RM/28000/M, ISO cylinder Magnetic piston, single acting

- ø 10 ... 25 mm
- Standard magnetic piston for full control system versatility
- Conforming to ISO 6432
- Optional port arrangement for compact installation
- Nose mounting nut and piston rod locknut as standard

Technical features

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

Standard:
ISO 6432

Operation:
Single acting (sprung in)
with magnetic piston and buffer
RM/28000/M Integral rear eye mounting
RM/28000/MC Central rear port
RM/28000/MF Flat rear cover

Operating pressure:
2 ... 10 bar (29 ... 145 psi)

Cylinder diameters:
10, 12, 16, 20, 25 mm

Strokes:
See page below

Non-standard strokes:
up to 50 mm max. on request

Operating temperature:
-10 ... +80 °C max. (+14 ... +176 °F)
Air supply must be dry enough to avoid ice formation at temperatures below +2 °C (+35 °F).

Materials:
Barrel: stainless steel (austenitic)
End covers: clear anodised aluminium alloy
Piston rod: stainless steel (austenitic)
Buffer: PUR
Seals: 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
Theoretical thrusts at 6 bar outstroke (N)	40,7	57,7	102	165	260
Spring forces F1 instroke (N)	3,7	4,8	10,5	16,1	21,6
Air consumption at 6 bar outstroke (l/cm)	0,006	0,008	0,014	0,022	0,035

Standard strokes

Cylinder ø (mm)	Stroke length (mm) 10	25	50
10	•	•	•
12	•	•	•
16	•	•	•
20	•	•	•
25	•	•	•

Cylinder variants

Symbol	Model with magnetic piston	Description	Dimensions Page
	RM/28000/M	Standard cylinder with integral eye mounting	3
	RM/28000/MC	Cylinder with central rear port	3
	RM/28000/MF	Cylinder with flat rear cover	3

Option selector

RM/280★★/★★/★★

Cylinder ø (mm)	Substitute
10	10
12	12
16	16
20	20
25	25

Stroke (mm)	
max. 50	
Variants (magnetic piston)	**Substitute**
Standard with integral eye mounting	M
Central rear port	MC
Flat rear cover	MF

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Mountings and Accessories

Cyl.	AK	B, G	C	F	FH
ø	8 Page 4	4 Page 4	5 Page 4	9 Page 4	1 Page 4
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.	L	L2	N	UF
ø	3 Page 4	2 Page 5	6 Page 5	7 Page 5
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.	Switch mounting brackets >15 mm stroke	<15 mm stroke	Magnetically operated switches
ø	11 Page 6	12 Page 6	Page 6 ... 9
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/28000/M

Dimensions in mm
Projection/First angle

Stroke
6 Exhaust position, do not obstruct

ø	AM	Ø B/BA -0,1	BE	BF	ø CD H9	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/28010/M/*
12	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	5	3	9	RM/28012/M/*
16	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	5	3	9	RM/28016/M/*
20	20	22	M22x1,5	20	8	30	G1/8	15,9	15	M8	27	8	4	12	RM/28020/M/*
25	22	22	M22x1,5	22	8	30	G1/8	15,9	15	M10x1,25	27	8	5	12	RM/28025/M/*

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/28010/M/*
12	3	3	6	8	5,5	10	5	19	22	2	75	0,058 kg	0,011 kg	RM/28012/M/*
16	3	4	6	7	5,5	10	5	19	22	2	82	0,070 kg	0,012 kg	RM/28016/M/*
20	3	3	8	11	8	13	7	27	24	2	95	0,145 kg	0,018 kg	RM/28020/M/*
25	4	7	10	9	8	17	9	27	28	2	104	0,200 kg	0,028 kg	RM/28025/M/*

* Please insert standard stroke length.

Alternative variants
RM/28000/MC –
Cylinder with central rear port

RM/28000/MF –
Cylinder with flat rear cover

ø	EE	ZJ	at 0 mm	per 25 mm	Model
10	M5	62	0,031 kg	0,007 kg	RM/28010/M/*
12	M5	72	0,052 kg	0,011 kg	RM/28012/M/*
16	M5	78	0,064 kg	0,012 kg	RM/28016/M/*
20	G1/8	92	0,130 kg	0,018 kg	RM/28020/M/*
25	G1/8	97	0,185 kg	0,028 kg	RM/28025/M/*

* Please insert standard stroke length.

