



BINDER NEU HAHN MAGNET *thoma* MAGNETTECHNIK



HIGH-ENERGY RELIABLE DYNAMIC

● HEAVY-DUTY SINGLE DIRECTION LINEAR SOLENOIDS SQUARE FORM

HIGH PERFORMANCE LINE



POWER OF PARTNERSHIP AND MAGNETISM

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.

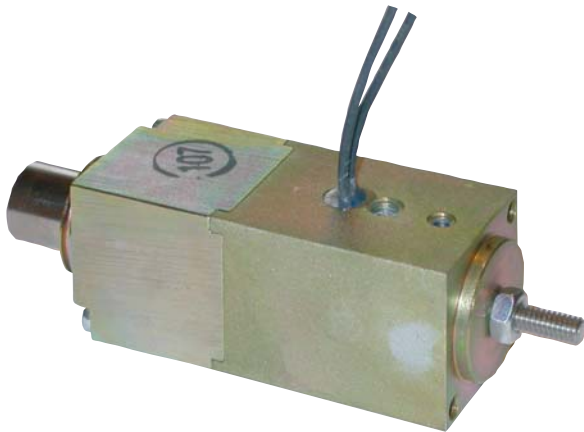
Our many years of experience in the development and manufacture of electromagnetic devices plus the skills and commitment of our employees enable us to recognise the needs of the market. And we turn those needs into high-quality products in cooperation with our customers.

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.

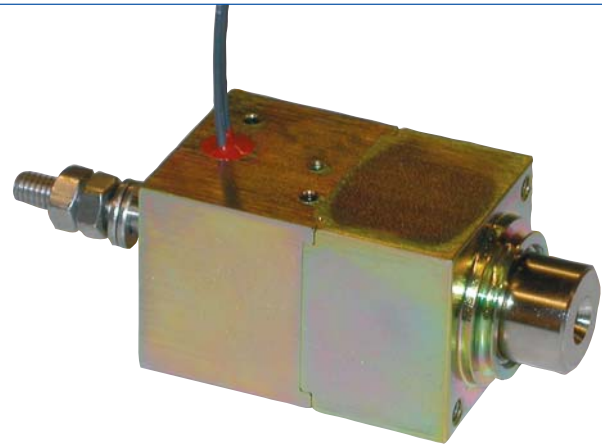
- **Customer-centred market management,**
- **innovative product developments,**
- **lean, flexible logistics,**
- **high quality standards,**
- **affordable prices,**
- **and the power of magnetism guarantee the success of KENDRION MAGNETTECHNIK.**



KENDRION MAGNETTECHNIK - YOUR ONE-STOP SOLUTION



LHP025055



LHP035053

Heavy-duty single direction linear solenoids for DC operation

The square-form solenoids of the High Performance Line are characterised by their tremendous linear work concentration and modular design, which permits numerous options.

They are used wherever large forces are needed in a small space, e.g.:

- high-voltage power switches
- railway carriage door locking mechanisms
- automated systems
- general actuation functions
- parking systems

- Modular design
versions: lead wires or DIN connector
options: see "Accessories"
- Plunger movement from initial position to end position achieved by applying an electromagnetic force.
- Return movement from end position to initial position is accomplished with external forces or an internal return spring.
- Maximum linear work thanks to optimum solenoid circuit design.
- Can be installed in any position, but force transfer must be axial (lateral loads increase the wear on the bearings).
- Can be used as push or pull versions.
- Plunger stop at end and initial positions (adjustable with optional nut).

These products and devices are built and tested according to **DIN VDE 0580 (July 2000)**

Standard voltage: 24 VDC, 205 VDC

Other voltages are possible on request (subject to a surcharge).

Insulation class: F
(max. temperature 155°C)

Class of protection to IEC 60529

Please note ordering data!

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

CE symbol solenoids/electronics electromagnets, electromagnetic devices

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.

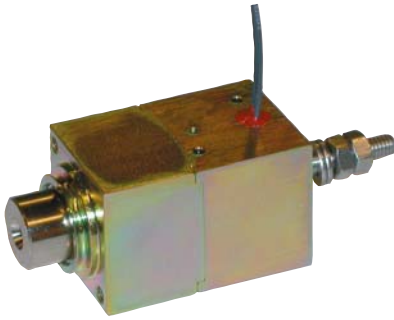
The user must ensure conformity with the EMC Directive 89/336/EEC by using suitable switching devices or controls. When using the recommended electronic switching devices and controls from Kendrion Magnettechnik, conformity with the EMC Directive is stated on the respective data sheets.

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.

LHP035053



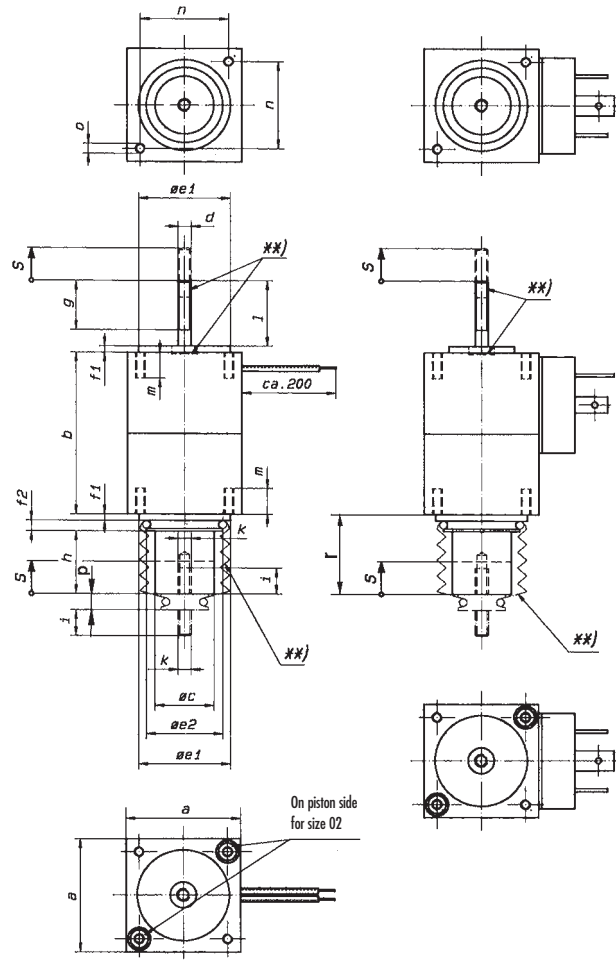
Options

see "Accessories/Options" (pp. 7-8)

Technical specification of return spring

Type	Stroke	Spring force at start of stroke F_{HA} [N]	Spring force at end of stroke F_{HE} [N]
LHP025055	5	1.5	4
LHP025055	10	1	2.2
LHP035053	5	2	3
LHP035053	10	2	2.5
LHP035053	15	2.1	4
LHP035053	20	1.5	4.3

Dimensions (mm)



Standard version "pull" and "push"
Version with lead wires
Class of protection: device IP 40
(without sealing ring, without bellows)
device IP 54
(with sealing ring, with bellows)
connection IP 00

Version with plug-in connection to DIN EN 175301-803 (DIN 43650)
Class of protection: device IP 40
(without sealing ring, without bellows)
device IP 54
(with sealing ring, with bellows)
connection IP 65

**)
Sealing ring on shaft side (size 03 only)
Bellows on piston side (with adapter)
Return spring (integral)
fork joint on shaft side

Type	a	b	c	d	e ₁	e ₂	f ₁	f ₂	g	h	i	k	l	m	n	o	p	r	Standard stroke s_{st}	Preferred strokes	s_{max}	Weight plunger	total
LHP025055	25	55	11.5	M4	20	18	2	2	11.5	10.5	8	M4	11.5	6	19.8	M3	4	14.5	5	10	10	35 g	230 g
LHP035053	35	53	18	M6	28	24	2	3	17.6	20.5	12	M6	17.6	8	27	M4	5.5	25.5	10	5, 15, 20	20	110 g	450 g
LHP070110	70	110	35	M10					20			M10	25	10	54	M6	26	20		10, 30	30	520 g	3600 g

Example of order

Heavy-duty single direction linear solenoid

LHP035053 . / . / . / . / . / . / .

