


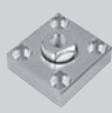








**Overview**

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**Cylinder Accessories**

*for piston rods*  
 – Piston rod eyes  
 – Piston rod clevis  
 – Compensating Coupling  
 – Coupling

*Pivot*  
 – for mounting B  
 – for mounting EN

*Adapter plate for mounting of S9-valves*

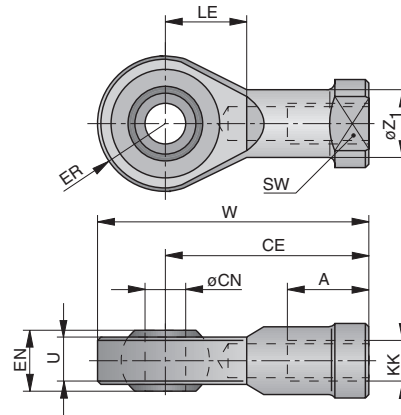
*Magnetic switch*

## Piston rod eyes

for Cylinder  
 $\varnothing$  10 to 320 mm

- to ISO 8139
  - to CETOP RP103P
- Series GA-...

### Dimensions



Material: galvanized steel

### Assembly instructions:

When mounting the load avoid lateral forces on the piston rod.

### Delivery includes:

1 spherical clevis

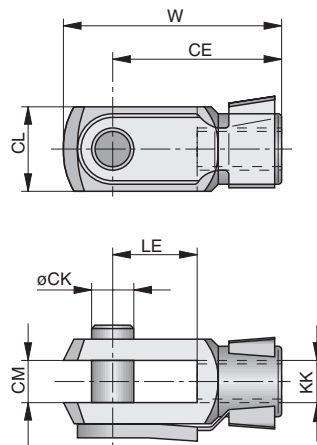
### Dimension Table (mm)

Type	ØCN <sup>H7</sup>	LE	U	EN	ER	W	A	CE	KK	ØZ <sub>1</sub>	SW
GA-M4	5	9	6	8	9	35	12	27	M4	9	8
GA-M6	6	11	6.75	9	10	40	12	30	M6	10	11
GA-M8	8	13	9	12	12	48	16	36	M8	12.5	14
GA-M10	10	15	10.5	14	14	57	20	43	M10	15	17
GA-M10x1.25	10	15	10.5	14	14	57	20	43	M10x1.25	15	17
GA-M12	12	17	12	16	16	66	22	50	M12	17.5	19
GA-M12x1.25	12	17	12	16	16	66	22	50	M12x1.25	17.5	19
GA-M16	16	22	15	21	21	85	28	64	M16	22	22
GA-M16x1.5	16	22	15	21	21	85	28	64	M16x1.5	22	22
GA-M20x1.5	20	26	18	25	25	102	33	77	M20x1.5	27.5	32
GAN-M24x2	25	31	22	31	30 <sub>max.</sub>	124 <sub>max.</sub>	42 <sub>min.</sub>	94	M24x2	33.5	36
GAN-M27x2	30	36	25	37	35 <sub>max.</sub>	145 <sub>max.</sub>	51 <sub>min.</sub>	110	M27x2	40	41
GAN-M36x2	35	41	28	43	40 <sub>max.</sub>	165 <sub>max.</sub>	56 <sub>min.</sub>	125	M36x2	46	50
GAN-M42x2	40	46	33	49	45 <sub>max.</sub>	187 <sub>max.</sub>	60 <sub>min.</sub>	142	M42x2	53	55
GAN-M48x2	50	59	45	60	58 <sub>max.</sub>	218 <sub>max.</sub>	65 <sub>min.</sub>	160	M48x2	65	65

### Order Instructions and Weight

Order Instructions		Weight (mass) (kg)
Type	Order-No.	
GA-M4	KX 6023	0.021
GA-M6	KY 6144	0.025
GA-M8	KY 6145	0.043
GA-M10	KY 6146	0.072
GA-M10x1,25	KY 6147	0.072
GA-M12	KY 6185	0.107
GA-M12x1,25	KY 6148	0.107
GA-M16	KY 6149	0.21
GA-M16x1,5	KY 6150	0.21
GA-M20x1,5	KY 6151	0.38
GAN-M24x2	KY 6152	0.65
GAN-M27x2	KY 6862	1.0
GAN-M36x2	KY 6863	1.6
GAN-M42x2	KY 6864	3.5
GAN-M48x2	KL 9132	5.2



**Dimensions**


Material: galvanized steel

**Dimension Table (mm)**

Type	ØCK	LE	CM	CL	W	CE	KK
GK-M4	4	8	4	8	22	16	M4
GK-M6	6	12	6	12	31	24	M6
GK-M8	8	16	8	16	42	32	M8
GK-M10	10	20	10	20	52	40	M10
GK-M10x1.25	10	20	10	20	52	40	M10x1.25
GK-M12	12	24	12	24	62	48	M12
GK-M12x1.25	12	24	12	24	62	48	M12x1.25
GK-M16	16	32	16	32	83	64	M16
GK-M16x1.5	16	32	16	32	83	64	M16x1.5
GK-M20x1.5	20	40	20	40	105	80	M20x1.5
GKN-M24x2	25	50	25	50	132 <sup>max.</sup>	100	M24x2
GKN-M27x2	30	54	30	55	148 <sup>max.</sup>	112	M27x2
GKN-M36x2	35	72	36	70	188 <sup>max.</sup>	144	M36x2
GKN-M42x2	40	84	40	85	245 <sup>max.</sup>	168	M42x2
GKN-M48x2	50	96	50	96	277 <sup>max.</sup>	192	M48x2

**Order Instructions and Weight**

Order Instructions		Weight (mass) (kg)
Type	Order-No.	
GK-M4	KZ 1413	0.008
GK-M6	KY 6132	0.016
GK-M8	KY 6133	0.038
GK-M10	KY 6134	0.08
GK-M10x1.25	KY 6135	0.08
GK-M12	KY 6138	0.125
GK-M12x1.25	KY 6136	0.125
GK-M16	KY 6140	0.3
GK-M16x1.5	KY 6139	0.3
GK-M20x1.5	KY 6141	0.52
GKN-M24x2	KY 6142	1.08
GKN-M27x2	KY 6866	1.5
GKN-M36x2	KY 6867	2.9
GKN-M42x2	KY 6868	6
GKN-M48x2	KL 9131	7.9

**Piston rod clevis**

for Cylinder  
 Ø 10 to 320 mm  
 – to ISO 8140  
 – to CETOP RP102P  
 Series GK-...

