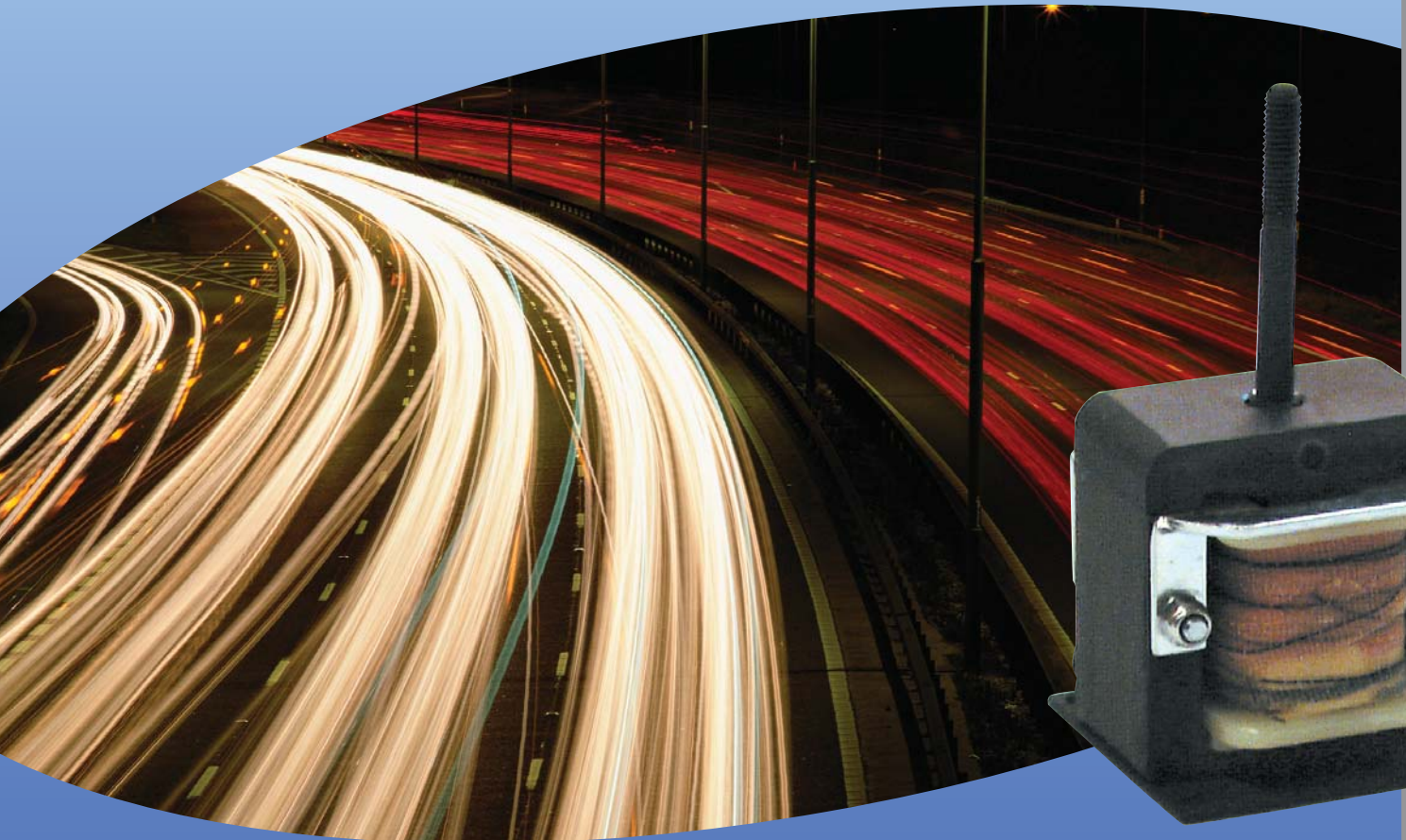




BINDER NEU HAHN MAGNET *thoma*
MAGNETTECHNIK



DYNAMIC FAST EFFICIENT

● ac linear solenoids



power of partnership and magnetism

system line

The KENDRION ELECTROMAGNETIC COMPONENTS Group (KEC Group) sees itself as a centre of excellence in the field of electromagnetism.