1 = with lead wires

6 = with plug¹⁾ to DIN EN 175301-803 (DIN 43650)

0 = without fork joint

1 = with fork joint

0 = without bellows/sealing ring²⁾

1 = with bellows/sealing ring²⁾

0 = without spring

1 = with spring³⁾

Voltage (standard: 24 VDC, 205 VDC)

Duty cycle (%)

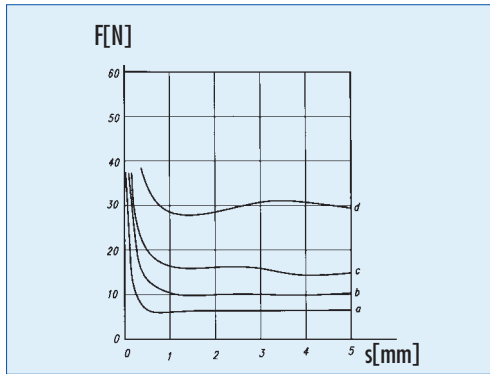
Stroke (mm)

¹⁾ See "Accessories/Options" (pp. 7-8) for material No. ²⁾ Sealing ring on size 03 only ³⁾ On size 07 on request

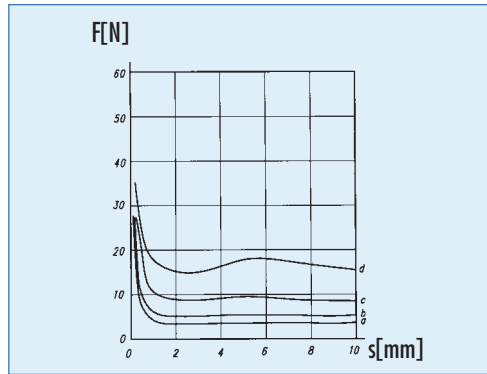
Technical specification without overvoluting

Type	Stroke s [mm]	100% duty cycle				40% duty cycle				25% duty cycle				5% duty cycle			
		Rated power	Linear work	Response time	Release time	Rated power	Linear work	Response time	Release time	Rated power	Linear work	Response time	Release time	Rated power	Linear work	Response time	Release time
		P ₂₀ [W]	W [Ncm]	t ₁ [ms]	t ₂ [ms]	P ₂₀ [W]	W [Ncm]	t ₁ [ms]	t ₂ [ms]	P ₂₀ [W]	W [Ncm]	t ₁ [ms]	t ₂ [ms]	P ₂₀ [W]	W [Ncm]	t ₁ [ms]	t ₂ [ms]
LHP025055	05	11	2.9	57	37	20.7	4.7	56.4	36.4	25.1	7.2	98.2	34.2	82.7	14	73.4	30
LHP025055	10	11	3.4	74.8	48.4	20.7	5	76.4	46.4	25.1	8.5	115.2	42.8	82.7	14.7	88.8	39.8
LHP035053	05	20	13	107	49	39.5	20	90.5	40.2	57.5	23	99	39	173.5	42	92.5	46.4
LHP035053	10	20	11	109.5	64	39.5	20	107.2	56.4	57.5	23.5	107	58.5	173.5	47.5	107	58.5
LHP035053	15	20	11.2	137.5	82	39.5	19.5	124	74.5	57.5	25.5	159.5	78.5	173.5	55.5	159.5	78.5
LHP035053	20	20	9	143.5	93	39.5	19	141	88	57.5	25	177	85	173.5	54	177	85
LHP070110	10	56	180	on request		130	275	on request		153	325	on request		810	650	on request	
LHP070110	20	56	180	on request		130	250	on request		153	350	on request		810	800	on request	
LHP070110	30	56	180	on request		130	300	on request		153	375	on request		810	600	on request	

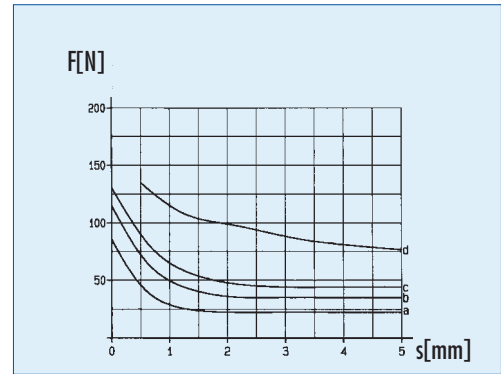
Force–stroke curves a = 100% duty cycle, b = 40% duty cycle, c = 25% duty cycle, d = 5% duty cycle