Stroke
6 Exhaust position, do not obstruct

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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 CN H7	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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- Magnetically operated reed switch - Round style
- Suitable for all cylinder ranges with magnetic piston
- LED indicator on LSU models
- Alternative variants allows a wide range of application

Technical features

Operation:
M/50/LSU Normally 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 temperature:
-25 ... +80 °C (-13 ... +176 °F)

High temperature version:
+150 °C max.(+302 °F)

Protection rating (EN 60529):
IP66

Shock resistance:
50 g (during 11 ms)

Vibration resistance:
35 g (at 2000 Hz)

Cable type:
2 x 0,25: PVC, PUR or silikone
3 x 0,25 PVC

Cable length:
2, 5 or 10 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 4.3.005

Symbol	Voltage (V a.c.)	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Plug	Cable length (m)	Cable type	Weight (g)	Model
± BN ~ BU	10 ... 240	10 ... 170	180	Normally open	-25 ... +80	•	IP 66	–	2, 5 or 10	PVC 2 x 0,25	37	M/50/LSU/*V
	10 ... 240	10 ... 170	180	Normally open	-25 ... +80	•	IP 66	–	5	PUR 2 x 0,25	37	M/50/LSU/5U
BN BU	10 ... 240	10 ... 170	180	Normally open	-25 ... +150	–	IP 66	–	2	Silicon 2 x 0,25	37	TM/50/RAU/2S
BK BU BN	10 ... 240	10 ... 170	180	Changeover	-25 ... +80	–	IP 66	–	5	PVC 3 x 0,25	37	M/50/RAC/5V
1 ± BN ~ 4 ~ BK	10 ... 60	10 ... 60	180	Normally open	-25 ... +80	•	IP 66	M8 x 1	0,3	PVC 3 x 0,25	16	M/50/LSU/CP *1)
	10 ... 60	10 ... 60	180	Normally open	-25 ... +80	•	IP 66	M12 x 1	0,3	PVC 3 x 0,25	16	M/50/LSU/CC *1)

* Insert cable length; *1) Plug-in connector see page 12

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Dimensions

M/50/LSU/*V, M/50/LSU/5U,
TM/50/RAU/2S
Cable length L = 2, 5 or 10 m

Dimensions in mm
Projection/First angle

M/50/RAC/5V
Cable length L = 5 m

M/50/LSU/CP
M/50/LSU/CC

1 Fixing screw
2 + BN = brown; - BU = blue (output)
3 - BK = black; + BN = brown; - ≠BU = blue
4 Version CP: Plug M8 x 1, color code: BK = +; BN = -; BU = output
Version CC: Plug M12 x 1, color code: BK = +; BN = -; BU = output

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- Magnetically operated switch, solid state - round style
- IO-Link version available
- Suitable for all cylinder ranges with magnetic piston
- Switches can be mounted flush in all profile cylinders
- Reliable switching with a very fast reponse time
- Particularly suited for use in high levels of vibration
- LED indicator as standard
- UL listed

Technical features

Operation:
PNP / NPN (see table)
Output with LED (yellow)
Normally open (standard)

Switching voltage (Ub):
10 ... 30 V d.c.
("supply class 2" acc. to cULus)

Voltage drop at output:
< 2,5 V

Residual current:
< 0,5 mA

Switching current (see graph):
100 mA max. (standard)
300 mA max. (M/50/EHP)

Switching power:
3,0 W max. (standard)
9,0 W max. (M/50/EHP)

Response time:
< 0,1 ms (standard)
< 5 ms (M/50/IOP)

Operating frequency:
1 kHz (standard)
200 Hz (M/50/IOP)

Responsiveness:
2,8 mT

Hysteresis:
0,5 ... 1,5 mT
0,2 mT (M/50/IOP)

Repeatability:
< 0,1 mT

Protection rating (EN 60529):
IP67 (standard)
IP68 (M/50/EAP/5U, M/50/EHP/5U)

Operating temperature:
-40 ... +80 °C (-40 ... 176 °F) (permanently fixed cable)
-25 ... +80 °C (-13 ...176 °F) (moving cable)

Cable type:
PVC 3 x 0,14 mm² (standard)
PUR 3 x 0,14 mm² (M/50/E*P/*U and all variants with connector)

Cable length:
2, 5 and 10 m

Electromagnetic compatibility according to:
EN 60947-5-2

Materials:
Housing: plastic
Thread insert: brass
Set screw: stainless steel
Cable: see table below

