KENDRION

WE MAGNETISE THE WORLD

INDUSTRIAL MAGNETIC SYSTEMS

System Line

AC Solenoids

BINDER

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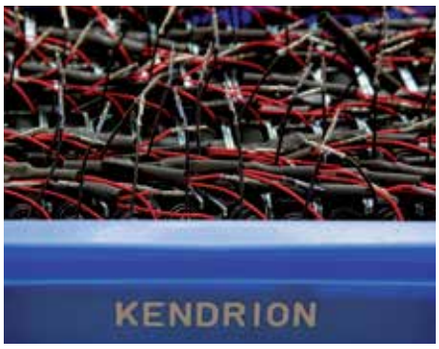

Kendrion N.V. is one of the leading manufacturers of solenoids and electromagnetic components worldwide.

Consisting of the four business units Industrial Magnetic Systems, Commercial Vehicle Systems, Industrial Drive Systems and Passenger Car Systems, Kendrion guarantees solution-oriented customer care. The company excels in innovative capability and maximum productivity.

Over the years Kendrion has integrated the brands Binder, Magnet AG, Neue Hahn Magnet, Thoma Magnettechnik, Linnig Antriebstechnik, Tri Tech LLC, Magneta and FAS Controls.

Our business unit Industrial Magnetic Systems develops, manufactures and distributes linear-, holding-, locking-, spreading-, control-, rotary- and vibrator solenoids as well as solenoid valves for industrial applications worldwide.

The strengths of Kendrion lie both in the area of standard applications and in the area of customer-specific solutions and applications.

With our technological know-how we ensure that your application will run smoothly.

All products are tested and developed according to DIN VDE 0580/ 07.2000. Kendrion Magnettechnik GmbH is a company certified according to ISO 9001:2008.

The main locations are in Donaueschingen (D) and Engelswies (D). Further locations are in Hausen am Albis (CH), Linz (A), Bradford (UK), Suzhou (CN), Mishawaka (USA) and Turin (I).

With our global distribution network we are available for our customers at any time and will be pleased to advise you.

Our products are used in almost all industrial areas. To name a few:

- Machine building
- Safety engineering
- Transportation industry
- Medical engineering
- Power engineering
- Environmental technology
- Elevator industry
- Automation

Your industry is not listed?
We are sure to have an optimum solution.

Wherever innovations and new approaches are required our staff will be happy to assist you.

Contact us. We're looking forward to assisting you!

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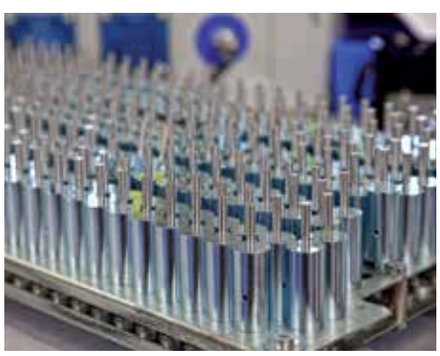
Please find detailed performance data in our product catalogues, with the help of our experts or by our product finder on:

www.kendrion.com



Product Line

Description

System Line

The use of AC solenoids requires to take into account their essential design and electromechanical features. In normal operation an AC solenoid achieves higher switching power than a DC solenoid, as the switching times are significantly shorter. Furthermore, it is smaller than a DC solenoid with the same performance. Damping is not possible, however, and the fast acceleration causes a hard impact and a loud impact noise which cannot resp. only to some extent be avoided.

As opposed to a DC solenoid with constant power consumption during the complete stroke travel the power consumption of an AC solenoid varies. Therefore, the acceleration must NOT be impeded once the device has been switched on as the highest power consumption (breakaway starting current) and heating occurs in the stroke starting position.
During the stroke travel this value decreases towards the end position, the holding current. The latter one is calculated in such a way that the magnet can be energized infinitely with a 100% duty cycle coil design.

Consequently, the solenoids of this type generally have an ascending force characteristic. The service life of an AC solenoid cannot be indicated by a certain number of switching operations as too many factors are involved. This is only possible on a case-by-case basis if the installation and operating conditions are known in detail. Generally, it should be ensured that at least 2/3 of the magnetic force are used to prevent early wear. The installation position should be as vertical as possible to avoid tilted force transfer and premature wear.