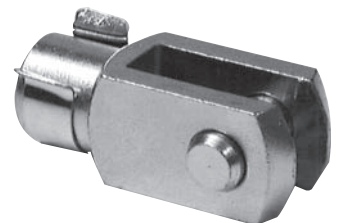
**Assembly instructions:**

On the load side with pin and circlip (supplied).  
 When mounting the load avoid lateral forces on the piston rod.

**Delivery includes:**

1 spherical clevis

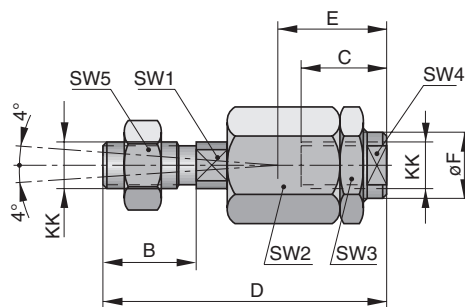
From Ø 125 upward, the safety clamp and the pin held with two circlips are omitted.



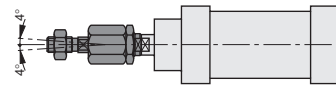
## Compensating Coupling

for Piston Rods  
 $\varnothing$  10 to 320 mm  
 – to ISO 8139  
 – to CETOP RP103P  
 Series AK-...

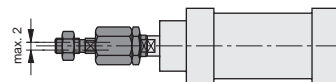
### Dimensions



### Angular compensation



### Radial compensation of the centre axis



Material: Steel  
 Tensile strength: 500-600 N/mm<sup>2</sup>

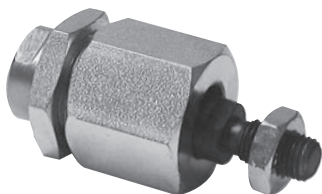
The compensating coupling is used to connect the piston rod end of all types of cylinders to the machine parts which are to be moved.  
 It compensates for radial and angular misalignments.

### Dimension Table (mm)

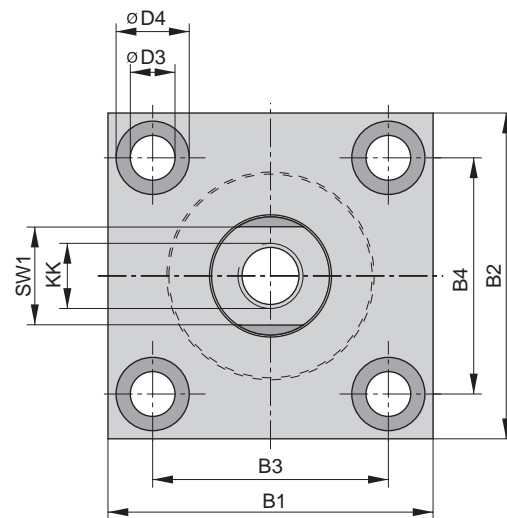
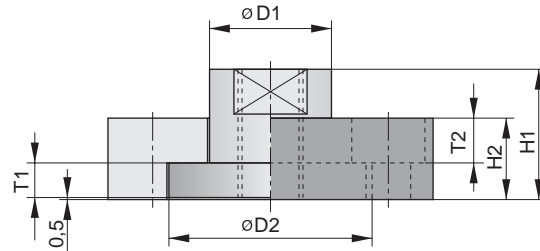
Type	KK	B	C	D	E	ØF	SW1	SW2	SW3	SW4	SW5
AK-M4	M4	8	14	33	20	SW12	3.2	12	12	12	7
AK-M6	M6	12	11	39	14	8.5	5	13	13	7	10
AK-M8	M8	16	14	55	20	12.4	7	17	17	10	13
AK-M10	M10	20	23	70	31	21	12	30	30	19	17
AK-M10x1.25	M10x1.25	20	23	73	31	21	12	30	30	19	17
AK-M12	M12	24	23	68	31	21	12	30	30	19	19
AK-M12x1.25	M12x1.25	24	23	77	31	21	12	30	30	19	19
AK-M16	M16	40	32	113	45	33.5	19	41	41	30	24
AK-16x1.5	M16x1.5	32	32	108	45	33.5	19	41	41	30	24
AK-M20x1.5	M20x1.5	40	42	122	56	33.5	19	41	41	30	30
AK-M24x2	M24x2	44	48	147	51	–	22	55	55	32	36
AK-M27x2	M27x2	54	48	147	51	39	24	55	55	32	41
AK-M36x2	M36x2	72	50	241	110	56	36	75	75	50	55
AK-M42x2	M42x2	82	88	271	120	–	36	80	80	60	65
AK-M48x2	M48x2	82	88	271	120	–	42	80	80	60	75

### Order Instructions and Weight

Order Instructions		Weight (mass) (kg)
Type	Order-No.	
AK-M4	KY1152	0.020
AK-M6	KY1126	0.020
AK-M8	KY1127	0.060
AK-M10	KY1128	0.230
AK-M10x1.25	KY1129	0.230
AK-M12	KY1130	0.230
AK-M12x1.25	KY1131	0.230
AK-M16	KY1132	0.650
AK-M16x1.5	KY1133	0.650
AK-M20x1.5	KY1134	0.710
AK-M24x2	KC5035	1.600
AK-M27x2	KC5036	1.600
AK-M36x2	KY1139	5.100
AK-M42x2	KY1140	7.900
AK-M48x2	KL9133	7.900



**Dimensions**



**Coupling**

for Cylinder  
Ø 32– 100 mm

Series KS-....

- angular compensation  
0.4 to 0.8 mm
- radial compensation 2 mm

**Included in delivery:**

- 1 flange
- 1 threaded part

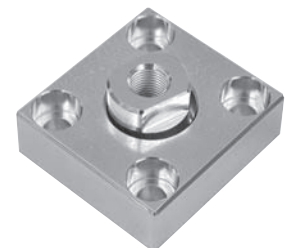
Material: steel, zinc-plated

**Dimension Table (mm)**

Type	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	ØD <sub>1</sub> <sup>H11</sup>	ØD <sub>2</sub>	ØD <sub>3</sub> <sup>H13</sup>	ØD <sub>4</sub> <sup>H13</sup>	H <sub>1</sub>	H <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	KK	SW1
KS-M10x1.25	60	37	36	23	20	30	6.6	11	24	15	7	7	M10x1.25	17
KS-M12x1.25	60	56	42	38	25	40	9	15	30	20	8	9	M12x1.25	19
KS-M16x1.5	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24
KS-M16x1.5	80	80	58	58	30	50	11	18	32	20	9	11	M16x1.5	24
KS-M20x1.5	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36
KS-M20x1.5	90	90	65	65	40	60	14	20	35	20	10	13	M20x1.5	36

**Order Instructions and Weight**

Order Instructions		Weight (kg)
Type	Order-No.	
KS-M10x1.25	KC 5224	0.300
KS-M12x1.25	KC 5225	0.400
KS-M16x1.5	KC 5226	0.900
KS-M20x1.5	KC 5227	1.100



## Pivot for mounting B

for Cylinder  
 $\varnothing$  32 to 100 mm  
 – to ISO 15552  
 – to VDMA 24562  
 – to CETOP RP43P  
 Series GLN-...