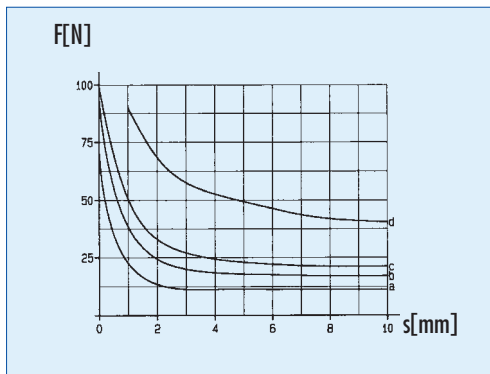
LHP025055



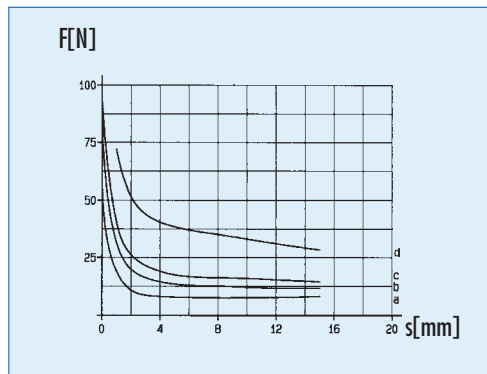
LHP025055



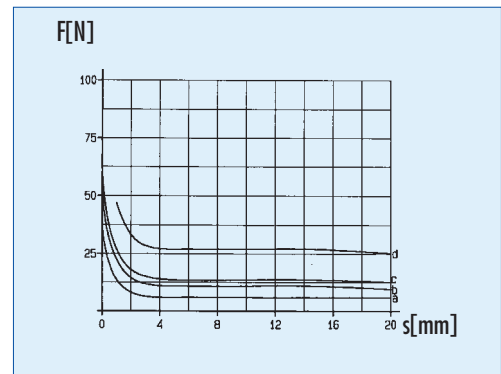
LHP035053



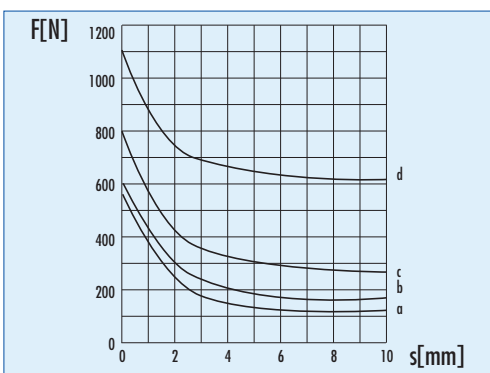
LHP035053



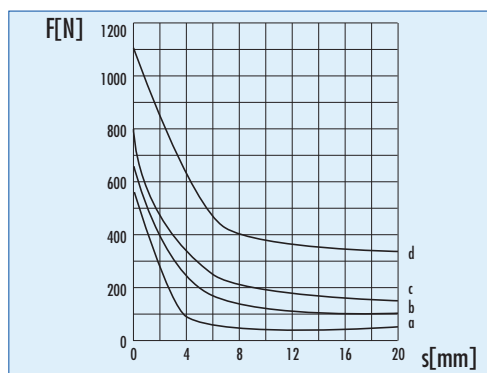
LHP035053



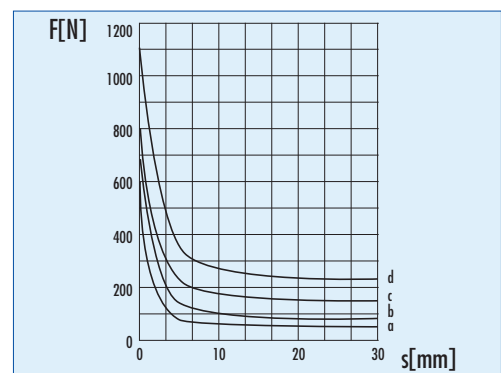
LHP035053



LHP070110



LHP070110



LHP070110

Technical specification with over-powering switching device 33 53501A00

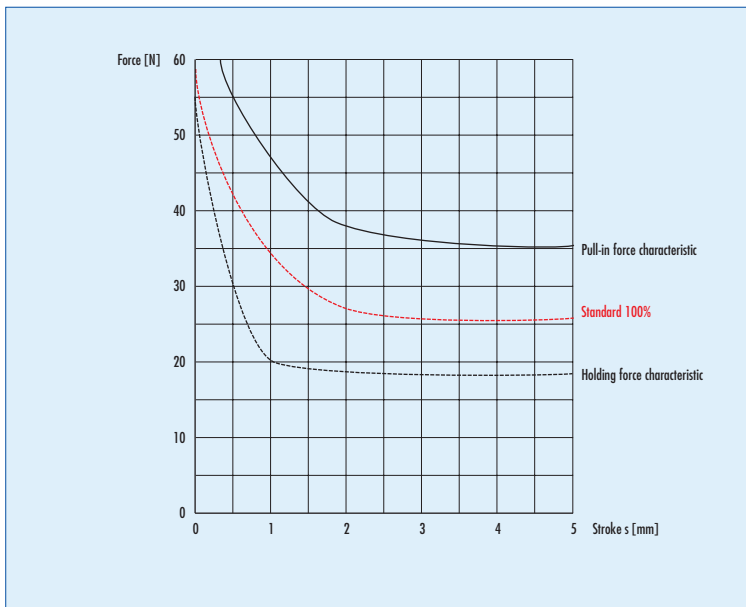
For information on the operation of the over-powering switching device, please refer the "Accessories Data Sheet"

Preferred Voltage $U_B = 24\text{ V}$, 100% duty cycle

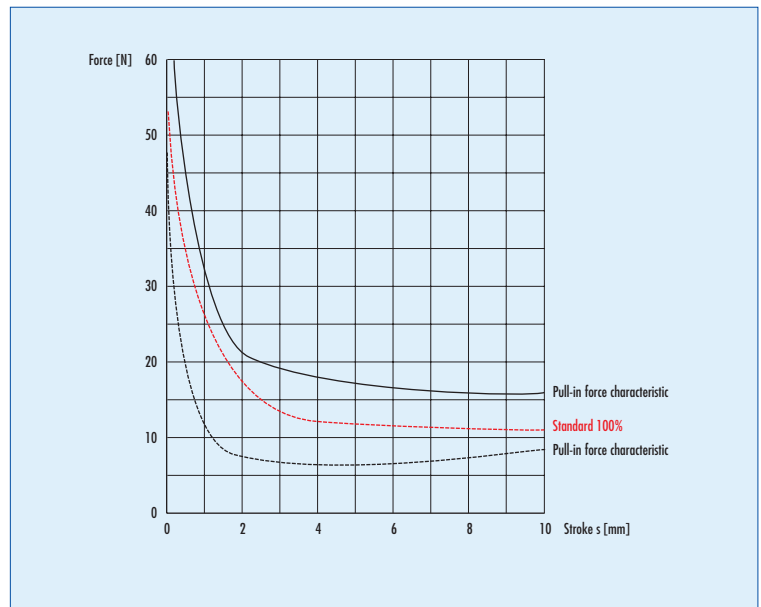
Type	Stroke s [mm]	Power at overpowering voltage P_{20} [W]	Holding power P_{20} [W]	Response time t_1 [ms]	Release time t_2 [ms]
LHP035053	05	48	12	on request	on request
LHP035053	10	48	12	on request	on request
LHP035053	15	48	12	on request	on request
LHP035053	20	48	12	on request	on request

Note: The duty cycle with over-powering is based exclusively on the coil design for the force–stroke curve required.

