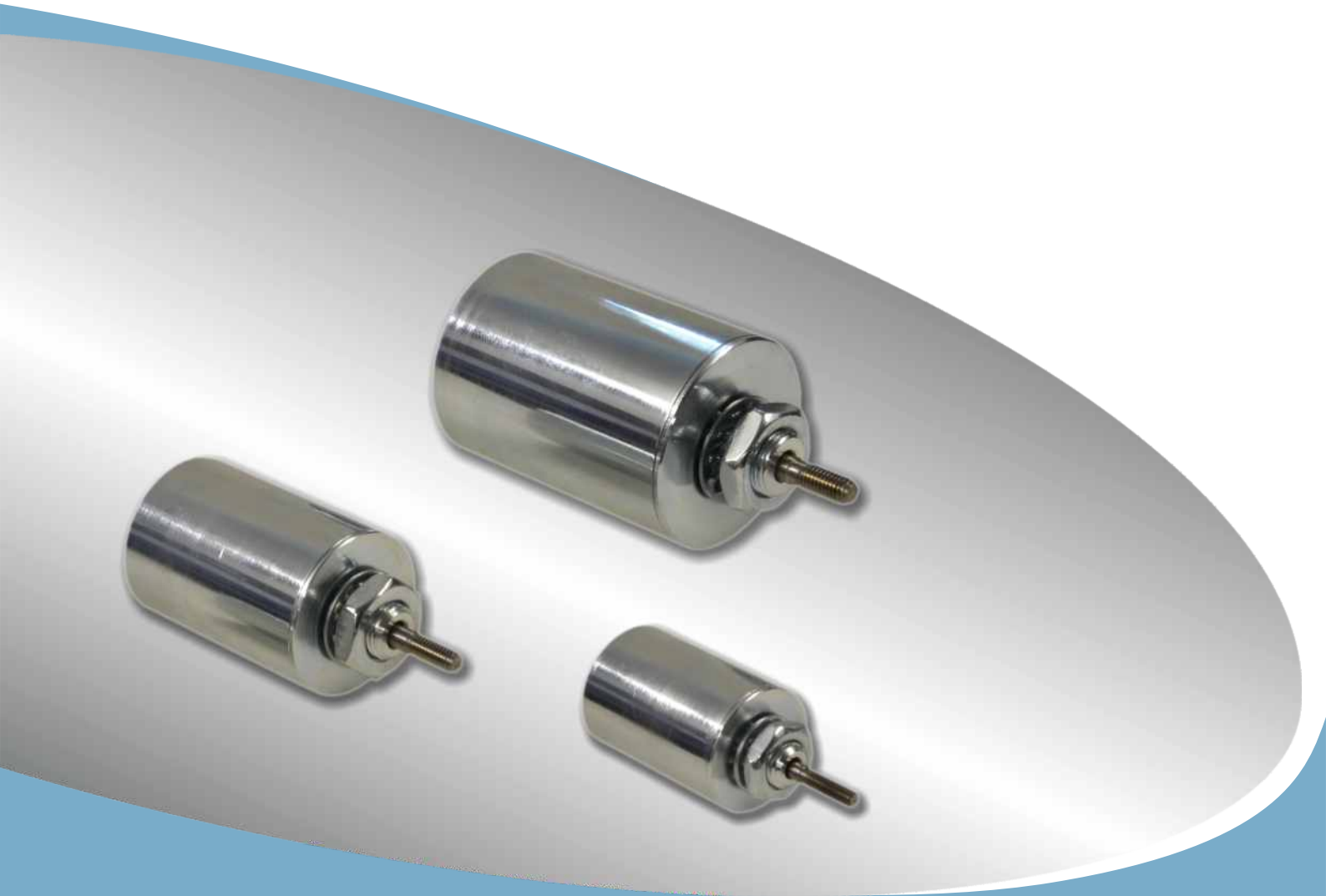




WE MAGNETISE THE WORLD

INDUSTRIAL MAGNETIC SYSTEMS



DC Miniature Solenoids KLM Varioline

SWISS MADE



MAGNET AG

BINDER

DC Miniature Solenoids Type KLM



- Design:** Single stroke solenoid pulling and pushing, double stroke and inverse stroke types.
Standard: Zinc plated (optional: painted / nickel plated)
- Fixing:** Central or flange mounting.
- Connection Type:** Flying terminal ends or terminal box small (see next pages).
- Mounting:** The KLM-solenoids work in any position and are maintenance-free.
- Coils:** Vacuum-impregnated
- Preferred Voltage:** 12, 24, 48 V dc / G 230 V 50 Hz ac
- Options:**
- Return spring inside
 - Nickel plated (increased corrosion protection) or painted

The nominal magnetic force applies at operating temperature, at 90% of nominal voltage and an ambient temperature of 20°C. At the nominal voltage, the nominal magnetic force increases by 20%.

