RM/8000/M/EX, ISO cylinder
Magnetic piston, double acting

- Ø 10 ... 25 mm
- Magnetic piston as standard
- Conforming to ISO 6432
- Corrosion resistant
- With buffer or adjustable cushioning
- Nose mounting nut and piston rod supplied locknut as standard
- These cylinders are applicable in zones 1&2 (gas), 21&22 (dust), ATEX Cat. II 2G and 2D



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated

Standard:
ISO 6432

Operation:
Double acting with magnetic piston and buffer or adjustable cushioning

Operating pressure:
1 ... 10 bar (14 ... 145 psi)

Cylinder diameters:
10, 12, 16, 20, 25 mm (buffer)
16, 20, 25 mm (adjustable cushioning)

Strokes:
See page below

Non-standard strokes:
up to 500 mm max. on request

Ambient temperature:
-5 ... +60°C max. (+23 ... +140°F)

Operating temperature:
-5 ... +80°C max. (+23 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Equipment marking acc. to ATEX:
II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T120°C Db

Materials:
Barrel: stainless steel (austenitic)
End covers: clear anodised aluminium alloy
Piston rod: stainless steel (austenitic)
Buffer: PUR
Piston rod seal: PUR
Piston seal: NBR
O-rings: NBR

Technical data

Cylinder Ø (mm)	10	12	16	20	25
Port size	M5	M5	M5	G1/8	G1/8
Piston rod Ø (mm)	4	6	6	8	10
Piston rod thread	M4	M6	M6	M8	M10x1,25
Cushion length mm	–	–	16	19	19
Initial cushion volume (cm3) *1)	–	–	2,4	4,4	7,2
Theoretical thrusts at 6 bar outstroke (N)	47,1	67,8	120	188	294
Theoretical thrusts at 6 bar instroke (N)	39,6	51	104	158	247
Air consumption at 6 bar outstroke (l/cm)	0,006	0,008	0,014	0,022	0,035
Air consumption at 6 bar instroke (l/cm)	0,005	0,006	0,013	0,019	0,028

*1) For cylinders with adjustable cushioning only

Standard strokes with buffer cushioning

Cylinder Ø (mm)	Stroke length (mm) 10	25	40	50	80	100	125	160	200	250
10	•	•	•	•	•	•	–	–	–	–
12	•	•	•	•	•	•	•	•	•	
16	•	•	•	•	•	•	•	•	•	–
20	•	•	•	•	•	•	•	•	•	•
25	•	•	•	•	•	•	•	•	•	•

with adjustable cushioning

Cylinder Ø (mm)	Stroke length (mm) 10	25	40	50	80	100	125	160	200	250
16	–	•	–	•	•	•	•	•	•	
20	–	•	–	•	•	•	•	•	•	•
25	–	•	–	•	•	•	•	•	•	•

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Explosion protection according ATEX directive 2014/34/EU
EN ISO 80079 Non-electrical equipment for potentally explosive atmospheres

Range of application		All range of application other than mines		
Equipment group		II		
Potentially explosive atmosphere		Mixture of air and gases, vapours, mists G (gas)		
(compustible materials)		Dust/air - mixture D (dust)		
Probability risk for a potentially explosive atmosphere		Continuous or long-term or frequent	Occasional	Rarely and briefly
Equipment categories		1	2	3
Equipment safety		very high	high	normal
Gas	Equipment-identification Ex...	Ex II 1G	Ex II 2G	Ex II 3G
	ATEX-zone	Zone 0	Zone 1	Zone 2
Dust	Equipment-identification Ex...	Ex II 1D	Ex II 2D	Ex II 3D
	ATEX-zone	Zone 20	Zone 21	Zone 22

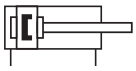
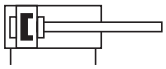
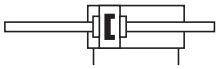
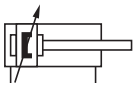
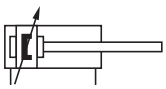
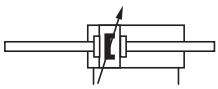
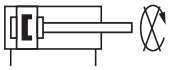
Equipment identification for IMI Norgren pneumatic cylinder: (Example for standard cylinder)