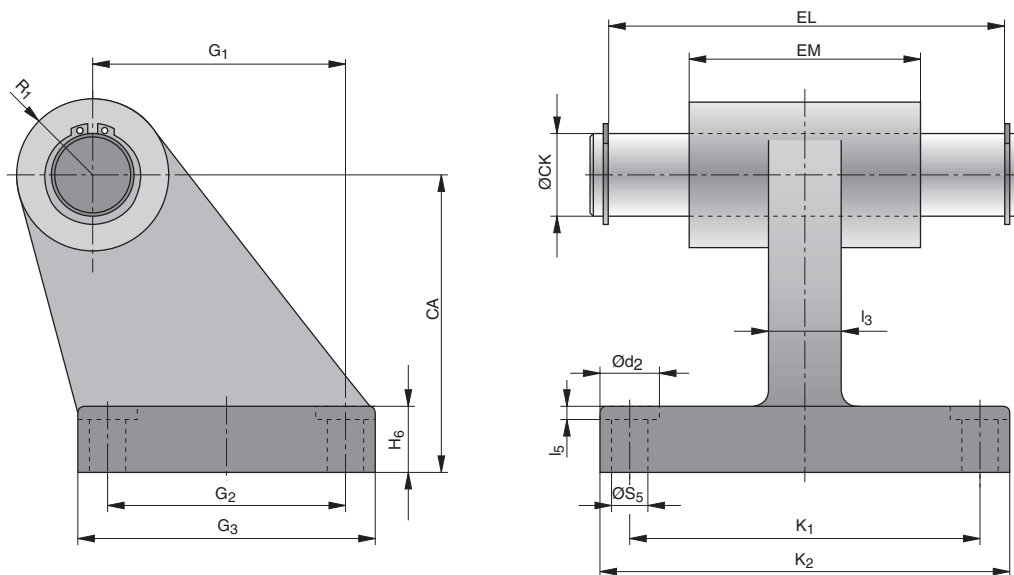
for 90° rotation

### Included in delivery:

for  $\varnothing$  32-100 mm:  
 1 Bracket  
 1 Pin with collar  
 1 Circlip

for  $\varnothing$  125-320 mm:  
 1 Bracket  
 1 Pin  
 2 Circlips DIN 471

Dimensions – Pivot for mounting B  $\varnothing$  32-320 mm  
 for 90° rotation

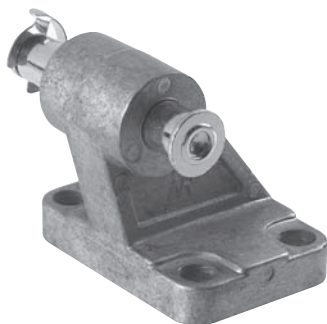


Material:  
 $\varnothing$  32-200: cast aluminium  
 $\varnothing$  250-320: cast steel

Dimension Table (mm)

Cyl. $\varnothing$	$\varnothing d_2$	$l_3$	$l_5$	$G_1$	$G_2$	$G_3$	EL	$H_6$	$K_1$	$K_2$	$R_1$	$\varnothing S_5$	CA	$\varnothing CK^{H9}$	EM
32	11	10	1.6	21	18	31	46	8	38	51	10	6.6	32	10	26
40	11	15	1.6	24	22	35	53	10	41	54	11	6.6	36	12	28
50	15*	16	1.6	33	30	45	61	12	50	65	13	9.0	45	12	32
63	15	16	1.6	37	35	50	71	14*	52	67	15	9.0	50	16	40
80	18	20	2.5	47	40	60	91	14	66	86	15	11.0	63	16	50
100	18	20	2.5	55	50	70	111	17*	76	96	19	11.0	71	20	60
125	20	30	3.2	70	60	90	132	20	94	124	22.5	14.0	90	25	70
160	20	36	4.0	97	88	126	172	25	118	156	31.5	14.0	115	30	90
200	26	40	4.0	105	90	130	172	30	122	162	31.5	18.0	135	30	90
250	33	45	4.5	128	110	160	202	35	150	200	40	22.0	165	40	110
320	40	55	4.5	150	122	186	222	40	170	234	45	26.0	200	45	120

\* strengthened, non-standard dimensions



**Order Instructions and Weight**

for Cylinder Ø	Weight (kg)	Order Instructions Type	Order-No.
32*	0.092	GLN-032	PD 40844
40*	0.131	GLN-040	PD 40845
50*	0.193	GLN-050	PD 40846
63*	0.305	GLN-063	PD 40847
80*	0.460	GLN-080	PD 40848
100*	0.840	GLN-100	PD 40849
125**	3.0	GLN-125	PD 24027
160**	6.5	GLN-160	PD 24028
200**	8.0	GLN-200	PD 39193
250**	13.5	GLN-250	PD 39194
320**	21.90	GLN-320	KL9129

\* version with circlip

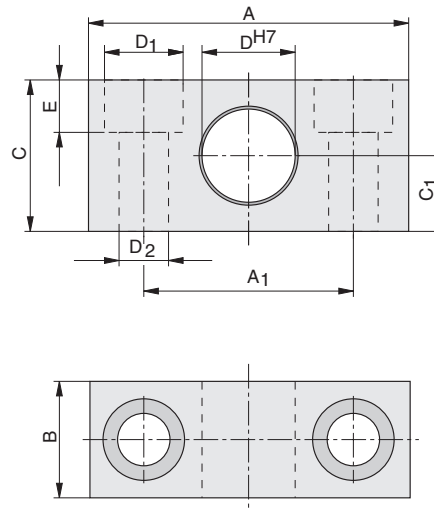
\*\* version with 2 security bolts according to DIN 471

## Pivot for mounting EN

for Cylinder  
 $\varnothing$  32 to 320 mm

Series EL-...