The solenoid types of the system line belong to the group of direct-acting solenoids, i.e. the stroke movement from the maximum stroke to the stroke end is accomplished by electromagnetic force. The reset must be achieved by external forces. The force transfer with pushing solenoids has to be effected by antimagnetic bolts.
The magnetic forces indicated are reached at 90% of the nominal voltage and in warmed-up condition. The values of the duty cycles apply for nominal voltage, warmed-up condition and load with 70% of the magnetic force of the device.

The products are manufactured and tested according to DIN VDE 0580/07.2000.

Nominal voltage: 230 Volt, 50 Hz

Duty cycle: 100%

Thermal class: B

Protection class: acc. IEC 60529

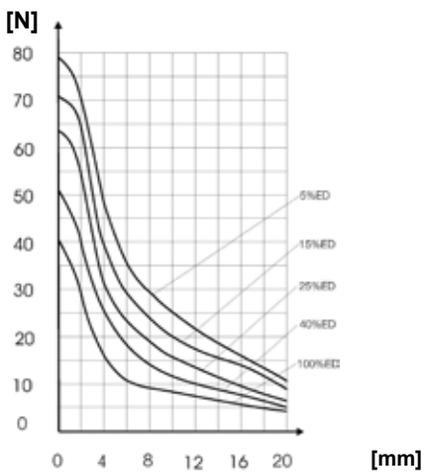
Design subject to change

AC Solenoid

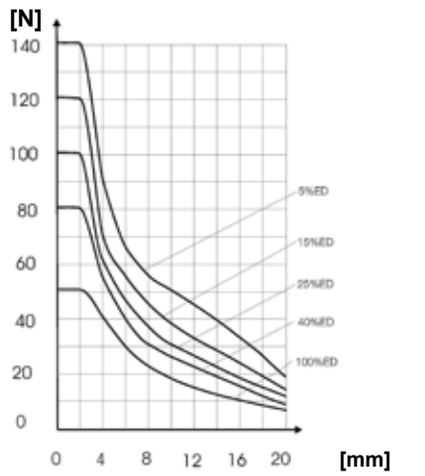
With this type the basic solenoid WL is installed in a sturdy aluminum housing so that protection class IP40 is achieved. Depending on the requirement the model can be supplied with an additional bellow (type WLF) in IP54. There are 6 sizes with 4 installation options each available.

Type	Length x Width x Height [mm]	Stroke [mm]	Duty cycle [%]	Initial force [N]	Apparent power Stroke starting [kVA]	End power [N]	Apparent power Stroke end [kVA]	Response time [ms]
WL125	65 x 60 x 85	15	100	13	0.400	51	0.048	95
WL125	65 x 60 x 85	15	40	18	0.570	81	0.110	95
WL125	65 x 60 x 85	15	25	21	0.670	101	0.150	95
WL125	65 x 60 x 85	15	15	26	0.770	121	0.220	95
WL125	65 x 60 x 85	15	5	36	1.000	141	0.400	95
WL230	77 x 70 x 94	20	100	27	1.000	102	0.070	95
WL230	77 x 70 x 94	20	40	40	1.350	122	0.190	95
WL230	77 x 70 x 94	20	25	47	1.600	152	0.280	95
WL230	77 x 70 x 94	20	15	57	2.000	182	0.450	95
WL230	77 x 70 x 94	20	5	72	2.500	202	0.925	95
WL330	87 x 76 x 113	25	100	55	1.700	133	0.100	95
WL330	87 x 76 x 113	25	40	77	2.100	153	0.187	95
WL330	87 x 76 x 113	25	25	100	2.420	183	0.385	95
WL330	87 x 76 x 113	25	15	125	3.300	213	0.660	95
WL330	87 x 76 x 113	25	5	155	4.620	253	1.200	95
WL430	107 x 93 x 144	30	100	76	2.100	166	0.110	95
WL430	107 x 93 x 144	30	40	99	3.565	260	0.340	95
WL430	107 x 93 x 144	30	25	126	4.620	300	0.685	95
WL430	107 x 93 x 144	30	15	164	5.500	380	1.190	95
WL430	107 x 93 x 144	30	5	200	7.040	430	2.400	95
WL450	108 x 108 x 158	40	100	105	3.600	210	0.100	95
WL450	108 x 108 x 158	40	40	155	6.160	330	0.280	95
WL450	108 x 108 x 158	40	25	220	8.800	410	0.500	95
WL450	108 x 108 x 158	40	15	275	10.120	460	0.880	95
WL450	108 x 108 x 158	40	5	335	12.980	500	1.826	95
WL540	142 x 99 x 186	40	100	120	4.625	253	0.121	95
WL540	142 x 99 x 186	40	40	205	9.240	383	0.462	95
WL540	142 x 99 x 186	40	25	254	9.570	430	0.638	95
WL540	142 x 99 x 186	40	15	295	11.660	464	1.232	95
WL540	142 x 99 x 186	40	5	390	14.300	513	2.244	95