II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T120°C Db

Equipment group:	II	All application other than mines
Equipment categorie:	2	High level of equipment safety
Usability for zones:	G and D	Gas and dust
Explosions groups	IIC and IIIC	Max. ignitability gas- and dust groups
Temperature class for gas:	T4	Max. surface temperature 135°C
Temperature data for dust:	120°C	Max. surface temperature
Equipment Protection Level (EPL)	Gb and Db	Gas and dust, save by normal operation and expected equipment fault

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Cylinder variants

Symbol	Model magnetic piston	Description	Dimensions Page
	RM/8000/M/EX	Standard cylinder with integral eye mounting	5
	RM/8000/MC/EX	Cylinder with central rear port	5
	RM/8000/MF/EX	Cylinder with flat rear cover	5
	RM/8000/MU/EX	Cylinder with extended piston rod piston rod extension 75 mm: RM/8***/MU/EX/*U/stroke/75	5
	RM/8000/JM/EX	Cylinder with double ended piston rod (Ø 16 to 25 mm)	6
	RM/8017/M/EX	Cylinder Ø 16 mm with adjustable cushioning	5
	RM/8021/M/EX	Cylinder Ø 20 mm with adjustable cushioning	5
	RM/8026/M/EX	Cylinder Ø 25 mm with adjustable cushioning	5
	RM/8017/MU/EX	Cylinder Ø 16 mm with adjustable cushioning and extended piston rod	5
	RM/8021/MU/EX	Cylinder Ø 20 mm with adjustable cushioning and extended piston rod	5
	RM/8026/MU/EX	Cylinder Ø 25 mm with adjustable cushioning and extended piston rod	5
	RM/8017/JM/EX	Cylinder Ø 16 mm with double ended piston rod and adjustable cushioning	5
	RM/8021/JM/EX	Cylinder Ø 20 mm with double ended piston rod and adjustable cushioning	6
	RM/8026/JM/EX	Cylinder Ø 25 mm with double ended piston rod and adjustable cushioning	6
	RM/8000/N2/EX	Cylinder with non-rotating piston rod (Ø 12 to 25 mm)	6

Option selector

RM/80★★/★★/EX/★★★

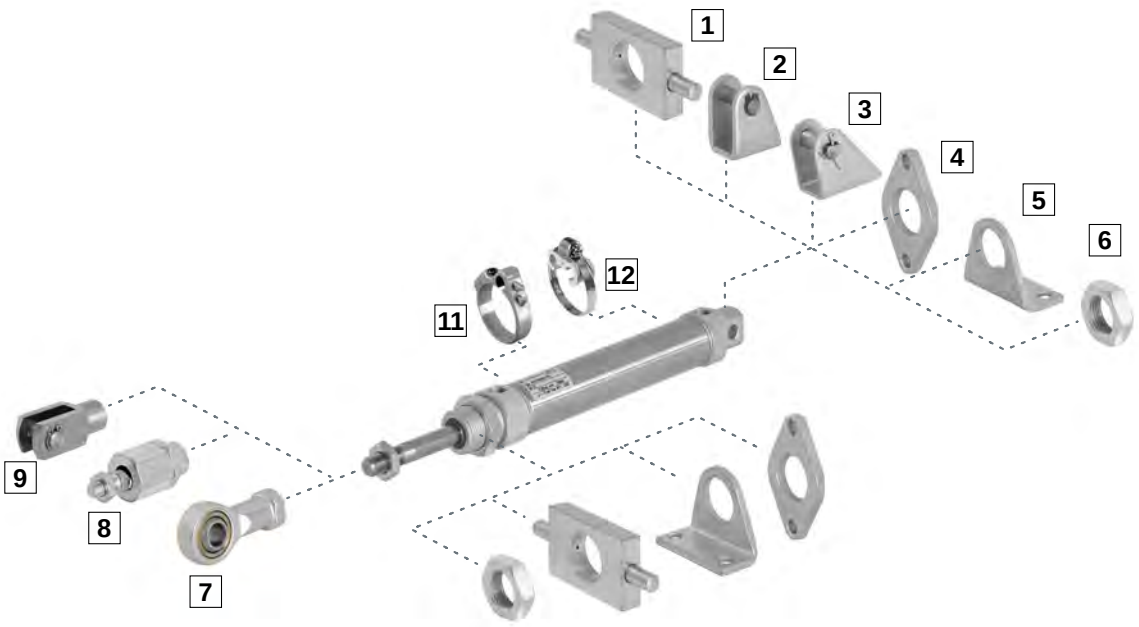
Cylinder Ø (mm) with buffer	Substitute
10	**10**
12	**12**
16	**16**
20	**20**
25	**25**
Cylinder Ø (mm) with adjustable cushioning	**Substitute**
16	**17**
20	**21**
25	**26**