### Dimensions



Material:  
 $\varnothing$ 32-125 mm – cast aluminium  
 $\varnothing$ 160-250 mm – Al, anodized  
 $\varnothing$  320 mm – steel

### Dimension Table (mm)

for Cyl. $\varnothing$	A	A <sub>1</sub>	B	C	C <sub>1</sub>	$\varnothing D^{H7}$	$\varnothing D_1$	$\varnothing D_2$	E
32	55	36	20	26	13	12	13.5	8.4	9
40, 50	55	36	20	26	13	16	13.5	8.4	9
63, 80	65	42	25	30	15	20	16.5	10.5	11
100, 125	75	50	28	40	20	25	19	13	13
160, 200	92	60	35	60	30	32	26	18	17
250	140	90	40	70	35	40	33	22	21.5
320	150	100	60	80	40	50	40	26	25.5

### Order Instructions and Weight

Order Instructions		for Cylinder- $\varnothing$	Weight (mass) (kg)
Type	Order-No.		
EL-032	PD 23381	32	0.06
EL-040/050	PD 23382	40, 50	0.06
EL-063/080	PD 23383	63, 80	0.10
EL-100/125	PD 23384	100, 125	0.175
EL-160/200	PD 24425	160, 200	0.35
EL-250	PD 25763	250	0.50
EL-320	KL 9130	320	6,70







## Magnetic Switches pneumatic

*with output indicator*  
Series DZPV

The magnetic switches are mounted on the cylinder tube profile. One or more switches can be fitted, depending on the stroke length. For cylinders for contactless position sensing see Series AZ, AZV.

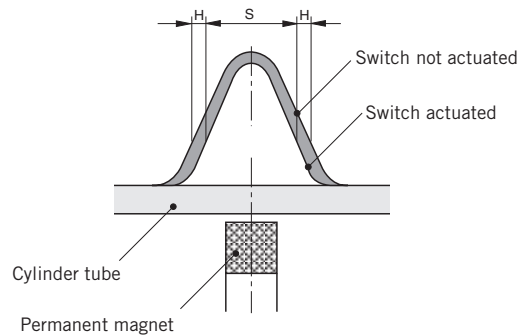
### Characteristics

Characteristics	Symbol	Unit	Description
Installation			In any position
Material			Housing: Macrolon
Ambient temperature range *)	$T_{min}$ $T_{max}$	°C °C	-10 +60
Service life			10 x 10 <sup>6</sup> switching cycles
Switching point accuracy		mm	± 0,2
Max. impulse acceleration		m/s <sup>2</sup>	50 g
Nominal diameter		mm	2
Medium			Filtered compressed air
Filter fineness	max.	µm	40
Lubrication			None required
Nominal pressure		bar	6
Operating pressure range	$p_{min}$ $p_{max}$	bar bar	2 6
Nominal flow		l/min	40
Switching frequency		Hz	40 (without switching volume)
Connection			Push-on nipples for NW3 tubing
Weight (mass)		kg	0.014 Magnet switch 0.020 Magnet switch with mounting

\*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.

### Switching Characteristics

H = Hysteresis  
S = Response range

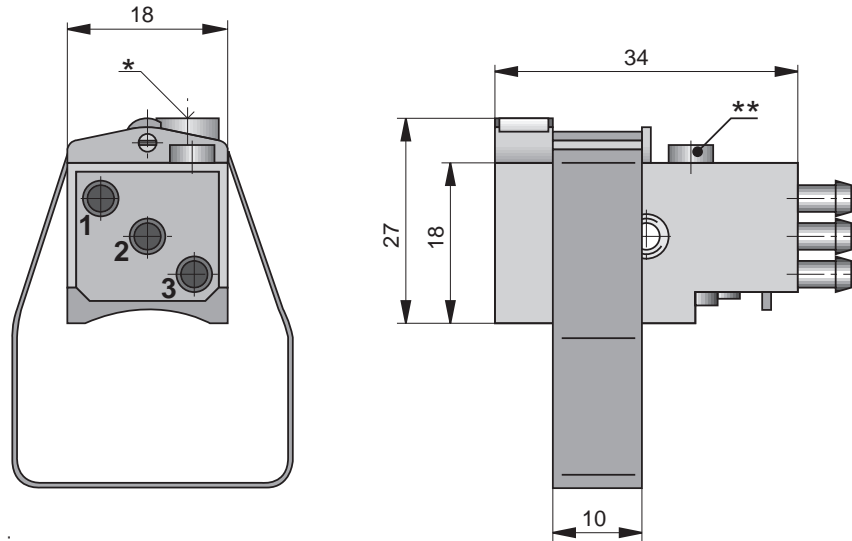


### Response Range, Overrun Speed

Cylinder Ø (mm)	Response range s	Overrun speed $V_{max}$
32	12	$V_{max} = \frac{s}{t_a}$ $t_a = \text{response time of following device}$
40	12	
50	12	
63	13	
80	13	
100	13	



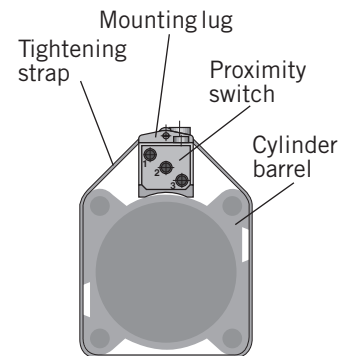
### Dimensions (mm) – for Tube Connection NW3



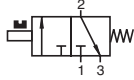
\* Tightening screw  
 \*\* Indicator

### Assembly Instructions

- The mounting is designed only for AZ cylinders. The switch must be mounted on a radiused side of the cylinder barrel (not on a side with a dovetail groove).
  - When fitting the DZPV, ensure that the tightening screw between strap and switch is tightened with a torque not exceeding 1.5 Nm.
  - To avoid interference from other magnetic fields, pneumatic cylinders installed close together should be at least 20 mm apart.
  - To avoid interference from other ferromagnetic components with the function of the DZPV, a minimum spacing of 15 mm should be maintained.
  - When fitting the DZPV, ensure that port 3 (exhaust) is never closed.
- The DZPV pneumatic proximity switch requires the following operating conditions:
- filtered and moderately lubricated compressed air
  - compressed air without aggressive constituents
  - operating pressure from 2 to 8 bar



### Order Instructions

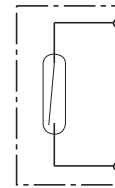
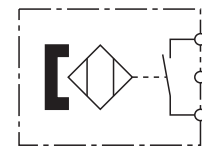
Version	Symbol	for Cylinder Ø	Order Instructions	
			Type	Order-No.
Switch			DZPV	KZ 2364
Mounting element		32-100	KLAZ 32	KC 8255

