

LINTRA® Heavy Duty Cylinders
Magnetic Piston
Double Acting
Ø 16 to 63 mm

- External guides for heavy loads over long distances
- Rigid, reinforced aluminium profile provides greater load support
- T-slots in the outer profile enable individual mounting options
- Precision guidance with ball bearings on hardened trackways
- Low rolling resistance


Technical Data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with adjustable cushioning,
Optional shock absorbers

Operating Pressure:

1,5 to 10 bar

Operating Temperature:

-30°C* to +80°C max.

* Consult our Technical Service for use below +2°C

Cylinder Diameters:

M/46800/M 20, 25 mm

M/46800/HM 25, 32, 40 mm

M/46800/PM 16, 25, 40, 63 mm

Standard Strokes:

Made to order

Maximum Strokes:

M/46800/M (Ø 20, 25 mm): 4500 mm

M/46800/HM (Ø 25, 32, 40 mm): 5700 mm

M/46816/PM (Ø 16 mm): 5600 mm

M/46825/PM (Ø 25 mm): 4000 mm

M/46840/PM (Ø 40 mm): 4500 mm

M/46863/PM (Ø 63 mm): 4500 mm

Materials:

Anodised aluminium carriage and end covers,
special anodised aluminium alloy cylinder extrusion,
polyurethane sealing strips and piston seals,
plastic cover strips, nitrile rubber or oil resistant plastic seals

Ordering Examples

See page N 1.6.015.02

Switches

See page N 1.6.015.02

Accessories

See page

Shock absorber for M/46800/M

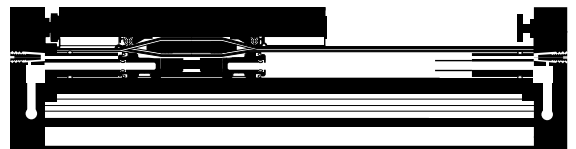
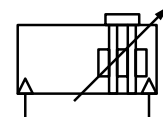
Model M/59620

N 1.11.011.01

Shock absorber for M/46800/HM

Model M/59625

N 1.11.011.01





Cylinder Variants

Symbol	Model	Description	Dimensions see page
	M/46800/M	Heavy duty guiding system 1 (Ø 20, 25 mm)	4
	M/46800/HM	Heavy duty guiding system 2 (Ø 25, 32, 40 mm)	4
	M/46800/PM	Heavy duty precision guiding (Ø 16, 25, 40, 63 mm)	5

Model Codes

M/468**/**/****

Threads	Substitute
Metric Ports: Metric (M5) or ISO 228 (G 1/8 to G 1/2)	M
Series	Substitute
46000	46
Variants	Substitute
Heavy Duty Cylinders	8
Cylinder Diameters (mm)	Substitute
16	16
20	20
25	25
32	32
40	40
63	63

Variants	Strokes (mm)
Ø 20 (M/46820/M)	4500 max.
Ø 25 (M/46825/M)	4500 max.
Ø 25 (M/46825/HM)	5700 max.
Ø 32 (M/46832/HM)	5700 max.
Ø 40 (M/46840/HM)	5700 max.
Ø 16 (M/46816/PM)	5600 max.
Ø 25 (M/46825/PM)	4000 max.
Ø 40 (M/46840/PM)	4500 max.
Ø 63 (M/46863/PM)	4500 max.

Guiding Systems	Substitute
Heavy duty guiding system 1 (Ø 20, 25 mm)	M
Heavy duty guiding system 2 (Ø 25, 32, 40 mm)	HM
Heavy duty precision guiding (Ø 16, 25, 40, 63 mm)	PM

Note: If option is not required, disregard option position within part number eg. M/46825/M/900

Switches for Series M/46800/M and M/46800/HM only

Model	
Solid state	QM/134

Model Reed	Solid State	Voltage V a.c.	V d.c.	Current Max.	Temperature °C	LED	Features	Cable Length	Cable Type	Plug-in Cable Straight	90°	Catalogue Page
—	QM/134/**	—	10 to 30	0,2 A	-20° to +80°	●	PNP	2, 5 m	PVC 3 x 0,34	—	—	N 4.3.055
—	QM/134/E/**	—	10 to 30	0,2 A	-20° to +80°	●	Pulse stretcher	5 m	PVC 3 x 0,34	—	—	N 4.3.055
—	QM/134/N/**	—	10 to 30	0,2 A	-20° to +80°	●	NPN	2, 5 m	PVC 3 x 0,34	—	—	N 4.3.055
—	QM/134/X/**	—	8,2	2,2/1 mA	-25° to +75°	●	NAMUR	5 m	PVC 2 x 0,34	—	—	N 4.3.055