Stroke (mm)	
max. 500	
Variants (magnetic piston)	**Substitute**
Standard with integral eye mounting	**M**
Central rear port	**MC**
Flat rear cover	**MF**
Non-rotating piston rod	**N2**
Double ended piston rod	**JM**
Extended piston rod	**MU**
RM/8***/MU/EX/***/***	**Extension (mm)**

Note: Please fill in only the numbers of digits required,e.g. RM/8025/M/EX/50
If option is not required, disregard option position within part number eg. RM/8025/M/EX/50. For combinations of cylinder variants consult our Technical Service. This options selector explains only the cylinder variants. Additional variants/ options are not possible.
See table above.

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Mountings



Cyl. Ø	AK  8 Page 7	B, G  4 Page 7	C  5 Page 7	F  9 Page 7	FH  1 Page 7
10	QM/8010/38	M/P19407	M/P19369	QM/8010/25	–
12	QM/8012/38	M/P19408	M/P19389	QM/8012/25	QM/8012/34
16	QM/8012/38	M/P19408	M/P19389	QM/8012/25	QM/8012/34
20	QM/8020/38	M/P19409	M/P19406	QM/8020/25	QM/8020/34
25	QM/8025/38	M/P19409	M/P19406	QM/8025/25	QM/8020/34

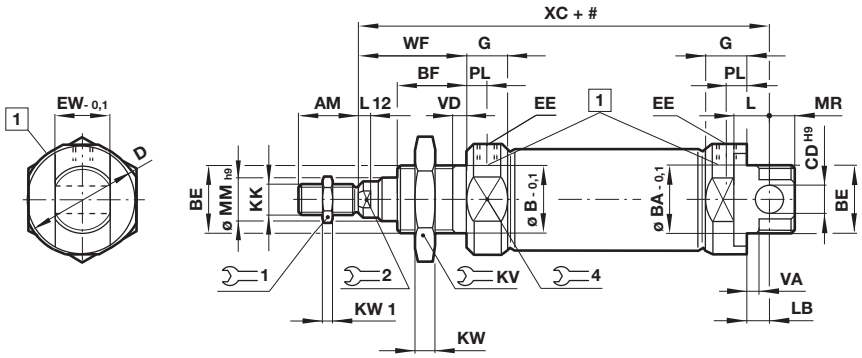
Cyl. Ø	L  3 Page 7	L2  2 Page 8	N  6 Page 8	UF  7 Page 8
10	QM/947	QM/8010/44	M/P1501/90	QM/8010/32
12	QM/8012/24	QM/8012/44	M/P13834	QM/8012/32
16	QM/8012/24	QM/8012/44	M/P13834	QM/8012/32
20	QM/8020/24	QM/8020/44	M/P13615	QM/8020/32
25	QM/8020/24	QM/8020/44	M/P13615	QM/8025/32

Cyl. Ø	Switch mounting brackets >15 mm stroke  11 Page 11	<15 mm stroke  12 Page 11	Magnetically operated switches  Page 9 & 10
10	QM/33/012/22	QM/33/010/23	
12	QM/33/012/22	QM/33/016/23	
16	QM/33/016/22	QM/33/016/23	
20	QM/33/020/22	QM/33/020/23	
25	QM/33/025/22	QM/33/025/23	

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Basic dimensions
RM/8000/M/EX Cylinder with buffer cushioning / adjustable cushioning