**Characteristics**

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			Type RS	Type ES
Switching output			Reed	PNP/NPN
Operating voltage	$U_B$	V	(5 DC) 10-240 AC/DC (NO) (5 DC) 10-150 AC/DC (NC) (5 DC) 10-70 AC/DC plug	10-30 DC
Voltage drop		V	$\leq 3$	$\leq 2$
Connection technology			2-wire	3-wire
Switching function			Normally open/closed	Normally open
Permanent current	$I_{Dmax}$	mA	< 200	
Breaking capacity			< 100	
Power consumption			- < 20	
Function indicator			LED, yellow	
Response time			ms < 2	< 2 (on)
Sensitivity			mT 2...4	2...4
Switch-off delay			ms None	25
Short circuit proof			No	Yes
Pole reversal proof			No	Yes
Switchable capacity			$\mu F$ 0,1 at 100 $\Omega$ , 24 VDC	
Switching point accuracy			mm $\pm 0,2^*$	
Hysteresis			mm 1,5 for series OSP < 8 <sup>*</sup> )	$\leq 3^*$ )
EMC			EN to 60947	
Service life			$\geq 10 \times 10^8$ switching cycles	Theoretically unlimited
Mechanical Characteristics				
Housing			Macrolon, smoke colour	
Cable diameter			mm <sup>2</sup> 2 x 0,14	3 x 0,14
Cable type			PVC highly flexible/PUR highly flexible	
Cable length			2,5 at 5,0 m, connector on 10 cm cable	
Bending radius			mm Fixed $\geq 20$ , moving $\geq 70$	
Weight			g 45 (RS-K, cable 2,5m) 80 (RS-K, cable 5,0m) 15 (RS-S)	
Degree of protection			IP 67 to EN 60529	
Ambient temperature range **)			°C -25 to +80	
Shock resistance			G < 50 at 50 Hz and 1mm stroke	

\*) These values depend on the type and diameter of cylinder used – please consult us,

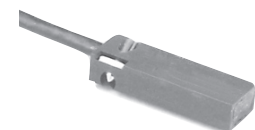
\*\*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.

**Magnetic Switches electronic**  
**CE**
**Series RS**

**Series ES**


Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The magnetic switches are fitted in the dovetail slot in the profiles of AZ-, SZ-, NZ- and NZK-cylinders or with a strap mounting on R-type cylinders.



## Magnetic Switches RS and ES

### Electrical Service Life Protective Measures

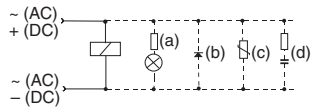
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With resistive and capacitive loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

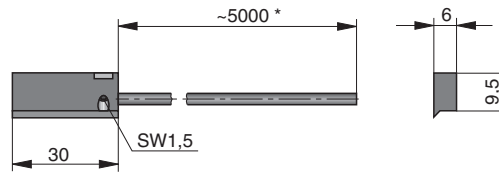
### Connection Examples:

- Load with protective circuits
- (a) Protective resistor for light bulb
  - (b) Freewheel diode on inductivity
  - (c) Varistor on inductivity
  - (d) RC element on inductivity



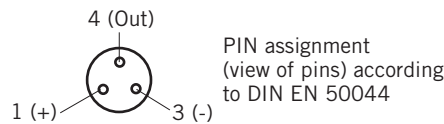
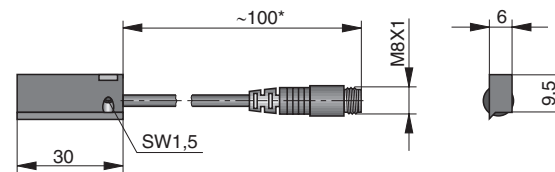
For the type ES, external protective circuits are not normally needed.

### Dimensions (mm) – Type RS-K



\* Length with possible minus tolerance, see chart below

### Dimensions (mm) – Type ES-S/RS-S\*\*



\* Length with possible minus tolerance, see chart below

\*\* Operating voltage max. 70 V

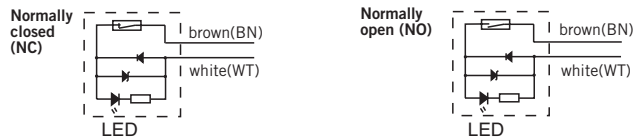
### Length of connection cable with length tolerance

Sensor Order-No.	Nominal cable length	Length tolerance
KL3043, KL3055, KL3059	2500 mm	-50 mm
KL3045, KL3048, KL3056	5000 mm	-50 mm
KL3054	100 mm	-20 mm
KL3060	145 mm	±5 mm

### Type RS

In the type RS contact is made by a mechanical reed switch encapsulated in glass.

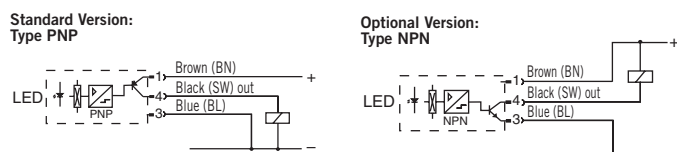
### Electrical Connection, Type RS



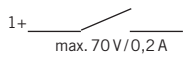
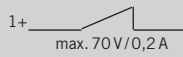
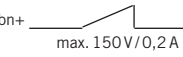
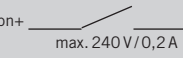
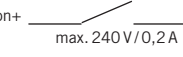





### Type ES

In the type ES contact is made by an electronic switch – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

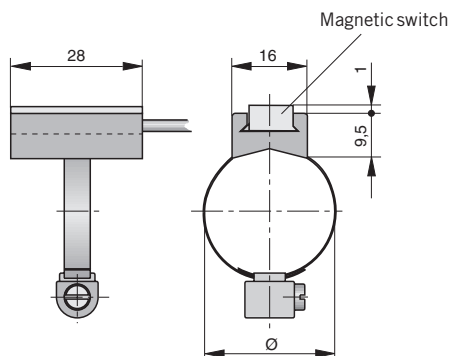
### Electrical Connection, Type ES



### Order Instructions

Version	Imprint	Order Instructions	
		Type	Order-No.
Magnetic switch, reed contact, normally open, screw connector M8, Pin 3 neutral (ES-S compatible connector; preferred type)	1+  4 max. 70V/0,2A	RS-S	KL3047
Magnetic switch, reed contact, normally closed, screw connector M8, Pin 3 neutral	1+  4 max. 70V/0,2A	RS-S	KL3087
Magnetic switch, reed contact, normally closed with 5.0 m cable	bn+  max. 150V/0,2A	RS-K	KL3048
Magnetic switch, reed contact, normally open with 2.5 m cable	bn+  max. 240V/0,2A	RS-K	KL3043
Magnetic switch, reed contact, normally open with 5.0 m cable	bn+  max. 240V/0,2A	RS-K	KL3045
Magnetic switch, electronic, PNP-Switching with screw connector M8	 PNP	ES-S	KL3054
Magnetic switch, electronic, NPN-Switching with screw connector M8	 NPN	ES-S	KL3060
Magnetic switch, electronic, PNP-Switching with 2.5 m cable	 PNP	ES-K	KL3055
Magnetic switch, electronic, NPN-Switching with 2.5 m cable	 NPN	ES-K	KL3059
Magnetic switch, electronic, PNP-Switching with 5.0 m cable	 PNP	ES-K	KL3056
Cable set 2.5 m and connector M8 with union nut		KSG25	KC3102
Cable set 5.0 m and connector M8 with union nut		KSG50	KC3104
Connector M8 without cable for custom made cables		STG8	KC3152