Ordering Examples

Cylinders

To order e.g. a standard 25 mm bore heavy duty cylinder system 1 with a 2500 mm stroke quote: **M/46825/M/2500**

Switches

To order e.g. a solid state switch with LED and 2 m cable length quote: **QM/134/2**

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 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.

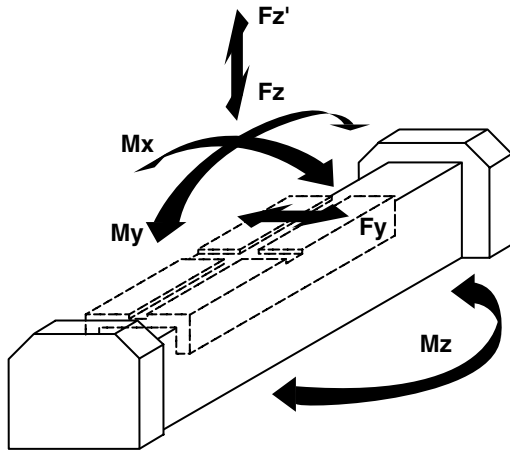
System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.



Thrust • Cushion length

Model	∅ mm	Thrust at 6 bar (N)	Air consumption (l/cm) per stroke at 6 bar	Cushion length (mm)
M/46820/M	20	150	0,022	26
M/46825/M	25	250	0,035	26
M/46825/HM	25	250	0,035	26
M/46832/HM	32	410	0,056	35
M/46840/HM	40	640	0,088	50
M/46816/PM	16	120	0,014	12
M/46825/PM	25	250	0,035	26
M/46840/PM	40	640	0,088	50
M/46863/PM	63	1600	0,218	70



Loading values for heavy duty cylinders

The values given in the table below show the single forces in the directions F_y , F_z and F_z' and the maximum moments M_x , M_y and M_z . All values are applicable only for speeds of max. 0,2 m/s. A requirement for using these values is a constant movement (no jerking) of the mass over the whole stroke length of the cylinder. The reference point from which the moments for all cylinders should be calculated is the centreline of the carriage.

For speeds up to 2 m/s please use our calculation programme PNEUCALC or contact our Technical Service. It is available upon request. PNEUCALC is suitable for all PC's having MS-Windows 95 and higher.

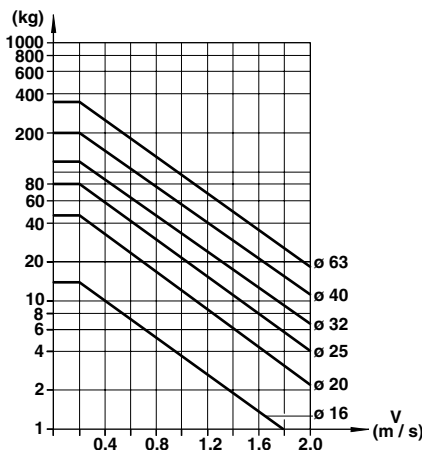
Total loads

When a heavy duty cylinder has to take several loads and moments, an additional calculation is necessary using this formula:

$$\frac{M_x}{M_x \text{ max.}} + \frac{M_y}{M_y \text{ max.}} + \frac{M_z}{M_z \text{ max.}} + \frac{F_y}{F_y \text{ max.}} + \frac{F_z (F_z')}{F_z (F_z') \text{ max.}} \leq 1$$

Model	∅ (mm)	F_y (N)	F_z (N)	F_z' (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)
M/46800/M	20, 25	4500	5000	4500	350	410	370
M/46800/HM	25, 32, 40	4500	5000	4500	450	620	580
M/46816/PM	16	3000	3000	3000	100	300	300
M/46825/PM	25	4200	5000	4200	250	500	500
M/46840/PM	40	7200	8500	7200	600	1200	1200
M/46863/PM	63	10000	12000	10000	1200	2400	2400

Loading values applicable to a speed of $\leq 0,2$ m/s. Maximum working life is normally reached below a speed of 1 m/s.