KENDRION MAGNETTECHNIK GmbH develops and manufactures a wide range of electromagnetic products in the most diverse variations and designs for countless technical applications. The company grew out of the traditional operations of Binder, Thoma and Neue Hahn and is now Europe's leading manufacturer of electromagnetic components.

Project work is our focal point. We at KENDRION MAGNETTECHNIK take this to mean the joint development of devices together with our customers, taking into account special operating conditions, special requirements and high economic efficiency. Our objective is to provide the market with the devices it needs. With optimised costs-benefits ratios to secure the competitiveness of our customers.

Our many years of experience in the development and manufacture of electromagnetic devices plus the skills and commitment of our employees enable us to recognise the needs of the market. And we turn those needs into high-quality products in cooperation with our customers.

We at KENDRION MAGNETTECHNIK achieve customer-focused solutions in all corporate divisions. Those solutions bring maximum benefits for customers and hence considerably strengthen their position in their markets.

- **Customer-centred market management,**
- **innovative product developments,**
- **lean, flexible logistics,**
- **high quality standards,**
- **affordable prices,**
- **and the power of magnetism guarantee the success of KENDRION MAGNETTECHNIK.**



kendrion magnettechnik -
YOUR ONE-STOP SOLUTION

AC solenoid type WL...



Example of order

WL 230 01
pull version,
with plunger stop for 10 mm stroke,
230 V, 50 Hz, 100% duty cycle,
10 mm stroke, 49 N linear force

Any requirements differing from those on the product data sheet must be stated separately when ordering!

Explanation of table

Dimension "t" for type WL 230 =
5, 6, 8, 10, 15 and 20 mm

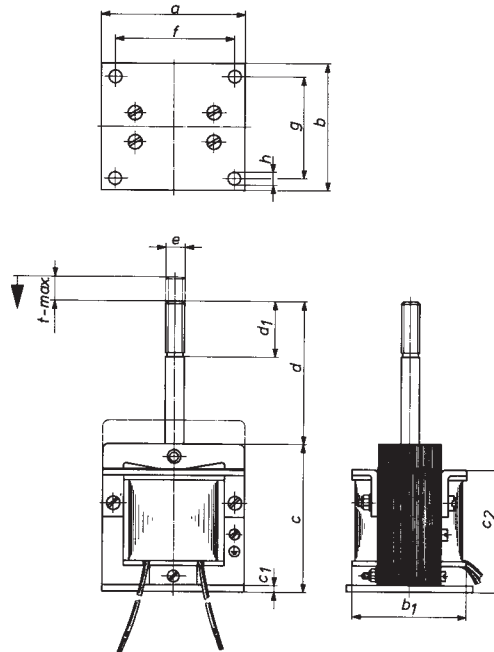
Dimension "t" for type WL 330 = 20 mm

d_1 = usable thread length

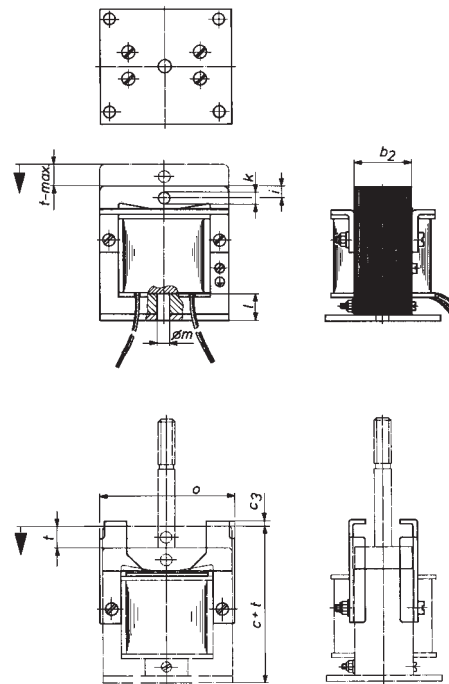
We reserve the right to make changes without prior notice.