### Strap mounting for Magnetic Switch for Series R, Ø10-63mm



### Dimension Table and Order Instructions – Mounting

Cyl. Ø	Order Instructions	
	Type	Order-No.
10,12,16	HMSR 010, 012, 016	KL9196
20, 25	HMSR 020, 025	KL9197
32	HMSR 032	KL9198
40	HMSR 040	KL9199
50	HMSR 050	KL9284
63	HMSR 063	KL9285

## Magnetic Switches electronic

CE

Series RST  
Series EST

Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The magnetic switches are mounted directly in the T-slot of NZ, AZ and FZ cylinders or, with the adapter, in the dovetail slot in the profiles of SZ- and NZK cylinders. For R-type cylinders a special strap mounting is used.

<sup>1)</sup> For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.



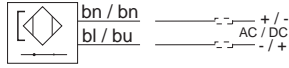
### Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			Type RST	Type EST
Switching output			Reed	PNP
Operating voltage	$U_B$	V	10-30 AC/DC	10-30 DC
Ripple	$U_b$		–	≤10%
Voltage drop		V	≤3	≤2
Electrical configuration			2-wire	3-wire
Output function			Normally open/closed	Normally open
Permanent current	$I_{Dmax}$	mA	≤100	≤100
Breaking capacity		W	≤6 peak	–
Power consumption, at $U_B=24V$ , switched on, without load		mA	–	≤10
Function indicator			LED, yellow (not for normally closed)	
Response time		ms	≤2	≤0,5
Sensitivity		mT	2–4	2–4
Time delay before availability		ms	–	≤2
Reverse polarity protection			yes	yes
Short-circuit protection			no	yes (pulsed)
Switchable capacity load		μF	0,1 bei 100 Ω, 24 VDC	
Switching frequency		Hz	≤400	≤5k
Repeatability		mm	≤0,2 <sup>*)</sup>	≤0,2 <sup>*)</sup>
Hysteresis		mm	≤1,5 <sup>*)</sup>	≤1,5 <sup>*)</sup>
EMC		EN	60947-5-2	
Lifetime			≥35 Mio. cycles with PLC load	unlimited
Power-up pulse suppression			–	yes
Protection for inductive load			–	yes
Mechanical Characteristics				
Housing			Plastic / PA66 + PA6I red	
Cable cross section		mm <sup>2</sup>	2x0,14	3x0,14
Cable type			PUR, black	
Bending radius		mm	≥36	≥30
Weight		kg	ca. 0,030 RST-K ca. 0,010 RST-S	ca. 0,030 EST-K ca. 0,010 EST-S
Degree of protection		IP	67 to EN 60529	
Ambient temperature range <sup>1)</sup>		°C	-25 to +80	-25 to +75 at $U_B=10-30 V$ -25 to +80 at $U_B=10-28 V$
– with adapter		°C	-25 to +60	
Adapter tightening torque		Nm	0,15 (tightening torque for screwing adapter onto magnetic switch)	
Shock resistance				
Vibration to EN 60068-2-6		G	15, 11ms, 10 to 55 Hz, 1 mm	
Shock to EN 60068-2-27		G	50, 11 ms	
Bump to EN 60068-2-29		G	30, 11 ms, 1000 bumps each axis	

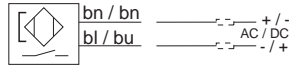
<sup>\*)</sup> These values depend on the type and diameter of cylinder used – please consult us.

**Electrical Connection  
Type RST-K**

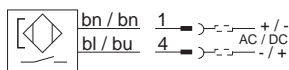
**Normally closed**



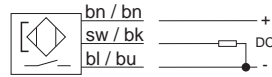
**Normally open**



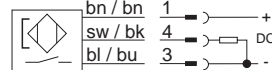
**Electrical Connection  
Type RST-S**



**Electrical Connection  
Type EST-K**



**Electrical Connection  
Type EST-S**



**Type RST**

In the type RST contact is made by a mechanical reed switch encapsulated in glass.

**Type EST**

In the type EST contact is made by an electronic switch – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector.

A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

**Magnetic Switches  
Series RST, EST**

**Electrical Service Life  
Protective Measures**

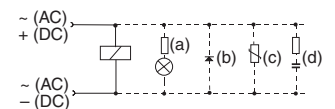
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With resistive and capacitive loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

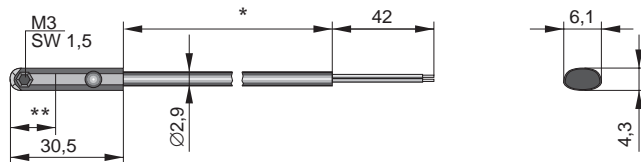
**Connection Examples:**

- Load with protective circuits
- (a) Protective resistor for light bulb
- (b) Freewheel diode on inductivity
- (c) Varistor on inductivity
- (d) RC element on inductivity



For the type EST, external protective circuits are not normally needed.

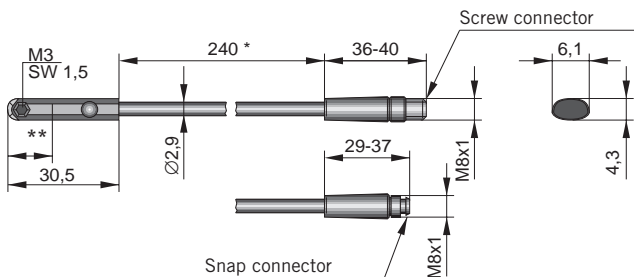
**Dimensions (mm) – Type RST-K, EST-K**



\* Cable lengths available: 5000 mm ± 75 mm  
2000 mm ± 40 mm

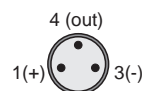
\*\* Switching point: Type RST-K Normally closed 14 mm  
Type RST-K Normally open 12,3 mm  
Type EST-K Normally open 8,1 mm

