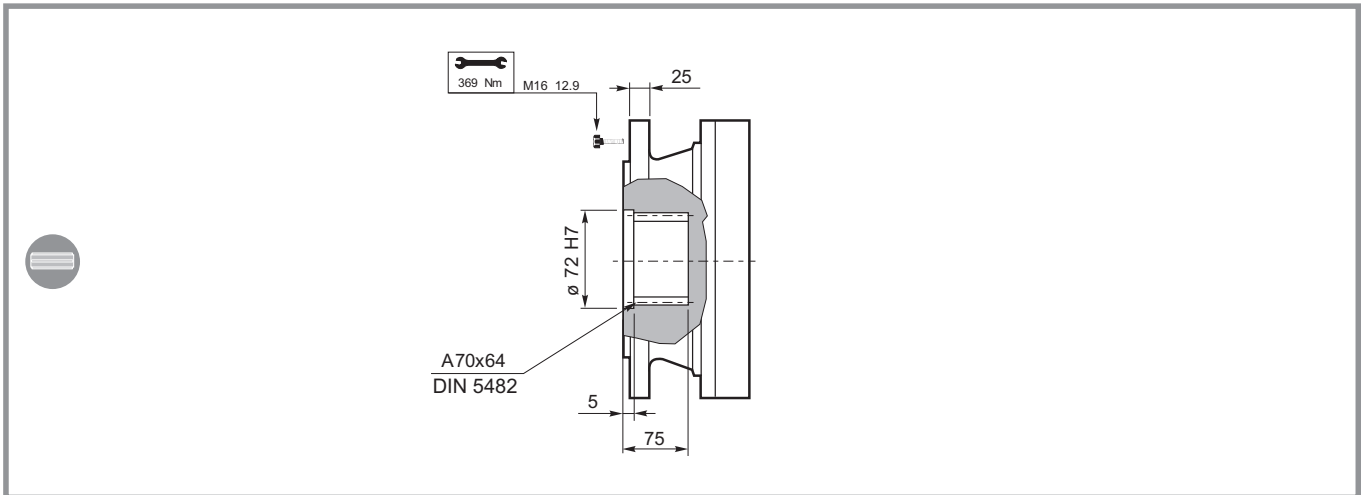
091

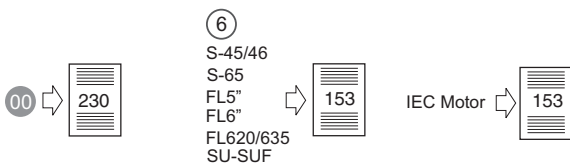
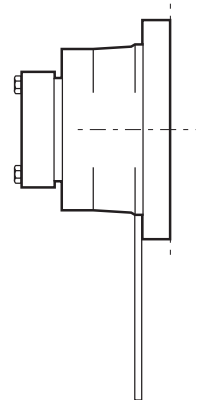
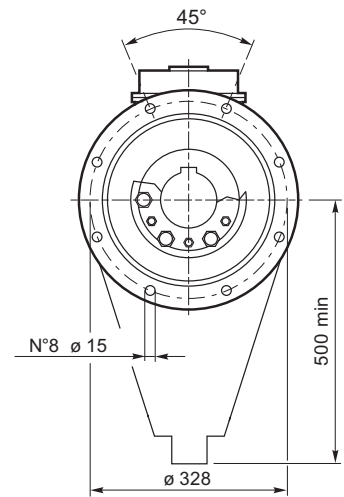
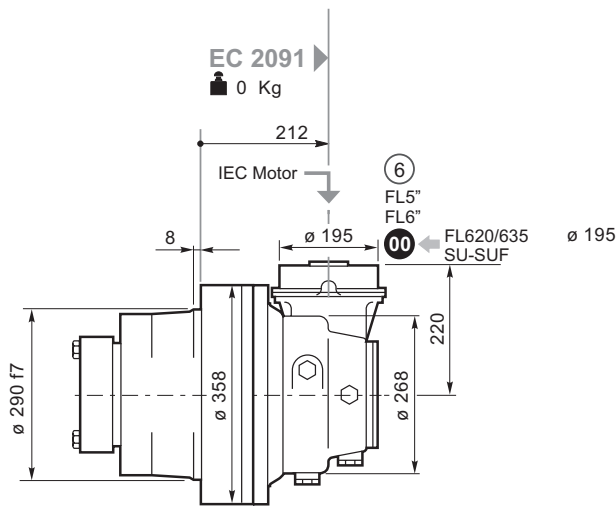
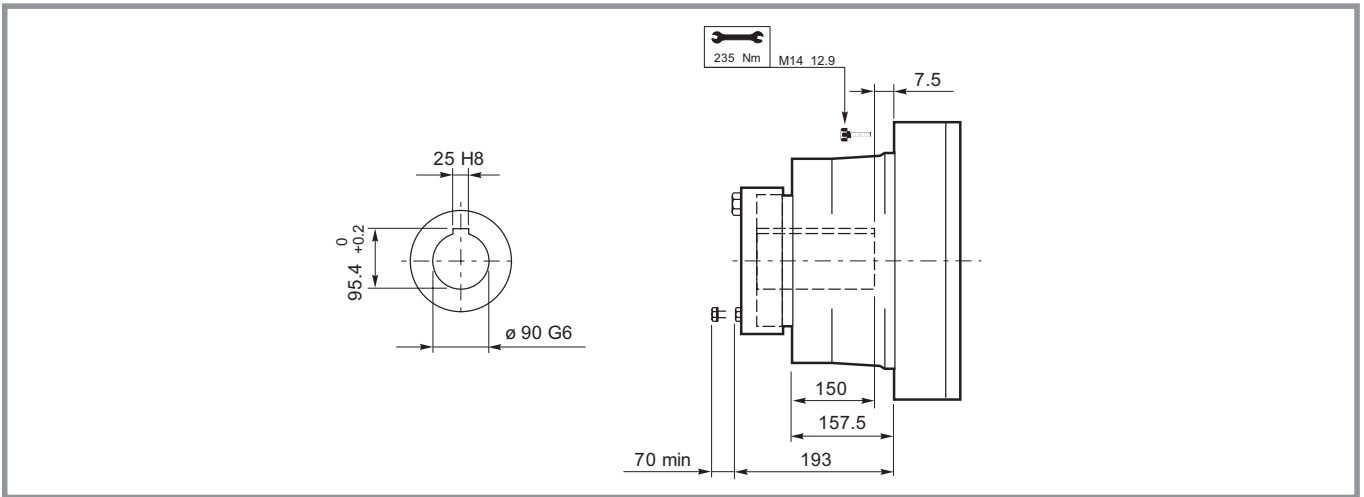
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

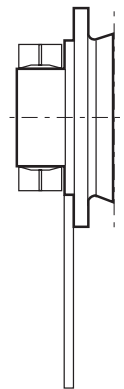
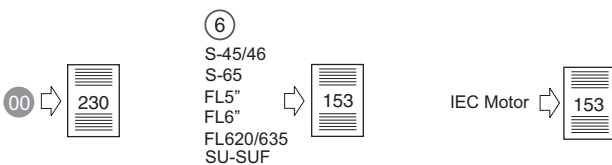
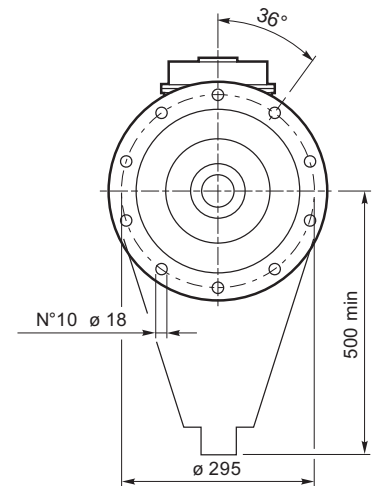
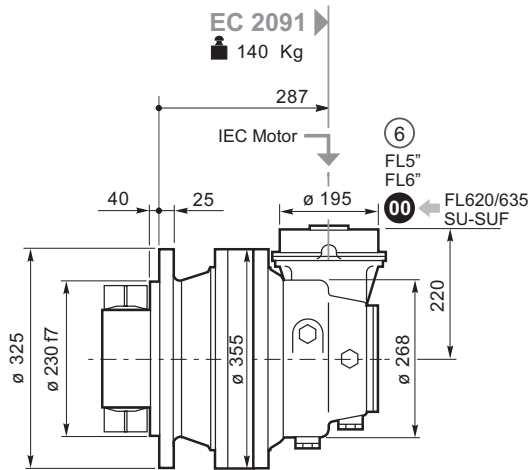
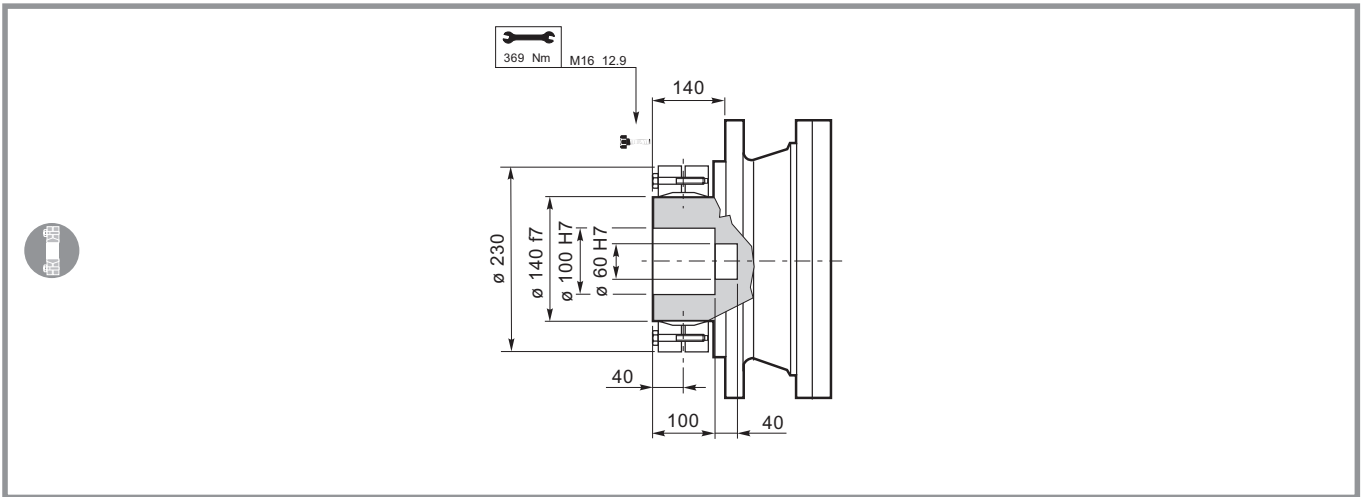
EC 2091 - PDA 2091

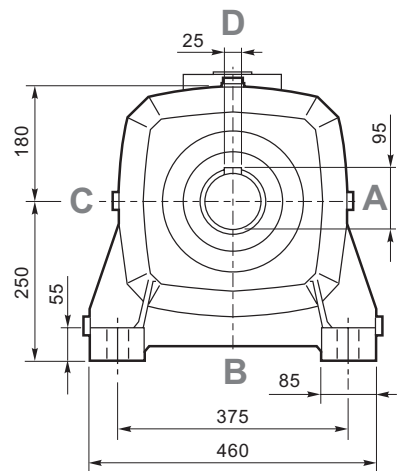
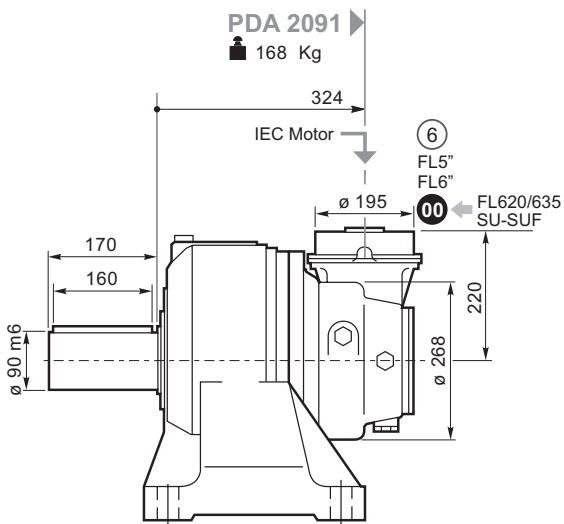
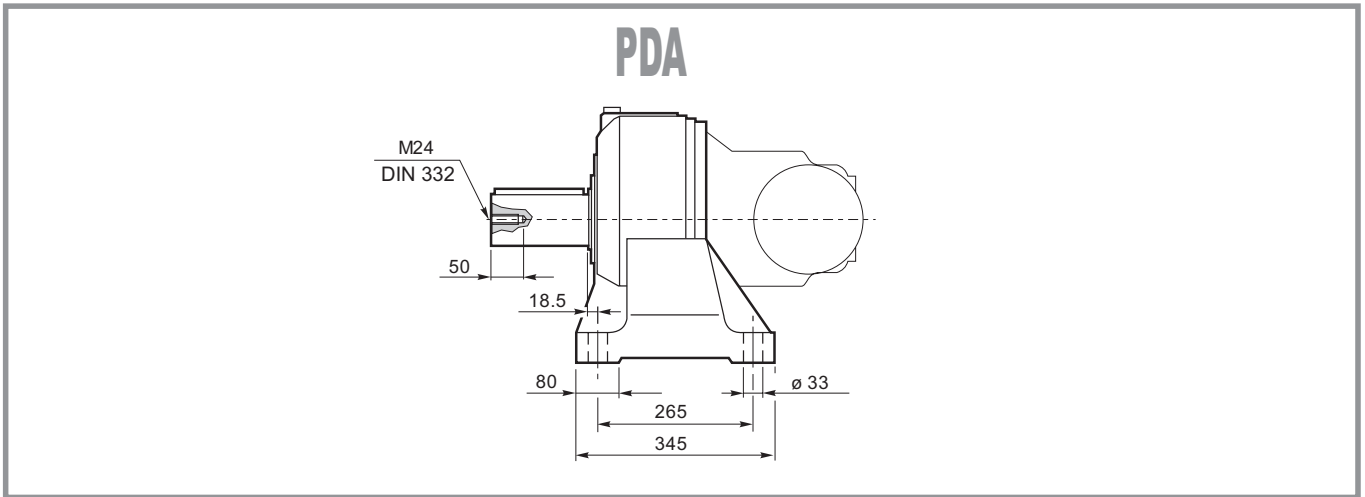
| | | | | | | | | | | | |
|--------------|------|------|------|------|------|------|------|------|------|------|----|
| 11.22 | 134 | 7027 | 98 | 89 | 7936 | 74 | 44.6 | 9771 | 45.6 | 5000 | 18 |
| 13.89 | 108 | 7309 | 83 | 72 | 7955 | 60 | 36.0 | 8774 | 33.1 | 5000 | |
| 15.98 | 94 | 6799 | 67 | 63 | 7105 | 46.6 | 31.3 | 7796 | 25.6 | 5000 | |
| 17.68 | 85 | 7014 | 62 | 57 | 7922 | 46.9 | 28.3 | 9233 | 27.4 | 5000 | |
| 20.34 | 74 | 6983 | 54 | 49.2 | 7280 | 37.5 | 24.6 | 8203 | 21.1 | 5000 | |
| 24.59 | 61 | 7016 | 44.8 | 40.7 | 7924 | 33.7 | 20.3 | 9218 | 19.6 | 5000 | |
| 28.29 | 53 | 7226 | 40.1 | 35.3 | 7594 | 28.1 | 17.7 | 8781 | 16.3 | 5000 | |
| 33.70 | 44.5 | 5696 | 26.6 | 29.7 | 5966 | 18.5 | 14.8 | 6925 | 10.8 | 5000 | |
| 42.37 | 35.4 | 4374 | 16.2 | 23.6 | 4576 | 11.3 | 11.8 | 5386 | 6.7 | 5000 | |



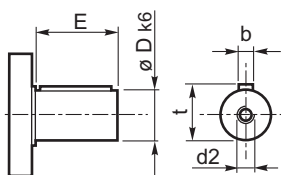




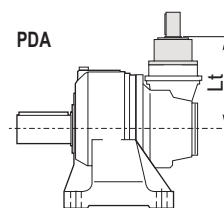




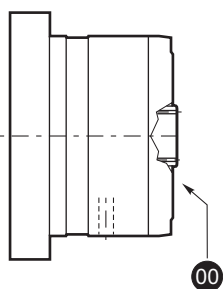
⑥ 48.82



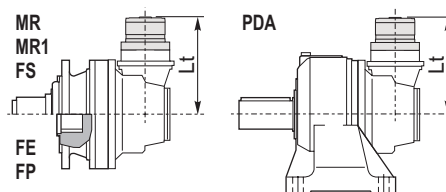
| | D | E | EC 2091 | L _t | |
|-------|----|----|---------|----------------------------|-----|
| | | | | MN-MN1-MR-MR1-FS-FP-FE-PDA | |
| 48.82 | 48 | 82 | EC 2091 | | 317 |



FL250-FL350-FL450 FL750



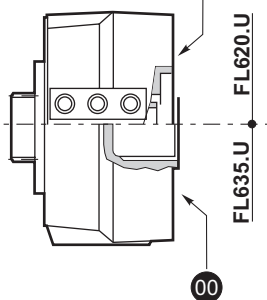
| | EC 2091 | L _t | | | |
|-------------------------|---------|-----------------|--------|-----|--------|
| | | MN-MN1 FE-FS | MR-MR1 | FP | PD-PDA |
| FL250 FL350 FL450 | EC 2091 | 408 | 408 | 408 | 408 |
| FL750 | EC 2091 | 422 | 422 | 422 | 422 |



FL620/10
FL635/10

FL620U-FL635U

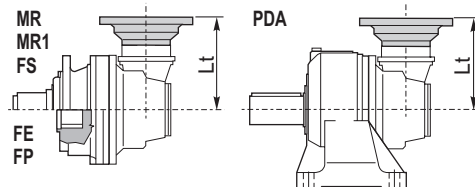
SAE A-AA
Shaft FE



| | EC 2091 | L _t | | | |
|---------|----------|-----------------|--------|-------|-------|
| | | MN-MN1 FE-FS | MR-MR1 | FP | PD |
| FL620/U | EC 2091 | 324.5 | 324.5 | 324.5 | 324.5 |
| FL635U | EC 2091 | 311 | 311 | 311 | 311 |
| | EC 2091* | 317 | 317 | 317 | 317 |

IEC Motor

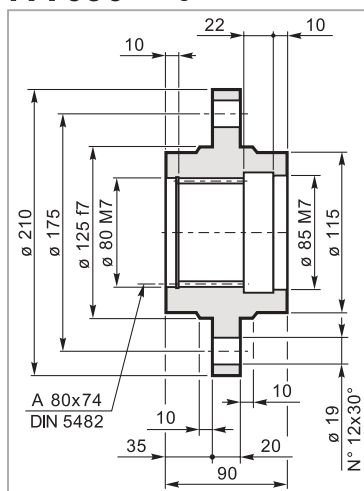
| EC 2091 | MN-MR-MN1-MR1 FE-FS-FP-PDA | L _t | | | | | | | |
|---------|-------------------------------|----------------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| | | 277 | 279 | 264 | 285 | 352 | 383 | 394 | |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 090

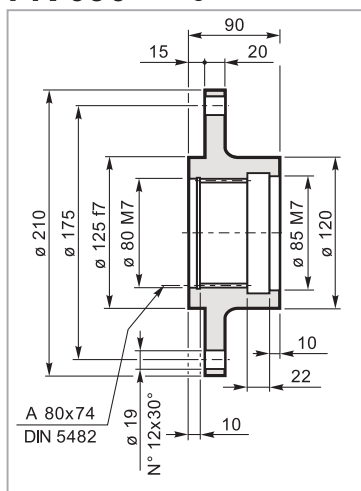


Mat. C40 UNI EN 10083
Code: 34701521800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 090

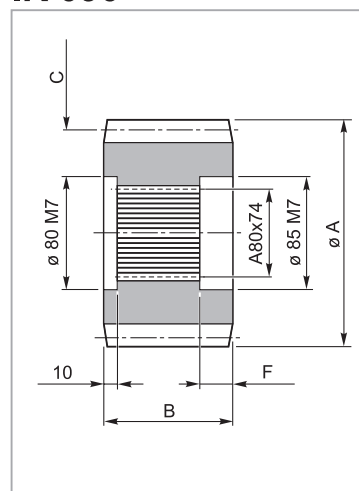


Mat. C40 UNI EN 10083
Code: 34701421800



Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 090

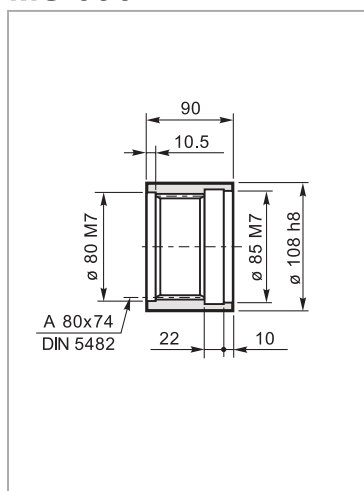


| code | A | B | C | F |
|---------------|-----|----|-----------------|----|
| 335.3543.0600 | 159 | 90 | M=10 Z=13 X=0.5 | 31 |



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 090

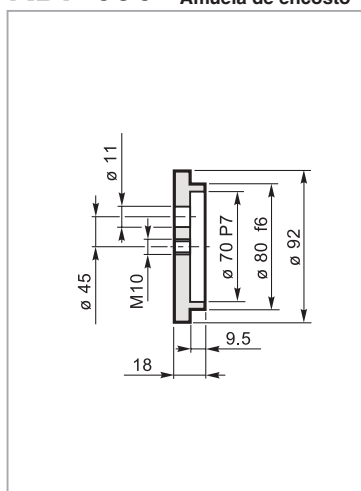


Mat. 39NiCrMo3 UNI EN 10083
Code: 39103040600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 090

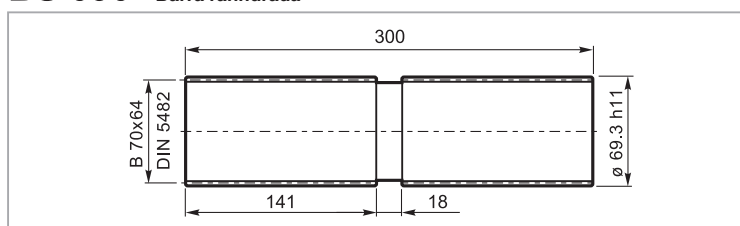


Mat. C40 UNI EN 10083
Code: 37200940800



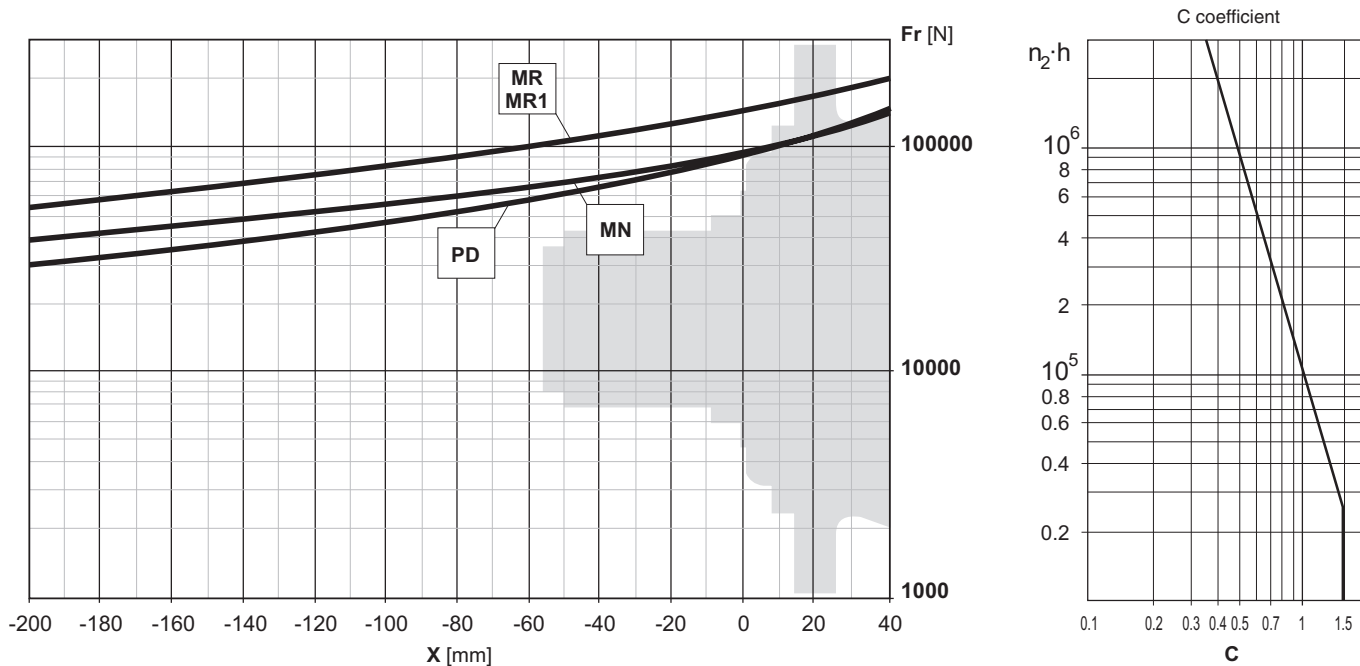
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 090

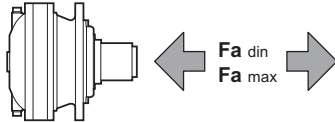


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Code: 39127130100

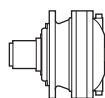
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie



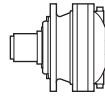
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



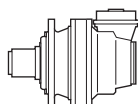
| | | Flange mounted | | PD-PDA |
|-------------------------|-----|----------------|--------|--------|
| | | MN-MN1 | MR-MR1 | MR1 |
| Fa_{din} | [N] | 48000 | 80000 | 35000 |
| Fa_{max} | [N] | 60000 | 90000 | 35000 |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1150 | | | | | | | | | | | | |
| 3.90 | 385 | 4758 | 192 | 256 | 5374 | 144 | 128 | 6616 | 89 | 20000 | 40 | |
| 5.14 | 292 | 5006 | 153 | 195 | 5654 | 115 | 97 | 6961 | 71 | 20000 | | |
| 6.27 | 239 | 5178 | 130 | 159 | 5847 | 98 | 80 | 7199 | 60 | 20000 | | |
| ED 2150 | | | | | | | | | | | | |
| 13.65 | 110 | 6103 | 70 | 73 | 6893 | 53 | 36.6 | 8486 | 32.6 | 20000 | 23 | |
| 16.11 | 93 | 6309 | 62 | 62 | 7125 | 46.3 | 31.0 | 8772 | 28.5 | 20000 | | |
| 17.99 | 83 | 7290 | 64 | 56 | 8233 | 47.9 | 27.8 | 9317 | 27.1 | 20000 | | |
| 20.16 | 74 | 6563 | 51 | 50 | 7412 | 38.5 | 24.8 | 9125 | 23.7 | 20000 | | |
| 21.95 | 68 | 7540 | 54 | 45.6 | 8220 | 39.2 | 22.8 | 8771 | 20.9 | 20000 | | |
| 26.57 | 56 | 8195 | 48.4 | 37.6 | 9057 | 35.7 | 18.8 | 9649 | 19.0 | 20000 | | |
| 28.28 | 53 | 6170 | 34.3 | 35.4 | 6613 | 24.5 | 17.7 | 7286 | 13.5 | 20000 | | |
| 30.84 | 48.6 | 8570 | 43.7 | 32.4 | 9185 | 31.2 | 16.2 | 9776 | 16.6 | 20000 | | |
| 37.27 | 40.3 | 8132 | 34.3 | 26.8 | 8716 | 24.5 | 13.4 | 9603 | 13.5 | 20000 | | |
| 45.46 | 33.0 | 8477 | 29.3 | 22.0 | 8799 | 20.3 | 11.0 | 9353 | 10.8 | 20000 | | |
| ET 3150 | | | | | | | | | | | | |
| 47.78 | 31.4 | 8888 | 29.2 | 20.9 | 10037 | 22.0 | 10.5 | 12357 | 13.5 | 20000 | 15 | |
| 56.37 | 26.6 | 9340 | 26.0 | 17.7 | 10548 | 19.6 | 8.9 | 12986 | 12.1 | 20000 | | |
| 62.96 | 23.8 | 9448 | 23.6 | 15.9 | 9794 | 16.3 | 7.9 | 10392 | 8.6 | 20000 | | |
| 70.57 | 21.3 | 9991 | 22.2 | 14.2 | 11283 | 16.7 | 7.1 | 13892 | 10.3 | 20000 | | |
| 81.90 | 18.3 | 10447 | 20.0 | 12.2 | 11799 | 15.1 | 6.1 | 14526 | 9.3 | 20000 | | |
| 93.01 | 16.1 | 9781 | 16.5 | 10.8 | 10129 | 11.4 | 5.4 | 11021 | 6.2 | 20000 | | |
| 98.96 | 15.2 | 11058 | 17.6 | 10.1 | 12488 | 13.2 | 5.1 | 13856 | 7.3 | 20000 | | |
| 107.9 | 13.9 | 9908 | 14.4 | 9.3 | 10258 | 10.0 | 4.6 | 11354 | 5.5 | 20000 | | |
| 127.4 | 11.8 | 10050 | 12.4 | 7.9 | 10402 | 8.6 | 3.9 | 11733 | 4.8 | 20000 | | |
| 137.4 | 10.9 | 10115 | 11.6 | 7.3 | 10468 | 8.0 | 3.6 | 11910 | 4.5 | 20000 | | |
| 159.4 | 9.4 | 10244 | 10.1 | 6.3 | 10684 | 7.0 | 3.1 | 12263 | 4.0 | 20000 | | |
| 185.0 | 8.1 | 10374 | 8.8 | 5.4 | 11010 | 6.2 | 2.7 | 12623 | 3.6 | 20000 | | |
| 192.7 | 7.8 | 10409 | 8.5 | 5.2 | 11099 | 6.0 | 2.6 | 12722 | 3.5 | 20000 | | |
| 223.6 | 6.7 | 10539 | 7.4 | 4.5 | 11434 | 5.4 | 2.2 | 13093 | 3.1 | 20000 | | |
| 235.0 | 6.4 | 9797 | 6.5 | 4.3 | 10399 | 4.6 | 2.1 | 11934 | 2.7 | 20000 | | |
| 270.2 | 5.6 | 10643 | 6.2 | 3.7 | 11112 | 4.3 | 1.9 | 11921 | 2.3 | 20000 | | |
| 329.6 | 4.6 | 10258 | 4.9 | 3.0 | 11128 | 3.5 | 1.5 | 12743 | 2.0 | 20000 | | |
| EQ 4150 | | | | | | | | | | | | |
| 359.5 | 4.2 | 15642 | 6.8 | 2.8 | 16279 | 4.7 | 1.4 | 18842 | 2.7 | 20000 | | 11 |
| 391.2 | 3.8 | 15764 | 6.3 | 2.6 | 16578 | 4.4 | 1.3 | 19172 | 2.6 | 20000 | | |
| 461.7 | 3.2 | 14336 | 4.9 | 2.2 | 14970 | 3.4 | 1.1 | 17336 | 2.0 | 20000 | | |
| 491.4 | 3.1 | 16094 | 5.1 | 2.0 | 17403 | 3.7 | 1.0 | 19575 | 2.1 | 20000 | | |
| 568.4 | 2.6 | 16464 | 4.6 | 1.8 | 17944 | 3.3 | 0.88 | 19845 | 1.8 | 20000 | | |
| 645.5 | 2.3 | 12997 | 3.2 | 1.5 | 14044 | 2.3 | 0.77 | 15988 | 1.3 | 20000 | | |
| 700.7 | 2.1 | 15008 | 3.4 | 1.4 | 16365 | 2.4 | 0.71 | 18879 | 1.4 | 20000 | | |
| 810.4 | 1.9 | 15486 | 3.0 | 1.2 | 16872 | 2.2 | 0.62 | 19271 | 1.2 | 20000 | | |
| 883.9 | 1.7 | 13803 | 2.5 | 1.1 | 14900 | 1.8 | 0.57 | 16938 | 1.0 | 20000 | | |
| 1039 | 1.4 | 15905 | 2.4 | 0.96 | 16561 | 1.7 | 0.48 | 17700 | 0.89 | 20000 | | |
| 1110 | 1.4 | 14412 | 2.0 | 0.90 | 15418 | 1.5 | 0.45 | 17656 | 0.83 | 20000 | | |
| 1226 | 1.2 | 16903 | 2.2 | 0.82 | 18375 | 1.6 | 0.41 | 19586 | 0.84 | 20000 | | |
| 1342 | 1.1 | 14755 | 1.7 | 0.75 | 16075 | 1.3 | 0.37 | 18272 | 0.71 | 20000 | | |
| 1552 | 0.97 | 15177 | 1.5 | 0.64 | 16539 | 1.1 | 0.32 | 18757 | 0.63 | 20000 | | |
| 1875 | 0.80 | 13067 | 1.1 | 0.53 | 14330 | 0.80 | 0.27 | 16674 | 0.47 | 20000 | | |
| 2023 | 0.74 | 16117 | 1.3 | 0.49 | 17360 | 0.90 | 0.25 | 19669 | 0.51 | 20000 | | |
| 2348 | 0.64 | 16565 | 1.1 | 0.43 | 17836 | 0.80 | 0.21 | 20197 | 0.45 | 20000 | | |
| 2468 | 0.61 | 15148 | 0.96 | 0.41 | 16325 | 0.69 | 0.20 | 18512 | 0.39 | 20000 | | |
| 2837 | 0.53 | 14358 | 0.80 | 0.35 | 15701 | 0.58 | 0.18 | 18194 | 0.34 | 20000 | | |
| 3460 | 0.43 | 16125 | 0.73 | 0.29 | 17364 | 0.53 | 0.14 | 19665 | 0.30 | 20000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| EM 1150 | | | | | | | | | | | | |
| 3.90 | 385 | 8407 | 339 | 256 | 9494 | 255 | 128 | 11689 | 157 | 20000 | 40 | |
| 5.14 | 292 | 8376 | 256 | 195 | 8905 | 181 | 97 | 9679 | 99 | 20000 | | |
| 6.27 | 239 | 8045 | 202 | 159 | 8487 | 142 | 80 | 9162 | 77 | 20000 | | |
| ED 2150 | | | | | | | | | | | | |
| 13.65 | 110 | 10783 | 124 | 73 | 12178 | 93 | 36.6 | 14716 | 56 | 20000 | 23 | |
| 16.11 | 93 | 11147 | 109 | 62 | 12138 | 79 | 31.0 | 13452 | 43.7 | 20000 | | |
| 17.99 | 83 | 9838 | 86 | 56 | 10241 | 60 | 27.8 | 11540 | 33.6 | 20000 | | |
| 20.16 | 74 | 9403 | 73 | 49.6 | 10112 | 53 | 24.8 | 11134 | 28.9 | 20000 | | |
| 21.95 | 68 | 9303 | 67 | 45.6 | 9669 | 46.1 | 22.8 | 10831 | 25.8 | 20000 | | |
| 26.57 | 56 | 10226 | 60 | 37.6 | 10840 | 42.7 | 18.8 | 12479 | 24.6 | 20000 | | |
| 28.28 | 53 | 7619 | 42.3 | 35.4 | 8102 | 30.0 | 17.7 | 8841 | 16.4 | 20000 | | |
| 30.84 | 48.6 | 10371 | 53 | 32.4 | 11181 | 38.0 | 16.2 | 12851 | 21.8 | 20000 | | |
| 37.27 | 40.3 | 10042 | 42.3 | 26.8 | 10678 | 30.0 | 13.4 | 11652 | 16.4 | 20000 | | |
| 45.46 | 33.0 | 10032 | 34.7 | 22.0 | 10909 | 25.1 | 11.0 | 12521 | 14.4 | 20000 | | |
| ET 3150 | | | | | | | | | | | | |
| 47.78 | 31.4 | 15012 | 49.4 | 20.9 | 15748 | 34.5 | 10.5 | 18220 | 20.0 | 20000 | 15 | |
| 56.37 | 26.6 | 15320 | 42.7 | 17.7 | 16176 | 30.0 | 8.9 | 18882 | 17.5 | 20000 | | |
| 62.96 | 23.8 | 11905 | 29.7 | 15.9 | 12903 | 21.5 | 7.9 | 14741 | 12.3 | 20000 | | |
| 70.57 | 21.3 | 15721 | 35.0 | 14.2 | 17035 | 25.3 | 7.1 | 19800 | 14.7 | 20000 | | |
| 81.90 | 18.3 | 16055 | 30.8 | 12.2 | 17613 | 22.5 | 6.1 | 19402 | 12.4 | 20000 | | |
| 93.01 | 16.1 | 12864 | 21.7 | 10.8 | 13915 | 15.7 | 5.4 | 15858 | 8.9 | 20000 | | |
| 98.96 | 15.2 | 14449 | 22.9 | 10.1 | 15342 | 16.2 | 5.1 | 16706 | 8.8 | 20000 | | |
| 107.9 | 13.9 | 13243 | 19.3 | 9.3 | 14316 | 13.9 | 4.6 | 16302 | 7.9 | 20000 | | |
| 127.4 | 11.8 | 13674 | 16.9 | 7.9 | 14773 | 12.1 | 3.9 | 16806 | 6.9 | 20000 | | |
| 137.4 | 10.9 | 13874 | 15.9 | 7.3 | 14985 | 11.4 | 3.6 | 17041 | 6.5 | 20000 | | |
| 159.4 | 9.4 | 14275 | 14.1 | 6.3 | 15409 | 10.1 | 3.1 | 17511 | 5.8 | 20000 | | |
| 185.0 | 8.1 | 14512 | 12.3 | 5.4 | 15694 | 8.9 | 2.7 | 17991 | 5.1 | 20000 | | |
| 192.7 | 7.8 | 14796 | 12.1 | 5.2 | 15962 | 8.7 | 2.6 | 18123 | 4.9 | 20000 | | |
| 223.6 | 6.7 | 14934 | 10.5 | 4.5 | 16376 | 7.7 | 2.2 | 18617 | 4.4 | 20000 | | |
| 235.0 | 6.4 | 13902 | 9.3 | 4.3 | 15004 | 6.7 | 2.1 | 17050 | 3.8 | 20000 | | |
| 270.2 | 5.6 | 12875 | 7.5 | 3.7 | 14154 | 5.5 | 1.9 | 16507 | 3.2 | 20000 | | |
| 329.6 | 4.6 | 14817 | 7.1 | 3.0 | 15976 | 5.1 | 1.5 | 18127 | 2.9 | 20000 | | |
| EQ 4150 | | | | | | | | | | | | |
| 359.5 | 4.2 | 20227 | 8.8 | 2.8 | 21077 | 6.1 | 1.4 | 23216 | 3.4 | 20000 | | 11 |
| 391.2 | 3.8 | 21081 | 8.5 | 2.6 | 21320 | 5.7 | 1.3 | 23496 | 3.1 | 20000 | | |
| 461.7 | 3.2 | 19343 | 6.6 | 2.2 | 20205 | 4.6 | 1.1 | 22310 | 2.5 | 20000 | | |
| 491.4 | 3.1 | 20884 | 6.7 | 2.0 | 21985 | 4.7 | 1.0 | 24265 | 2.6 | 20000 | | |
| 568.4 | 2.6 | 21263 | 5.9 | 1.8 | 22450 | 4.1 | 0.88 | 24765 | 2.3 | 20000 | | |
| 645.5 | 2.3 | 18488 | 4.5 | 1.5 | 19883 | 3.2 | 0.77 | 22472 | 1.8 | 20000 | | |
| 700.7 | 2.1 | 20240 | 4.5 | 1.4 | 21453 | 3.2 | 0.71 | 23656 | 1.8 | 20000 | | |
| 810.4 | 1.9 | 20669 | 4.0 | 1.2 | 21902 | 2.8 | 0.62 | 24140 | 1.6 | 20000 | | |
| 883.9 | 1.7 | 19562 | 3.5 | 1.1 | 21024 | 2.5 | 0.57 | 23739 | 1.4 | 20000 | | |
| 1039 | 1.4 | 20034 | 3.0 | 0.96 | 21902 | 2.2 | 0.48 | 24984 | 1.3 | 20000 | | |
| 1110 | 1.4 | 20373 | 2.9 | 0.90 | 21886 | 2.1 | 0.45 | 24696 | 1.2 | 20000 | | |
| 1226 | 1.2 | 21929 | 2.8 | 0.82 | 23218 | 2.0 | 0.41 | 25561 | 1.1 | 20000 | | |
| 1342 | 1.1 | 21068 | 2.5 | 0.75 | 22624 | 1.8 | 0.37 | 25515 | 1.0 | 20000 | | |
| 1552 | 0.97 | 21615 | 2.2 | 0.64 | 23206 | 1.6 | 0.32 | 26162 | 0.88 | 20000 | | |
| 1875 | 0.80 | 19683 | 1.6 | 0.53 | 21365 | 1.2 | 0.27 | 24486 | 0.68 | 20000 | | |
| 2023 | 0.74 | 22645 | 1.8 | 0.49 | 24301 | 1.3 | 0.25 | 27377 | 0.71 | 20000 | | |
| 2348 | 0.64 | 23241 | 1.6 | 0.43 | 24935 | 1.1 | 0.21 | 28081 | 0.63 | 20000 | | |
| 2468 | 0.61 | 21331 | 1.4 | 0.41 | 22899 | 0.97 | 0.20 | 25813 | 0.55 | 20000 | | |
| 2837 | 0.53 | 21402 | 1.2 | 0.35 | 23190 | 0.86 | 0.18 | 26512 | 0.49 | 20000 | | |
| 3460 | 0.43 | 22632 | 1.0 | 0.29 | 24282 | 0.74 | 0.14 | 27349 | 0.41 | 20000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2150 - PDA 2150

| | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|-------|----|
| 10.73 | 140 | 4179 | 61 | 93 | 4719 | 46.1 | 46.6 | 5810 | 28.4 | 20000 | 18 |
| 14.14 | 106 | 5508 | 61 | 71 | 6220 | 46.1 | 35.4 | 7658 | 28.4 | 20000 | |
| 17.99 | 83 | 4041 | 35.3 | 56 | 4564 | 26.6 | 27.8 | 5619 | 16.4 | 20000 | |
| 18.99 | 79 | 3067 | 25.4 | 53 | 3463 | 19.1 | 26.3 | 4264 | 11.8 | 16483 | |
| 21.95 | 68 | 4929 | 35.3 | 45.6 | 5567 | 26.6 | 22.8 | 6854 | 16.4 | 20000 | |
| 25.03 | 60 | 4042 | 25.4 | 40.0 | 4565 | 19.1 | 20.0 | 5620 | 11.8 | 20000 | |
| 30.53 | 49.1 | 4931 | 25.4 | 32.8 | 5568 | 19.1 | 16.4 | 6856 | 11.8 | 20000 | |

EC 2150 - PDA 3150

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|------|-------|------|-------|----|
| 48.32 | 31.0 | 8772 | 28.5 | 20.7 | 9907 | 21.5 | 10.3 | 12197 | 13.2 | 20000 | 15 |
| 53.97 | 27.8 | 9317 | 27.1 | 18.5 | 9662 | 18.7 | 9.3 | 10258 | 10.0 | 20000 | |
| 63.06 | 23.8 | 6172 | 15.4 | 15.9 | 6970 | 11.6 | 7.9 | 8581 | 7.1 | 20000 | |
| 74.41 | 20.2 | 7283 | 15.4 | 13.4 | 8225 | 11.6 | 6.7 | 10126 | 7.1 | 20000 | |
| 83.11 | 18.0 | 8134 | 15.4 | 12.0 | 9186 | 11.6 | 6.0 | 10774 | 6.8 | 20000 | |
| 92.52 | 16.2 | 9776 | 16.6 | 10.8 | 10124 | 11.5 | 5.4 | 11010 | 6.2 | 20000 | |
| 98.07 | 15.3 | 9598 | 15.4 | 10.2 | 10175 | 10.9 | 5.1 | 11139 | 5.9 | 20000 | |
| 111.8 | 13.4 | 9603 | 13.5 | 8.9 | 10087 | 9.4 | 4.5 | 10893 | 5.1 | 20000 | |
| 122.8 | 12.2 | 10019 | 12.8 | 8.1 | 10369 | 8.8 | 4.1 | 11648 | 5.0 | 20000 | |
| 142.5 | 10.5 | 10147 | 11.2 | 7.0 | 10500 | 7.7 | 3.5 | 11995 | 4.4 | 20000 | |
| 149.8 | 10.0 | 9429 | 9.9 | 6.7 | 9760 | 6.8 | 3.3 | 10918 | 3.8 | 20000 | |
| 172.2 | 8.7 | 10118 | 9.2 | 5.8 | 10590 | 6.4 | 2.9 | 11394 | 3.5 | 20000 | |
| 210.0 | 7.1 | 9704 | 7.3 | 4.8 | 10164 | 5.1 | 2.4 | 11674 | 2.9 | 20000 | |

EC 2150 - PDA 4150

| | | | | | | | | | | | |
|-------|------|-------|-----|------|-------|-----|------|-------|------|-------|----|
| 260.5 | 5.8 | 14782 | 8.9 | 3.8 | 15762 | 6.3 | 1.9 | 17618 | 3.5 | 20000 | 10 |
| 296.9 | 5.1 | 13856 | 7.3 | 3.4 | 14532 | 5.1 | 1.7 | 15656 | 2.8 | 20000 | |
| 326.0 | 4.6 | 15501 | 7.5 | 3.1 | 16087 | 5.2 | 1.5 | 18465 | 3.0 | 20000 | |
| 350.3 | 4.3 | 13973 | 6.3 | 2.9 | 14507 | 4.3 | 1.4 | 16365 | 2.4 | 20000 | |
| 384.7 | 3.9 | 14096 | 5.8 | 2.6 | 14631 | 4.0 | 1.3 | 16690 | 2.3 | 20000 | |
| 457.2 | 3.3 | 14576 | 5.0 | 2.2 | 15235 | 3.5 | 1.1 | 16354 | 1.9 | 20000 | |
| 498.7 | 3.0 | 12363 | 3.9 | 2.0 | 13370 | 2.8 | 1.0 | 15240 | 1.6 | 20000 | |
| 555.1 | 2.7 | 12623 | 3.6 | 1.8 | 13647 | 2.6 | 0.90 | 15418 | 1.5 | 20000 | |
| 634.7 | 2.4 | 12955 | 3.2 | 1.6 | 13999 | 2.3 | 0.79 | 15938 | 1.3 | 20000 | |
| 711.0 | 2.1 | 13241 | 2.9 | 1.4 | 14303 | 2.1 | 0.70 | 16275 | 1.2 | 20000 | |
| 810.5 | 1.9 | 11921 | 2.3 | 1.2 | 12403 | 1.6 | 0.62 | 13868 | 0.90 | 20000 | |
| 890.1 | 1.7 | 13821 | 2.4 | 1.1 | 14920 | 1.8 | 0.56 | 16960 | 1.0 | 20000 | |
| 1033 | 1.5 | 14217 | 2.2 | 0.97 | 15172 | 1.5 | 0.48 | 17427 | 0.88 | 20000 | |
| 1086 | 1.4 | 12975 | 1.9 | 0.92 | 14015 | 1.4 | 0.46 | 15947 | 0.77 | 20000 | |
| 1248 | 1.2 | 12435 | 1.6 | 0.80 | 13063 | 1.1 | 0.40 | 15269 | 0.64 | 20000 | |
| 1523 | 0.99 | 13838 | 1.4 | 0.66 | 14932 | 1.0 | 0.33 | 16965 | 0.58 | 20000 | |

Tutti i rapporti evidenziati (es. 10.73) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.73) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

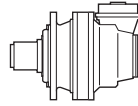
Alle mit (es. 10.73) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 10.73) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 10.73) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 10.73) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 2150 - PDA 2150

| | | | | | | | | | | | |
|-------|------|------|------|------|-------|------|------|-------|------|-------|----|
| 10.73 | 140 | 7383 | 108 | 93 | 8338 | 81 | 46.6 | 10266 | 50 | 20000 | 18 |
| 14.14 | 106 | 9588 | 107 | 71 | 10003 | 74 | 35.4 | 10981 | 40.7 | 20000 | |
| 17.99 | 83 | 7139 | 62 | 56 | 8063 | 46.9 | 27.8 | 9927 | 28.9 | 20000 | |
| 18.99 | 79 | 5419 | 44.8 | 53 | 6119 | 33.7 | 26.3 | 7119 | 19.6 | 16483 | |
| 21.95 | 68 | 8709 | 62 | 45.6 | 9669 | 46.1 | 22.8 | 10831 | 25.8 | 20000 | |
| 25.03 | 60 | 7141 | 44.8 | 40.0 | 8065 | 33.7 | 20.0 | 9382 | 19.6 | 20000 | |
| 30.53 | 49.1 | 8712 | 44.8 | 32.8 | 9838 | 33.7 | 16.4 | 11445 | 19.6 | 20000 | |

EC 2150 - PDA 3150

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|------|-------|------|-------|----|
| 48.32 | 31.0 | 13452 | 43.7 | 20.7 | 14120 | 30.6 | 10.3 | 15938 | 17.3 | 20000 | 15 |
| 53.97 | 27.8 | 11540 | 33.6 | 18.5 | 12517 | 24.3 | 9.3 | 14316 | 13.9 | 20000 | |
| 63.06 | 23.8 | 10904 | 27.2 | 15.9 | 12315 | 20.5 | 7.9 | 15161 | 12.6 | 20000 | |
| 74.41 | 20.2 | 12867 | 27.2 | 13.4 | 14531 | 20.5 | 6.7 | 17503 | 12.3 | 20000 | |
| 83.11 | 18.0 | 12583 | 23.8 | 12.0 | 13618 | 17.2 | 6.0 | 15529 | 9.8 | 20000 | |
| 92.52 | 16.2 | 12851 | 21.8 | 10.8 | 13901 | 15.7 | 5.4 | 15694 | 8.9 | 20000 | |
| 98.07 | 15.3 | 12998 | 20.8 | 10.2 | 14057 | 15.0 | 5.1 | 16015 | 8.6 | 20000 | |
| 111.8 | 13.4 | 11652 | 16.4 | 8.9 | 12189 | 11.4 | 4.5 | 13549 | 6.3 | 20000 | |
| 122.8 | 12.2 | 13577 | 17.4 | 8.1 | 14670 | 12.5 | 4.1 | 16693 | 7.1 | 20000 | |
| 142.5 | 10.5 | 13971 | 15.4 | 7.0 | 14777 | 10.9 | 3.5 | 17155 | 6.3 | 20000 | |
| 149.8 | 10.0 | 12751 | 13.4 | 6.7 | 13783 | 9.6 | 3.3 | 15696 | 5.5 | 20000 | |
| 172.2 | 8.7 | 12224 | 11.2 | 5.8 | 12750 | 7.8 | 2.9 | 14952 | 4.5 | 20000 | |
| 210.0 | 7.1 | 13608 | 10.2 | 4.8 | 14692 | 7.3 | 2.4 | 16703 | 4.2 | 20000 | |

PDA - EC 4150

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|-----|------|-------|------|-------|----|
| 260.5 | 5.8 | 20669 | 12.5 | 3.8 | 21080 | 8.5 | 1.9 | 22171 | 4.5 | 20000 | 10 |
| 296.9 | 5.1 | 16706 | 8.8 | 3.4 | 17456 | 6.2 | 1.7 | 19349 | 3.4 | 20000 | |
| 326.0 | 4.6 | 20971 | 10.1 | 3.1 | 21213 | 6.8 | 1.5 | 22895 | 3.7 | 20000 | |
| 350.3 | 4.3 | 19192 | 8.6 | 2.9 | 19413 | 5.8 | 1.4 | 21453 | 3.2 | 20000 | |
| 384.7 | 3.9 | 19244 | 7.9 | 2.6 | 19676 | 5.4 | 1.3 | 21741 | 3.0 | 20000 | |
| 457.2 | 3.3 | 17504 | 6.0 | 2.2 | 18238 | 4.2 | 1.1 | 21302 | 2.4 | 20000 | |
| 498.7 | 3.0 | 17644 | 5.6 | 2.0 | 18986 | 4.0 | 1.0 | 21477 | 2.3 | 20000 | |
| 555.1 | 2.7 | 17991 | 5.1 | 1.8 | 19354 | 3.7 | 0.90 | 21886 | 2.1 | 20000 | |
| 634.7 | 2.4 | 18433 | 4.6 | 1.6 | 19823 | 3.3 | 0.79 | 22406 | 1.8 | 20000 | |
| 711.0 | 2.1 | 18814 | 4.2 | 1.4 | 20228 | 3.0 | 0.70 | 22856 | 1.7 | 20000 | |
| 810.5 | 1.9 | 16507 | 3.2 | 1.2 | 17994 | 2.3 | 0.62 | 20749 | 1.3 | 20000 | |
| 890.1 | 1.7 | 19587 | 3.5 | 1.1 | 21050 | 2.5 | 0.56 | 23768 | 1.4 | 20000 | |
| 1033 | 1.5 | 20114 | 3.1 | 0.97 | 21610 | 2.2 | 0.48 | 24389 | 1.2 | 20000 | |
| 1086 | 1.4 | 18435 | 2.7 | 0.92 | 19821 | 1.9 | 0.46 | 22395 | 1.1 | 20000 | |
| 1248 | 1.2 | 18094 | 2.3 | 0.80 | 19677 | 1.7 | 0.40 | 22615 | 0.95 | 20000 | |
| 1523 | 0.99 | 19585 | 2.0 | 0.66 | 21043 | 1.4 | 0.33 | 23751 | 0.82 | 20000 | |

Tutti i rapporti evidenziati (es. 10.73) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 10.73) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

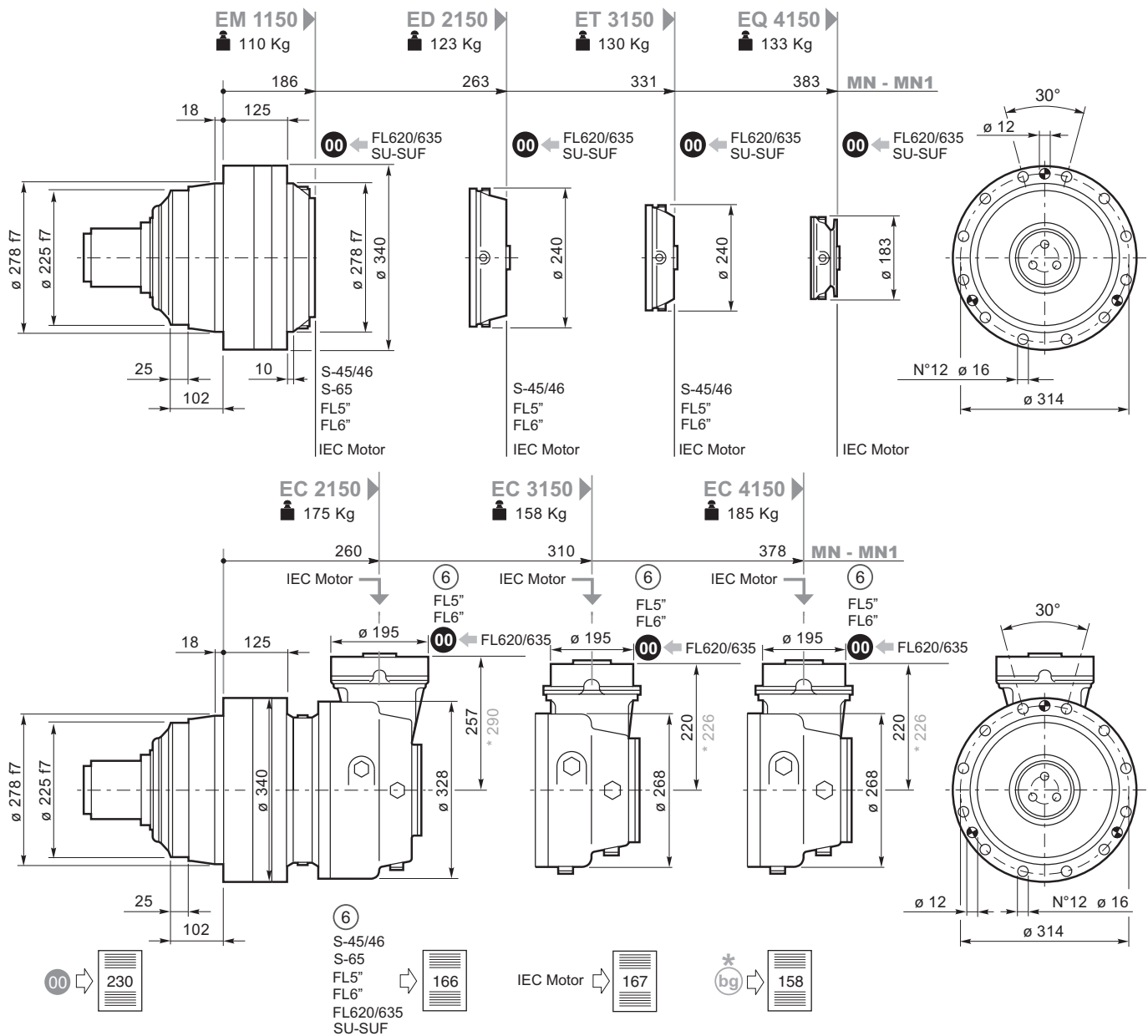
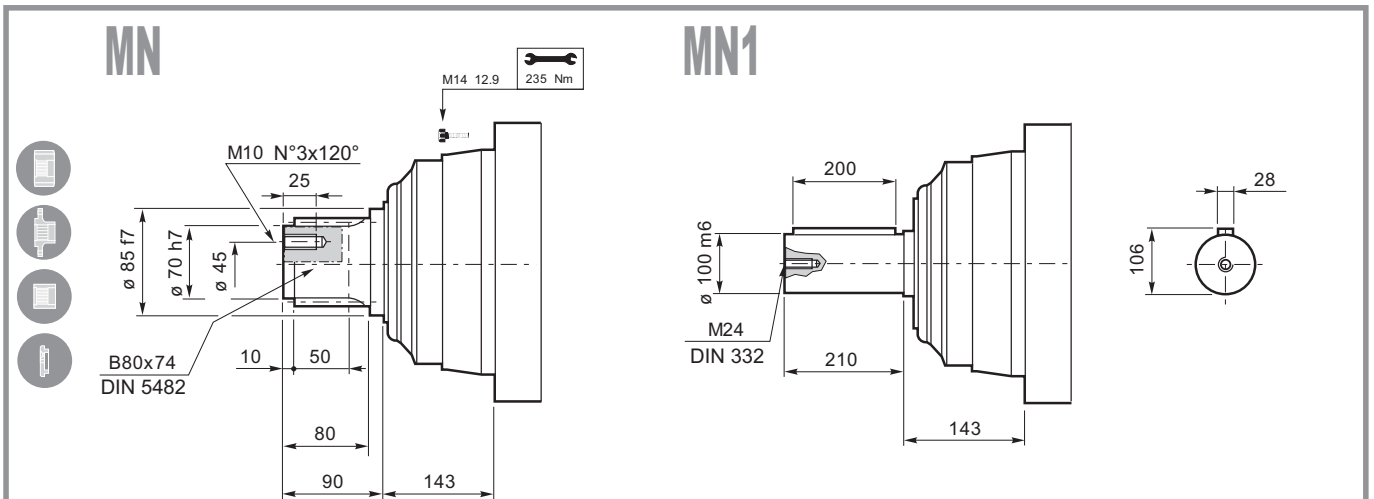
Alle mit (es. 10.73) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

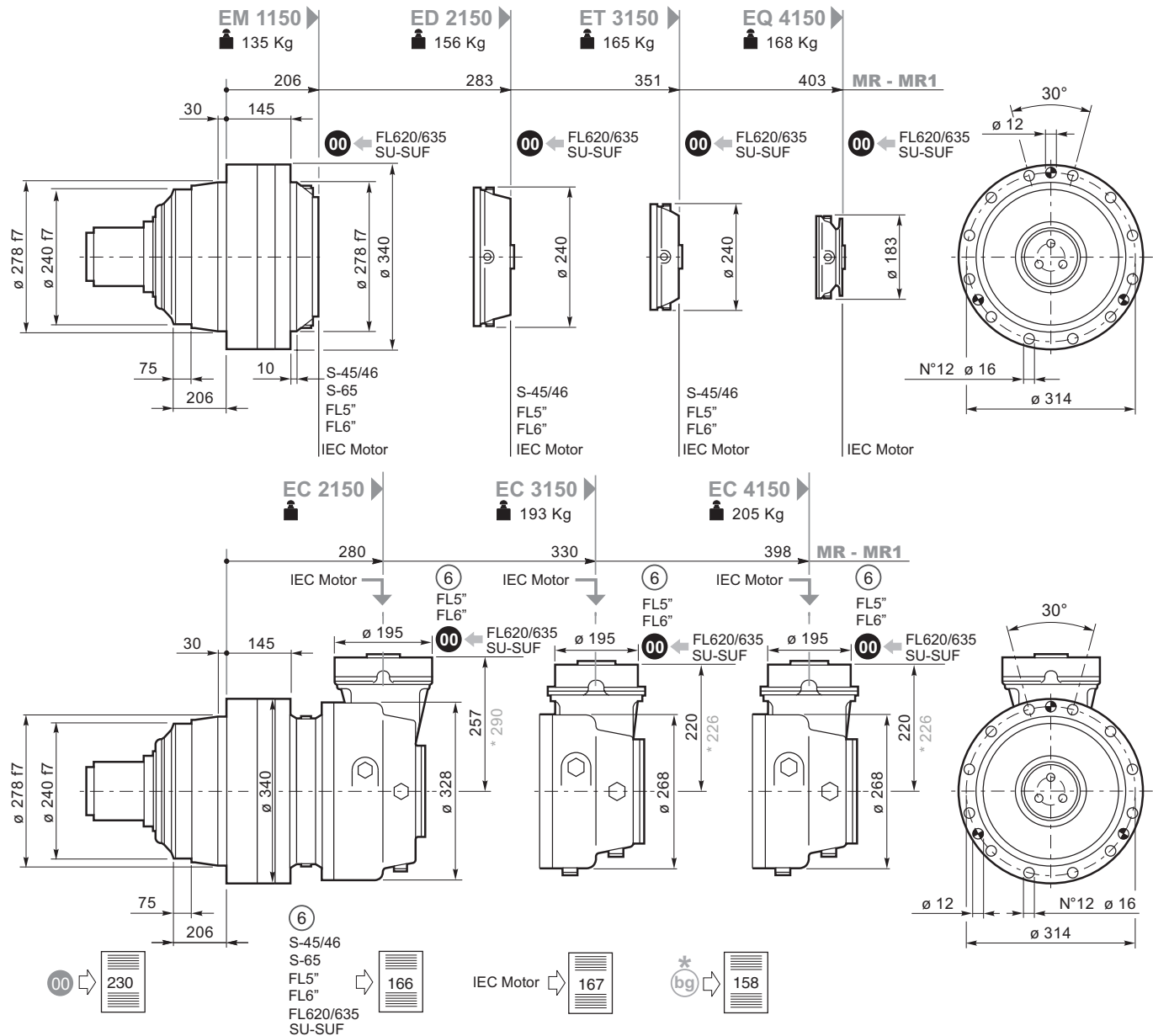
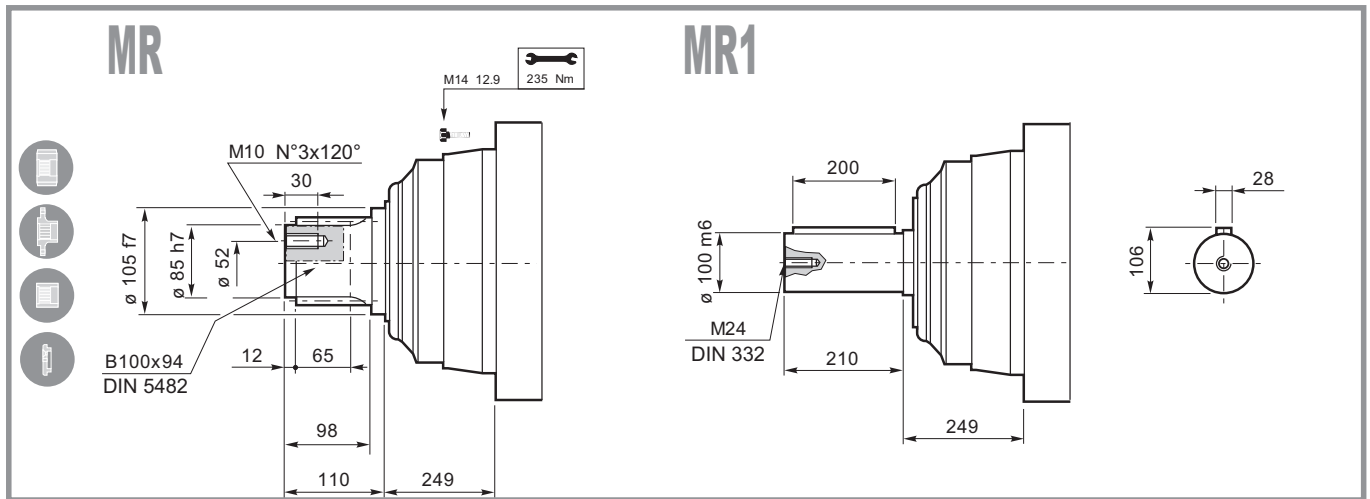
Les rapports repérés par (es. 10.73) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