Dimensions (mm) for open frame series with T-plunger

Plunger stop for versions 01 and 04 available for types WL 230 and WL 330



Version 01



Version 04

100% duty cycle, stroke (mm), dimensions (mm), weight without plunger stop

Type	a	b	b ₁	b ₂	c	c ₁	c ₂	c ₃	d	d ₁	e	f	g	ø h	i	ø k	l	ø m	o	t _{max}	Weight	
																					Plunger	Complete solenoid
WL 115	46	35	32	14.5	50	2	41.5	-	50	20	M 6	38	28	3.5	4	4	12.8	5.5	-	20	0.080	0.310
WL 125	46	42	42	24.5	50	2	41.5	-	50	20	M 6	36	35	3.5	4	4	12.8	5.5	-	20	0.140	0.420
WL 230	55	55	54	29.5	56.5	2	48.5	1.5	50	20	M 6	46	46	4.5	5	4	13.8	7	59	20	0.240	0.680
WL 330	72	66	61	29.5	64	3	53.5	2.0	60	20	M 8	62	54	5.5	6	5	12.8	9	77	25	0.330	1.190
WL 430	90	80	72.5	29.5	93.5	4	78	-	90	30	M 10	75	65	6.6	8	6	19.8	9	-	50	0.600	2.450
WL 450	90	100	92.5	49.5	93.5	4	78	-	90	30	M 10	75	85	6.6	8	6	19.8	9	-	50	0.950	3.550
WL 540	116	90	86	39.5	115.5	6	93.5	-	100	43	M 14	100	70	9	10	8	30.8	13	-	50	1.350	4.900

Stroke - magnetic force - apparent power - switching times

100% duty cycle, stroke (mm), apparent power (kVA), magnetic force (N)

1 Newton (N) = 0.102 kp

Type	Stroke 0		Stroke 2		Stroke 4		Stroke 6		Stroke 8		Stroke 10		Stroke 15		Stroke 20		Stroke 25		max. coil ON time (s)
	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	
WL 115	41	0.025	29	0.085	16	0.110	11	0.132	9	0.145	8	0.155	6	0.170	4	0.190			unlimited
WL 125	51	0.048	51	0.170	41	0.250	30	0.300	23	0.340	18	0.360	13	0.400	7	0.430			unlimited
WL 230	102	0.070	102	0.300	74	0.410	59	0.500	52	0.610	49	0.700	40	0.850	27	1.000			unlimited
WL 330	133	0.100	133	0.350	113	0.530	88	0.650	78	0.750	73	0.870	68	1.200	66	1.500	55	1.700	unlimited
Response time (ms)	applies to all				27		35		40		45		58		65		72		
Release time (ms)	sizes				27		35		40		45		58		65		72		

40% duty cycle

WL 115	51	0.066	41	0.176	26	0.195	18	0.240	14	0.260	12	0.285	8,5	0.310	5	0.330			240
WL 125	81	0.110	81	0.260	56	0.390	41	0.440	32	0.490	27	0.520	18	0.570	9	0.600			300
WL 230	122	0.190	122	0.480	112	0.670	82	0.780	74	0.920	70	1.020	57	1.200	40	1.350			360
WL 330	153	0.187	153	0.600	153	0.850	113	0.890	93	1.056	85	1.180	83	1.500	80	1.780	77	2.100	480
Response time (ms)	applies to all				27		35		40		45		58		65		72		
Release time (ms)	sizes				27		35		40		45		58		65		72		

25% duty cycle

WL 115	63	0.105	56	0.210	32	0.250	23	0.300	19	0.330	16	0.340	11	0.370	6,5	0.400			85
WL 125	101	0.150	101	0.300	63	0.420	49	0.500	37	0.560	31	0.600	21	0.670	12	0.700			100
WL 230	152	0.280	152	0.660	132	0.850	107	1.050	94	1.180	86	1.280	72	1.450	47	1.600			360
WL 330	183	0.385	183	0.700	170	0.970	138	1.125	113	1.300	103	1.410	102	1.850	101	2.160	100	2.420	480
Response time (ms)	applies to all				27		35		40		45		58		65		72		
Release time (ms)	sizes				27		35		40		45		58		65		72		

15% duty cycle

WL 115	71	0.180	66	0.285	41	0.350	29	0.400	24	0.430	20	0.445	15	0.505	8	0.535			40
WL 125	121	0.220	121	0.400	71	0.520	56	0.600	46	0.650	38	0.700	26	0.770	14	0.800			50
WL 230	182	0.450	182	0.900	162	1.100	127	1.300	112	1.450	102	1.600	84	1.800	57	2.000			60
WL 330	213	0.660	213	1.190	213	1.500	168	1.590	145	1.800	140	1.980	133	2.420	128	2.860	125	3.300	180
Response time (ms)	applies to all				27		35		40		45		58		65		72		
Release time (ms)	sizes				27		35		40		45		58		65		72		