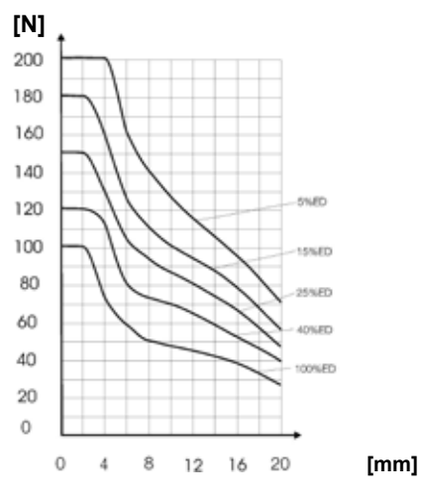
WL115



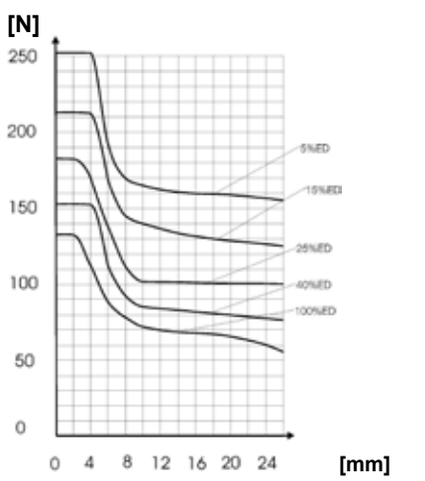
WL125



WL230



WL330



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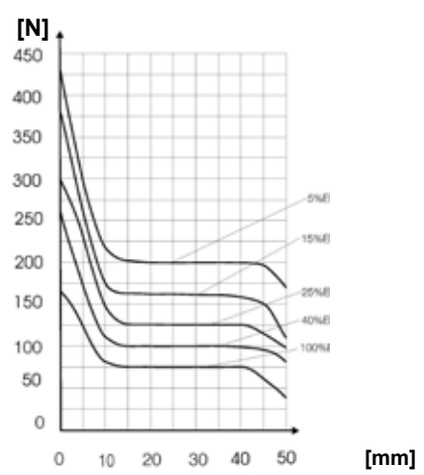

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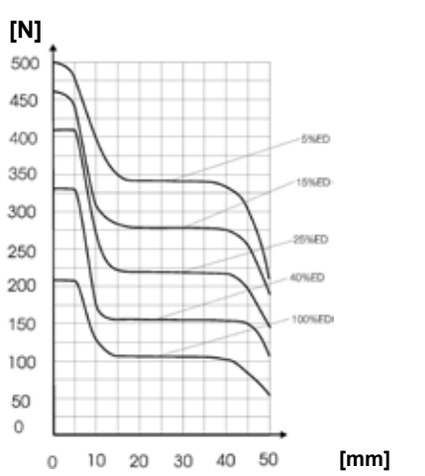
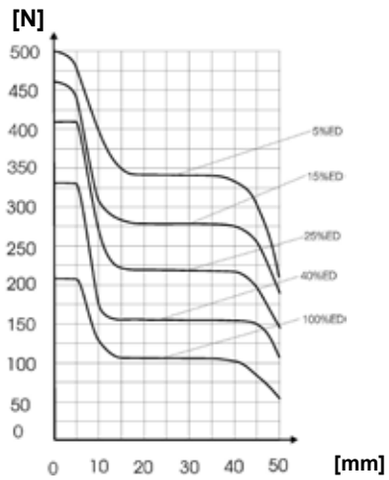