**Dimensions (mm) – Type RST-S, EST-S**



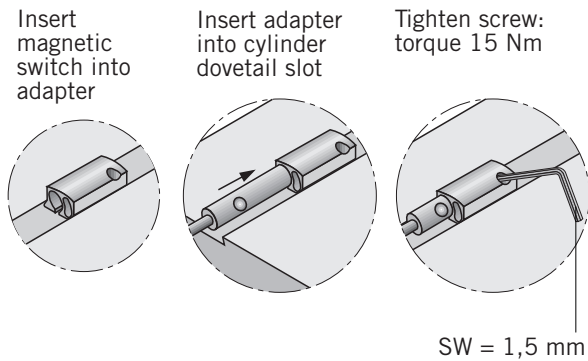
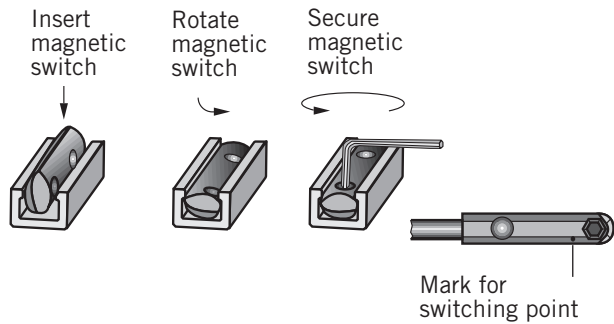
\* ± 6 mm

\*\* Switching point: Type RST-K Normally closed 14 mm  
Type RST-K Normally open 12,3 mm  
Type EST-K Normally open 8,1 mm

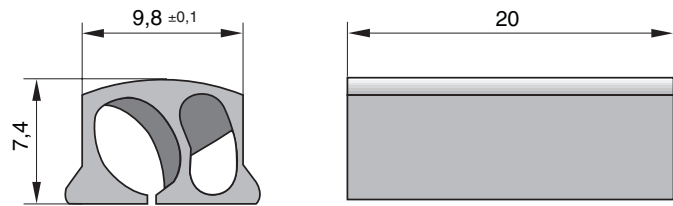


PIN assignment  
(view of pins) to DIN EN 50044

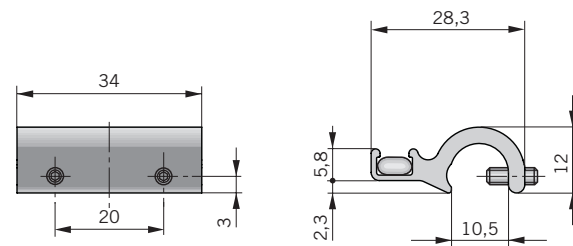
### Installation



### Dimensions of Adapter for Magnetic Switch

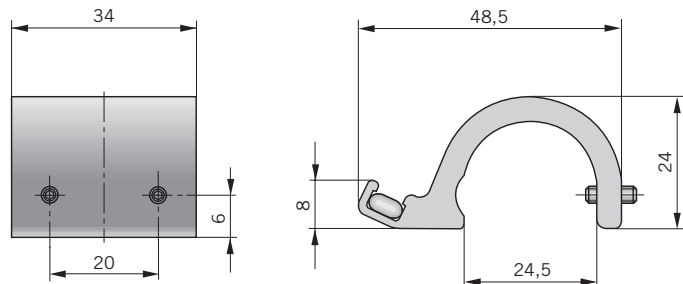


### Mounting for T-slot switch for Cylinder Series AZZ Ø32–100 mm



Order-No. PD48955

### Mounting for T-slot switch for Cylinder Series DZ Ø125–320 mm

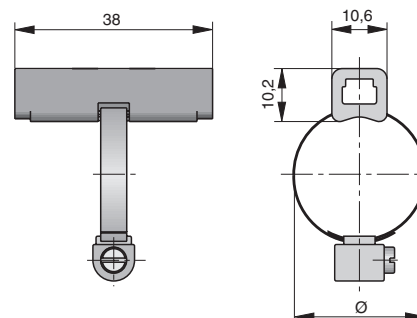


Order-No. PD48956

### Order Instructions – Mounting for T-slot switch

Cylinder Series	for Cyl. Ø	Order Instructions Type	Order-No.
R.... Ø10-63mm	10/12/16	HMTR 010/012/016	KL9190
	20/25	HMTR 020/025	KL9191
	32	HMTR 032	KL9192
	40	HMTR 040	KL9193
	50	HMTR 050	KL9194
	63	HMTR 063	KL9195

### Mounting for T-slot switch for Cylinder Series R Ø10–63 mm



### Order Instructions – Magnetic Switches

Version	Voltage	Order Instructions	
		Type	Order-No.
Magnetic switch, reed contact, normally open, LED indicator, cable 2 m	10-30 V AC / DC	RST-K	KL 3301
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-30 V AC / DC	RST-K	KL 3300
Magnetic switch, reed contact, normally open, snap connector M8, LED indicator cable 0.24 m	10-30 V AC / DC	RST-S	KL 3302
Magnetic switch, reed contact, normally open, screw connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	RST-S	KL 3303
Magnetic switch, reed contact, normally closed, cable 5 m	10-30 V AC / DC	RST-K	KL 3305
Magnetic switch, electronic, PNP, LED indicator, cable 2 m	10-30 V DC	EST-K	KL 3308
Magnetic switch, electronic, PNP, LED indicator, cable 5 m	10-30 V DC	EST-K	KL 3309
Magnetic switch, electronic, PNP snap connector M8, LED indicator	10-30 V DC	EST-S	KL 3312
Magnetic switch, electronic, PNP screw connector M8, LED indicator	10-30 V DC	EST-S	KL 3306

**Included in delivery:** 1 magnetic switch  
1 adapter for dovetail slot mounting

### Order Instructions – Accessories

Description	Order Instructions	
	Type	Order-No.
Cable M8; 2.5 m – without lock nut	KS 25	KY 3240
Cable M8; 5.0 m – without lock nut	KS 50	KY 3241
Cable M8; 10.0 m – without lock nut	KS 100	KC 3140
Cable M8; 2.5 m – with lock nut	KSG 25	KC 3102
Cable M8; 5.0 m – with lock nut	KSG 50	KC 3104
Adapter for dovetail slot (pack of 10)		KL 3333
Mounting for T-slot switch – for Cylinder Series AZZ Ø 32-100 mm		PD48955
Mounting for T-slot switch – for Cylinder Series DZ Ø 125-320 mm		PD48956
Mounting for T-slot switch – for Cylinder Series R Ø 10-63 mm	HMTR ...	see page 154

## Components for EX-Areas



## Magnetic Switches electronic



Series RS-K..ATEX  
Series ES-K..ATEX

For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted. They can also be used for sensing of intermediate positions.

Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The magnetic switches are fitted directly with an adapter in the dovetail slot of the cylinder.

### Characteristics

Characteristics	Symbol	Unit	Description	
Electrical Characteristics			Type RS-K ATEX	Type ES-K ATEX
ATEX Certification			yes	yes
Category Type: RS-K			⊕ II 3GD EEX nC IIC T3 146°C	
Category Type: ES-K			⊕ II 2GD EEX ib IIC T5 100°C	
Switching output			Reed	Namur
Operating voltage	$U_B$	V	10-240 AC/DC	7-9 DC
Voltage drop		V	≤ 3	–
Electrical configuration			Two wire	Two wire
Output function			Normally open	Normally open
Permanent current	$I_{Dmax}$	mA	≤ 200	≤ 3
Power consumption		W/VA	≤ 10/10 Spitze	
Peak current		mA	≤ 500	–
Power consumption, without load		mA	–	≤ 1
Function indicator			LED, yellow	
Response time On/Out		ms	≤ 2	≤ 0,5
Sensitivity		mT	2–4	2–4
Reverse polarity prot			yes	yes
Short-circuit protection			no	yes
Repeatability		mm	≤ 0,2 *)	≤ 0,2 *)
Hysteresis		mm	≤ 1,5 *)	≤ 1,5 *)
EMC		EN	60947-5-2	
Lifetime			≥ 10 Mio. Cycles with PLC load	
Mechanical Characteristics				
Housing			Makrolon, smoke color	
Cable cross section		mm <sup>2</sup>	2 x 0.14	2 x 0.14
Cable type			PVC, blue	PVC, blue
Weight		kg	ca. 0.075	
Degree of protection		IP	67 nach EN 60529	
Ambient temperature range **)		°C	-25	-20
		°C	+80	+75
Surface temperature		°C	The maximum surface temperature $T=146$ °C is referred to the max. ambiente temperature of 80 °C	
Shock resistance				
Vibration and Shock			50G at 50Hz and 1mm	

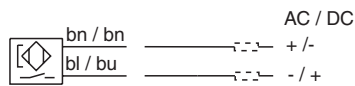
\*) These values depend on the type and diameter of cylinder used – please consult us.

\*\*) For the temperature range of the magnetic switches, the surface temperature and own heat generation of the cylinder must be taken into account.



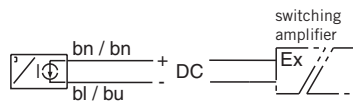
### Electrical Connection – Type RS-K ATEX

Make contact (Reed)

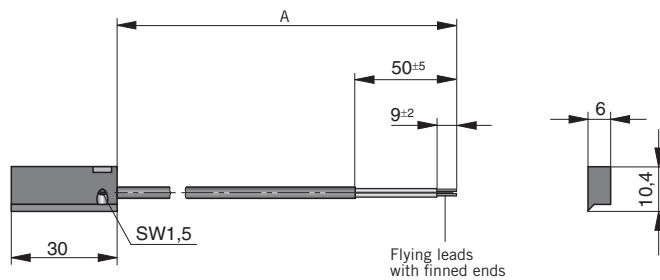


### Electrical Connection – Type ES-K ATEX

Make contact (Namur)



### Dimensions (mm)



### Dimension Table (mm)

Magnetic switch Order-No.	Nominal cable length A	Lengths tolerance
KL3240	5000	- 50
KL3241	10000	- 50
KL3250	5000	- 50
KL3251	10000	- 50

### Magnetic Switches Type RS-K ATEX-Version

In the type RS contact is made by a mechanical reed switch encapsulated in glass.

**ATEX-Version Type: RS-K**  
 $\text{Ex II 3GD EEX nC IIC T3 146}^{\circ}\text{C}$

### Magnetic Switches Type ES-K ATEX-Version

In the type ES contact is made by an electronic switch – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations.

**ATEX-Version Type: ES-K**  $\text{Ex II 2GD EEX ib IIC T5 100}^{\circ}\text{C}$

### Caution!

The connection of the magnetic switch Type ES-K ATEX must be realised by means of an EEX i switching amplifier (see Accessories).

### Magnetic Switches Series RST, EST

#### Electrical Service Life Protective Measures

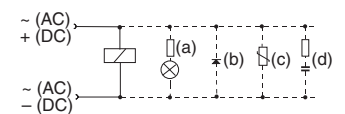
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With resistive and capacitive loads with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

#### Connection Examples:

- Load with protective circuits
- (a) Protective resistor for light bulb
  - (b) Freewheel diode on inductivity
  - (c) Varistor on inductivity
  - (d) RC element on inductivity



**Order Instructions – Magnetic switches**

Version	Voltage	Order Instructions	
		Type	Order-No.
Magnetic switch, reed contact, normally open LED indicator, cable 5 m	10-240 V AC/DC	RS-K ATEX	KL3240
Magnetic switch, reed contact, normally open, LED indicator, cable 10 m	10-240 V AC/DC	RS-K ATEX	KL3241
Magnetic switch, electronic, NAMUR, normally open, LED indicator, cable 5 m	7-9 V DC	ES-K ATEX	KL3250
Magnetic switch, electronic, NAMUR, normally open, LED indicator, cable 10 m	7-9 V DC	ES-K ATEX	KL3251

**Order Instructions – Accessories**

Description	for magnetic switch	Order-No.
2 channel switching amplifier 24 V DC	ES-K ATEX	2876
2 channel switching amplifier 220 V AC	ES-K ATEX	1546

Note: 2 magnetic switches can be connected to each switching amplifier.



## Notes



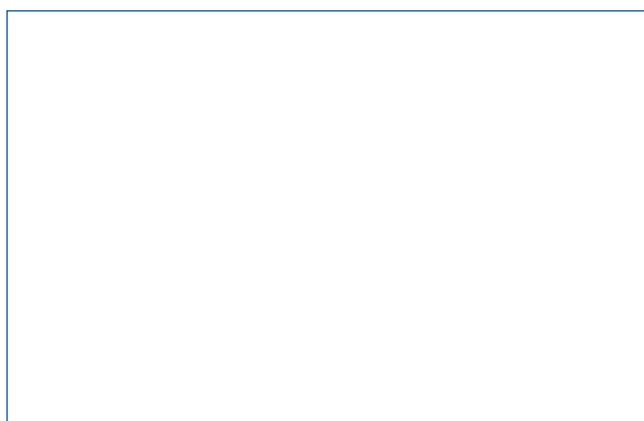
## Notes



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