Mounting type:
Flush mountable

Technical data - Solid state - additional information see data sheet en 4.3.007

Symbol	Voltage (V DC)	Current maximum (mA)	Function	IO-Link *1)	Operating temperature (°C)	LED	Protection class	Connector	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 30	100	PNP		-40 ... +80	•	IP67	---	2	PVC 3 x 0,14	23	M/50/EAP/2V
	10 ... 30	100	PNP		-40 ... +80	•	IP67	---	5	PVC 3 x 0,14	56	M/50/EAP/5V
	10 ... 30	100	PNP		-40 ... +80	•	IP67	---	10	PVC 3 x 0,14	102	M/50/EAP/10V
	10 ... 30	100	PNP / NPN	•	-40 ... +80	•	IP67	---	5	PVC 3 x 0,14	56	M/50/IOP/5V
	10 ... 30	100	PNP		-40 ... +80	•	IP68	---	5	PUR 3 x 0,14	56	M/50/EAP/5U
	10 ... 30	100	PNP		-40 ... +80	•	IP67	---	10	PUR 3 x 0,14	102	M/50/EAP/10U
	10 ... 30	300	PNP		-40 ... +80	•	IP67	---	2	PVC 3 x 0,14	23	M/50/EHP/2V
	10 ... 30	300	PNP		-40 ... +80	•	IP67	---	5	PVC 3 x 0,14	56	M/50/EHP/5V
	10 ... 30	300	PNP		-40 ... +80	•	IP67	---	10	PVC 3 x 0,14	102	M/50/EHP/10V
	10 ... 30	300	PNP		-40 ... +80	•	IP68	---	5	PUR 3 x 0,14	56	M/50/EHP/5U
	10 ... 30	100	PNP		-40 ... +80	•	IP67	M8 x 1	0,3	PUR 3 x 0,14	7	M/50/EAP/CP
	10 ... 30	100	PNP / NPN	•	-40 ... +80	•	IP67	M8 x 1	0,3	PUR 3 x 0,14	7	M/50/IOP/CP
	10 ... 30	100	PNP		-40 ... +80	•	IP67	M12 x 1	0,3	PUR 3 x 0,14	16	M/50/EAP/CC
	10 ... 30	100	PNP		-40 ... +80	•	IP67	M12 x 1	2	PUR 3 x 0,14	35	M/50/EAP/CC/2
	10 ... 30	100	PNP / NPN	•	-40 ... +80	•	IP67	M12 x 1	0,3	PUR 3 x 0,14	16	M/50/IOP/CC
	10 ... 30	300	PNP		-40 ... +80	•	IP67	M8 x 1	0,3	PUR 3 x 0,14	7	M/50/EHP/CP
	10 ... 30	100	NPN		-40 ... +80	•	IP67	---	2	PVC 3 x 0,14	23	M/50/EAN/2V
	10 ... 30	100	NPN		-40 ... +80	•	IP67	---	5	PVC 3 x 0,14	56	M/50/EAN/5V
	10 ... 30	100	NPN		-40 ... +80	•	IP67	---	10	PVC 3 x 0,14	102	M/50/EAN/10V
	10 ... 30	100	NPN		-40 ... +80	•	IP67	M8 x 1	0,3	PUR 3 x 0,14	7	M/50/EAN/CP

Color code: see next page

*1) IO-Link functionality: see next page

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IO-Link Switch conforming to IEC 61131-9

Properties and Functionality	M/50/EAP, M/50/EAN M/50/EHP	M/50/IOP	
Operating Mode	Standard	Standard	
Power LED		•	•
LED sensor signal	•	•	•
Normally open (delivery status)	•	•	•
Normally closed		O	•
Delay mode		O	•
Installation aid		•	•
Temperature measurement			•
Detection counter			•
Teach functionality			•
Responsiveness adjustment			•

Note: IODD for the M/50/IOP switches available on the Norgren homepage.
https://www.norgren.com/uk/en/technical-support/software

• = included
O = optional (manufacture pre-setting required)

Switching current and switching voltage

M/50/EAP, M/50/EAN, M/50/IOP

M/50/EHP

Dimensions

Dimensions in mm
Projection/First angle

M/50/EAP/*V,
M/50/EAP/*U,
M/50/IOP/5V,
M/50/EHP/*V,
M/50/EHP/5U,
M/50/EAN/*V
Cable length L = 2, 5 or 10 m

M/50/EAP/CP,
M/50/EAN/CP,
M/50/IOP/CP,
M/50/EHP/CP

M/50/EAP/CC,
M/50/IOP/CC,
M/50/EHP/CC

1 Fixing screw
2 Color code: BK = black (output); BN = brown (+); BU = blue (-)
3 Connector M8 x 1; 1 BN = +; 3 BU = -; 4 BK = output
4 Connector M12 x 1; 1 BN = +; 3 BU = -; 4 BK = output

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Accessories

Plug-in connector cable with nut

Outer cover	Cable length (m)	Weight (kg)	Connector	Model
PVC 3 x 0,25	5	0,18	M8 x 1 straight connector	M/P73001/5
PUR 3 x 0,25	5	0,18	M8 x 1 straight connector	M/P73002/5
PVC 3 x 0,25	5	0,18	M8 x 1 angled connector 90 °	M/P34615/5
PUR 3 x 0,25	5	0,18	M8 x 1 angled connector 90 °	M/P34596/5
PUR 3 x 0,34	5	0,21	M12 x 1 straight connector	M/P34594/5

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

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.
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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