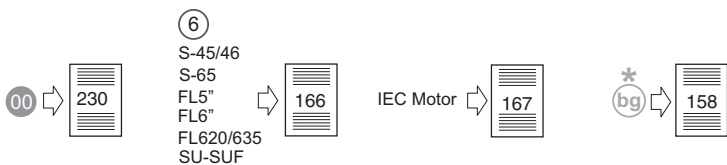
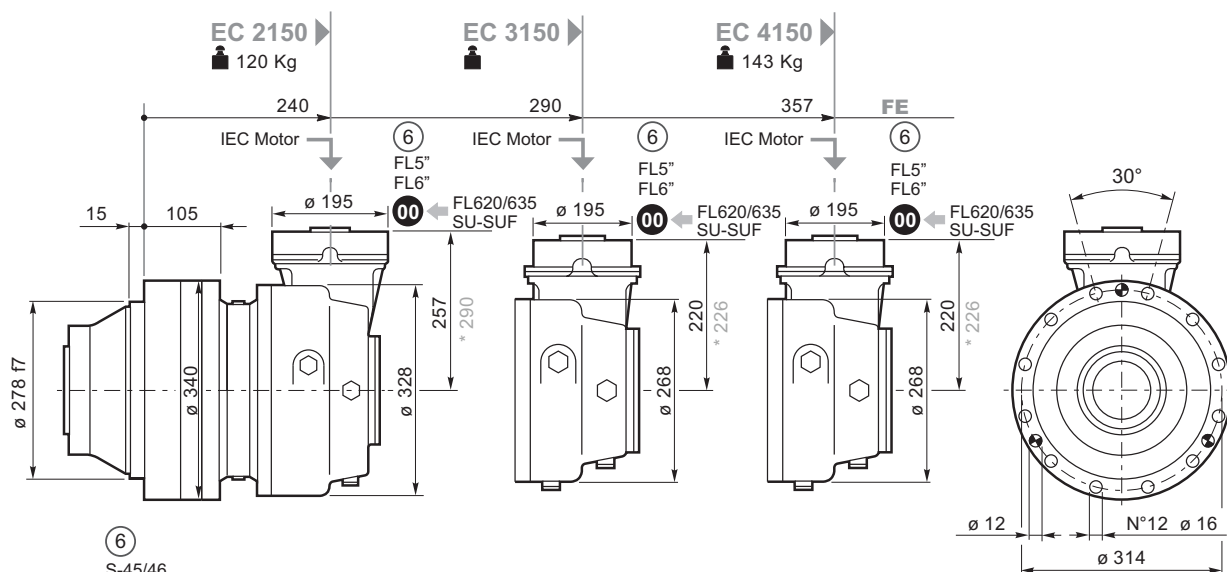
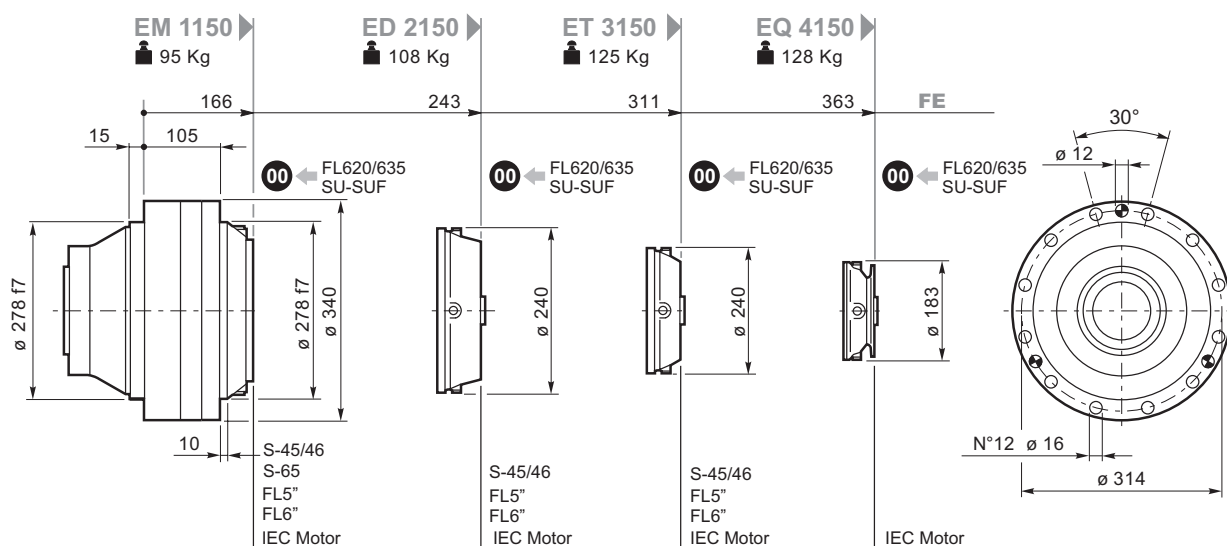
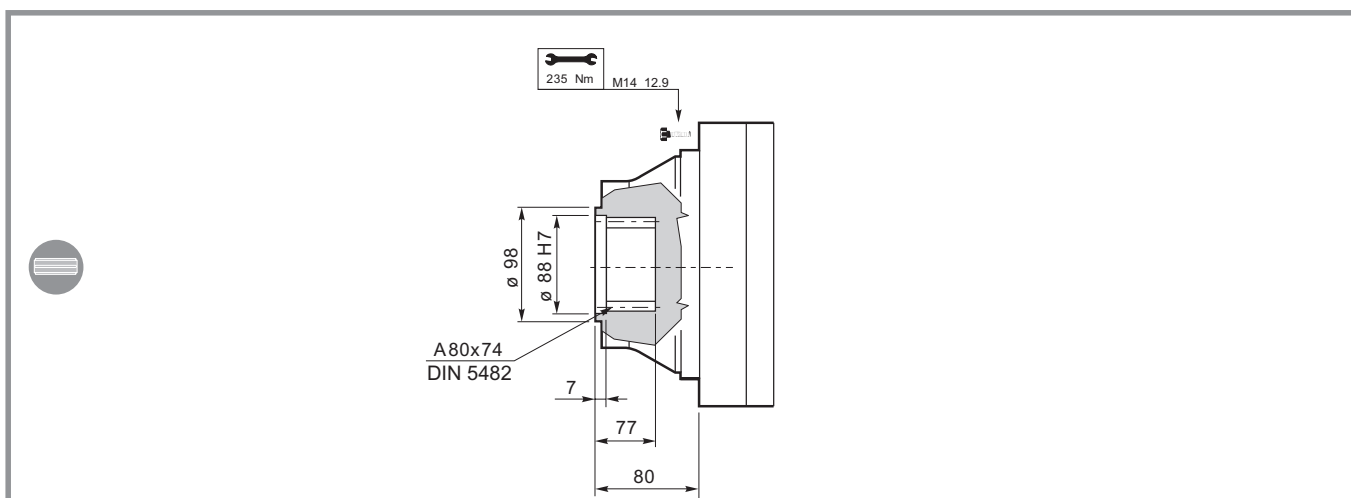
Todas las relaciones indicadas con (es. 10.73) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

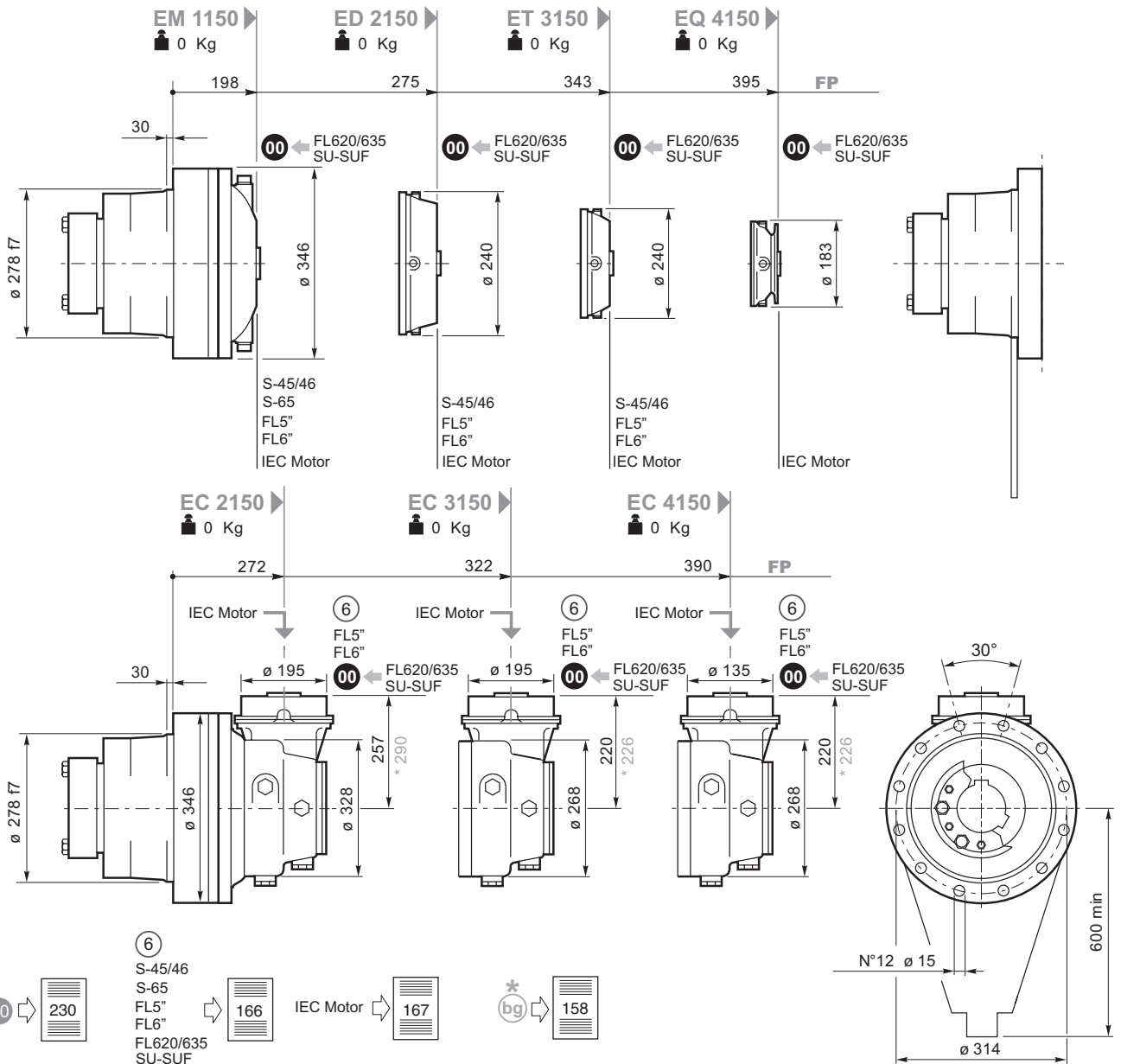
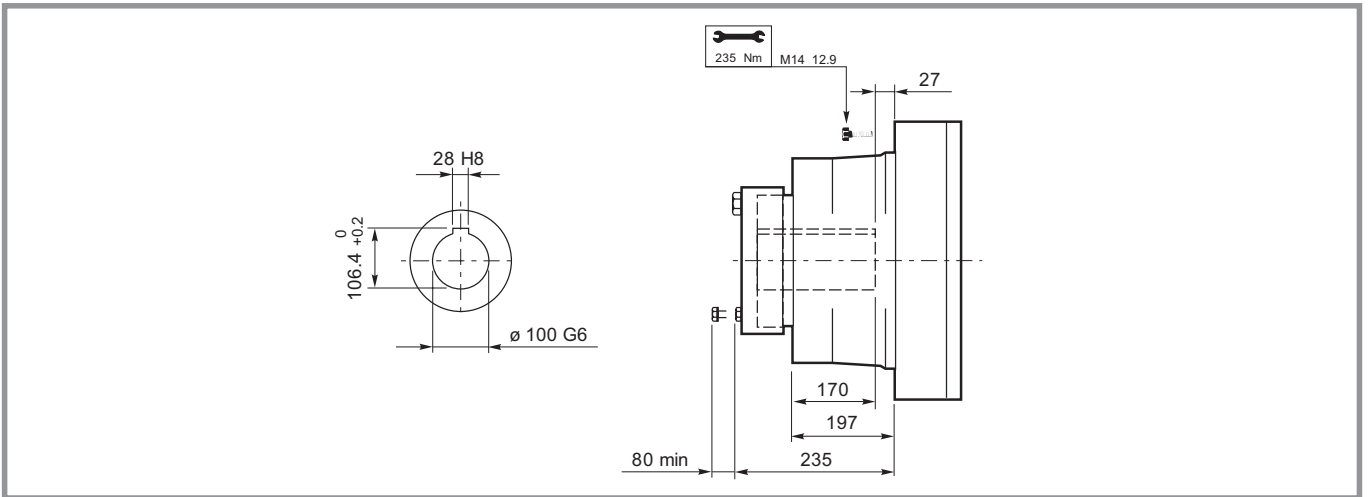
As relações marcadas com (es. 10.73) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

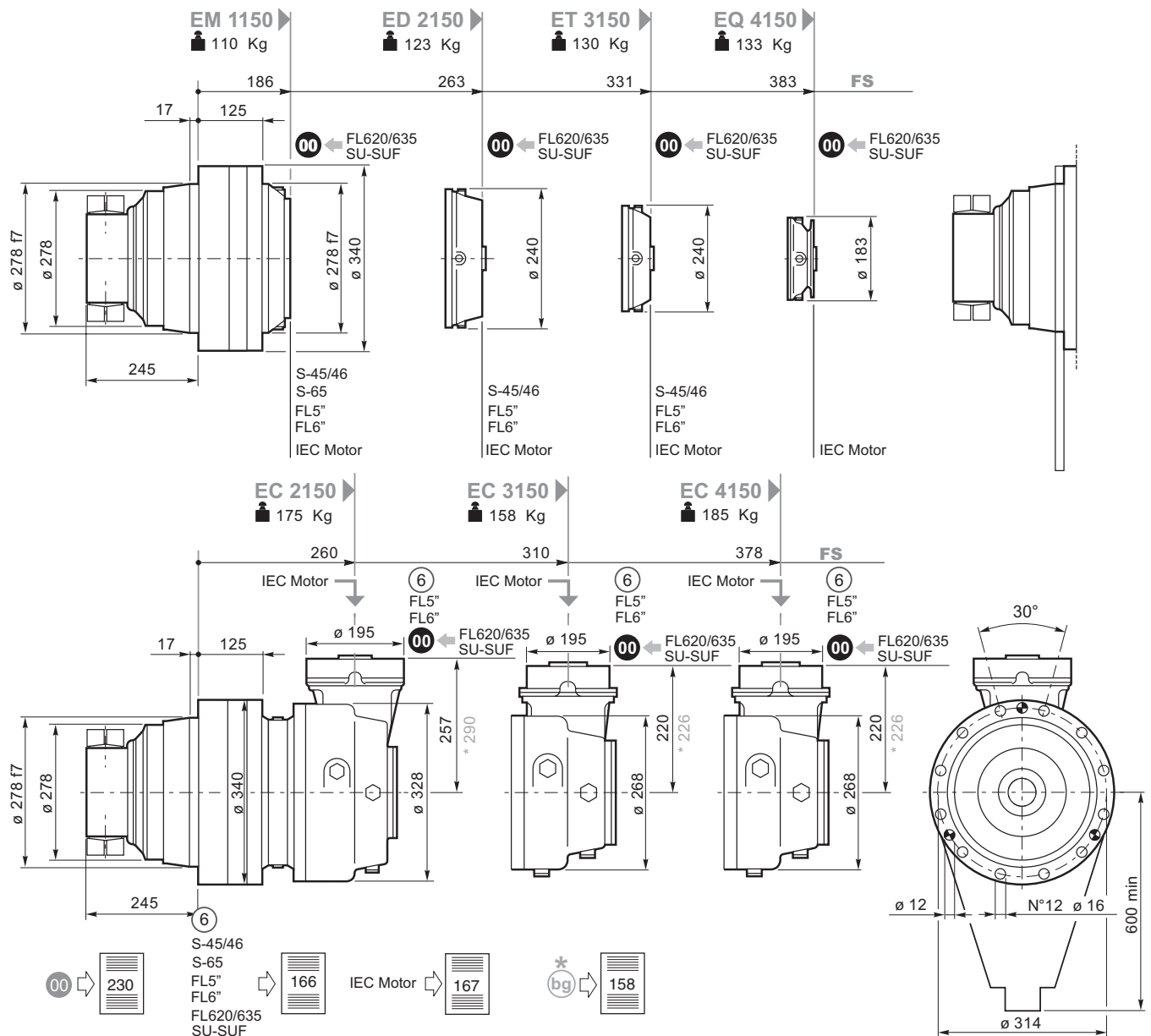
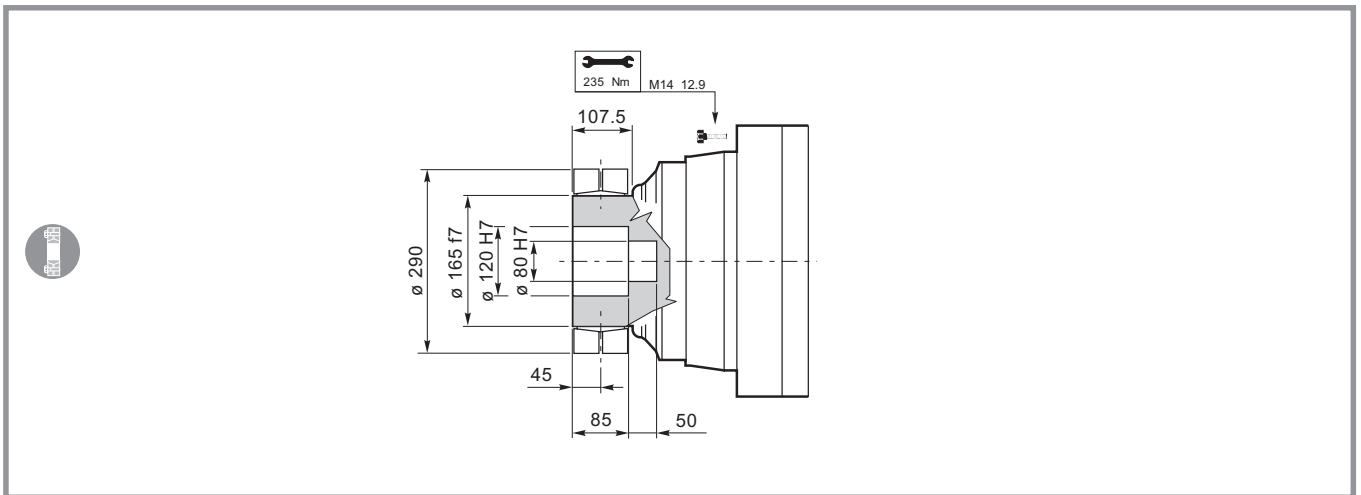


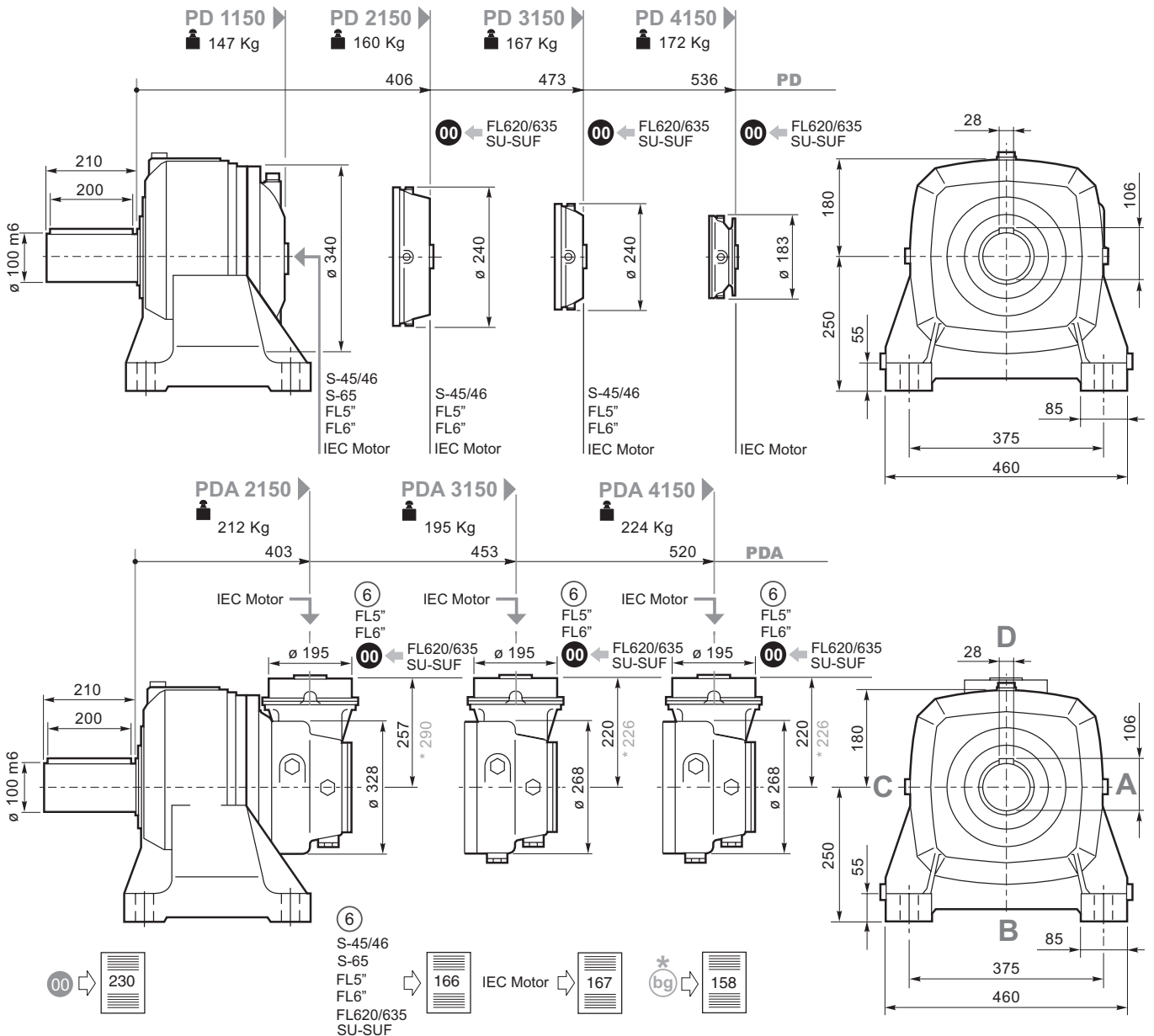
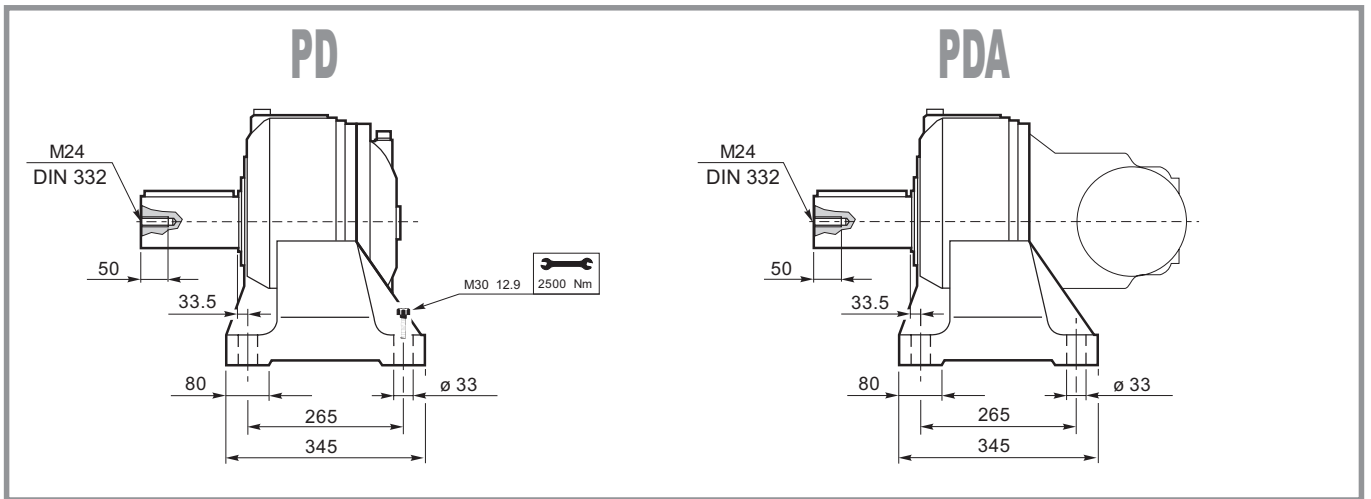






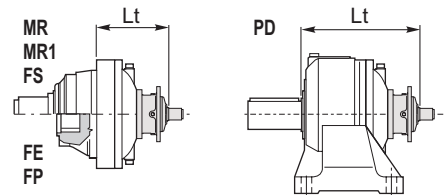
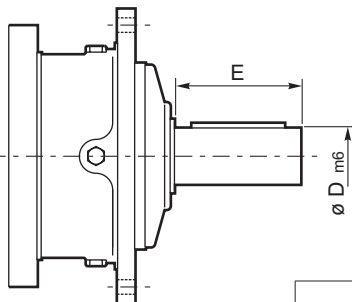






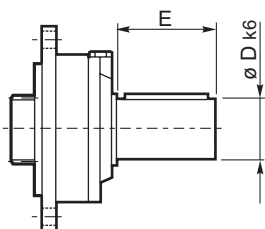
S45CR1-S46C1

S65CR1

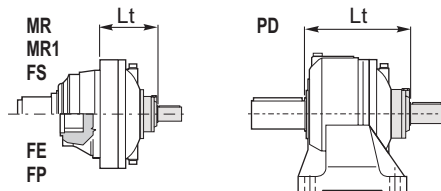


| | D m6 | E | Lt | | | | | |
|----------------|---------|-----|----------------|--------|-----|-----|-----|-----|
| | | | MN-MN1-FS | MR-MR1 | FE | FP | PD | |
| S45 CR1 | 65 | 105 | EM 1150 | 326 | 346 | 306 | 338 | 468 |
| | | | ED 2150 | 326 | 346 | 306 | 338 | 468 |
| | | | ET 3150 | 393 | 413 | 373 | 405 | 535 |
| S46 C1 | 65 | 105 | EM 1150 | 346 | 387 | 347 | 379 | 510 |
| | | | ED 2150 | 367 | 387 | 347 | 379 | 510 |
| | | | ET 3150 | 434 | 454 | 414 | 446 | 577 |
| S65 CR1 | 80 | 130 | EM 1150 | 366 | 386 | 346 | 378 | 509 |

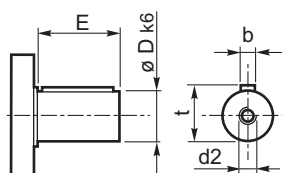
SU2



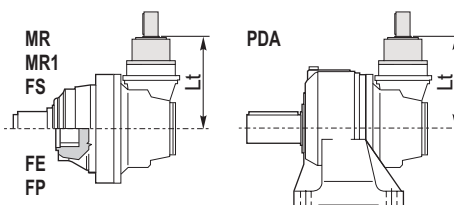
| | D k6 | E | Lt | | | | | |
|-------------|---------|----|-----------------|-----------|-----|-----|-----|-----|
| | | | MN MN1 FS | MR MR1 | FE | FP | PD | |
| SU 2 | 40 | 58 | EM 1150 | 246 | 266 | 226 | 258 | — |
| | | | ED 2150 | 323 | 343 | 303 | 335 | 446 |
| | | | ET 3150 | 391 | 411 | 371 | 403 | 533 |
| | | | EQ 4150 | 443 | 463 | 423 | 455 | 596 |



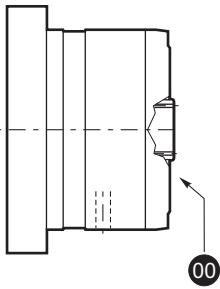
⑥ 48.82



| | D | E | Lt | | | | |
|--------------|----|----|----------------------------|--|--|--|-----|
| | | | MN-MN1-MR-MR1-FS-FE-FP-PDA | | | | |
| 48.82 | 48 | 82 | EC 2150 | | | | 317 |
| | | | EC 3150 | | | | 280 |
| | | | EC 4150 | | | | 280 |

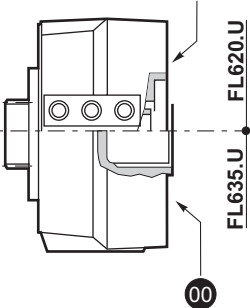


FL250-FL350-FL450 FL750 FL760-FL960

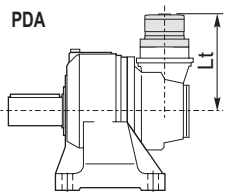
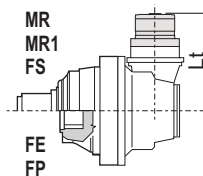
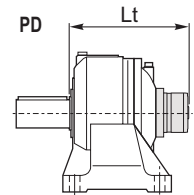
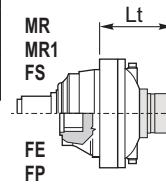


FL620/10
FL635/10

FL620U-FL635U
SAE A-AA
Shaft FE



| | | Lt | | | | |
|----------------------|----------|--------------|--------|-----|-----|------------|
| | | MN-MN1 FS | MR-MR1 | FE | FP | PD- PDA |
| FL250-FL350 FL450 | EM 1150 | 296 | 316 | 276 | 308 | 439 |
| | ED 2150 | 356 | 376 | 326 | 368 | 500 |
| | ET 3150 | 424 | 444 | 404 | 436 | 567 |
| | EC 2150* | 408 | 408 | 408 | 408 | 408 |
| | EC 2150 | 441 | 441 | 441 | 441 | 441 |
| | EC 3150* | 280 | 280 | 280 | 280 | 280 |
| | EC 3150 | 377 | 377 | 377 | 377 | 377 |
| | EC 4150* | 280 | 280 | 280 | 280 | 280 |
| | EC 4150 | 377 | 377 | 377 | 377 | 377 |
| FL750 | EM 1150 | 310 | 330 | 290 | 322 | 453 |
| | ED 2150 | 370 | 390 | 350 | 382 | 513 |
| | ET 3150 | 437 | 457 | 417 | 449 | 580 |
| | EC 2150* | 422 | 422 | 422 | 422 | 422 |
| | EC 2150 | 455 | 455 | 455 | 455 | 455 |
| FL760-FL960 | EM 1150 | 324 | 344 | 304 | 336 | 467 |
| | ED 2150 | 397 | 417 | 377 | 409 | 540 |

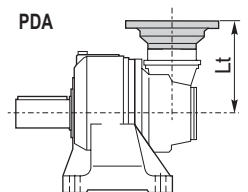
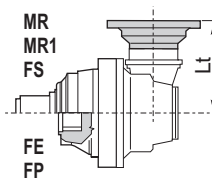
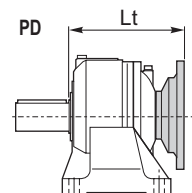
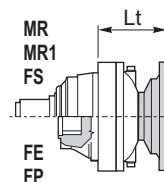


| | | Lt | | | | | |
|----------|----------|--------------|--------|-------|-------|-------|-----|
| | | MN-MN1 FS | MR-MR1 | FE | FP | PD | |
| FL620/U | EM 1150 | 290.5 | 310.5 | 270.5 | 302.5 | — | |
| | ED 2150 | 367.5 | 387.5 | 347.5 | 379.5 | 510.5 | |
| | ET 3150 | 435.5 | 455.5 | 415.5 | 447.5 | 577.5 | |
| | EQ 4150 | 487.5 | 507.5 | 467.5 | 499.5 | 640.5 | |
| | EC 2150 | 361.5 | 361.5 | 361.5 | 361.5 | 361.5 | |
| | EC 2150* | 394.5 | 394.5 | 394.5 | 394.5 | 394.5 | |
| | EC 3150 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 3150* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 | |
| | EC 4150 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 | |
| | EC 4150* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 | |
| | FL635U | EM 1150 | 277 | 297 | 257 | 289 | — |
| | | ED 2150 | 354 | 374 | 334 | 366 | 497 |
| ET 3150 | | 422 | 442 | 402 | 434 | 564 | |
| EQ 4150 | | 474 | 494 | 454 | 486 | 627 | |
| EC 2150 | | 348 | 348 | 348 | 348 | 348 | |
| EC 2150* | | 381 | 381 | 381 | 381 | 381 | |
| EC 3150 | | 311 | 311 | 311 | 311 | 311 | |
| EC 3150* | | 317 | 317 | 317 | 317 | 317 | |
| EC 4150 | | 311 | 311 | 311 | 311 | 311 | |
| EC 4150* | | 317 | 317 | 317 | 317 | 317 | |
| FL620/10 | | EQ 4150 | 446 | 466 | 426 | 446 | 590 |
| FL635/10 | | EQ 4150 | 428 | 448 | 408 | 428 | 571 |

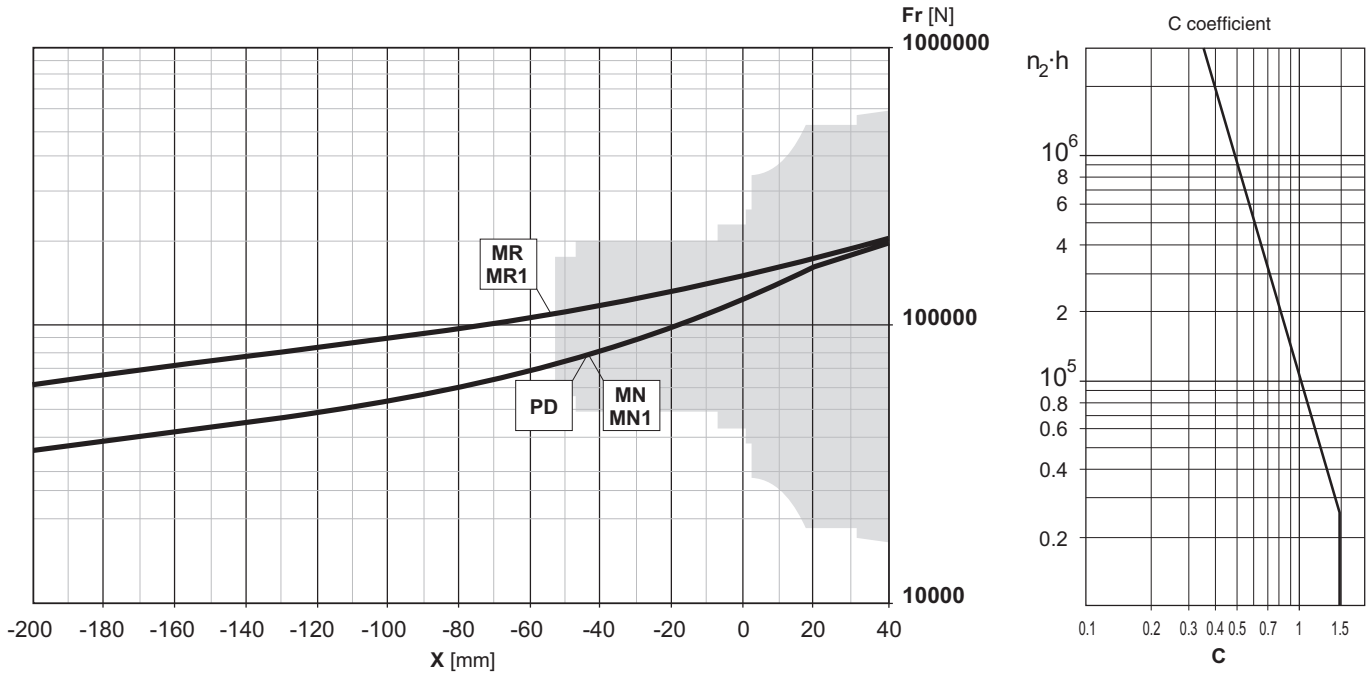
*

IEC Motor

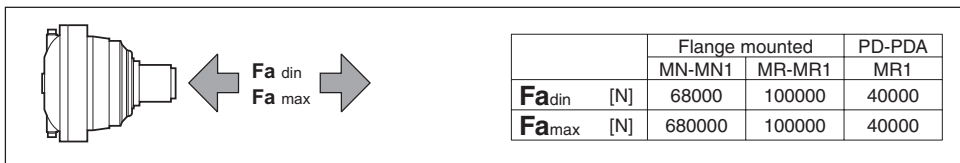
| | | Lt | | | | | | | |
|----------|-------------------------------|-----------|-----------|-----------------|-------------------|------------|-------------------|------------|------------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2150 | MN-MN-FS | 283 | 285 | 290 | 291 | 358 | 389 | 399 | 430 |
| ED 2150 | MR-MR1 | 303 | 305 | 310 | 311 | 378 | 409 | 419 | 450 |
| ED 2150 | FE | 263 | 265 | 270 | 271 | 338 | 369 | 379 | 410 |
| ED 2150 | FP | | | | | | | | |
| ET 3150 | MN-MN-FS | 351 | 353 | 358 | 359 | 426 | 457 | 467 | 498 |
| ET 3150 | MR-MR1 | 371 | 373 | 378 | 379 | 446 | 447 | 487 | 518 |
| ET 3150 | FE | 331 | 333 | 338 | 339 | 406 | 437 | 447 | 478 |
| ET 3150 | FP | | | | | | | | |
| EQ 4150 | MN-MN-FS | 403 | 405 | 410 | 411 | 478 | | | |
| EQ 4150 | MR-MR1 | 423 | 425 | 430 | 431 | 498 | | | |
| EQ 4150 | FE | 383 | 385 | 390 | 391 | 458 | | | |
| EQ 4150 | FP | | | | | | | | |
| PD 2150 | PD | 426 | 428 | 433 | 434 | 501 | 532 | 542 | 573 |
| PD 3150 | PD | 494 | 496 | 501 | 502 | 569 | 600 | 610 | 641 |
| PD 4150 | PD | 546 | 548 | 553 | 554 | 621 | | | |
| EC 2150 | MN-MR-MN1-MR1 FE-FS-FP-PDA | 277 | 279 | 284 | 285 | 352 | 383 | | |
| EC 2150* | | 310 | 312 | 317 | 318 | 385 | 416 | | |
| EC 3150 | | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3150* | | 246 | 248 | 253 | 254 | 321 | 352 | | |
| EC 4150 | | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 4150* | | 246 | 248 | 253 | 254 | 321 | 352 | | |



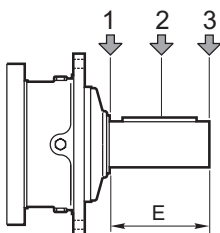
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



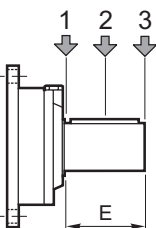
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais



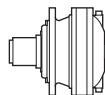
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|---------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

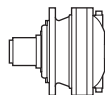


| Type | E | Fr [N] | | | | | |
|------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



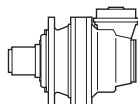
| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| ED 2155 | | | | | | | | | | | |
| 19.50 | 77 | 7712 | 62 | 51 | 8709 | 46.8 | 25.6 | 10722 | 28.8 | 20000 | 23 |
| 23.40 | 64 | 8145 | 55 | 42.7 | 9199 | 41.2 | 21.4 | 11325 | 25.3 | 20000 | |
| ET 3155 | | | | | | | | | | | |
| 47.78 | 31.4 | 10090 | 33.2 | 20.9 | 11395 | 25.0 | 10.5 | 13411 | 14.7 | 20000 | 15 |
| 56.37 | 26.6 | 10604 | 29.5 | 17.7 | 11976 | 22.2 | 8.9 | 13721 | 12.7 | 20000 | |
| 62.17 | 24.1 | 10920 | 27.6 | 16.1 | 12333 | 20.8 | 8.0 | 13992 | 11.8 | 20000 | |
| 70.57 | 21.3 | 11343 | 25.3 | 14.2 | 12810 | 19.0 | 7.1 | 14349 | 10.6 | 20000 | |
| 80.54 | 18.6 | 11802 | 23.0 | 12.4 | 13221 | 17.2 | 6.2 | 14727 | 9.6 | 20000 | |
| 87.31 | 17.2 | 12091 | 21.8 | 11.5 | 13310 | 16.0 | 5.7 | 14962 | 9.0 | 20000 | |
| 100.8 | 14.9 | 12624 | 19.7 | 9.9 | 13471 | 14.0 | 5.0 | 15388 | 8.0 | 20000 | |
| 109.1 | 13.7 | 12928 | 18.6 | 9.2 | 13631 | 13.1 | 4.6 | 15627 | 7.5 | 20000 | |
| 122.4 | 12.3 | 13236 | 17.0 | 8.2 | 13949 | 11.9 | 4.1 | 15978 | 6.8 | 20000 | |
| 141.4 | 10.6 | 13396 | 14.9 | 7.1 | 14353 | 10.6 | 3.5 | 16425 | 6.1 | 20000 | |
| 161.4 | 9.3 | 10255 | 10.0 | 6.2 | 10710 | 7.0 | 3.1 | 12291 | 4.0 | 20000 | |
| 169.7 | 8.8 | 13729 | 12.7 | 5.9 | 14878 | 9.2 | 2.9 | 17006 | 5.3 | 20000 | |
| 185.0 | 8.1 | 10374 | 8.8 | 5.4 | 11010 | 6.2 | 2.7 | 12623 | 3.6 | 20000 | |
| 196.8 | 7.6 | 9651 | 7.7 | 5.1 | 10030 | 5.3 | 2.5 | 11526 | 3.1 | 20000 | |
| 223.6 | 6.7 | 10539 | 7.4 | 4.5 | 11434 | 5.4 | 2.2 | 13093 | 3.1 | 20000 | |
| 272.7 | 5.5 | 9920 | 5.7 | 3.7 | 10715 | 4.1 | 1.8 | 12286 | 2.4 | 20000 | |

1500
HOURS LIFE



155

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| ED 2155 | | | | | | | | | | | |
| 19.50 | 77 | 13112 | 106 | 51 | 13988 | 75 | 25.6 | 16097 | 43.2 | 20000 | 23 |
| 23.40 | 64 | 13347 | 90 | 42.7 | 14527 | 65 | 21.4 | 16682 | 37.3 | 20000 | |
| ET 3155 | | | | | | | | | | | |
| 47.78 | 31.4 | 15464 | 51 | 20.9 | 16748 | 36.7 | 10.5 | 19110 | 20.9 | 20000 | 15 |
| 56.37 | 26.6 | 15980 | 44.5 | 17.7 | 17292 | 32.1 | 8.9 | 19709 | 18.3 | 20000 | |
| 62.17 | 24.1 | 16291 | 41.2 | 16.1 | 17620 | 29.7 | 8.0 | 20070 | 16.9 | 20000 | |
| 70.57 | 21.3 | 16699 | 37.2 | 14.2 | 18050 | 26.8 | 7.1 | 20544 | 15.2 | 20000 | |
| 80.54 | 18.6 | 17131 | 33.4 | 12.4 | 18507 | 24.1 | 6.2 | 21048 | 13.7 | 20000 | |
| 87.31 | 17.2 | 17399 | 31.3 | 11.5 | 18790 | 22.5 | 5.7 | 21361 | 12.8 | 20000 | |
| 100.8 | 14.9 | 17884 | 27.9 | 9.9 | 19303 | 20.1 | 5.0 | 21928 | 11.4 | 20000 | |
| 109.1 | 13.7 | 18155 | 26.1 | 9.2 | 19590 | 18.8 | 4.6 | 22245 | 10.7 | 20000 | |
| 122.4 | 12.3 | 18553 | 23.8 | 8.2 | 20012 | 17.1 | 4.1 | 22712 | 9.7 | 20000 | |
| 141.4 | 10.6 | 19061 | 21.2 | 7.1 | 20550 | 15.2 | 3.5 | 23308 | 8.6 | 20000 | |
| 161.4 | 9.3 | 14307 | 13.9 | 6.2 | 15443 | 10.0 | 3.1 | 17549 | 5.7 | 20000 | |
| 169.7 | 8.8 | 18633 | 17.3 | 5.9 | 20396 | 12.6 | 2.9 | 23638 | 7.3 | 20000 | |
| 185.0 | 8.1 | 14684 | 12.5 | 5.4 | 15843 | 9.0 | 2.7 | 17991 | 5.1 | 20000 | |
| 196.8 | 7.6 | 13440 | 10.7 | 5.1 | 14514 | 7.7 | 2.5 | 16506 | 4.4 | 20000 | |
| 223.6 | 6.7 | 15216 | 10.7 | 4.5 | 16408 | 7.7 | 2.2 | 18617 | 4.4 | 20000 | |
| 272.7 | 5.5 | 14299 | 8.2 | 3.7 | 15426 | 5.9 | 1.8 | 17517 | 3.4 | 20000 | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3155 - PDA 3155

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|------|-------|------|-------|----|
| 40.95 | 36.6 | 9235 | 35.4 | 24.4 | 10430 | 26.7 | 12.2 | 12841 | 16.4 | 20000 | 15 |
| 45.16 | 33.2 | 9921 | 34.5 | 22.1 | 11205 | 26.0 | 11.1 | 13348 | 15.5 | 20000 | |
| 50.66 | 29.6 | 10269 | 31.8 | 19.7 | 11598 | 24.0 | 9.9 | 13477 | 13.9 | 20000 | |
| 58.50 | 25.6 | 10722 | 28.8 | 17.1 | 12109 | 21.7 | 8.5 | 13823 | 12.4 | 20000 | |
| 63.06 | 23.8 | 6172 | 15.4 | 15.9 | 6970 | 11.6 | 7.9 | 8581 | 7.1 | 20000 | |
| 70.20 | 21.4 | 11325 | 25.3 | 14.2 | 12790 | 19.1 | 7.1 | 14334 | 10.7 | 20000 | |
| 78.02 | 19.2 | 7635 | 15.4 | 12.8 | 8623 | 11.6 | 6.4 | 10616 | 7.1 | 20000 | |
| 90.09 | 16.7 | 8817 | 15.4 | 11.1 | 9957 | 11.6 | 5.6 | 12259 | 7.1 | 20000 | |
| 102.8 | 14.6 | 9866 | 15.1 | 9.7 | 10215 | 10.4 | 4.9 | 11245 | 5.7 | 20000 | |
| 108.1 | 13.9 | 10580 | 15.4 | 9.3 | 11949 | 11.6 | 4.6 | 14711 | 7.1 | 20000 | |
| 118.7 | 12.6 | 9990 | 13.2 | 8.4 | 10340 | 9.1 | 4.2 | 11571 | 5.1 | 20000 | |
| 142.5 | 10.5 | 10147 | 11.2 | 7.0 | 10500 | 7.7 | 3.5 | 11995 | 4.4 | 20000 | |
| 173.8 | 8.6 | 9550 | 8.6 | 5.8 | 9883 | 6.0 | 2.9 | 11246 | 3.4 | 20000 | |

Tutti i rapporti evidenziati (es. 45.16) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 45.16) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

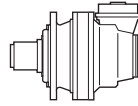
Alle mit (es. 45.16) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 45.16) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 45.16) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 45.16) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

EC 3155 - PDA 3155

| | | | | | | | | | | | |
|--------------|------|-------|------|------|-------|------|------|-------|------|-------|----|
| 40.95 | 36.6 | 14992 | 58 | 24.4 | 16252 | 41.6 | 12.2 | 18565 | 23.7 | 20000 | 15 |
| 45.16 | 33.2 | 15290 | 53 | 22.1 | 16566 | 38.4 | 11.1 | 18910 | 21.9 | 20000 | |
| 50.66 | 29.6 | 15646 | 48.5 | 19.7 | 16940 | 35.0 | 9.9 | 19321 | 20.0 | 20000 | |
| 58.50 | 25.6 | 16097 | 43.2 | 17.1 | 17416 | 31.2 | 8.5 | 19845 | 17.8 | 20000 | |
| 63.06 | 23.8 | 10904 | 27.2 | 15.9 | 12315 | 20.5 | 7.9 | 15161 | 12.6 | 20000 | |
| 70.20 | 21.4 | 16682 | 37.3 | 14.2 | 17604 | 26.3 | 7.1 | 19562 | 14.6 | 20000 | |
| 78.02 | 19.2 | 13490 | 27.2 | 12.8 | 15235 | 20.5 | 6.4 | 18757 | 12.6 | 20000 | |
| 90.09 | 16.7 | 15578 | 27.2 | 11.1 | 17593 | 20.5 | 5.6 | 21483 | 12.5 | 20000 | |
| 102.8 | 14.6 | 13119 | 20.0 | 9.7 | 14185 | 14.4 | 4.9 | 16156 | 8.2 | 20000 | |
| 108.1 | 13.9 | 17652 | 25.6 | 9.3 | 18442 | 17.9 | 4.6 | 21496 | 10.4 | 20000 | |
| 118.7 | 12.6 | 13490 | 17.8 | 8.4 | 14578 | 12.9 | 4.2 | 16591 | 7.3 | 20000 | |
| 142.5 | 10.5 | 13971 | 15.4 | 7.0 | 15088 | 11.1 | 3.5 | 17155 | 6.3 | 20000 | |
| 173.8 | 8.6 | 13123 | 11.9 | 5.8 | 14178 | 8.5 | 2.9 | 16133 | 4.9 | 20000 | |

Tutti i rapporti evidenziati (es. 45.16) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 45.16) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

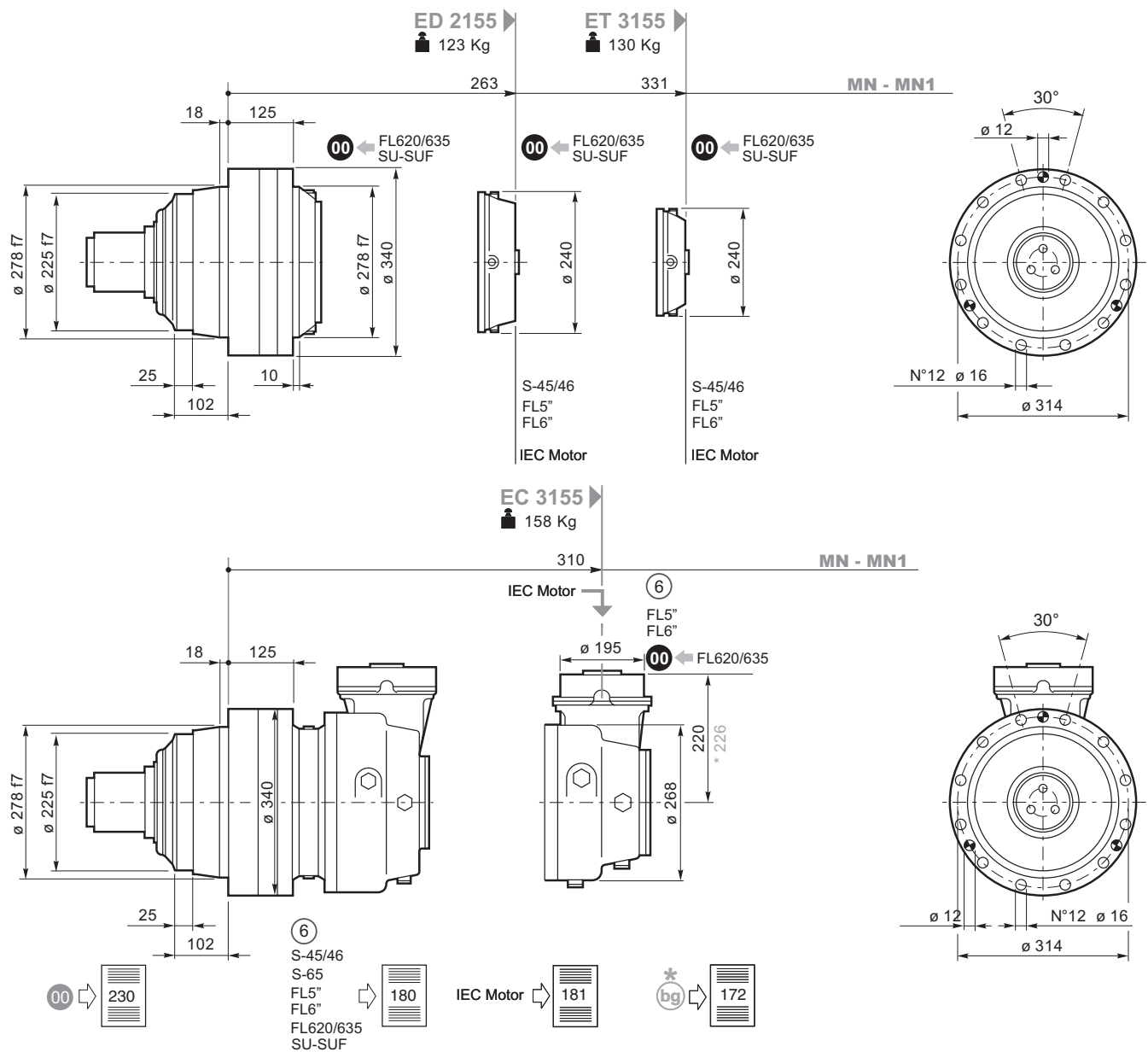
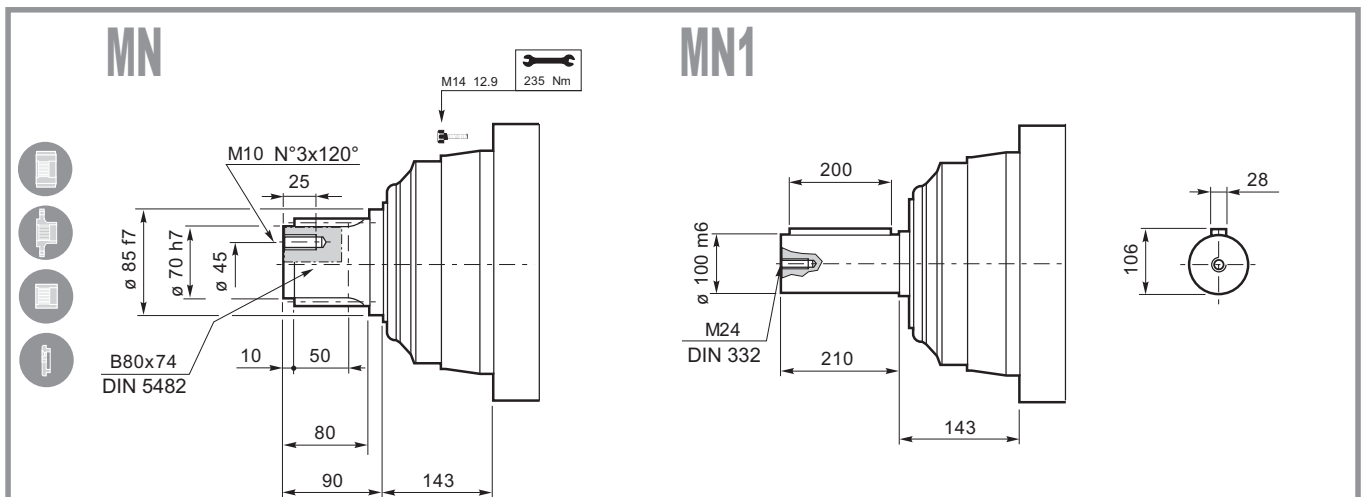
Alle mit (es. 45.16) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

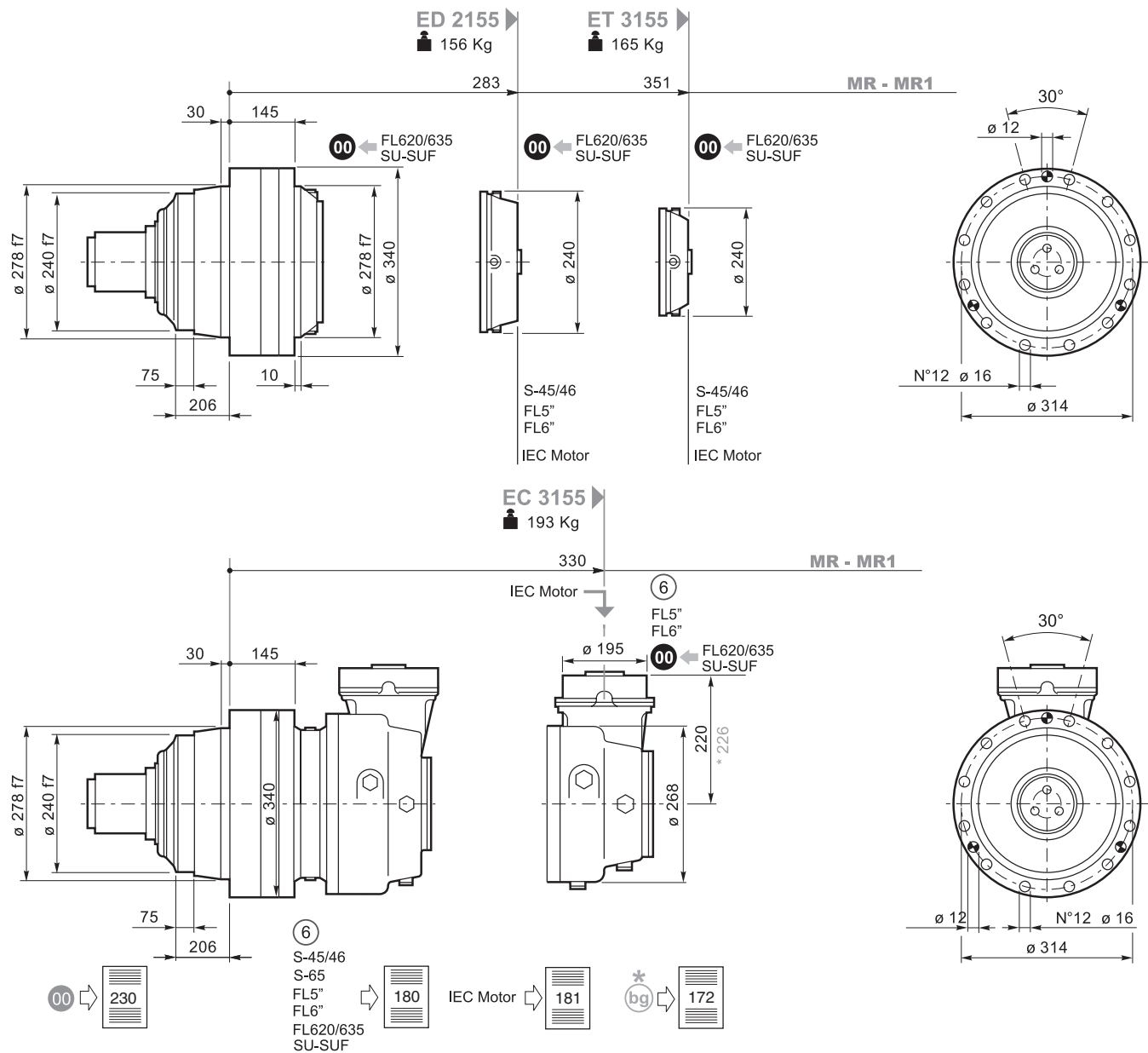
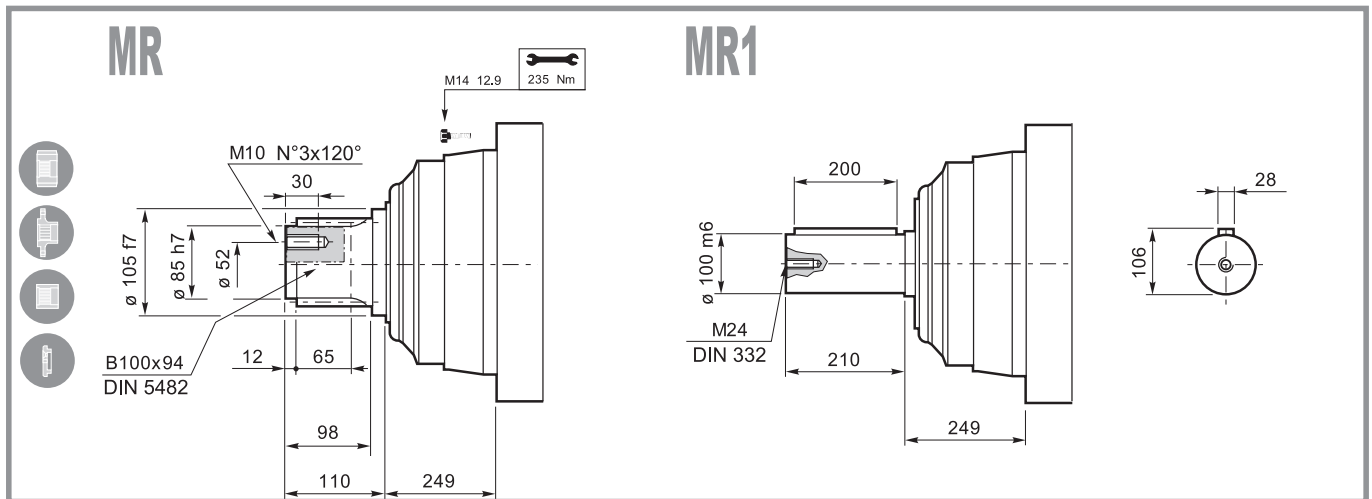
Les rapports repérés par (es. 45.16) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

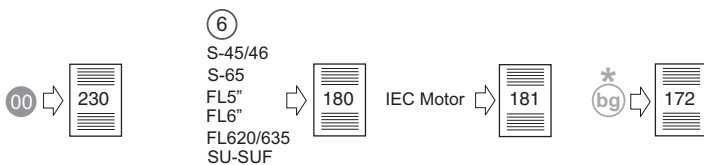
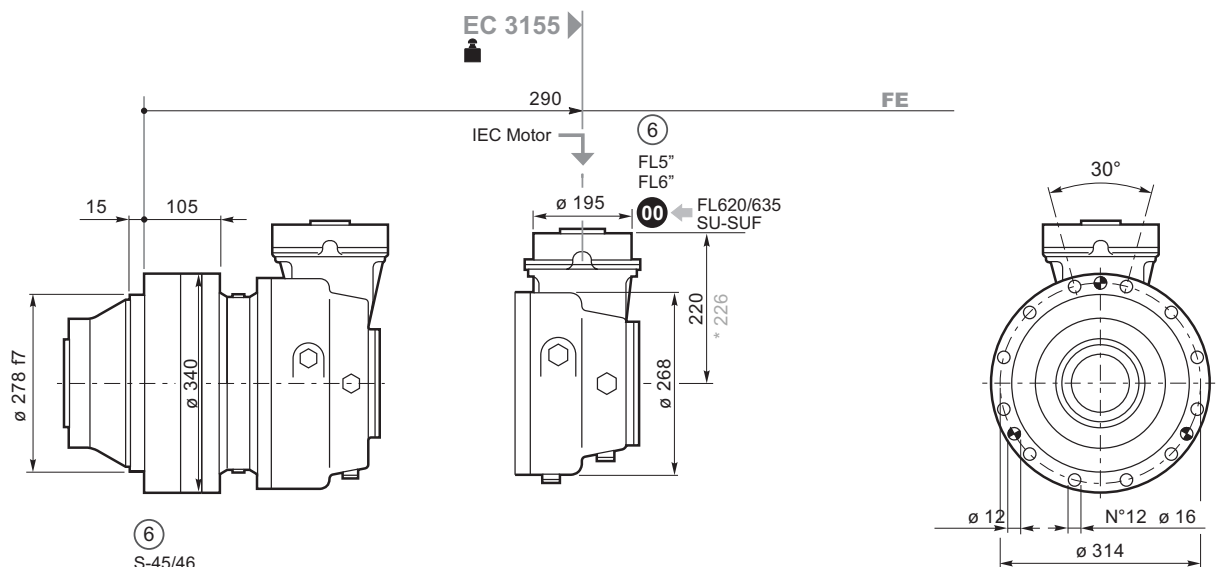
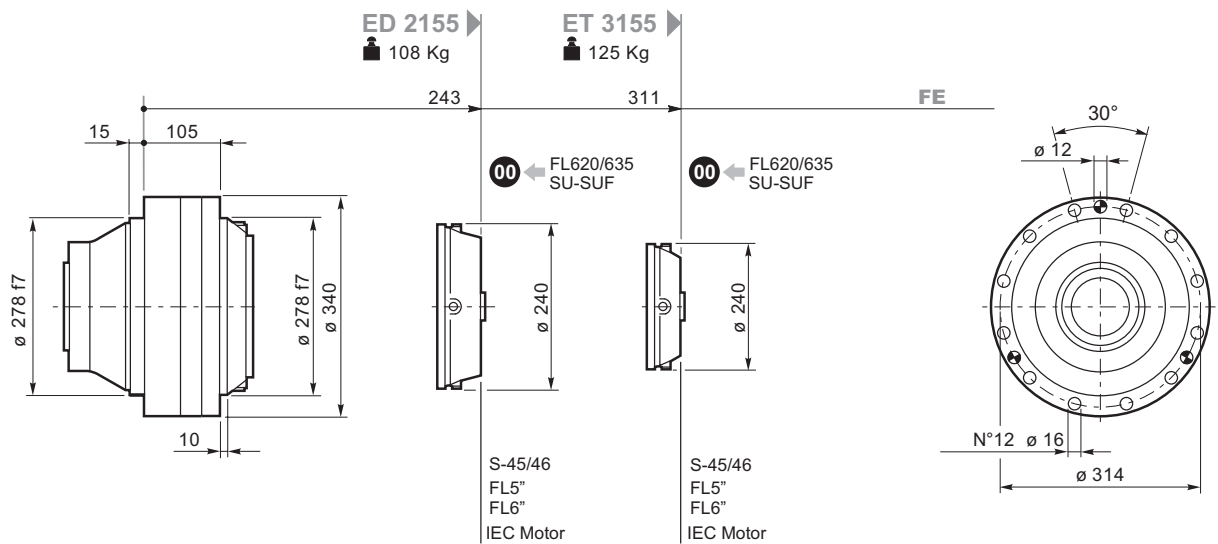
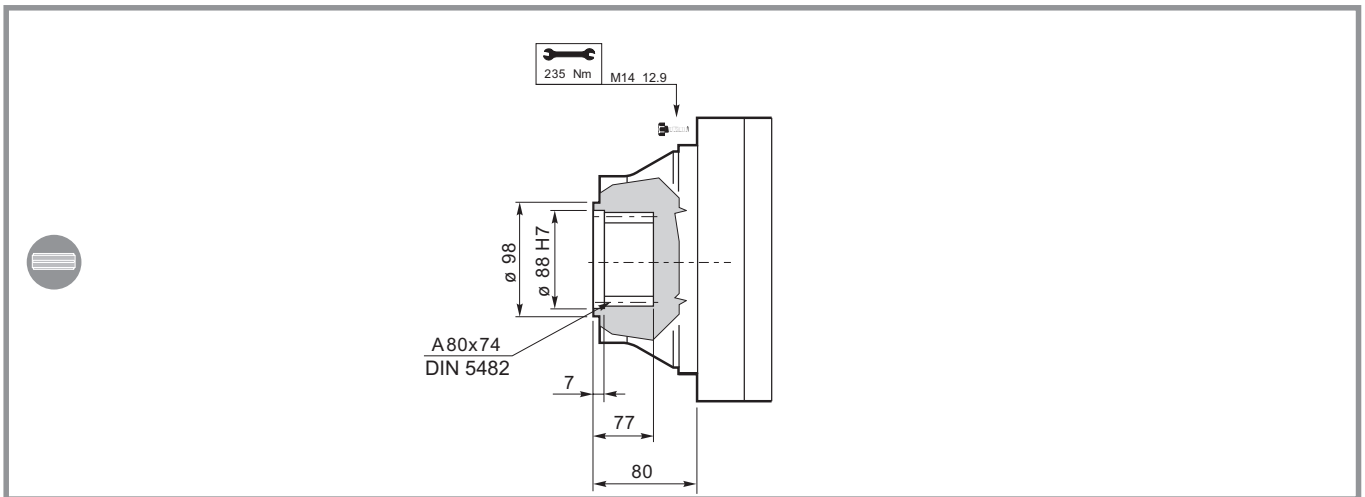
Todas las relaciones indicadas con (es. 45.16) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

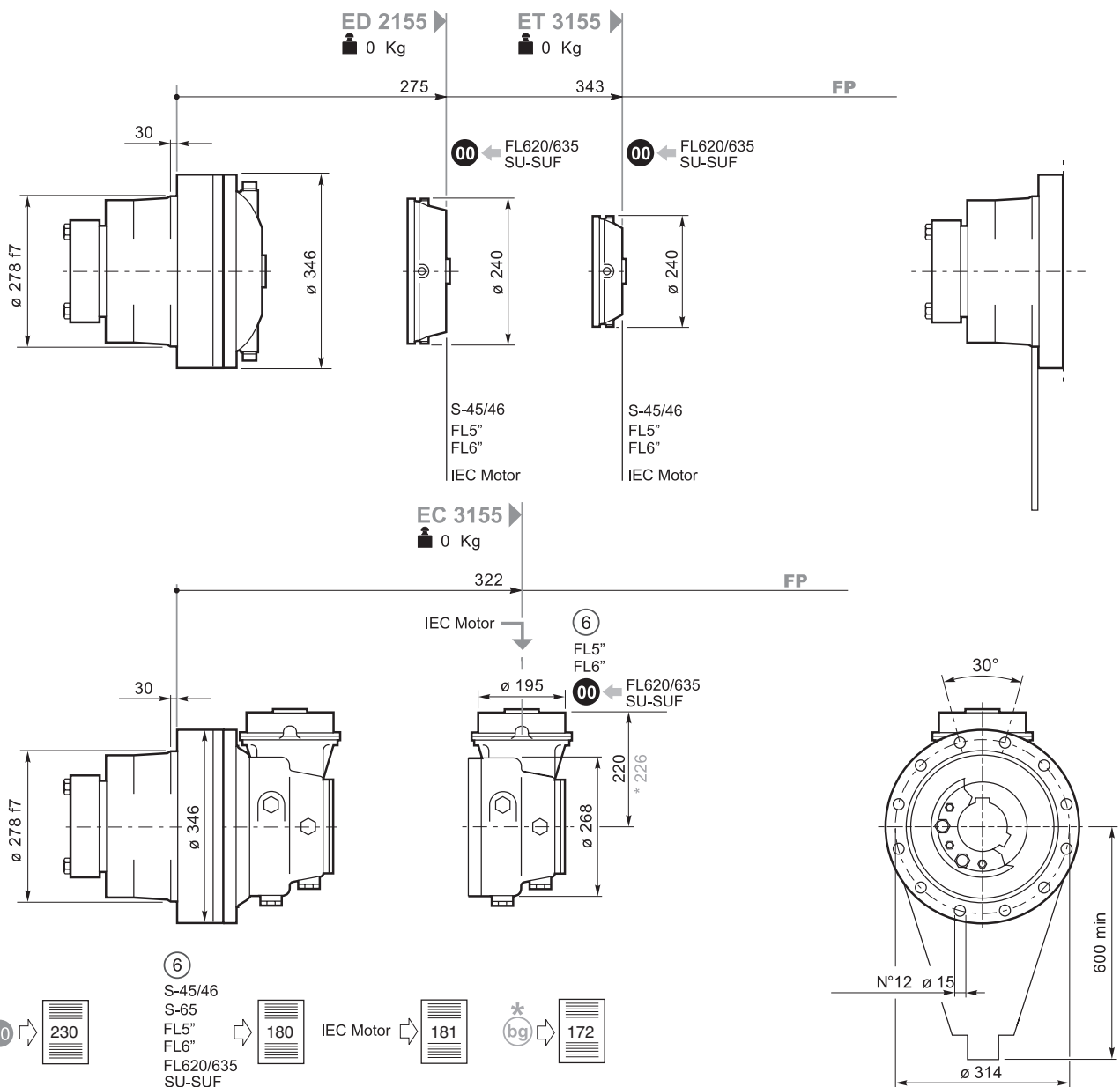
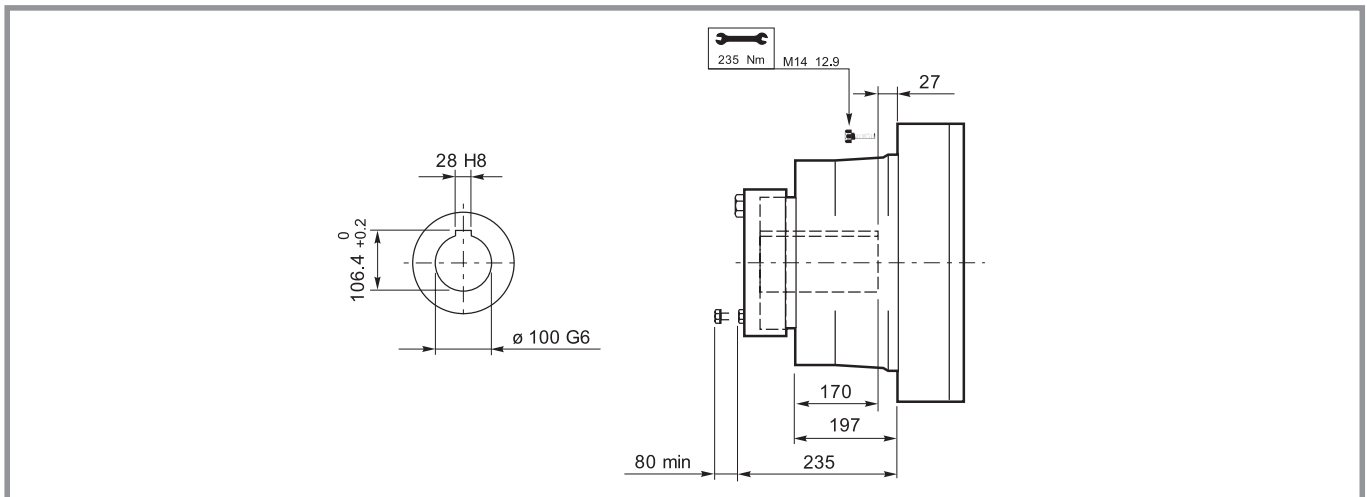
As relações marcadas com (es. 45.16) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.