5% duty cycle

WL 115	79	0.250	71	0.365	49	0.410	36	0.450	29	0.485	25	0.500	17,5	0.535	11	0.640			15
WL 125	141	0.400	141	0.600	91	0.720	66	0.800	57	0.850	51	0.920	36	1.000	19	1.080			20
WL 230	202	0.925	202	1.200	202	1.450	162	1.650	142	1.800	127	1.900	102	2.200	72	2.500			30
WL 330	253	1.200	253	1.500	253	1.800	193	2.250	170	2.420	165	2.685	160	3.125	158	3.960	155	4.620	60
Response time (ms)	applies to all				27		35		40		45		58		65		72		
Release time (ms)	sizes				27		35		40		45		58		65		72		

The magnetic force (N) includes the respective plunger weight and is measured at 90% of the rated voltage, at operating temperature. This same figure is increased by approx. 20% at the rated voltage and 20°C coil temperature.

The response and release times are measured at rated voltage and operating temperature, and at 70% of the magnetic force.

Maximum switching frequencies per hour (S/h) 3600 1200 600 300 120

100% duty cycle, stroke (mm), apparent power (kVA), magnetic force (N)

1 Newton (N) = 0.102 kp

Type	Stroke 0		Stroke 5		Stroke 10		Stroke 15		Stroke 20		Stroke 25		Stroke 30		Stroke 35		Stroke 40		Stroke 45		Stroke 50		max. coil ON time (s)
	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	N	KVA	
WL 430	166	0.110	126	0.610	81	0.920	76	1.250	76	1.450	76	1.700	76	2.100	76	2.450	76	2.800	61	3.200	36	3.600	unlimited
WL 450	210	0.100	210	0.835	130	1.230	110	1.600	110	1.975	110	2.300	110	2.800	110	3.200	105	3.600	80	4.050	54	4.450	unlimited
WL 540	253	0.121	253	1.210	193	1.760	163	2.100	163	2.640	163	3.200	163	3.700	163	4.200	163	4.625	133	6.000	93	7.400	unlimited
Response time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		
Release time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		

40% duty cycle

WL 430	260	0.340	178	1.150	116	1.585	100	2.025	99	2.465	99	3.060	99	3.565	99	4.000	96	4.560	90	4.950	80	5.280	2100
WL 450	330	0.280	330	1.500	175	2.200	160	2.795	160	3.432	160	4.180	160	4.840	160	7.700	155	6.160	150	7.040	110	7.480	2100
WL 540	383	0.462	383	2.156	274	2.992	220	3.960	210	4.620	210	5.500	210	6.425	210	7.920	205	9.240	174	10.120	134	10.560	2100
Response time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		
Release time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		

25% duty cycle

WL 430	300	0.685	232	1.630	147	2.290	126	2.860	126	3.480	126	4.070	126	4.620	126	5.280	126	5.830	112	6.160	98	6.710	1200
WL 450	410	0.500	410	2.000	270	2.800	220	3.785	220	4.620	220	5.610	220	6.500	220	7.700	220	8.800	190	9.350	145	9.900	1800
WL 540	430	0.638	400	2.400	326	3.300	293	4.225	274	5.060	264	6.120	264	7.150	260	8.140	254	9.570	224	10.450	172	11.440	1800
Response time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		
Release time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		

15% duty cycle

WL 430	380	1.190	267	2.420	174	3.060	164	3.630	164	4.290	164	4.950	164	5.500	164	6.160	160	7.260	155	7.700	114	8.360	360
WL 450	460	0.880	440	2.750	310	3.960	285	4.840	280	5.940	280	7.040	280	8.360	280	9.240	275	10.120	260	11.440	180	11.880	720
WL 540	464	1.232	450	3.100	346	4.510	324	5.720	310	7.040	310	8.360	310	9.240	305	10.560	295	12.760	280	12.980	215	14.300	1200
Response time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		
Release time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		