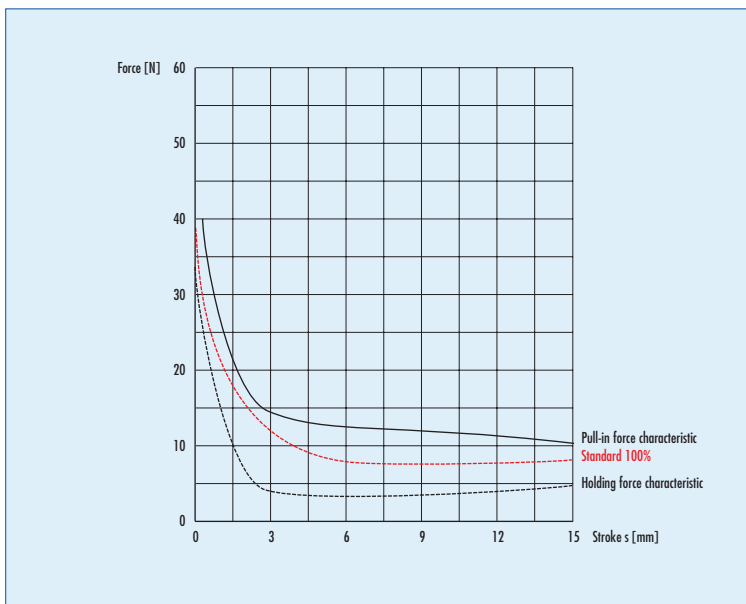
Force–stroke curves



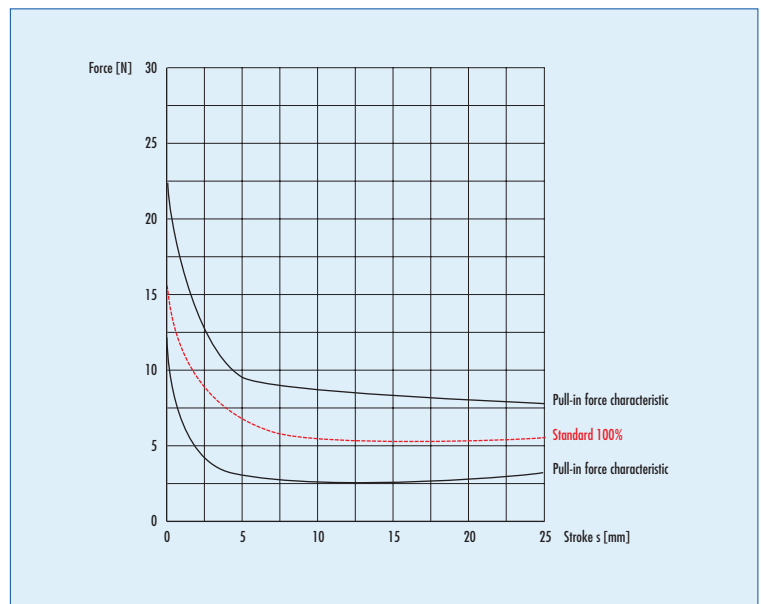
LHP035053 over-powering



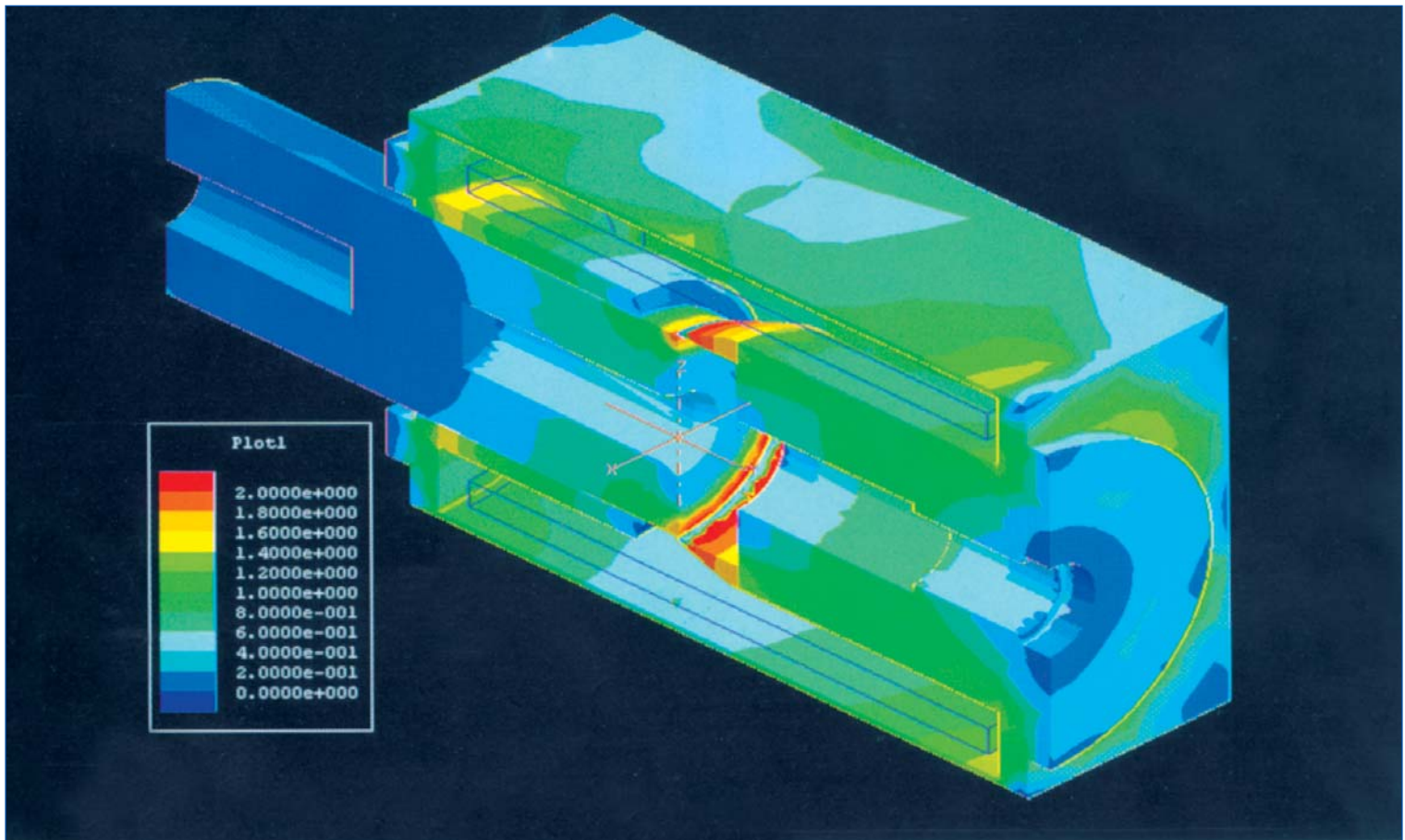
LHP035053 over-powering



LHP035053 over-powering



LHP035053 over-powering

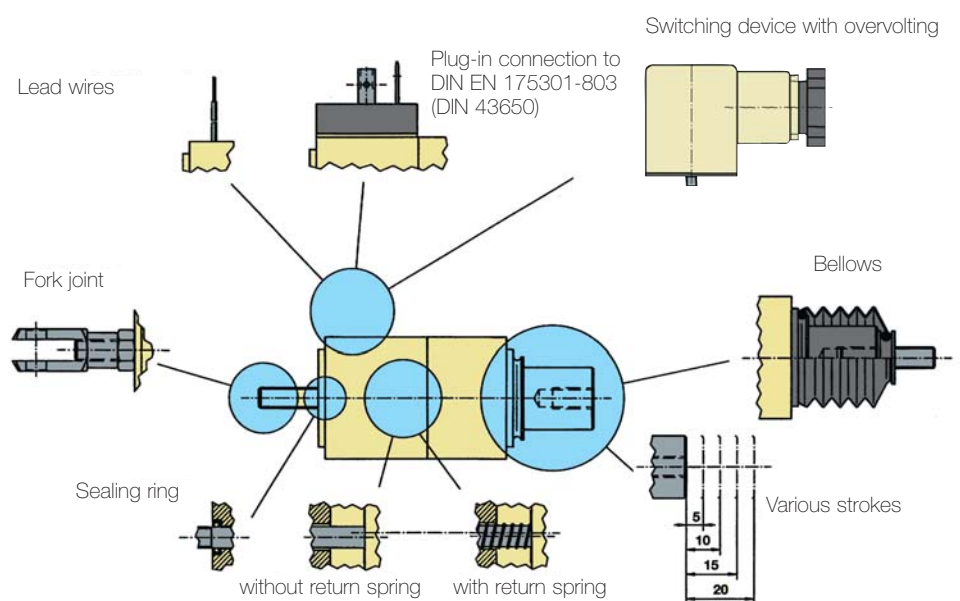


This solenoid was developed and optimised using computer-based FEM (Finite Element Method) techniques. It is characterised by its tremendous linear work concentration and modular design, which permits numerous options.

Options

Numerous options are possible thanks to the modular design.