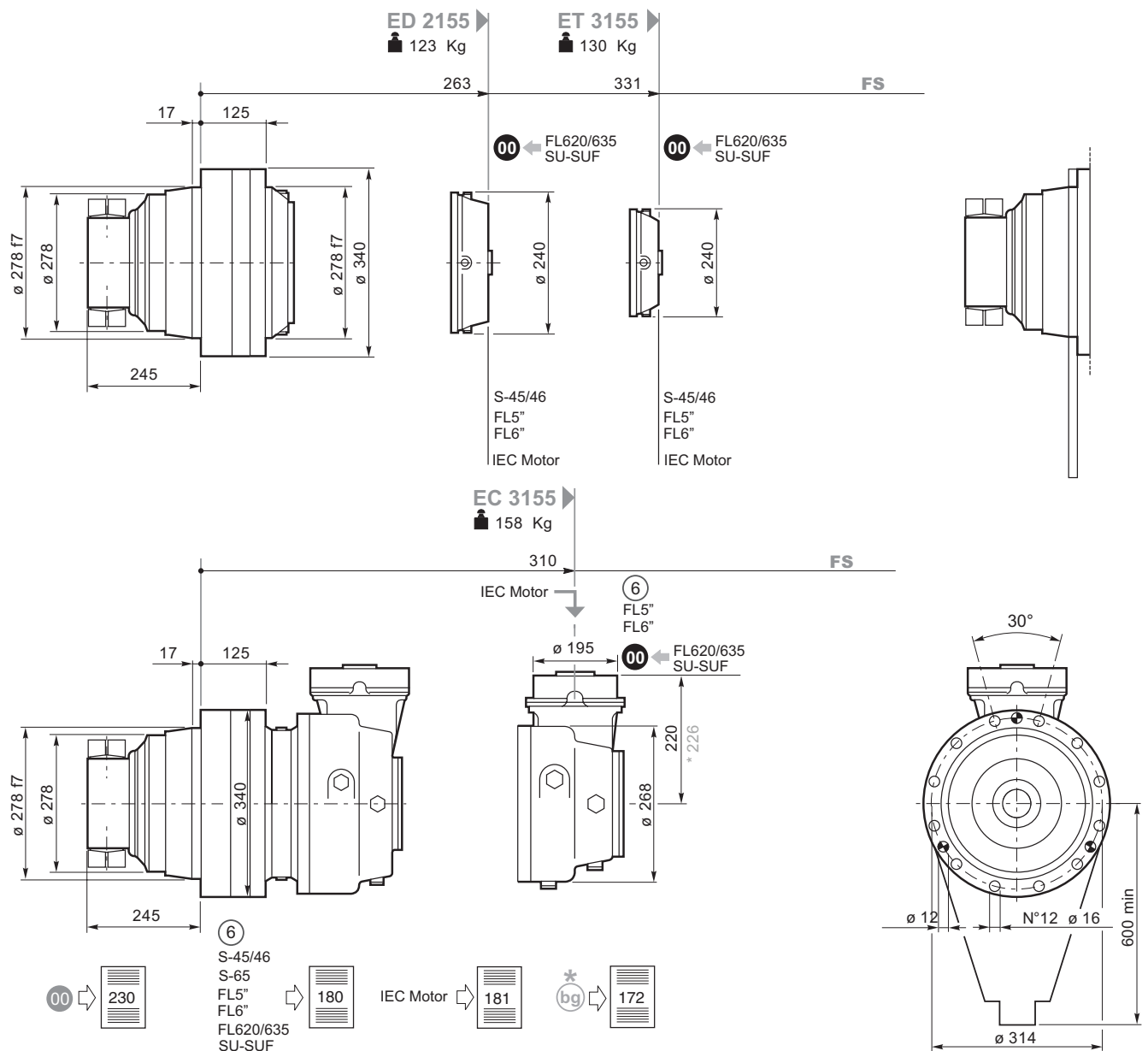
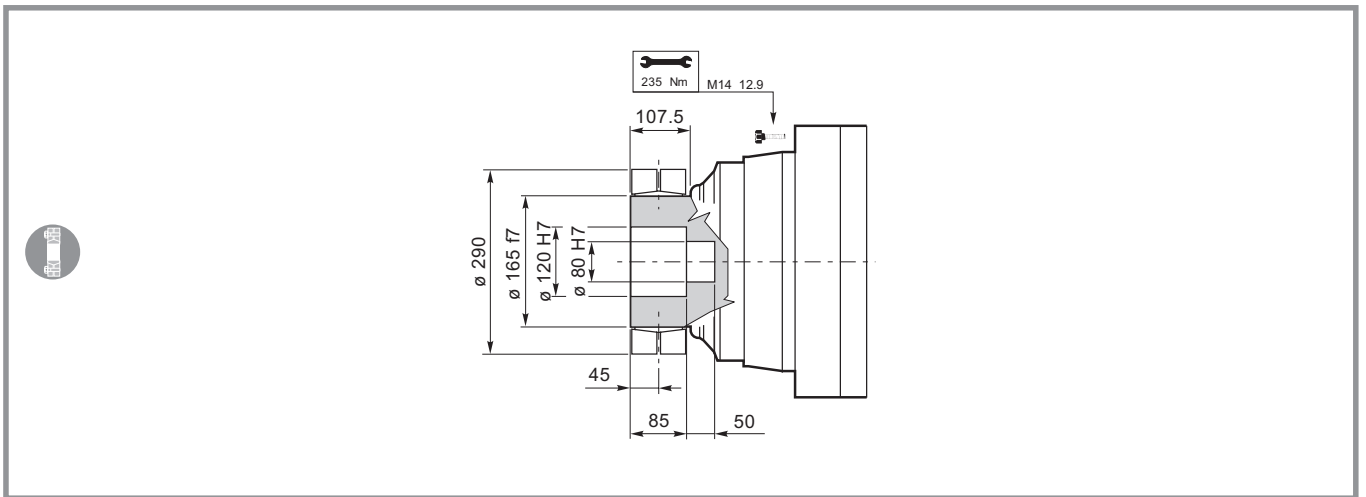


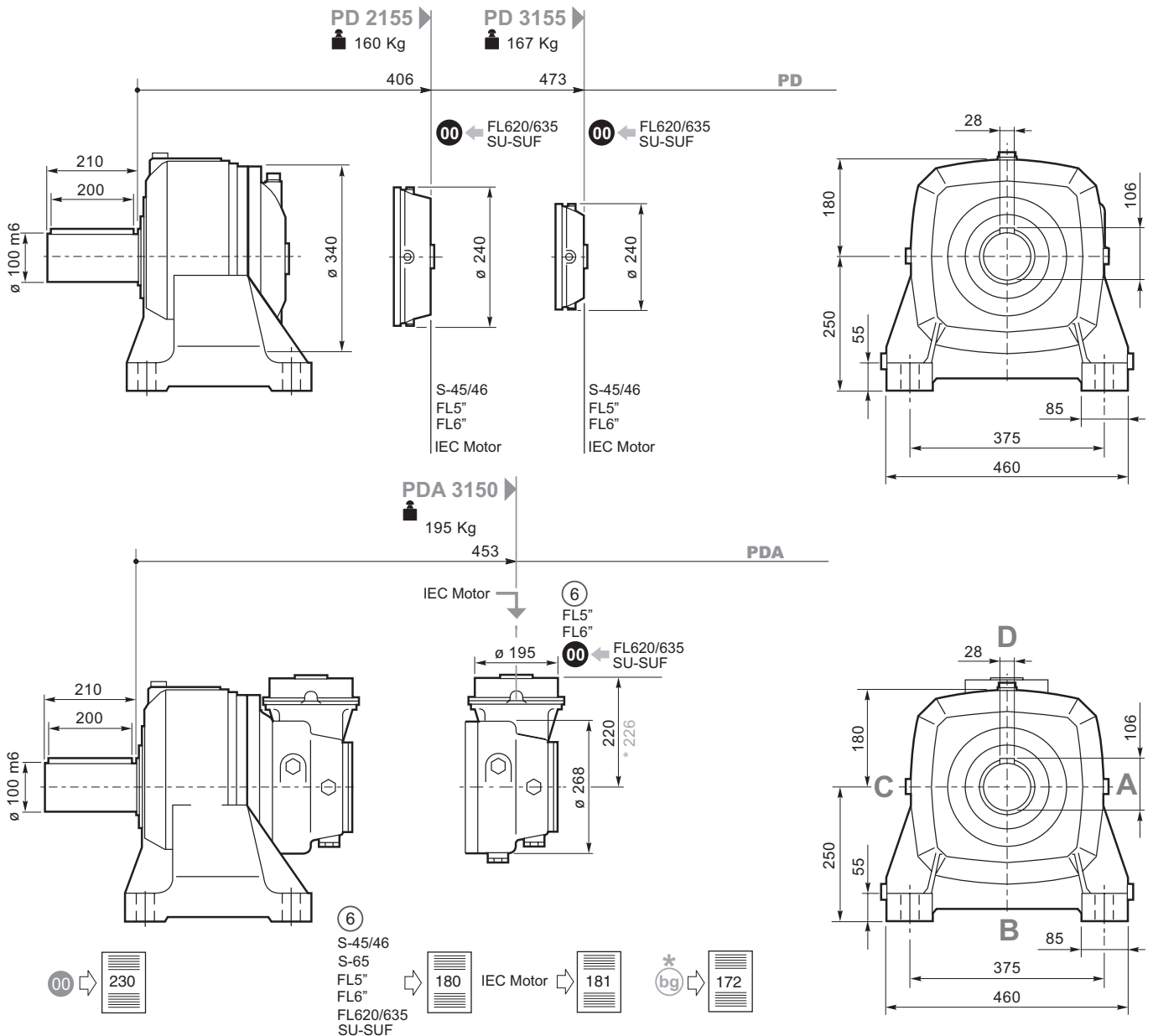
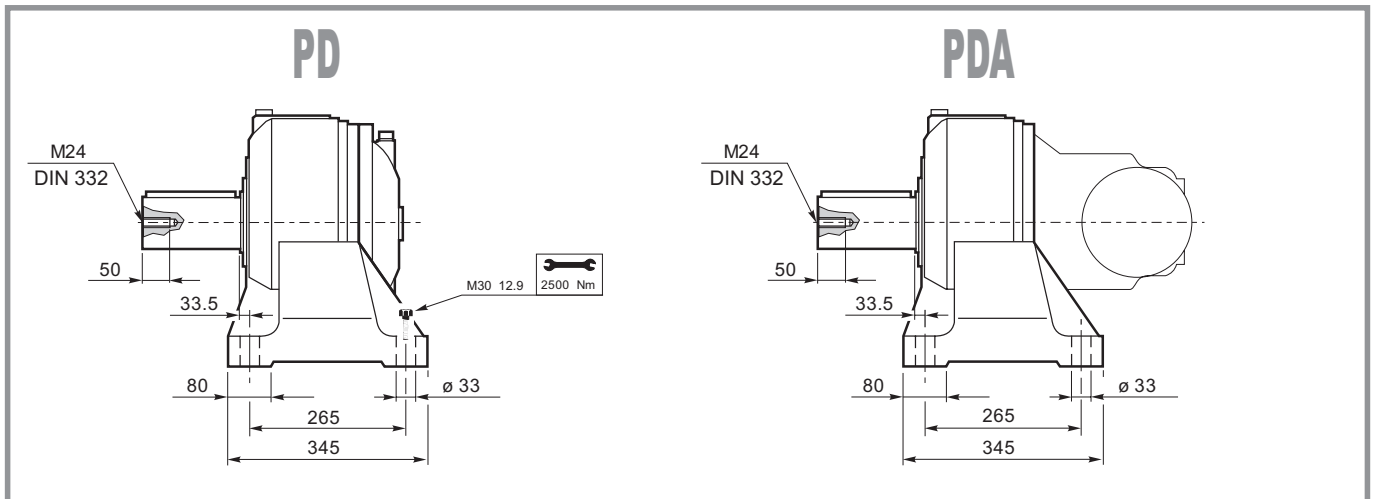






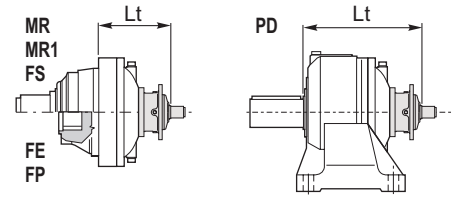
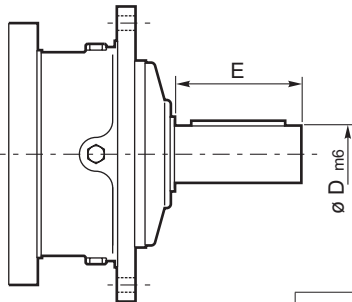






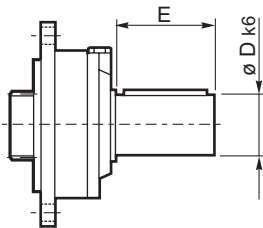
S45CR1-S46C1

S65CR1

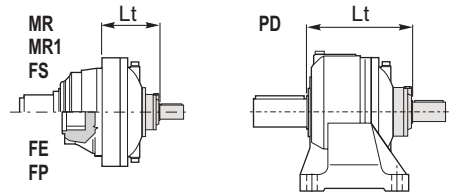


| | D m6 | E | | L _t | | | | |
|---------|---------|-----|---------|----------------|--------|-------|-------|-------|
| | | | | MN-MN1-FS | MR-MR1 | FE | FP | PD |
| S45 CR1 | 65 | 105 | ED 2155 | 399.5 | 419.5 | 379.5 | | 542.5 |
| | | | ET 3155 | 407.5 | 427.5 | | 550.5 | |
| S46 C1 | 65 | 105 | ED 2155 | 440.5 | 460.5 | 420.5 | | 583.5 |
| | | | ET 3155 | 448.5 | 468.5 | | 591.5 | |
| S65 CR1 | 80 | 130 | ED 2155 | 439 | 459 | 419 | | 582 |

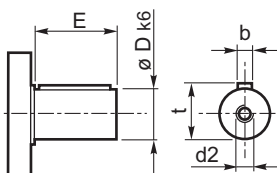
SU2



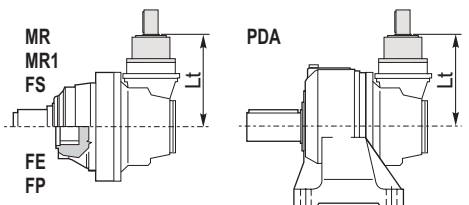
| | D k6 | E | | L _t | | | | |
|------|---------|----|---------|-----------------|-----------|-----|-----|-----|
| | | | | MN MN1 FS | MR MR1 | FE | FP | PD |
| SU 2 | 40 | 58 | ED 2155 | 323 | 343 | 303 | 335 | 446 |
| | | | ET 3155 | 391 | 411 | 371 | 403 | 533 |



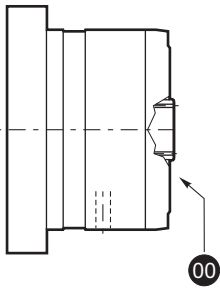
⑥ 48.82



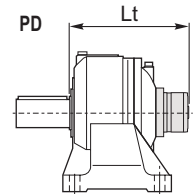
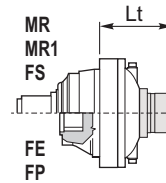
| | D | E | | L _t | | | | |
|-------|----|----|---------|----------------------------|--|--|--|--|
| | | | | MN-MN1-MR-MR1-FS-FE-FP-PDA | | | | |
| 48.82 | 48 | 82 | EC 3155 | 280 | | | | |



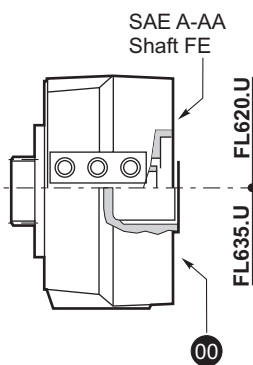
FL250-FL350-FL450 FL750 FL760-FL960



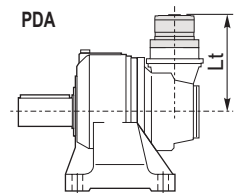
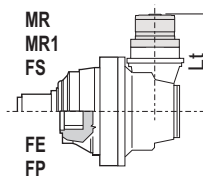
| | | Lt | | | | |
|----------------------|----------|--------------|--------|-------|-------|------------|
| | | MN-MN1 FS | MR-MR1 | FE | FP | PD- PDA |
| FL250-FL350 FL450 | ED 2155 | 377 | 397 | 357 | 389 | 520 |
| | ET 3155 | 438 | 458 | 418 | 450 | 581 |
| | EC 3155* | 377.5 | 377.5 | 377.5 | 377.5 | 377.5 |
| | EC 3155 | 280 | 280 | 280 | 280 | 280 |
| FL750 | ED 2155 | 390.5 | 410.5 | 370.5 | 402.5 | 533.5 |
| | ET 3155 | 451.5 | 471.5 | 431.5 | 436.5 | 594.5 |
| | EC 3155* | 391 | 391 | 391 | 391 | 391 |
| | EC 3155 | 293.5 | 293.5 | 293.5 | 293.5 | 293.5 |
| FL760-FL960 | ED 2155 | 404.5 | 424.5 | 384.5 | 416.5 | 547.5 |



FL620U-FL635U

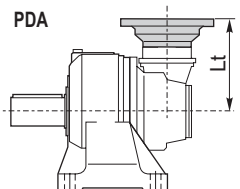
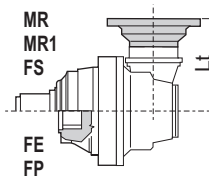
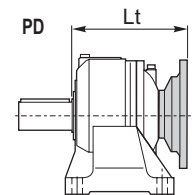
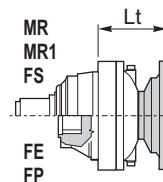


| | | Lt | | | | |
|---------|----------|--------------|--------|-------|-------|-------|
| | | MN-MN1 FS | MR-MR1 | FE | FP | PD |
| FL620/U | ED 2155 | 376 | 396 | 356 | 323.5 | 519 |
| | ET 3155 | 449 | 469 | 429 | 396.5 | 592 |
| | EC 3155 | 324.5 | 324.5 | 324.5 | 324.5 | 324.5 |
| | EC 3155* | 330.5 | 330.5 | 330.5 | 330.5 | 330.5 |
| FL635U | ED 2155 | 344.5 | 382.5 | 342.5 | 310 | 505.5 |
| | ET 3155 | 435.5 | 455.5 | 415.5 | 383 | 578.5 |
| | EC 3155 | 311 | 311 | 311 | 311 | 311 |
| | EC 3155* | 317 | 317 | 317 | 317 | 317 |



IEC Motor

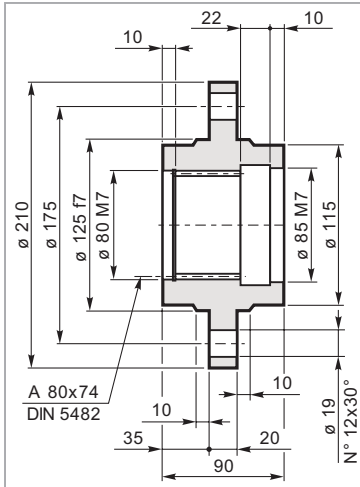
| | | Lt | | | | | | | |
|----------|---------------|-----------|-----------|-----------------|-------------------|------------|-------------------|------------|------------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2155 | MN-MN1-FS | | | 299 | 300 | 367 | 320 | 408 | 438 |
| ED 2155 | MR-MR1 | | | 319 | 320 | 387 | 340 | 428 | 458 |
| ED 2155 | FE | | | 279 | 280 | 347 | 300 | 388 | 418 |
| ED 2155 | FP | | | 311.5 | 312.5 | 379.5 | 332.5 | 420.5 | 450.5 |
| ET 3155 | MN-MN1-FS | 365 | 367 | 372 | 373 | 440 | 471 | 481 | 511 |
| ET 3155 | MR-MR1 | 365 | 367 | 372 | 393 | 460 | 491 | 501 | 531 |
| ET 3155 | FE | 365 | 367 | 372 | 353 | 420 | 451 | 461 | 491 |
| ET 3155 | FP | 397.5 | 399.5 | 404.5 | 385.5 | 452.5 | 483.5 | 493.5 | 523.5 |
| PD 2155 | PD | | | 442 | 443 | 510 | 463 | 551 | 588 |
| PD 3155 | PD | 508 | 510 | 515 | 516 | 583 | 614 | 624 | 654 |
| EC 3155 | MN-MR-MN1-MR1 | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 3155* | FE-FS-FP-PDA | 246 | 248 | 253 | 254 | 321 | 352 | | |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 150

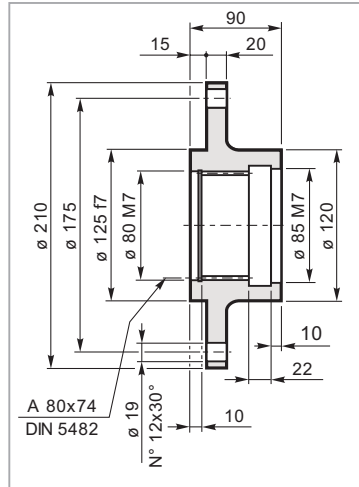


Mat. C40 UNI EN 10083
Code: 34701521800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

FR 150

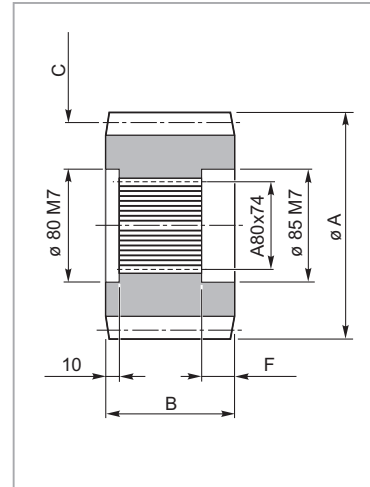


Mat. C40 UNI EN 10083
Code: 34701421800



Pignoni
Pinion
Ritzel
Pignon
Piñones
Pinhões

IR 150

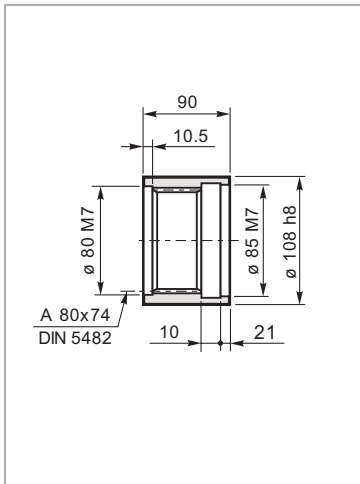


| code | A | B | C | F |
|---------------|-----|----|-----------------|----|
| 335.3543.0600 | 159 | 90 | M=10 Z=13 X=0.5 | 31 |



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

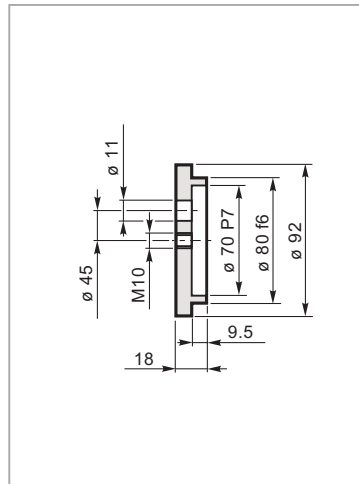
MS 150



Mat. 39NiCrMo3 UNI EN 10083
Code: 39103040600



RDF 150

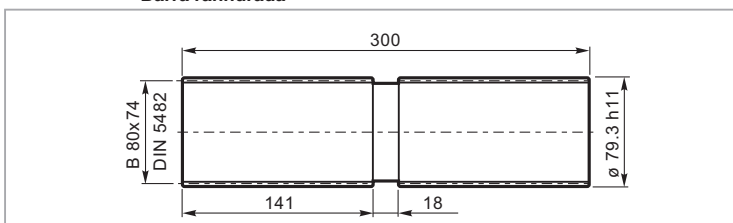


Mat. C40 UNI EN 10083
Code: 37200940800



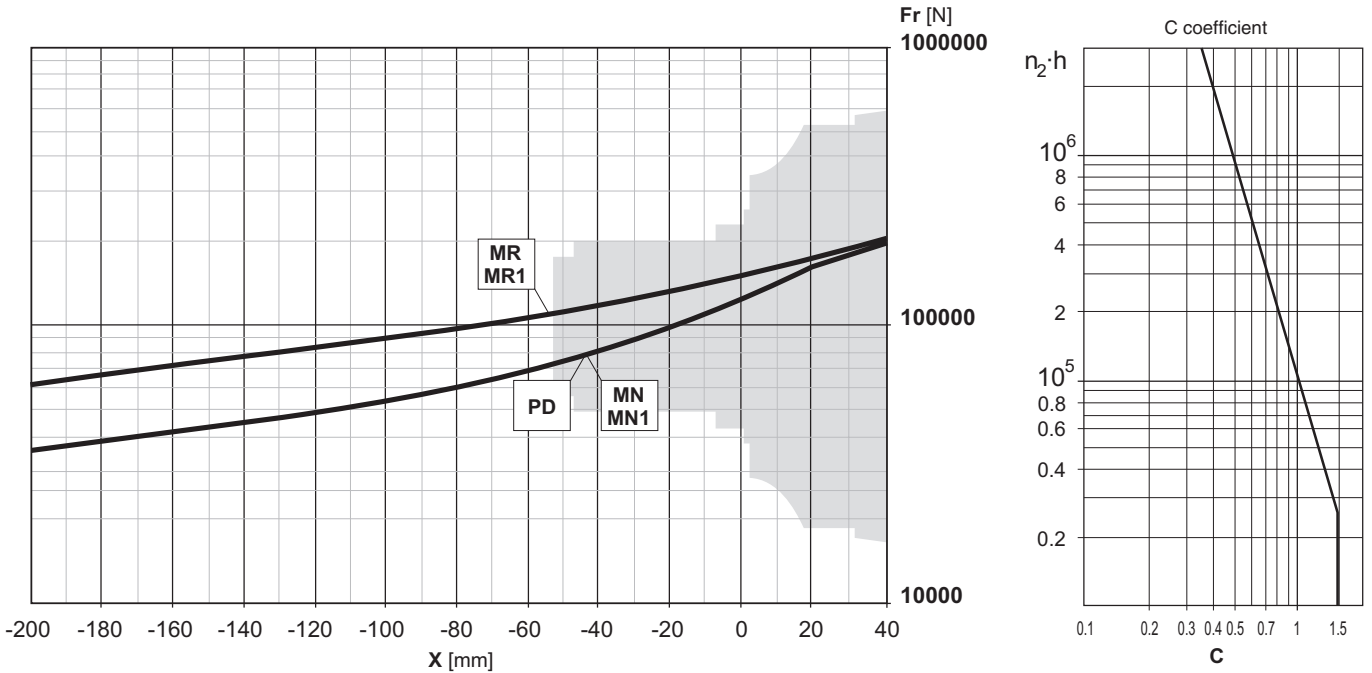
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 150



Mat. 39NiCrMo3 UNI EN 10083
Code: 39127230100

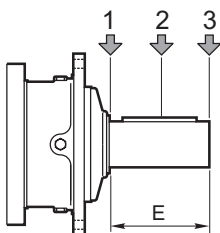
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



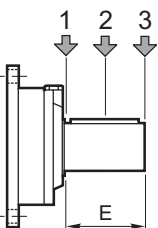
Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais

| | Flange mounted | | PD-PDA |
|-----------------------------|----------------|--------|--------|
| | MN-MN1 | MR-MR1 | MR1 |
| Fa_{din} [N] | 68000 | 100000 | 40000 |
| Fa_{max} [N] | 680000 | 100000 | 40000 |

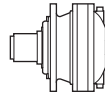
Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|----------------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

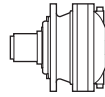


| Type | E | Fr [N] | | | | | |
|------------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



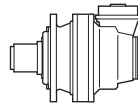
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1250 | | | | | | | | | | | |
| 4.04 | 371 | 6707 | 261 | 248 | 7574 | 196 | 124 | 9325 | 121 | 35000 | 50 |
| 5.12 | 293 | 6948 | 213 | 195 | 7847 | 161 | 98 | 9661 | 99 | 35000 | |
| 6.00 | 250 | 7194 | 188 | 167 | 8124 | 142 | 83 | 10002 | 87 | 35000 | |
| ED 2250 | | | | | | | | | | | |
| 14.14 | 106 | 9056 | 101 | 71 | 10227 | 76 | 35.4 | 12591 | 46.6 | 35000 | 30 |
| 15.59 | 96 | 9320 | 94 | 64 | 10526 | 71 | 32.1 | 12959 | 43.5 | 35000 | |
| 17.49 | 86 | 9480 | 85 | 57 | 10706 | 64 | 28.6 | 13181 | 39.5 | 35000 | |
| 20.20 | 74 | 9701 | 75 | 49.5 | 10956 | 57 | 24.8 | 13489 | 35.0 | 35000 | |
| 22.17 | 68 | 10786 | 76 | 45.1 | 12181 | 58 | 22.6 | 14996 | 35.4 | 35000 | |
| 25.60 | 59 | 11261 | 69 | 39.1 | 12718 | 52 | 19.5 | 15658 | 32.0 | 35000 | |
| 30.72 | 48.8 | 11894 | 61 | 32.6 | 13433 | 45.8 | 16.3 | 16538 | 28.2 | 35000 | |
| 36.00 | 41.7 | 12314 | 54 | 27.8 | 13711 | 39.9 | 13.9 | 14586 | 21.2 | 35000 | |
| ET 3250 | | | | | | | | | | | |
| 43.55 | 34.4 | 12565 | 45.3 | 23.0 | 14190 | 34.1 | 11.5 | 17471 | 21.0 | 35000 | 20 |
| 49.49 | 30.3 | 13187 | 41.9 | 20.2 | 14893 | 31.5 | 10.1 | 18335 | 19.4 | 35000 | |
| 58.40 | 25.7 | 13858 | 37.3 | 17.1 | 15651 | 28.1 | 8.6 | 19269 | 17.3 | 35000 | |
| 61.23 | 24.5 | 13805 | 35.4 | 16.3 | 15590 | 26.7 | 8.2 | 19194 | 16.4 | 35000 | |
| 70.70 | 21.2 | 14127 | 31.4 | 14.1 | 15955 | 23.6 | 7.1 | 19642 | 14.5 | 35000 | |
| 83.43 | 18.0 | 14846 | 28.0 | 12.0 | 16767 | 21.0 | 6.0 | 20642 | 13.0 | 35000 | |
| 90.44 | 16.6 | 15518 | 27.0 | 11.1 | 17526 | 20.3 | 5.5 | 21577 | 12.5 | 35000 | |
| 104.4 | 14.4 | 15881 | 23.9 | 9.6 | 17935 | 18.0 | 4.8 | 21831 | 10.9 | 35000 | |
| 114.6 | 13.1 | 17656 | 24.2 | 8.7 | 18932 | 17.3 | 4.4 | 21050 | 9.6 | 35000 | |
| 121.2 | 12.4 | 16607 | 21.5 | 8.3 | 18755 | 16.2 | 4.1 | 22136 | 9.6 | 35000 | |
| 146.5 | 10.2 | 17451 | 18.7 | 6.8 | 18668 | 13.3 | 3.4 | 20506 | 7.3 | 35000 | |
| 158.8 | 9.4 | 18809 | 18.6 | 6.3 | 19598 | 12.9 | 3.1 | 21928 | 7.2 | 35000 | |
| 184.3 | 8.1 | 19040 | 16.2 | 5.4 | 20178 | 11.5 | 2.7 | 22242 | 6.3 | 35000 | |
| 216.0 | 6.9 | 15468 | 11.2 | 4.6 | 16343 | 7.9 | 2.3 | 18719 | 4.5 | 35000 | |
| 261.0 | 5.7 | 15713 | 9.5 | 3.8 | 16968 | 6.8 | 1.9 | 19411 | 3.9 | 35000 | |
| EQ 4250 | | | | | | | | | | | |
| 282.7 | 5.3 | 22231 | 12.4 | 3.5 | 24311 | 9.0 | 1.8 | 27017 | 5.0 | 35000 | 15 |
| 310.4 | 4.8 | 21812 | 11.0 | 3.2 | 22644 | 7.6 | 1.6 | 24291 | 4.1 | 35000 | |
| 350.4 | 4.3 | 23452 | 10.5 | 2.9 | 25059 | 7.5 | 1.4 | 26805 | 4.0 | 35000 | |
| 405.3 | 3.7 | 22633 | 8.8 | 2.5 | 23809 | 6.2 | 1.2 | 26733 | 3.5 | 35000 | |
| 438.6 | 3.4 | 19760 | 7.1 | 2.3 | 20624 | 4.9 | 1.1 | 22075 | 2.6 | 35000 | |
| 490.7 | 3.1 | 22752 | 7.3 | 2.0 | 23596 | 5.0 | 1.0 | 26762 | 2.9 | 35000 | |
| 579.0 | 2.6 | 23095 | 6.3 | 1.7 | 23945 | 4.3 | 0.86 | 27696 | 2.5 | 35000 | |
| 627.7 | 2.4 | 24833 | 6.2 | 1.6 | 25894 | 4.3 | 0.80 | 27687 | 2.3 | 35000 | |
| 724.8 | 2.1 | 23564 | 5.1 | 1.4 | 25109 | 3.6 | 0.69 | 29001 | 2.1 | 35000 | |
| 795.4 | 1.9 | 24677 | 4.9 | 1.3 | 26600 | 3.5 | 0.63 | 30169 | 2.0 | 35000 | |
| 878.7 | 1.7 | 22200 | 4.0 | 1.1 | 23169 | 2.8 | 0.57 | 24830 | 1.5 | 35000 | |
| 1016 | 1.5 | 22549 | 3.5 | 0.98 | 23517 | 2.4 | 0.49 | 25182 | 1.3 | 35000 | |
| 1102 | 1.4 | 21717 | 3.1 | 0.91 | 22433 | 2.1 | 0.45 | 23587 | 1.1 | 35000 | |
| 1273 | 1.2 | 25078 | 3.1 | 0.79 | 25905 | 2.1 | 0.39 | 27237 | 1.1 | 35000 | |
| 1336 | 1.1 | 24140 | 2.8 | 0.75 | 26267 | 2.1 | 0.37 | 30411 | 1.2 | 35000 | |
| 1546 | 0.97 | 24819 | 2.5 | 0.65 | 27102 | 1.8 | 0.32 | 31337 | 1.1 | 35000 | |
| 1845 | 0.81 | 21425 | 1.8 | 0.54 | 23340 | 1.3 | 0.27 | 26895 | 0.76 | 35000 | |
| 1935 | 0.78 | 26068 | 2.1 | 0.52 | 28428 | 1.5 | 0.26 | 32808 | 0.89 | 35000 | |
| 2268 | 0.66 | 23687 | 1.6 | 0.44 | 25505 | 1.2 | 0.22 | 28884 | 0.67 | 35000 | |
| 2339 | 0.64 | 27152 | 1.8 | 0.43 | 29579 | 1.3 | 0.21 | 34085 | 0.76 | 35000 | |
| 2741 | 0.55 | 24522 | 1.4 | 0.36 | 26393 | 1.0 | 0.18 | 29869 | 0.57 | 35000 | |

1500
HOURS LIFE



250

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EM 1250 | | | | | | | | | | | |
| 4.04 | 371 | 11849 | 461 | 248 | 13382 | 347 | 124 | 16475 | 214 | 35000 | 50 |
| 5.12 | 293 | 12276 | 377 | 195 | 13864 | 284 | 98 | 17069 | 175 | 35000 | |
| 6.00 | 250 | 12501 | 327 | 167 | 13288 | 232 | 83 | 14437 | 126 | 35000 | |
| ED 2250 | | | | | | | | | | | |
| 14.14 | 106 | 15999 | 178 | 71 | 18069 | 134 | 35.4 | 22246 | 82 | 35000 | 30 |
| 15.59 | 96 | 16467 | 166 | 64 | 18597 | 125 | 32.1 | 22773 | 76 | 35000 | |
| 17.49 | 86 | 16748 | 150 | 57 | 18915 | 113 | 28.6 | 23092 | 69 | 35000 | |
| 20.20 | 74 | 17140 | 133 | 49.5 | 19357 | 100 | 24.8 | 21970 | 57 | 35000 | |
| 22.17 | 68 | 18421 | 131 | 45.1 | 19142 | 90 | 22.6 | 22007 | 52 | 35000 | |
| 25.60 | 59 | 18680 | 115 | 39.1 | 19714 | 81 | 19.5 | 22633 | 46.3 | 35000 | |
| 30.72 | 48.8 | 19003 | 97 | 32.6 | 20353 | 69 | 16.3 | 22135 | 37.7 | 35000 | |
| 36.00 | 41.7 | 15462 | 67 | 27.8 | 16593 | 48.3 | 13.9 | 19053 | 27.7 | 35000 | |
| ET 3250 | | | | | | | | | | | |
| 43.55 | 34.4 | 22200 | 80 | 23.0 | 24311 | 58 | 11.5 | 27713 | 33.3 | 35000 | 20 |
| 49.49 | 30.3 | 23028 | 73 | 20.2 | 24916 | 53 | 10.1 | 28375 | 30.0 | 35000 | |
| 58.40 | 25.7 | 21911 | 59 | 17.1 | 23733 | 42.6 | 8.6 | 26263 | 23.5 | 35000 | |
| 61.23 | 24.5 | 23497 | 60 | 16.3 | 24527 | 42.0 | 8.2 | 27974 | 23.9 | 35000 | |
| 70.70 | 21.2 | 22341 | 49.6 | 14.1 | 23292 | 34.5 | 7.1 | 26426 | 19.6 | 35000 | |
| 83.43 | 18.0 | 22733 | 42.8 | 12.0 | 23673 | 29.7 | 6.0 | 27372 | 17.2 | 35000 | |
| 90.44 | 16.6 | 22818 | 39.6 | 11.1 | 24509 | 28.4 | 5.5 | 26937 | 15.6 | 35000 | |
| 104.4 | 14.4 | 23256 | 35.0 | 9.6 | 24745 | 24.8 | 4.8 | 28688 | 14.4 | 35000 | |
| 114.6 | 13.1 | 24437 | 33.5 | 8.7 | 26366 | 24.1 | 4.4 | 29932 | 13.7 | 35000 | |
| 121.2 | 12.4 | 23600 | 30.6 | 8.3 | 25563 | 22.1 | 4.1 | 28712 | 12.4 | 35000 | |
| 146.5 | 10.2 | 21383 | 22.9 | 6.8 | 22704 | 16.2 | 3.4 | 24723 | 8.8 | 35000 | |
| 158.8 | 9.4 | 23440 | 23.2 | 6.3 | 24839 | 16.4 | 3.1 | 28906 | 9.5 | 35000 | |
| 184.3 | 8.1 | 23790 | 20.3 | 5.4 | 25682 | 14.6 | 2.7 | 29830 | 8.5 | 35000 | |
| 216.0 | 6.9 | 21752 | 15.8 | 4.6 | 23458 | 11.4 | 2.3 | 26621 | 6.5 | 35000 | |
| 261.0 | 5.7 | 22536 | 13.6 | 3.8 | 24290 | 9.7 | 1.9 | 27543 | 5.5 | 35000 | |
| EQ 4250 | | | | | | | | | | | |
| 282.7 | 5.3 | 30294 | 16.8 | 3.5 | 31911 | 11.8 | 1.8 | 37097 | 6.9 | 35000 | 15 |
| 310.4 | 4.8 | 28632 | 14.5 | 3.2 | 31109 | 10.5 | 1.6 | 35687 | 6.0 | 35000 | |
| 350.4 | 4.3 | 28403 | 12.7 | 2.9 | 31014 | 9.3 | 1.4 | 35877 | 5.4 | 35000 | |
| 405.3 | 3.7 | 27816 | 10.8 | 2.5 | 29953 | 7.7 | 1.2 | 33155 | 4.3 | 35000 | |
| 438.6 | 3.4 | 23496 | 8.4 | 2.3 | 25477 | 6.1 | 1.1 | 29551 | 3.5 | 35000 | |
| 490.7 | 3.1 | 31440 | 10.1 | 2.0 | 34082 | 7.3 | 1.0 | 38975 | 4.2 | 35000 | |
| 579.0 | 2.6 | 32500 | 8.8 | 1.7 | 35206 | 6.4 | 0.86 | 40219 | 3.6 | 35000 | |
| 627.7 | 2.4 | 29731 | 7.4 | 1.6 | 32542 | 5.4 | 0.80 | 37675 | 3.1 | 35000 | |
| 724.8 | 2.1 | 33979 | 7.4 | 1.4 | 36774 | 5.3 | 0.69 | 41957 | 3.0 | 35000 | |
| 795.4 | 1.9 | 34762 | 6.9 | 1.3 | 37323 | 4.9 | 0.63 | 42078 | 2.8 | 35000 | |
| 878.7 | 1.7 | 26605 | 4.8 | 1.1 | 28634 | 3.4 | 0.57 | 33356 | 2.0 | 35000 | |
| 1016 | 1.5 | 26993 | 4.2 | 0.98 | 29590 | 3.0 | 0.49 | 34405 | 1.8 | 35000 | |
| 1102 | 1.4 | 24398 | 3.5 | 0.91 | 25202 | 2.4 | 0.45 | 26498 | 1.3 | 35000 | |
| 1273 | 1.2 | 28173 | 3.5 | 0.79 | 29102 | 2.4 | 0.39 | 30599 | 1.3 | 35000 | |
| 1336 | 1.1 | 35726 | 4.2 | 0.75 | 38701 | 3.0 | 0.37 | 44220 | 1.7 | 35000 | |
| 1546 | 0.97 | 36773 | 3.7 | 0.65 | 39813 | 2.7 | 0.32 | 45454 | 1.5 | 35000 | |
| 1845 | 0.81 | 31467 | 2.7 | 0.54 | 34018 | 1.9 | 0.27 | 38754 | 1.1 | 35000 | |
| 1935 | 0.78 | 38436 | 3.1 | 0.52 | 41579 | 2.3 | 0.26 | 46534 | 1.3 | 35000 | |
| 2268 | 0.66 | 33238 | 2.3 | 0.44 | 35661 | 1.6 | 0.22 | 40162 | 0.93 | 35000 | |
| 2339 | 0.64 | 39879 | 2.7 | 0.43 | 43112 | 1.9 | 0.21 | 49114 | 1.1 | 35000 | |
| 2741 | 0.55 | 34351 | 2.0 | 0.36 | 36844 | 1.4 | 0.18 | 41475 | 0.79 | 35000 | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | $T_{2\text{max}}$ [Nm] | P_T [kW] |
|------------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|---------------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 2250 | | | | | | | | | | | |
| 11.11 | 135 | 4329 | 61 | 90 | 4889 | 46.1 | 45.0 | 6019 | 28.4 | 35000 | 18 |
| 14.08 | 107 | 5486 | 61 | 71 | 6196 | 46.1 | 35.5 | 7628 | 28.4 | 35000 | |
| 16.50 | 91 | 6429 | 61 | 61 | 7261 | 46.1 | 30.3 | 8939 | 28.4 | 35000 | |
| 17.92 | 84 | 4025 | 35.3 | 56 | 4546 | 26.6 | 27.9 | 5597 | 16.4 | 26476 | |
| 21.00 | 71 | 4717 | 35.3 | 47.6 | 5327 | 26.6 | 23.8 | 6559 | 16.4 | 31027 | |
| 24.93 | 60 | 4026 | 25.4 | 40.1 | 4547 | 19.1 | 20.1 | 5598 | 11.8 | 21639 | |
| 29.22 | 51 | 4718 | 25.4 | 34.2 | 5329 | 19.1 | 17.1 | 6561 | 11.8 | 25359 | |
| EC 3250 | | | | | | | | | | | |
| 46.78 | 32.1 | 10551 | 35.4 | 21.4 | 11915 | 26.7 | 10.7 | 14670 | 16.4 | 35000 | 14 |
| 52.48 | 28.6 | 11835 | 35.4 | 19.1 | 13366 | 26.7 | 9.5 | 16456 | 16.4 | 35000 | |
| 53.76 | 27.9 | 12124 | 35.4 | 18.6 | 13692 | 26.7 | 9.3 | 16858 | 16.4 | 35000 | |
| 60.60 | 24.8 | 13489 | 35.0 | 16.5 | 15233 | 26.3 | 8.3 | 18755 | 16.2 | 35000 | |
| 72.05 | 20.8 | 7051 | 15.4 | 13.9 | 7963 | 11.6 | 6.9 | 9804 | 7.1 | 35000 | |
| 80.82 | 18.6 | 7910 | 15.4 | 12.4 | 8933 | 11.6 | 6.2 | 10998 | 7.1 | 35000 | |
| 93.32 | 16.1 | 9134 | 15.4 | 10.7 | 10315 | 11.6 | 5.4 | 12699 | 7.1 | 35000 | |
| 102.4 | 14.6 | 10024 | 15.4 | 9.8 | 11321 | 11.6 | 4.9 | 13938 | 7.1 | 35000 | |
| 112.0 | 13.4 | 10960 | 15.4 | 8.9 | 12378 | 11.6 | 4.5 | 15239 | 7.1 | 35000 | |
| 118.3 | 12.7 | 11575 | 15.4 | 8.5 | 13073 | 11.6 | 4.2 | 16094 | 7.1 | 35000 | |
| 141.9 | 10.6 | 13890 | 15.4 | 7.0 | 15687 | 11.6 | 3.5 | 19313 | 7.1 | 35000 | |
| 166.3 | 9.0 | 15133 | 14.3 | 6.0 | 15655 | 9.9 | 3.0 | 17795 | 5.6 | 35000 | |
| EC 4250 | | | | | | | | | | | |
| 212.1 | 7.1 | 19642 | 14.5 | 4.7 | 21862 | 10.8 | 2.4 | 23291 | 5.8 | 35000 | 10 |
| 228.6 | 6.6 | 20871 | 14.3 | 4.4 | 23357 | 10.7 | 2.2 | 26584 | 6.1 | 35000 | |
| 252.2 | 5.9 | 21481 | 13.4 | 4.0 | 23793 | 9.9 | 2.0 | 26371 | 5.5 | 35000 | |
| 282.9 | 5.3 | 21848 | 12.1 | 3.5 | 24014 | 8.9 | 1.8 | 26041 | 4.8 | 35000 | |
| 314.9 | 4.8 | 20767 | 10.4 | 3.2 | 21786 | 7.2 | 1.6 | 23449 | 3.9 | 35000 | |
| 363.6 | 4.1 | 22136 | 9.6 | 2.8 | 22971 | 6.6 | 1.4 | 25126 | 3.6 | 35000 | |
| 392.0 | 3.8 | 17662 | 7.1 | 2.6 | 18453 | 4.9 | 1.3 | 19778 | 2.6 | 35000 | |
| 432.3 | 3.5 | 19478 | 7.1 | 2.3 | 20351 | 4.9 | 1.2 | 21813 | 2.6 | 35000 | |
| 484.9 | 3.1 | 21850 | 7.1 | 2.1 | 22829 | 4.9 | 1.0 | 24468 | 2.6 | 35000 | |
| 559.9 | 2.7 | 23025 | 6.5 | 1.8 | 23874 | 4.5 | 0.89 | 27506 | 2.6 | 35000 | |
| 614.5 | 2.4 | 23513 | 6.0 | 1.6 | 25363 | 4.3 | 0.81 | 28797 | 2.5 | 35000 | |
| 709.6 | 2.1 | 24157 | 5.3 | 1.4 | 26047 | 3.8 | 0.70 | 29556 | 2.2 | 35000 | |
| 811.9 | 1.8 | 18598 | 3.6 | 1.2 | 19578 | 2.5 | 0.62 | 22723 | 1.5 | 35000 | |
| 857.5 | 1.7 | 25025 | 4.6 | 1.2 | 26969 | 3.3 | 0.58 | 30579 | 1.9 | 35000 | |
| 1029 | 1.5 | 23570 | 3.6 | 0.97 | 24811 | 2.5 | 0.49 | 28798 | 1.5 | 35000 | |
| 1206 | 1.2 | 21065 | 2.7 | 0.83 | 22719 | 2.0 | 0.41 | 25791 | 1.1 | 35000 | |

Tutti i rapporti evidenziati (es. 11.11) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 11.11) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

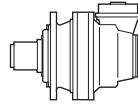
Alle mit (es. 11.11) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

Les rapports repérés par (es. 11.11) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

Todas las relaciones indicadas con (es. 11.11) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

As relações marcadas com (es. 11.11) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 2250 | | | | | | | | | | | |
| 11.11 | 135 | 7648 | 108 | 90 | 8638 | 81 | 45.0 | 10634 | 50 | 35000 | 18 |
| 14.08 | 107 | 9693 | 108 | 71 | 10947 | 81 | 35.5 | 13477 | 50 | 35000 | |
| 16.50 | 91 | 11359 | 108 | 61 | 12828 | 81 | 30.3 | 15794 | 50 | 35000 | |
| 17.92 | 84 | 7112 | 62 | 56 | 8032 | 46.9 | 27.9 | 9888 | 28.9 | 26476 | |
| 21.00 | 71 | 8334 | 62 | 47.6 | 9412 | 46.9 | 23.8 | 11588 | 28.9 | 31027 | |
| 24.93 | 60 | 7114 | 44.8 | 40.1 | 8034 | 33.7 | 20.1 | 9346 | 19.6 | 21639 | |
| 29.22 | 51 | 8336 | 44.8 | 34.2 | 9415 | 33.7 | 17.1 | 10952 | 19.6 | 25359 | |
| EC 3250 | | | | | | | | | | | |
| 46.78 | 32.1 | 18641 | 63 | 21.4 | 21052 | 47.1 | 10.7 | 25918 | 29.0 | 35000 | 14 |
| 52.48 | 28.6 | 20910 | 63 | 19.1 | 23615 | 47.1 | 9.5 | 27062 | 27.0 | 35000 | |
| 53.76 | 27.9 | 21102 | 62 | 18.6 | 22848 | 44.5 | 9.3 | 26054 | 25.4 | 35000 | |
| 60.60 | 24.8 | 21970 | 57 | 16.5 | 22934 | 39.6 | 8.3 | 25563 | 22.1 | 35000 | |
| 72.05 | 20.8 | 12458 | 27.2 | 13.9 | 14069 | 20.5 | 6.9 | 17321 | 12.6 | 35000 | |
| 80.82 | 18.6 | 13974 | 27.2 | 12.4 | 15782 | 20.5 | 6.2 | 19430 | 12.6 | 35000 | |
| 93.32 | 16.1 | 16137 | 27.2 | 10.7 | 18224 | 20.5 | 5.4 | 22437 | 12.6 | 35000 | |
| 102.4 | 14.6 | 17710 | 27.2 | 9.8 | 20001 | 20.5 | 4.9 | 24624 | 12.6 | 35000 | |
| 112.0 | 13.4 | 18285 | 25.6 | 8.9 | 19104 | 17.9 | 4.5 | 22267 | 10.4 | 35000 | |
| 118.3 | 12.7 | 20451 | 27.2 | 8.5 | 23096 | 20.5 | 4.2 | 28435 | 12.6 | 35000 | |
| 141.9 | 10.6 | 23174 | 25.6 | 7.0 | 24212 | 17.9 | 3.5 | 28220 | 10.4 | 35000 | |
| 166.3 | 9.0 | 20703 | 19.6 | 6.0 | 22347 | 14.1 | 3.0 | 25390 | 8.0 | 35000 | |
| EC 4250 | | | | | | | | | | | |
| 212.1 | 7.1 | 26426 | 19.6 | 4.7 | 28779 | 14.2 | 2.4 | 33116 | 8.2 | 35000 | 10 |
| 228.6 | 6.6 | 30478 | 20.9 | 4.4 | 32553 | 14.9 | 2.2 | 37316 | 8.5 | 35000 | |
| 252.2 | 5.9 | 30989 | 19.3 | 4.0 | 33600 | 14.0 | 2.0 | 37959 | 7.9 | 35000 | |
| 282.9 | 5.3 | 30622 | 17.0 | 3.5 | 33249 | 12.3 | 1.8 | 38099 | 7.1 | 35000 | |
| 314.9 | 4.8 | 24864 | 12.4 | 3.2 | 25989 | 8.6 | 1.6 | 28885 | 4.8 | 35000 | |
| 363.6 | 4.1 | 28712 | 12.4 | 2.8 | 30011 | 8.6 | 1.4 | 33355 | 4.8 | 35000 | |
| 392.0 | 3.8 | 21065 | 8.4 | 2.6 | 22019 | 5.9 | 1.3 | 25639 | 3.4 | 35000 | |
| 432.3 | 3.5 | 23232 | 8.4 | 2.3 | 24284 | 5.9 | 1.2 | 28276 | 3.4 | 35000 | |
| 484.9 | 3.1 | 26061 | 8.4 | 2.1 | 27240 | 5.9 | 1.0 | 31719 | 3.4 | 35000 | |
| 559.9 | 2.7 | 30094 | 8.4 | 1.8 | 31456 | 5.9 | 0.89 | 36627 | 3.4 | 35000 | |
| 614.5 | 2.4 | 33028 | 8.4 | 1.6 | 34523 | 5.9 | 0.81 | 40198 | 3.4 | 35000 | |
| 709.6 | 2.1 | 34069 | 7.5 | 1.4 | 36586 | 5.4 | 0.70 | 41260 | 3.0 | 35000 | |
| 811.9 | 1.8 | 26750 | 5.2 | 1.2 | 29008 | 3.7 | 0.62 | 33197 | 2.1 | 35000 | |
| 857.5 | 1.7 | 32828 | 6.0 | 1.2 | 34204 | 4.2 | 0.58 | 39951 | 2.4 | 35000 | |
| 1029 | 1.5 | 33901 | 5.2 | 0.97 | 36763 | 3.7 | 0.49 | 42071 | 2.1 | 35000 | |
| 1206 | 1.2 | 29746 | 3.9 | 0.83 | 31949 | 2.8 | 0.41 | 36041 | 1.6 | 35000 | |

Tutti i rapporti evidenziati (es. 11.11) hanno dimensioni particolari della coppia conica in certe versioni; vedere tavole dimensionali.

All ratios grey highlighted (ex. 11.11) have specific dimensions of the bevel gear set in some versions; see dimensional tables.

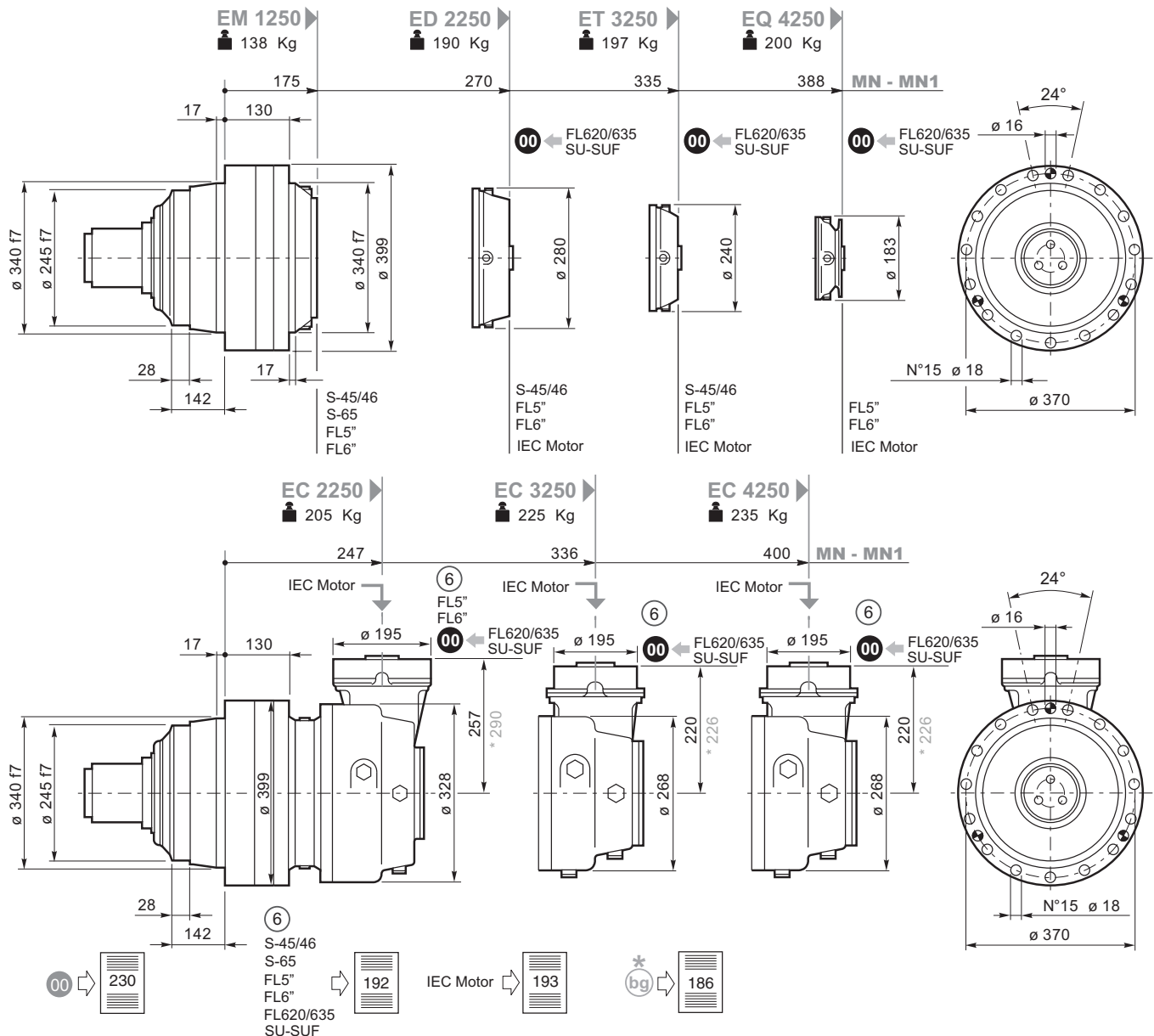
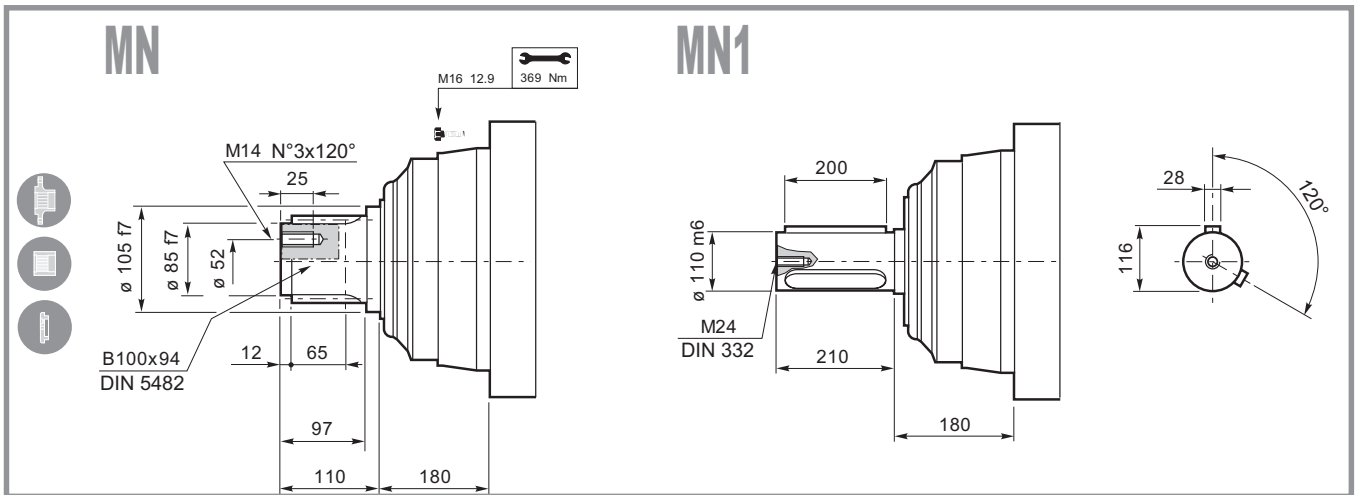
Alle mit (es. 11.11) gekennzeichneten Übersetzungen haben in bestimmten Versionen besondere Dimensionen des Kegelradtriebs. Siehe auch Dimensionstabellen.