5% duty cycle

WL 430	430	2.400	294	3.600	219	4.070	204	5.280	200	5.720	200	6.600	200	7.040	200	8.360	200	9.020	194	9.460	170	10.120	120
WL 450	500	1.826	480	3.850	400	5.215	350	6.710	340	7.546	340	9.350	340	10.780	340	12.100	335	12.980	310	13.640	210	14.080	450
WL 540	513	2.244	513	4.290	410	5.830	400	7.700	394	9.240	394	10.186	394	11.880	394	12.980	390	14.300	364	15.400	300	16.500	540
Response time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		
Release time (ms)	applies to all sizes		30		45		58		65		74		78		82		85		90		95		

The magnetic force (N) includes the respective plunger weight and is measured at 90% of the rated voltage, at operating temperature. This same figure is increased by approx. 20% at the rated voltage and 20°C coil temperature.

The response and release times are measured at rated voltage and operating temperature, and at 70% of the magnetic force.

Maximum switching frequencies per hour (S/h) 3600 1200 600 300 120

Preferred voltage 230 V, 50 Hz

Preferred duty cycle 100%
 duty cycle = coil ON time (s) x 100/total cycle time (s)

Type of connection

lead wires (200 mm long, series)
 connection terminal (special version)
 connection box (special version)

Class of protection to IEC 60529: IP 00

Insulation class B,
 DIN VDE 0580 (July 2000)

This magnet system employs a U-shaped frame and a T-shaped plunger. Such a plunger shape guarantees a considerable increase in the pull force because the lines of force can pass through the air gap either in the core or at the top via the limb. The system is suitable for both short and longer strokes (max. 50 mm).

The force–stroke curve has a gently ascending characteristic, which makes this type particularly suitable for overcoming spring forces. The application of an electromagnetic force brings about a linear movement from the initial position to the end position; the return movement is accomplished with external forces.

Make sure that the plunger can attract until the pole faces make complete contact because otherwise a thermal overload in the coil can lead to failure.

Both frame and plunger are manufactured from magnetic, high-quality plates. The pole faces are delivered without corrosion protection. The energisation coil consists of a bobbin made from an electrically and mechanically high-quality material on which windings of enamelled copper wire, insulation class F, are wound.

The force transfer in the push version should be by means of a non-magnetic pin.

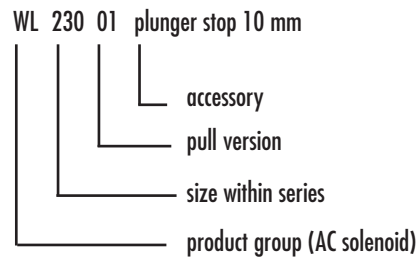
Accessories

The solenoids can be supplied with the following accessories; however, this should be stated separately on the order.

Accessories plunger stop (only available for types WL 230 and WL 330, see dimension "t")
 fork joint DIN 71752

Version 01, pull version, with pull bar
 04, push version, with drilled hole, without pull bar, without push shaft

Type designation code



For further information on the use of electromagnetic devices please refer to the publication "The Technical Background"

CE symbol solenoids/electronics

The electromagnetic products from Kendrion Magnettechnik are components for incorporation and operation in electrical equipment and devices.

They therefore do not fall within the remit of the Low Voltage Directive 73/23/EEC.

However, the components comply with various standards for incorporation and operation in devices covered by the Low Voltage Directive, in particular DIN VDE 0580 (July 2000). The corresponding data is given on the data sheets for the individual components.

The products are components in the meaning of the Machinery Directive 98/37/EC. According to this directive, such products incorporated in a machine may not be operated until said machine's conformity with the EC directive has been established. A manufacturer's declaration, which is not automatically supplied with the product, can be obtained on request.

The user must ensure conformity with the EMC Directive 89/336/EEC by using corresponding switching devices or controls. When using the recommended electronic switching devices and controls from Kendrion Magnettechnik, conformity with the EMC Directive is stated on the respective data sheets.

Notes:

- to DIN VDE 0580 (July 2000) ICS29.020.53.020.01 (valid as manufacturer's Declaration of Conformity)
- directives 98/37/EC and 73/23/EEC
- CCC certificate for China not required

We reserve the right to make changes to the product design.

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