At nominal voltage and with a coil temperature of 20°C, the nominal magnetic force increases by approximately 50%.

Voltages higher than 48V cause a gradual reduction of nominal magnetic force of up to 10% at 200V.

Voltages higher than 48V cause a gradual reduction of time constant T of up to 15% at 200V.

The switching times are reached at operating temperature with nominal voltage and a load of 70% of the nominal magnetic force.

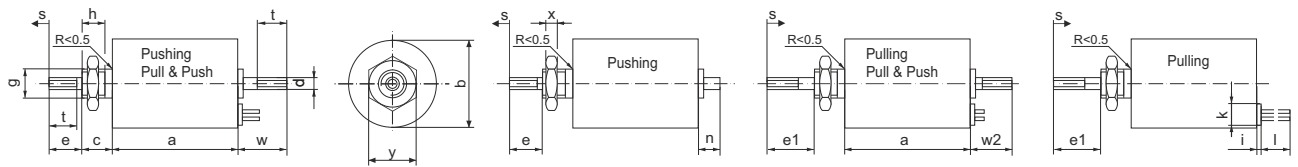
The ambient temperature should not exceed 40°C; its average value over a period of 24 hours should not exceed 35°C.

Type		KLM 22					KLM 30					KLM 40																	
Duty cycle	ED %	100	40	25	15	5	100	40	25	15	5	100	40	25	15	5													
Stroke max.	mm	3	3	3	3	3	6	6	6	6	6	6	10	6	10	6	10	6	10										
Nominal magnetic force	N	1.7	2.5	3.2	4.3	7.2	3.1	5.5	6.5	8.7	17.8	11.5	7.5	18.5	11.5	22.5	14.0	26.0	16.5	48.0	33.0								
Holding force	N	2.8	5.0	7.6	10.8	18.5	10.0	13.6	15.0	21.0	33.0	30.0	17.5	45.0	25.0	61.0	32.0	69.0	38.0	111.0	63.0								
Work rating	Ncm	0.51	0.75	0.96	1.29	2.16	1.86	3.30	3.90	5.22	10.70	6.90	7.50	11.1	11.5	13.5	14.0	15.6	16.5	28.8	33.0								
Response	Opening time	ms	8	8	7	7	6	6	11	10	10	10	8	20	15	14	12	12	10	10	75								
		ms	33	41	33	41	33	32	39	32	38	53	64	50	60	48	58	44	54	42	50	92	112	81	96	73	87	69	81
Decay	Closing time	ms	4	3	3	3	3	3	5	4	3	3	3	8	7	6	6	6	6	6	6	47							
		ms	27	31	27	30	22	25	20	23	20	23	39	44	36	40	34	37	34	37	34	46	54	45	52	43	49	41	47
Maximal operations per hour	s/h	50'000	20'300	13'800	8'700	2'950	33'300	14'400	9'450	5'900	2'080	21'700	9'700	6'600	4'200	1'450													
Electrical power at 20 °C	W	4	8	10.4	14.5	29	6	12.5	15.5	25	65	10	23	33	47	153													
Inductance $L = \frac{U^2 \cdot \tau}{P \cdot 1000}$	Time constant τ	4	4	4	4	3	6	6	6	5	4	12	10	9	8	7													
	Stroke start ms	8	7	7	6	6	16	13	10	9	7	37	32	25	20	10													
		Simple-action		Double / Rev. action			Simple-action		Double / Rev. action			Simple-action		Double / Rev. action															
Total weight	g	80		125			200		260			265		460		630			640										
Armature weight	g	14		30			26		35			40		58		70			80										