WL540


[N]
500
450
400
350
300
250
200
150
100
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10
20
30
40
50
[mm]
5%ED
15%ED
25%ED
40%ED
100%ED

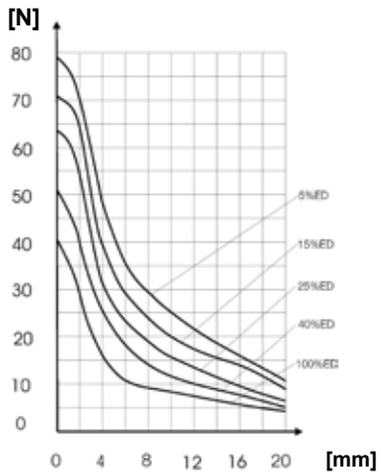
AC Solenoid

With the AC solenoids of the series WL the yoke is U-shaped while the armature is T-shaped. This design allows for optimum pulling force results with relatively small sizes as the lines of force can pass the working air gap either in the coil centre or via the limbs.

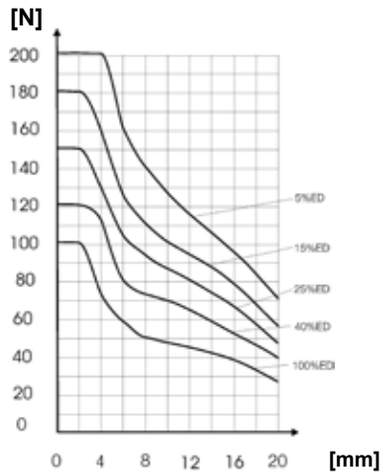
The solenoid system can be used for short as well as long strokes (max. 50 mm). There are 7 sizes in basic models available. Stroke limitation yokes on request!

Type	Length x Width x Height [mm]	Stroke [mm]	Duty cycle [%]	Initial force [N]	Apparent power Stroke starting [kVA]	End power [N]	Apparent power Stroke end [kVA]	Response time [ms]
WL115	46 x 35 x 50	20	100	4	0.190	41	0.025	72
WL115	46 x 35 x 50	20	40	5	0.330	51	0.066	72
WL115	46 x 35 x 50	20	25	6.5	0.105	63	0.400	72
WL115	46 x 35 x 50	20	15	8	0.535	71	0.180	72
WL115	46 x 35 x 50	20	5	11	0.640	79	0.250	72
WL230	55 x 55 x 56.5	20	100	27	1.000	102	0.070	72
WL230	55 x 55 x 56.5	20	40	40	1.350	122	0.190	72
WL230	55 x 55 x 56.5	20	25	47	1.600	152	0.280	72
WL230	55 x 55 x 56.5	20	15	57	2.000	182	0.450	72
WL230	55 x 55 x 56.5	20	5	72	2.500	202	0.925	72
WL330	72 x 66 x 64	25	100	55	1.700	133	0.100	72
WL330	72 x 66 x 64	25	40	77	2.100	153	0.187	72
WL330	72 x 66 x 64	25	25	100	2.420	183	0.385	72
WL330	72 x 66 x 64	25	15	125	3.300	213	0.660	72
WL330	72 x 66 x 64	25	5	155	4.620	253	1.200	72