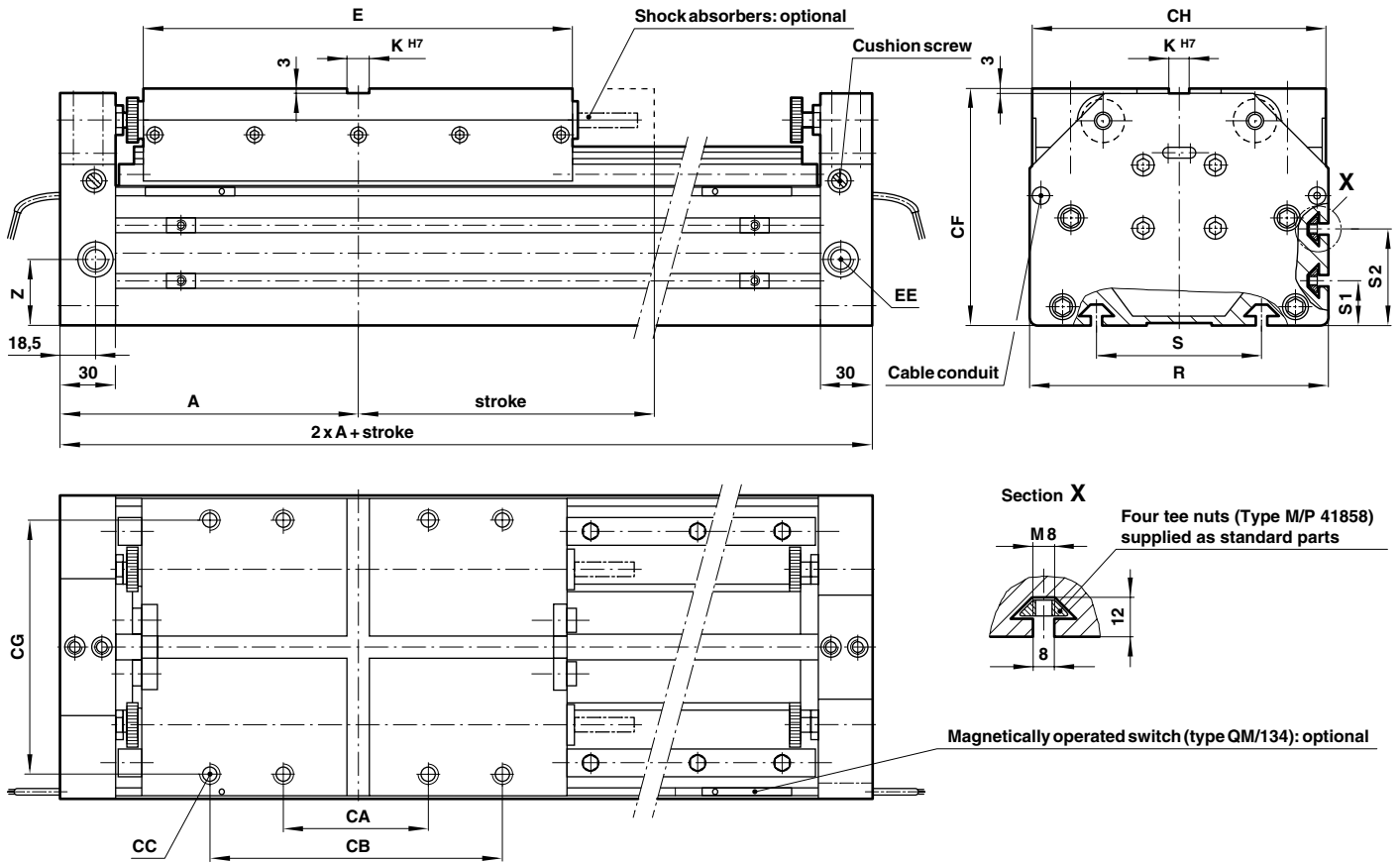


Cushioning Performance

The dynamic energy of a heavy duty cylinder is caused by direct or indirect external loads which must be absorbed by pneumatic cushioning. The cushioning ability depends to a large extent on the pneumatic circuit design (e.g. back pressure, pre-exhaust). The values given in the diagram were tested with an operating pressure of 6 bar using a 5/2 control valve. When installed horizontally, depending upon the speed, dynamic energy can be absorbed by the cylinder. Whenever the values given in the diagram are exceeded, the transported mass must be cushioned by additional shock absorbers.