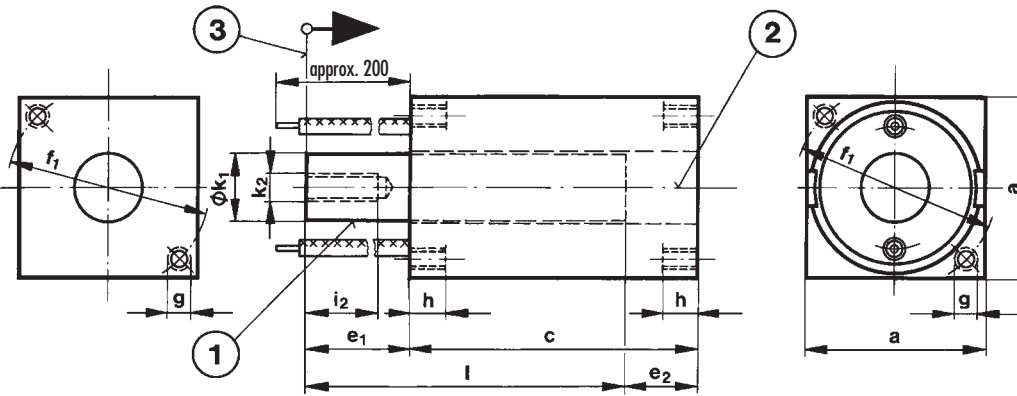
- three different sizes
- plug-in connection
- overvolting
- numerous voltages and duty cycles
- return spring
- sealing ring/bellows
- fork joint
- various strokes (5-20 mm)



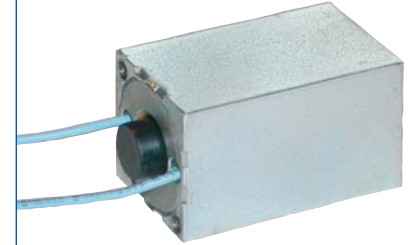
Accessories for square form LHP025055/035053/070110	Material No.	Standard	Option	Limited applicability
Plug-in connection to DIN EN 175301-803 (DIN 43650)			<input type="checkbox"/>	
Lead wires, 200 mm		■		
without bellows		■		
Bellows on pull side / sealing ring on push side			<input type="checkbox"/>	
Threaded bar on push side		■		
Threaded bar on pull side*)			<input type="checkbox"/>	
Hexagonal nut on push side		■		
without return spring		■		
with return spring			<input type="checkbox"/>	
without fork joint		■		
Fork joint with snap-on fork pin				
with fork joint GKO M4 (with/without snap-on fork pin)	3142007		<input type="checkbox"/>	
with fork joint GKO M6 (with/without snap-on fork pin)	3142009		<input type="checkbox"/>	
with fork joint GKO M6 (with/without snap-on fork pin)	3142011		<input type="checkbox"/>	
with fork joint GKO M8 (with/without snap-on fork pin)	3142013		<input type="checkbox"/>	
with fork joint GKO M10 (with/without snap-on fork pin)	3142019		<input type="checkbox"/>	
with fork joint GKO M12 (with/without snap-on fork pin)	3142021		<input type="checkbox"/>	
Plug-in connector with bridge rectifier GDSB 211 2A	3141051		<input type="checkbox"/>	
Plug-in connector with bridge rectifier GDSB V211 4A	3141049		<input type="checkbox"/>	
Plug-in connector without bridge rectifier GD311 2A	3141050		<input type="checkbox"/>	
Switching device with overvolting, rated power max. 48 W	33 53501A00			○

*) only in conjunction with bellows on pull side / sealing ring on push side

Dimensions (mm)



LHP020032



Notes for types LHP016/020/025/030

- ① A reversed plunger installation is also possible (thread k_2 pointing upwards).
- ② Insert push bar made from non-magnetic material (brass or similar) for push force effect.
- ③ Initial position (see diagram).

In this type of single direction linear solenoid the linear movement from the initial position to the end position is achieved by applying an electromagnetic force, and the return movement by means of external forces. Types LHP016/020/025/030 exhibit an ascending magnetic force progression. These solenoids do not include a plunger stop; this must be achieved with the device to be connected. They can be installed in any position, but the force transfer should be in the axial direction only.

Devices with class of protection I require the user to provide a PE line connection according to DIN VDE 0100.

These products and devices are built and tested according to **DIN VDE 0580 (July 2000)**

Standard voltage: 24 VDC

Other voltages up to max. 60 VDC and duty cycles not given in the table are possible on request (subject to a surcharge).

Class of protection: device IP 20

Insulation class: F

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

Please note ordering data!

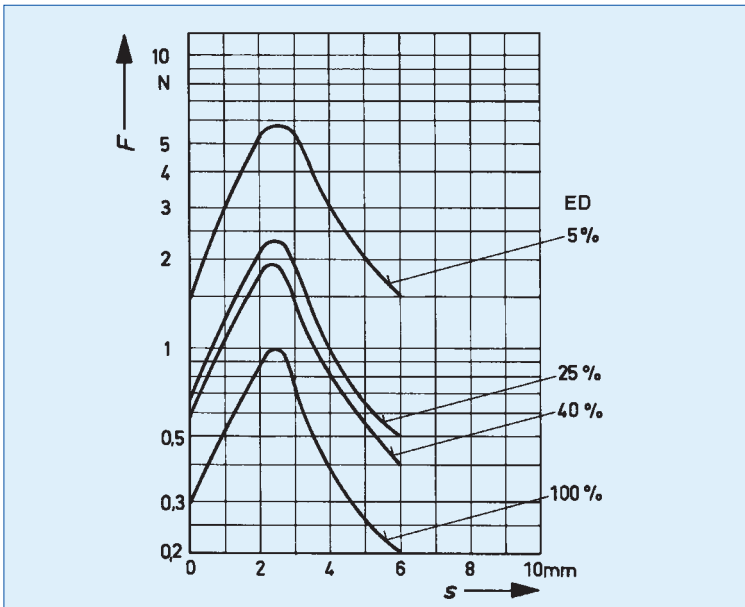
Type	a	c	e ₁	e ₂	f ₁	g	h	i ₂	k ₁	k ₂	l
LHP016028	16	28	12	10	18	M 2.5	4	10	7	M 3	30
LHP020032	20	32	15	13	22	M 2.5	5	10	8	M 3	34
LHP025040	25	40	22	17	28	M 3	5	10	9.5	M 4	45
LHP030046	30	46.5	20.5	17	33	M 3	5	10	11.5	M 4	50

Magnetic force, switching times, input powers

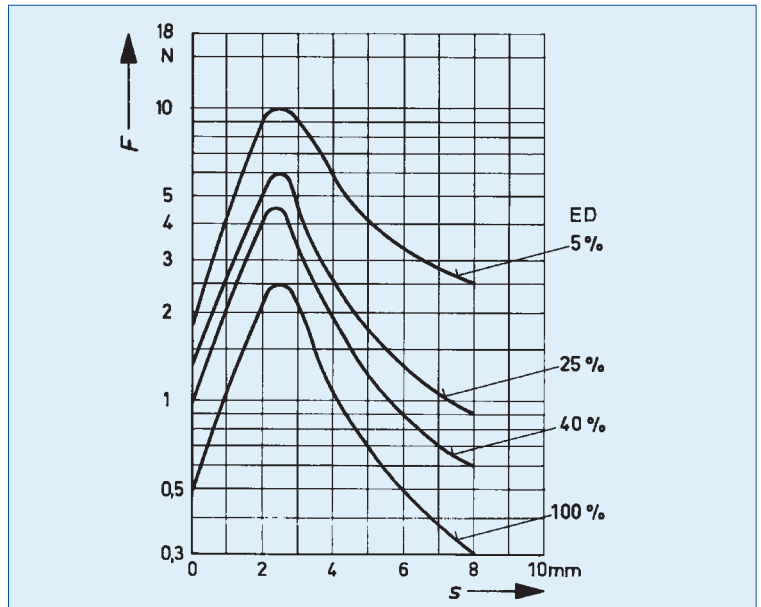
Type	Stroke s [mm]	100% duty cycle			40% duty cycle			25% duty cycle			5% duty cycle			Weight	
		Response time	Release time	Rated power	Response time	Release time	Rated power	Response time	Release time	Rated power	Response time	Release time	Rated power	plunger approx.	total approx.
		t ₁ [ms]	t ₂ [ms]	P _N [W]	t ₁ [ms]	t ₂ [ms]	P _N [W]	t ₁ [ms]	t ₂ [ms]	P _N [W]	t ₁ [ms]	t ₂ [ms]	P _N [W]	m [g]	m [g]
LHP016028	6	50	25	4	40	20	7.5	35	20	9.5	25	15	26	11	50
LHP020032	8	50	25	4.5	45	20	8	40	20	11	25	15	30	18	75
LHP025040	10	50	30	6	45	25	11	40	20	15	30	15	45	30	170
LHP030046	10	55	30	8	45	25	16	45	20	23	30	15	80	40	260