Dimensions in mm
Projection/First angle



Stroke
1 Cushion screw

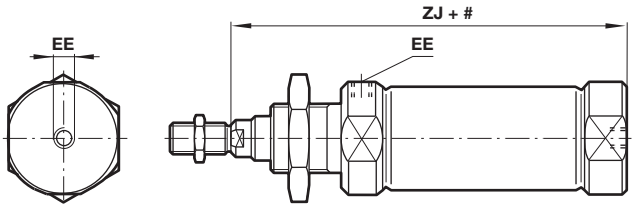
Ø	AM	Ø B/BA-0,1	BE	BF	Ø CDH9	Ø D	EE	EW -0,1	G	KK	KV	KW	KW1	L	Model
10	12	12	M12x1,25	12	4	16,5	M5	7,9	9	M4	19	6	2	6	RM/8010/M/EX/*
12	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	5	3	9	RM/8012/M/EX/*
16	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	5	3	9	RM/8016/M/EX/*
20	20	22	M22x1,5	20	8	30	G1/8	15,9	15	M8	27	8	4	12	RM/8020/M/EX/*
25	22	22	M22x1,5	22	8	30	G1/8	15,9	15	M10x1,25	27	8	5	12	RM/8025/M/EX/*

Ø	L12	LB	Ø MM h9	MR	PL	1	2	4	WF	VA/VD	XC	at 0 mm	per 25 mm	Model
10	–	2	4	8	5,5	7	–	14	16	1,5	64	0,034 kg	0,007 kg	RM/8010/M/EX/*
12	3	3	6	8	5,5	10	5	19	22	2	75	0,058 kg	0,011 kg	RM/8012/M/EX/*
16	3	4	6	7	5,5	10	5	19	22	2	82	0,070 kg	0,012 kg	RM/8016/M/EX/*
20	3	3	8	11	8	13	7	27	24	2	95	0,145 kg	0,018 kg	RM/8020/M/EX/*
25	4	7	10	9	8	17	9	27	28	2	104	0,200 kg	0,028 kg	RM/8025/M/EX/*

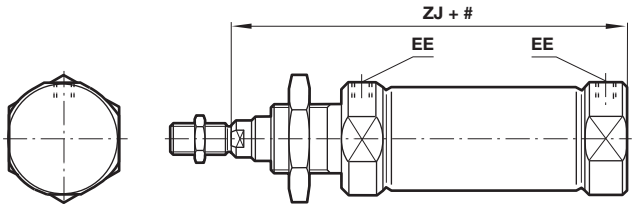
* Please insert standard stroke length.

Alternative variants

RM/8000/MC/EX –
Cylinder with central rear port



RM/8000/MF/EX –
Cylinder with flat rear cover



Stroke

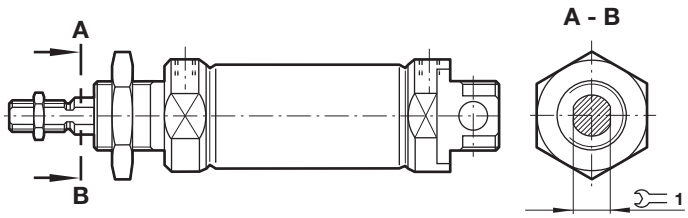
Ø	EE	ZJ	at 0 mm	per 25 mm	Model
10	M5	62	0,031 kg	0,007 kg	RM/8010/M/EX/*
12	M5	72	0,052 kg	0,011 kg	RM/8012/M/EX/*
16	M5	78	0,064 kg	0,012 kg	RM/8016/M/EX/*
20	G1/8	92	0,130 kg	0,018 kg	RM/8020/M/EX/*
25	G1/8	97	0,185 kg	0,028 kg	RM/8025/M/EX/*

* Please insert standard stroke length.

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Alternative variants

Dimensions in mm
Projection/First angle

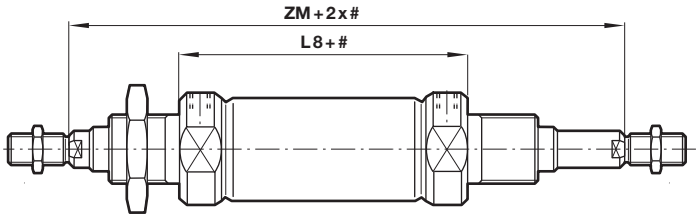


Stroke

RM/8000/N2/EX –
Cylinder with non-rotating piston rod

Ø	1	Torque max.	at 0 mm	per 25 mm	Model
12	5	0,04 Nm	0,058 kg	0,011 kg	RM/8012/N2/EX/*
16	5	0,04 Nm	0,070 kg	0,012 kg	RM/8016/N2/EX/*
20	6	0,15 Nm	0,145 kg	0,018 kg	RM/8020/N2/EX/*
25	8	0,25 Nm	0,200 kg	0,028 kg	RM/8025/N2/EX/*

* Please insert standard stroke length.