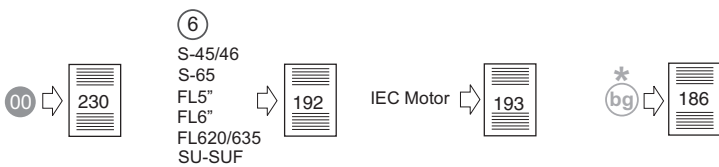
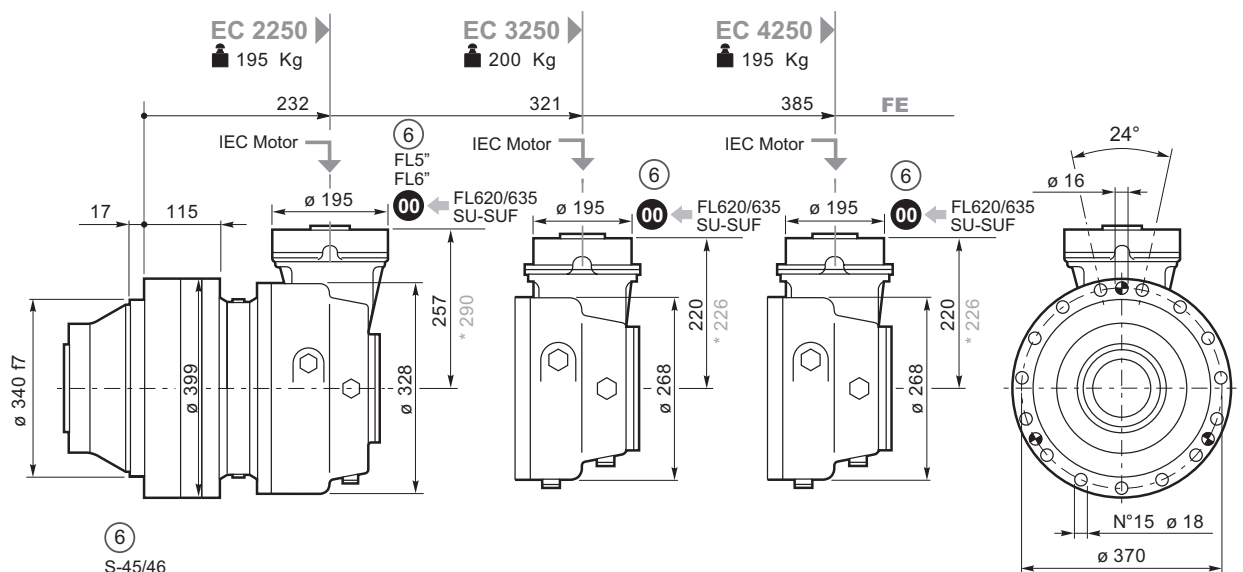
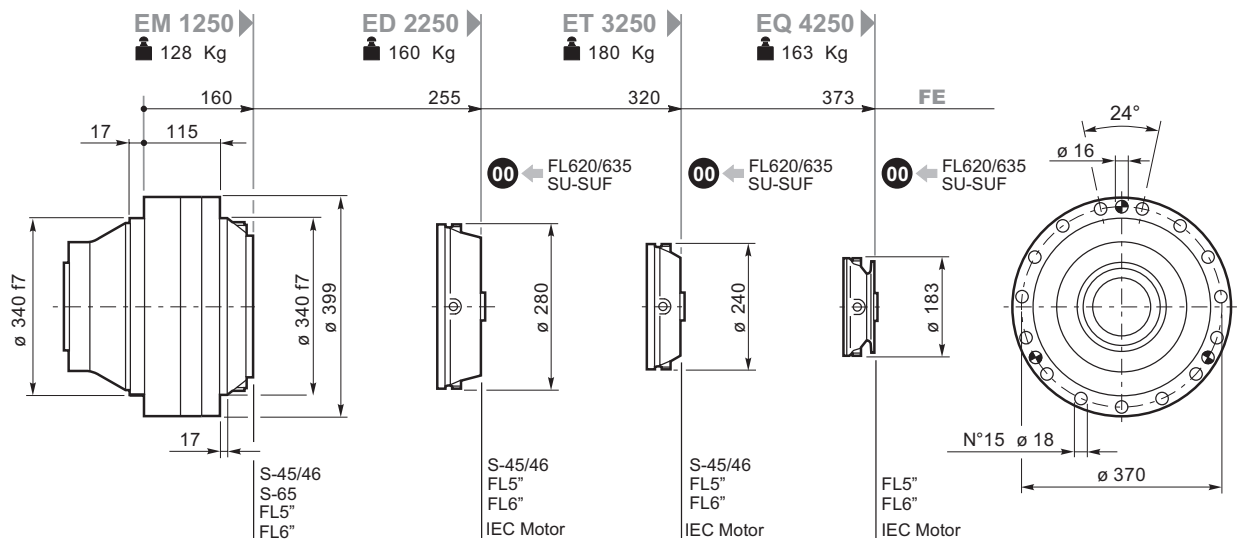
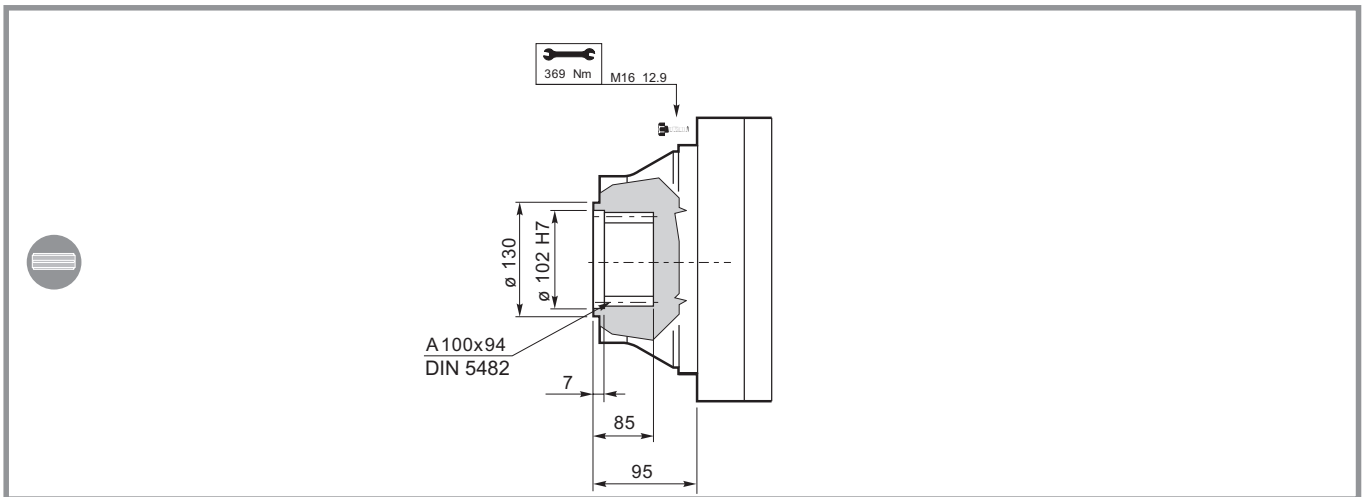
Les rapports repérés par (es. 11.11) ont des dimensions de couple conique particulières. Voir les tableaux dimensionnels.

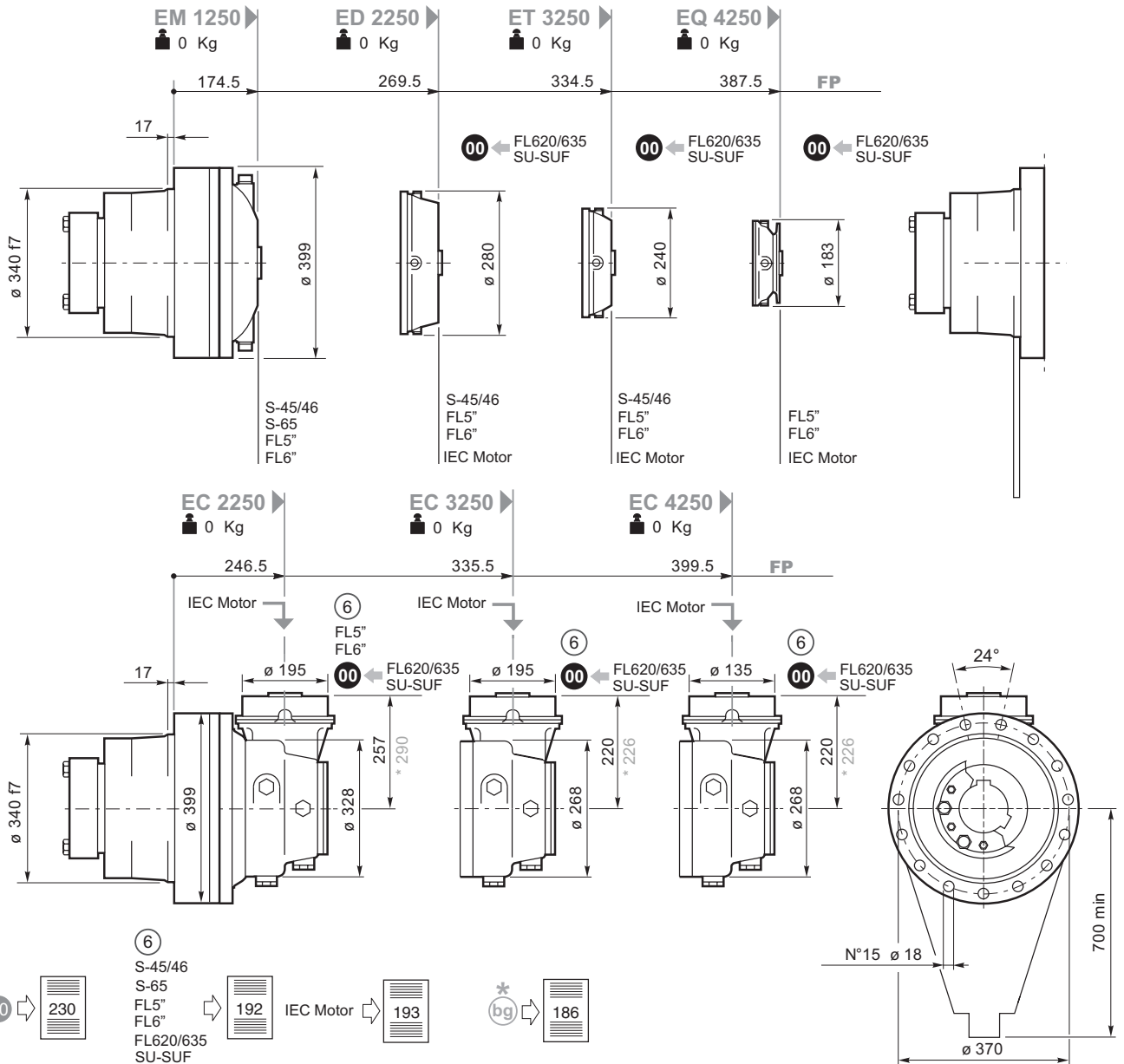
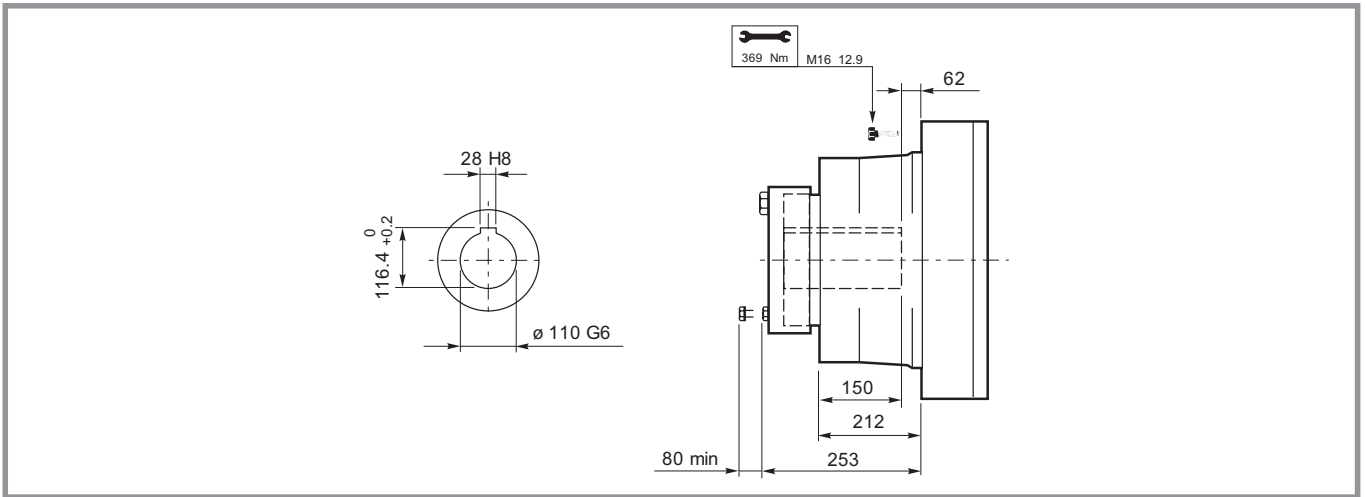
Todas las relaciones indicadas con (es. 11.11) tienen dimensiones particulares del par cónico según las versiones; ver las tablas de dimensión.

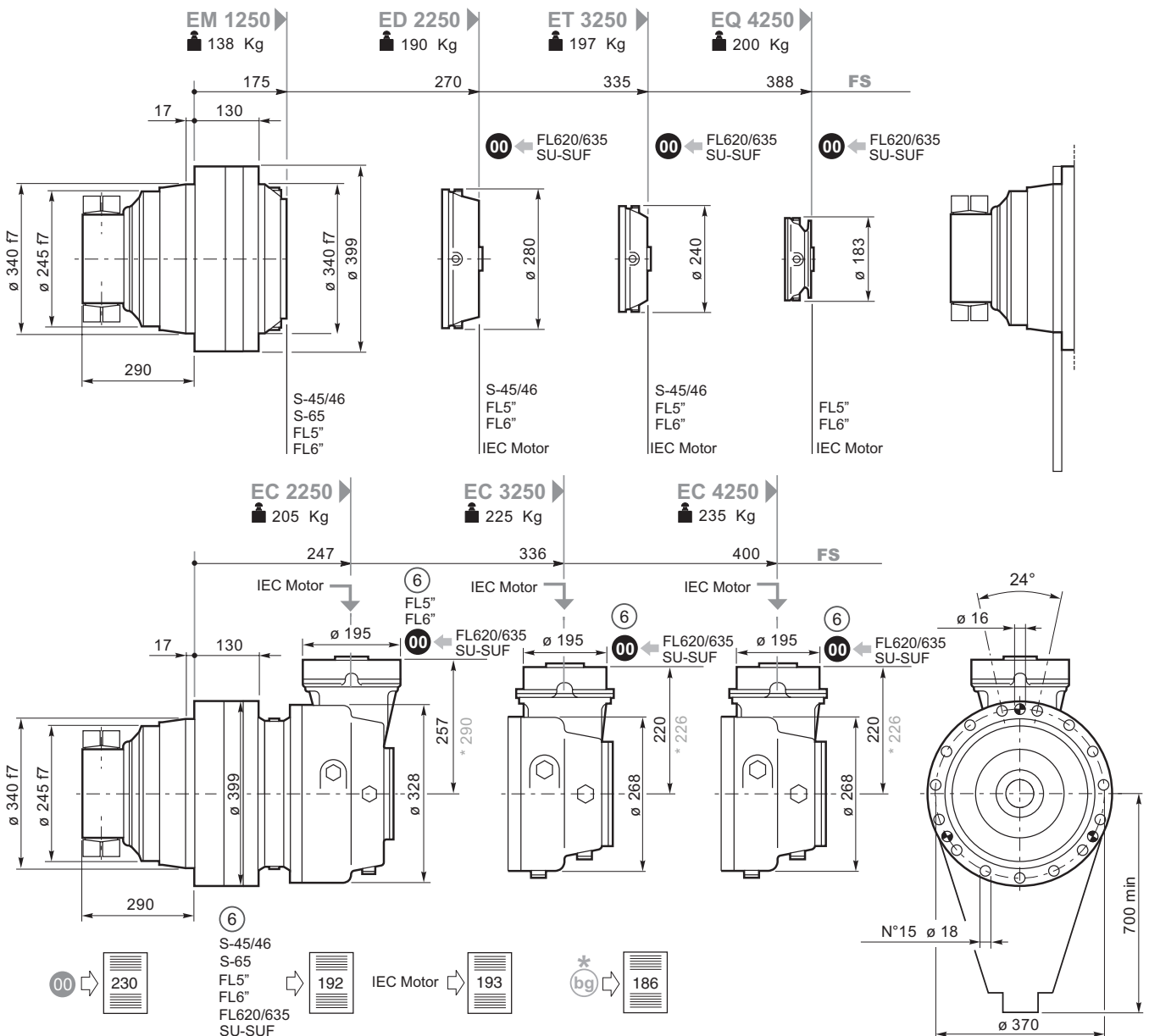
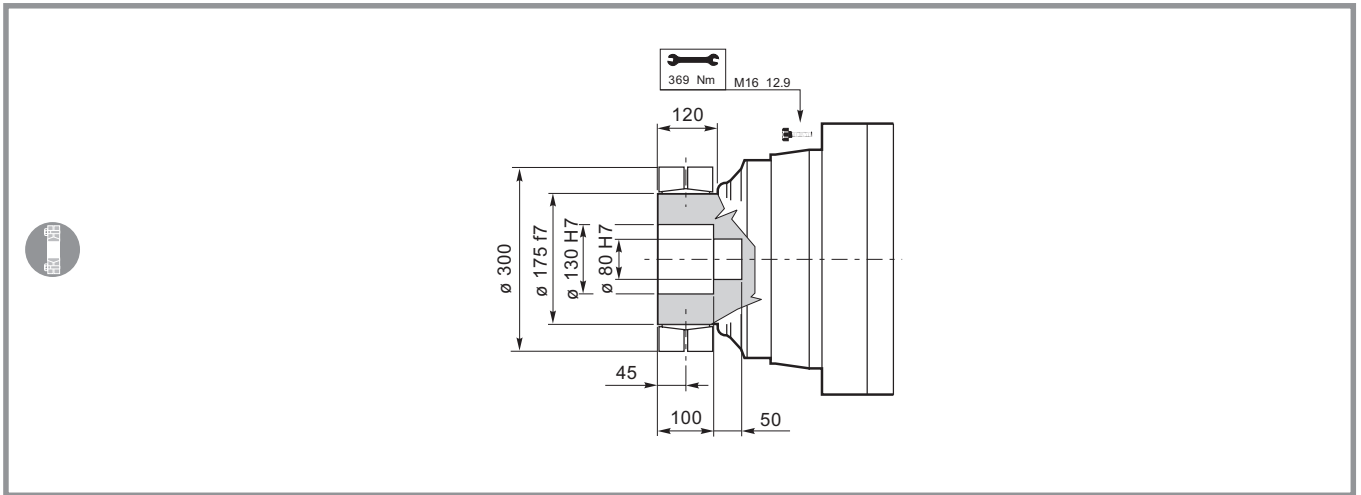
As relações marcadas com (es. 11.11) têm dimensões particulares da engrenagem cônica em certas versões; vide tabelas dimensionais.





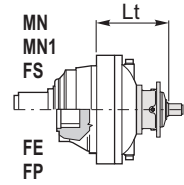
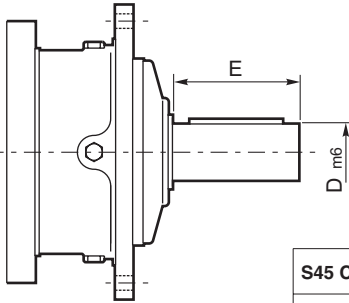






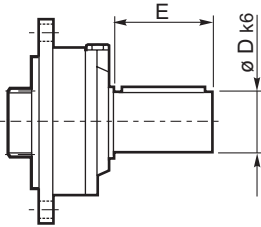
S45CR1-S46C1

S65CR1

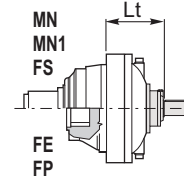


| | D m6 | E | | Lt | | |
|----------------|---------|-----|----------------|-----------|-----|-------|
| | | | | MN-MN1-FS | FE | FP |
| S45 CR1 | 65 | 105 | ED 2250 | 398 | 383 | 397.5 |
| | | | ET 3250 | 398 | 383 | 397.5 |
| S46 C1 | 65 | 105 | ED 2250 | 439 | 424 | 438.5 |
| | | | ET 3250 | 439 | 424 | 438.5 |
| S65 CR1 | 80 | 130 | EM 1250 | 403 | 388 | 402.5 |
| | | | ED 2250 | 437 | 422 | 436.5 |

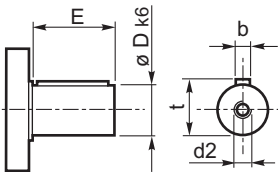
SU2



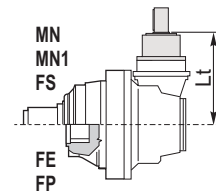
| | D k6 | E | | Lt | | |
|-------------|---------|----|----------------|-----------|-----|-------|
| | | | | MN-MN1-FS | FE | FP |
| SU 2 | 40 | 58 | ET 3250 | 395 | 380 | 394.5 |
| | | | EQ 4250 | 448 | 433 | 447.5 |



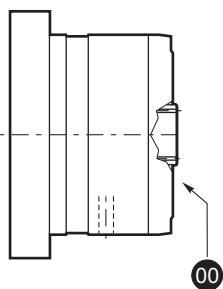
⑥ 48.82



| | D | E | | Lt | |
|--------------|----|----|----------------|-----------------|--|
| | | | | MN-MN1-FS-FE-FP | |
| 48.82 | 48 | 82 | EC 2250 | 317 | |
| | | | EC 3250 | 280 | |
| | | | EC 4250 | 280 | |



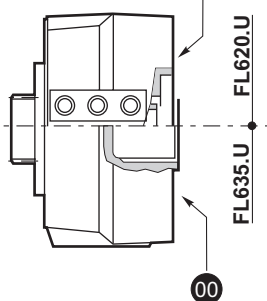
FL250-FL350-FL450 FL750 FL760-FL960



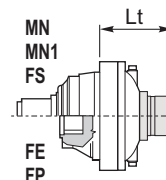
FL620/10
FL635/10

FL620U-FL635U

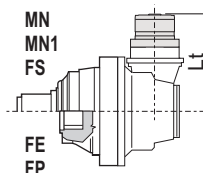
SAE A-AA
Shaft FE



| | | Lt | | |
|----------------------|----------|-----------|-----|-------|
| | | MN-MN1-FS | FE | FP |
| FL250-FL350 FL450 | ED 2250 | 429 | 414 | — |
| | ET 3250 | 429 | 414 | 428.5 |
| | EC 2250* | 441 | 441 | 441 |
| | EC 2250 | 408 | 408 | 408 |
| | EC 3250* | 377 | 377 | 377 |
| | EC 3250 | 280 | 280 | 280 |
| | EC 4250* | 377 | 377 | 377 |
| FL750 | ED 2250 | 442 | 427 | — |
| | ET 3250 | 442 | 427 | 441.5 |
| | EC 2250* | 455 | 455 | 455 |
| | EC 2250 | 422 | 422 | 422 |
| FL760-FL960 | EM 1250 | 308 | 293 | 307.5 |

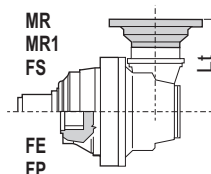
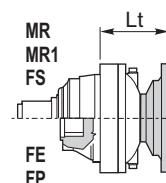


| | | Lt | | |
|----------|----------|-----------|-------|-------|
| | | MN-MN1-FS | FE | FP |
| FL620/U | EM 1250 | 279.5 | 264.5 | 279 |
| | ED 2250 | 374.5 | 359.5 | 374 |
| | ET 3250 | 439.5 | 424.5 | 439 |
| | EQ 4250 | 492.5 | 477.5 | 492 |
| | EC 2250 | 361.5 | 361.5 | 361.5 |
| | EC 2250* | 394.5 | 394.5 | 394.5 |
| | EC 3250 | 324.5 | 324.5 | 324.5 |
| | EC 3250* | 330.5 | 330.5 | 330.5 |
| | EC 4250 | 324.5 | 324.5 | 324.5 |
| | EC 4250* | 330.5 | 330.5 | 330.5 |
| | FL635U | EM 1250 | 266 | 251 |
| ED 2250 | | 361 | 346 | 360.5 |
| ET 3250 | | 426 | 411 | 425.5 |
| EQ 4250 | | 479 | 464 | 478.5 |
| EC 2250 | | 348 | 348 | 348 |
| EC 2250* | | 381 | 381 | 381 |
| EC 3250 | | 311 | 311 | 311 |
| EC 3250* | | 317 | 317 | 317 |
| EC 4250 | | 311 | 311 | 311 |
| EC 4250* | | 317 | 317 | 317 |
| FL620/10 | | EQ 4250 | 452 | 427 |
| FL635/10 | EQ 4250 | 433 | 418 | 433 |



IEC Motor

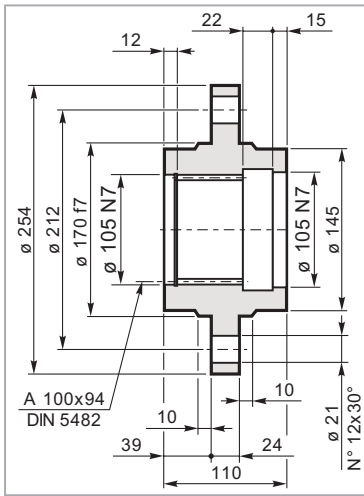
| | | Lt | | | | | | | |
|----------|-----------------|--------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2250 | MN-MN1-FS | 290 | 292 | 297 | 298 | 365 | | 406 | 424 |
| ED 2250 | FE | 275 | 277 | 282 | 283 | 350 | | 391 | 372 |
| ED 2250 | FP | | | | | | | | |
| ET 3250 | MN-MN1-FS | 335 | 357 | 362 | 363 | 430 | 461 | 471 | 490 |
| ET 3250 | FE | 340 | 342 | 347 | 348 | 415 | 446 | 456 | 438 |
| ET 3250 | FP | | | | | | | | |
| EQ 4250 | MN-MN1-FS | 408 | 410 | 415 | 416 | 483 | | | |
| EQ 4250 | FE | 393 | 395 | 400 | 401 | 468 | | | |
| EQ 4250 | FP | | | | | | | | |
| EC 2250 | MN-MN1-FE-FS-FP | 277 | 279 | 284 | 285 | 352 | 383 | | |
| EC 2250* | MN-MN1-FE-FS-FP | 310 | 312 | 317 | 318 | 385 | 416 | | |
| EC 3250 | MN-MN1-FE-FS-FP | 240 | 242 | 247 | 248 | 315 | 346 | | 508 |
| EC 3250* | MN-MN1-FE-FS-FP | 246 | 248 | 253 | 254 | 321 | 352 | | 530 |
| EC 4250 | MN-MN1-FE-FS-FP | 240 | 242 | 247 | 248 | 315 | 346 | | |
| EC 4250* | MN-MN1-FE-FS-FP | 246 | 248 | 253 | 254 | 321 | 352 | | |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 250

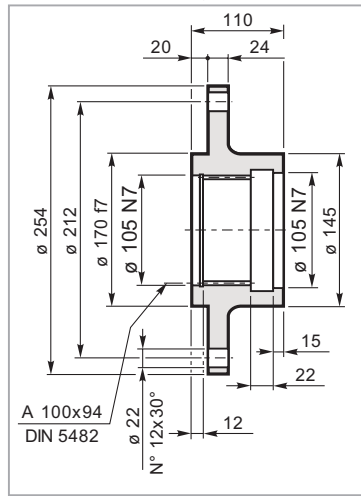


Mat. C40 UNI EN 10083
 Code: 34702921800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 250

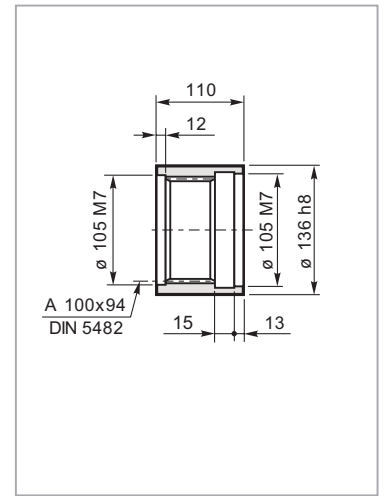


Mat. C40 UNI EN 10083
 Code: 34703021800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 250

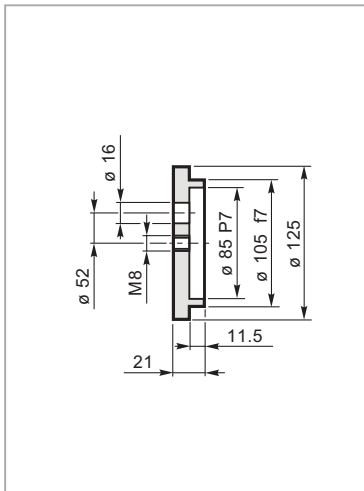


Mat. 39NiCrMo3 UNI EN 10083
 Code: 39105140600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 250

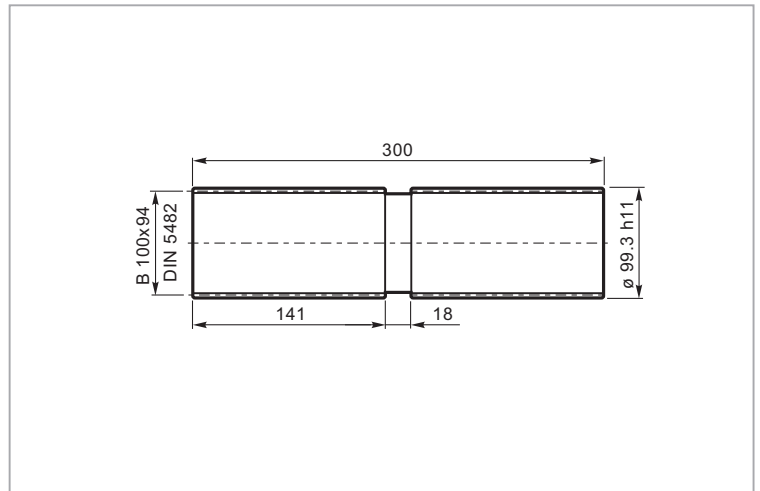


Mat. C40 UNI EN 10083
 Code: 37201240800



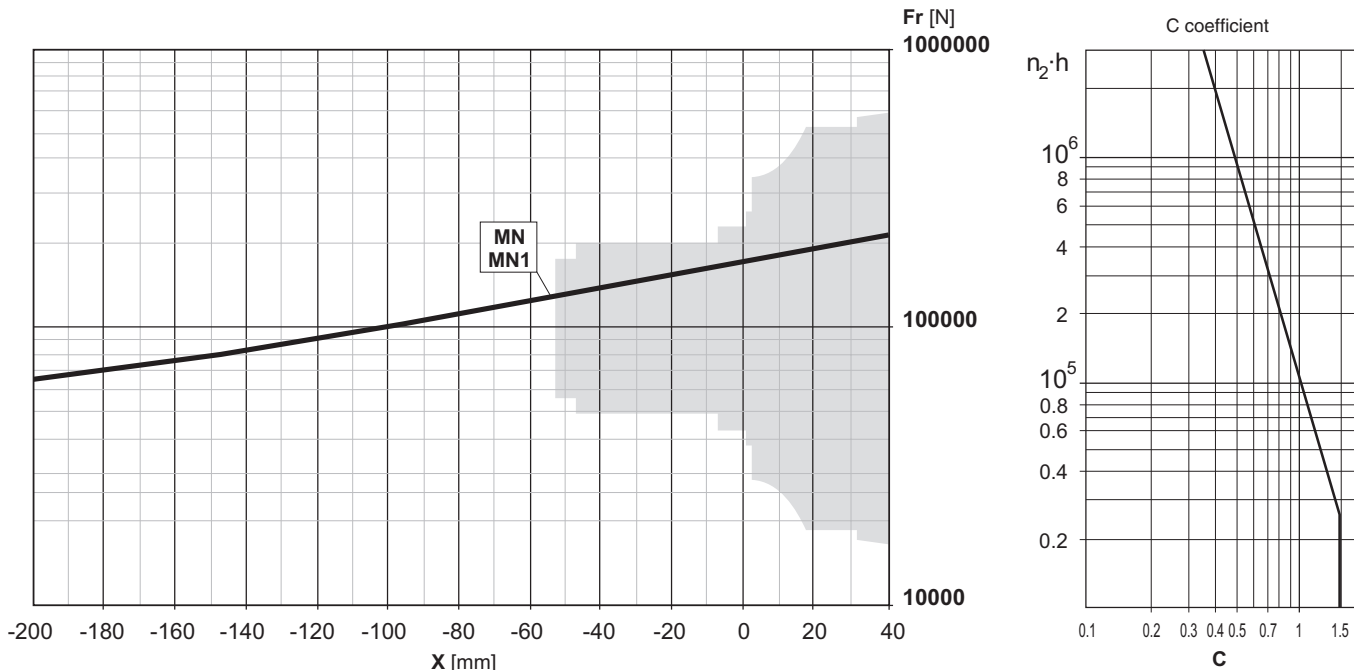
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 250



Mat. 39NiCrMo3 UNI EN 10083
 Code: 39127330100

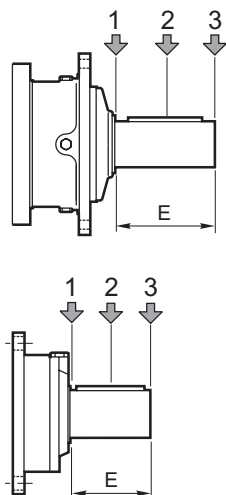
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais

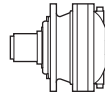
| | | Flange mounted | | PD-PDA |
|-------------------------|-----|----------------|--------|--------|
| | | MN-MN1 | MR-MR1 | MR1 |
| Fa_{din} | [N] | 100000 | — | — |
| Fa_{max} | [N] | 100000 | — | — |

Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada

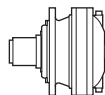


| Type | E | Fr [N] | | | | | |
|----------------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

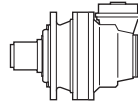
| Type | E | Fr [N] | | | | | |
|------------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2255 | | | | | | | | | | | | |
| 16.48 | 91 | 10226 | 97 | 61 | 11549 | 73 | 30.3 | 14219 | 45.2 | 35000 | 30 | |
| 20.40 | 74 | 10902 | 84 | 49.0 | 12312 | 63 | 24.5 | 15158 | 38.9 | 35000 | | |
| 23.47 | 64 | 11370 | 76 | 42.6 | 12841 | 57 | 21.3 | 15809 | 35.3 | 35000 | | |
| 25.86 | 58 | 11295 | 69 | 38.7 | 12756 | 52 | 19.3 | 15705 | 31.8 | 35000 | | |
| 27.96 | 54 | 11983 | 67 | 35.8 | 13533 | 51 | 17.9 | 16661 | 31.2 | 35000 | | |
| 29.75 | 50 | 11780 | 62 | 33.6 | 13304 | 46.8 | 16.8 | 16379 | 28.8 | 35000 | | |
| 30.30 | 49.5 | 11694 | 61 | 33.0 | 13206 | 45.6 | 16.5 | 14368 | 24.8 | 35000 | | |
| 35.43 | 42.3 | 12415 | 55 | 28.2 | 14020 | 41.4 | 14.1 | 17261 | 25.5 | 35000 | | |
| 41.52 | 36.1 | 12853 | 48.6 | 24.1 | 13892 | 35.0 | 12.0 | 14766 | 18.6 | 35000 | | |
| 44.54 | 33.7 | 13297 | 46.9 | 22.5 | 15017 | 35.3 | 11.2 | 17387 | 20.4 | 35000 | | |
| 52.20 | 28.7 | 13668 | 41.1 | 19.2 | 14180 | 28.4 | 9.6 | 15057 | 15.1 | 35000 | | |
| ET 3255 | | | | | | | | | | | | |
| 57.69 | 26.0 | 14892 | 40.5 | 17.3 | 16818 | 30.5 | 8.7 | 20474 | 18.6 | 35000 | 20 | |
| 68.08 | 22.0 | 15650 | 36.1 | 14.7 | 17674 | 27.2 | 7.3 | 21146 | 16.3 | 35000 | | |
| 71.41 | 21.0 | 15876 | 34.9 | 14.0 | 17929 | 26.3 | 7.0 | 21343 | 15.7 | 35000 | | |
| 84.26 | 17.8 | 16684 | 31.1 | 11.9 | 18842 | 23.4 | 5.9 | 22036 | 13.7 | 35000 | | |
| 90.50 | 16.6 | 16448 | 28.6 | 11.1 | 18566 | 21.5 | 5.5 | 20106 | 11.6 | 35000 | | |
| 105.5 | 14.2 | 17847 | 26.6 | 9.5 | 20155 | 20.0 | 4.7 | 23003 | 11.4 | 35000 | | |
| 115.5 | 13.0 | 18338 | 24.9 | 8.7 | 19870 | 18.0 | 4.3 | 21283 | 9.7 | 35000 | | |
| 122.4 | 12.3 | 18662 | 23.9 | 8.2 | 20712 | 17.7 | 4.1 | 23661 | 10.1 | 35000 | | |
| 144.5 | 10.4 | 19496 | 21.2 | 6.9 | 20331 | 14.7 | 3.5 | 21740 | 7.9 | 35000 | | |
| 155.1 | 9.7 | 18773 | 19.0 | 6.4 | 19507 | 13.2 | 3.2 | 22308 | 7.5 | 35000 | | |
| 183.2 | 8.2 | 19030 | 16.3 | 5.5 | 20153 | 11.5 | 2.7 | 23022 | 6.6 | 35000 | | |
| 202.7 | 7.4 | 20193 | 15.7 | 4.9 | 21018 | 10.9 | 2.5 | 22430 | 5.8 | 35000 | | |
| 230.3 | 6.5 | 18584 | 12.7 | 4.3 | 19459 | 8.8 | 2.2 | 20954 | 4.8 | 35000 | | |
| 256.9 | 5.8 | 19890 | 12.2 | 3.9 | 21516 | 8.8 | 1.9 | 24532 | 5.0 | 35000 | | |
| 267.3 | 5.6 | 18906 | 11.1 | 3.7 | 19779 | 7.8 | 1.9 | 21278 | 4.2 | 35000 | | |
| 322.9 | 4.6 | 19314 | 9.4 | 3.1 | 20186 | 6.5 | 1.5 | 21692 | 3.5 | 35000 | | |
| EQ 4255 | | | | | | | | | | | | |
| 346.1 | 4.3 | 23398 | 10.6 | 2.9 | 25248 | 7.6 | 1.4 | 28679 | 4.3 | 35000 | | 15 |
| 404.1 | 3.7 | 21596 | 8.4 | 2.5 | 22424 | 5.8 | 1.2 | 23862 | 3.1 | 35000 | | |
| 435.6 | 3.4 | 24434 | 8.8 | 2.3 | 26347 | 6.3 | 1.1 | 29898 | 3.6 | 35000 | | |
| 505.6 | 3.0 | 25123 | 7.8 | 2.0 | 27079 | 5.6 | 0.99 | 30710 | 3.2 | 35000 | | |
| 545.3 | 2.8 | 25479 | 7.3 | 1.8 | 27458 | 5.3 | 0.92 | 31129 | 3.0 | 35000 | | |
| 632.9 | 2.4 | 26192 | 6.5 | 1.6 | 28215 | 4.7 | 0.79 | 31969 | 2.6 | 35000 | | |
| 734.5 | 2.0 | 26921 | 5.8 | 1.4 | 28989 | 4.1 | 0.68 | 32828 | 2.3 | 35000 | | |
| 802.1 | 1.9 | 24715 | 4.8 | 1.2 | 26640 | 3.5 | 0.62 | 30214 | 2.0 | 35000 | | |
| 887.5 | 1.7 | 27870 | 4.9 | 1.1 | 29998 | 3.5 | 0.56 | 33947 | 2.0 | 35000 | | |
| 969.1 | 1.5 | 25599 | 4.2 | 1.0 | 27579 | 3.0 | 0.52 | 31257 | 1.7 | 35000 | | |
| 1125 | 1.3 | 26312 | 3.7 | 0.89 | 28337 | 2.6 | 0.44 | 32098 | 1.5 | 35000 | | |
| 1275 | 1.2 | 26928 | 3.3 | 0.78 | 28991 | 2.4 | 0.39 | 32823 | 1.3 | 35000 | | |
| 1382 | 1.1 | 22478 | 2.6 | 0.72 | 23391 | 1.8 | 0.36 | 27360 | 1.0 | 35000 | | |
| 1541 | 0.97 | 27875 | 2.8 | 0.65 | 29998 | 2.0 | 0.32 | 33941 | 1.2 | 35000 | | |
| 1862 | 0.81 | 28850 | 2.4 | 0.54 | 31034 | 1.7 | 0.27 | 35091 | 0.99 | 35000 | | |
| 1938 | 0.77 | 23238 | 1.9 | 0.52 | 25230 | 1.4 | 0.26 | 29497 | 0.80 | 35000 | | |
| 2341 | 0.64 | 23986 | 1.6 | 0.43 | 26352 | 1.2 | 0.21 | 30741 | 0.69 | 35000 | | |
| 2744 | 0.55 | 24527 | 1.4 | 0.36 | 26399 | 1.0 | 0.18 | 29876 | 0.57 | 35000 | | |

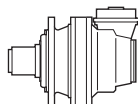


| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] | |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|----|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | | |
| ED 2255 | | | | | | | | | | | | |
| 16.48 | 91 | 18068 | 172 | 61 | 19971 | 127 | 30.3 | 23024 | 73 | 35000 | 30 | |
| 20.40 | 74 | 19261 | 148 | 49.0 | 20892 | 107 | 24.5 | 24007 | 62 | 35000 | | |
| 23.47 | 64 | 19862 | 133 | 42.6 | 21505 | 96 | 21.3 | 24665 | 55 | 35000 | | |
| 25.86 | 58 | 18698 | 114 | 38.7 | 19755 | 80 | 19.3 | 22677 | 45.9 | 35000 | | |
| 27.96 | 54 | 18857 | 106 | 35.8 | 20067 | 75 | 17.9 | 21864 | 41.0 | 35000 | | |
| 29.75 | 50 | 18947 | 100 | 33.6 | 20327 | 72 | 16.8 | 23298 | 41.0 | 35000 | | |
| 30.30 | 49.5 | 15214 | 79 | 33.0 | 16013 | 55 | 16.5 | 18421 | 31.8 | 35000 | | |
| 35.43 | 42.3 | 19390 | 86 | 28.2 | 21054 | 62 | 14.1 | 24089 | 35.6 | 35000 | | |
| 41.52 | 36.1 | 15712 | 59 | 24.1 | 17082 | 43.1 | 12.0 | 19587 | 24.7 | 35000 | | |
| 44.54 | 33.7 | 18250 | 64 | 22.5 | 19413 | 45.6 | 11.2 | 21210 | 24.9 | 35000 | | |
| 52.20 | 28.7 | 16478 | 49.6 | 19.2 | 17885 | 35.9 | 9.6 | 20467 | 20.5 | 35000 | | |
| ET 3255 | | | | | | | | | | | | |
| 57.69 | 26.0 | 23732 | 65 | 17.3 | 25655 | 46.6 | 8.7 | 29185 | 26.5 | 35000 | | 20 |
| 68.08 | 22.0 | 24505 | 57 | 14.7 | 26468 | 40.7 | 7.3 | 30079 | 23.1 | 35000 | | |
| 71.41 | 21.0 | 24732 | 54 | 14.0 | 26706 | 39.2 | 7.0 | 30341 | 22.2 | 35000 | | |
| 84.26 | 17.8 | 25525 | 47.6 | 11.9 | 27543 | 34.2 | 5.9 | 31262 | 19.4 | 35000 | | |
| 90.50 | 16.6 | 23361 | 40.5 | 11.1 | 25228 | 29.2 | 5.5 | 28676 | 16.6 | 35000 | | |
| 105.5 | 14.2 | 26630 | 39.7 | 9.5 | 28709 | 28.5 | 4.7 | 32548 | 16.2 | 35000 | | |
| 115.5 | 13.0 | 22627 | 30.8 | 8.7 | 23567 | 21.4 | 4.3 | 27025 | 12.3 | 35000 | | |
| 122.4 | 12.3 | 27380 | 35.1 | 8.2 | 29502 | 25.2 | 4.1 | 33424 | 14.3 | 35000 | | |
| 144.5 | 10.4 | 23151 | 25.2 | 6.9 | 24425 | 17.7 | 3.5 | 28327 | 10.3 | 35000 | | |
| 155.1 | 9.7 | 25866 | 26.2 | 6.4 | 27880 | 18.8 | 3.2 | 31607 | 10.7 | 35000 | | |
| 183.2 | 8.2 | 26677 | 22.9 | 5.5 | 28739 | 16.4 | 2.7 | 32558 | 9.3 | 35000 | | |
| 202.7 | 7.4 | 24063 | 18.7 | 4.9 | 26286 | 13.6 | 2.5 | 30363 | 7.8 | 35000 | | |
| 230.3 | 6.5 | 22539 | 15.4 | 4.3 | 23776 | 10.8 | 2.2 | 27955 | 6.4 | 35000 | | |
| 256.9 | 5.8 | 28388 | 17.4 | 3.9 | 30553 | 12.5 | 1.9 | 34568 | 7.0 | 35000 | | |
| 267.3 | 5.6 | 22898 | 13.5 | 3.7 | 24642 | 9.7 | 1.9 | 28905 | 5.7 | 35000 | | |
| 322.9 | 4.6 | 23390 | 11.4 | 3.1 | 25767 | 8.4 | 1.5 | 30142 | 4.9 | 35000 | | |
| EQ 4255 | | | | | | | | | | | | |
| 346.1 | 4.3 | 33074 | 15.0 | 2.9 | 35537 | 10.8 | 1.4 | 40106 | 6.1 | 35000 | 15 | |
| 404.1 | 3.7 | 27914 | 10.9 | 2.5 | 30344 | 7.9 | 1.2 | 34832 | 4.5 | 35000 | | |
| 435.6 | 3.4 | 34452 | 12.4 | 2.3 | 37000 | 8.9 | 1.1 | 41729 | 5.0 | 35000 | | |
| 505.6 | 3.0 | 35370 | 11.0 | 2.0 | 37975 | 7.9 | 0.99 | 42810 | 4.4 | 35000 | | |
| 545.3 | 2.8 | 35845 | 10.3 | 1.8 | 38479 | 7.4 | 0.92 | 43370 | 4.2 | 35000 | | |
| 632.9 | 2.4 | 36794 | 9.1 | 1.6 | 39487 | 6.5 | 0.79 | 44488 | 3.7 | 35000 | | |
| 734.5 | 2.0 | 37764 | 8.1 | 1.4 | 40518 | 5.8 | 0.68 | 45632 | 3.3 | 35000 | | |
| 802.1 | 1.9 | 34813 | 6.8 | 1.2 | 37377 | 4.9 | 0.62 | 42138 | 2.8 | 35000 | | |
| 887.5 | 1.7 | 39029 | 6.9 | 1.1 | 41862 | 4.9 | 0.56 | 47123 | 2.8 | 35000 | | |
| 969.1 | 1.5 | 35990 | 5.8 | 1.0 | 38628 | 4.2 | 0.52 | 43526 | 2.4 | 35000 | | |
| 1125 | 1.3 | 36940 | 5.2 | 0.89 | 39637 | 3.7 | 0.44 | 44647 | 2.1 | 35000 | | |
| 1275 | 1.2 | 37759 | 4.7 | 0.78 | 40508 | 3.3 | 0.39 | 45614 | 1.9 | 35000 | | |
| 1382 | 1.1 | 32556 | 3.7 | 0.72 | 35469 | 2.7 | 0.36 | 40872 | 1.5 | 35000 | | |
| 1541 | 0.97 | 39021 | 4.0 | 0.65 | 41849 | 2.8 | 0.32 | 47103 | 1.6 | 35000 | | |
| 1862 | 0.81 | 40320 | 3.4 | 0.54 | 43230 | 2.4 | 0.27 | 48635 | 1.4 | 35000 | | |
| 1938 | 0.77 | 34973 | 2.8 | 0.52 | 38035 | 2.1 | 0.26 | 43718 | 1.2 | 35000 | | |
| 2341 | 0.64 | 36379 | 2.4 | 0.43 | 39528 | 1.8 | 0.21 | 45375 | 1.0 | 35000 | | |
| 2744 | 0.55 | 34358 | 2.0 | 0.36 | 36851 | 1.4 | 0.18 | 41484 | 0.79 | 35000 | | |



| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| EC 3255 | | | | | | | | | | | |
| 49.45 | 30.3 | 11152 | 35.4 | 20.2 | 12595 | 26.7 | 10.1 | 15506 | 16.4 | 35000 | 14 |
| 61.21 | 24.5 | 13803 | 35.4 | 16.3 | 15589 | 26.7 | 8.2 | 19192 | 16.4 | 35000 | |
| 70.42 | 21.3 | 15809 | 35.3 | 14.2 | 17854 | 26.6 | 7.1 | 21286 | 15.8 | 35000 | |
| 77.57 | 19.3 | 15705 | 31.8 | 12.9 | 17736 | 23.9 | 6.4 | 19507 | 13.2 | 35000 | |
| 94.26 | 15.9 | 9225 | 15.4 | 10.6 | 10418 | 11.6 | 5.3 | 12826 | 7.1 | 35000 | |
| 96.51 | 15.5 | 9445 | 15.4 | 10.4 | 10667 | 11.6 | 5.2 | 13133 | 7.1 | 35000 | |
| 108.4 | 13.8 | 10613 | 15.4 | 9.2 | 11986 | 11.6 | 4.6 | 14757 | 7.1 | 35000 | |
| 129.2 | 11.6 | 12641 | 15.4 | 7.7 | 14276 | 11.6 | 3.9 | 17576 | 7.1 | 35000 | |
| 137.4 | 10.9 | 13451 | 15.4 | 7.3 | 15190 | 11.6 | 3.6 | 18702 | 7.1 | 35000 | |
| 163.7 | 9.2 | 16020 | 15.4 | 6.1 | 18093 | 11.6 | 3.1 | 22275 | 7.1 | 35000 | |
| 205.8 | 7.3 | 18340 | 14.0 | 4.9 | 19217 | 9.8 | 2.4 | 20710 | 5.3 | 35000 | |
| EC 4255 | | | | | | | | | | | |
| 266.5 | 5.6 | 22261 | 13.1 | 3.8 | 24043 | 9.4 | 1.9 | 27344 | 5.4 | 35000 | 10 |
| 314.5 | 4.8 | 22976 | 11.5 | 3.2 | 24801 | 8.3 | 1.6 | 28183 | 4.7 | 35000 | |
| 346.4 | 4.3 | 21283 | 9.7 | 2.9 | 22108 | 6.7 | 1.4 | 23539 | 3.6 | 35000 | |
| 389.3 | 3.9 | 23922 | 9.7 | 2.6 | 25805 | 6.9 | 1.3 | 29296 | 3.9 | 35000 | |
| 456.9 | 3.3 | 24653 | 8.5 | 2.2 | 26580 | 6.1 | 1.1 | 30156 | 3.5 | 35000 | |
| 487.3 | 3.1 | 24951 | 8.0 | 2.1 | 26897 | 5.8 | 1.0 | 30507 | 3.3 | 35000 | |
| 565.5 | 2.7 | 25652 | 7.1 | 1.8 | 27641 | 5.1 | 0.88 | 31333 | 2.9 | 35000 | |
| 650.7 | 2.3 | 26327 | 6.4 | 1.5 | 28358 | 4.6 | 0.77 | 32127 | 2.6 | 35000 | |
| 683.4 | 2.2 | 26566 | 6.1 | 1.5 | 28612 | 4.4 | 0.73 | 32409 | 2.5 | 35000 | |
| 786.2 | 1.9 | 27259 | 5.4 | 1.3 | 29348 | 3.9 | 0.64 | 33227 | 2.2 | 35000 | |
| 936.4 | 1.6 | 23322 | 3.9 | 1.1 | 24430 | 2.7 | 0.53 | 28240 | 1.6 | 35000 | |
| 982.1 | 1.5 | 25662 | 4.1 | 1.0 | 27646 | 2.9 | 0.51 | 31331 | 1.7 | 35000 | |
| 1064 | 1.4 | 21898 | 3.2 | 0.94 | 22800 | 2.2 | 0.47 | 25781 | 1.3 | 35000 | |
| 1187 | 1.3 | 26573 | 3.5 | 0.84 | 28615 | 2.5 | 0.42 | 32406 | 1.4 | 35000 | |
| 1492 | 1.0 | 22649 | 2.4 | 0.67 | 23732 | 1.7 | 0.34 | 27836 | 0.98 | 35000 | |
| 1748 | 0.86 | 22577 | 2.0 | 0.57 | 24326 | 1.5 | 0.29 | 27574 | 0.83 | 35000 | |

1500
HOURS LIFE



255

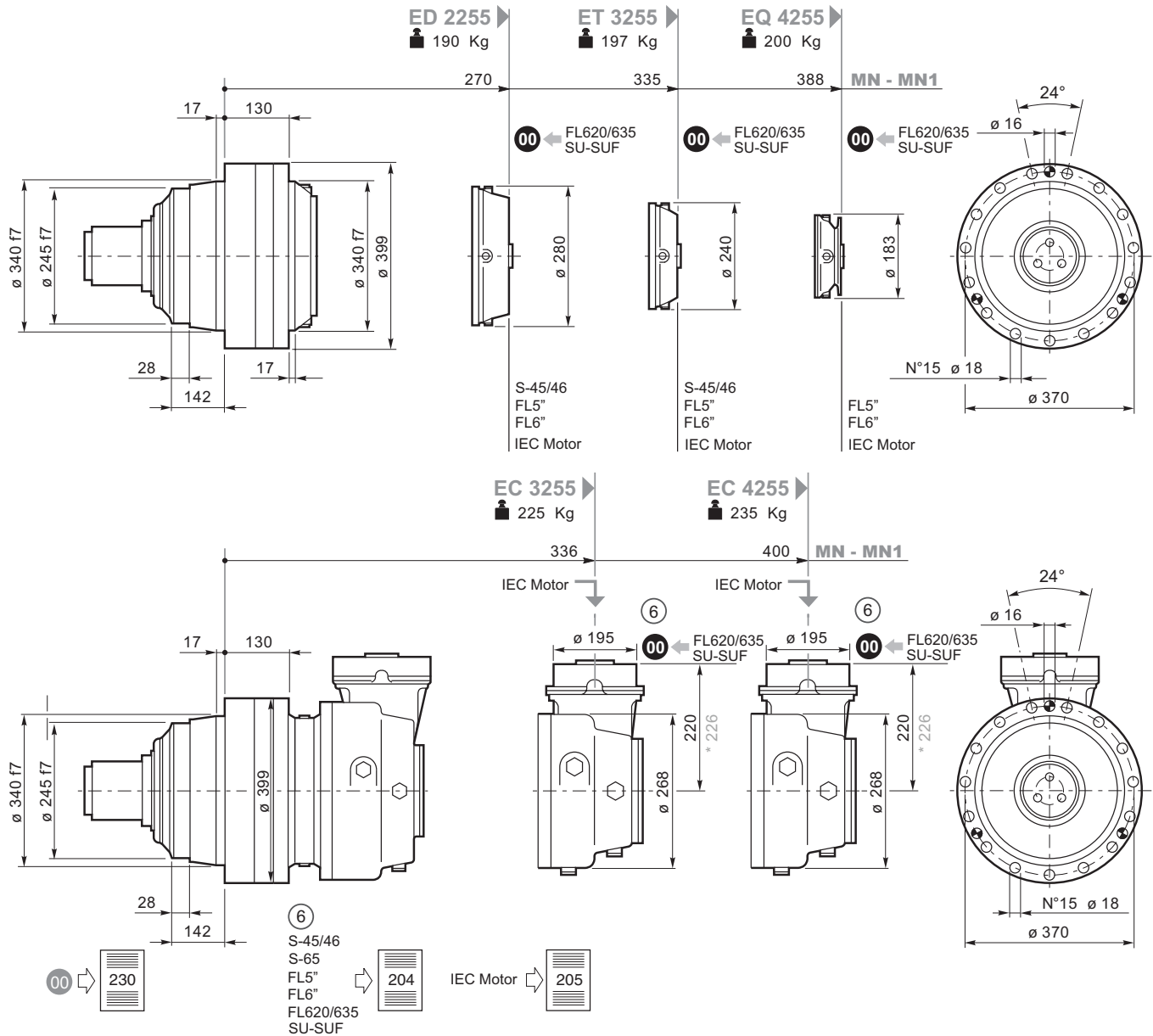
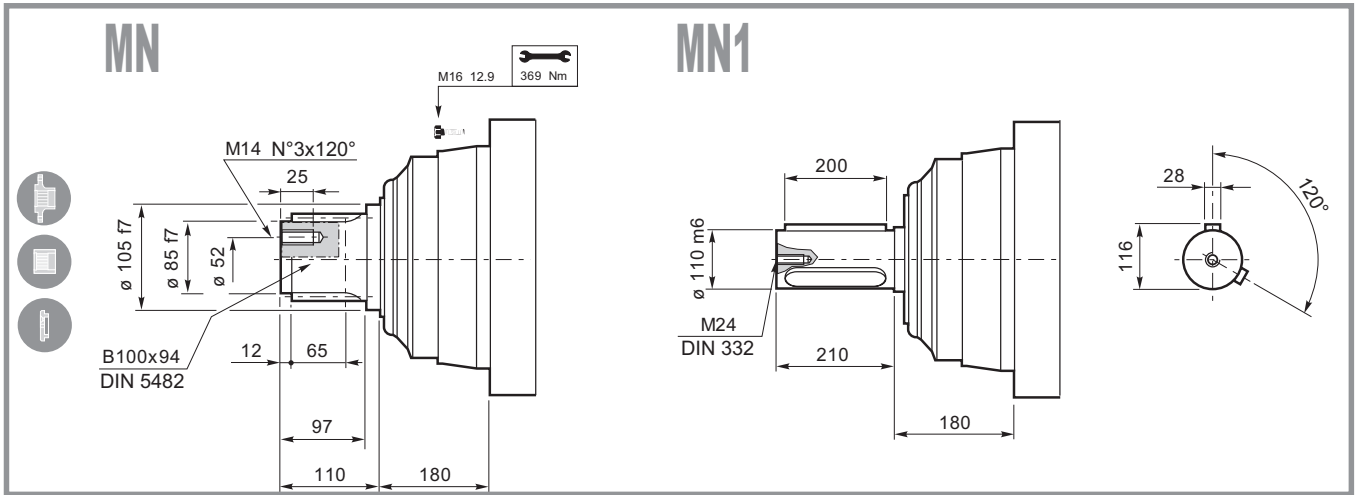
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|-----------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |

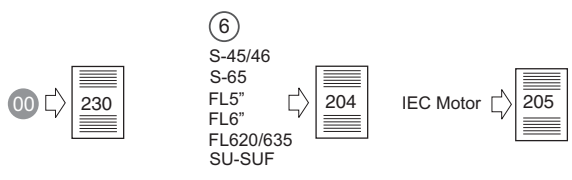
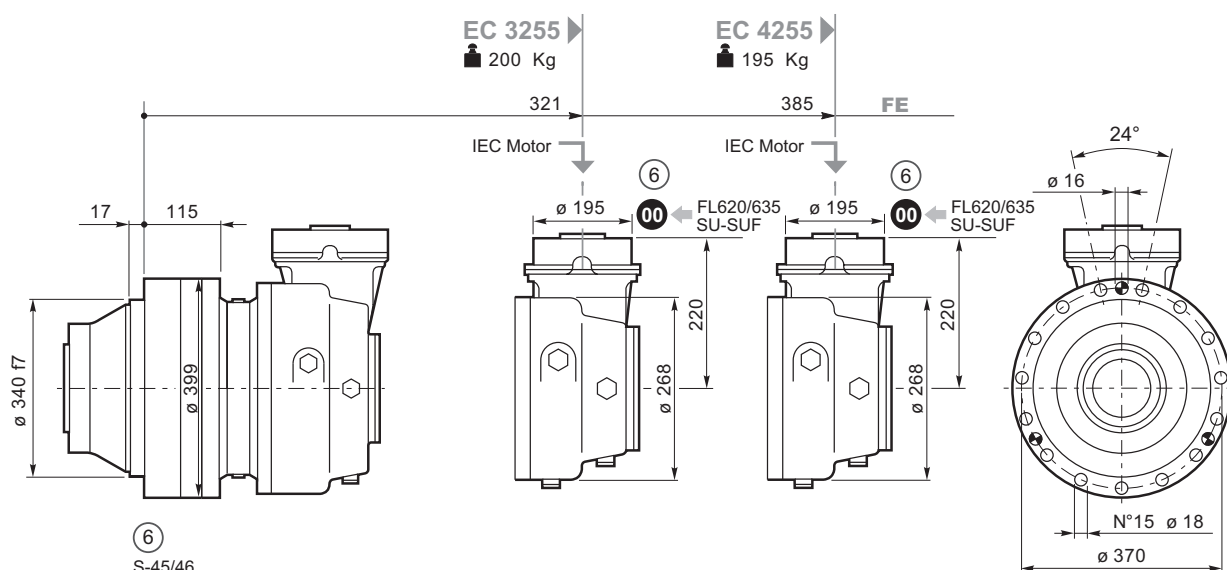
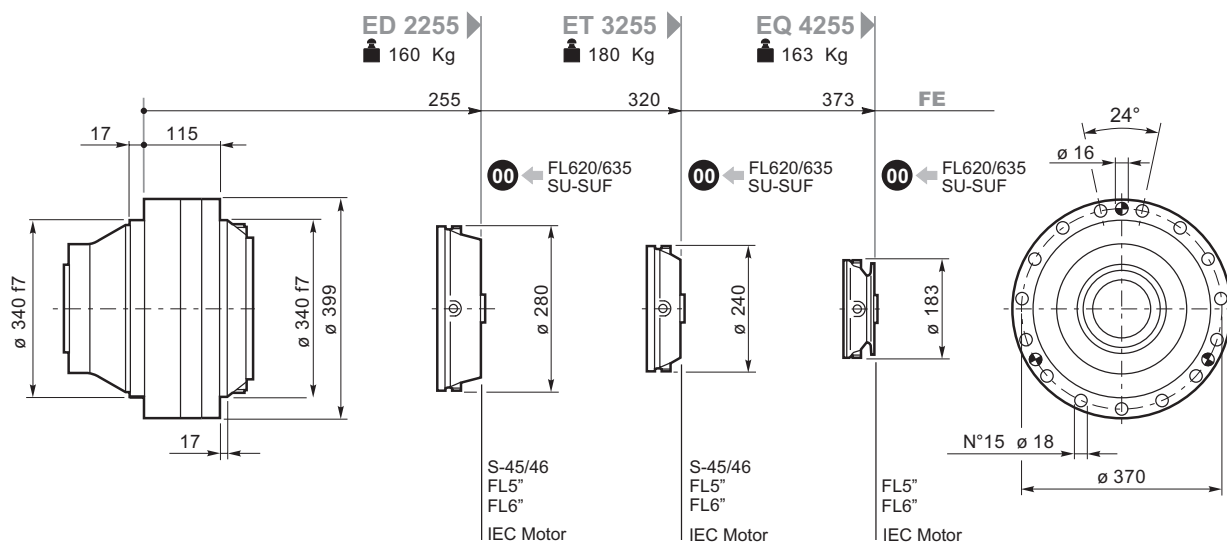
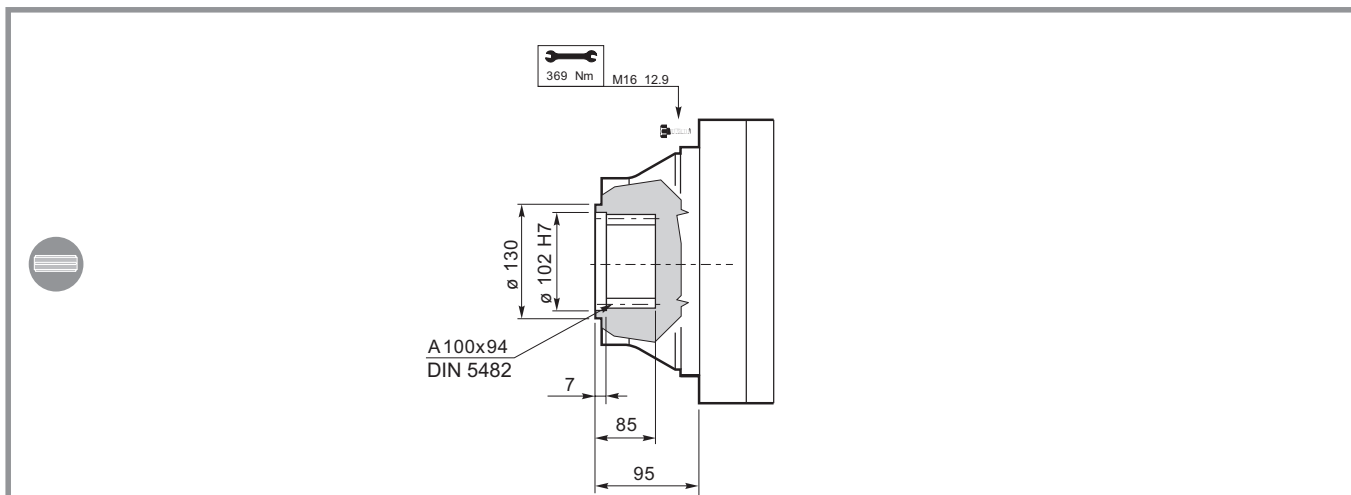
EC 3255

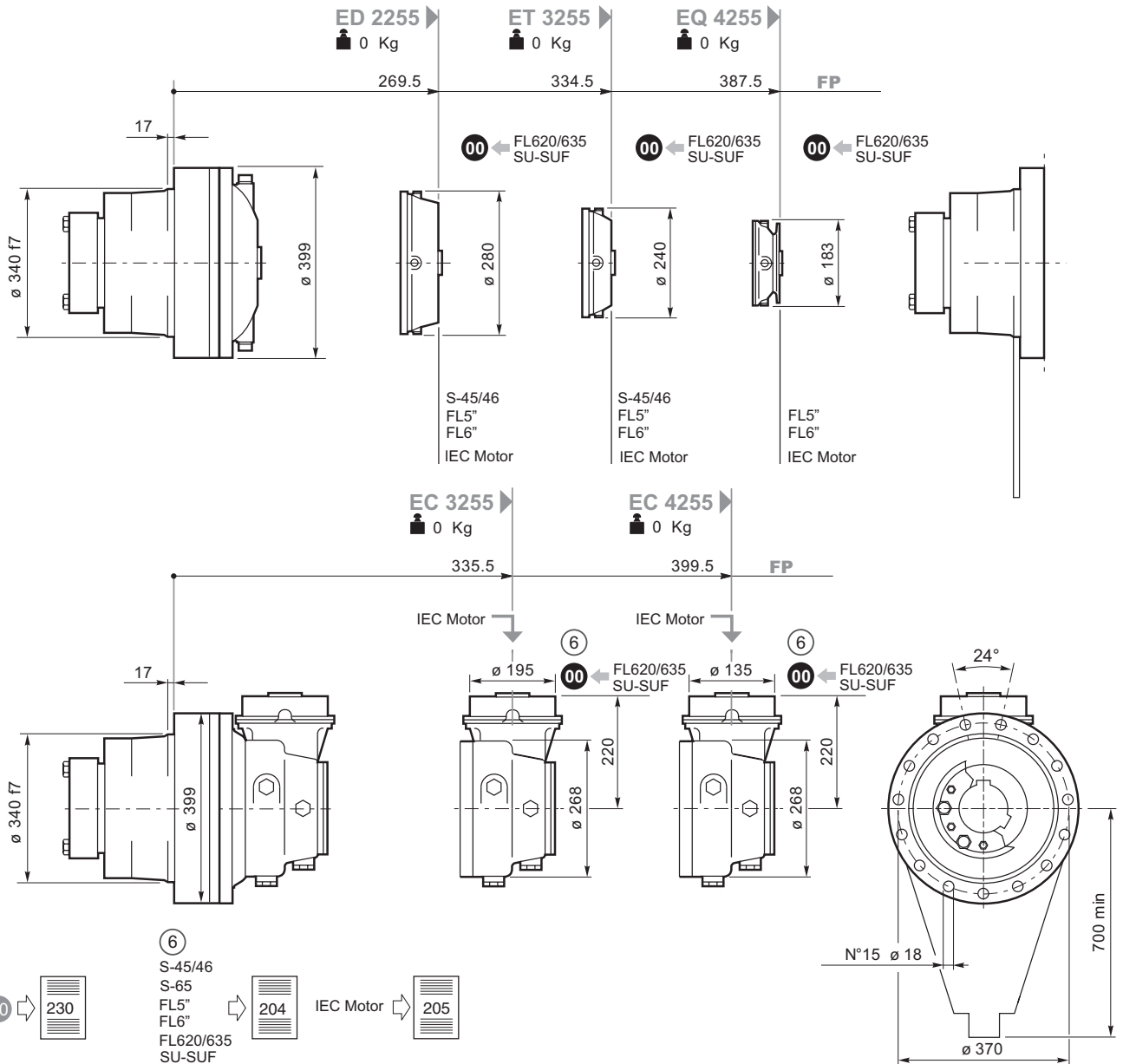
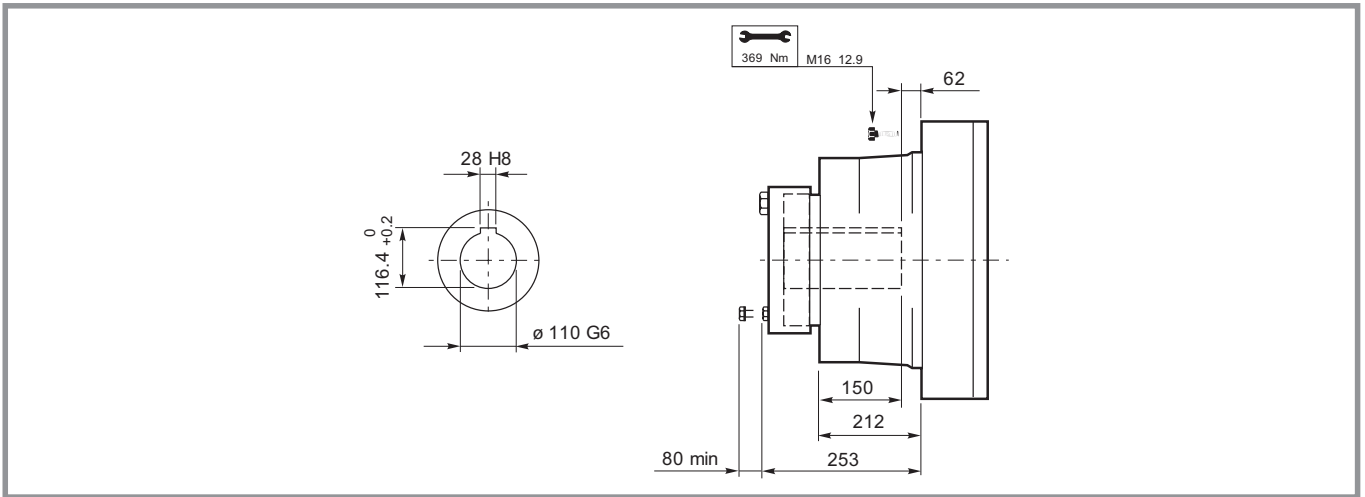
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|-------|------|-------|------|------|-------|------|------|-------|------|-------|----|
| 49.45 | 30.3 | 19703 | 63 | 20.2 | 22252 | 47.1 | 10.1 | 27395 | 29.0 | 35000 | |
| 61.21 | 24.5 | 24007 | 62 | 16.3 | 25944 | 44.4 | 8.2 | 29502 | 25.2 | 35000 | |
| 70.42 | 21.3 | 24665 | 55 | 14.2 | 26637 | 39.6 | 7.1 | 30264 | 22.5 | 35000 | |
| 77.57 | 19.3 | 22677 | 45.9 | 12.9 | 24506 | 33.1 | 6.4 | 27880 | 18.8 | 35000 | |
| 94.26 | 15.9 | 16298 | 27.2 | 10.6 | 18406 | 20.5 | 5.3 | 22661 | 12.6 | 35000 | |
| 96.51 | 15.5 | 16688 | 27.2 | 10.4 | 18846 | 20.5 | 5.2 | 23203 | 12.6 | 35000 | 14 |
| 108.4 | 13.8 | 18751 | 27.2 | 9.2 | 21177 | 20.5 | 4.6 | 26072 | 12.6 | 35000 | |
| 129.2 | 11.6 | 22334 | 27.2 | 7.7 | 23823 | 19.3 | 3.9 | 27670 | 11.2 | 35000 | |
| 137.4 | 10.9 | 23764 | 27.2 | 7.3 | 26838 | 20.5 | 3.6 | 30928 | 11.8 | 35000 | |
| 163.7 | 9.2 | 26126 | 25.1 | 6.1 | 28155 | 18.0 | 3.1 | 31911 | 10.2 | 35000 | |
| 205.8 | 7.3 | 22267 | 17.0 | 4.9 | 23244 | 11.8 | 2.4 | 27250 | 6.9 | 35000 | |