Technical specification

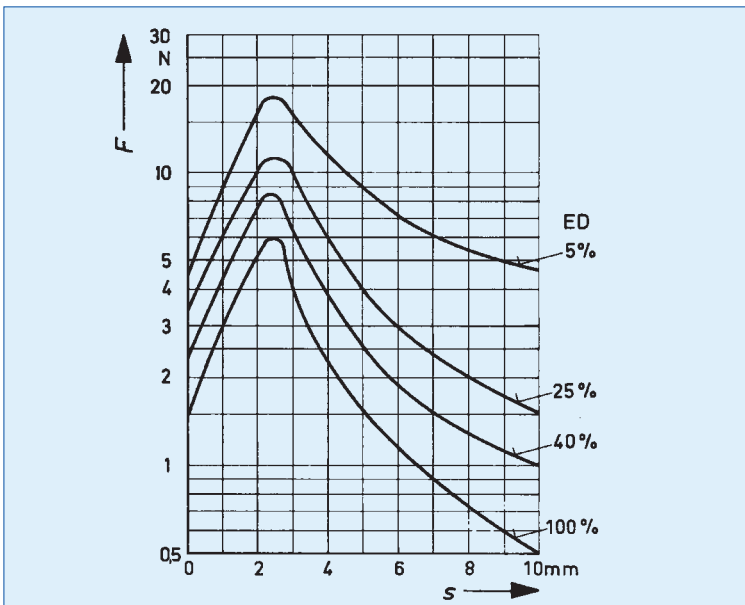
The magnetic forces specified are achieved at operating temperature and 90% of the rated voltage. The switching times are typical values for guidance only and are valid for rated voltage, operating temperature and loaded with 70% of the magnetic force of the device. The duty cycles are based on a maximum total cycle time of 30 seconds.