Stroke

RM/8000/JM/EX –
Cylinder with double ended piston rod

Ø	L8	ZM	at 0 mm	per 25 mm	Model
16	56	100	0,080 kg	0,017 kg	RM/8016/JM/EX/*
20	68	116	0,165kg	0,028 kg	RM/8020/JM/EX/*
25	69	125	0,250 kg	0,043 kg	RM/8025/JM/EX/*

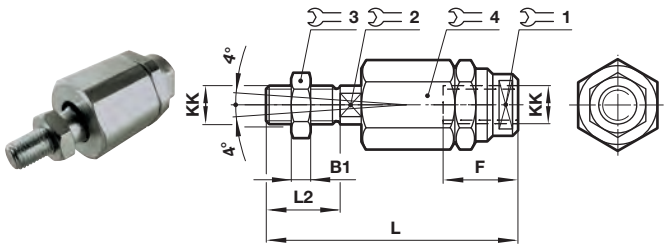
* Please insert standard stroke length.

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Mountings

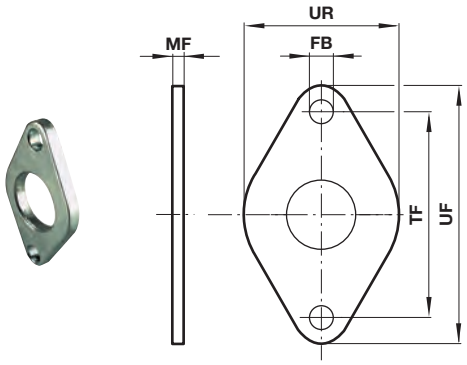
Piston rod swivel AK
Conforms to DIN ISO 8139

Dimensions in mm
Projection/First angle



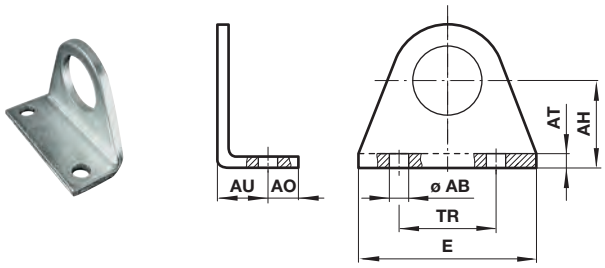
Ø	KK	B1	F	L	L2	1	2	3	4	kg	Model (AK)
10	M 4	2	12,5	33	8	11	3,2	7	11	0,01	QM/8010/38
12/16	M 6	3	14	39	12	7	5	10	13	0,02	QM/8012/38
20	M 8	4	18	55	16	10	7	13	17	0,05	QM/8020/38
25	M 10 x 1,25	5	26	73	20	19	12	17	30	0,2	QM/8025/38

Front or rear flange G and B



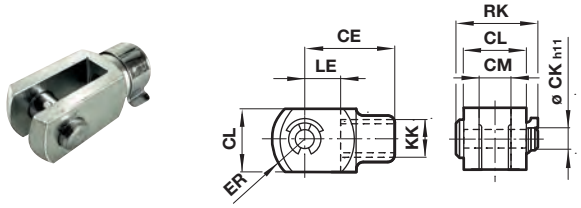
Ø	Ø FB	MF	TF	UF	UR	kg	Model (B, G)
10	4,5	3	30	40	22	0,02	M/P19407
12/16	5,5	4	40	51	28	0,03	M/P19408
20/25	6,6	5	50	63	38	0,05	M/P19409

Foot C
Conforms to DIN ISO 6432



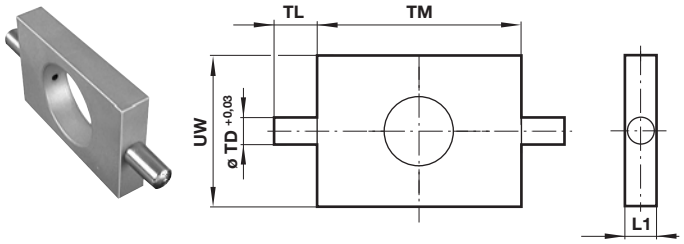
Ø	Ø AB	AH	AO	AT	AU	E	TR	kg	Model (C)
10	4,5	16	6	2	10	35	25	0,02	M/P19369
12/16	5,5	20	6	3	13	43	32	0,03	M/P19389
20/25	6,6	25	7,5	4	16	53	40	0,06	M/P19406