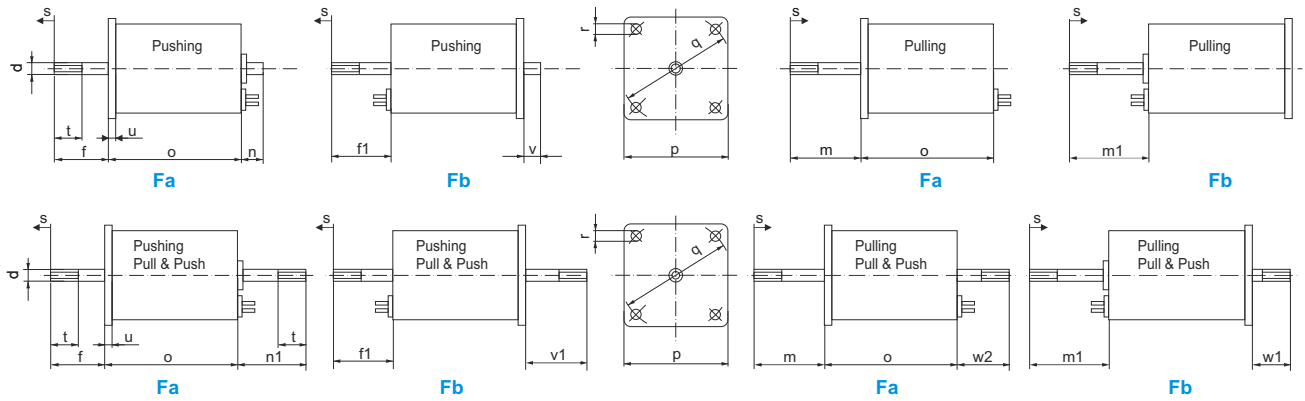
Dimensions of DC Miniature Solenoids Type KLM

Simple-action Solenoids

Central Fixing



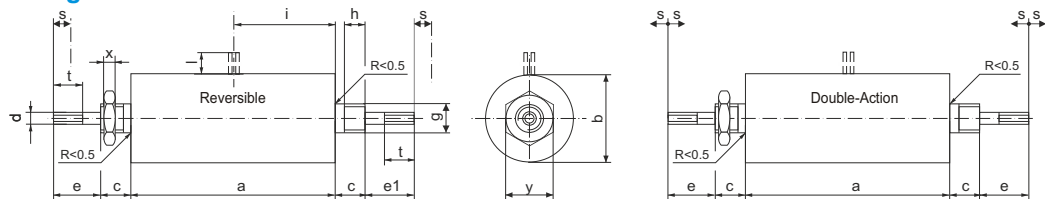
Flange Fixing



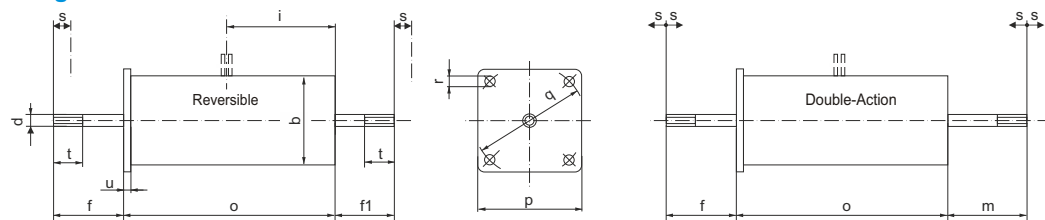
Typ	a	b	c	d	e	e1	f	f1	g	h	i	k	l	m	m1	n	n1	o	p	q	r	s	t	u	v	v1	w	w1	w2	x	y
KLM 22	32	22	8	M 3	11	14	17	19	M 8 x 1	6	2	6	200	20	22	5	18	34	27	30	3.2	3	10	2	3	20	18	13	15	4	13
KLM 30	43	30	10	M 4	11	17	18	21	M 10 x 1	7	2	8	200	24	27	7	23	46	35	40	3.5	6	10	3	5	20	23	14	17	5	17
KLM 40	56	40	12	M 5	13	23	21	25	M 12 x 1	8	2	10	200	31	35	12	30	60	45	50	4.5	6 / 10	10	4	8	26	30	16	20	6	19

Double and Reversible-Action Solenoids

Central Fixing



Flange Fixing



Typ	a	b	c	d	e	e1	f	f1	g	h	i	l	m	o	p	q	r	s	t	u	x	y
KLM 22	54	22	8	M 3	14	11	20	19	M 8 x 1	6	27	200	22	56	27	30	3.2	3	10	2	4	13
KLM 30	70	30	10	M 4	17	11	24	21	M 10 x 1	7	35	200	27	73	35	40	3.5	6	10	3	5	17
KLM 40	89	40	12	M 5	23	13	31	25	M 12 x 1	8	44.5	200	35	93	45	50	4.5	6 / 10	10	4	6	19