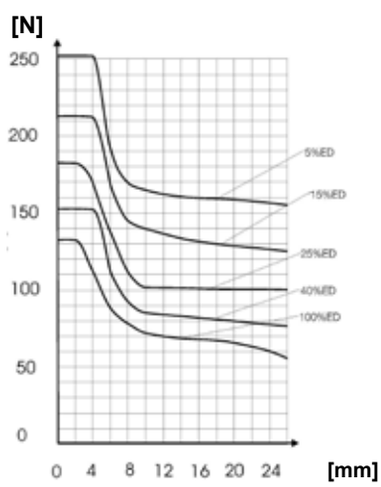
WL115



WL230



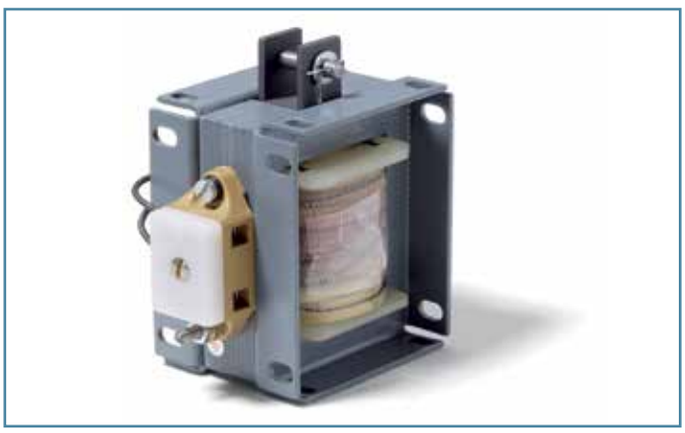
WL330



AC Solenoid

AC solenoids of this series are particularly suitable for use under harsh conditions. The excitation system is potted in the housing with casting resin. The cooling fins allow for particularly efficient heat dissipation. By means of the bellow and the standard connection via a box mounting receptacle the protection class IP65 is achieved here. 4 sizes in 5 basic models comprise the full range.

Type	Length x Width x X Height [mm]	Stroke [mm]	Duty cycle [%]	Initial force [N]	End force [N]	Response time [ms]
WLA125	65 x 67.5 x 75	20	100	5	60	95
WLA125	65 x 67.5 x 75	20	40	8	90	95
WLA125	65 x 67.5 x 75	20	25	15	110	95
WLA125	65 x 67.5 x 75	20	15	18	130	95
WLA125	65 x 67.5 x 75	20	5	24	150	95
WLA230	75 x 78 x 81	20	100	35	110	95
WLA230	75 x 78 x 81	20	40	45	135	95
WLA230	75 x 78 x 81	20	25	52	165	95
WLA230	75 x 78 x 81	20	15	64	190	95
WLA230	75 x 78 x 81	20	5	80	200	95
WLA330	95 x 98 x 97	25	100	65	140	95
WLA330	95 x 98 x 97	25	40	85	160	95
WLA330	95 x 98 x 97	25	25	105	190	95
WLA330	95 x 98 x 97	25	15	130	220	95
WLA330	95 x 98 x 97	25	5	160	280	95
WLA430	110 x 115 x 132	30	100	85	200	95
WLA430	110 x 115 x 132	30	40	105	280	95
WLA430	110 x 115 x 132	30	25	140	320	95
WLA430	110 x 115 x 132	30	15	180	400	95
WLA430	110 x 115 x 132	30	5	210	450	95



AC Solenoid

With this type the armature is I-sphaped. Therefore, it is particularly suitable for large strokes at small dimensions. The solenoid has a very strong acceleration. With the immersion of the armature the stray field can develop and the pulling force is reduced until the working air gap has narrowed accordingly. Due to this reduction the working flux dominates and increases the pulling force. 13 sizes, 2 models (pulling and pushing), 4 installation types.