Piston rod clevis F
Conforms to DIN ISO 8140



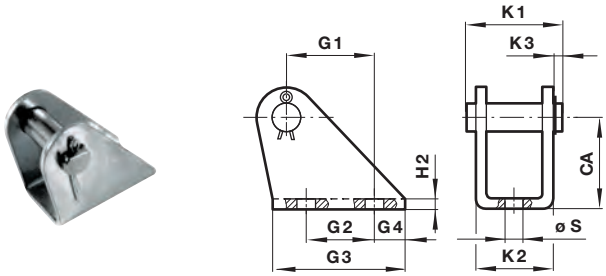
Ø	KK	CE	Ø CK h11	CL	CM	ER	LE	RK	kg	Model (F)
10	M4	16	4	8	4	6,5	8	11,5	0,01	QM/8010/25
12/16	M6	24	6	12	6	9,5	12	17,5	0,02	QM/8012/25
20	M8	32	8	16	8	13	16	22	0,06	QM/8020/25
25	M10 x1,25	40	10	20	10	16	20	28	0,10	QM/8025/25

Front or rear detachable trunnion FH



Ø	L1	Ø TD+0,03	TL	TM	UW	kg	Model (FH)
12/16	8	6	10	38	25	0,05	QM/8012/34
20/25	8	6	10	46	30	0,07	QM/8020/34

Rear hinge L

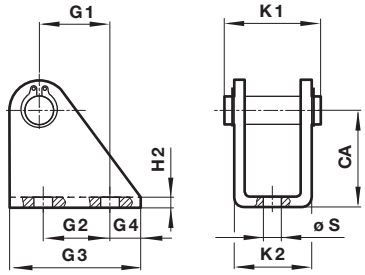


Ø	CA	G1	G2	G3	G4	H2	K1	K2	K3	Ø S	kg	Model (L)
10	12	6,5	–	15	6	1	13,5	10,5	2	4,8	0,01	QM/947
12/16	20	18,5	15	30	8	1,5	20	15	3	5,5	0,02	QM/8012/24
20/25	25	20	15	35	10	2	25	20,5	3	6,6	0,04	QM/8020/24

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Rear hinge L2



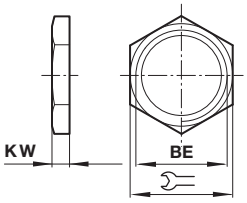


Ø	CA	G1	G2	G3	G4	H2	K1	K2	Ø S	kg	Model (L2)
10	24	11	12,5	20	4	2,5	17,5	13	4,5	0,018	QM/8010/44
12/16	27	13	15	25	5	3	23	18	5,5	0,035	QM/8012/44
20/25	30	16	20	32	6	4	29,5	24	6,6	0,077	QM/8020/44

Nose nut N

Dimensions in mm
Projection/First angle

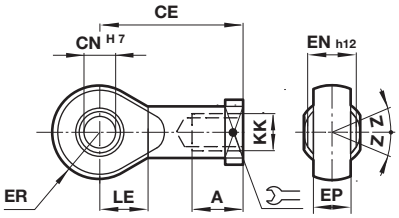




Ø	BE	⌓	KW	kg	Model (N)
10	M12x1,25	19	6	0,01	M/P1501/90
12/16	M16x1,5	22	5	0,01	M/P13834
20/25	M22x1,5	27	8	0,02	M/P13615

Universal piston rod eye UF
Conforms to DIN ISO 8139





Ø	KK	AX	CE	Ø CNH7	EN-0,1	ER	LE	Z	kg	Model (UF)
10	M4	14	27	5	8	8	10	5°	0,02	QM/8010/32
12/16	M6	14	30	6	9	9	11	5°	0,02	QM/8012/32
20	M8	16	36	8	12	11	13	5°	0,05	QM/8020/32
25	M10 x 1,25	25	42	10	14	14	15	5°	0,08	QM/8025/32

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— ATEX - Magnetically operating switch, reed contact
— Suitable for all cylinder ranges with magnetic piston
— LED indicator
— CE verificated



Technical features

Operation:
Normal open with LED (yellow)

Switching voltage (Ub):
10 ... 240 V a.c./170 V d.c.