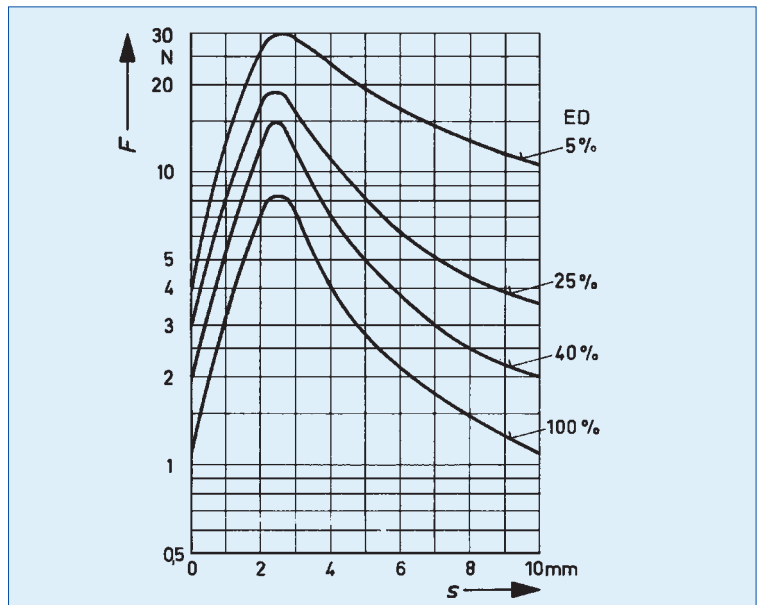
LHP016028



LHP020032

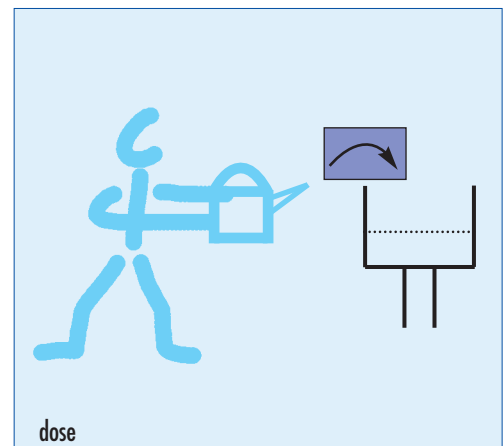
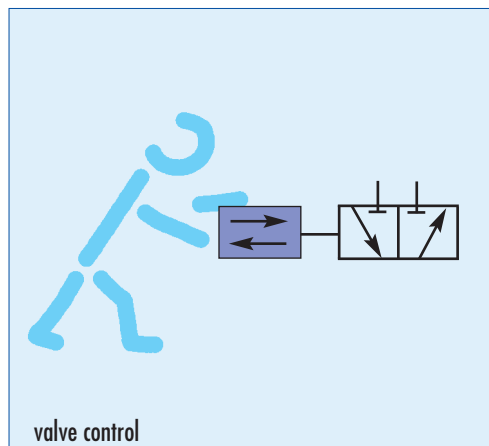
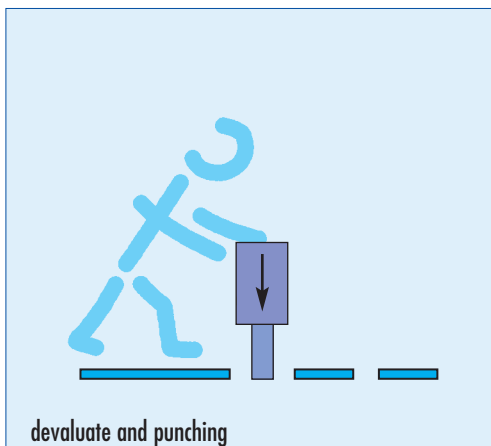
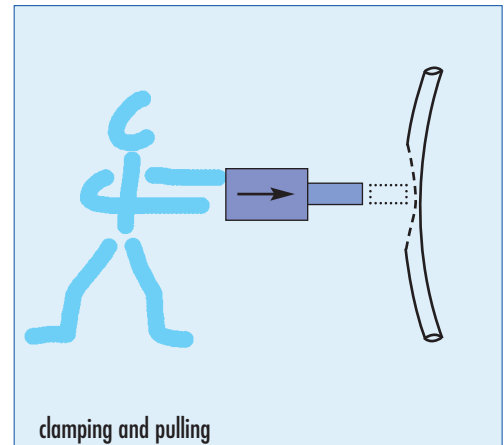
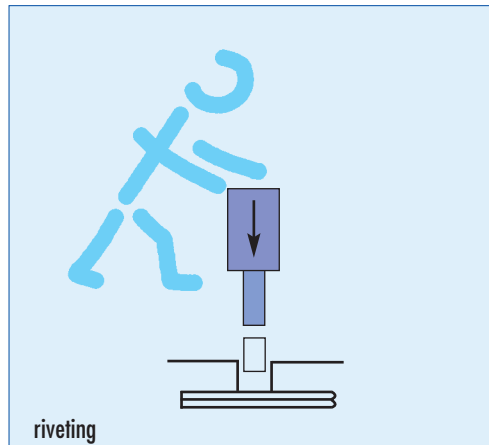
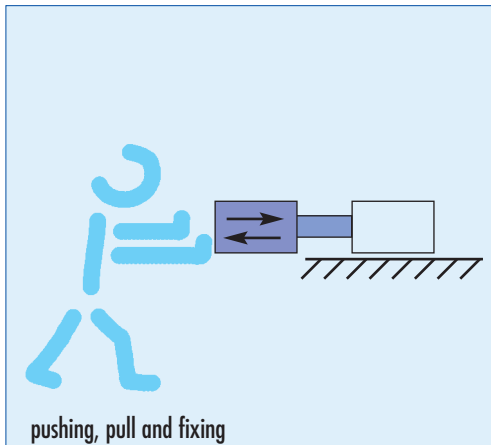
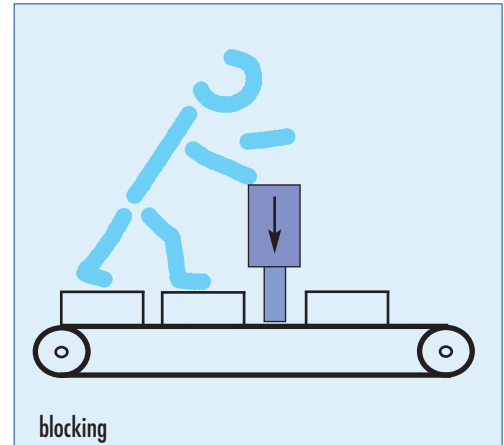
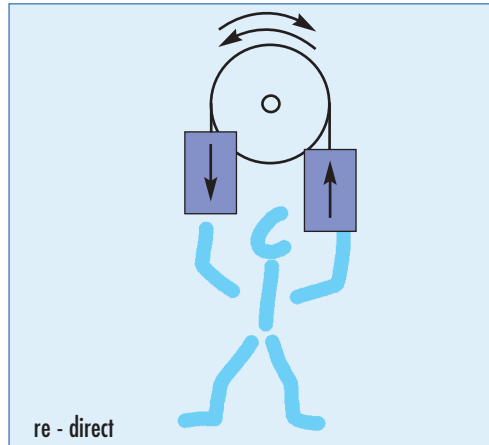
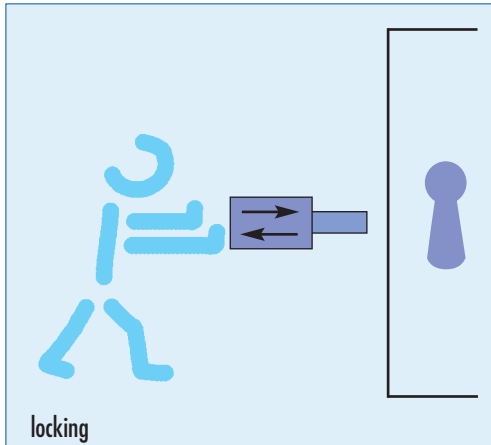
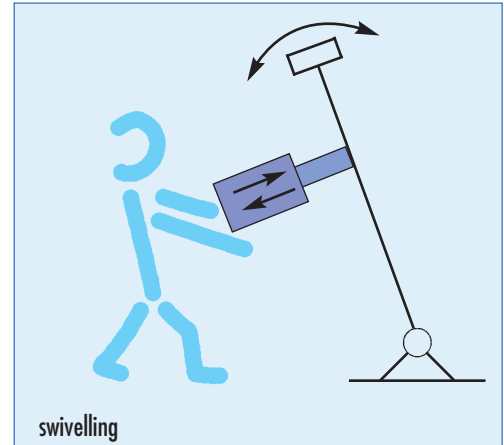
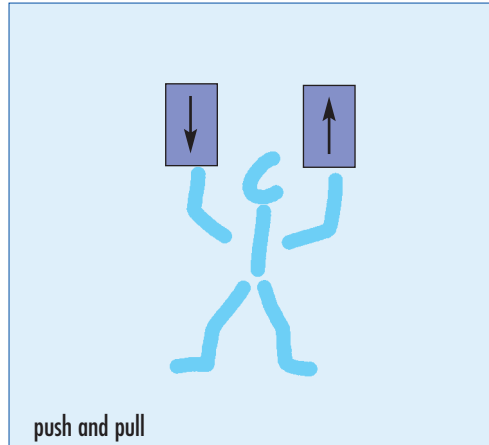
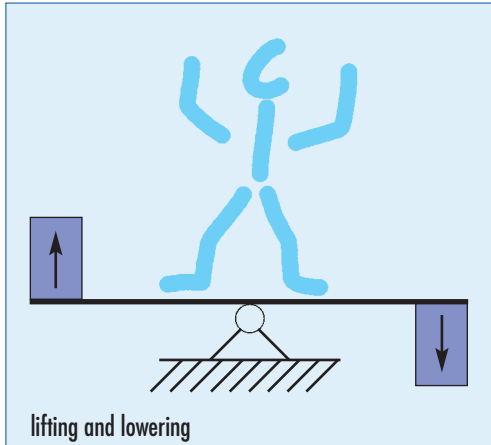


LHP025040



LHP030046

Examples of applications



Kendrion Magnettechnik GmbH

August-Fischbach-Strasse 1
78166 Donaueschingen
Germany
Tel. +49 (0) 77 1 80 09-0
Fax +49 (0) 77 1 80 09-63 4
www.kendrionmt.com
info@kendrionmt.com

Engelswies Works

Fred-Hahn-Strasse 33
72514 Inzigkofen-Engelswies, Germany
Tel. +49 (0) 75 75 20 8-0
Fax +49 (0) 75 75 20 8-1 90
www.kendrionmt.com
info@kendrionmt.com

Kendrion Binder Magnete

Ges.m.b.H.
8552 Eibiswald 269, Austria
Tel. +43 (0) 34 66 42 32 2-0
Fax +43 (0) 34 66 42 72 2
office@kendrion.com

Kendrion Binder Componentes, S.L.