Type	Length x Width x X Height [mm]	Stroke [mm]	Duty cycle [%]	Initial force [N]	Apparent power Stroke starting [kVA]	End force [N]	Apparent power Stroke end [kVA]
WTI01	44 x 32.5 x 52	20	100	3.3	0.112	13	0.030
WTI01	44 x 32.5 x 52	20	40	4.7	0.140	20	0.050
WTI01	44 x 32.5 x 52	20	25	5.5	0.165	24	0.071
WTI01	44 x 32.5 x 52	20	15	7	0.230	26	0.110
WTI01	44 x 32.5 x 52	20	5	12	0.480	30	0.250
WTI02	44 x 40.5 x 52	20	100	6.5	0.196	31	0.038
WTI02	44 x 40.5 x 52	20	40	9.5	0.230	36	0.070
WTI02	44 x 40.5 x 52	20	25	12	0.340	41	0.110
WTI02	44 x 40.5 x 52	20	15	15	0.430	45	0.150
WTI02	44 x 40.5 x 52	20	5	20	0.560	51	0.300
WTI03	52 x 41.5 x 64	30	100	5	0.350	35	0.045
WTI03	52 x 41.5 x 64	30	40	8.5	0.460	49	0.120
WTI03	52 x 41.5 x 64	30	25	12	0.550	56	0.170
WTI03	52 x 41.5 x 64	30	15	15	0.680	64	0.260
WTI03	52 x 41.5 x 64	30	5	18	1.040	71	0.560
WTI04	52 x 52.5 x 64	30	100	11	0.450	50	0.050
WTI04	52 x 52.5 x 64	30	40	13	0.700	70	0.120
WTI04	52 x 52.5 x 64	30	25	16	0.920	90	0.190
WTI04	52 x 52.5 x 64	30	15	18	1.150	91	0.265
WTI04	52 x 52.5 x 64	30	5	27	1.400	101	0.540
WTI05	54 x 53 x 62	30	100	20	0.680	78	0.066
WTI05	54 x 53 x 62	30	40	29	0.900	100	0.130
WTI05	54 x 53 x 62	30	25	35	1.100	105	0.190
WTI05	54 x 53 x 62	30	15	40	1.250	110	0.290
WTI05	54 x 53 x 62	30	5	48	1.800	120	0.590
WTI06	63 x 44 x 62	40	100	12	0.650	45	0.065
WTI06	63 x 44 x 62	40	40	14	0.800	51	0.120
WTI06	63 x 44 x 62	40	25	15	1.000	56	0.220
WTI06	63 x 44 x 62	40	15	18	1.170	64	0.370
WTI06	63 x 44 x 62	40	5	29	1.650	71	0.730
WTI07	63 x 56 x 62	40	100	29	0.800	62	0.060
WTI07	63 x 56 x 62	40	40	31	1.400	72	0.150
WTI07	63 x 56 x 62	40	25	44	1.800	92	0.300
WTI07	63 x 56 x 62	40	15	50	2.400	122	0.400
WTI07	63 x 56 x 62	40	5	62	2.700	142	0.800
WTI08	63 x 61 x 62	40	100	27	1.020	72	0.070
WTI08	63 x 61 x 62	40	40	55	2.050	102	0.175
WTI08	63 x 61 x 62	40	25	67	2.600	127	0.380
WTI08	63 x 61 x 62	40	15	74	3.000	152	0.580
WTI08	63 x 61 x 62	40	5	97	3.600	167	1.150
WTI09	77.5 x 83 x 92.5	50	100	27	1.360	72	0.100
WTI09	77.5 x 83 x 92.5	50	40	33	2.350	97	0.290
WTI09	77.5 x 83 x 92.5	50	25	34	2.500	117	0.450
WTI09	77.5 x 83 x 92.5	50	15	42	2.900	142	0.700
WTI09	77.5 x 83 x 92.5	50	5	62	4.200	152	1.300
WTI10	77.5 x 87 x 92.5	50	100	45	2.100	110	0.130
WTI10	77.5 x 87 x 92.5	50	40	53	3.000	123	0.300

Type	Length x Width x X Height [mm]	Stroke [mm]	Duty cycle [%]	Initial force [N]	Apparent power Stroke starting [kVA]	End force [N]	Apparent power Stroke end [kVA]
WTI10	77.5 x 87 x 92.5	50	25	63	3.600	133	0.540
WTI10	77.5 x 87 x 92.5	50	15	78	4.000	153	0.700
WTI10	77.5 x 87 x 92.5	50	5	88	5.400	183	1.400
WTI11	77.5 x 95 x 92.5	50	100	60	2.600	123	0.150
WTI11	77.5 x 95 x 92.5	50	40	79	3.600	163	0.350
WTI11	77.5 x 95 x 92.5	50	25	86	4.400	183	0.700
WTI11	77.5 x 95 x 92.5	50	15	107	5.000	213	1.000
WTI11	77.5 x 95 x 92.5	50	5	118	5.400	233	1.700
WTI12	90 x 92.2 x 92.5	50	100	65	3.030	134	0.160
WTI12	90 x 92.2 x 92.5	50	40	79	4.030	184	0.290
WTI12	90 x 92.2 x 92.5	50	25	109	5.800	214	0.750
WTI12	90 x 92.2 x 92.5	50	15	129	6.500	244	1.000
WTI12	90 x 92.2 x 92.5	50	5	164	7.900	264	2.200
WTI13	90 x 103.3 x 92.5	50	100	95	5.200	155	0.210
WTI13	90 x 103.3 x 92.5	50	40	115	6.800	205	0.420
WTI13	90 x 103.3 x 92.5	50	25	145	8.800	255	1.000
WTI13	90 x 103.3 x 92.5	50	15	175	10.000	305	1.500

KENDRION

WE MAGNETISE THE WORLD

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