Switching voltage output:
Ub - 2,7 V

Switching current (see graph overleaf):
0,18 A max.

Switching power:
10 W/10 VA max.

Contact resistance:
150 mΩ

Response time:
1,8 ms

Operating temperatur:
-20 ... +50°C (-4 ... +122°F)

Ex-Identification:
II 3G Ex nC IIC T5 Gc X
II 3D Ex tc IIIC T120°C Dc X

Protection rating (EN 60529):
IP67

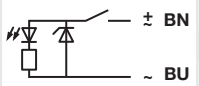
Cable type:
PVC 2 x 0,25 mm2

Cable length:
5 m

Electromagnetic compatibility according to:
EN 60947-5-2

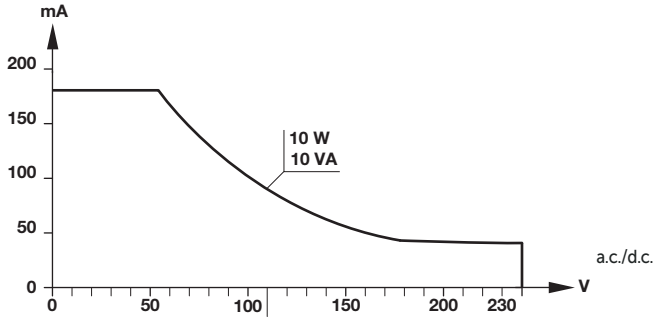
Materials:
Body: plastic
Cable: see table below

Technical data - Reed switches - additional information see data sheet en 4.3.015

Symbol	Voltage (V a.c.)	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 240	10 ... 170	180	Closer	-20 ... +50	•	IP67	5	PVC 2 x 0,25	40	M/50/LXU/5V

Color code: BN = brown, BU = blue

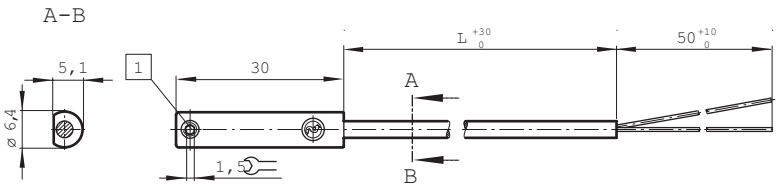
Switching current and switching voltage



Dimensions
Cable length L = 5 m

Dimensions in mm
Projection/First angle





1 Fixing screw

ATTENTION:
The setting of magnetic switches on a cylinder barrel forms an ATEX assembly:
- Each part is separate classified according ATEX for use in potentially explosive atmospheres.
- The resulting range of approved applications for the module corresponds to that of the individual part assigned to the lowest category.
- The result concerns the device category, potentially explosive atmosphere G or D, max. surface temperature and explosion classification if applicable.

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- ATEX - Magnetically operating switch, solid state
- Suitable for all cylinder ranges with magnetic piston
- LED indicator
- Resistant, reliable switching with a very fast response time
- Particularly suited for use in high levels of vibration
- CE verificated
- UL certificated



Technical features

Operation:
PNP-output with LED (yellow)

Switching voltage (Ub):
10 ... 30 V d.c.

Switching voltage output:
Ub - 2 V

Switching current (see graph):
150 mA max.

Switching power:
4,5 W max.

Response time:
< 0,5 ms

Switching frequency:
1 kHz

Operating temperatur:
-20 ... +50°C (-4 ... +122°F)

Ex-Identification:
II 3G Ex nA IIC T4 Gc X
II 3D Ex tc IIIC T110°C Dc X

Protection rating (EN 60529):
IP67

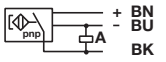
Cable type:
PVC 3 x 0,25 mm2

Cable length:
5 m

Electromagnetic compatibility according to:
EN 60947-5-2

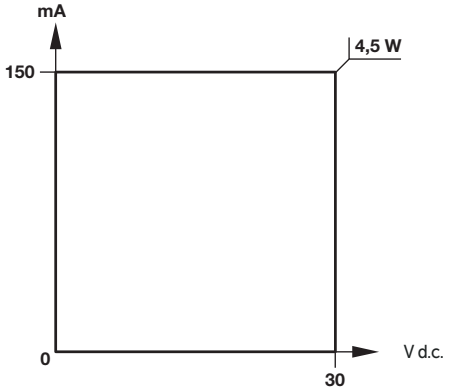
Materials:
Body: plastic
Cable: see table below