Parque Industrial "El Poligono"
c./Rio Arba, 25
50410 Cuarte de Huerva /
Zaragoza, Spain
Tel. +34 9 76 46 30 40
Fax +34 9 76 46 30 42
guadalupe.cabrera@kendrion.com

Authorised suppliers and distributors (Germany)

ELMATEC

Straub und Müller GmbH
Benzstrasse 2
78083 Dauchingen
Tel. +49 (0) 77 20 95 71 71
Fax +49 (0) 77 20 95 71 73

Klebs + Hartmann GmbH & Co KG

August-Heller-Strasse 3
67065 Ludwigshafen
Tel. +49 (0) 6 21 57 90 0-0
Fax +49 (0) 6 21 57 90 0-95
www.klebs-hartmann.de
e-technik@klebs-hartmann.de

Steinlen

Elektromaschinenbau GmbH
Ehlbeek 21
30938 Burgwedel
Tel. +49 (0) 51 39 80 70-0
Fax +49 (0) 51 39 80 70 60
www.steinlen.de
vertrieb@steinlen.de

Technical offices (Germany)

Kendrion Magnettechnik GmbH

Technisches Büro West
Bottroper Strasse 15
46244 Bottrop
Tel. +49 (0) 20 45 41 34 34
Fax +49 (0) 20 45 40 64 26
www.kendrionmt.com
wilhelm.martin@kendrion.com

Kendrion Magnettechnik GmbH

Technisches Büro Nord
Delmer Bogen 71
21614 Buxtehude
Tel. +49 (0) 41 61 73 37 77
Fax +49 (0) 41 61 60 07 39 3
www.kendrionmt.com
reinhard.lenser@kendrion.com

Representatives (Germany)

Claus Kähne

Industriervertretungen GmbH
Kurmainzer Strasse 199a
65936 Frankfurt
Tel. +49 (0) 69 34 05 90 20
Fax +49 (0) 69 34 05 90 27
kaehne.gmbh@t-online.de

Winfried Kerner GmbH

Ingenieurbüro
Kiebitzweg 11
85375 Neufahrn
Tel. +49 (0) 81 65 52 45
Fax +49 (0) 81 65 62 12 8
www.kerner-gmbh.de
kerner-gmbh@t-online.de

Antriebstechnik Laipple GmbH

Burgstrasse 84
73614 Schorndorf
Tel. +49 (0) 71 81 97 94 92
Fax +49 (0) 71 81 97 94 93
ad.sued-west@moeninghoff.de

Wolfgang Niess

Ingenieurbüro
Wasserbergweg 3
73207 Plochingen a. N.
Tel. +49 (0) 7161 65 85 70
Fax +49 (0) 7161 65 85 72 9
+49 (0) 7153 82 06 18
jurenka@r-u-g.de

VOR-Steuerungstechnik

Friedrich Rudolph GmbH
Wichernstrasse 9
50389 Wesseling
Tel. +49 (0) 22 36 94 27 88
Fax +49 (0) 22 36 84 27 86
www.vor.de
info@vor.de

Representatives (worldwide)

Austria

**Kendrion Binder Magnete
Vertriebs. GmbH**
Estermannstrasse 27
4020 Linz
Tel. +43 (0) 7 32 77 63 83
Fax +43 (0) 7 32 78 35 58
www.kendrion-binder.at
office@kendrion-binder.at

Belgium, Luxembourg

Bintz technics N.V.
Brixtonlaan 25
1930 Zaventem
Tel. +32 (0) 2 7 20 49 16
Fax +32 (0) 2 7 20 37 50
www.bintz-technics.be
info@bintz.be

Canada

VL Motion Systems Inc.
1105 Goodson Cres.
Oakville, Ontario L6H4A7
Tel. +01 905 842 0244
Fax +01 905 844 1293
vince@vlmotion.com

Denmark

Lind Jacobsen & Co. A / S
Blokken 62
3460 Birkerød
Tel. +45 (0) 45 81 82 22
Fax +45 (0) 45 82 10 22
www.lind-jacobsen.dk
strong@lind-jacobsen.dk

Desim Elektronik APS

Tasingevej 15
9500 Hobro
Tel. +45 (0) 70 22 00 66
Fax +45 (0) 70 22 22 20
www.desim.dk
desim@desim.dk

Farstrup & Benzon A/S

Engholmvej 1, Saunte
3100 Hombæk
Tel. +45 (0) 49 70 40 33
Fax +45 (0) 49 70 40 32
www.safeline.dk
f&b@safeline.dk

Finland

SKS-mekaniikka Oy
Martinkyläntie 50
P.O. Box 122
01721 Vantaa
Tel. +358 (0) 98 52 66 1
Fax +358 (0) 98 52 68 20
www.sks.fi
mekaniikka@sks.fi

Moeller Electric Oy

Sahaajankatu 24
00811 Helsinki
Tel. +358 (0) 9 25 25 21 00
Fax +358 (0) 9 25 25 21 77
www.moeller.fi
info.fin@moeller.net

France

Binder Magnetic
1, Allée des Barbannières
92632 Gennevilliers Cedex
Tel. +33 (0) 1 46 13 80 80
Fax +33 (0) 1 46 13 80 99
info@binder-magnetic.fr

Italy

SPii S.p.A
Via Don Volpi 37
21047 Saronno (VA)
Tel. +39 (0) 2 96 22 921
Fax +39 (0) 2 96 09 611
www.spii.it
info@spii.it

Netherlands

Solar Electro B. V.
Effect 5
6921 RG Duiven
Tel. +31 (0) 26 3 65 29 11
Fax +31 (0) 26 3 65 23 90
www.solarelektro.nl
algemeen@solarelektro.nl

GTI Electroproject B.V.

Sluispolderweg 15
1505 HJ-Zaandam
Tel. +31 (0) 75 68 18 88 8
Fax +31 (0) 75 63 54 00 3

Norway

Industrielementer AS
Postboks 43
1556 Son
Tel. +47 (0) 64 95 81 32
Fax +47 (0) 64 98 29 29
www.industrielementer.no
post@industrielementer.no

siv. ing. J.F. Knudtzen A/S

Billingstadsletta 97
1396 Billingstad
Tel. +47 (0) 66 98 33 50
Fax +47 (0) 66 98 09 55
www.jfk.no
firmapost@jfk.no

South Africa

Magnete Service Binder
P.O. Box 44051
2104 Linden
Tel. +27 (0) 11 46 2-32 08
Fax +27 (0) 11 46 2-33 04
info@binder.co.za

Spain, Portugal

Binder Magnete Iberica S.L.
Apartado de Correos 116
Costa Zefir 99
43892 Miami-Playa (Tarragona)
Tel. +34 9 77 17 27 07
+34 9 77 81 04 29
Fax +34 9 77 17 01 82
www.binder-es.com
binder@binder-es.com

Sweden

Industrikomponenter AB
Industrivägen 12
17148 Solna
Tel. +46 (0) 8 51 48 44 00
Fax +46 (0) 8 51 48 44 01
www.inkom.se
info@inkom.se

Uno Gunnarsson / Höör AB

Box 64
24322 Höör
Tel. +46 (0) 4 13 24 54 0
Fax +46 (0) 4 13 23 18 3

Moeller Electric AB

Huvudkontor och filial
Skalholtsgatan 6
16426 Kista
Tel. +46 (0) 86 32 30 00
Fax +46 (0) 86 32 32 99

Switzerland

Kendrion Binder Magnet AG
Albisstrasse 26
8915 Hausen a/A
Tel. +41 (0) 17 64 80 60
Fax +41 (0) 17 64 80 69
www.kendrion.ch
binder.magnete@kendrion.com

United Kingdom

**Kendrion Binder Magnete
(U.K.) Ltd.**
Huddersfield Road, Low Moor
Bradford, West Yorkshire,
BD12 0TQ
Tel. +44 (0) 12 74 60 11 11
Fax +44 (0) 12 74 69 10 93
www.kendrion-binder.co.uk
sales@kendrion-binder.co.uk

USA

Gradframe Inc.
950 E. Baldwin Road
Palatine IL 60074
Tel. +01 847 991 1788
Fax +01 847 991 1788
gradframe@aol.com

This publication is for information purposes only and should not be regarded as a binding presentation of the products, unless we expressly confirm otherwise. We reserve the right to make changes to the specification, form, price and availability of the products described herein at any time without prior notice. Each product may be used only for its intended purpose. We reserve to make changes to the product design.