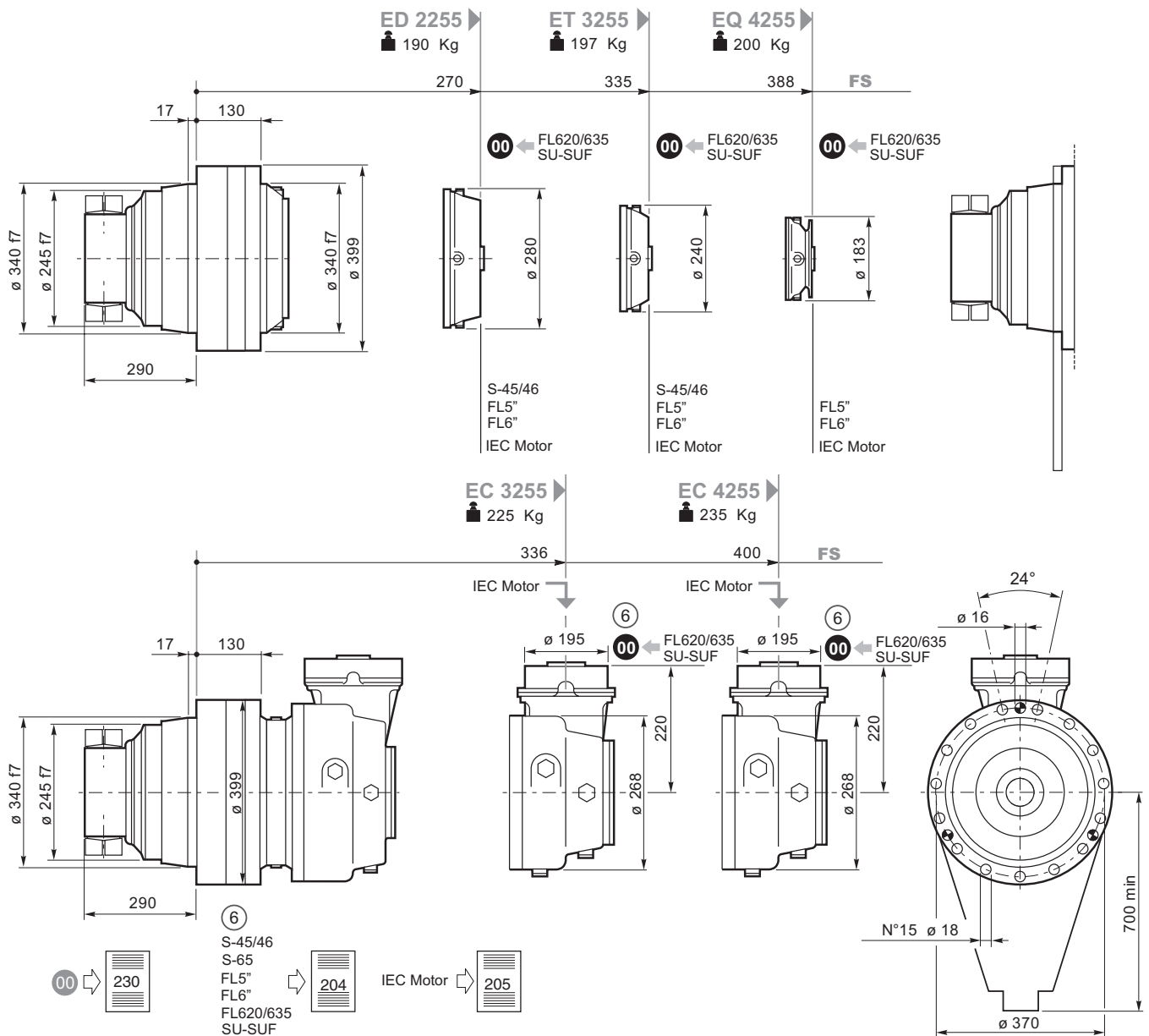
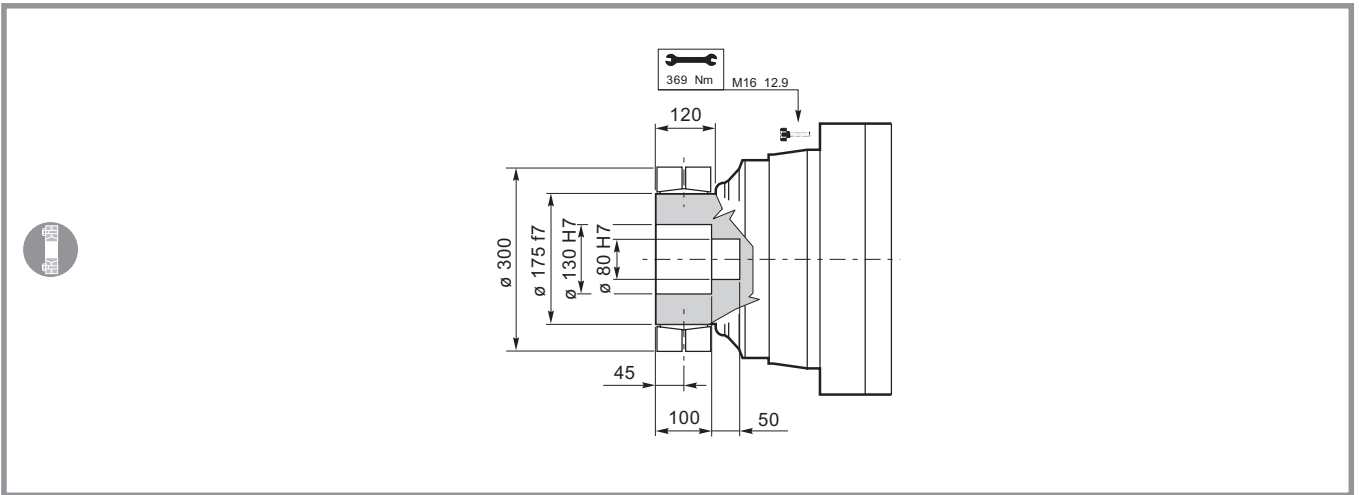
EC 4255

| | | | | | | | | | | | |
|-------|------|-------|------|------|-------|------|------|-------|-----|-------|----|
| 266.5 | 5.6 | 31562 | 18.6 | 3.8 | 33932 | 13.3 | 1.9 | 38327 | 7.5 | 35000 | |
| 314.5 | 4.8 | 32512 | 16.2 | 3.2 | 34941 | 11.6 | 1.6 | 39446 | 6.6 | 35000 | |
| 346.4 | 4.3 | 27025 | 12.3 | 2.9 | 29404 | 8.9 | 1.4 | 33795 | 5.1 | 35000 | |
| 389.3 | 3.9 | 33772 | 13.6 | 2.6 | 36278 | 9.8 | 1.3 | 40928 | 5.5 | 35000 | |
| 456.9 | 3.3 | 34744 | 11.9 | 2.2 | 37310 | 8.6 | 1.1 | 42073 | 4.8 | 35000 | |
| 487.3 | 3.1 | 35142 | 11.3 | 2.1 | 37733 | 8.1 | 1.0 | 42541 | 4.6 | 35000 | |
| 565.5 | 2.7 | 36075 | 10.0 | 1.8 | 38724 | 7.2 | 0.88 | 43641 | 4.0 | 35000 | |
| 650.7 | 2.3 | 36973 | 8.9 | 1.5 | 39678 | 6.4 | 0.77 | 44699 | 3.6 | 35000 | |
| 683.4 | 2.2 | 37291 | 8.6 | 1.5 | 40016 | 6.1 | 0.73 | 45075 | 3.5 | 35000 | |
| 786.2 | 1.9 | 38215 | 7.6 | 1.3 | 40997 | 5.5 | 0.64 | 46164 | 3.1 | 35000 | 10 |
| 936.4 | 1.6 | 33107 | 5.6 | 1.1 | 35844 | 4.0 | 0.53 | 40917 | 2.3 | 35000 | |
| 982.1 | 1.5 | 36074 | 5.8 | 1.0 | 38717 | 4.1 | 0.51 | 43626 | 2.3 | 35000 | |
| 1064 | 1.4 | 30767 | 4.5 | 0.94 | 33571 | 3.3 | 0.47 | 38769 | 1.9 | 35000 | |
| 1187 | 1.3 | 37288 | 4.9 | 0.84 | 40007 | 3.5 | 0.42 | 45057 | 2.0 | 35000 | |
| 1492 | 1.0 | 33094 | 3.5 | 0.67 | 36040 | 2.5 | 0.34 | 41505 | 1.5 | 35000 | |
| 1748 | 0.86 | 31760 | 2.9 | 0.57 | 34089 | 2.0 | 0.29 | 38417 | 1.2 | 35000 | |



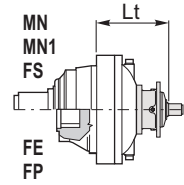
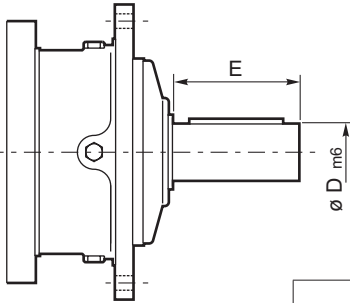






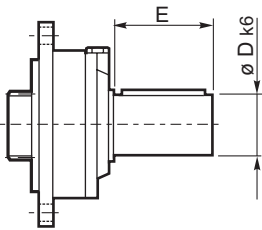
S45CR1-S46C1

S65CR1

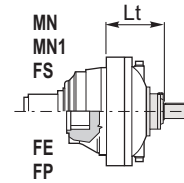


| | D m6 | E | Lt | | | |
|----------------|---------|-----|----------------|-------|-------|-------|
| | | | MN-MN1-FS | FE | FP | |
| S45 CR1 | 65 | 105 | ED 2255 | 411.5 | 396.5 | 411 |
| | | | ET 3255 | 411.5 | 396.5 | 411 |
| | | | EQ 4255 | 478 | 463 | 477.5 |
| S46 C1 | 65 | 105 | ED 2255 | 452.5 | 437.5 | 452 |
| | | | ET 3255 | 452.5 | 437.5 | 452 |
| | | | EQ 4255 | 519 | 504 | 518.5 |
| S65 CR1 | 80 | 130 | ED 2255 | 450.5 | 433.5 | 450 |

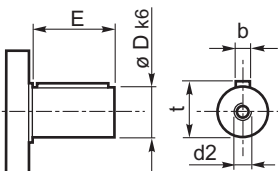
SU2



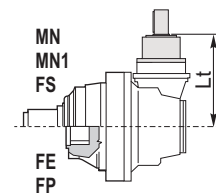
| | D k6 | E | Lt | | | |
|-------------|---------|----|----------------|-----|-----|-------|
| | | | MN-MN1 FS | FE | FP | |
| SU 2 | 40 | 58 | ET 3255 | 395 | 380 | 394.5 |
| | | | EQ 4255 | 448 | 433 | 447.5 |



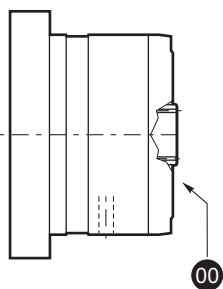
⑥ 48.82



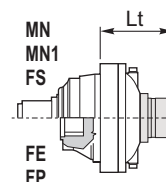
| | D | E | Lt | |
|--------------|----|----|-----------------|--|
| | | | MN-MN1-FS-FE-FP | |
| 48.82 | 48 | 82 | 280 | |
| | | | 280 | |



FL250-FL350-FL450 FL750 FL760-FL960



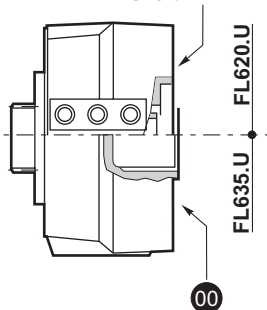
| | | Lt | | |
|----------------------|---------|-----------|-------|-----|
| | | MN-MN1-FS | FE | FP |
| FL250-FL350 FL450 | ED 2255 | 381.5 | 366.5 | — |
| | ET 3255 | 442 | 427 | — |
| | EQ 4255 | 509.5 | 594.5 | — |
| | EC 3255 | 280 | 280 | 280 |
| | EC 4255 | 280 | 280 | 280 |
| FL750 | ED 2255 | 394.5 | 380 | — |
| | ET 3255 | 455 | 440.5 | — |
| | EQ 4255 | 522.5 | 507 | — |
| | EC 3255 | 293 | 293 | 293 |
| | EC 4255 | 293 | 293 | 293 |
| FL760-FL960 | ED 2255 | 409 | 394 | — |



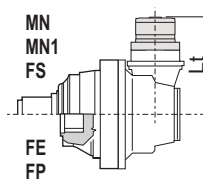
FL620/10
FL635/10

FL620U-FL635U

SAE A-AA
Shaft FE



| | | Lt | | |
|----------|----------|-----------|-------|-------|
| | | MN-MN1-FS | FE | FP |
| FL620/U | ED 2255 | | | |
| | ET 3255 | | | |
| | EQ 4255 | | | |
| | EC 3255 | 324.5 | 324.5 | 324.5 |
| | EC 3255* | 330.5 | 330.5 | 330.5 |
| | EC 4255 | 324.5 | 324.5 | 324.5 |
| | EC 4255* | 330.5 | 330.5 | 330.5 |
| FL635/U | ED 2255 | 372.5 | 357.5 | 360.5 |
| | ET 3255 | 439.5 | 424.5 | 425.5 |
| | EQ 4255 | 507 | 492 | 478.5 |
| | EC 3255 | 311 | 311 | 311 |
| | EC 3255* | 317 | 317 | 317 |
| | EC 4255 | 311 | 311 | 311 |
| | EC 4255* | 317 | 317 | 317 |
| FL620/10 | EQ 4255 | 480 | 465 | 452 |
| FL635/10 | EQ 4255 | 461 | 446 | 433 |

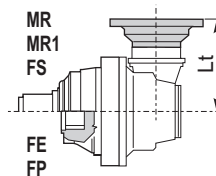
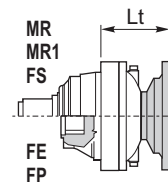


* (bg)

198

IEC Motor

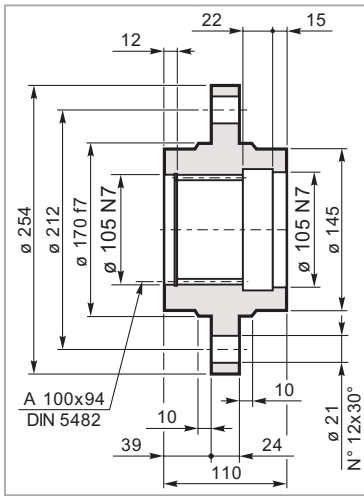
| | | Lt | | | | | | | |
|---------|-----------------|--------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2255 | MN-MN1-FS-FP | 301.5 | 303.5 | 308.5 | 309.5 | 376.5 | | 420.5 | 448.5 |
| ED 2255 | FE | 286.5 | 288.5 | 293.5 | 294.5 | 361.5 | | 405.5 | 433.5 |
| ET 3255 | MN-MN1-FS-FP | 368.5 | 370.5 | 375.5 | 376.5 | 453.5 | 474.5 | 484.5 | 515.5 |
| ET 3255 | FE | 353.5 | 355.5 | 360.5 | 361.5 | 438.5 | 459.5 | 468.5 | 499.5 |
| EQ 4255 | MN-MN1-FS-FP | 436 | 438 | 443 | 444 | 511 | 542 | 552 | |
| EQ 4255 | FE | 421 | 423.5 | 428.5 | 429.5 | 496 | 527 | 537 | |
| EC 3255 | MN-MN1-FE-FS-FP | 240 | 242 | 247 | 248 | 315 | 346 | 356 | 387 |
| EC 4255 | MN-MN1-FE-FS-FP | 240 | 242 | 247 | 248 | 315 | 346 | 356 | 387 |





Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FA 250

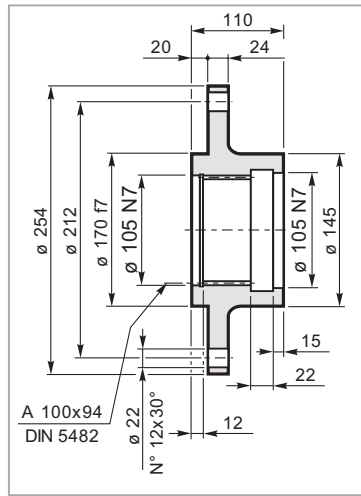


Mat. C40 UNI EN 10083
 Code: 34702921800



Flangia ruota
Driving flange
Radnabenflansch
Flasque de roue
Brida de la rueda
Flange de roda

FR 250

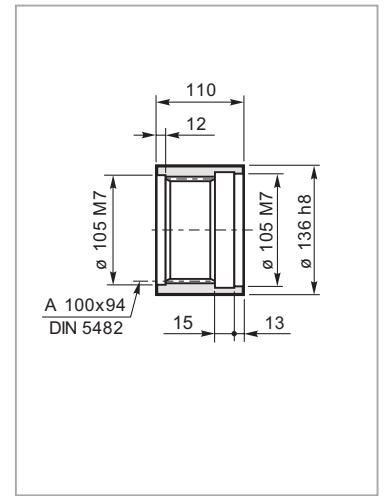


Mat. C40 UNI EN 10083
 Code: 34703021800



Manicotto scanalato
Splined bush
Keilmuffe
Manchon cannelée
Manguito acanalado
Luva ranhurada

MS 250

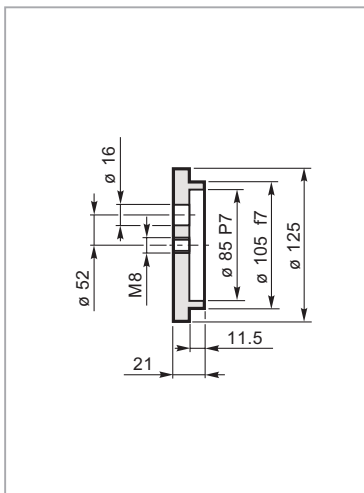


Mat. 39NiCrMo3 UNI EN 10083
 Code: 39105140600



Rondella di fermo
Shaft cover
Gegenscheibe
Rondelle frein
Arandela de bloqueo
Amuela de encosto

RDF 250

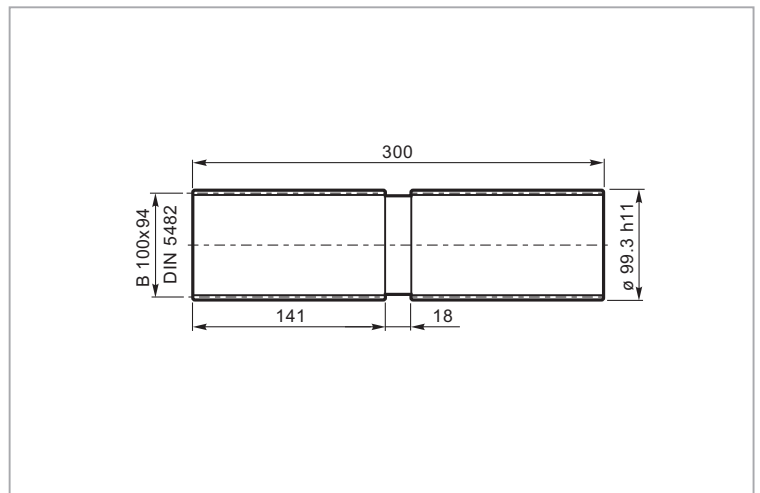


Mat. C40 UNI EN 10083
 Code: 37201240800



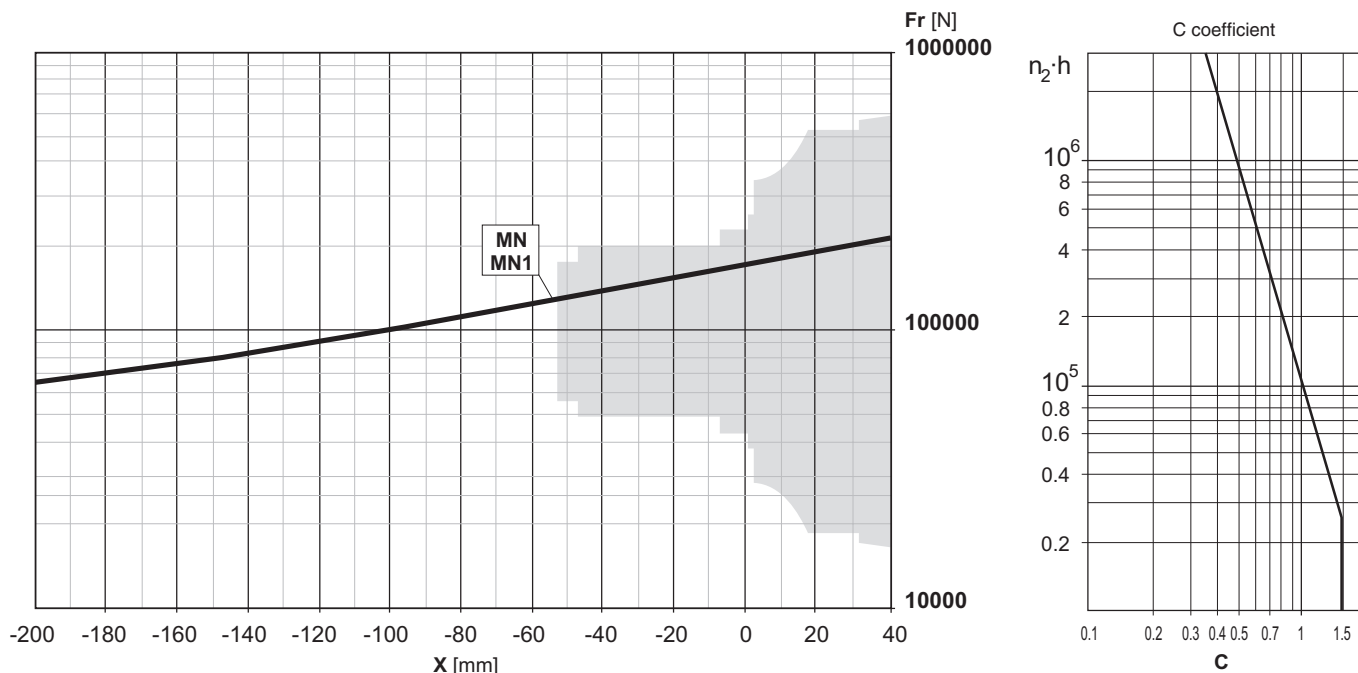
Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

BS 250

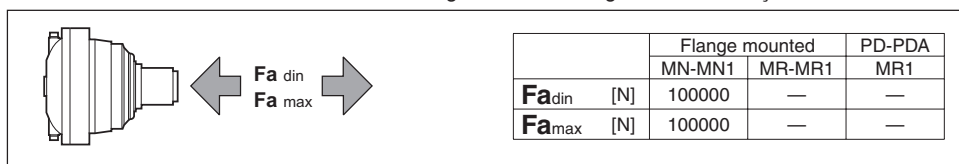


Mat. 39NiCrMo3 UNI EN 10083
 Code: 39127330100

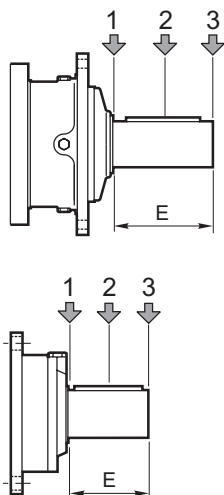
Carichi radiali sugli alberi uscita / Radial loads on output shafts
 Radiallasten auf de Abtriebswellen / Charges radiales sur les arbres de sortie
 Cargas sobre los ejes de salida / Cargas radiais nos eixos de saida



Carichi assiali / Axial loads / Axialkräfte / Charges axiales / Cargas axiales / Forças axiais

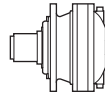


Carichi radiali sugli alberi entrata / Radial loads on input shafts
 Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
 Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



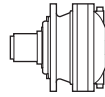
| Type | E | Fr [N] | | | | | |
|----------------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |

| Type | E | Fr [N] | | | | | |
|------------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |



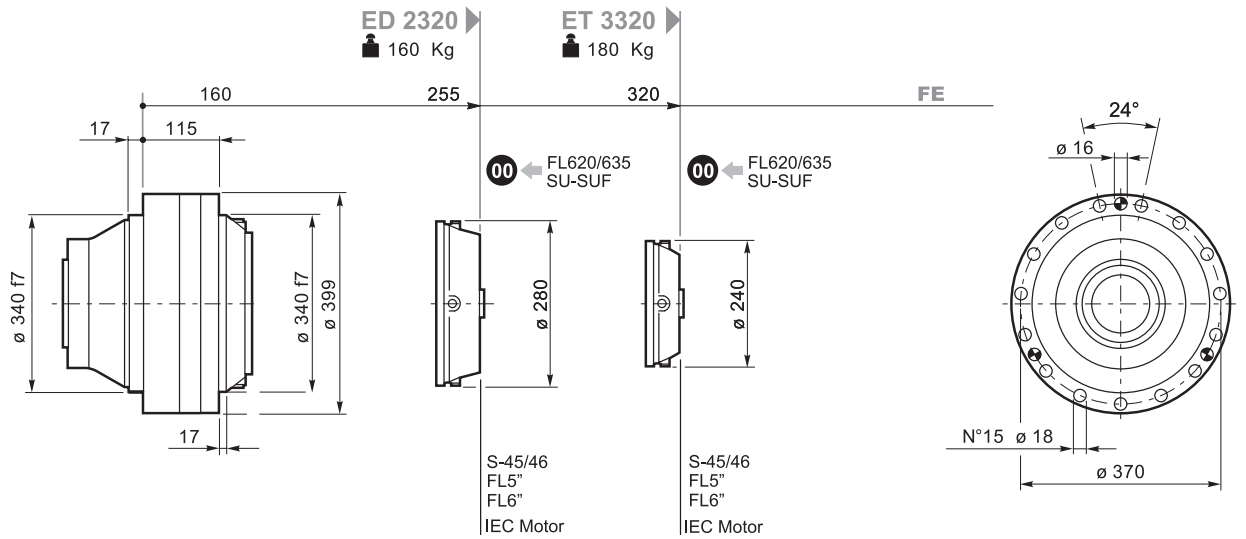
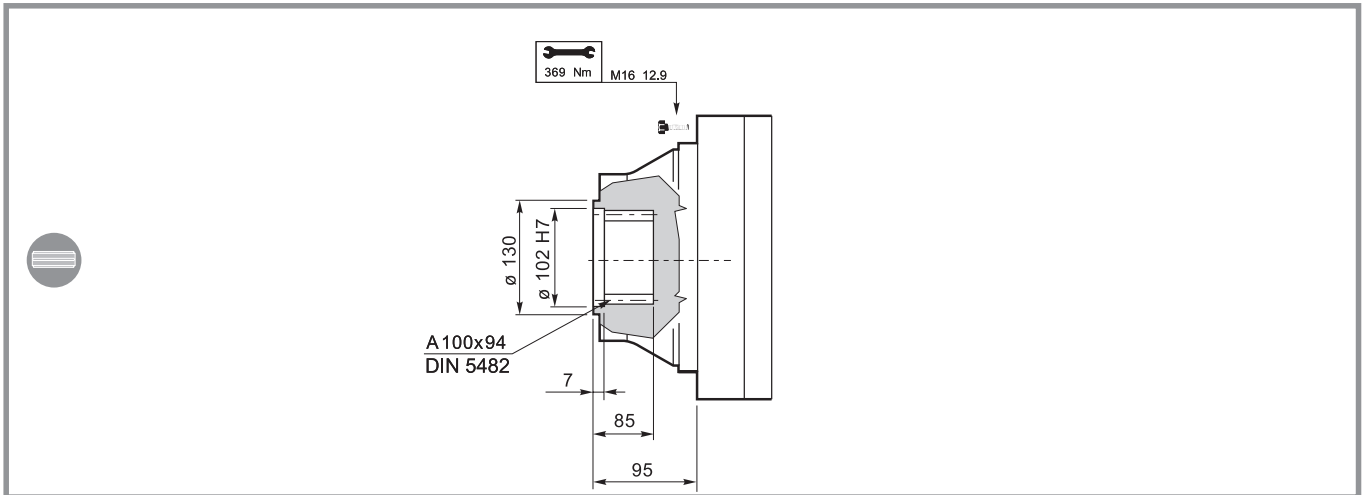
| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| ED 2320 | | | | | | | | | | | |
| 19.95 | 75 | 14059 | 111 | 50 | 15877 | 83 | 25.1 | 19547 | 51 | 35000 | 30 |
| 24.69 | 61 | 14935 | 95 | 40.5 | 16867 | 72 | 20.2 | 20766 | 44.0 | 35000 | |
| 28.41 | 53 | 15269 | 84 | 35.2 | 17244 | 64 | 17.6 | 21229 | 39.1 | 35000 | |
| 33.84 | 44.3 | 15877 | 74 | 29.6 | 17931 | 55 | 14.8 | 22076 | 34.2 | 35000 | |
| 42.54 | 35.3 | 14027 | 52 | 23.5 | 15048 | 37.0 | 11.8 | 16606 | 20.4 | 35000 | |
| ET 3320 | | | | | | | | | | | |
| 69.83 | 21.5 | 20472 | 46.1 | 14.3 | 23121 | 34.7 | 7.2 | 24587 | 18.4 | 35000 | 20 |
| 82.40 | 18.2 | 21515 | 41.0 | 12.1 | 23517 | 29.9 | 6.1 | 24927 | 15.8 | 35000 | |
| 86.43 | 17.4 | 21749 | 39.5 | 11.6 | 23613 | 28.6 | 5.8 | 25025 | 15.2 | 35000 | |
| 103.2 | 14.5 | 23014 | 35.0 | 9.7 | 23971 | 24.3 | 4.8 | 25693 | 13.0 | 35000 | |
| 117.3 | 12.8 | 23367 | 31.3 | 8.5 | 24232 | 21.6 | 4.3 | 26359 | 11.8 | 35000 | |
| 127.7 | 11.8 | 23582 | 29.0 | 7.8 | 24404 | 20.0 | 3.9 | 26802 | 11.0 | 35000 | |
| 148.2 | 10.1 | 23883 | 25.3 | 6.8 | 24708 | 17.5 | 3.4 | 27598 | 9.8 | 35000 | |
| 170.5 | 8.8 | 24167 | 22.3 | 5.9 | 24997 | 15.4 | 2.9 | 28362 | 8.7 | 35000 | |
| 179.0 | 8.4 | 24267 | 21.3 | 5.6 | 25098 | 14.7 | 2.8 | 28634 | 8.4 | 35000 | |
| 206.0 | 7.3 | 24553 | 18.7 | 4.9 | 25685 | 13.1 | 2.4 | 29420 | 7.5 | 35000 | |
| 245.3 | 6.1 | 24442 | 15.7 | 4.1 | 25441 | 10.9 | 2.0 | 27149 | 5.8 | 35000 | |

1500
HOURS LIFE



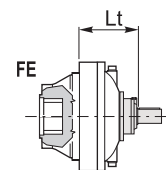
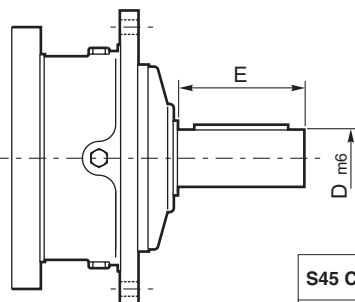
320

| i_{eff} | 1500 | | | 1000 | | | 500 | | | T_{2max} [Nm] | P_T [kW] |
|----------------|----------------|---------------|---------------|----------------|---------------|---------------|----------------|---------------|---------------|--------------------|---------------|
| | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | n_2 [rpm] | T_2 [Nm] | P_2 [kW] | | |
| ED 2320 | | | | | | | | | | | |
| 19.95 | 75 | 23238 | 183 | 50 | 24201 | 127 | 25.1 | 26873 | 71 | 35000 | 30 |
| 24.69 | 61 | 23751 | 151 | 40.5 | 24693 | 105 | 20.2 | 28052 | 59 | 35000 | |
| 28.41 | 53 | 24080 | 133 | 35.2 | 25055 | 92 | 17.6 | 28844 | 53 | 35000 | |
| 33.84 | 44.3 | 22824 | 106 | 29.6 | 24289 | 75 | 14.8 | 26464 | 41.0 | 35000 | |
| 42.54 | 35.3 | 17430 | 64 | 23.5 | 18541 | 45.6 | 11.8 | 20257 | 24.9 | 35000 | |
| ET 3320 | | | | | | | | | | | |
| 69.83 | 21.5 | 27722 | 62 | 14.3 | 30034 | 45.0 | 7.2 | 34291 | 25.7 | 35000 | 20 |
| 82.40 | 18.2 | 28652 | 55 | 12.1 | 31014 | 39.4 | 6.1 | 35370 | 22.5 | 35000 | |
| 86.43 | 17.4 | 28923 | 53 | 11.6 | 31301 | 37.9 | 5.8 | 35686 | 21.6 | 35000 | |
| 103.2 | 14.5 | 29945 | 45.6 | 9.7 | 32379 | 32.9 | 4.8 | 36876 | 18.7 | 35000 | |
| 117.3 | 12.8 | 30704 | 41.1 | 8.5 | 33182 | 29.6 | 4.3 | 37763 | 16.9 | 35000 | |
| 127.7 | 11.8 | 31209 | 38.4 | 7.8 | 33716 | 27.7 | 3.9 | 38353 | 15.7 | 35000 | |
| 148.2 | 10.1 | 32113 | 34.0 | 6.8 | 34673 | 24.5 | 3.4 | 39412 | 13.9 | 35000 | |
| 170.5 | 8.8 | 32982 | 30.4 | 5.9 | 35594 | 21.9 | 2.9 | 40430 | 12.4 | 35000 | |
| 179.0 | 8.4 | 33290 | 29.2 | 5.6 | 35920 | 21.0 | 2.8 | 40791 | 11.9 | 35000 | |
| 206.0 | 7.3 | 34182 | 26.1 | 4.9 | 36866 | 18.7 | 2.4 | 41838 | 10.6 | 35000 | |
| 245.3 | 6.1 | 29126 | 18.7 | 4.1 | 31816 | 13.6 | 2.0 | 36752 | 7.8 | 35000 | |



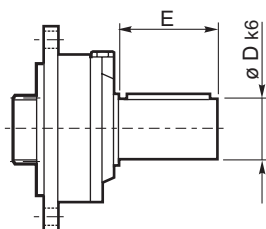
S45CR1-S46C1

S65CR1

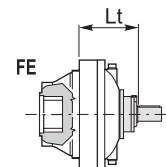


| | D m6 | E | Lt | |
|----------------|---------|-----|----------------|-----|
| | | | | FE |
| S45 CR1 | 65 | 105 | ED 2320 | 383 |
| | | | ET 3320 | 383 |
| S46 C1 | 65 | 105 | ED 2320 | 424 |
| | | | ET 3320 | 424 |
| S65 CR1 | 80 | 130 | ED 2320 | 422 |

SU2

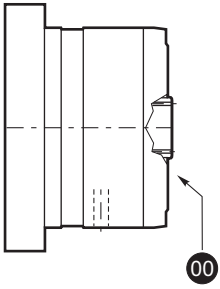


| | D k6 | E | Lt | |
|-------------|---------|----|----------------|-----|
| | | | | FE |
| SU 2 | 40 | 58 | ET 3320 | 380 |

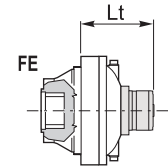


320

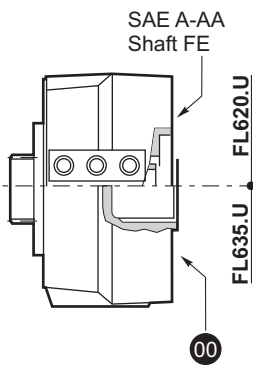
FL250-FL350-FL450 FL750



| | | Lt |
|-------------|---------|-----|
| | | FE |
| FL250-FL350 | ED 2320 | 414 |
| | ET 3320 | 414 |
| FL450 | ED 2320 | 427 |
| | ET 3320 | 427 |



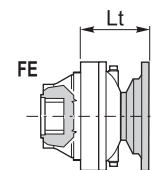
FL620U-FL635U



| | | Lt |
|---------|---------|-------|
| | | FE |
| FL620/U | ED 2320 | 359.5 |
| | ET 3320 | 424.5 |
| FL635U | ED 2320 | 346 |
| | ET 3320 | 411 |

IEC Motor

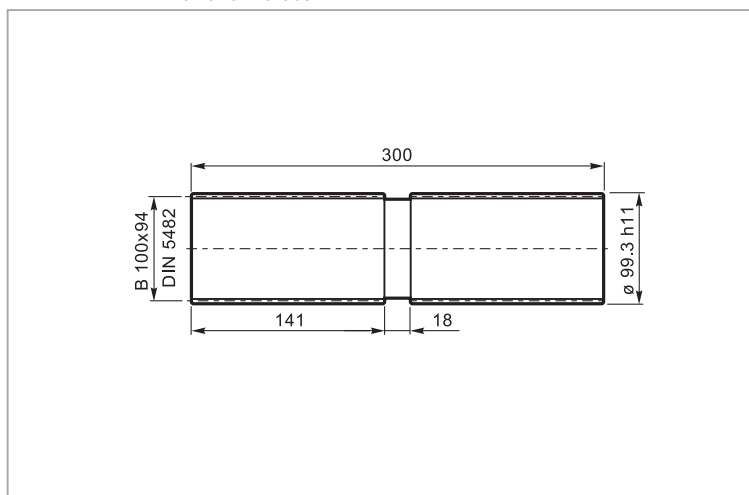
| | | Lt | | | | | | | |
|---------|----|--------|--------|--------------|----------------|---------|----------------|---------|---------|
| | | IEC 63 | IEC 71 | IEC 80 90 | IEC 100 112 | IEC 132 | IEC 160 180 | IEC 200 | IEC 225 |
| ED 2320 | FE | 275 | 277 | 282 | 283 | 350 | | 391 | 372 |
| ET 3320 | FE | 340 | 342 | 347 | 348 | 415 | 446 | 456 | 438 |





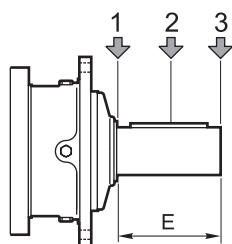
BS 250

Barra scanalata
Splined bar
Zugspindel
Barre cannelée
Barra acanalada
Barra ranhurada

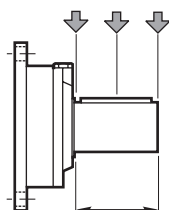


Mat. 39NiCrMo3 UNI EN 10083
Code: 39127330100

Carichi radiali sugli alberi entrata / Radial loads on input shafts
Radiallasten auf de Antriebswellen / Charges radiales sur les arbres d'entrée
Cargas sobre los ejes de entrada / Cargas radiais nos eixos de entrada



| Type | E | Fr [N] | | | | | |
|----------------|-----|----------------------|-------|------|----------------------|------|------|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| S45 CR1 | 105 | 10000 | 6000 | 4000 | 5000 | 3000 | 2000 |
| S46 C1 | 105 | 14000 | 8800 | 6400 | 7000 | 4400 | 3200 |
| S65 CR1 | 130 | 23800 | 15500 | 9600 | 11900 | 7800 | 4800 |



| Type | E | Fr [N] | | | | | |
|------------|----|----------------------|------|------|----------------------|------|-----|
| | | $n_1 \cdot h = 10^7$ | | | $n_1 \cdot h = 10^8$ | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| SU2 | 58 | 3000 | 2000 | 1500 | 1400 | 1000 | 700 |

**8. USCITE
ENTRATE**
**8. SORTIES
ENTRÉES**

**8. OUTPUT
INPUT**
**8. SALIDAS
ENTRADAS**

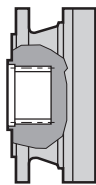
**8. ANTRIEBE
ABTRIEBE**
**8. SAÍDAS
ENTRADAS**

FE

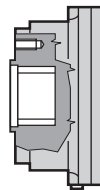
Flangia e albero cavo scanalato
Sortie femelle cannelée

Mounting flange and female splined shaft
Brida y eje ranurado hembra

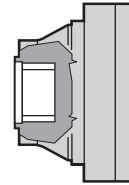
Flansch und innenverzahnte Hohlwelle
Flange e eixo vazado estriado



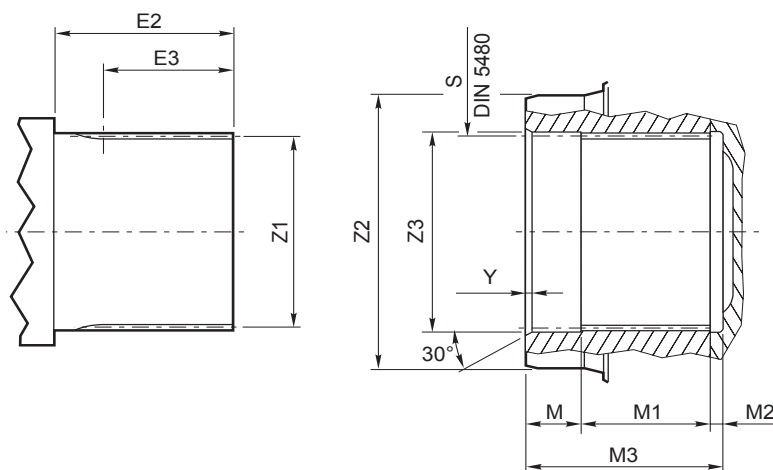
010



020 - 091



150 - 320



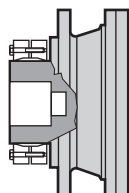
| | M3 | M | M1 | M2 | Y | S | Z2 | Z3 | Z1 | E2 | E3 |
|----------------|------|---|------|----|-----|-------------|--------|--------|------------|------|------|
| 010 | 34.7 | 5 | 24.7 | 5 | 0.5 | A40x36 H10 | 50 f8 | 36 H11 | B40x36 c9 | 32.7 | 22.7 |
| 020 | 51.5 | 8 | 43.6 | - | 1.0 | A58x53 H10 | 75 f7 | 60 H7 | B58x53 c9 | 49.5 | 41.5 |
| 030 | 44 | 8 | 36 | - | 1.5 | A58x53 H10 | 75 f7 | 60 H7 | B58x53 c9 | 42 | 34 |
| 045 | 44 | 8 | 36 | - | 1.5 | A58x53 H10 | 75 f7 | 60 H7 | B58x53 c9 | 42 | 34 |
| 065-067 | 67 | 9 | 50 | 8 | 1.0 | A70x64 H10 | 90 g7 | 72 H7 | B70x64 c9 | 65 | 48 |
| 090-091 | 75 | 5 | 62 | 8 | 1.0 | A70x64 H10 | 90 h8 | 72 H7 | B70x64 c9 | 73 | 60 |
| 150-155 | 77 | 7 | 70 | - | 1.5 | A80x74 H10 | 100 f7 | 88 H7 | B80x74 c9 | 75 | 68 |
| 250-255 | 85 | 7 | 78 | - | 1.5 | A100x94 H10 | 130 f7 | 102 H7 | B100x94 c9 | 83 | 76 |
| 320 | 85 | 7 | 78 | - | 1.5 | A100x94 H10 | 130 f7 | 102 H7 | B100x94 c9 | 83 | 76 |

FS

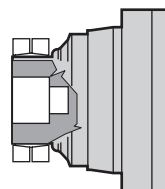
Albero cavo per calettatore
Sortie pour montage à fret

Shaft mounted
Eje hembra para montaje

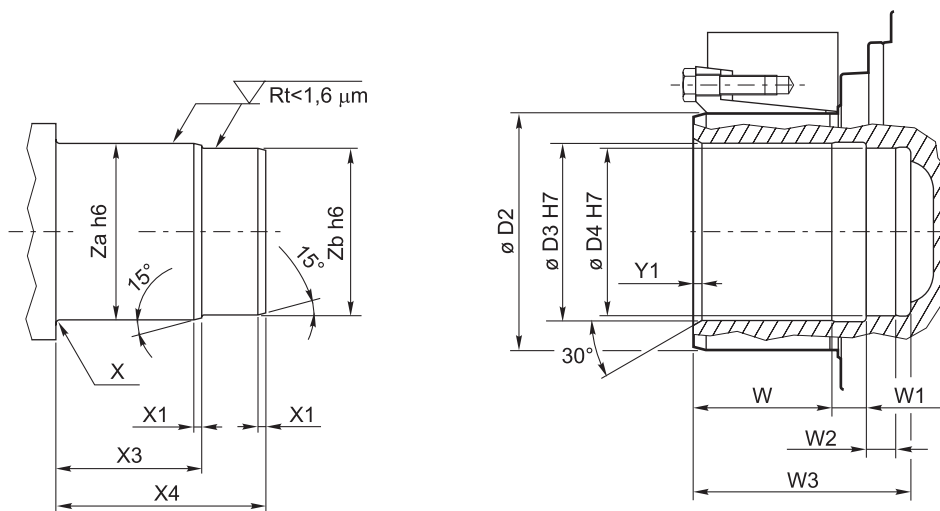
Schrumpfscheiben-Verbindung
Eixo vazado para encaixe



010 - 091



150 - 255



| | W | W1 | W2 | W3 | D2 | D3 | D4 | Y1 | X | X1 | X3 | X4 | Za | Zb |
|----------------|----|----|----|-----|--------|--------|-------|-----|-------|----|----|-----|-----|----|
| 010 | 29 | 9 | 10 | 50 | 65 f7 | 48 H7 | 30 f7 | 2 | R 2 | 3 | 33 | 48 | 48 | 30 |
| 020 | 54 | 16 | 23 | 95 | 100 f7 | 75 H7 | 40 f7 | 2 | R 2 | 3 | 52 | 92 | 75 | 40 |
| 030 | 54 | 16 | 23 | 95 | 100 f7 | 75 H7 | 40 f7 | 2 | R 2 | 3 | 52 | 92 | 75 | 40 |
| 045 | 54 | 16 | 23 | 95 | 100 f7 | 75 H7 | 40 f7 | 2 | R 2 | 3 | 52 | 92 | 75 | 40 |
| 065-067 | 80 | 20 | 33 | 135 | 125 f7 | 90 H7 | 50 f7 | 2 | R 2 | 3 | 62 | 132 | 90 | 50 |
| 090-091 | 80 | 20 | 38 | 140 | 140 f7 | 100 H7 | 60 f7 | 2 | R 2 | 3 | 69 | 135 | 100 | 60 |
| 150-155 | 79 | 6 | 47 | 135 | 165 f7 | 120 H7 | 80 f7 | 5 | R 2 | 3 | 79 | 130 | 120 | 80 |
| 250-255 | 80 | 20 | 47 | 150 | 175V | 130 H7 | 80 f7 | 1.5 | R 1.5 | 5 | 81 | 145 | 130 | 80 |

Per la verifica dell'accoppiamento con il giunto vedi pag. 24

To check joint coupling see page 24

Für die Kontrolle der Verbindung der Kupplung, siehe Seite 24

Pour la vérification de l'accouplement avec le joint, voir page. 25

Para el control del acoplamiento con la unión, consultar pág. 25

Para verificar a ligação com o acoplamento, ver a pág. 25

MN

Flangia e albero scanalato
Sortie à arbre cannelé

Mounting flange and splined shaft
Brida y eje ranurado

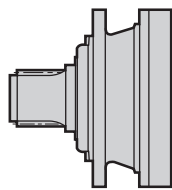
Flansch und Zahnwelle
Flange e eixo estriado

MR

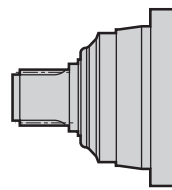
Flangia e albero scanalato rinforzato
Sortie renforcée à arbre cannelé

Mounting flange and heavy duty splined shaft
Brida y eje ranurado reforzado

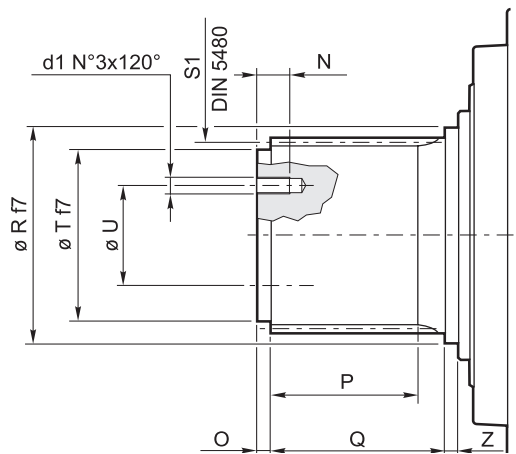
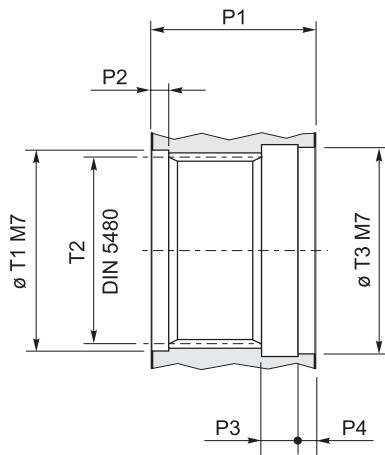
Flansch und verstärkt Zahnwelle
Flange e eixo estriado reforçado



010 - 091



150 - 255



| | | d1 | N | O | P | P1 | P2 | P3 | P4 | Q | R | S1 | T | T1 | T2 | T3 | U | Z |
|----------------|-------|-----|----|----|----|-----|------|----|----|----|--------|------------|-------|--------|---------|--------|----|----|
| 010 | MN-MR | M6 | 20 | 5 | 30 | 55 | 5 | 14 | 7 | 43 | 42 f7 | B40x36 c9 | 35 f7 | 42 M7 | A40x36 | 42 M7 | 24 | 7 |
| 020 | MR | M10 | 20 | 8 | 38 | 68 | 8 | 13 | 10 | 58 | 60 f7 | B58x53 c9 | 50 f7 | 60 M7 | A58x53 | 60 M7 | 32 | 8 |
| 030 | MR | M10 | 20 | 8 | 38 | 68 | 8 | 13 | 10 | 58 | 60 f7 | B58x53 c9 | 50 f7 | 60 M7 | A58x53 | 60 M7 | 32 | 8 |
| 040 | MN | M10 | 20 | 8 | 50 | 68 | 8 | 13 | 10 | 58 | 60 f7 | B58x53 c9 | 50 f7 | 60 M7 | A58x53 | 60 M7 | 32 | 8 |
| 045 | MR | M10 | 20 | 8 | 38 | 68 | 8 | 13 | 10 | 58 | 60 f7 | B58x53 c9 | 50 f7 | 60 M7 | A58x53 | 60 M7 | 32 | 8 |
| 046 | MN | M10 | 20 | 8 | 50 | 80 | 8 | 16 | 7 | 73 | 60 f7 | B58x53 c9 | 50 f7 | 60 M7 | A58x53 | 60 M7 | 32 | 7 |
| 065-067 | MR | M10 | 20 | 10 | 50 | 90 | 10.5 | 21 | 10 | 80 | 72 f7 | B70x64 c9 | 62 f7 | 72 M7 | A70x64 | 72 M7 | 40 | 10 |
| 090-091 | MN-MR | M10 | 25 | 10 | 50 | 90 | 10.5 | 22 | 10 | 80 | 85 f7 | B80x74 c9 | 70 f7 | 80 M7 | A80x74 | 85 M7 | 45 | 10 |
| 150-155 | MN | M10 | 25 | 10 | 50 | 90 | 10.5 | 22 | 10 | 80 | 85 f7 | B80x74 c9 | 70 h7 | 80 M7 | A80x74 | 85 M7 | 45 | 10 |
| | MR | M14 | 30 | 12 | 65 | 110 | 12 | 22 | 15 | 98 | 105 f7 | B100x94 c9 | 85 h7 | 105 M7 | A100x94 | 105 M7 | 52 | 12 |
| 250-255 | MN | M14 | 25 | 12 | 65 | 110 | 12 | 22 | 15 | 97 | 105 f7 | B100x94 c9 | 85 f7 | 105 M7 | A100x94 | 105 M7 | 52 | 13 |

MN1

Flangia e albero cilindrico
Sortie à arbre claveté

Mounting flange and keyed cylindrical shaft
Brida y eje cilíndrico

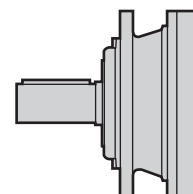
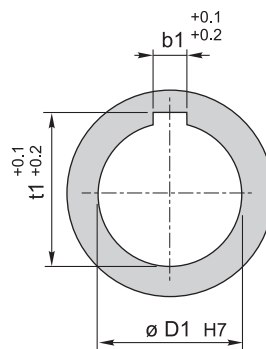
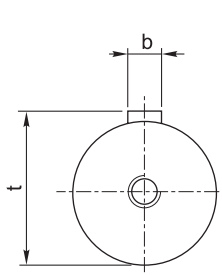
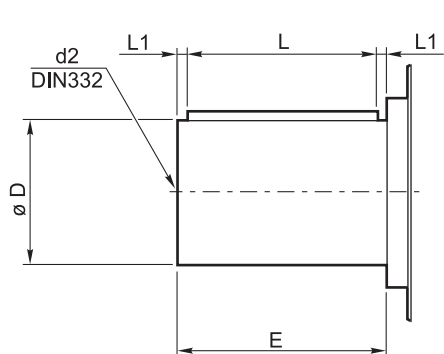
Flansch und Passfederwelle
Flange e eixo cilíndrico

MR1

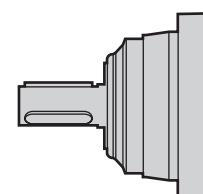
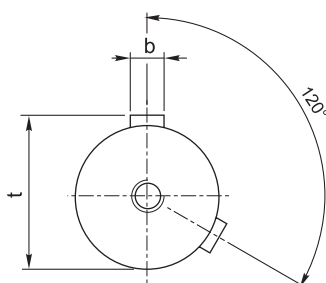
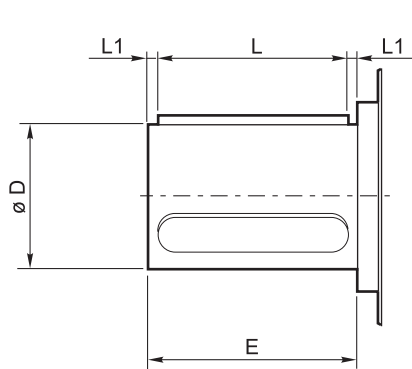
Flangia e albero cilindrico rinforzato
Sortie renforcée à arbre claveté

Mounting flange and heavy duty keyed cylindrical shaft
Brida y eje cilíndrico reforzado

Flansch und verstärkt Passfeder-Welle
Flange e eixo cilíndrico reforçado



010 - 155



250-255

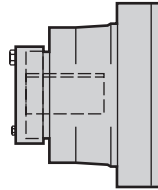
| | | D | E | L | L1 | t | b | d2 | D1 | t1 | b1 |
|----------------|---------|--------|-----|-----|-----|-----|----|-----|-----|-----|----|
| 010 | MN1-MR1 | 42 k6 | 82 | 70 | 6 | 45 | 12 | M16 | 42 | 45 | 12 |
| 020 | MR1 | 65 m6 | 105 | 90 | 7.5 | 69 | 18 | M20 | 65 | 69 | 18 |
| 030 | MR1 | 65 m6 | 105 | 90 | 7.5 | 69 | 18 | M20 | 65 | 69 | 18 |
| 040 | MN1 | 65 m6 | 105 | 90 | 7.5 | 69 | 18 | M20 | 65 | 69 | 18 |
| 045 | MR1 | 65 m6 | 105 | 90 | 7.5 | 69 | 18 | M20 | 65 | 69 | 18 |
| 046 | MN1 | 65 m6 | 105 | 90 | 7.5 | 69 | 18 | M20 | 65 | 69 | 18 |
| 065-067 | MR1 | 80 m6 | 130 | 110 | 10 | 85 | 22 | M20 | 80 | 85 | 22 |
| 090-091 | MN1-MR1 | 90 m6 | 170 | 160 | 5 | 95 | 25 | M24 | 90 | 95 | 25 |
| 150-155 | MN1 | 100 m6 | 210 | 200 | 5 | 106 | 28 | M24 | 100 | 106 | 28 |
| | MR1 | 100 m6 | 210 | 200 | 5 | 106 | 28 | M24 | 100 | 106 | 28 |
| 250-255 | MN1 | 110 m6 | 210 | 200 | 5 | 116 | 28 | M24 | 100 | 116 | 28 |

FP

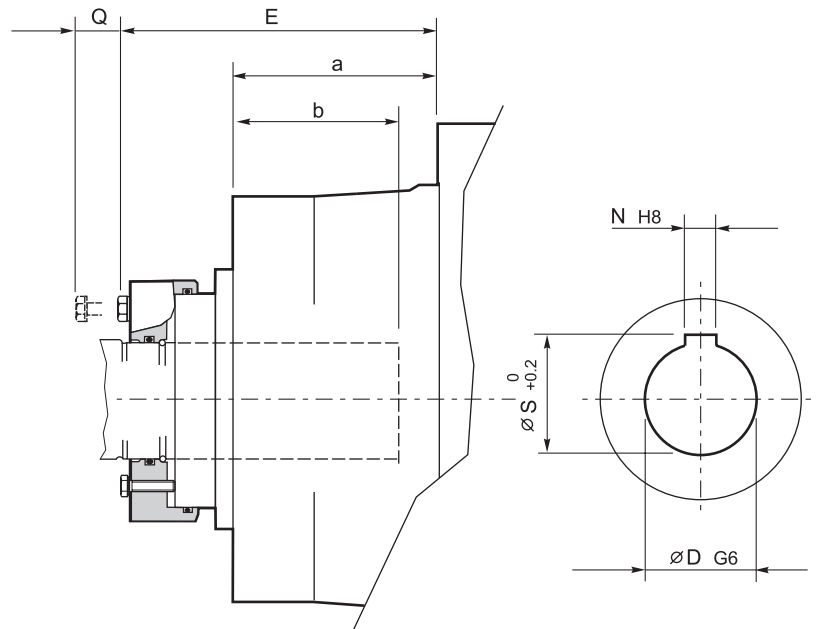
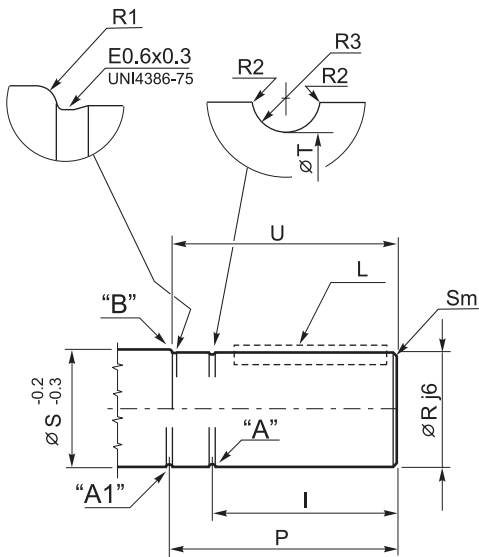
Albero cavo con cava per linguetta
Arbres creux avec clavette

Hollow-shaft with keyway
Ejes huecos con chavetero

Hohlwellen mit Passfedernut
Eixos ocós com chavetera



020 - 255



"A" gola obbligatoria per bloccaggio
"A1" o "B" gole in alternativa per estrazione

"A" Obligatory locking groove
"A1" or "B" alternative extraction groove

"A" Zwangsrille für Blockierung
"A1" oder "B" alternative Rillen für das Herausziehen

"A" gorge obligatoire pour blocage
"A1" ou "B" gorges comme alternative pour extraction

"A" ranura obligatoria para bloqueo / Obligatory locking groove
"A1" o "B" ranuras en alternativa para extracción

"A" sulco obrigatório para o bloqueio
"A1" ou "B" sulcos alternativos para a extracção

| | D | M | N | R | R1 | R2 | R3 | S | T | I | P | L | U | E | Q | a | b | Sm |
|----------------|-----|-------|----|-----|-----|-----|-----|-----|------|-------|-------|-----------|-----|-----|----|-------|-----|-------|
| 020 | 50 | 53.8 | 14 | 50 | 1.4 | 0.4 | 1.8 | 53 | 47.5 | 92.5 | 119.5 | 14x9x70 | 118 | 130 | 60 | 105 | 90 | 1.5-2 |
| 030 | 65 | 69.4 | 18 | 65 | 1.4 | 0.4 | 1.8 | 68 | 63.8 | 102.5 | 139.5 | 18x11x90 | 130 | 140 | 70 | 110 | 100 | 1.5-2 |
| 045 | 65 | 69.4 | 18 | 65 | 1.4 | 0.4 | 1.8 | 68 | 63.8 | 102.5 | 139.5 | 18x11x90 | 130 | 140 | 70 | 110 | 100 | 1.5-2 |
| 065-067 | 80 | 85.4 | 22 | 80 | 1.6 | 0.4 | 1.8 | 83 | 76.8 | 138 | 162.5 | 22x14x110 | 161 | 170 | 70 | 137 | 130 | 2 |
| 090-091 | 90 | 95.4 | 25 | 90 | 1.6 | 0.4 | 1.8 | 93 | 86.8 | 158 | 183.5 | 25x14x125 | 182 | 193 | 70 | 157.5 | 150 | 2 |
| 150-155 | 100 | 106.4 | 28 | 100 | 1.6 | 0.4 | 1.8 | 103 | 98.8 | 180 | 206 | 28x11x140 | 204 | 235 | 80 | 197 | 170 | 2 |
| 250-255 | 110 | 116.4 | 28 | 110 | 3 | 0.6 | 3.4 | 116 | 104 | 159 | 186 | 28x16x125 | 183 | 253 | 80 | 212 | 150 | 2 |

9. SUPPORTI MASCHIO IN ENTRATA

Gli alberi di entrata descritti di seguito sono utilizzati quando il motore di azionamento, generalmente elettrico, è collegato all'albero di entrata mediante giunto elastico, o puleggia e cinghie.

La normale posizione di montaggio è con l'asse orizzontale; per altre posizioni di montaggio, occorre regolare la lubrificazione. Si prega di consultare il Servizio Tecnico Brevini per maggiori dettagli. La velocità massima di lavoro è generalmente 1800 min⁻¹.

9. INPUT MALE SHAFTS

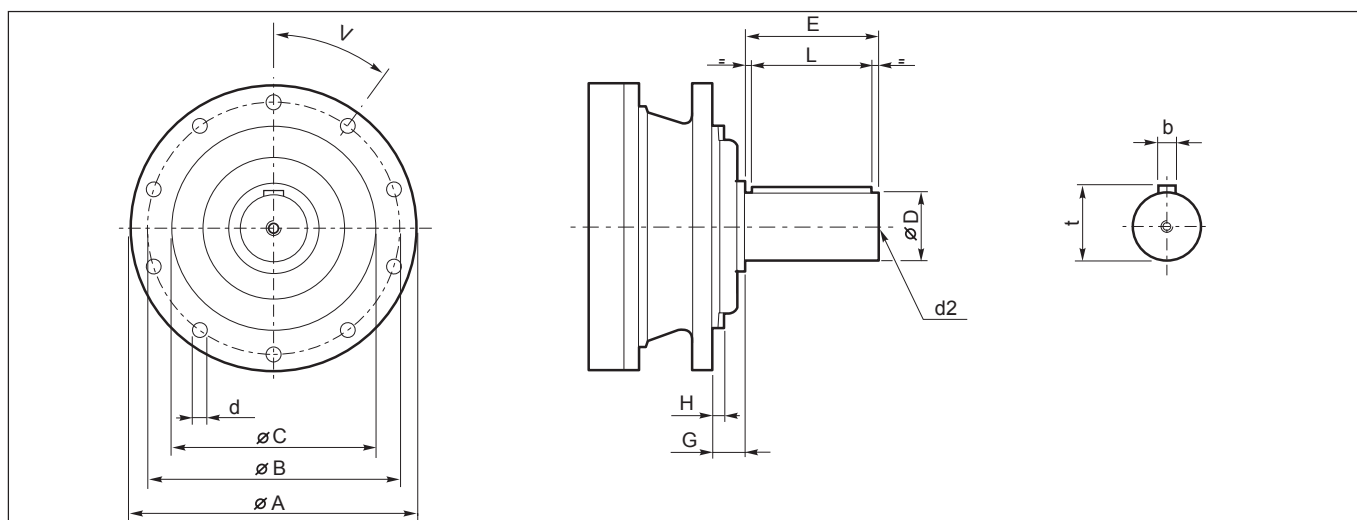
Input shafts described below are used when the driving motor, which is usually electric, is connected to the input shaft by flexible coupling or belts and pulleys.