Technical data - Reed switches - additional information see data sheet en 4.3.017

Symbol	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 30	150	PNP	-20 ... +50	•	IP67	5	PVC 3 x 0,25	40	M/50/EXP/5V

Color code: BK = black, BN = brown, BU = blue

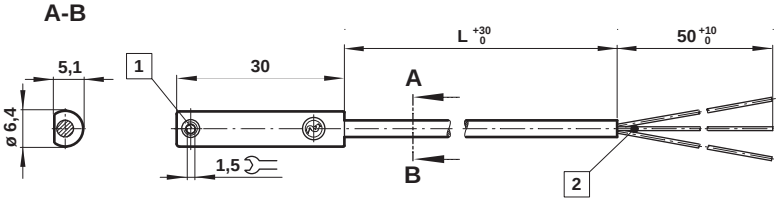
Switching current and switching voltage



Dimensions
Cable length L = 5 m

Dimensions in mm
Projection/First angle





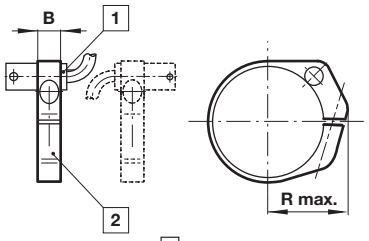
1 Fixing screw
2 Color code
BK = black
BN = brown
BU = blue

ATTENTION:
The setting of magnetic switches on a cylinder barrel forms an ATEX assembly:
- Each part is separate classified according ATEX for use in potentially explosive atmospheres.
- The resulting range of approved applications for the module corresponds to that of the individual part assigned to the lowest category.
- The result concerns the device category, potentially explosive atmosphere G or D, max. surface temperature and explosion classification if applicable.

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Switch mounting brackets - Brackets > 15 mm stroke



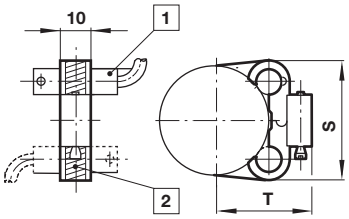


1 Magnetically operated switch
2 Switch mounting bracket

Ø	B	R max.	kg	Model
10	8	16	0,01	QM/33/010/22
12	8	18	0,01	QM/33/012/22
16	10	20	0,01	QM/33/016/22
20	10	22	0,01	QM/33/020/22
25	10	24	0,01	QM/33/025/22

Switch mounting brackets - Brackets < 15 mm stroke





1 Magnetically operated switch
2 Switch mounting bracket

Ø	S	T	kg	Model
10	27,5	19,5	0,01	QM/33/010/23
12	28,5	21,5	0,01	QM/33/016/23
16	29,5	23,5	0,01	QM/33/016/23
20	29,5	26	0,01	QM/33/020/23
25	31,5	28,5	0,01	QM/33/025/23

Protection of magnetic switch

1. Install the switch in a way that ensures to protect the switch against mechanical damage, shock or impact from any direction.
2. For an open installation of a magnetic switch onto a cylinder barrel with external tie rods or round cylinders, an additional protection element for the magnetic switch and his cable has to be installed with the mounting element. For the protection element of the housing a separate order for M/P73673 is required.

Roundline cylinder, stroke ≥ 50 mm

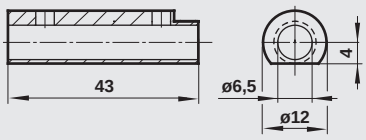


Mounting element for magnetic switch



Protection unit ATEX





Cylinder Ø (mm)	Model	Model
10	QM/33/010/22	M/P73673
12	QM/33/012/22	
16	QM/33/016/22	
20	QM/33/020/22	
25	QM/33/025/22	

Attention: During the assembly the magnetic switch must be completely inserted into the protection element.

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »**Technical features/ data**«.
Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult Norgren GmbH.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

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