Key to Type Identification

Type of Solenoid
KLM = DC Miniature Solenoid

Function
Z = pulling
S = pushing
SB = Pushing pull & push
ZB = Pulling pull & push
D = double-action
U = reversible

Diameter
size in mm

Fixing
Z = central fixing
Fa = flange fixing type a
Fb = flange fixing type b
- K = Terminal box small

Example: KLM Z 30 Fa

Flange fixing (fixing diameter 3 x 120°)			
KLM 22	fixing - Ø	16 mm	3 x M3
KLM 30	fixing - Ø	21 mm	3 x M3
KLM 40	fixing - Ø	28 mm	3 x M4

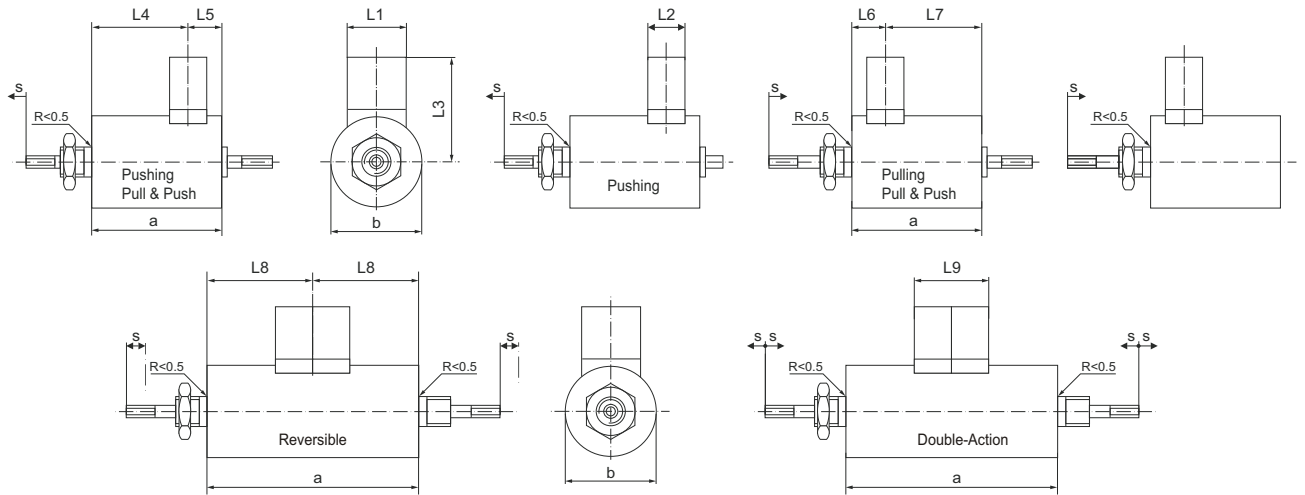
Ordering example: KLM SB 40 Z

U = 24V dc
ED = 100 %
s = 10 mm
F = 7.5 N

DC Miniature Solenoids Type KLM



- Design:** Single direction lifting solenoid pulling and pushing, double stroke and inverse stroke types. Standard: Zinc plated
- Fixing:** Central or flange mounting.
- Connection Type:** Terminal box small (max. 48 V dc).
- Mounting:** The KLM-solenoids work in any position and are maintenance-free.
- Coils:** Vacuum-impregnated
- Preferred Voltage:** 12, 24, 48 V dc / G 230 V 50 Hz ac
- Options:**
 - Return spring inside
 - Nickel plated (increased corrosion protection) or painted
- Additional Data:** see previous pages



Simple-action Solenoids

Double / Reversible-Action Solenoids

Type	a	b	L1	L2	L3	L4	L5	L6	L7	Typ	a	b	L8	L9
KLM 22	32	22	18	14	31	24	8	8	24	KLM 22	54	22	27	28
KLM 30	43	30	18	14	35	33	10	10	33	KLM 30	70	30	35	28
KLM 40	56	40	18	14	40	43	13	13	43	KLM 40	89	40	44.5	28