M/46800/M, M/46800/HM – Cylinders with heavy duty guiding systems

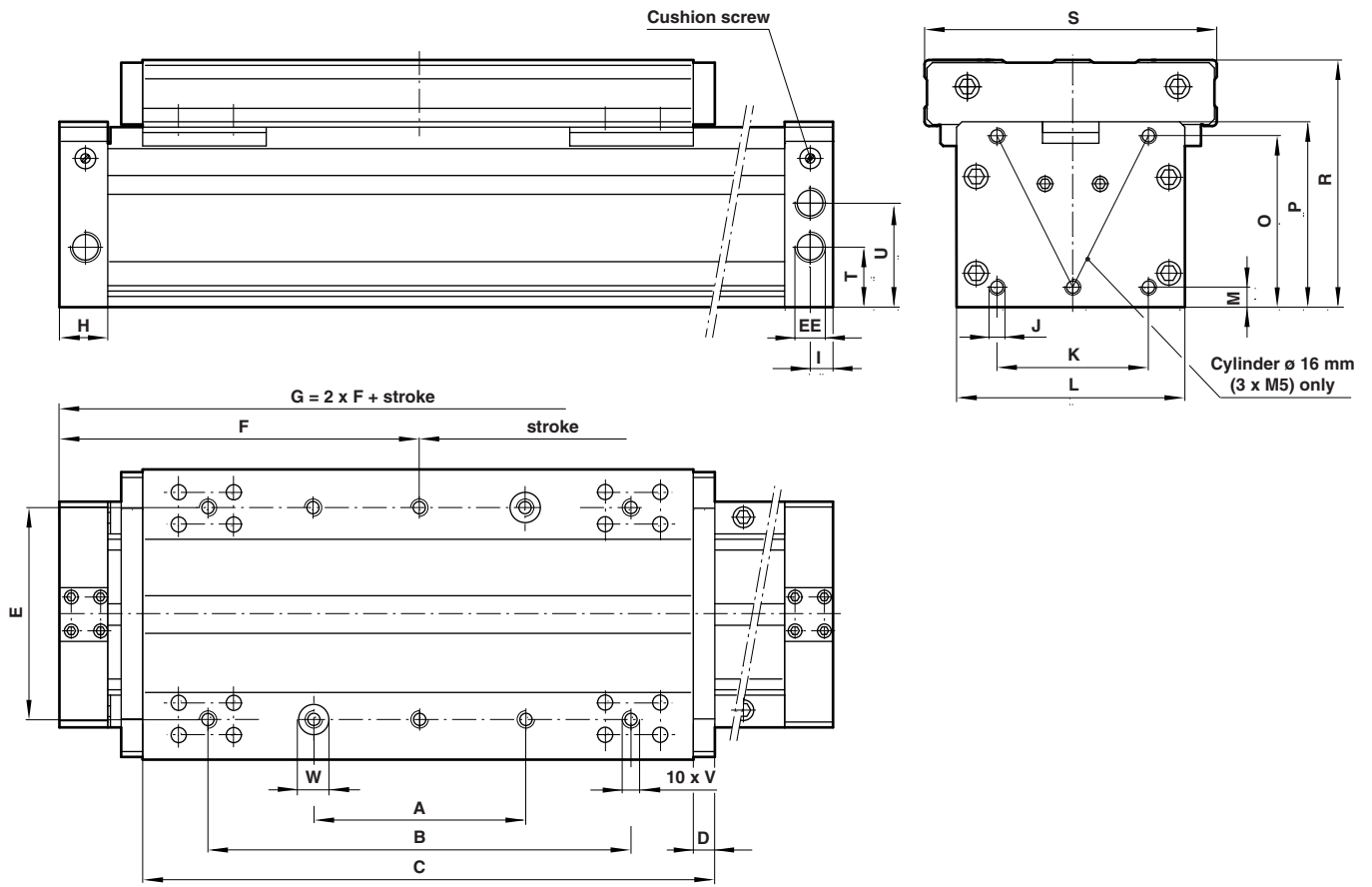


Model	∅	A	CA	CB	CC	CF	CG	CH	E	EE
M/46820/M	20	130	30	112	M 8 x 25 deep	100	112	132	170	G 1/8
M/46825/M	25	130	30	112	M 8 x 25 deep	100	112	132	170	G 1/8
M/46825/HM	25	162,5	80	160	M 8 x 33 deep	128	136	162	235	G 1/4
M/46832/HM	32	162,5	80	160	M 8 x 33 deep	128	136	162	235	G 1/4
M/46840/HM	40	162,5	80	160	M 8 x 33 deep	128	136	162	235	G 1/4

Model	∅	K H7	R	S	S1	S2	Z	at 0 mm	per 100 mm
M/46820/M	20	8	134	66	26,5	-	25,5	6,9 kg	1,49 kg
M/46825/M	25	8	134	66	26,5	-	25,5	7,2 kg	1,54 kg
M/46825/HM	25	12	164	90	24	52	35	11,2 kg	1,95 kg