Normal mounting position is with horizontal axis; for different positions the lubrication solution must be adjusted: please consult Brevini technical staff for more details. Max working speed is generally 1800 min⁻¹.

9. ANTRIEBSWELLENSTÜMPFE

Die im Folgenden beschriebenen Antriebswellen werden eingesetzt, wenn der normalerweise elektrische Antriebsmotor mittels einer elastische Kupplung oder mithilfe von Riemenscheiben und Riemen angeschlossen wird.

Die normale Einbaulage ist horizontal; für andere Einbaupositionen muss die Schmierung eingestellt werden. Wenden Sie sich für weitere Einzelheiten an den Technischen Kundendienst Brevini. Die maximale Betriebsdrehzahl beträgt meist 1800 min⁻¹.



| | A | B | C f7 | D m6 | E | G | H | I | L | b | d | d2 DIN332 | t |
|---------|-----|-----|---------|---------|-----|----|----|----|-----|----|----|--------------|----|
| S-45CR1 | 220 | 195 | 150 | 65 | 105 | 15 | 5 | 16 | 90 | 18 | 14 | M20x42 | 69 |
| S-46C1 | 272 | 245 | 175 | 65 | 105 | 39 | 10 | 18 | 90 | 18 | 14 | M20x42 | 69 |
| S-65CR1 | 280 | 250 | 200 | 80 | 130 | 40 | 20 | 20 | 110 | 22 | 16 | M20x42 | 85 |
| S-90CR1 | 325 | 295 | 230 | 90 | 170 | 36 | 5 | 25 | 160 | 25 | 18 | M24x50 | 95 |

9. PALIER MALES EN ENTREE

Les arbres d'entrée décrits ci-après sont utilisés lorsque le moteur d'entraînement, généralement électrique, est relié à l'arbre d'entrée par un accouplement élastique ou poulie et courroie.

La position normale de montage est avec l'axe horizontal; pour les autres positions de montage, il faut régler la lubrification. Il est conseillé de s'adresser au Service technique Brevini pour de plus amples informations.

La vitesse maximale de fonctionnement est généralement de 1800 min⁻¹.

9. SOPORTES MACHO EN LA ENTRADA

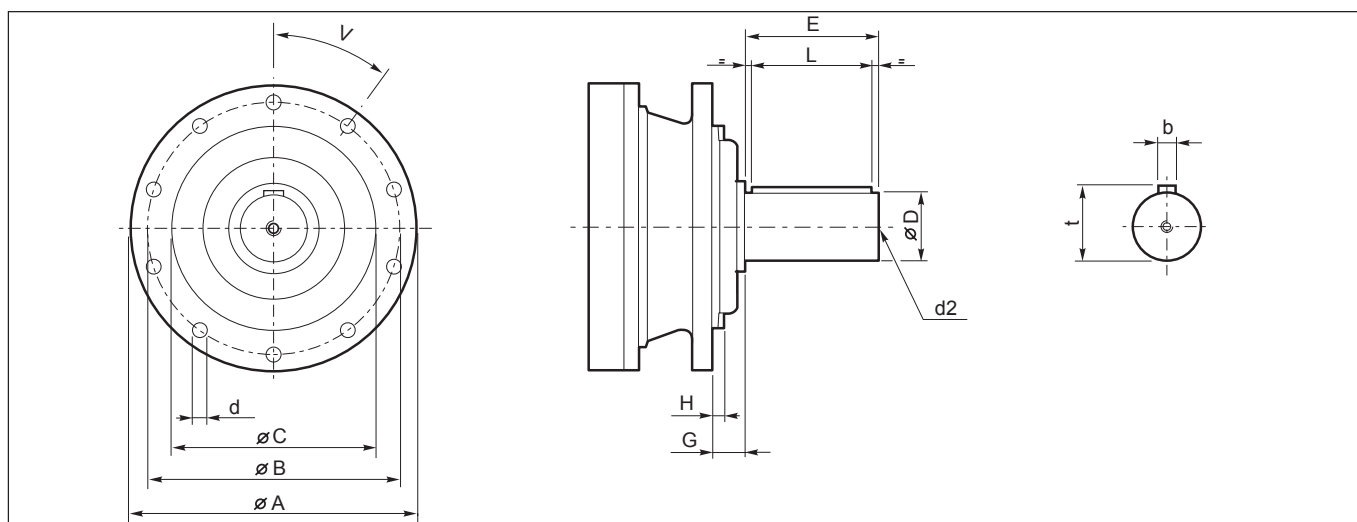
Los ejes de entrada que se describen a continuación se utilizan cuando el motor de accionamiento (generalmente eléctrico) está conectado el eje de entrada por medio de un acoplamiento elástico o de una polea y correas.

En la posición de montaje normal el eje es horizontal; en las demás posiciones es preciso ajustar la lubricación. Se aconseja contactar con el Servicio Técnico de Brevini. La velocidad máxima de trabajo suele cercarse a 1800 min⁻¹.

9. SUPORTES MACHO NA ENTRADA

Os eixos de entrada descritos a seguir são utilizados quando o motor de acionamento, geralmente elétrico, é conectado ao eixo de entrada através de uma junta elástica ou polia e correia.

A posição de montagem normal é com o eixo horizontal; para outras posições de montagem é necessário regular a lubrificação. Consulte o Serviço Técnico da Brevini para obter mais detalhes. A velocidade máxima de serviço é geralmente de 1800 min⁻¹.



| | A | B | C f7 | D m6 | E | G | H | I | L | b | d | d2 DIN332 | t |
|---------|-----|-----|---------|---------|-----|----|----|----|-----|----|----|--------------|----|
| S-45CR1 | 220 | 195 | 150 | 65 | 105 | 15 | 5 | 16 | 90 | 18 | 14 | M20x42 | 69 |
| S-46C1 | 272 | 245 | 175 | 65 | 105 | 39 | 10 | 18 | 90 | 18 | 14 | M20x42 | 69 |
| S-65CR1 | 280 | 250 | 200 | 80 | 130 | 40 | 20 | 20 | 110 | 22 | 16 | M20x42 | 85 |
| S-90CR1 | 325 | 295 | 230 | 90 | 170 | 36 | 5 | 25 | 160 | 25 | 18 | M24x50 | 95 |

Supporti maschio per entrata universale

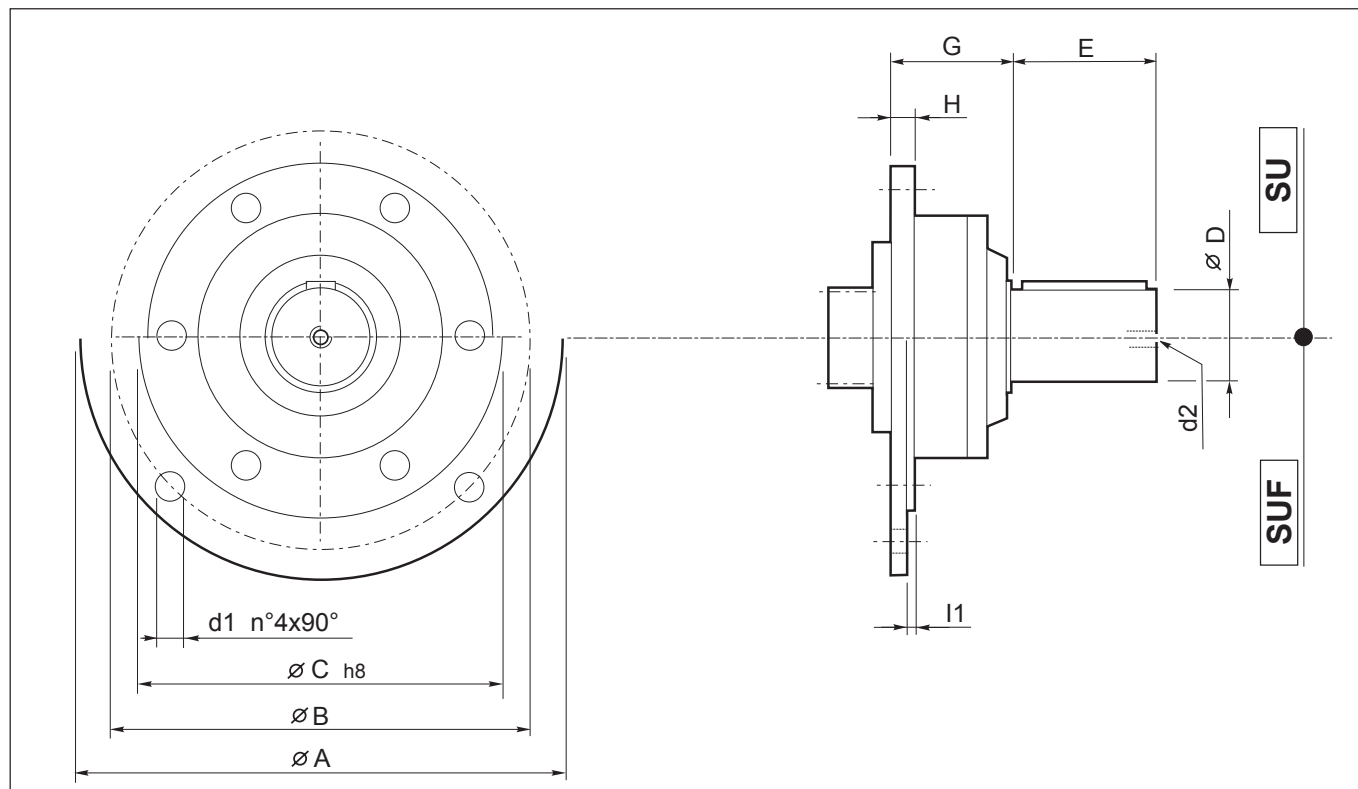
I tipi SU sono generalmente utilizzati con un giunto elastico, possono essere montati direttamente su qualsiasi tipo di riduttore con entrata universale 00 e possono essere forniti separatamente. Vedere la sezione relativa ai riduttori per dimensioni e carichi radiali.

Male shafts for universal input

These types generally used in combination with a flexible coupling. They fit directly onto any type of gear unit with universal input type 00 and can be supplied separately. See gearbox sections for dimensions and radial loads.

Wellenstümpfe für Universalantriebe

Die Typen der Baureihe SU werden gewöhnlich mit einer elastischen Kupplung verwendet, können direkt auf jede Getriebeart mit Universalantrieb 00 montiert werden und sind separat lieferbar. Für Abmessungen und Radiallasten siehe Abschnitt Getriebe.



| | A | B | C | D | d1 | d2 | E | G | H | l1 | Codice / Code |
|------|-----|-----|-----|----|----|--------|----|----|----|----|---------------|
| SU1 | — | — | — | 28 | — | M10x22 | 50 | 60 | 12 | — | C1129800420 |
| SU2 | — | — | — | 40 | — | M10x22 | 58 | 60 | 12 | — | C1129800380 |
| SU3 | — | — | — | 48 | — | M10x25 | 82 | 60 | 12 | — | C1129800910 |
| SUF1 | 250 | 215 | 180 | 28 | 13 | M10x22 | 50 | 60 | 12 | 3 | C1131900420 |
| SUF2 | 250 | 215 | 180 | 40 | 13 | M10x22 | 58 | 60 | 12 | 3 | C1131900380 |
| SUF3 | 250 | 215 | 180 | 48 | 13 | M10x25 | 82 | 60 | 12 | 3 | C1131900910 |

Palier mâle pour prédisposition d'entrée universelle

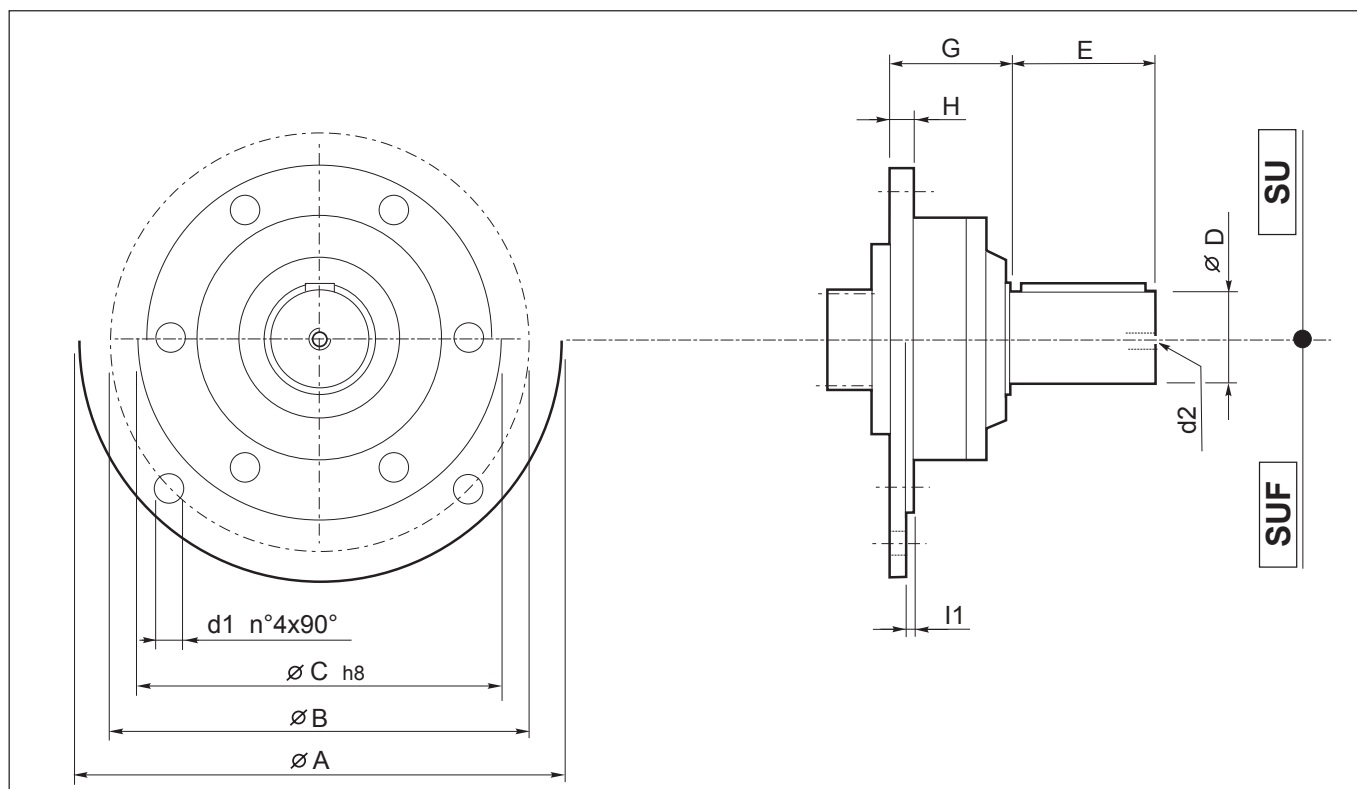
Les types SU sont généralement utilisés avec un accouplement élastique, peuvent être directement montés sur n'importe quel type de réducteur avec arbre d'entrée universel 00 et peuvent être livrés séparément. Voir section relative aux réducteurs pour les dimensions et les charges radiales.

Soportes macho para entrada universal

Los del tipo SU se utilizan generalmente con un empalme elástico y se montan en cualquier reductor con entrada universal 00. Pueden solicitarse por separado. Las dimensiones y las cargas radiales pueden verse en la sección dedicada a los reductores.

Suportes macho para entrada universal

Os tipos SU são geralmente utilizados com uma junta elástica, podem ser montados diretamente em qualquer tipo de redutor com entrada universal 00 e podem ser fornecidos separadamente. Consulte a seção relativa aos redutores para obter as dimensões e as cargas radiais.



| | A | B | C | D | d1 | d2 | E | G | H | l1 | Codice / Code |
|------|-----|-----|-----|----|----|--------|----|----|----|----|---------------|
| SU1 | — | — | — | 28 | — | M10x22 | 50 | 60 | 12 | — | C1129800420 |
| SU2 | — | — | — | 40 | — | M10x22 | 58 | 60 | 12 | — | C1129800380 |
| SU3 | — | — | — | 48 | — | M10x25 | 82 | 60 | 12 | — | C1129800910 |
| SUF1 | 250 | 215 | 180 | 28 | 13 | M10x22 | 50 | 60 | 12 | 3 | C1131900420 |
| SUF2 | 250 | 215 | 180 | 40 | 13 | M10x22 | 58 | 60 | 12 | 3 | C1131900380 |
| SUF3 | 250 | 215 | 180 | 48 | 13 | M10x25 | 82 | 60 | 12 | 3 | C1131900910 |

10. FRENI LAMELLARI A BAGNO D'OLIO

I riduttori di questo catalogo possono essere dotati in entrata di freno a dischi multipli a bagno d'olio ad apertura idraulica.

Freni negativi

Questi freni agiscono sotto la spinta di una serie di molle su coppie di dischi alternati fissi e mobili; lo sbloccaggio avviene per effetto della pressione idraulica nel pistone. Hanno quindi un funzionamento "negativo"; sono da impiegare come freni di stazionamento, non per frenatura dinamica. Tali prestazioni, con margine di accuratezza +/- 10%, sono sempre calcolate con contropressione 0; in caso contrario la coppia frenante viene percentualmente ridotta nel rapporto contropressione/pressione min. apertura. Per la selezione, occorre tenere conto di due condizioni:

1) Coppia freno $\times i_{\text{eff}} >$ Coppia richiesta in uscita;

2) Coppia freno $\times i_{\text{eff}} < 1.1 T_{2\text{max}}$

Ricordiamo che le alte velocità di rotazione, oppure prolungati funzionamenti con asse verticale, possono generare elevati aumenti di temperatura: in questi casi, contattare il Servizio Tecnico Commerciale BREVINI per opportuni consigli in merito. Per la lubrificazione, si consigliano oli minerali resistenti al calore ed all'invecchiamento, di viscosità ISO VG 32, indice di viscosità pari o superiore a 95. Gli oli idraulici sono generalmente idonei; nel capitolo relativo alla lubrificazione sono riportati quelli consigliati.

10. MULTIDISC BRAKES IN OIL

The gear units in this catalogue can be supplied with multidisc brakes, in oil, hydraulically released.

Negative brakes

These brakes are actuated by a series of coil springs pressing together alternate fixed and rotating discs. The braking torque is released by mean of an hydraulic pressure supplied from outside. This means that they work as "negative" brakes and are intended for safety or parking only, when the input shaft is not rotating. These performances, with +/- 10% accuracy margins, are always calculated without back pressure; otherwise the braking torque is reduced as a percentage of the ratio back pressure/minimum opening pressure. When carrying out the selection, the following two conditions must be taken into account:

1) Braking torque $\times i_{\text{eff}} >$ required output torque;

2) Braking torque $\times i_{\text{eff}} < 1.1 T_{2\text{max}}$

We remind you that high rotation speed, or extended running with vertical axis, can generate considerable temperature increases; in such cases please apply to BREVINI technical staff for advice. For lubrication we recommend to use mineral oils heat and aging resistant, having viscosity ISO VG 32 and viscosity index at least 95; hydraulic oils are usually suitable (for recommended types see lubrication chapter).

10. LAMELLENBREMSEN IM ÖLBAD

Die Getriebe des vorliegenden Katalogs können mit im Ölbad laufenden Lamellenbremsen mit hydraulischer Spreizung ausgestattet werden.

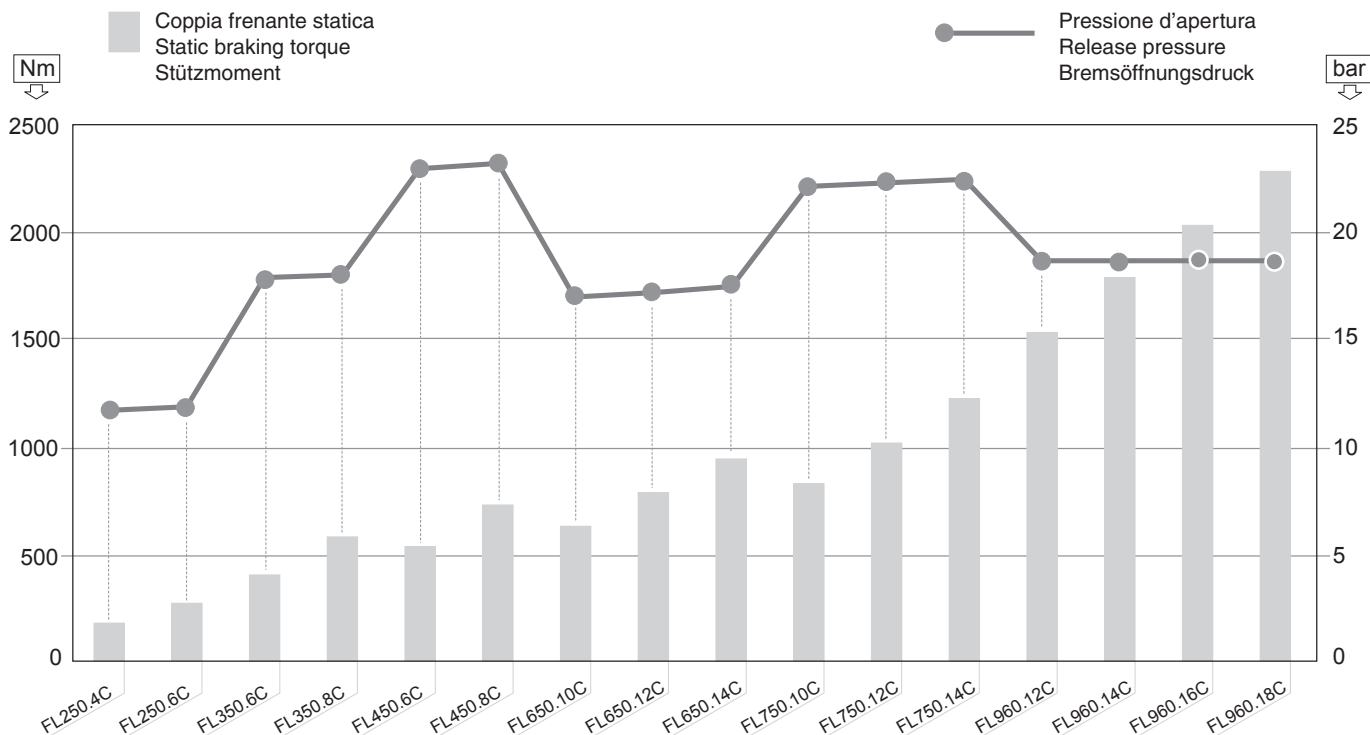
Negative Bremsen

Die Bremsen wirken unter dem Druck einer Reihe von Federn auf abwechselnd fixe und bewegliche Scheibenpaare; das Lösen der Bremse erfolgt durch den hydraulischen Druck im Kolben. Sie haben demnach eine "negative" Funktion; sie werden als Feststellbremsen benutzt und dienen nicht zum dynamischen Abbremsen. Diese Leistungen werden bei einer Genauigkeitsmarge von +/- 10% mit einem Gegendruck von 0 berechnet; anderenfalls wird das Bremsmoment prozentual im Verhältnis Gegendruck/Mindestöffnungsdruck reduziert. Bei der Auswahl sind zwei Bedingungen zu berücksichtigen:

1) Bremsmoment $\times i_{\text{eff}} >$ erforderliches Abtriebsdrehmoment;

2) Bremsmoment $\times i_{\text{eff}} < 1.1 T_{2\text{max}}$

Es wird daran erinnert, dass hohe Drehzahlen oder lange Betriebszeiten mit vertikaler Achse zu starken Temperaturerhöhungen führen können: Wenden Sie sich in diesem Fall an den technischen Kundendienst BREVINI, der Sie diesbezüglich gerne berät. Zur Schmierung sollten wärme- und alterungsbeständige Mineralöle mit Viskosität ISO VG 32 verwendet werden (Viskositätsindex gleich oder höher als 95). Die Hydrauliköle sind normalerweise geeignet; im Kapitel "Schmierung" werden die empfohlenen Ölsorten aufgeführt.



10.FREINS A LAMELLES IMMERGEES

Les réducteurs de ce catalogue peuvent être dotés en entrée d'un frein à lamelles immergées à commande hydraulique.

Freins négatifs

Ces freins agissent sous la poussée d'une série de ressorts sur des paires de disques alternés fixes et mobiles; le déblocage s'effectue par l'action de la pression hydraulique dans le piston. Ils ont donc un fonctionnement "négatif"; ils doivent être utilisés comme frein de stationnement et non pas pour le freinage dynamique. Ces performances, avec un marge de +/- 10%, sont toujours calculées en tenant compte d'une contre-pression 0; dans le cas contraire, le couple de freinage est proportionnellement réduit dans le rapport contre-pression/pression mini d'ouverture. Pour la sélection, il faut tenir compte de deux conditions:

1) Couple de freinage $\times i_{\text{eff}} >$ Couple requis en sortie;

2) Couple de freinage $\times i_{\text{eff}} < 1.1 T_{2\text{max}}$

Noter que les vitesses de rotation élevées, ainsi que le fonctionnement prolongé avec l'axe vertical, peuvent entraîner des élévations de température: dans ces cas, appeler le Service tecnico-commercial BREVINI pour des conseils utiles à ce propos. Pour la lubrification, nous conseillons des huiles minérales résistantes à la chaleur et au vieillissement, ayant une viscosité ISO VG 32. indice de viscosité égal ou supérieur à 95. Les huiles hydrauliques conviennent généralement; dans le chapitre consacré à la lubrification sont indiqués les lubrifiants préconisés.

10.FRENOS LAMINARES EN BAÑO DE ACEITE

En la entrada de los reductores de este catálogo se pueden montar discos múltiples en baño de aceite con apertura hidráulica.

Frenos negativos

Estos frenos son accionados por una serie de muelles que comprimen pares de discos fijos y móviles alternados; el desbloqueo se produce por efecto de la presión hidráulica sobre el pistón. Por ello se habla de funcionamiento "negativo"; se emplean como frenos de estacionamiento, no para el frenado dinámico. El intervalo de tolerancia es de +/- 10% y se calcula siempre con contrapresión 0; de lo contrario el par de frenado de la relación contrapresión/presión mín de apertura se reduce. Antes de la selección hay que tomar en cuenta dos factores:

1) Par freno $\times i_{\text{ef}} >$ Par de salida necesario;

2) Par freno $\times i_{\text{ef}} < 1.1 T_{2\text{max}}$

Si el reductor trabaja demasiado tiempo en posición vertical o con velocidades grandes puede registrarse un aumento significativo de la temperatura: se aconseja contactar con el Servicio Técnico de Brevini.

Lubricar con aceites minerales resistentes al calor y al envejecimiento con viscosidad ISO VG 32 y un índice de viscosidad igual o mayor que 95.

En general los aceites hidráulicos tienen un comportamiento adecuado; los tipos recomendados se enumeran en el capítulo de lubricación.

10.FREIOS LAMELARES A BANHO DE ÓLEO

Os redutores deste catálogo podem ser dotados, na entrada, de freio a discos múltiplos a banho de óleo com abertura hidráulica.

Freios negativos

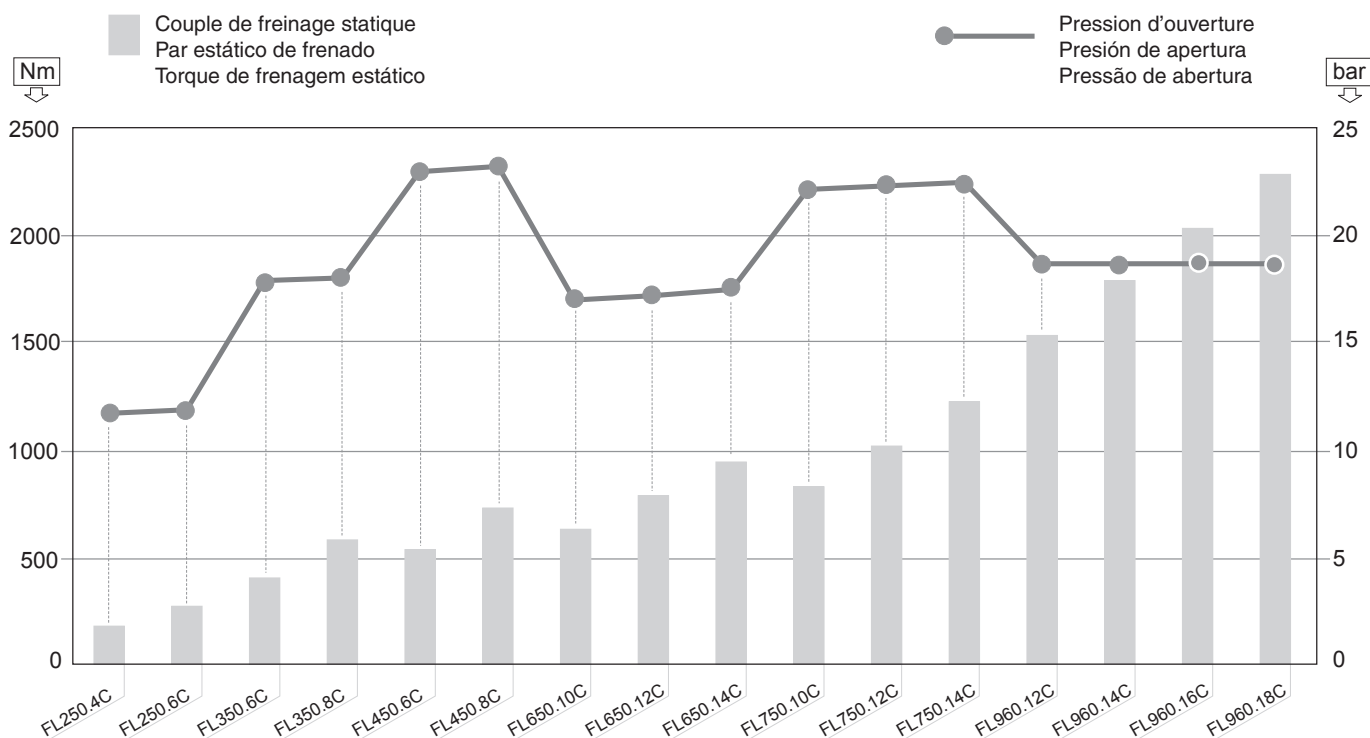
Esses freios agem sob a pressão de uma série de molas em pares de discos alternados, fixos e móveis; o desbloqueio ocorre por efeito da pressão hidráulica no pistão. Têm, portanto, um funcionamento "negativo"; devem ser empregados como freios de estacionamento, não para frenagem dinâmica. Tais desempenhos, com margem de precisão de +/- 10% são sempre calculados com contrapressão 0, caso contrário o torque de frenagem é percentualmente reduzido na relação contrapressão/pressão mín. de abertura. Para a seleção, é necessário levar em consideração duas condições:

1) Torque do freio $\times i_{\text{eff}} >$ Torque necessário na saída;

2) Torque do freio $\times i_{\text{eff}} < 1.1 T_{2\text{max}}$

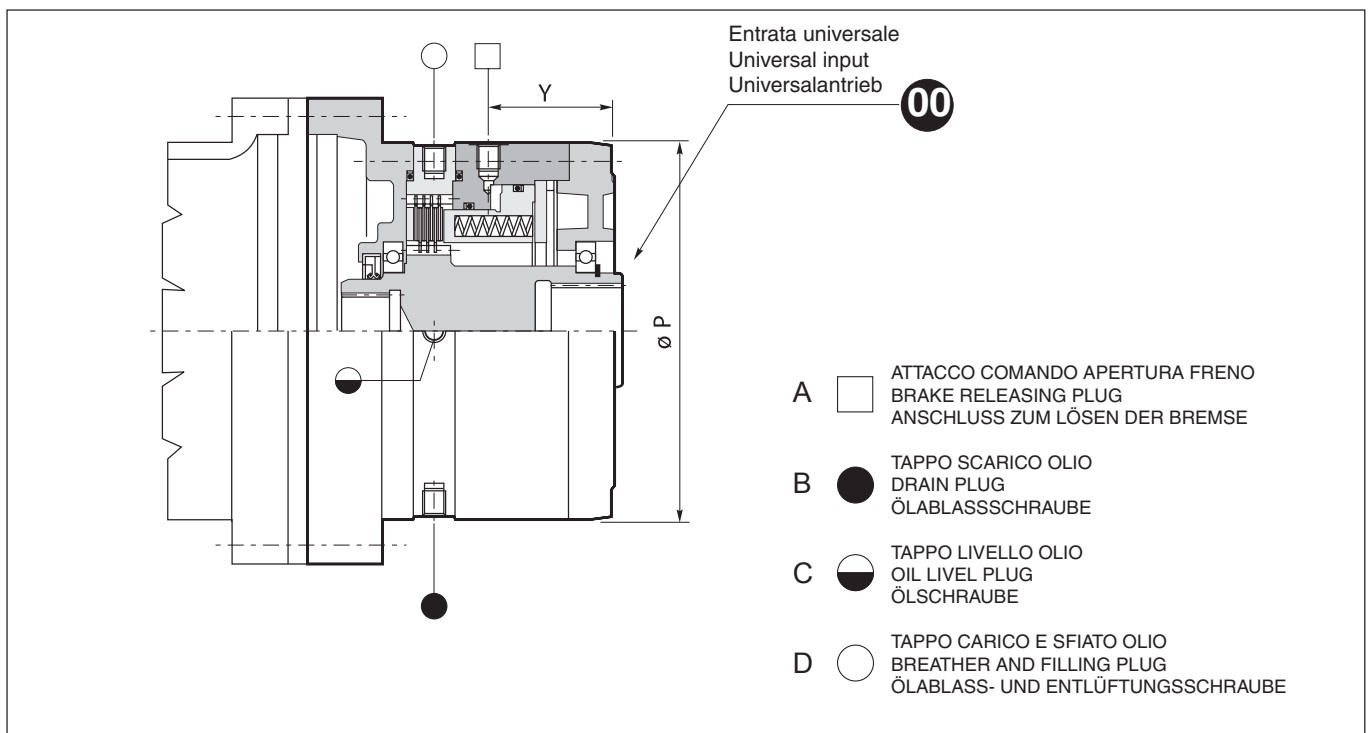
Recordamos que as altas velocidades de rotação ou períodos de funcionamento prolongados com eixo vertical podem gerar grandes aumentos de temperatura: nesses casos, entre em contato com o Serviço Técnico Comercial da BREVINI para obter conselhos adequados a respeito.

Para a lubrificação, são aconselháveis óleos minerais resistentes ao calor e ao envelhecimento, com viscosidade ISO VG 32. índice de viscosidade igual ou superior a 95. Os óleos hidráulicos em geral são adequados; no capítulo relativo à lubrificação são indicados aqueles aconselhados.



| | T [Nm] | P [bar] | Pmax [bar] | Vo [l] | | Va [cm ³] | |
|--------------|------------|------------|---------------|---------------------------|-----------------------|---|----|
| | | | | orizzontale horizontal | verticale vertical | lamelle nuove new discs Neue Lamellen | |
| FL250 | FL 250.4C | 181 | 13.28 | 315 | 0.3 | 0.6 | 15 |
| | FL 250.6C | 278 | 13.28 | 315 | 0.3 | 0.6 | 15 |
| FL350 | FL 350.6C | 417 | 19.92 | 315 | 0.3 | 0.6 | 15 |
| | FL 350.8C | 571 | 19.92 | 315 | 0.3 | 0.6 | 15 |
| FL450 | FL 450.6C | 540 | 25.59 | 315 | 0.3 | 0.6 | 15 |
| | FL 450.8C | 737 | 25.59 | 315 | 0.3 | 0.6 | 15 |
| FL650 | FL 650.10C | 642 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| | FL 650.12C | 792 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| | FL 650.14C | 949 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| FL750 | FL 750.10C | 834 | 25.59 | 315 | 0.5 | 1.0 | 15 |
| | FL 750.12C | 1027 | 25.59 | 315 | 0.0 | 1.0 | 15 |
| | FL 750.14C | 1229 | 25.59 | 315 | 0.5 | 1.0 | 15 |
| FL960 | FL 960.12C | 1528 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.14C | 1783 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.16C | 2038 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.18C | 2293 | 21.98 | 315 | 1.2 | 2.4 | 22 |

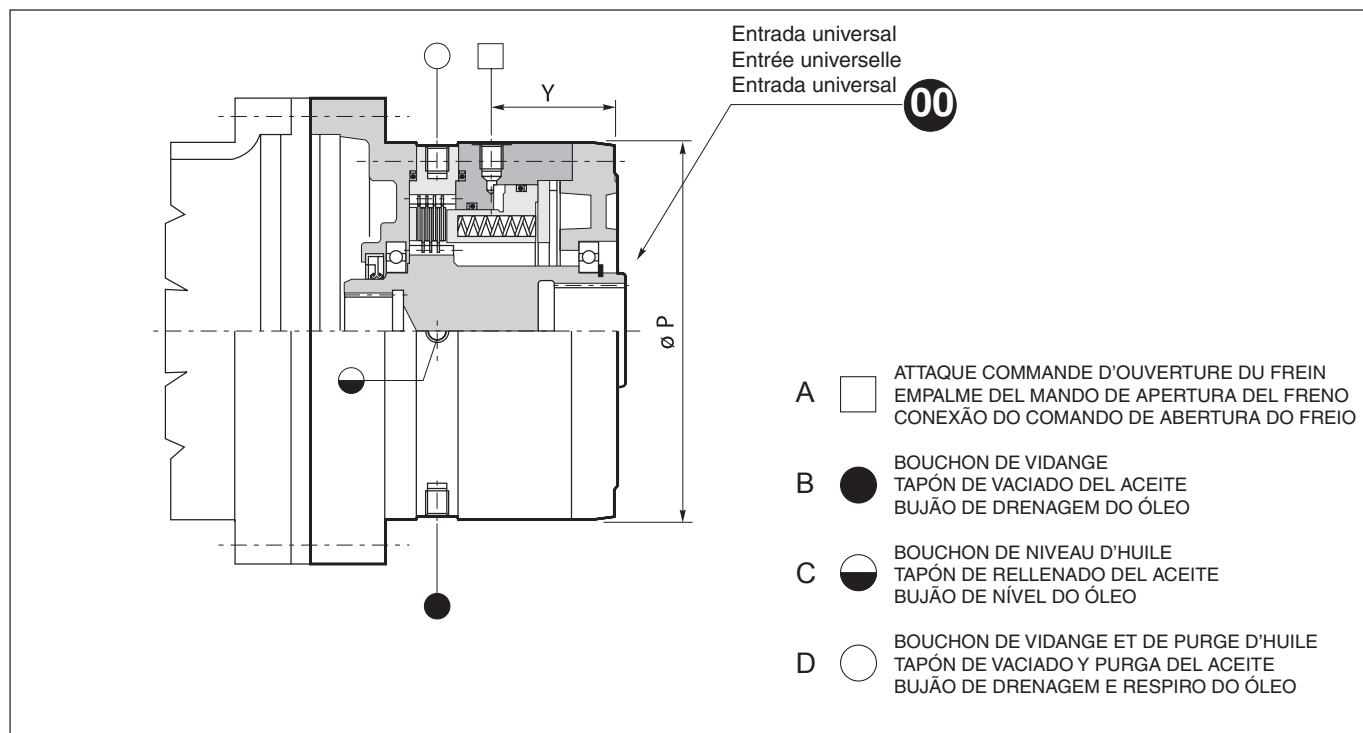
T: Coppia statica media / Medium static torque / Mittleres Stützmoment
P: Pressione apertura freno / Brake release pressure / Bremsöffnungsdruck
Pmax: Pressione max. / Max pressure / Höchstdruck
Vo: Volume olio / Oil quantity / Ölmenge
Va: Volume olio per comando apertura freno / Oil quantity for brake release control / Bremsölmenge zum Lösen der Bremse



| | P | Y | ATTACCHI / PLUGS / ANSCHLÜSSE | | | | Kg |
|---------------|-----|------|-------------------------------|--------|--------|--------|----|
| | | | A | B | C | D | |
| FL 250 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 24 |
| FL 350 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 24 |
| FL 450 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 26 |
| FL 650 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 36 |
| FL 750 | 225 | 72.5 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 37 |
| FL 960 | 225 | 72.5 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 42 |

| | T [Nm] | P [bar] | Pmax [bar] | Vo [l] | | Va [cm ³] | |
|--------------|------------|------------|---------------|--------------------------|----------------------|--|----|
| | | | | horizontal horizontal | vertical vertical | lamelles neuves laminillas nuevas discos novos | |
| FL250 | FL 250.4C | 181 | 13.28 | 315 | 0.3 | 0.6 | 15 |
| | FL 250.6C | 278 | 13.28 | 315 | 0.3 | 0.6 | 15 |
| FL350 | FL 350.6C | 417 | 19.92 | 315 | 0.3 | 0.6 | 15 |
| | FL 350.8C | 571 | 19.92 | 315 | 0.3 | 0.6 | 15 |
| FL450 | FL 450.6C | 540 | 25.59 | 315 | 0.3 | 0.6 | 15 |
| | FL 450.8C | 737 | 25.59 | 315 | 0.3 | 0.6 | 15 |
| FL650 | FL 650.10C | 642 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| | FL 650.12C | 792 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| | FL 650.14C | 949 | 19.92 | 315 | 0.5 | 1.0 | 15 |
| FL750 | FL 750.10C | 834 | 25.59 | 315 | 0.5 | 1.0 | 15 |
| | FL 750.12C | 1027 | 25.59 | 315 | 0.0 | 1.0 | 15 |
| | FL 750.14C | 1229 | 25.59 | 315 | 0.5 | 1.0 | 15 |
| FL960 | FL 960.12C | 1528 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.14C | 1783 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.16C | 2038 | 21.98 | 315 | 1.2 | 2.4 | 22 |
| | FL 960.18C | 2293 | 21.98 | 315 | 1.2 | 2.4 | 22 |

T: Couple statique moyen / Par estático medio / Tração estática média
P: Pression d'ouverture du frein / Presión de apertura del freno / Pressão de abertura do freio
Pmax: Pression max. / Presión máx. / Pressão máx.
Vo: Volume d'huile / Volumen de aceite / Volume de óleo
Va: Volume d'huile pour commande d'ouverture du frein / Volumen de aceite para el mando de apertura del freno / Volume de óleo para o comando da abertura do freio



| | P | Y | FIXATIONS / EMPALMES / ENGATES | | | | Kg |
|---------------|-----|------|--------------------------------|--------|--------|--------|----|
| | | | A | B | C | D | |
| FL 250 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 24 |
| FL 350 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 24 |
| FL 450 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 26 |
| FL 650 | 195 | 67 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 36 |
| FL 750 | 225 | 72.5 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 37 |
| FL 960 | 225 | 72.5 | M12X1.5 | R 1/4" | R 1/4" | R 1/4" | 42 |

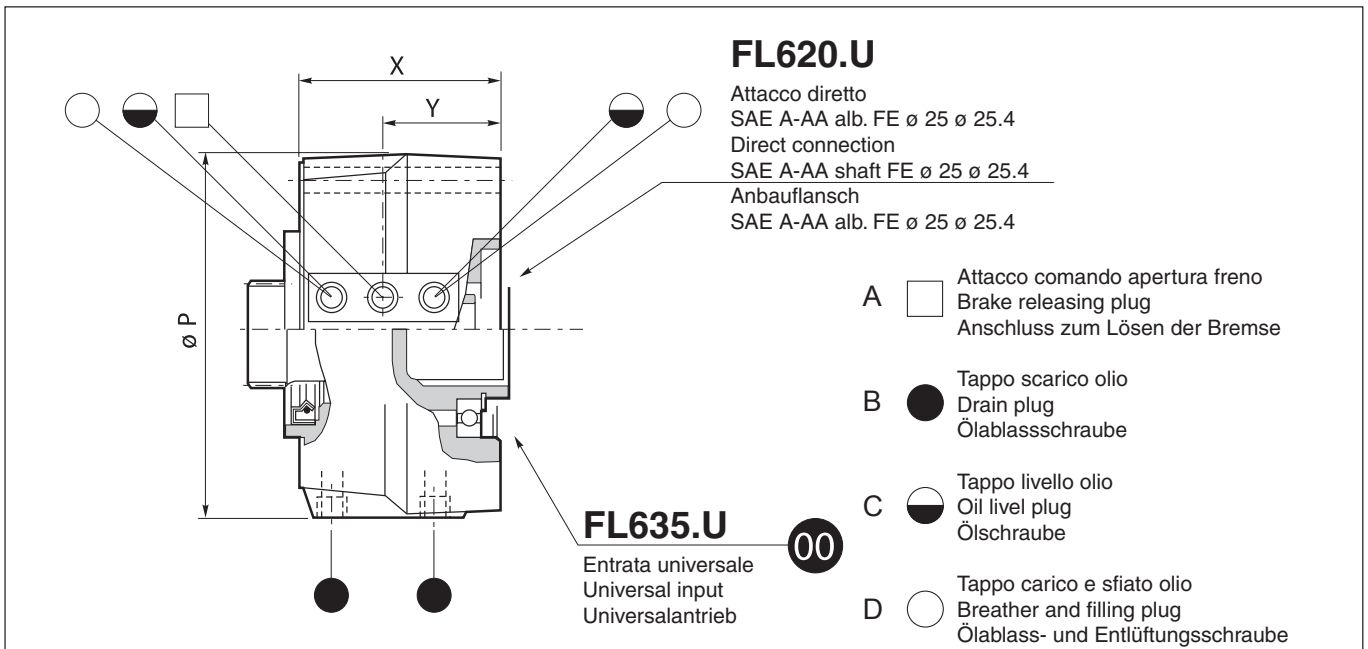
FRENI LAMELLARI UNIVERSALI

MULTIDISC BRAKES

UNIVERSAL
LAMELLENBREMSEN

| | T [Nm] | P [bar] | Pmax [bar] | Vo [l] | | Va [cm ³] |
|---------|-----------|------------|---------------|---|-----------------------------------|---|
| | | | | orizzontale horizontal horizontal | verticale vertical vertikal | lamelle nuove new discs Neue Lamellen |
| FL620.U | 271 | 24.9 | 210 | 0.1 | 0.2 | 10 |
| FL635.U | 377 | 13.6 | 315 | 0.1 | 0.2 | 10 |

T: Coppia statica media / Medium static torque / Mittleres Stützmoment
P: Pressione apertura freno / Brake release pressure / Bremsöffnungsdruck
Pmax: Pressione max. / Max pressure / Höchstdruck
Vo: Volume olio / Oil quantity / Ölmenge
Va: Volume olio per comando apertura freno / Oil quantity for brake release control / Bremsölmenge zum Lösen der Bremse



| | P | X | Y | ATTACCHI / PLUGS / ANSCHLÜSSE | | | | Kg | Codice / Code / Code |
|----------|-----|-------|----|-------------------------------|--------|--------|--------|----|--|
| | | | | A | B | C | D | | |
| FL 620.U | 161 | 104.5 | 46 | M10x1 | R 1/8" | R 1/8" | R 1/8" | 8 | C1103704120 (alb. FE ø 25) C1103704120 (alb. FE ø 25.4) |
| FL 635.U | 165 | 91 | 59 | M12x1.5 | R 1/4" | R 1/4" | R 1/4" | 9 | C1109200160 |

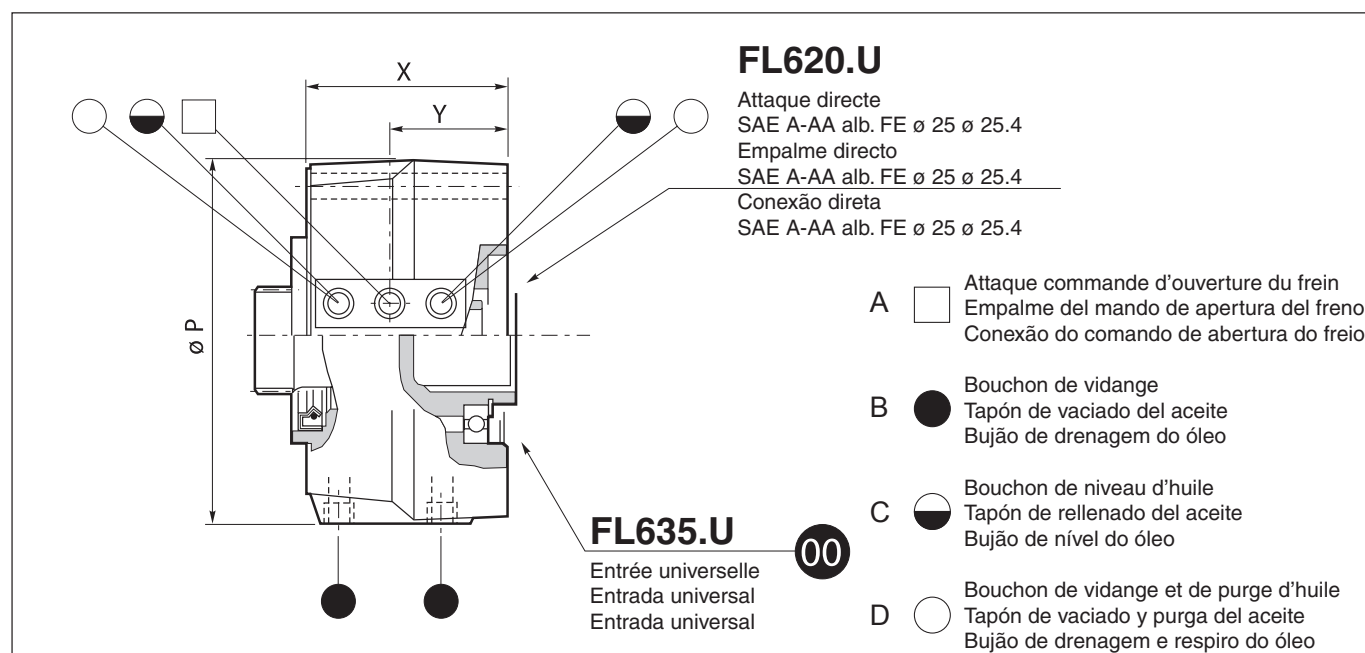
**FREINS A LAMELLES
UNIVERSELS**

**FRENOS LAMINARES
UNIVERSALES**

**FREIOS LAMELARES
UNIVERSAIS**

| | T [Nm] | P [bar] | Pmax [bar] | Vo [l] | | Va [cm ³] |
|----------------|-----------|------------|---------------|--|----------------------------------|--|
| | | | | horizontal horizontal horizontal | vertical vertical vertical | lamelles neuves laminillas nuevas discos novos |
| FL620.U | 271 | 24.9 | 210 | 0.1 | 0.2 | 10 |
| FL635.U | 377 | 13.6 | 315 | 0.1 | 0.2 | 10 |

- T:** Couple statique moyen / Par estático medio / Tração estática média
P: Pression d'ouverture du frein / Presión de apertura del freno / Pressão de abertura do freio
Pmax: Pression max. / Presión máx. / Pressão máx.
Vo: Volume d'huile / Volumen de aceite / Volume de óleo
Va: Volume d'huile pour commande d'ouverture du frein / Volumen de aceite para el mando de apertura del freno / Volume de óleo para o comando da abertura do freio



| | P | X | Y | FIXATIONS / EMPALMES / ENGATES | | | | Kg | Code / Código / Código |
|-----------------|-----|-------|----|--------------------------------|--------|--------|--------|----|--|
| | | | | A | B | C | D | | |
| FL 620.U | 161 | 104.5 | 46 | M10x1 | R 1/8" | R 1/8" | R 1/8" | 8 | C1103704120 (alb. FE ø 25) C1103704120 (alb. FE ø 25.4) |
| FL 635.U | 165 | 91 | 59 | M12x1.5 | R 1/4" | R 1/4" | R 1/4" | 9 | C1109200160 |

11. ENTRATE UNIVERSALI

L'entrata universale è una configurazione che, montata in ingresso ai riduttori, permette di accoppiare le più diverse tipologie di motorizzazioni tramite una flangia e un manicotto di adattamento appositi.

Esistono due diverse dimensioni di entrata universale in funzione delle grandezze montate come stadio in ingresso sui riduttori.

Questa configurazione è possibile anche quando il riduttore sia dotato in entrata di freno lamellare.

L'applicabilità può essere dedotta dalle tavole dimensionali.

11. UNIVERSAL INPUTS

The universal input is a configuration mounted on the gear unit input, enabling the coupling of many types of motorizations by means of a special flange and adapter coupling.

Two different universal input sizes are available according to the sizes mounted as input stage on the gear units.

The universal input configuration can be used whether an external lamellar brake is fitted to the gearbox input.

Applicability can be obtained from the dimensional tables.

11. UNIVERSAL-ANTRIEBE

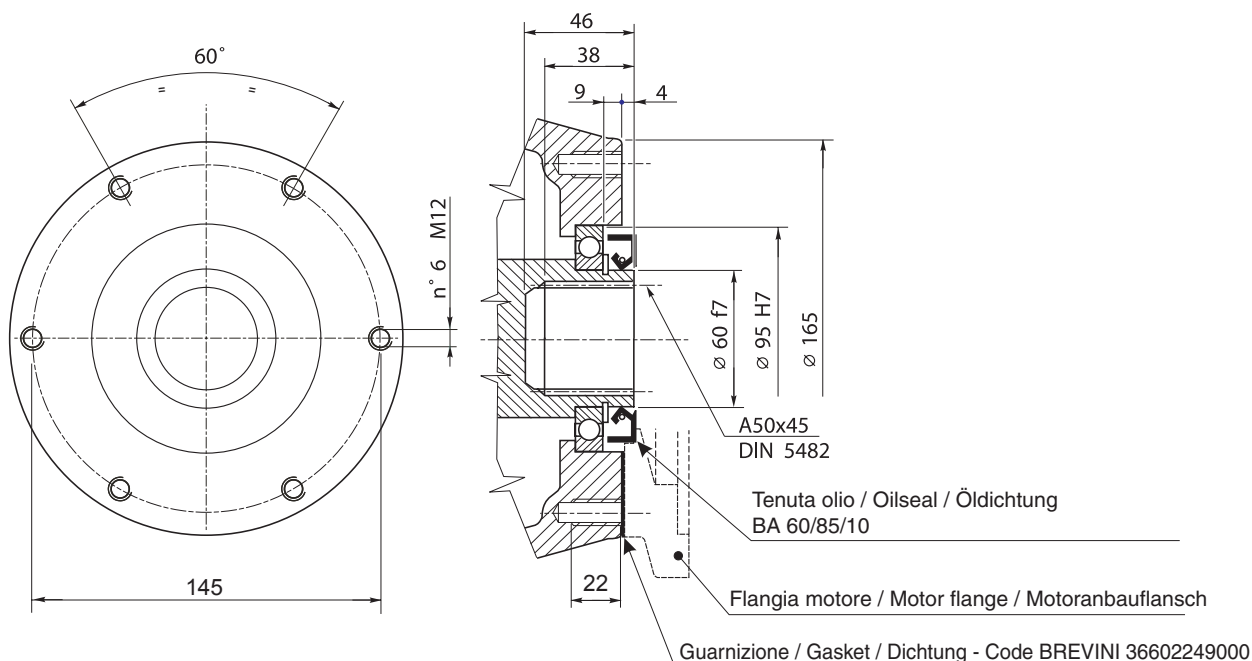
Der Universalantrieb ist eine Anordnung, die am Getriebeeingang montiert wird und die ermöglicht, die unterschiedlichsten Motortypen mithilfe eines Flansches oder einer Adapterhülse anzukoppeln.

Je nach der auf den Getrieben montierten Antriebsstufen stehen zwei verschiedene Größen des Universalantriebs zur Verfügung.

Konfiguration ist anwendbar, unabhängig davon, ob das Getriebe am Eingang mit einer Lamellenbremse ausgestattet ist.

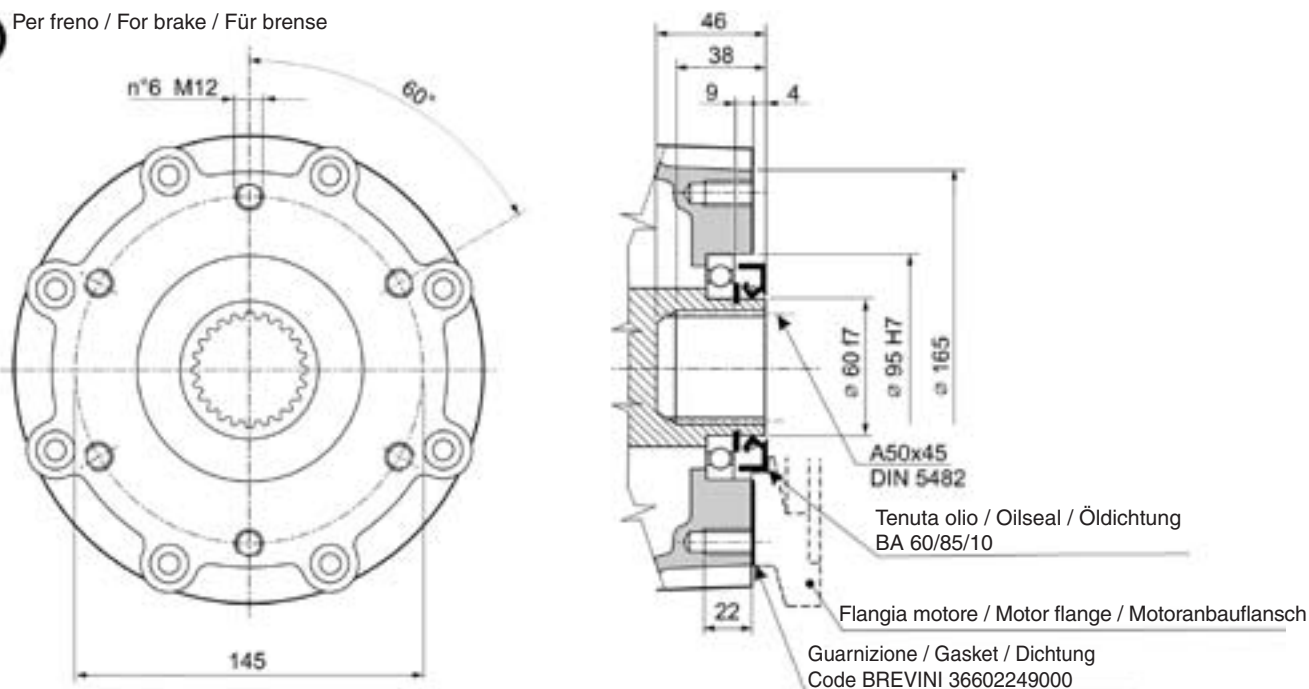
Die Eignung kann den Maßbildern entnommen werden.

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Per freno / For brake / Für brense



11. PREDISPOSITIONS D'ENTREE

La pr edisposition d'entr ee universelle est une configuration qui, mont ee en entr ee aux r educteurs, permet d'accoupler les diff erents types de moteurs par un flasque-bride et un manchon ou moyeu d'adaptation appropri es.

Il existe deux diff erentes dimensions de pr edispositions d'entr ee universelles en fonction des grandeurs mont ees comme  tage en entr ee, sur les r educteurs.

Cette configuration est possible  galement quand le r educteur est dot e d'une entr ee de frein lamellaire externe.

L'adaptabilit e peut  tre tir ee des planches des dimensions d'encombrement.

11. ENTRADAS UNIVERSALES

La entrada universal es una configuraci n que permite acoplar todo tipo de motores por medio de una brida y un manguito adaptador especiales.

Dependiendo del tama o elegido para la entrada del reductor puede haber dos medidas de entrada universal.

Se puede realizar independientemente de que en la entrada del reductor haya un freno laminar exterior.

Las posibilidades de aplicaci n se deducen de los dise os dimensionales.

11. ENTRADAS UNIVERSAIS

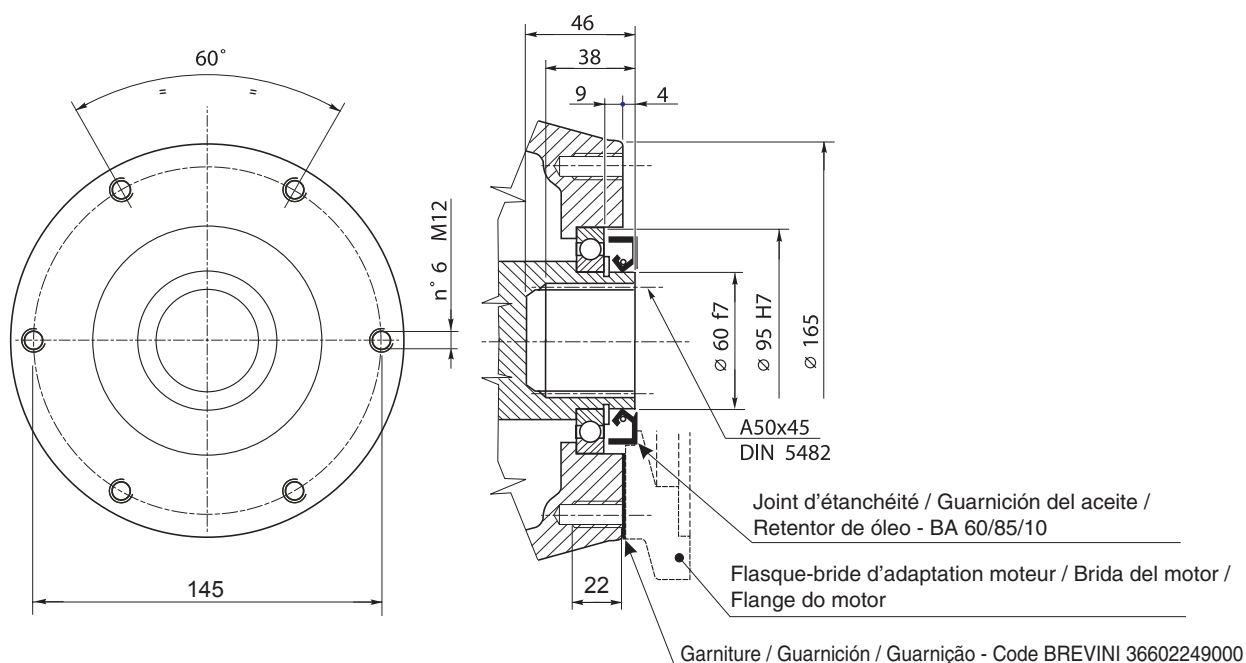
A entrada universal   uma configura o que, montada na entrada dos redutores, permite acoplar os mais diversos tipos de motores atrav s de um flange e uma luva de adapta o adequados.

Existem duas dimens es de entrada universal diferentes em fun o dos tamanhos montados como  stgio na entrada dos redutores.

Essa configura o   poss vel mesmo quando o redutor   dotado, na entrada, de freio lamelar externo.

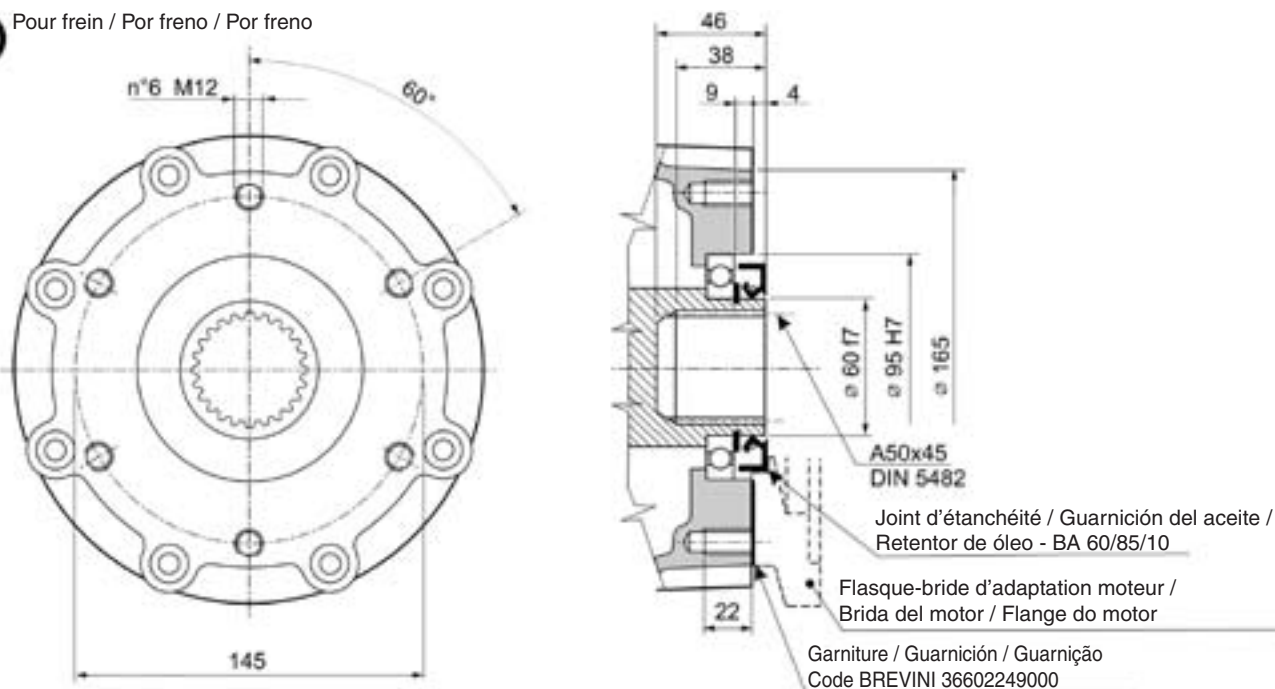
A aplicabilidade pode ser deduzida atrav s das tabelas dimensionais.