Flange fixing: See previous pages

Key to Type Identification

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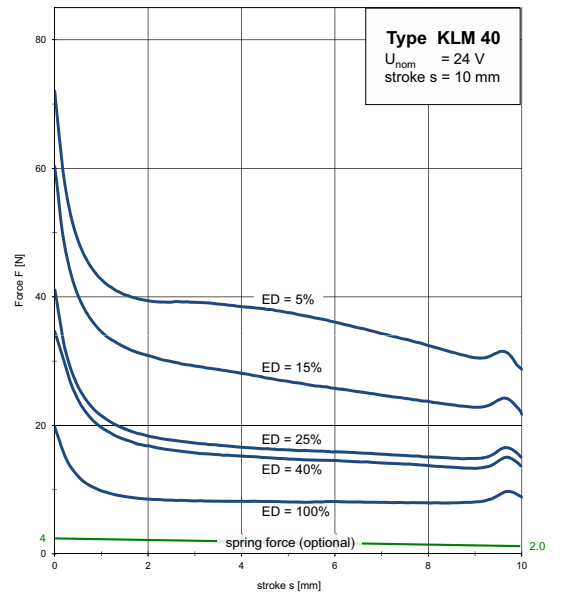
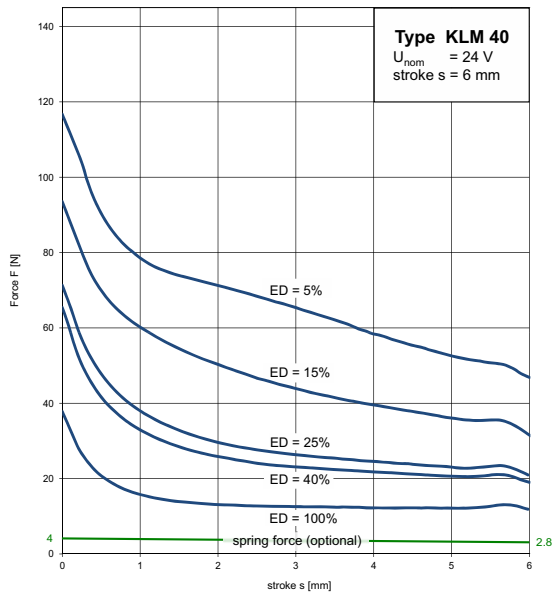
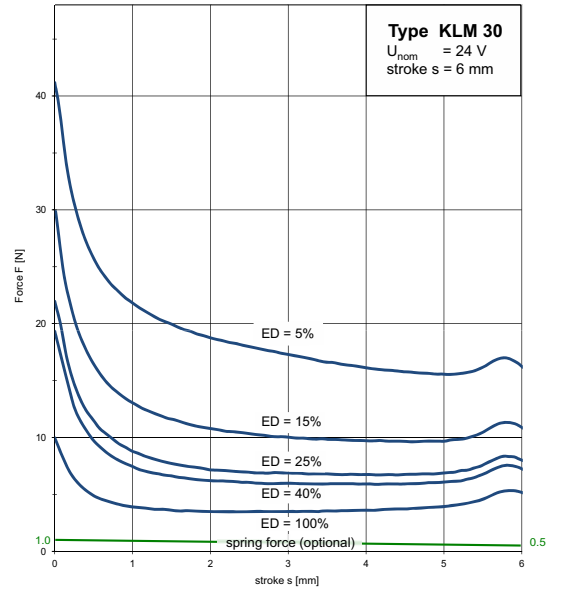
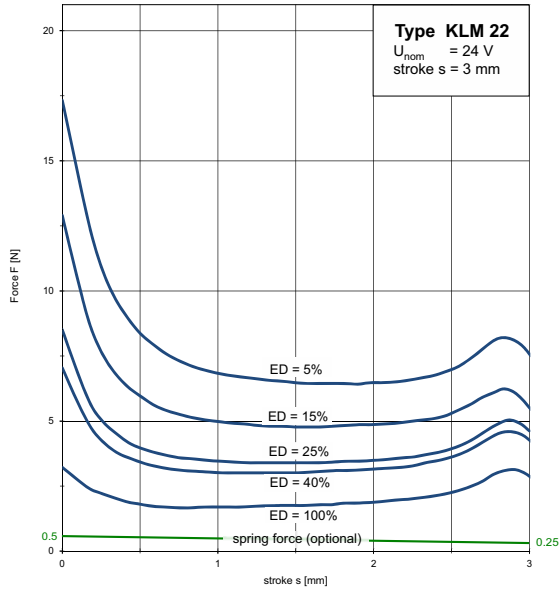
Ordering Example: KLM SB 40 Z-K

U = 24V dc
 ED = 100 %
 s = 10 mm
 F = 7.5 N

Example: KLM Z 30 Fa-K

Miniature Solenoids Type KLM: Force-stroke diagram

for $U = 90\% U_{nom}$ and in hot condition





WE MAGNETISE THE WORLD

If you have any questions - we will be happy to help!

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