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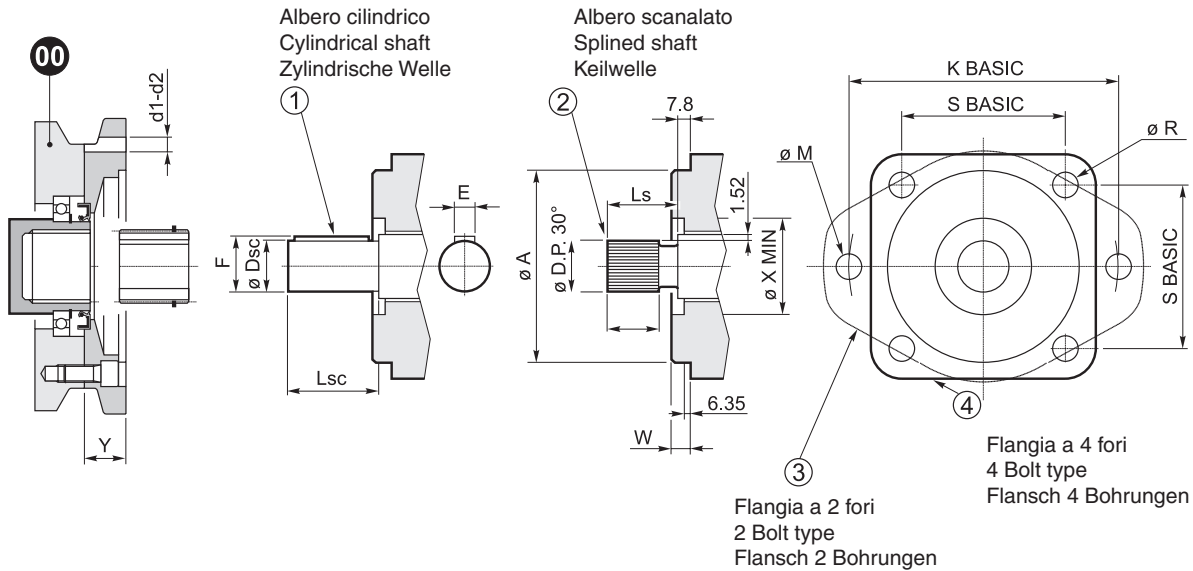
Pour frein / Por freno / Por freno



**12. FLANGIATURA
MOTORI
SAE J 744C - NEMA**

**12. ADAPTORS
FOR MOTORS
SAE J 744C - NEMA**

**12. ANFLANSCHEN
DER MOTOREN
SAE J 744C - NEMA**

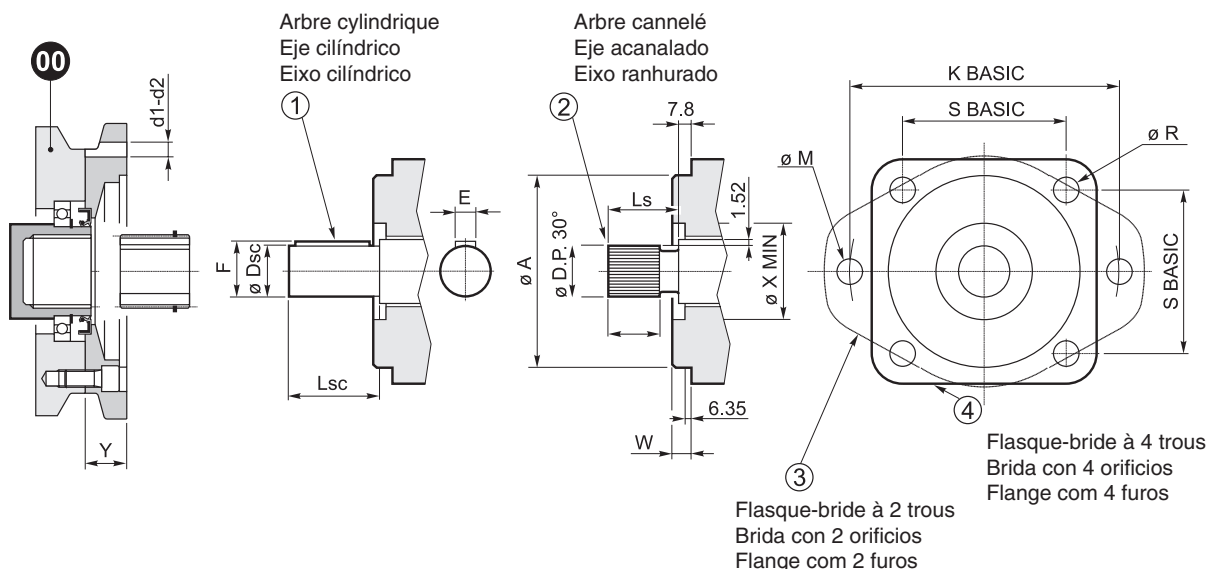


| SAE | Ø A | W | Ø X MIN | K basic | Ø M | S basic | Ø R | ALBERO SCANALATO SPLINED SHAFT KEILWELLE | | | | ALBERO CILINDRICO CYLINDRICAL SHAFT ZYLINDRISCHE WELLE | | | |
|-----|-------|-------|---------|---------|------|---------|------|--|-------------|-------|------------|--|-------|-------|-------|
| | | | | | | | | Nr.Denti No.Teeth Anz. Zähne | 30° D.P. | LS | LA MIN. | Ø DSC | LSC | F | E |
| A | 82.55 | 6.35 | — | 106.4 | 13 | 75.22 | — | 9 | 16/32 | 24 | 7.6 | 15.88 | 24 | 17.6 | 4 |
| B | 101.6 | 9.65 | 50.8 | 146 | 14.3 | 89.8 | 14.3 | 13 | 16/32 | 33.3 | 10.2 | 22.22 | 33.3 | 24.95 | 6.35 |
| B-B | 101.6 | 9.65 | 50.8 | 146 | 14.3 | 89.8 | 14.3 | 15 | 16/32 | 38.1 | 12.7 | 25.4 | 38.1 | 28.1 | 6.35 |
| C | 127.0 | 12.7 | 63.5 | 181 | 17.5 | 114.5 | 14.3 | 14 | 12/24 | 47.6 | 15.2 | 31.75 | 47.6 | 35.2 | 7.8 |
| C-C | 127.0 | 12.7 | 63.5 | 181 | 17.5 | 114.5 | 14.3 | 17 | 12/24 | 54 | 17.8 | 38.1 | 54 | 42.25 | 9.525 |
| D | 152.4 | 12.7 | 70 | 228.6 | 20.6 | 161.6 | 20.6 | 13 | 8/16 | 66.67 | 20.3 | 44.45 | 66.67 | 49.3 | 11.1 |
| E | 165.1 | 15.87 | 70 | 317.5 | 27 | 224.5 | 20.6 | 13 | 8/16 | 66.67 | 20.3 | 44.45 | 66.67 | 49.3 | 11.1 |

12. FLASQUAGE AU MOTEURS SAE J 744C - NEMA

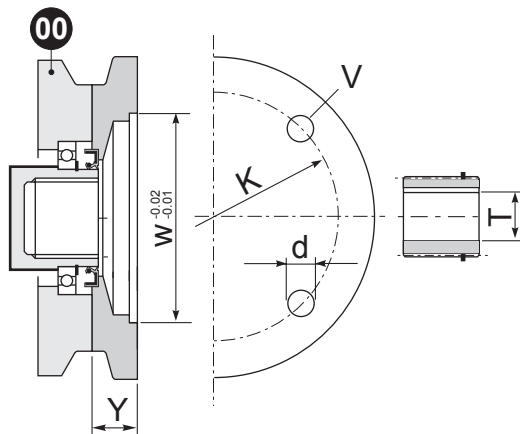
12. BRIDAS DE LOS MOTORES SAE J 744C - NEMA

12. FLANGES DE MOTORES SAE J 744C - NEMA



| SAE | Ø A | W | Ø X MIN | K basic | Ø M | S basic | Ø R | ARBRE CANNELE EJE ACANALADO EIXO RANHURADO | | | | ARBRE CYLINDRIQUE EJE CILÍNDRICO EIXO CILÍNDRICO | | | |
|-----|-------|-------|---------|---------|------|---------|------|--|-------------|-------|------------|--|-------|-------|-------|
| | | | | | | | | Nbre dents Dientes N.º dentes | 30° D.P. | LS | LA MIN. | Ø DSC | LSC | F | E |
| A | 82.55 | 6.35 | — | 106.4 | 13 | 75.22 | — | 9 | 16/32 | 24 | 7.6 | 15.88 | 24 | 17.6 | 4 |
| B | 101.6 | 9.65 | 50.8 | 146 | 14.3 | 89.8 | 14.3 | 13 | 16/32 | 33.3 | 10.2 | 22.22 | 33.3 | 24.95 | 6.35 |
| B-B | 101.6 | 9.65 | 50.8 | 146 | 14.3 | 89.8 | 14.3 | 15 | 16/32 | 38.1 | 12.7 | 25.4 | 38.1 | 28.1 | 6.35 |
| C | 127.0 | 12.7 | 63.5 | 181 | 17.5 | 114.5 | 14.3 | 14 | 12/24 | 47.6 | 15.2 | 31.75 | 47.6 | 35.2 | 7.8 |
| C-C | 127.0 | 12.7 | 63.5 | 181 | 17.5 | 114.5 | 14.3 | 17 | 12/24 | 54 | 17.8 | 38.1 | 54 | 42.25 | 9.525 |
| D | 152.4 | 12.7 | 70 | 228.6 | 20.6 | 161.6 | 20.6 | 13 | 8/16 | 66.67 | 20.3 | 44.45 | 66.67 | 49.3 | 11.1 |
| E | 165.1 | 15.87 | 70 | 317.5 | 27 | 224.5 | 20.6 | 13 | 8/16 | 66.67 | 20.3 | 44.45 | 66.67 | 49.3 | 11.1 |

| SAE | Y | No. Bolt | CODICE DI ORDINAZIONE ORDERING CODE BESTELLNUMMER | | | CODICE DI ORDINAZIONE ORDERING CODE BESTELLNUMMER | | |
|-----|----|----------|---|--|--|---|--|--|
| | | | Flangia con d1 / Flange with d1 / Flansch mit d1 | | | Flangia con d2 / Flange with d2 / Flansch mit d2 | | |
| | | | d1 Metric Metric Metrisch | Albero scanalato Splined shaft Keilwelle | Albero cilindrico Cylindrical shaft Zylindrische Welle | d2 Pollici Inch Zoll | Albero scanalato Splined shaft Keilwelle | Albero cilindrico Cylindrical shaft Zylindrische Welle |
| A | 25 | 2 - 4 | M10 T.U. 15 | 61125502680 | 61125500900 | 3/8 0.59 Min Full Thread | 61147702680 | 61147700900 |
| B | 25 | 2 - 4 | M12 T.U. 25 | 61125700580 | 61125700460 | 1/2 - 13 1.00 Min Full Thread | 61143900580 | 61143900460 |
| B-B | 25 | 2 - 4 | M12 T.U. 25 | 61125701940 | 61125700500 | 1/2 - 13 1.00 Min Full Thread | 61143901940 | 61143900460 |
| C | 28 | 2 | M16 T.U. 20 | 61101801480 | 61101800510 | 5/8-11 0.78 Min F.T. | 61145301480 | 61145300510 |
| | | 4 | M14 T.U. 20 | | | 1/2-13 0.78 Min F.T. | | |
| C-C | 79 | 2 | M16 T.U. 20 | 61101802540 | 61101801750 | 5/8-11 0.78 Min F.T. | 61145302540 | 61145301750 |
| | | 4 | M14 T.U. 20 | | | 1/2-13 0.78 Min F.T. | | |
| D | 93 | 2 - 4 | M18 T.U. 20 | 61103501930 | 61103501720 | 3/4 - 10 1.00 Min Full Thread | 61147801930 | 61147801720 |
| E | 93 | 2 - 4 | Æ 22 T.U. 30 | 61118201930 | 61118201720 | Ø 0.875 1.11 Min | 61118201930 | 61118201720 |



| NEMA Grandezza motore Motor size Motorgröße | FLANGE ATTACCO MOTORE INPUT FLANGE ADAPTER MOTORANBAUFLANSCH | | | | | MANICOTTO COUPLING KUPPLUNG | | CODICE DI ORDINAZIONE ORDERING CODE BESTELLNUMMER |
|--|--|-------------------------------|------|------|------|-----------------------------------|-------|--|
| | W | V | d | K | Y | T | | |
| | Diametro Diameter Durchmesser | Linguetta Key Passfeder | | | | | | |
| 143/145 TD | 9 | 4 | 0.55 | 10 | 1.18 | 0.875 | 0.187 | 61135501060 |
| 182/184 TC | 8.5 | 4 | 0.55 | 7.25 | 1.18 | 1.125 | 0.25 | 61130800070 |
| 182/184 TD | 9 | 4 | 0.55 | 10 | 1.18 | 1.25 | 0.25 | 61135502200 |
| 210 TD | 9 | 4 | 0.55 | 10 | 1.18 | 1.375 | 0.312 | 61135502500 |
| 213/215 TC | 8.5 | 4 | 0.55 | 7.25 | 1.81 | 1.375 | 0.312 | 61130802500 |

Dimensioni in pollici

Inch dimensions

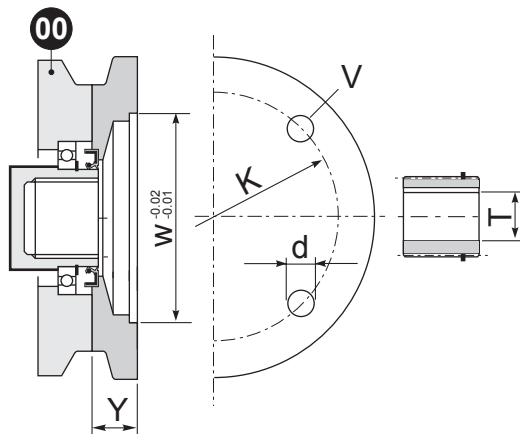
Abmessungen in Zoll

Oltre alle flangiature riportate in tabella sono disponibili altri modelli a richiesta.

Most requested electric motor adapters are displayed. Other input flange and shaft adapters are available on request.

Neben den in der Tabelle aufgeführten Flanschadaptern sind weitere auf Anfrage erhältlich.

| SAE | Y | No. Bolt | CODE DE COMMANDE CÓDIGO PARA EL PEDIDO CÓDIGO DE PEDIDO | | | CODE DE COMMANDE CÓDIGO PARA EL PEDIDO CÓDIGO DE PEDIDO | | |
|-----|----|----------|---|--|--|---|--|--|
| | | | Flasque-bride avec d1 / Brida con d1 / Flange com d1 | | | Flasque-bride avec d2 / Brida con d2 / Flange com d2 | | |
| | | | d1 Métrique Métrico Métrico | Arbre cannelé Eje acanalado Eixo ranhurado | Arbre cylindrique Eje cilíndrico Eixo cilíndrico | d2 Pouces Pulgadas Polegadas | Arbre cannelé Eje acanalado Eixo ranhurado | Arbre cylindrique Eje cilíndrico Eixo cilíndrico |
| A | 25 | 2 - 4 | M10 T.U. 15 | 61125502680 | 61125500900 | 3/8 0.59 Min Full Thread | 61147702680 | 61147700900 |
| B | 25 | 2 - 4 | M12 T.U. 25 | 61125700580 | 61125700460 | 1/2 - 13 1.00 Min Full Thread | 61143900580 | 61143900460 |
| B-B | 25 | 2 - 4 | M12 T.U. 25 | 61125701940 | 61125700500 | 1/2 - 13 1.00 Min Full Thread | 61143901940 | 61143900460 |
| C | 28 | 2 | M16 T.U. 20 | 61101801480 | 61101800510 | 5/8-11 0.78 Min F.T. | 61145301480 | 61145300510 |
| | | 4 | M14 T.U. 20 | | | 1/2-13 0.78 Min F.T. | | |
| C-C | 79 | 2 | M16 T.U. 20 | 61101802540 | 61101801750 | 5/8-11 0.78 Min F.T. | 61145302540 | 61145301750 |
| | | 4 | M14 T.U. 20 | | | 1/2-13 0.78 Min F.T. | | |
| D | 93 | 2 - 4 | M18 T.U. 20 | 61103501930 | 61103501720 | 3/4 - 10 1.00 Min Full Thread | 61147801930 | 61147801720 |
| E | 93 | 2 - 4 | Æ 22 T.U. 30 | 61118201930 | 61118201720 | Ø 0.875 1.11 Min | 61118201930 | 61118201720 |



| NEMA Grandeur moteur Tamaño del motor Tamanho do motor | FLASQUES-BRIDES POUR FIXATION SUR MOTEUR BRIDAS DEL MOTOR FLANGE ENGATE MOTOR | | | | | MANCHON OU MOYEU MANGUITO ACOPLAMENTO LUA ACOPLAMENTO | | CODE DE COMMANDE CÓDIGO PARA EL PEDIDO CÓDIGO DE PEDIDO |
|---|--|---|------|------|------|---|----------------------------------|--|
| | | | | | | T | | |
| | W | V | d | K | Y | Diamètre Diámetro Diâmetro | Clavette Lengüeta Lingüeta | |
| 143/145 TD | 9 | 4 | 0.55 | 10 | 1.18 | 0.875 | 0.187 | 61135501060 |
| 182/184 TC | 8.5 | 4 | 0.55 | 7.25 | 1.18 | 1.125 | 0.25 | 61130800070 |
| 182/184 TD | 9 | 4 | 0.55 | 10 | 1.18 | 1.25 | 0.25 | 61135502200 |
| 210 TD | 9 | 4 | 0.55 | 10 | 1.18 | 1.375 | 0.312 | 61135502500 |
| 213/215 TC | 8.5 | 4 | 0.55 | 7.25 | 1.81 | 1.375 | 0.312 | 61130802500 |

Dimensions en pouces

Dimensiones en pulgadas

Dimensões em polegadas

Aux flasques - brides indiquées dans le tableau viennent s'ajouter d'autres modèles sur demande.

Además de las bridas indicadas en la tabla, Brevini Riduttori puede suministrar diferentes modelos bajo pedido.

Além dos flanges indicados na tabela, estão disponíveis outros modelos a pedido.

13. STATO DI FORNITURA

I riduttori sono verniciati esternamente con fondo epossidico sintetico blu "RAL 5010", salvo di verse disposizioni contrattuali. La protezione è idonea a resistere a normali ambienti industriali anche esterni e consente ulteriori finiture con vernici sintetiche.

Nel caso si prevedano particolari condizioni ambientali aggressive, bisogna utilizzare delle verniciature speciali.

Le parti esterne lavorate del riduttore come le estremità degli alberi cavi e non, piani di appoggio, centraggi ecc. vengono protetti con olio (tectyl) antiossidante. Le parti interne delle carcasse dei riduttori sono verniciate con vernice antiolio e i cinematismi sono protetti con olio antiossidante.

Tutti i riduttori, salvo diverse indicazioni contrattuali, **vengono forniti senza lubrificazione**: come indicato da un'apposita etichetta adesiva allegata al riduttore stesso per evidenziarne lo stato.

I prodotti Brevini Riduttori S.p.A. vengono imballati e spediti, secondo i casi, in casse o su pallets.

Tutti i prodotti Brevini, salvo diverse indicazioni contrattuali, **vengono imballati con imballi idonei per resistere a normali ambienti industriali**.

Ogni riduttore Brevini viene fornito con specifico manuale di "Installazione e Manutenzione". Dichiarazione del fabbricante e l'attestato di Conformità – UNI EM10204-2.1.

14. CONDIZIONI DI STOCCAGGIO

Nel caso occorra immagazzinare il prodotto per un periodo superiore ai 2 mesi attenersi a quanto segue:

Proteggere gli alberi e i centraggi con pellicola di grasso e/o liquidi protettivi anticorrosione.

Riempire totalmente il riduttore e l'eventuale freno lamellare con oli adeguati.

Immagazzinare in luogo asciutto e con temperatura compresa fra i -5 °C e +30 °C.

Proteggere i colli dallo sporco, dalla polvere e dall'umidità.

Per immagazzinamento prolungato oltre i 6 mesi decade l'efficienza per le tenute rotanti. Si consiglia un controllo periodico facendo ruotare gli ingranaggi interni a mano ruotando l'albero in entrata, in presenza di freno lamellare negativo, bisogna sbloccare il freno, con pompa idraulica o similare (per pressione di apertura freno vedi capitolo freni). L'eventuale sostituzione all'atto del l'avviamento delle guarnizioni è consigliata.

13. SUPPLY CONDITION

The gear units are painted externally with synthetic primer in blue "RAL 5010", unless otherwise specified in the contract. The protection is suitable for withstanding normal industrial environments (also external) and can be finished with synthetic paints. If particular aggressive ambient conditions are foreseen, special painting is required.

The worked external parts of the gear unit, such as the ends of the hollow and solid shafts, support tables, centerings, etc., must be protected with antioxidant oil (tectyl). The parts inside the gear unit casings are painted with oil-proof paint and the kinematic mechanisms are protected with antioxidant oil. Unless otherwise specified in the contract, **all the gear units are supplied without lubrication**: as specified by a special sticker placed on the unit for indicating its condition.

Brevini Riduttori S.p.A. products are packed and shipped in boxes or on pallets, as required.

Unless otherwise specified in the contract, all Brevini products **are packed with packing suitable for withstanding normal industrial environments**.

Every Brevini gear unit comes with a specific "Installation and Maintenance" manual. Manufacturer's declaration and certificate of Conformity - UNI EM10204-2.1.

14. STORING CONDITIONS

If the product is to be stored for more than 2 months, carry out as follows:

Protect the shafts and centerings with a film of grease and/or anticorrosive protection liquids.

Completely fill the gear unit and possible multidisc brake with suitable oils.

Store in a dry place with temperature of between -5 °C and +30 °C.

Protect the packages from dirt, dust and damp.

When storing for more than 6 months the rotating seals will lose efficiency.

It is advisable to carry out a periodical check, manually turning the internal gears, turning the input shaft; with negative multidisc brake, release the brake, with hydraulic pump or similar (for brake release pressure see the chapter Brakes). Possible replacement of the gaskets on starting is advisable.

13. LIEFERBEDINGUNGEN

Die Außenseite der Getriebe ist mit Epoxidharz blau "RAL 5010" lackiert, soweit vertraglich nicht anders vereinbart. Der Schutz ist für normale Industrieumgebungen und Außenbereiche geeignet und gestattet zusätzliche Überlackierung mit Synthetiklacken. Bei Einsatz unter besonders aggressiven Umgebungsbedingungen müssen Speziallacke verwendet werden.

Die bearbeiteten Außenteile des Getriebes wie die Stümpfe der Hohlwellen und Wellen, Stützflächen, Zentrieransätze usw. werden mit einem Film oxidationshemmenden Öls (Tectyl) geschützt. Die Innenteile der Getriebegehäuse werden mit schmierölfesten Lacken lackiert und die Getriebe sind durch oxidationshemmendes Öl geschützt.

Alle Getriebe, soweit vertraglich nicht anders vereinbart, **werden ohne Schmieröl geliefert**: ein Aufkleber auf dem Getriebe weist auf den Zustand desselben hin.

Die Produkte Brevini Riduttori S.p.A. werden in Kisten oder auf Paletten geliefert und versandt.

Alle Produkte Brevini, soweit vertraglich nicht anders vereinbart, **werden in Verpackung geliefert, die für normale Industrieumgebungen ausreichend sind**. **Alle Getriebe Brevini sind mit einem spezifischen "Installations- und Wartungshandbuch"**, mit Herstellererklärung und Konformitätsbescheinigung – UNI EM10204-2.1 versehen.

14. LAGERBEDINGUNGEN

Gehen Sie bei einer Lagerung des Produktes für einen Zeitraum von mehr als 2 Monaten wie folgt vor:

Schützen Sie die Wellen und die Zentrieransätze mit einer dünnen Fettschicht und/oder Rostschutzmitteln.

Füllen Sie das Getriebe und die eventuelle Lamellenbremse ganz mit den empfohlenen Ölsorten. Lagern Sie die Getriebe an einem trockenen Ort mit einer Temperatur von -5 °C bis +30 °C.

Schützen Sie die Ware vor Schmutz, Staub und Feuchtigkeit.

Bei Lagerung von mehr als 6 Monaten verlieren die Wellendichtungen ihre Wirksamkeit. Überprüfen Sie regelmäßig die Getriebe, indem Sie die Zahnräder von Hand mithilfe der Antriebswelle drehen; sollte eine Lamellenbremse eingebaut sein, muss die Bremse mit einer Hydraulikpumpe oder ähnlichem freigesetzt werden (für den Öffnungsdruck der Bremse siehe das Kapitel Bremsen). Bei der Inbetriebnahme sollte die Dichtung möglichst ersetzt werden.

13. ETAT DE LA FOURNITURE

Les réducteurs sont peints extérieurement par application d'un apprêt époxydique synthétique bleu "RAL 5010", sauf dispositions contractuelles contraires. La protection est prévue pour résister aux environnements industriels normaux, même extérieurs, et permet l'application de couches de finitions de peintures synthétiques. Dans le cas d'utilisation dans des particulières conditions d'ambiance agressives, il faut utiliser des peintures spéciales. Les parties extérieures usinées du réducteur, comme par exemple les bouts d'arbres creux et non, les plans d'appui, centrages, etc., doivent être protégés avec de l'huile (tectyl) antioxydante. Les parties intérieures des carcasses (autrement dit carters) des réducteurs sont revêtues d'une peinture anti-huile et les cinématismes sont protégés avec de l'huile antioxydante.

Tous les réducteurs, sauf dispositions contractuelles contraires, **sont livrés sans lubrification**: comme spécifié sur une étiquette autocollante jointe avec le réducteur pour signaler cette condition. Les produits Brevini Riduttori S.p.A. sont emballés et expédiés, suivant les cas, dans des caisses ou sur palettes. Tous les produits Brevini, sauf dispositions contractuelles contraires, **sont conditionnés dans des emballages prévus pour résister aux ambiances industrielles normales**.

Chaque réducteur Brevini est accompagné d'un manuel d'Installation et d'Entretien spécifique. Déclaration du fabricant et certificat de conformité – UNI EM10204-2.1.

14. CONDITIONS DE STOCKAGE

Dans le cas d'emménagement du produit pour une période de temps supérieure à 2 mois, respecter les points suivants: Protéger les arbres et les centrages avec un film de graisse et/ou de liquides de protection anticorrosion.

Remplir entièrement le réducteur et le frein à lamelles éventuelles avec des huiles appropriées.

Stocker en un lieu sec et avec une température comprise entre -5 °C et +30 °C. Protéger les colis contre la saleté, la poussière et l'humidité.

Pour le stockage au-delà des 6 mois, l'efficacité des joints rotatifs se dégrade. Il est conseillé d'effectuer un contrôle périodique en faisant tourner les engrenages internes à la main en tournant l'arbre en entrée; en présence d'un frein à lamelles négatif, il faut le débloquent le frein avec une pompe hydraulique ou un matériel similaire (pour la pression d'ouverture du frein, voir chapitre freins). Le remplacement éventuel, au moment du démarrage, des joints est conseillé.

13. CONFIGURACIÓN DE ENTREGA

Salvo cuando el contrato estipula lo contrario, los reductores están barnizados por fuera con una base epoxídica sintética azul "RAL 5010". Esta protección es idónea para instalaciones industriales bajo techo y a la intemperie y admite el acabado con barnices sintéticos. Si las condiciones ambientales son particularmente agresivas hay que utilizar barnices especiales.

Las partes externas mecanizadas del reductor (extremos de los ejes huecos y macizos, planos de apoyo, centrados, etc.) se protegen con aceite antioxidante (tectyl). Las carcassas de los reductores están barnizadas por dentro con barniz impermeable al aceite. Los mecanismos están protegidos con aceite antióxido.

Salvo cuando el contrato estipula lo contrario, todos los reductores Brevini se **entregan sin lubricantes**: así lo indica la descripción del estado que figura en la etiqueta adhesiva del reductor.

Los productos de Brevini Riduttori se envían embalados en cajones o en paletas, según los casos.

Salvo cuando el contrato estipula lo contrario, los productos Brevini **se los materiales de los embalajes son aptos para ambientes industriales normales**. Cada reductor Brevini se entrega con un manual de instalación y mantenimiento. Declaración del fabricante y certificado de Conformidad – UNI EM10204-2.1.

14. CONDICIONES DE ALMACENAJE

Si el producto debe permanecer almacenado más de dos meses:

Proteger los ejes y los centrages con una película de grasa o un líquido anticorrosión.

Llenar el reductor y eventualmente el freno laminar con aceites adecuados.

Almacenar en un sitio seco a una temperatura de -5 a +30 °C.

Proteger los bultos de la suciedad, el polvo y la humedad.

Si el almacenaje se prolonga más de seis meses las garniciones giratorias pierden eficiencia. Se aconseja revisarlas periódicamente girando a mano los engranajes interiores y el eje de entrada.

Si se observa freno negativo hay que desbloquear el freno con una bomba hidráulica o similar (la presión de apertura está indicada en el capítulo dedicado a los frenos) y sustituir las garniciones giratorias antes de utilizarlas por primera vez.

13. CONDIÇÃO DE FORNECIMENTO

Os reductores são pintados externamente com base epóxi sintética azul "RAL 5010", salvo disposições contratuais diferentes. A proteção é adequada para resistir a ambientes industriais normais, também externos, e permite acabamentos posteriores com tintas sintéticas.

Caso sejam previstas condições ambientais particularmente agressivas, será necessário utilizar tintas especiais.

As partes externas trabalhadas do reductor, como as extremidades dos eixos ocos e não ocos, planos de apoio, centragens, etc. são protegidas com óleo (tectyl) antioxidante. As partes internas das carcaças dos reductores são pintadas com tinta antióleo e os mecanismos cinemáticos são protegidos com óleo antioxidante.

Todos os reductores, salvo outra indicação contratual, **são fornecidos sem lubrificação**: como indicado em uma etiqueta adesiva apropriada fixada ao próprio reductor para evidenciar sua condição.

Os produtos Brevini Riduttori S.p.A. são embalados e expedidos, conforme os casos, em caixas ou sobre paletes. Todos os produtos Brevini, salvo indicações contratuais diferentes, **são embalados com embalagens idôneas para resistir a ambientes industriais normais**.

Cada reductor Brevini é fornecido com um manual de "Instalação e manutenção" específico. Declaração do fabricante e atestado de Conformidade – UNI EM10204-2.1.

14. CONDIÇÕES DE ARMAZENAGEM

Caso seja necessário armazenar o produto por um período superior a 2 meses, limitar-se ao que segue:

Proteger os eixos e as centragens com uma película de graxa e/ou líquidos de proteção anticorrosão Encher totalmente o reductor e o freio lamelar eventual com óleos adequados.

Armazenar em local seco e com temperatura entre -5 °C e +30 °C.

Proteger os volumes contra sujeira, poeira e umidade.

A eficiência dos retentores giratórios cai no caso de um armazenamento prolongado por mais de 6 meses. É aconselhável um controle periódico girando manualmente as engrenagens internas, girando o eixo na entrada; na presença de freio lamelar negativo, é necessário desbloquear o freio com bomba hidráulica ou similar (para a pressão de abertura do freio, consultar o capítulo Freios). É aconselhável a eventual substituição das garnições no momento da partida.

15. INSTALLAZIONE

L'installazione dei riduttori deve essere realizzata con cura e professionalità impiegando personale adeguatamente istruito e tecnicamente preparato.

La predisposizione al funzionamento deve avvenire rispettando tutte le indicazioni tecniche contenute rispettando tutte le indicazioni tecniche contenute nei relativi documenti.

Le strutture a cui vanno fissati devono essere rigide. con superfici di appoggio lavorate a macchina ben piane e prive di verniciatura, normali all'asse azionato, e con centraggi a tolleranza H8; Le superfici a contatto debbono essere preventivamente sgrassate in modo perfetto.

Deve essere curato l'allineamento tra il riduttore e l'albero da comandare, soprattutto nel caso di riduttori con uscita femmina scanalata che, ricordiamo, non accettano carichi esterni; Per il fissaggio devono essere impiegate viti di classe minimo 10.9 con serraggio al 75% dello snervamento.

Durante il montaggio debbono essere assolutamente evitati urti assiali violenti che potrebbero danneggiare i cuscinetti interni. Gli organi di comando da calettare sull'albero cilindrico in uscita devono essere lavorati come da indicazioni riportate nel capitolo: "Configurazioni uscite".

Quindi nel collegamento tra riduttore e motore si consiglia l'utilizzo di giunti in grado di recuperare disallineamento, mentre se si utilizzano organi meccanici non in grado di recuperare disallineamento, all'atto del montaggio porre molta attenzione all'allineamento fra riduttore e motore.

15. INSTALLATION

The gear units must be carefully installed by suitably trained technical personnel.

Preparation for operation must occur according to all technical information contained in relevant documents.

The structures to which they are fixed must be rigid, with perfectly flat machined unpainted support surfaces, normal with driven shaft, and with centerings to tolerance H8.

The contact surfaces must be duly and perfectly greased.

The unit must be carefully aligned with the driven shaft, especially with gear units with female splined output shaft which, it must be remembered, do not take external loads.

For fixing, use screws of class min. 10.9 with tightening at 75% yielding.

During assembly, violent axial impacts must absolutely be avoided since they could damage the internal bearings. The control parts to be fitted on the cylindrical output shaft must be worked according to the specifications given in the chapter: "Output configurations".

We are therefore recommending to use couplings that can recover misalignment when connecting gearbox and motor. In case of use of mechanical components that do not allow misalignment recovering, please pay special care to the alignment between gearbox and motor during assembling operations.

15. INSTALLATION

Die Installation der Getriebe muss sorgfältig und professionell durch technisch ausgebildete Fachkräfte ausgeführt werden.

Die Vorbereitung zur Inbetriebnahme muss entsprechend gemäß allen technischen Angaben der spezifischen Unterlagen.

Sie dürfen nur an starren Strukturen befestigt werden mit ebenen maschinenbearbeiteten unlackierten Auflageflächen, gewöhnlich an der angetriebenen Achse und mit Zentrieransätzen mit Toleranz H8;

Die Kontaktflächen müssen zuvor sorgfältig entfettet werden.

Die Ausrichtung zwischen Getriebe und angetriebener Welle ist äußerst sorgfältig vorzunehmen, besonders bei Hohlwellen mit Keilnut, die, wie bekannt ist, keinen externen Belastungen ausgesetzt werden dürfen;

Für die Befestigung sind Schrauben mit Mindestklasse 10.9 und Anziehmoment von 75% der Streckgrenze zu verwenden.

Bei der Montage sind unbedingt heftige Stöße gegen die Achsen zu vermeiden, durch die die inneren Lager beschädigt werden können.

Die Organe, die auf die zylindrische Abtriebswelle aufgezogen werden, müssen entsprechend den Anweisungen im Kapitel: "Konfigurationen Abtriebe" bearbeitet werden.

Wir empfehlen Motor und Getriebe durch Kupplungen zu verbinden, die die Fluchtabweichung aufheben können. Falls mechanische Teile ohne Beseitigung der Fluchtabweichung verwendet werden, muss bei der Montage die Ausrichtung zwischen Getriebe und Motor beachtet werden.

15. INSTALLATION

L'installation des réducteurs doit être effectuée par un professionnel qualifié et expressément habilité à réaliser cette opération.

La prédisposition au fonctionnement doit se faire en suivant toutes les indications techniques contenues dans les documents correspondants.

Les structures auxquelles sont fixés les réducteurs doivent être rigides, présentés des surfaces ou portées usinées parfaitement plane et nues (sans peinture), normales à l'arbre entraîné et des centrages avec une tolérance H8;

Les surfaces de contact doivent être préalablement dégraissées minutieusement.

Il faut prêter une attention particulière à l'alignement entre le réducteur et l'arbre à commander, notamment dans le cas de réducteurs avec sortie femelle cannelée qui, faut-il le rappeler, ne supportent pas de charges externes; Pour la fixation, il faut impérativement utiliser des vis de classe 10.9 minimum serrées à 75% de la limite d'élasticité.

Lors du montage, il faut absolument éviter tous chocs axiaux violents qui pourraient endommager les roulements internes.

Les organes de commande à assembler sur l'arbre cylindrique en sortie doivent être usinés en respectant les prescriptions indiquées dans le chapitre : "Configurations des sorties".

Pour le raccordement entre le réducteur et le moteur, on conseille donc d'utiliser des joints en mesure de récupérer le désalignement, alors que si on utilise des organes mécaniques pas en mesure de récupérer le désalignement, au moment du montage faire très attention à l'alignement entre le réducteur et le moteur.

15. INSTALACIÓN

Los reductores deben ser instalados por técnicos profesionales competentes y expertos.

Al prepararlos para funcionar es preciso respetar todas las indicaciones técnicas contenidas en los relativos documentos. Fijar el reductor en estructuras rígidas con superficies de apoyo mecanizadas muy planas y sin barnizar, perpendiculares al eje accionado (tolerancia de centrado H8);

Antes de comenzar hay que desengrasar cuidadosamente las superficies de contacto.

Mantener el reductor bien alineado al eje sobre todo si la salida hembra es acanalada porque, como se recordará, estas salidas no aceptan cargas externas.

Los tornillos de fijación deben ser como mínimo de 10.9 y estar apretados al 75%.

Durante el montaje hay que evitar los choques axiales violentos porque pueden dañar los rodamientos interiores.

Los órganos de mando que se ensamblan en el eje cilíndrico de salida deben estar mecanizados como se describe en el capítulo "Configuración de las salidas".

Por ello, en la conexión entre el reductor y el motor se recomienda el uso de uniones capaces de recuperar desalineaciones, mientras que si se usan órganos mecánicos que no sean capaces de recuperar desalineaciones, durante el montaje prestar mucha atención a la alineación entre el reductor y el motor.

15. INSTALAÇÃO

A instalação dos redutores deve ser realizada com cuidado e profissionalismo, empregando pessoal instruído de forma adequada e tecnicamente preparado.

A predisposição para o funcionamento deve ser efetuada respeitando todas as indicações técnicas contidas nos relativos documentos.

As estruturas às quais serão fixados devem ser rígidas, com superfícies de apoio acabadas a máquina, bem planas e isentas de tinta, perpendiculares ao eixo accionado e com centragens de tolerância H8;

As superfícies de contato devem ser desengraxadas preventivamente de modo perfeito.

O alinhamento entre o redutor e o eixo a ser operado deve ser observado, sobretudo no caso de redutores com saída fêmea ranhurada que, lembramos, não aceitam cargas externas; Para a fixação devem ser empregados parafusos com classe mínima de 10.9 com aperto até 75% do limite elástico.

Durante a montagem devem ser absolutamente evitados os impactos axiais violentos que podem danificar os coxins internos.

Os órgãos de comando a serem alinhados ao eixo cilíndrico na saída devem ser trabalhados como indicado no capítulo: "Configurações de saída".

Portanto, na ligação entre o redutor e o motor, aconselha-se a utilizar um acoplamento que consiga compensar o desalinhamento. Por outro lado, se forem utilizados órgãos mecânicos não capazes de compensar o desalinhamento, na altura da montagem será preciso prestar muita atenção ao alinhamento entre o redutor e o motor.

16. BRACCIO DI REAZIONE

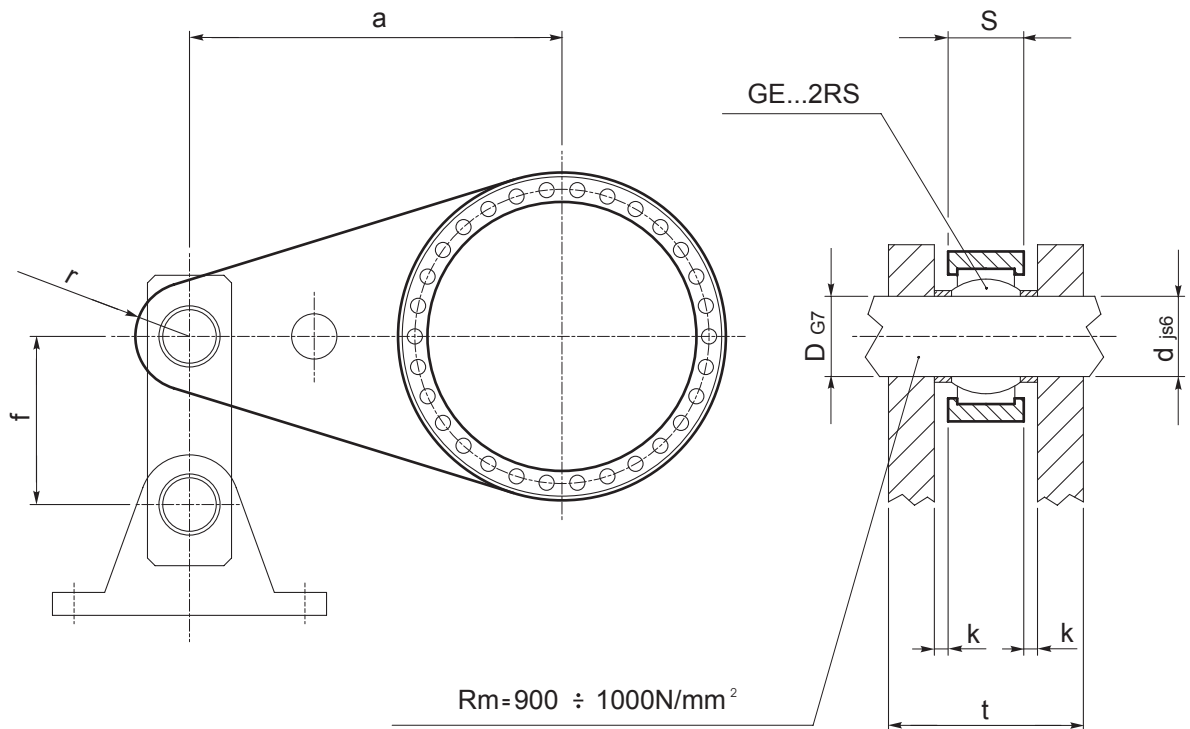
INDICAZIONI PER LA COSTRUZIONE E ANCORAGGIO DEL BRACCIO DI REAZIONE

16. TORQUE ARM

INSTRUCTIONS FOR TORQUE ARM CONSTRUCTION AND ANCHORING

16. SCHUBSTREBE

ANWEISUNGEN FÜR DEN BAU UND DIE MONTAGE DER SCHUBSTREBE



| | a min [mm] | s [mm] | r min [mm] | f min [mm] | GE...2RS | D d [mm] | k [mm] | t min [mm] |
|---------|------------|--------|------------|------------|----------|----------|--------|------------|
| 010 | 200 | 15 | 20 | 80 | 20 | 20 | 2 | 35 |
| 020 | 300 | 15 | 20 | 80 | 20 | 20 | 2 | 35 |
| 030-045 | 300 | 20 | 25 | 100 | 25 | 25 | 3 | 46 |
| 065 | 400 | 20 | 25 | 100 | 25 | 25 | 3 | 46 |
| 090 | 500 | 25 | 30 | 150 | 30 | 30 | 3 | 55 |
| 150 | 600 | 25 | 30 | 150 | 30 | 30 | 3 | 55 |
| 250 | 700 | 30 | 35 | 150 | 35 | 35 | 4 | 66 |

16. BRAS DE RÉACTION

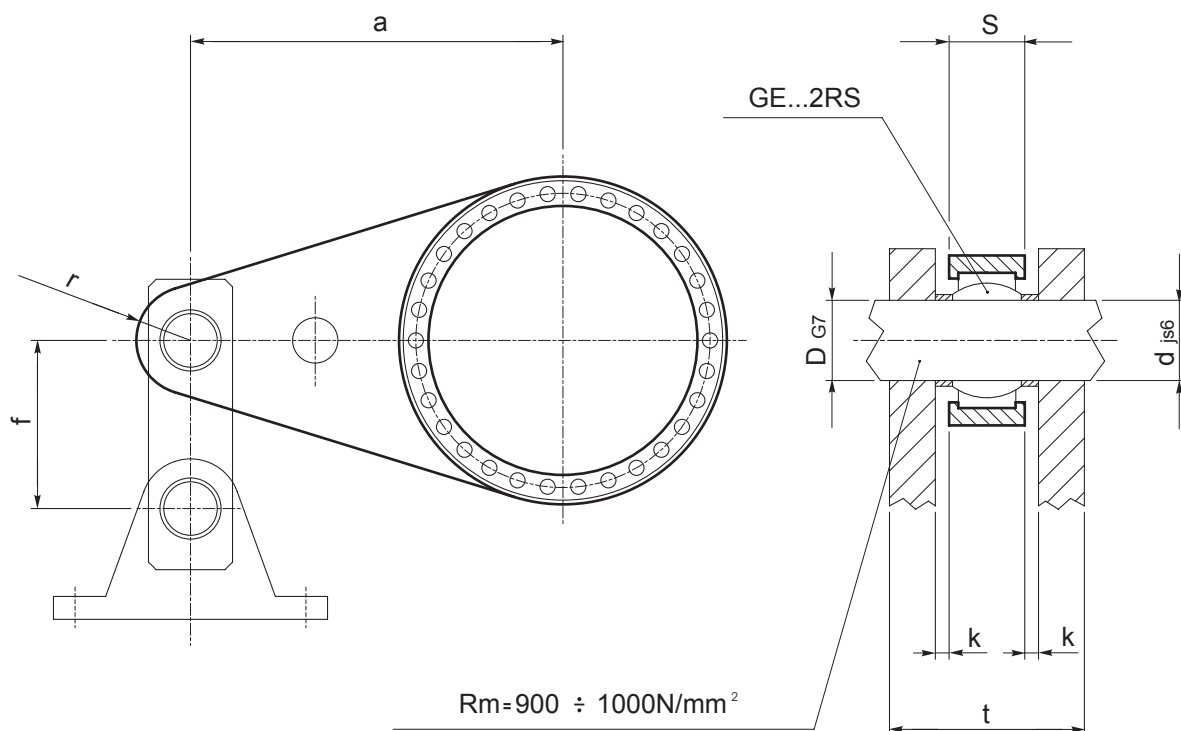
INSTRUCTIONS POUR LA CONSTRUCTION ET L'ANCRAGE DU BRAS DE REACTION

16. BRAZO DE REACCIÓN

INDICACIONES PARA FABRICAR Y ANCLAR EL BRAZO DE REACCIÓN

16. BRAÇO DE TORÇÃO

INDICAÇÕES PARA A CONSTRUÇÃO E ANCORAGEM DO BRAÇO DE TORÇÃO



| | a min [mm] | s [mm] | r min [mm] | f min [mm] | GE...2RS | D d [mm] | k [mm] | t min [mm] |
|---------|------------|--------|------------|------------|----------|----------|--------|------------|
| 010 | 200 | 15 | 20 | 80 | 20 | 20 | 2 | 35 |
| 020 | 300 | 15 | 20 | 80 | 20 | 20 | 2 | 35 |
| 030-045 | 300 | 20 | 25 | 100 | 25 | 25 | 3 | 46 |
| 065 | 400 | 20 | 25 | 100 | 25 | 25 | 3 | 46 |
| 090 | 500 | 25 | 30 | 150 | 30 | 30 | 3 | 55 |
| 150 | 600 | 25 | 30 | 150 | 30 | 30 | 3 | 55 |
| 250 | 700 | 30 | 35 | 150 | 35 | 35 | 4 | 66 |

17. LUBRIFICAZIONE

I riduttori Brevini vengono forniti privi di lubrificante; l'utilizzatore è tenuto ad effettuare il corretto riempimento prima della messa in moto della macchina.

Caratteristiche fondamentali degli oli

I parametri importanti da considerare quando si sceglie il tipo di olio sono:

- la viscosità alle condizioni nominali di funzionamento
- gli additivi

Lo stesso olio, deve lubrificare sia i cuscinetti che gli ingranaggi e tutti questi componenti convivono all'interno della stessa scatola, in condizioni di funzionamento diverse. Consideriamo i singoli parametri.

Viscosità

La viscosità nominale è riferita ad una temperatura di 40 °C, ma diminuisce velocemente all'aumentare della temperatura. Se la temperatura di funzionamento è compresa tra 50 °C e 70 °C, si può scegliere una viscosità nominale secondo la seguente tabella indicativa, scegliendo la viscosità più elevata quando si prevede la temperatura più alta.

| n_2 [rpm] | 50° C | 70° C |
|----------------|---------------|---------------|
| $n_2 > 20$ | VG 150 | VG 220 |
| $20 > n_2 > 5$ | VG 220 | VG 320 |
| $n_2 > 5$ | VG 320 | VG 460 |

Particolare attenzione bisogna fare agli stadi in uscita molto caricati e con velocità molto basse (<1 giro/min). In questi casi bisogna ricorrere sempre ad oli con viscosità elevata e con una buona carica di additivazione Extreme Pressure (EP).

Additivi

Oltre ai normali additivi antischiuma ed antiossidanti, è importante utilizzare oli lubrificanti con additivi in grado di conferire proprietà EP (extremepressure) ed anti-usura, secondo ISO 6743-6 L-CKC o DIN 51517-3 CLP. Chiaramente quindi occorre ricercare prodotti con caratteristiche EP tanto più forti (tipo MOBILGEAR SHC) quanto più lenta è la velocità del riduttore. È opportuno ricordare che, i composti chimici sostitutivi della lubrificazione idrodinamica, si formano a scapito della carica EP originale. Quindi, in presenza di velocità molto basse e carichi elevati, è importante rispettare gli intervalli di manutenzione per non deprimere eccessivamente le caratteristiche lubrificanti dell'olio.

17. LUBRICATION

Brevini gear units are supplied without lubricant; therefore the user must carry out correct filling before starting the machine.

Fundamental characteristics of the oils

The important parameters to consider when choosing the type of oil are:

- viscosity at nominal operating conditions
- additives

The oil must lubricate the bearings and the gears and all these components work inside the same box, in different operating conditions. We will consider the individual parameters.

Viscosity

Nominal viscosity is referred to a temperature of 40 °C, but rapidly decreases with an increase in temperature. If the operating temperature is between 50 °C and 70 °C, a nominal viscosity can be chosen according to the following guide table, choosing the highest viscosity if the highest temperature is foreseen.

17. SCHMIERUNG

Die Brevini - Getriebe werden ohne Schmieröl geliefert; der Benutzer muss dieselben vor der Inbetriebnahme der Maschine mit der vorschrittmäßigen Schmierölmenge füllen.

Grundlegende schmieröleigenschaften

Bei der Schmierölauswahl sind die folgenden wichtige Parameter zu berücksichtigen:

- Viskosität bei Nennbetriebsbedingungen
- Additive

Dasselbe Öl muss sowohl Lager wie auch Zahnräder schmieren und diese Bauteile funktionieren zusammen in demselben Gehäuse unter unterschiedlichen Betriebsbedingungen. Nachfolgend werden die einzelnen Parameter kurz beschrieben.

Viskosität

Die Nennviskosität bezieht sich auf eine Temperatur von 40 °C und nimmt mit der Zunahme der Temperatur rasch ab. Liegt die Betriebstemperatur zwischen 50 °C und 70 °C, kann eine Nennviskosität laut folgender Tabelle gewählt werden, wobei bei sehr hoher Temperatur die höchste Viskosität zu wählen ist.

Special attention must be paid to very loaded output stages and with very low speeds (<1 rpm). In such cases, always use high viscosity oils and with a good amount of Extreme Pressure (EP) additive.

Additives

In addition to the normal antifoaming and antioxidant additives, it is important to use lubricating oils with additives that provide EP (extremepressure) and antiwear properties, according to ISO 6743-6 L-CKC or DIN 51517-3 CLP. Therefore it will be necessary to find products with EP characteristics all the stronger (type MOBILGEAR SHC) the slower the gear unit speed. It should be remembered that the chemical compounds replacing hydrodynamic lubrication are formed to the detriment of the original EP load. Therefore, with very low speeds and high loads it is important to respect the maintenance periods so as not to excessively diminish the lubricating characteristics of the oil.

Besonders vorsichtig muss man bei Abtriebsstufen unter hohen Lasten und mit niedriger Drehzahl (<1 U/min) sein. In diesen Fällen muss immer Schmieröl mit hoher Viskosität und einer ausreichenden Menge an E.P. Additiven eingesetzt werden.

Additive

Neben den normalen Entschäumern und Oxidationshemmern müssen Schmieröle E.P. Additive (Extrem-Pressure) und verschleißhemmende Wirkstoffe laut ISO 6743-6 L-CKC oder DIN 51517-3 CLP enthalten. Es ist offensichtlich, dass dabei Produkte mit E.P. Eigenschaften (Typ MOBILGEAR SHC) zu wählen sind, die um so ausgeprägter sein müssen, je langsamer die Getriebedrehzahl ist. Es wird daran erinnert, dass sich die chemischen Substitutionsverbindungen der hydrodynamischen Schmierung zu Lasten des ursprünglichen EP-Gehalts bilden. Es ist daher bei sehr niedrigen Drehzahlen und hohen Belastungen sehr wichtig, dass die Wartungszeiträume zur Vermeidung einer übermäßigen Verschlechterung der Schmieröleigenschaften genau eingehalten werden.

17. LUBRIFICATION

Les réducteurs Brevini sont livrés sans lubrifiant; Il incombe à l'utilisateur d'effectuer le remplissage correct avant la mise en service de la machine.

Caractéristiques fondamentales des lubrifiants

Les paramètres importants à considérer lors du choix du type de lubrifiant sont:

- la viscosité aux conditions nominales de fonctionnement
- les additifs ou dopes

La même huile doit pouvoir correctement lubrifier tant les roulements et que les engrenages et tous les composants renfermés dans le carter dans des conditions d'emploi différentes. Considérons à présent chacun des facteurs intervenant ici.

Viscosité

La viscosité nominale se rapporte à une température de 40 °C, mais elle diminue rapidement lorsque la température du réducteur s'élève. Si la température de fonctionnement est comprise entre 50 °C et 70 °C, il sera alors possible de choisir une viscosité nominale selon le tableau suivant, en choisissant la viscosité la plus élevée lorsque l'on prévoit la température d'emploi la plus élevée.

| n_2 [rpm] | 50° C | 70° C |
|----------------|---------------|---------------|
| $n_2 > 20$ | VG 150 | VG 220 |
| $20 > n_2 > 5$ | VG 220 | VG 320 |
| $n_2 > 5$ | VG 320 | VG 460 |

Il faut prêter une attention particulière aux étages en sortie très chargés et avec des vitesses très basses (<1 tr/min). Dans ces cas, il faut toujours recourir à des huiles avec une viscosité élevée et dopées EP extrême pression.

Additifs ou dopes

En plus des additifs antimousse et anti-corrosion normaux, il est important d'utiliser d'autres huiles activées ou dopées [EP (extreme-pressure) et antiusure], selon la classification ISO 6743-6 L-CKC ou DIN 51517-3 CLP. Il est donc évident qu'il faut rechercher des produits dont les caractéristiques EP seront d'autant plus fortes (type MOBILGEAR SHC) que la vitesse de rotation du réducteur sera lente. Il est opportun de rappeler que: les composés chimiques de remplacement de la lubrification hydrodynamique se forment au détriment de la charge EP originale. En conséquence, dans le cas de vitesses très basses et de charges élevées, il est important de respecter les intervalles d'entretien pour éviter que les propriétés lubrifiantes de l'huile dégénèrent.

17. LUBRICACIÓN

Los reductores Brevini se entregan sin lubricante; el usuario debe rellenar el reductor antes de ponerlo en funcionamiento.

Características fundamentales de los aceites

Los parámetros importantes a la hora de elegir un aceite son:

- la viscosidad en condiciones nominales de funcionamiento
- los aditivos.

El mismo aceite debe lubricar a los cojinetes y a los engranajes. Estos componentes coexisten dentro de la misma carcasa en condiciones de funcionamiento diferentes. Examinemos cada factor por separado.

Viscosidad

La viscosidad nominal se mide por convención a 40 °C pero baja rápidamente si aumenta la temperatura. Si la temperatura de funcionamiento está entre 50 y 70 °C se puede elegir una viscosidad nominal en la siguiente tabla. Si existe la posibilidad de que la temperatura suba hay que elegir una viscosidad más alta.

17. LUBRIFICAÇÃO

Os redutores Brevini são fornecidos sem lubrificante; o usuário deve efetuar o abastecimento correto antes da colocação da máquina em funcionamento.

Características fundamentais dos óleos

Os parâmetros importantes a serem considerados ao escolher o tipo de óleo são:

- a viscosidade nas condições nominais de funcionamento
- os aditivos

O próprio óleo, que deve lubrificar seja os coxins, seja as engrenagens e todos os componentes que convivem dentro da mesma caixa, em condições de funcionamento diferentes. Consideremos os parâmetros individuais.

Viscosidade

A viscosidade nominal refere-se a uma temperatura de 40 °C, mas diminui rapidamente com o aumento da temperatura. Se a temperatura de funcionamento estiver entre 50 °C e 70 °C, será possível escolher uma viscosidade nominal conforme a seguinte tabela indicativa, escolhendo-se a viscosidade mais elevada quando for prevista a temperatura mais elevada.

Cuando la velocidad de rotación de salida es muy baja (<1 rpm) y la carga es muy grande hay que prestar mucha atención. En estos casos se debe recurrir a aceites con alta viscosidad y alto contenido de aditivos Extreme Pressure (EP).

Aditivos

Además de los agentes antiespuma y antioxidantes convencionales, es importante que los aditivos añadan al lubricante propiedades EP (presión extrema) y antidesgaste, con arreglo a las normas ISO 6743-6 L-CKC o DIN 51517-3 CLP. Las características EP deben ser más marcadas cuanto más lenta es la velocidad del reductor. Recuerde que: los compuestos químicos que reemplazan a la lubricación hidrodinámica se forman a expensas de la carga EP original. Por tanto, si las velocidades son muy bajas y las cargas muy altas hay que respetar el programa de mantenimiento para que el aceite no se degrade demasiado.

Deve-se prestar atenção especial aos estágios de saída muito carregados e com velocidades muito baixas (<1 rotação/min). Nesses casos será necessário recorrer sempre a óleos com viscosidade elevada e com uma boa carga de aditivos do tipo Extreme Pressure (EP).

Aditivos

Além dos aditivos normais antiespuma e antioxidante, é importante utilizar óleos lubrificantes com aditivos capazes de conferir propriedades EP (extrema pressão) e anti-desgaste, conforme as normas ISO 6743-6 LCKC ou DIN 51517-3 CLP. É necessário, portanto, procurar produtos com características EP tanto mais fortes (tipo MOBILGEAR SHC) quanto mais lenta for a velocidade do reductor. É oportuno lembrar que os compostos químicos substitutivos da lubrificação hidrodinâmica formam-se em detrimento da carga EP original. Dessa forma, na presença de velocidades muito baixas e cargas elevadas, será importante respeitar os intervalos de manutenção para não deteriorar excessivamente as características lubrificantes do óleo.

Tipi di oli

Gli oli disponibili appartengono generalmente a tre grandi famiglie.

- 1) Oli minerali
- 2) Oli sintetici Poli-Alfa-Olefine
- 3) Oli sintetici Poli-Glicole

La scelta più appropriata è generalmente legata alle condizioni di impiego.

I riduttori non particolarmente caricati e con un ciclo di impiego discontinuo senza escursioni termiche importanti, possono certamente essere lubrificati con olio minerale.

Nei casi di impiego gravoso, quando i riduttori saranno prevedibilmente caricati molto ed in modo continuativo, con conseguente prevedibile innalzamento della temperatura, è bene utilizzare lubrificanti sintetici tipo polialfaolefine (PAO).

Gli oli di tipo poliglicole (PG) sono da utilizzare strettamente nel caso di applicazioni con forti strisciamenti fra i contatti, ad esempio nelle viti senza fine. Debbono essere impiegati con grande attenzione poiché non sono compatibili con gli altri oli e sono invece completamente miscibili con l'acqua. Questo fenomeno è particolarmente pericoloso poiché non si nota, ma deprime velocemente le caratteristiche lubrificanti dell'olio.

Oltre a questi già menzionati, ricordiamo che esistono gli oli idraulici e gli oli per l'industria alimentare.

I primi vengono usati per il comando dei freni negativi. Per una maggiore tutela dell'ambiente sottolineiamo l'esistenza di alcuni tipi biodegradabili.

I secondi trovano specifico impiego nell'industria alimentare in quanto sono prodotti speciali non nocivi alla salute.

Vari produttori forniscono oli appartenenti a tutte le famiglie con caratteristiche molto simili. Più avanti proponiamo una tabella comparativa tra le marche più note.

Types of oils

The oils available generally belong to three big families.

- 1) Mineral oils
- 2) Poly-Alpha-Olefin synthetic oils
- 3) Poly-Glycol synthetic oils

The most suitable choice is generally tied to the conditions of use.

Gear units that are not particularly loaded and with a discontinuous operating cycle, without considerable temperature ranges, can certainly be lubricated with mineral oil.

In cases of heavy use, when the gear units are very loaded and in a continuous way, with resultant temperature increase, it is best to use polyalphaolefin synthetic lubricants (PAO).

Polyglycol oils (PG) are to be used strictly in the case of applications with heavy sliding between contacts, e.g. in worms. They must be employed with great care since they are not compatible with the other oils but are completely mixable with water. This phenomenon is particularly dangerous, since it is not noticed, but rapidly diminishes the lubricating characteristics of the oil.

In addition to the above, there are also hydraulic oils and oils for the food industry.

The former are used for the command of negative brakes. For better environmental protection there are several biodegradable types.

The latter have a specific use in the food industry since they are special products that are not harmful to the health.

Various producers supply oils belonging to all the families with very similar characteristics. A comparison table of the best known brands is given later on.

Schmierösorten

Die verfügbaren Ösorten gehören allgemein zu drei großen Familien

- 1) Mineralöle
- 2) Synthetische Poly-Alpha-Olefin-Öle
- 3) Synthetische Polyglykolöle

Die Auswahl hängt im Allgemeinen von den Einsatzbedingungen ab.

Getriebe, die nicht im Dauerbetrieb laufen und keinen großen Belastungen und großen Temperaturschwankungen ausgesetzt sind, können problemlos mit Mineralölen geschmiert werden.

Bei Einsatz unter erschwerten Bedingungen, bei denen die Getriebe voraussichtlich hohen Lasten im Dauerbetrieb mit der entsprechenden voraussehbaren Temperaturerhöhung ausgesetzt sind, ist es angebracht, synthetische Poly-Alpha-Olefin-Öle (PAO) zu verwenden.

Die Poly-Glykolöle (PG) werden in Anwendungen benutzt, in denen starke Gleitreibungen zwischen den Kontaktflächen auftreten, wie z. B. in Schnecken. Bei ihrer Anwendung ist sehr sorgfältig vorzugehen, da sie mit anderen Schmierölen unverträglich, aber voll mit Wasser vermischtbar sind. Das ist besonders gefährlich, weil es unbemerkt erfolgt und sehr schnell die Schmiereigenschaften des Öls verschlechtert.

Neben den erwähnten Ölen gibt es noch Hydrauliköl und Öle für die Lebensmittelindustrie.

Die ersteren werden auf Negativbremsen eingesetzt. Zum Umweltschutz weisen wir auf einige biologisch abbaubare Ösorten hin.

Die zweiten werden von der Lebensmittelindustrie verwendet, da sie nicht gesundheitsschädlich sind.

Einige Hersteller liefern Schmieröle, die allen Familien mit sehr ähnlichen Merkmalen angehören. An anderer Stelle finden Sie eine Vergleichstabelle der bekanntesten Ölmarken.

Types des huiles

Les huiles disponibles appartiennent généralement à trois grandes familles.

- 1) Huiles minérales
 - 2) Huiles synthétiques polyalphaoléfinés (PAO)
 - 3) Huiles synthétiques polyglycoles (PG)
- Le choix le plus adapté est généralement lié aux conditions d'emploi.

Les réducteurs assez peu chargés et avec un cycle de fonctionnement discontinu, sans variations de température importantes, peuvent certainement être lubrifiés à l'huile minérale.

Dans des conditions d'utilisation sévères, à savoir lorsque les engrenages sont très chargés et de manière continue, avec comme probable conséquence l'élévation de température, il convient d'utiliser des lubrifiants synthétiques type polyalphaoléfine (PAO). Les huiles de type polyglycoles (PG) conviennent particulièrement aux applications présentant d'importants frottements aux points de contact, comme par exemple dans les vis sans fin. Elles doivent être employées avec beaucoup de précautions, puisqu'elles ne sont pas compatibles avec les autres huiles et sont par contre totalement miscibles avec l'eau. Ce phénomène est d'autant plus dangereux qu'il n'est pas visible et dégrade rapidement les qualités de l'huile.

En sus de ces types déjà mentionnés, il est bon de rappeler qu'il existe des huiles hydrauliques et des huiles pour l'industrie alimentaire.

Les premiers sont employés pour la commande des freins négatifs. Il est bon d'indiquer ici l'existence de certains types biodégradables qui préservent le milieu naturel.

Les seconds conviennent à l'industrie alimentaire, car il s'agit de produits spéciaux qui ne sont pas nuisibles à la santé.

Noter que différents fabricants fournissent des huiles appartenant à toutes les familles avec des caractéristiques très similaires. Plus en avant, vous trouverez un tableau de comparaison des marques les plus connues.

Tipos de aceites

Los aceites se agrupan en tres grandes familias.

- 1) Aceites minerales
- 2) Aceites sintéticos polialfaolefinas
- 3) Aceites sintéticos poliglicoles

El criterio de selección más adecuado toma en cuenta las condiciones de empleo.

Los reductores que no soportan una carga particularmente grande y se someten a ciclos de trabajo discontinuos sin variaciones icas significativas pueden utilizar un aceite mineral.

La carga de los reductores para usos severos suele ser muy grande y continua, por lo que la temperatura tiende a subir. En estos casos se recomienda utilizar polialfaolefinas (PAO).

Los poliglicoles (PG) se deben utilizar solamente cuando el rozamiento es intenso, como por ejemplo en los tornillos sin fin. Hay que manejarlos con precaución porque son completamente solubles en agua pero también incompatibles con otros aceites. Este fenómeno es imperceptible pero muy peligroso porque degrada rápidamente al lubricante.

Además de los mencionados, existen aceites hidráulicos y aceites especiales para la industria alimentaria.

Los primeros se utilizan para los frenos negativos. Los biodegradables contribuyen a proteger el medioambiente.

Los segundos se emplean en la industria de la alimentación porque no son nocivos para la salud.

Existen varios fabricantes que disponen de aceites con características similares en cada una de las familias. Más adelante se incluye una tabla comparativa de las marcas más conocidas.

Tipos de óleo

Os óleos disponíveis pertencem geralmente a três grandes famílias.

- 1) Óleos minerais
- 2) Óleos sintéticos polialfaolefinas
- 3) Óleos sintéticos poliglicóis

A escolha mais apropriada é geralmente ligada às condições de emprego.

Os redutores não particularmente sujeitos a cargas elevadas e com um ciclo de trabalho descontínuo sem amplitudes térmicas relevantes podem certamente ser lubrificados com óleo mineral.

Nos casos de emprego rigoroso, quando os redutores forem provavelmente sujeitos a cargas muito elevadas e de modo contínuo, com o consequente e previsível aumento da temperatura, será melhor utilizar lubrificantes sintéticos do tipo polialfaolefinas (PAO). Os óleos de tipo poliglicóis (PG) devem ser utilizados especificamente no caso de aplicações com forte atrito entre os contatos, por exemplo, nos parafusos sem fim. Devem ser empregados com muita atenção porque não são compatíveis com os outros óleos e são, ao contrário, completamente misturáveis com a água. Esse fenômeno é particularmente perigoso porque não é observado, mas reduz rapidamente as características lubrificantes do óleo.

Além desses já mencionados, lembramos que existem os óleos hidráulicos e os óleos para a indústria alimentícia.

Os primeiros são usados para o comando dos freios negativos. Para uma maior proteção do meio ambiente, ressaltamos a existência de alguns tipos biodegradáveis.

Os últimos encontram emprego específico na indústria alimentícia pois são produtos especiais não nocivos à saúde.

Vários produtores fornecem óleos pertencentes a todas as famílias com características muito semelhantes. Mais adiante propomos uma tabela comparativa entre as marcas mais conhecidas.

Contaminazione

Durante il normale funzionamento, a causa del rodaggio delle superfici, è inevitabile che si trasferiscano nell'olio delle microparticelle metalliche. Questa contaminazione, può accorciare la vita dei cuscinetti, mandando in avaria prematura il riduttore. Per limitare e controllare il fenomeno, senza ricorrere a frequenti e costosi cambi d'olio, occorre prevedere l'impiego di un opportuno sistema ausiliario di circolazione dell'olio.

Con questo sistema, si ottiene il doppio vantaggio di controllare il livello di contaminazione con l'impiego di appositi filtri e di stabilizzare la temperatura di funzionamento al livello più adeguato per garantire la viscosità voluta. Infatti, può succedere che la capacità termica specifica del riduttore è insufficiente a garantire un livello di temperatura di funzionamento corretto e stabile. Vedremo più avanti i sistemi ausiliari disponibili presso la Brevini Riduttori.

Per problemi di lubrificazione di riduttori destinati a impieghi particolari sia per la tipologia costruttiva, sia per i parametri di funzionamento, è consigliabile contattare il servizio Tecnico-Commerciale Brevini.

A questo proposito ricordiamo che la Brevini Riduttori si avvale di un accordo tecnico con la Exxon Mobil in base al quale si può avere sia una consulenza preventiva mirata all'applicazione, sia il monitoraggio di applicazioni lubrificate con prodotti MOBIL.

Contamination

During normal operation, due to running-in of the surfaces, metallic microparticles will inevitably form in the oil. This contamination can shorten the life of the bearings, resulting in early breakdown of the gear unit. To limit and control this phenomenon, without resorting to frequent and costly oil changes, a suitable auxiliary oil circulating system must be provided.

This system offers the dual advantage of controlling the level of contamination with the use of special filters and stabilizing the operating temperature at a level more suitable for guaranteeing the required viscosity. In fact, the specific thermal capacity of the gear unit is sometimes insufficient to ensure a correct and stable operating temperature level. The auxiliary systems available from Brevini Riduttori will be described later on.

For lubrication problems with gear units intended for particular uses, for construction type and operating parameters, it is advisable to contact the Brevini Technical Commercial service.

In this respect, Brevini Riduttori has a technical agreement with Exxon Mobil for having preventive advice for the specific application, and the monitoring of applications lubricated with MOBIL products.

Verschmutzung

Während des normalen Betriebs entstehen durch den Abrieb der Oberflächen Mikrometallpartikel im Öl. Diese Verschmutzung kann die Lebensdauer der Lager verkürzen und zu einem Ausfall des Getriebes führen. Zur Einschränkung dieser Erscheinung ohne häufigen und kostspieligen Ölwechsel ist der Einbau einer zusätzlichen Filteranlage des Schmieröls empfehlenswert.

Diese Anlage bietet den doppelten Vorteil, einerseits den Grad der Ölverschmutzung zu reduzieren und andererseits die Betriebstemperatur auf einer für die gewünschte Viskosität geeigneten Temperaturstufe zu stabilisieren. Es kann mitunter der Fall eintreten, dass die spezifische Wärmeleistung des Getriebes nicht ausreicht, eine korrekte und stabile Stufe der Betriebstemperatur zu gewährleisten. An anderer Stelle werden die bei Brevini Riduttori verfügbaren Hilfssysteme beschrieben.

Wenden Sie sich bei Schmierproblemen von Getrieben, die sowohl bauseitig wie auch aufgrund der Betriebsparameter für besondere Anwendungen vorgesehen sind, direkt an die technische Verkaufsbearbeitung Brevini.

In diesem Zusammenhang dürfen wir erwähnen, dass Brevini Riduttori eine technische Vereinbarung mit Exxon Mobil abgeschlossen hat, die Ihnen eine gezielte Anwendungsberatung wie auch die Überwachung von Schmieranwendungen mit Produkten MOBIL ermöglicht.

Contamination

Pendant le fonctionnement normal, à cause du rodage des surfaces, il est inévitable que des microparticules métalliques se transfèrent dans l'huile. Cette contamination peut diminuer la durée de vie des roulements et entraîner la défaillance prématurée du réducteur. Pour limiter et contrôler le phénomène, sans toutefois recourir à des renouvellements d'huile fréquents et onéreux, il faut prévoir l'emploi d'un système auxiliaire de circulation de l'huile.

Ce système présente le double avantage de pouvoir contrôler le niveau de contamination à l'aide de filtres spécifiques et de pouvoir stabiliser la température de fonctionnement au niveau le plus adapté pour garantir la viscosité voulue. En fait, il se peut que la puissance thermique spécifique du réducteur soit insuffisante à garantir un degré de température de fonctionnement correct et stable. Nous donnerons plus en avant les systèmes auxiliaires disponibles chez Brevini Riduttori.

Pour les problèmes de lubrification des réducteurs destinés à des applications particulières, tant pour le type de construction que pour les paramètres de fonctionnement, il est préférable de prendre contact avec le service technico-commercial Brevini.

A ce propos, il est bon de rappeler que Brevini Riduttori a conclu un accord technique avec Exxon Mobil pour permettre d'offrir un service à la fois de consultation préventive visée à l'application et de suivi (monitorage) d'applications lubrifiées avec des produits MOBIL.

Contaminación

El rodaje de las superficies durante el funcionamiento normal hace que las micropartículas metálicas migren inevitablemente hacia el aceite. Este tipo de contaminación acorta la vida de los rodamientos y puede determinar una avería prematura del reductor. Para limitar el fenómeno, en lugar de recurrir a frecuentes y costosos cambios de aceite hay que instalar un circuito auxiliar de circulación.

Esta solución tiene dos ventajas: los filtros reducen la contaminación y la temperatura de funcionamiento se estabiliza en un valor que asegura la viscosidad necesaria. Puede suceder que la capacidad térmica específica del reductor no alcance a garantizar una temperatura de funcionamiento adecuada y estable. Más adelante se suministra la lista de sistemas auxiliares de la gama Brevini Riduttori.

Para resolver cualquier problema relacionado con la lubricación de reductores para usos especiales (construcción del circuito, ajuste, etc.) se aconseja contactar con el servicio técnico de Brevini Riduttori.

Se recuerda que Brevini Riduttori ha estipulado un acuerdo técnico con Exxon Mobil en virtud del cual el cliente puede adquirir asesoramiento para la futura aplicación o bien un servicio de monitoreo de las aplicaciones lubricadas con productos Mobil.

Contaminação

Durante a operação normal, em função da lapidação das superfícies, é inevitável a transferência de micropartículas metálicas para a água. Essa contaminação pode reduzir a vida útil dos coxins, provocando a avaria prematura do redutor. Para limitar e controlar o fenômeno, sem recorrer a frequentes e custosas trocas de óleo, é necessário prever o emprego de um sistema auxiliar apropriado de circulação do óleo.

Com esse sistema se obtém uma dupla vantagem, de controlar o nível de contaminação com o emprego de filtros apropriados e estabilizar a temperatura de funcionamento ao nível mais adequado para garantir a viscosidade desejada. Efetivamente, a capacidade térmica específica do redutor pode ser insuficiente para garantir um nível de temperatura de funcionamento correto e estável. Veremos mais adiante os sistemas auxiliares disponíveis junto à Brevini Riduttori.

Para problemas de lubrificação de reductores destinados a empregos particulares, seja pelo tipo construtivo, seja pelos parâmetros de funcionamento, é aconselhável entrar em contato com o Serviço Técnico Comercial da Brevini.

A esse propósito, lembramos que a Brevini Riduttori se vale de um acordo técnico com a Exxon Mobil com base no qual é possível haver uma consultoria preventiva dirigida à aplicação e o monitoramento de aplicações lubrificadas com produtos MOBIL.

Tabella oli lubrificanti per uso generale

Table of lubricant oils for general use

Tabelle der allaemein verwendeten Schmierole

Tableau des lubrifiants pour emoloi general

Tabla de aceites lubricantes para todos los usos

Tabela de óleos lubrificantes para uso geral

| Produttore Manufacturer Hersteller Marque Fabricante Produtor | Oli Minerali Mineral oils Mineralöle Huiles minérales Aceites minerales Óleos minerais | | | Oli Sintetici Polialfaolefine (PAO) Poly-Alpha-Olefin synthetic oils (PAO) Synthetische Poly-Alpha-Olefin-Öle (PAO) Huiles synthétiques polialphaoléfinas (PAO) Aceites sintéticos polialfaolefinas (PAO) Óleos sintéticos polialfaolefinas (PAO) | | | Oli Sintetici Poliglicoli (PG) Polyglycol synthetic oils (PG) Synthetische Polyglykölöle (PG) Huiles synthétiques polyglycoles (PG) Aceites sintéticos poliglicoles (PG) Óleos sintéticos poliglicóis (PAO) | | |
|--|---|--------------------------|--------------------------|--|--------------------------|--------------------------|--|----------------------|----------------------|
| | ISO VG 150 | ISO VG 220 | ISO VG 320 | ISO VG 150 | ISO VG 220 | ISO VG 320 | ISO VG 150 | ISO VG 220 | ISO VG 320 |
| ADDINOL | Transmission Oil CLP 150 | Transmission Oil CLP 220 | Transmission Oil CLP 320 | Eco Gear 150 S | Eco Gear 220 S | Eco Gear 320 S | Luboil RS 150 | Luboil RS 220 | - |
| AGIP | Blasia 150 | Blasia 220 | Blasia 320 | - | Blasia SX 220 | Blasia SX 320 | Blasia S 150 | Blasia S 220 | Blasia S 320 |
| ARAL | Degol BG 150 Plus | Degol BG 220 Plus | Degol BG 320 Plus | Degol PAS 150 | Degol PAS 220 | Degol PAS 320 | Degol GS 150 | Degol GS 220 | Degol GS 320 |
| BP | Energol GR-XP 150 | Energol GR-XP 220 | Energol GR-XP 320 | Energol EPX 150 | Energol EPX 220 | Energol EPX 320 | Energol SG 150 | Energol SG-XP 220 | Energol SG-XP 320 |
| CASTROL | Alpha SP 150 | Alpha SP 220 | Alpha SP 320 | Alphasyn EP 150 | Alphasyn EP 220 | Alphasyn EP 320 | Alphasyn PG 150 | Alphasyn PG 220 | Alphasyn PG 320 |
| CEPSA | Engranajes HP 150 | Engranajes HP 220 | Engranajes HP 320 | Engranajes HPX 150 | Engranajes HPX 220 | Engranajes HPX 320 | Engranajes HPS 150 | Engranajes HPS 220 | Engranajes HPS 320 |
| CHEVRON | Ultra Gear 150 | Ultra Gear 220 | Ultra Gear 320 | Tegra Synthetic Gear 150 | Tegra Synthetic Gear 220 | Tegra Synthetic Gear 320 | HiPerSYN 150 | HiPerSYN 220 | HiPerSYN 320 |
| DEA | Falcon 150 | Falcon 220 | Falcon 320 | Intor 150 | Intor 220 | Intor 320 | Polydea 150 | Polydea 220 | Polydea 320 |
| ERG | Roxin S EP 150 | Roxin S EP 220 | Roxin S EP 320 | - | - | - | - | - | - |
| ESSO | Spartan EP 150 | Spartan EP 220 | Spartan EP 320 | Spartan S EP 150 | Spartan S EP 220 | Spartan S EP 320 | Glycolube 150 | Glycolube 220 | Glycolube 320 |
| FUCHS | Renolin CKC 150 | Renolin CKC 220 | Renolin CKC 320 | Renolin Unisyn CKC 150 | Renolin Unisyn CKC 220 | Renolin Unisyn CKC 320 | Renolin PG 150 | Renolin PG 220 | Renolin PG 320 |
| LUBRITECH | Gearmaster CLP 150 | Gearmaster CLP 220 | Gearmaster CLP 320 | Gearmaster SYN 150 | Gearmaster SYN 220 | Gearmaster SYN 320 | Gearmaster PGP 150 | Gearmaster PGP 220 | Gearmaster PGP 320 |
| KLÜBER | Klüberoil GEM 1-150 | Klüberoil GEM 1-220 | Klüberoil GEM 1-320 | Klübersynth EG 4-150 | Klübersynth EG 4-220 | Klübersynth EG 4-320 | Klübersynth GH 6-150 | Klübersynth GH 6-220 | Klübersynth GH 6-320 |
| LUBMARINE | Epona Z 150 | Epona Z 220 | Epona Z 320 | - | Epona SA 220 | Epona SA 320 | - | - | - |
| MOBIL | Mobilgear XMP 150 | Mobilgear XMP 220 | Mobilgear XMP 320 | Mobilgear SHC XMP 150 | Mobilgear SHC XMP 220 | Mobilgear SHC XMP 320 | Glygoyle 22 | Glygoyle 30 | Glygoyle HE320 |
| MOLIKOTE | L-0115 | L-0122 | L-0132 | L-1115 | L-1122 | L-1132 | - | - | - |
| NILS | Ripress EP 150 | Ripress EP 220 | Ripress EP 320 | Ripress Synt Food 150 | Ripress Synt Food 220 | Ripress Synt Food 320 | Ripress Synt 150 | Ripress Synt 220 | Ripress Synt 320 |
| OMV | Gear HST 150 | Gear HST 220 | Gear HST 320 | - | Gear SHG 220 | Gear SHG 320 | Gear PG 150 | Gear PG 220 | Gear PG 320 |
| OPTIMOL | Optigear BM 150 | Optigear BM 220 | Optigear BM 320 | Optigear Synthetic A 150 | Optigear Synthetic A 220 | Optigear Synthetic A 320 | Optiflex A 150 | Optiflex A 220 | Optiflex A 320 |
| PAKELO | Erolube EP-C ISO 150 | Erolube EP-C ISO 220 | Erolube EP-C ISO 320 | Gearsint EP ISO 150 | Gearsint EP ISO 220 | Gearsint EP ISO 320 | Allsint EP-C ISO 150 | Allsint EP-C ISO 220 | Allsint EP-C ISO 320 |
| PENNZOIL | Super Maxol EP 150 | Super Maxol EP 220 | Super Maxol EP 320 | - | - | - | - | - | - |
| Q8 | Goya 150 | Goya 220 | Goya 320 | El Greco 150 | El Greco 220 | El Greco 320 | Gade 150 | Gade 220 | Gade 320 |
| ROLOIL | EP/150 | EP/220 | EP/320 | - | - | - | Sincat 150 | Sincat 220 | Sincat 320 |
| ROYAL PURPLE | - | - | - | Synergy 150 | Synergy 220 | Synergy 320 | - | - | - |
| SHELL | Omala 150 | Omala 220 | Omala 320 | Omala HD 150 | Omala HD 220 | Omala HD 320 | Tivela S 150 | Tivela S 220 | Tivela S 320 |
| SINCLAIR | Warrior EP/ NL 150 | Warrior EP/ NL 220 | Warrior EP/ NL 320 | - | - | - | - | - | - |
| SUNOCO | Sun EP 150 | Sun EP 220 | Sun EP 320 | Duragear 150 | Duragear 220 | Duragear 320 | - | - | - |
| TAMOIL | Carter EP Lubricant 150 | Carter EP Lubricant 220 | Carter Ep Lubricant 320 | - | - | - | - | - | - |
| TEXACO | Meropa 150 | Meropa 220 | Meropa 320 | Pinnacle EP 150 | Pinnacle EP 220 | Pinnacle EP 320 | - | Synlube CLP 220 | Synlube CLP 320 |
| TOTAL | Carter EP 150 | Carter EP 220 | Carter EP 320 | Carter SH 150 | Carter SH 220 | Carter SH 320 | Carter SY 150 | Carter SY 220 | Carter SY 320 |
| TRIBOL | 1100/150 | 1100/220 | 1100/320 | 1510/150 | 1510/220 | 1510/320 | 800/150 | 800/220 | 800/320 |

Tabella lubrificanti adatti per uso alimentare

(approvati secondo specifiche USDA-H1 e NSF-H1)

Tabelle dafür den Lebensmittelbereich geeigneten Schmieröle

(zugelassen laut Normen USDA-H1 und NSF-H1)

Tabla de aceites lubricantes aprobados para usos alimentarios

(según especificaciones USDA-H1 y NSF-H1)

Table of lubricants suitable for food use

(approved according to USDA-H1 and NSF-H1 specifications)

Tableau des lubrifiants pour usage alimentaire

(approuvés selon les spécifications USDA-H1 et NSF-H1)

Tabela de lubrificantes adequados para uso alimentar

(aprovados conforme as especificações USDA-H1 e NSF-H1)

| Produttore Manufacturer Hersteller Marque Fabricante Produtor | Oli Idrraulici Hydraulic oils Hydrauliköle Huiles hydrauliques Aceites hidráulicos Óleos hidráulicos | | | Oli per ingranaggi Gear oils Getriebeöle Huiles pour engrenages Aceites para engranajes Óleos para engranagens | | |
|--|---|------------------------------|------------------------------|---|-----------------------------|------------------------------|
| | ISO VG 32 | ISO VG 46 | ISO VG 68 | ISO VG 150 | ISO VG 220 | ISO VG 320 |
| AGIP | Rocol Foodlube Hi Power 32 | - | - | Rocol Foodlube Hi-Torque 150 | - | Rocol Foodlube Hi-Torque 320 |
| ARAL | Eural Hyd 32 | Eural Hyd 46 | Eural Hyd 68 | Eural Gear 150 | Eural Gear 220 | - |
| BEL-RAY | No-Tox HD Hyd Oil 32 | No-Tox HD Hyd Oil 46 | No-Tox HD Hyd Oil 68 | No-Tox Syn Gear Oil 150 | No-Tox Syn Gear Oil 220 | No-Tox Syn Gear Oil 320 |
| BP | Enerpar M 32 | Enerpar M 46 | Enerpar M 68 | - | - | - |
| CHEVRON | Lubricating Oil FM 32 | Lubricating Oil FM 46 | Lubricating Oil FM 68 | - | Lubricating Oil FM 220 | - |
| ESSO | Nuto FG 32 | Nuto FG 46 | Nuto FG 68 | - | Gear Oil FM 220 | - |
| KEYSTONE | Nevastane SL 32 | Nevastane SL 46 | Nevastane SL 68 | Nevastane EP 150 | Nevastane EP 220 | Nevastane EP 320 |
| KLÜBER | Summit Hysyn FG 32 | Summit Hysyn FG 46 | Summit Hysyn FG 68 | Klüberoil 4 UH1 N 150 | Klüberoil 4 UH1 N 220 | Klüberoil 4 UH1 N 320 |
| MOBIL | DTE FM 32 | DTE FM 46 | DTE FM 68 | DTE FM 150 | DTE FM 220 | DTE FM 320 |
| NILS | Mizar 32 | Mizar 46 | Mizar 68 | Ripress Synt Food 150 | Ripress Synt Food 220 | Ripress Synt Food 320 |
| OPTIMOL | Optileb HY 32 | Optileb HY 46 | Optileb HY 68 | Optileb GT 150 | Optileb GT 220 | Optileb GT 320 |
| PAKELO | Non-Tox Oil Hydraulic ISO 32 | Non-Tox Oil Hydraulic ISO 46 | Non-Tox Oil Hydraulic ISO 68 | Non-Tox Oil Gear EP ISO 150 | Non-Tox Oil Gear EP ISO 150 | Non-Tox Oil Gear EP ISO 150 |
| ROYAL PURPLE | Poly-Guard FDA 32 | Poly-Guard FDA 46 | Poly-Guard FDA 68 | Poly-Guard FDA 150 | Poly-Guard FDA 220 | Poly-Guard FDA 320 |
| SHELL | Cassida Fluid HF 32 | Cassida Fluid HF 46 | Cassida Fluid HF 68 | Cassida Fluid GL 150 | Cassida Fluid GL 220 | Cassida Fluid GL 320 |
| TEXACO | Cygnus Hydraulic Oil 32 | Cygnus Hydraulic Oil 32 | Cygnus Hydraulic Oil 32 | Cygnus Gear PAO 150 | Cygnus Gear PAO 220 | - |
| TRIBOL | Food Proof 1840/32 | Food Proof 1840/ 46 | Food Proof 1840/68 | - | Food Proof 1810/220 | Food Proof 1810/320 |

18.INDICAZIONI CONTROLLO OLI CON LUBRIFICAZIONE NON FORZATA

Montaggio orizzontale Posizione livelli

Nel caso di montaggio orizzontale del riduttore, il normale livello per garantire una corretta lubrificazione è posto sulla mezzeria, Fig. (7). Per applicazioni con velocità di rotazione in uscita molto bassa ($n_2 \leq 5$ rpm) è consigliabile fissare il livello ad una quota superiore di 50-100 mm. Fig. (8).

E' possibile verificare con facilità il corretto livello utilizzando un tubo trasparente posizionato come da figura.

Nel caso in cui la velocità di uscita sia estremamente bassa ($n_2 \leq 1$ rpm), oppure se sono prevedibili lunghi periodi di fermo del riduttore, è consigliabile riempire tutta la scatola. In questo caso occorre prevedere l'impiego di un apposito serbatoio ausiliario (vedere il capitolo seguente).

Volendo montare uno strumento che consenta la verifica visiva del livello (o tramite apposito segnale elettrico), occorre eseguire un montaggio secondo lo schema Fig.(9). Montare il tappo di sfiato al di sopra dell'indicatore di livello tramite un tubo abbastanza lungo, collegando la parte superiore (vuota) del riduttore appena sotto allo sfiato. In questo modo si eviterà la fuoriuscita di olio.

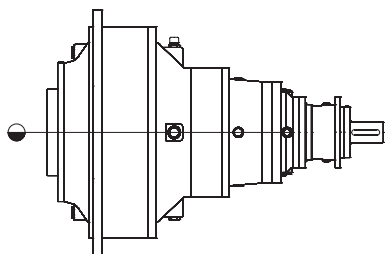


Fig. 7

18.INDICATIONS FOR OIL CONTROL DIAGRAMS WITHOUT AUXILIARY COOLING SYSTEM

Horizontal mounting Position of levels

With horizontal mounting of the gear unit, the normal level for guaranteeing correct lubrication is located at the centre line. Fig. (7). For applications with very low output rotation speed ($n_2 \leq 5$ rpm) it is advisable to fix the level at a value higher than 50-100 mm. Fig. (8).

The correct level can be easily checked using a transparent tube positioned as shown in the figure.

If the output speed is extremely low ($n_2 \leq 1$ rpm), or if long gear unit downtimes are foreseen, it is advisable to fill the entire box. In this case a special auxiliary tank must be provided (see the next chapter). To fit an instrument for visually checking the level (or by means of a special electric signal), assembly must be done according to the drawing in Fig. (9). Locate the breather plug over the instrument by mean of a long tube. Connect the upper (empty) part of the gearbox just under the breather by mean of a bleeding tube to prevent oil leakage.

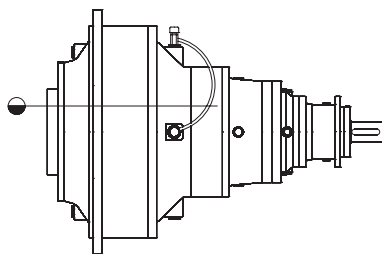


Fig. 8

18.HINWEISE FÜR DIE ÖLKONTROLLE OHNE DRUCKSCHMIERUNG

Horizontale Einbaulage Füllstände

Bei horizontalem Getriebeeinbau liegt der normale Füllstand für eine störungsfreie Schmierung auf der Mittellinie, Abb. (7). Bei Anwendungen mit äußerst niedrigen Abtriebsdrehzahlen ($n_2 \leq 5$ U/min) sollte der Füllstand um 50 - 100 mm höher liegen. Abb. (8).

Der vorschriftsmäßige Füllstand kann leicht mit einem durchsichtigen Schlauch kontrolliert werden (siehe Abbildung Bei extrem niedriger Abtriebsdrehzahl ($n_2 \leq 1$ U/min) oder bei voraussichtlichen langen Stillstandzeiten des Getriebes ist es angebracht, das Gehäuse vollständig zu füllen. In diesem Fall ist ein besonderes Zusatzgefäß einzusetzen (siehe das folgende Kapitel).

Falls eine Sichtkontrolle des Ölstands (oder eine Kontrolle mittels eines elektrischen Signals) gewünscht wird, muss die Installation laut Schema der Abb. 9 vorgenommen werden. Die Entlüfterkappe auf dem Füllstandanzeiger mit einem ausreichend langen Schlauch montieren und den oberen (leeren) Teil des Getriebes knapp unter dem Entlüfter anschließen. Auf diese Weise wird das Austreten von Schmieröl verhindert.

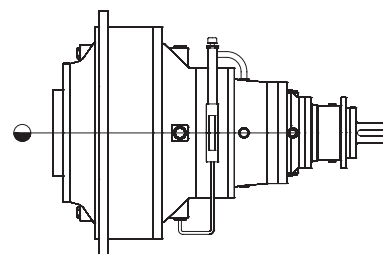


Fig. 9

18. INDICATIONS POUR LE CONTRÔLE DE L'HUILE AVEC UNE LUBRIFICATION PAR CIRCULATION NON FORCÉE

Montage horizontal Position des niveaux

Dans le cas de montage du réducteur en position horizontale, le niveau d'huile pour une lubrification correcte doit se situer à mi-hauteur, Fig. (7). Pour les applications prévoyant une vitesse de rotation en sortie très basse ($n_2 \leq 5$ tr/min), il est préférable de fixer le niveau à une cote supérieure à 50-100 mm. Fig. (8).

Pour vérifier facilement le niveau correct, utiliser un tube transparent positionné comme indiqué en figure.

Dans le cas de vitesse de sortie extrêmement basse ($n_2 \leq 1$ tr/min) ou de longues périodes d'arrêt du réducteur, il est préférable de remplir tout le carter. Dans ce cas, il faut prévoir l'utilisation d'un réservoir auxiliaire prévu à cet effet (voir chapitre suivant).

Pour monter un indicateur permettant le contrôle visuel du niveau (ou par un signal électrique), il faut réaliser le montage selon le schéma Fig.(9).

Monter le bouchon reniflard au-dessus de l'indicateur de niveau en utilisant un tube assez long, en reliant la partie supérieure (vide) du réducteur juste en dessous du reniflard. Ceci pour éviter la sortie d'huile.

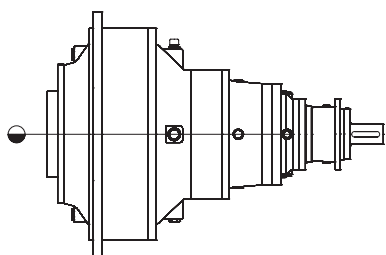


Fig. 7

18. INSPECCIÓN EN CASO DE LUBRICACIÓN NO FORZADA

Montaje horizontal Posición de los niveles

En caso de montaje horizontal del reductor, el nivel indispensable para garantizar una buena lubricación coincide con la línea media, Fig. 7. En las aplicaciones en las que la velocidad de rotación de salida es muy baja ($n_2 \leq 5$ rpm) el nivel se debe fijar 50 a 100 mm más arriba. Fig. (8).

El nivel se puede verificar fácilmente con la ayuda de un tubo transparente como se observa en la figura.

Si la velocidad de salida es extremadamente baja ($n_2 \leq 1$ rpm) o el reductor debe atravesar largos periodos de inactividad, se aconseja llenar todo el depósito. Está prevista la instalación de un depósito auxiliar (véase el capítulo siguiente).

Si se desea montar un instrumento de verificación visual o eléctrica se aconseja aplicar el esquema de la Fig. 9. Colocar el tapón de purga por encima de la parte superior (vacía) del reductor inmediatamente debajo del orificio de purga. De esta forma se evitará que el aceite se derrame.

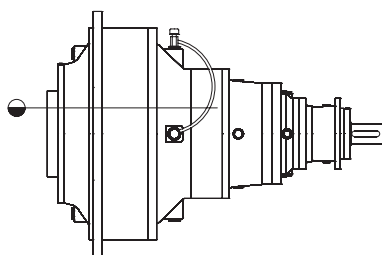


Fig. 8

18. INDICAÇÕES DE CONTROLE DE ÓLEO COM LUBRIFICAÇÃO NÃO FORÇADA

Montagem horizontal Posição dos níveis

No caso de montagem horizontal do reductor, o nível normal para garantir uma lubrificação correta está colocado na linha central (fig. 7). Para aplicações com velocidades de rotação muito baixa na saída ($n_2 \leq 5$ rpm) é aconselhável fixar o nível a uma quota superior de 50 a 100 mm. (Fig. 8).

É possível verificar com facilidade o nível correto utilizando um tubo transparente como mostrado na figura.

Caso a velocidade de saída seja extremamente baixa ($n_2 \leq 1$ rpm), ou se forem previstos períodos longos de parada do reductor, será aconselhável encher toda a carcaça. Nesse caso, será necessário empregar um reservatório auxiliar apropriado (consultar o capítulo seguinte).

Desejando montar um instrumento que permita verificar visualmente o nível (ou através de um sinal elétrico apropriado), será necessário efetuar uma montagem segundo o esquema da fig. 9. Montar o bujão de respiro acima do indicador de nível através de um tubo comprido o suficiente, conectando a parte superior (vazia) do reductor imediatamente abaixo do respiro. Desse modo se evitará a saída de óleo.

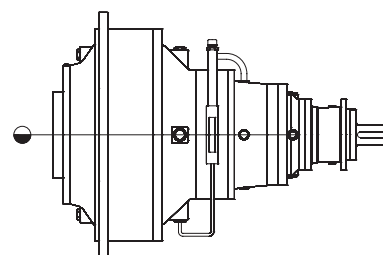


Fig. 9

Vaso di espansione

Nel caso di montaggio verticale e, comunque, ogni volta si renda necessario riempire completamente il riduttore, occorre rispettare alcune regole. All'atto del riempimento, nella parte superiore, in corrispondenza della tenuta rotante dell'albero di uscita, si può formare una bolla d'aria, che deve essere eliminata per evitare l'insufficiente lubrificazione della tenuta stessa. Inoltre sapendo che il volume dell'olio aumenta con la temperatura, occorre predisporre un serbatoio ausiliario che consenta all'olio di espandersi senza creare pericolose pressioni interne al riduttore.

Expansion tank

Several rules must be followed with vertical mounting, and in any case whenever the gear unit has to be completely filled. During filling, an air bubble can form in the upper part, at the output shaft revolving seal, and which must be eliminated in order to avoid insufficient lubrication of the seal. Also, since the volume of oil increases with the temperature, an auxiliary tank must be provided to allow the oil to expand without creating dangerous pressures inside the gear unit.

Expansionsgefäß

Bei vertikalem Einbau und in allen Fällen, in denen das Getriebe vollständig gefüllt werden muss, sind einige wichtige Regeln einzuhalten. Während des Füllens kann sich im oberen Teil in Höhe der Wellendichtung eine Luftblase bilden, die zur Vermeidung ungenügender Schmierung beseitigt werden muss. Da sich das Ölvolume mit steigender Temperatur erhöht, muss ein Hilfsbehälter eingebaut werden, der die Ausdehnung des Öls ausgleicht und gefährliche Drücke im Inneren des Getriebes verhindert.

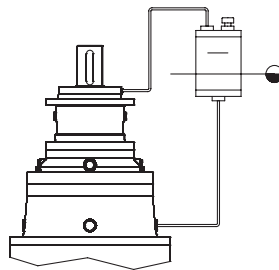


Fig. 10

Per il dimensionamento occorre determinare il volume (Ve) di espansione dell'olio alla temperatura di funzionamento:

For dimensioning, the oil expansion volume (Ve) at operating temperature must be determined:

Für die Bemessung des Behälters muss das Ausdehnungsvolumen (Ve) des Öls bei Betriebstemperatur berechnet werden:

$$V_e = V_t \times \Delta T / 1000$$

V_t = volume totale dell'olio
 ΔT = differenza tra temperatura di funzionamento e temperatura ambiente

V_t = total volume of oil
 ΔT = difference between operating temperature and ambient temperature

V_t = Gesamte Ölmenge
 ΔT = Unterschied zwischen Betriebs- und Umgebungstemperatur

La capacità (Vs) del vaso di espansione è:

The capacity (Vs) of the expansion tank is:

Das Aufnahmevermögen (Vs) des Expansionsbehälters ist:

$$V_s = 2 \times V_e$$

Per eliminare l'eventuale aria residua, devono essere collegati il foro presente nella zona più alta del riduttore e la parte superiore del vaso di espansione; quest'ultimo deve essere posto ad una altezza tale da garantire il pieno riempimento del riduttore al livello minimo. Si consiglia di realizzare il tubo di spurgo o lo stesso vaso di espansione con materiale trasparente, per poter verificare con facilità l'esatta posizione del livello del lubrificante.

To remove any residual air, the holes in the top part of the gear unit and the upper part of the expansion tank must be connected; the latter must be located at a height guaranteeing complete filling of the gear unit up to the minimum level. It is advisable to make the bleeding tube or the expansion tank with transparent material, to be able to easily check the exact position of the lubricant level.

Zur Entlüftung der Restluft ist die Bohrung im höchsten Teil des Getriebes mit dem Oberteil des Expansionsgefäßes zu verbinden; letzteres muss auf einer Höhe angeordnet werden, die gewährleistet, dass das Getriebe immer bis zum Mindeststand gefüllt ist. Es ist angebracht, einen Entlüftungsschlauch und ein Expansionsgefäß aus durchsichtigem Material zu verwenden, um jederzeit auf leichte Weise den Schmierölstand kontrollieren zu können.

Vase d'expansion

Dans le cas de montage du réducteur en position verticale et, de toute façon, chaque fois qu'il est nécessaire de remplir complètement le réducteur, il faut respecter certaines règles.

Au moment du remplissage, dans la partie supérieure, au niveau du joint tournant de l'arbre de sortie, il peut se former une bulle d'air qui doit être éliminée pour éviter l'insuffisance de lubrification dudit joint. En outre, du fait que le volume de l'huile augmente avec la température, il faut prévoir un réservoir auxiliaire permettant à l'huile de se détendre sans créer des pressions dangereuses dans le réducteur.

Depósito de expansión

En caso de montaje vertical y toda vez que se debe llenar el reductor, hay que respetar algunas reglas.

A la altura de la guarnición giratoria del eje de salida se puede formar al rellenar una burbuja de aire. Para que la guarnición quede bien lubricada hay que eliminarla. Como además el volumen del aceite aumenta con la temperatura, hay que instalar un depósito auxiliar para que la expansión del aceite no haga aumentar la presión dentro del reductor.

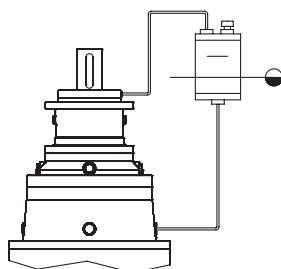


Fig. 10

Vaso de expansão

No caso de montagem vertical e, de qualquer modo, toda vez que for necessário reabastecer completamente o reductor, será necessário respeitar algumas regras.

No ato do reabastecimento, na parte superior, em correspondência ao retentor giratório do eixo de saída, é possível a formação de uma bolha de ar, que deverá ser eliminada para evitar a lubrificação insuficiente do próprio retentor. Além disso, sabendo que o volume do óleo aumenta com a temperatura, será necessário colocar um reservatório auxiliar que permita a expansão do óleo sem criar pressões perigosas dentro do reductor.

Pour le dimensionnement, il faut déterminer le volume (V_e) d'expansion de l'huile à la température de fonctionnement:

Para determinar el tamaño del depósito auxiliar hay que averiguar el volumen (V_e) de expansión del aceite a la temperatura de funcionamiento:

Para o dimensionamento é necessário determinar o volume (V_e) de expansão do óleo à temperatura de funcionamento:

$$V_e = V_t \times \Delta T / 1000$$

V_t = volume total de l'huile

ΔT = différence ou écart température de fonctionnement et température ambiante

V_t = volumen total de aceite

ΔT = diferencia entre la temperatura ambiente y la de funcionamiento

V_t = volume total do óleo

ΔT = diferença entre a temperatura de funcionamento e a temperatura ambiente

La capacité (V_s) du vase d'expansion est:

La capacidad (V_s) del depósito de expansión es:

A capacidade (V_s) do vaso de expansão é de:

$$V_s = 2 \times V_e$$

Pour éliminer l'air résiduel éventuel, l'orifice situé dans la partie la plus haute du réducteur et la partie supérieure du réservoir d'expansion doivent être reliés; ce dernier doit être situé à une hauteur suffisante pour garantir le remplissage du réducteur jusqu'au niveau minimum. Il est conseillé d'utiliser un tube de purge ou un vase d'expansion transparent, afin de faciliter l'examen visuel du niveau du lubrifiant.

Para eliminar el aire residual el agujero que está en la parte más alta del reductor se debe conectar con la parte superior del vaso de expansión, cuya altura debe a su vez permitir que el reductor se llene hasta el nivel mínimo. Se aconseja realizar el tubo de purga y el depósito de expansión en un material transparente para que sea más fácil inspeccionar el nivel.

Para eliminar o ar residual eventual, deverão ser conectados o furo presente na zona mais alta do reductor e a parte superior do vaso de expansão; este último deve ser colocado a uma altura tal que garanta o enchimento completo do reductor ao nível mínimo. É aconselhável realizar o tubo de expurgo ou o próprio vaso de expansão com material transparente, para poder verificar com facilidade a posição exata do nível do lubrificante.

Montaggio verticale in linea e versioni ortogonali

I riduttori debbono essere completamente pieni, quindi occorre montare il vaso di espansione. Come detto in precedenza, è molto importante collegare lo sfiato superiore del riduttore al vaso di espansione per consentire all'olio di risalire fino all'anello di tenuta rotante dell'albero superiore del riduttore.

Volendo montare uno strumento che consenta la verifica visiva (o tramite apposito segnale elettrico), lo strumento sarà collocato sul fianco del serbatoio.

Vertical mounting in-line and right-angle versions

The gear units must be completely full, then the expansion tank must be fitted. As already stated, it is very important to connect the top breather to the expansion tank in order to allow the oil to rise up to the rotating seal ring of the gear unit upper shaft.

To fit an instrument for visual checking (or by means of a special electric signal), the instrument must be placed on the side of the tank.

Vertikaleinbau von In-Line- und Winkelgetrieben

Die Getriebe müssen vollständig gefüllt sein; daher ist immer ein Expansionsbehälter erforderlich. Wie bereits ausgeführt wurde, ist es sehr wichtig, dass die obere Entlüftung des Getriebes an das Expansionsgefäß angeschlossen wird, damit das Schmieröl die Wellendichtung der oberen Getriebewelle erreichen kann.

Falls eine Sichtkontrolle des Ölstands (oder eine Kontrolle mittels eines elektrischen Signals) gewünscht wird, muss das Gerät auf der Seite des Behälters angeordnet werden.

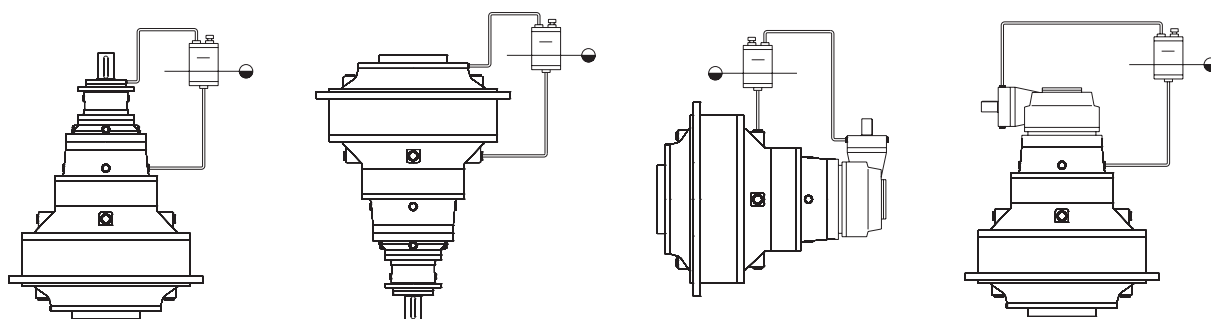


Fig. 11

Sistemi ausiliari di raffreddamento e filtrazione

Nel caso la potenza trasmessa sia superiore alla potenza termica dissipabile dal riduttore, è necessario l'impiego di un sistema ausiliario di raffreddamento, in grado di smaltire la potenza termica in eccedenza e di mantenere anche un buon livello di pulizia dell'olio lubrificante, attraverso la filtrazione continua.

Per assolvere questa funzione, la Brevini Riduttori propone tre unità di raffreddamento in grado di dissipare rispettivamente 5, 10, 20 kW.

Auxiliary cooling and filtering systems

If the power transmitted is higher than the thermal power that can be dissipated by the gear unit, an auxiliary cooling system able to dissipate the excess thermal power and also maintain a good level of cleaning of the lubricating oil through constant filtering, must be used.

To carry out this function, Brevini Riduttori proposes three cooling units able to dissipate 5, 10, 20 kW respectively.

Zusätzliche kühl- und filteranlage

Falls die übertragene Leistung höher ist als die vom Getriebe abführbare Wärmeleistung muss ein zusätzliches Kühlsystem installiert werden, das in der Lage ist, die überschüssige Wärmeleistung abzuführen und durch Dauerfiltration das Schmieröl auf einem ausreichend sauberen Niveau zu halten.

Brevini Riduttori bietet zu diesem Zweck drei Kühleinheiten mit einer Wärmedissipation von jeweils 5, 10, 20 kW an.

Montage vertical en ligne et versions orthogonales

Les réducteurs devant être complètement remplis, il faut donc monter le réservoir d'expansion. Ainsi qu'on l'a dit précédemment, il est très important de relier la purge supérieure du réducteur au vase d'expansion pour permettre à l'huile de remonter jusqu'au joint tournant de l'arbre supérieur du réducteur.

Si l'on veut monter un instrument permettant l'examen visuel (ou par signal électrique), celui-ci devra être placé à côté du réservoir.

Montaje vertical en línea y versiones perpendiculares

Como los reductores deben estar completamente llenos, en ambos casos hay que montar el depósito de expansión. Es muy importante conectar la purga superior del reductor con el vaso de expansión para que el aceite suba hasta la guarnición giratoria del eje superior del reductor.

Si se desea montar un instrumento de verificación visual o eléctrica hay que colocarlo junto al depósito.

Montagem vertical em linha e versões ortogonais

Os redutores devem ser completamente cheios e, assim, é necessário montar o vaso de expansão. Como mencionado anteriormente, é muito importante conectar o respiro superior do redutor no vaso de expansão para permitir a subida do óleo até o anel de retenção giratório do eixo superior do redutor.

Desejando montar um instrumento que permita uma verificação visual (ou através de um sinal elétrico apropriado), o instrumento será colocado ao lado do reservatório.

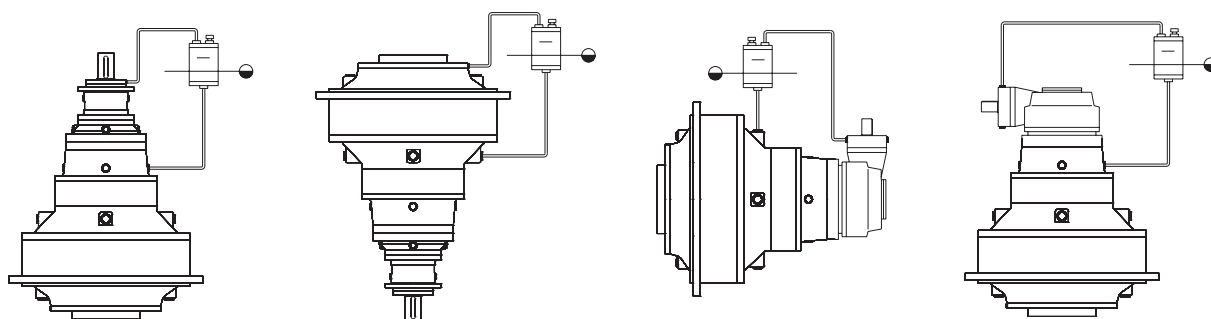


Fig. 11

Systèmes auxiliaires de refroidissement et de filtration

Dans le cas où la puissance transmise est supérieure à la puissance thermique pouvant être dissipée par le réducteur, il faudra prévoir l'adoption d'un système auxiliaire de refroidissement capable d'évacuer la puissance thermique en excès et de maintenir également un bon degré de propreté du lubrifiant à travers une filtration continue.

Pour remplir cette fonction, Brevini Riduttori propose trois unités de refroidissement pouvant dissiper respectivement 5, 10, 20 kW.

Sistemas auxiliares de enfriamiento y filtrado

Si la fuerza transmitida es mayor que la potencia térmica que puede disipar el reductor hay que instalar un sistema auxiliar de enfriamiento con filtrado continuo que elimine el exceso de temperatura y mantenga el aceite lubricante siempre limpio.

Brevini Riduttori fabrica tres unidades de enfriamiento opcionales que disipan 5, 10 y 20 kW respectivamente.

Sistemas auxiliares de arrefecimento e filtragem

Caso a potência transmitida seja superior à potência térmica dissipável do reductor, será necessário empregar um sistema auxiliar de arrefecimento capaz de absorver a potência térmica em excesso e de também manter um bom nível de limpeza do óleo lubrificante através de uma filtragem contínua.

Para efetuar essa função, a Brevini Riduttori propõe três unidades de arrefecimento capazes de dissipar respectivamente 5, 10 e 20 kW.

19. Quantità olio [I]

19. Schmierung [I]

19. Volumen del aceite [I]

19. Oil quantity [I]

19. Quantité d'huile [I]

19. Quantidades de óleo [I]

Posizioni di montaggio / Mounting positions / Einbauposition / Positions de montage / Posiciones de montaje / Posições de montagem

① B3
B6
B7
B8

② V5
V6

③ V5A V6A B3D
V5B V6B B6C
V5C V6C B7A
V5D V6D B8B

④ Type 1 2 3 4
Type 1 2 3 4
Type 1 2 3 4

| Type | ① | ② | ③ | ④ |
|------|---|---|---|---|
|------|---|---|---|---|

010

| | | | | | |
|------------|-----|-----|-----|--|--|
| EM 1010 | MN | 0,5 | 1 | | |
| | MR | 0,5 | 1 | | |
| | FE | 0,5 | 1 | | |
| | FS | 0,5 | 1 | | |
| ED 2010 | MN | 0,8 | 1,6 | | |
| | MR | 0,8 | 1,6 | | |
| | FE | 0,8 | 1,6 | | |
| | FS | 0,8 | 1,6 | | |
| EC 2010 | MN | | | | |
| | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| ET 3010 | MN | 0,9 | 1,8 | | |
| | MR | 0,9 | 1,8 | | |
| | FE | 0,9 | 1,8 | | |
| | FS | 0,9 | 1,8 | | |
| EC 3010 | MN | | | | |
| | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| EC 4010 | MN | | | | |
| | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| PD 1010 | MR1 | 1,1 | 2 | | |
| PD 2010 | MR1 | 1,3 | 2,3 | | |
| PD 3010 | MR1 | 1,4 | 2,5 | | |
| PDA 2010 | MR1 | | | | |
| PDA 3010 | MR1 | | | | |
| PDA 4010 | MR1 | | | | |
| 020 | | | | | |
| EM 1020 | MR | 1 | 2 | | |
| | FE | 1,2 | 2,4 | | |
| | FS | 1 | 2 | | |
| | FP | | | | |
| ED 2020 | MR | 1,2 | 2,4 | | |
| | FE | 1,5 | 3 | | |
| | FS | 1,2 | 2,4 | | |
| | FP | | | | |
| EC 2020 | MR | 2,2 | 4,4 | | |
| | FE | 2,3 | 4,6 | | |
| | FS | 2,2 | 4,4 | | |
| | FP | | | | |
| ET 3020 | MR | 1,6 | 3,2 | | |
| | FE | 1,7 | 3,4 | | |
| | FS | 1,6 | 3,2 | | |
| | FP | | | | |

| Type | ① | ② | ③ | ④ |
|------|---|---|---|---|
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020

| | | | | | |
|------------|-----|-----|-----|--|--|
| EC 3020 | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| | FP | | | | |
| EQ 4020 | MR | 1,7 | 3,4 | | |
| | FE | 1,8 | 3,6 | | |
| | FS | 1,7 | 3,4 | | |
| | FP | | | | |
| EC 4020 | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| | FP | | | | |
| PD 1020 | MR1 | 3,6 | 6,8 | | |
| PD 2020 | MR1 | 3,8 | 7,2 | | |
| PD 3020 | MR1 | 4 | 7,5 | | |
| PD 4020 | MR1 | 4,3 | 8 | | |
| PDA 2020 | MR1 | | | | |
| PDA 3020 | MR1 | | | | |
| 030 | | | | | |
| ED 2030 | MR | 1,3 | 2,6 | | |
| | FE | 1,1 | 2,2 | | |
| | FS | 1,3 | 2,6 | | |
| ET 3030 | MR | 1,6 | 3,2 | | |
| | FE | 1,6 | 3,2 | | |
| | FS | 1,6 | 3,2 | | |
| EC 3030 | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| EQ 4030 | MR | 1,7 | 3,4 | | |
| | FE | 1,7 | 3,4 | | |
| | FS | 1,7 | 3,4 | | |
| EC 4030 | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| PD 2030 | MR1 | 3,6 | 6,8 | | |
| PD 3030 | MR1 | 3,8 | 7,1 | | |
| PD 4030 | MR1 | 4,1 | 7,6 | | |
| PDA 3030 | MR1 | | | | |
| PDA 4030 | MR1 | | | | |
| 040 | | | | | |
| ED 2040 | MN | 1,7 | 3,4 | | |
| ET 3040 | MN | 1,7 | 3,4 | | |
| EC 3040 | MN | | | | |
| EQ 4040 | MN | 1,8 | 3,6 | | |
| EC 4040 | MN | | | | |

| Type | ① | ② | ③ | ④ |
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045

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|----------|-----|-----|-----|------|-----|
| EM 1045 | MR | 1 | 2 | | |
| | FE | 1,1 | 2,2 | | |
| | FS | 1 | 2 | | |
| | FP | | | | |
| ED 2045 | MR | 1,6 | 3,2 | | |
| | FE | 1,5 | 3 | | |
| | FS | 1,6 | 3,2 | | |
| | FP | | | | |
| EC 2045 | MR | 2 | 4 | | |
| | FE | 2,1 | 4,2 | | |
| | FS | 2 | 4 | | |
| | FP | | | | |
| ET 3045 | MR | 1,6 | 3,2 | | |
| | FE | 1,6 | 3,2 | | |
| | FS | 1,6 | 3,2 | | |
| | FP | | | | |
| EC 3045 | MR | 3 | 6 | | |
| | FE | 3,2 | 6,4 | | |
| | FS | 3 | 6 | | |
| | FP | | | | |
| EQ 4045 | MR | 2,2 | 4,4 | | |
| | FE | 2,5 | 5 | | |
| | FS | 2,2 | 4,4 | | |
| | FP | | | | |
| EC 4045 | MR | | | | |
| | FE | | | | |
| | FS | | | | |
| | FP | | | | |
| PD 1045 | MR1 | 3,4 | 6,5 | | |
| PD 2045 | MR1 | 4 | 7,6 | 8,4 | 8,4 |
| PD 3045 | MR1 | 4,2 | 8 | 10,8 | 5,6 |
| PD 4045 | MR1 | 4,5 | 8,2 | | |
| PDA 2045 | MR1 | 4 | 8 | 8,5 | 4,5 |
| PDA 3045 | MR1 | 5,5 | 7,5 | 11 | 6 |
| PDA 4045 | MR1 | | | | |

046

| | | | | | |
|---------|----|-----|-----|--|--|
| EM 1046 | MN | 1,2 | 2,4 | | |
| ED 2046 | MN | 2 | 4 | | |
| EC 2046 | MN | 2,5 | 5 | | |
| ET 3046 | MN | 1,8 | 3,6 | | |
| EC 3046 | MN | 3,3 | 6,6 | | |
| EQ 4046 | MN | 2,2 | 4,4 | | |
| EC 4046 | MN | | | | |

| Type | 1 | 2 | 3 | 4 |
|------|---|---|---|---|
|------|---|---|---|---|

065
067

| | | | | | |
|-----------------|-----|-----|------|----|-----|
| EM 1065 | MN | 1,6 | 3,2 | | |
| | FE | 1,8 | 3,6 | | |
| | FS | 1,6 | 3,2 | | |
| | FP | | | | |
| ED 2065 | MN | 2,4 | 4,8 | | |
| | FE | 2,6 | 5,2 | | |
| | FS | 2,4 | 4,8 | | |
| | FP | | | | |
| EC 2065 | MN | 2,7 | 5,4 | | |
| | FE | 2,9 | 5,8 | | |
| | FS | 2,7 | 5,4 | | |
| | FP | | | | |
| ET 3065 | MN | 2,3 | 4,6 | | |
| | FE | 2,5 | 5 | | |
| | FS | 2,3 | 4,6 | | |
| | FP | | | | |
| EC 3065 | MN | 3,7 | 7,4 | | |
| | FE | 3,8 | 7,6 | | |
| | FS | 3,7 | 7,4 | | |
| | FP | | | | |
| EQ 4065 | MN | 2,5 | 5 | | |
| | FE | 2,8 | 5,6 | | |
| | FS | 2,5 | 5 | | |
| | FP | | | | |
| EC 4065 | MN | | | | |
| | FE | | | | |
| | FS | | | | |
| | FP | | | | |
| PD 1065 | MR1 | 5 | 9 | | |
| PD 2065 | MR1 | 5,8 | 10,5 | | |
| PD 3065 | MR1 | 6 | 11 | | |
| PD 4065 | MR1 | 6,4 | 11,8 | | |
| PDA 2065 | MR1 | 6 | 11,4 | 12 | 6,5 |
| PDA 3065 | MR1 | 7 | 13,8 | 14 | 7,5 |
| PDA 4065 | MR1 | | | | |

090
091

| | | | | | |
|----------------|----|-----|------|--|--|
| EM 1090 | MN | 2,2 | 4,4 | | |
| | MR | 3 | 6 | | |
| | FE | 2,2 | 4,4 | | |
| | FS | 2,2 | 4,4 | | |
| ED 2090 | MN | 2,2 | 4,4 | | |
| | MR | 3,5 | 7 | | |
| | FE | 3,2 | 6,4 | | |
| | FS | 2,2 | 4,4 | | |
| EC 2090 | MN | 5 | 10 | | |
| | MR | 6 | 12 | | |
| | FE | 5,2 | 10,4 | | |
| | FS | 5 | 10 | | |
| ET 3090 | MN | 3,3 | 6,6 | | |
| | MR | 3,2 | 6,4 | | |
| | FE | 3,2 | 6,4 | | |
| | FS | 3,3 | 6,6 | | |
| EC 3090 | MN | | | | |
| | FE | | | | |
| | FS | | | | |
| | FP | | | | |

| Type | 1 | 2 | 3 | 4 |
|------|---|---|---|---|
|------|---|---|---|---|

090
091

| | | | | | |
|-----------------|-----|-----|------|------|-----|
| EC 3090 | MN | 5,2 | 10,4 | | |
| | MR | 6,2 | 12,4 | | |
| | FE | 5,5 | 11 | | |
| | FS | 5,2 | 10,4 | | |
| | FP | | | | |
| EQ 4090 | MN | 4 | 8 | | |
| | MR | 5 | 10 | | |
| | FE | 3,8 | 7,6 | | |
| | FS | 4 | 8 | | |
| | FP | | | | |
| EC 4090 | MN | 5,5 | 11 | | |
| | MR | 6,5 | 13 | | |
| | FE | 5,8 | 11,6 | | |
| | FS | 5,5 | 11 | | |
| | FP | | | | |
| PD 1090 | MR1 | 5,2 | 9,5 | | |
| PD 2090 | MR1 | 6 | 11 | | |
| PD 3090 | MR1 | 6,3 | 11,6 | | |
| PD 4090 | MR1 | 7 | 13 | | |
| PDA 2090 | MR1 | 8,5 | 14,8 | 15 | 8 |
| PDA 3090 | MR1 | 9 | 15,4 | 15,5 | 8,5 |
| PDA 4090 | MR1 | 9,5 | 16 | 16 | 9 |

150
155

| | | | | | |
|----------------|----|-----|------|--|--|
| EM 1150 | MN | 2,5 | 5 | | |
| | MR | 4,5 | 9 | | |
| | FE | 1,8 | 3,6 | | |
| | FS | 2,5 | 5 | | |
| | FP | | | | |
| ED 2150 | MN | 3,2 | 6,4 | | |
| | MR | 5 | 10 | | |
| | FE | 2,5 | 5 | | |
| | FS | 3,2 | 6,4 | | |
| | FP | | | | |
| EC 2150 | MN | 5 | 10 | | |
| | MR | 7 | 14 | | |
| | FE | 3 | 12 | | |
| | FS | 5 | 10 | | |
| | FP | | | | |
| ET 3150 | MN | 3,5 | 7 | | |
| | MR | 5,3 | 10,6 | | |
| | FE | 3 | 6 | | |
| | FS | 3,5 | 7 | | |
| | FP | | | | |
| EC 3150 | MN | 4,4 | 8,8 | | |
| | MR | 6 | 12 | | |
| | FE | 3,7 | 7,4 | | |
| | FS | 4,4 | 8,8 | | |
| | FP | | | | |
| EQ 4150 | MN | 3,7 | 7,4 | | |
| | MR | 5,5 | 11 | | |
| | FE | 3,5 | 7 | | |
| | FS | 3,7 | 7,4 | | |
| | FP | | | | |
| EC 4150 | MN | 5,5 | 11 | | |
| | MR | 6 | 12 | | |
| | FE | 3,5 | 7 | | |
| | FS | 5,5 | 11 | | |
| | FP | | | | |

| Type | 1 | 2 | 3 | 4 |
|------|---|---|---|---|
|------|---|---|---|---|

150
155

| | | | | | |
|-----------------|-----|-----|------|------|-----|
| PD 1150 | MR1 | 5,5 | 10,2 | | |
| PD 2150 | MR1 | 6,3 | 11,6 | | |
| PD 3150 | MR1 | 6,5 | 12 | | |
| PD 4150 | MR1 | 11 | 13,4 | | |
| PDA 2150 | MR1 | 10 | 15,2 | 15,5 | 9 |
| PDA 3150 | MR1 | 9 | 15,7 | 16 | 9 |
| PDA 4150 | MR1 | 9 | 16,4 | 16,5 | 9,5 |

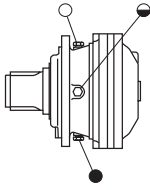
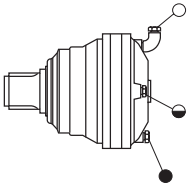
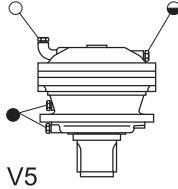
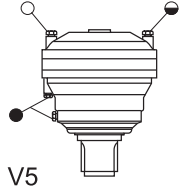
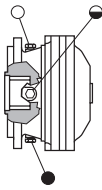
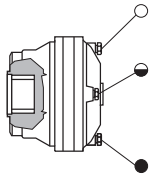
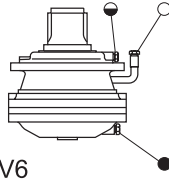
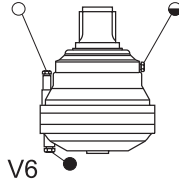
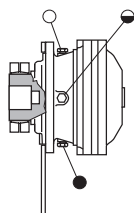
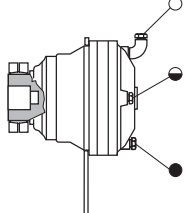
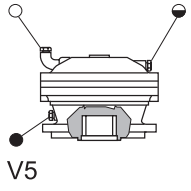
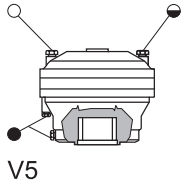
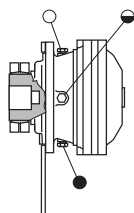
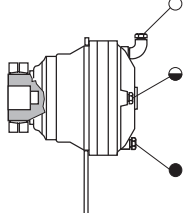
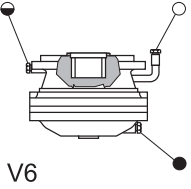
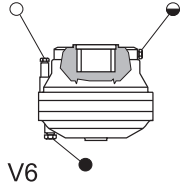
250
255

| | | | | | |
|----------------|----|-----|------|--|--|
| EM 1250 | MN | 3,8 | 7 | | |
| | FE | 2,5 | 5 | | |
| | FS | 3,8 | 7 | | |
| | FP | | | | |
| ED 2250 | MN | 4,5 | 9 | | |
| | FE | 3,5 | 7 | | |
| | FS | 4,5 | 9 | | |
| | FP | | | | |
| EC 2250 | MN | 6,5 | 13 | | |
| | FE | 5 | 10 | | |
| | FS | 6,5 | 13 | | |
| | FP | | | | |
| ET 3250 | MN | 5 | 10 | | |
| | FE | 4,5 | 9 | | |
| | FS | 5 | 10 | | |
| | FP | | | | |
| EC 3250 | MN | 5,7 | 11,4 | | |
| | FE | 6 | 12 | | |
| | FS | 5,7 | 11,4 | | |
| | FP | | | | |
| EQ 4250 | MN | 5,2 | 10,4 | | |
| | FE | 4,8 | 9,6 | | |
| | FS | 5,2 | 10,4 | | |
| | FP | | | | |
| EC 4250 | MN | 7 | 14 | | |
| | FE | 5,7 | 11,4 | | |
| | FS | 7 | 14 | | |
| | FP | | | | |
| 320 | | | | | |
| ED 2320 | FE | 3,5 | 7 | | |
| ET 3320 | FE | 4,5 | 9 | | |

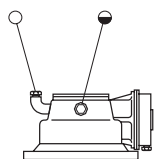
20.POSIZIONI DI MONTAGGIO

20.MOUNTING POSITIONS

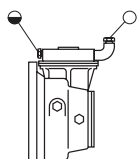
20.EINBAUPOSITION

| | | Posizione orizzontale / Horizontal position / Waagerechte Stellung Position Horizontale / Posición Horizontal / Posição Horizontal | | Posizione verticale / vertical position / Senkrechte Stellung Position Verticale / Posición Vertical / Posição Vertical | |
|--------|---|---|--|--|---|
| | | 010-091 | 150-320 | 010-091 | 150-320 |
| INLINE | MN-MR-MN1-MR1 |  |  |  |  |
| | | B3 | B3 | V5 | V5 |
| | |  |  |  |  |
| | B3 | B3 | V6 | V6 | |
| |  |  |  |  | |
| | B3 | B3 | V5 | V5 | |
| |  |  |  |  | |
| | B3 | B3 | V6 | V6 | |

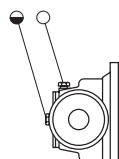
RIGHT ANGLE



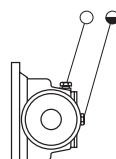
V5B



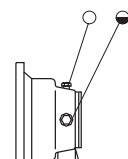
B3D



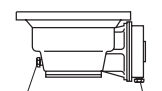
B3C



B3A



B3B



V6B

● Tappo scarico / Drain plug
Bouchon de vidange de l'huile
Ölablasstopfen
Tapón vaciado aceite / Bujão de dreno

◐ Tappo livello / Oil level plug
Bouchon de niveau de l'huile
Ölstandsstopfen
Tapón nivel aceite / Bujão de nível

○ Tappo carico e sfiato / Breather and filling plug
Bouchon de remplissage de l'huile et reniflard
Öleinfüll- und entlüftungstopfen
Tapón llenado y presurizado
Bujão de preenchimento e válvula de alívio

20.POSITIONS DE MONTAGE

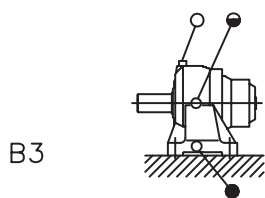
20.POSICIONES DE MONTAJE

20.POSIÇÕES DE MONTAGEM

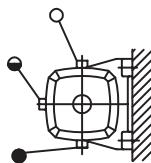
Posizione orizzontale / Horizontal position / Waagerechte Stellung
Position Horizontale / Posición Horizontal / Posição Horizontal

Posizione verticale / vertical position
Senkrechte Stellung / Position Verticale
Posición Vertical / Posição Vertical

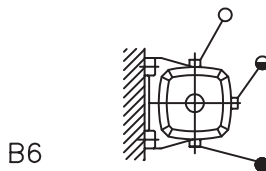
INLINE



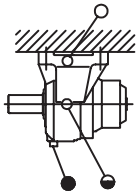
B3



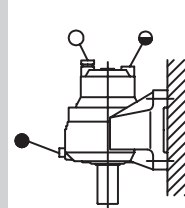
B7



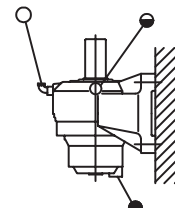
B6



B8

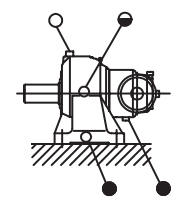


V5

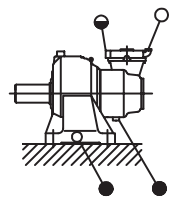


V6

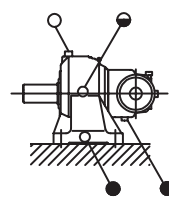
RIGHT ANGLE



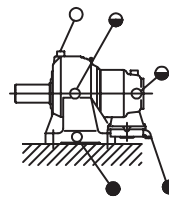
B3C



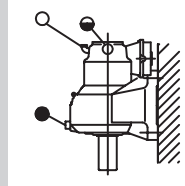
B3D



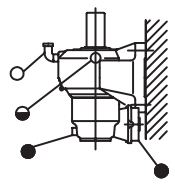
B3A



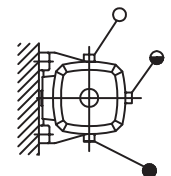
B3B



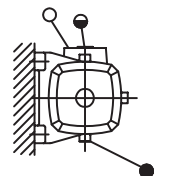
V5B



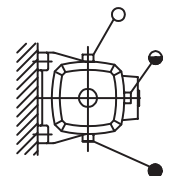
V6B



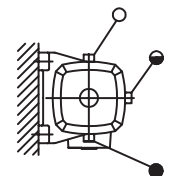
B6B



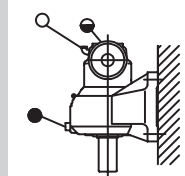
B6C



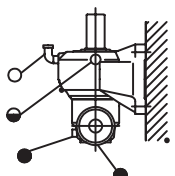
B6D



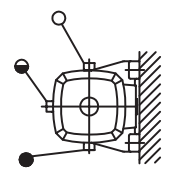
B6A



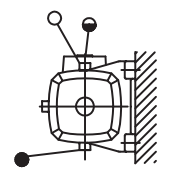
V5A



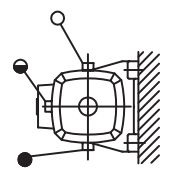
V6A



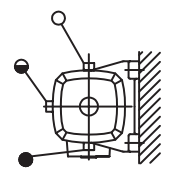
B7B



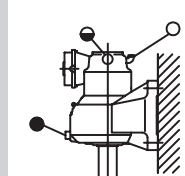
B7A



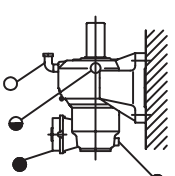
B7D



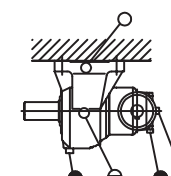
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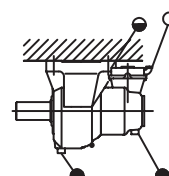
V5D



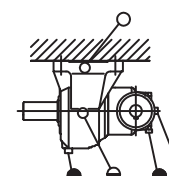
V6D



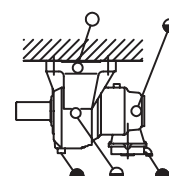
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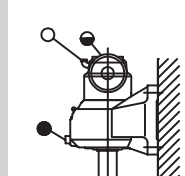
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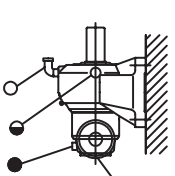
B8C



B8D



V5C



V6C