M/46832/HM	32	12	164	90	24	52	35	12,0 kg	2,10 kg
M/46840/HM	40	12	164	90	24	52	35	13,1 kg	2,25 kg



Basic Dimensions M/46800/PM – Cylinders with heavy duty precision guiding

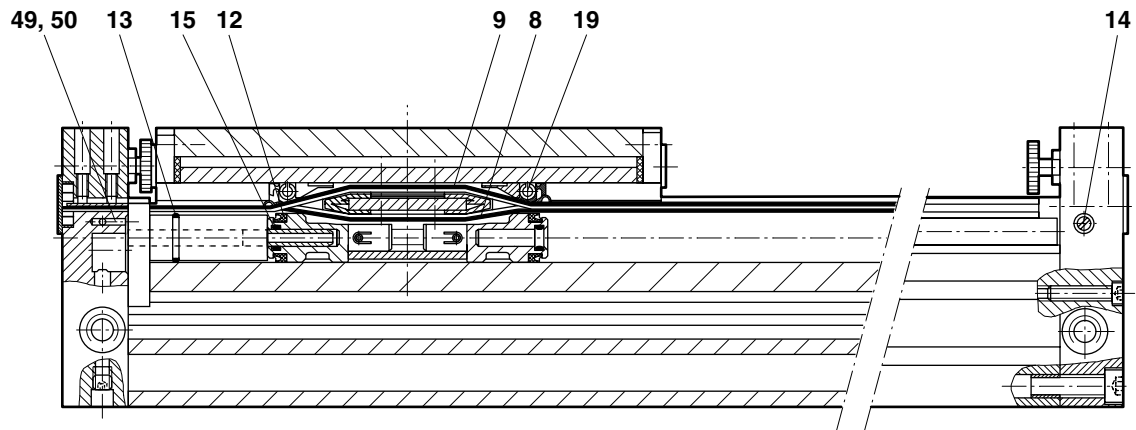


Model	∅	A	B	C	D	E	EE	F	H	I	J	K	L	M	O
M/46816/PM	16	60	120	180	8	60	G 1/8	128	20	10	M5	37	72	7,5	50
M/46825/PM	25	90	180	240	10	90	G 1/8	165	25	12,5	M6	64	96	11	75
M/46840/PM	40	120	240	320	12	120	G 1/4	210	30	15	M8	80	130	17	97
M/46863/PM	63	154	308	400	15	154	G 1/2	260	35	17,5	M10	110	165	15	125

Model	∅	P	R	S	T	U	V	W ^{H7}	at 0 mm	per 100 mm
M/46816/PM	16	58	75	85	16	37,5	M6-10 deep	12-3,2 deep	2,9 kg	0,65 kg
M/46825/PM	25	82,5	105	125	30	47	M 8-12 deep	15-3,2 deep	6,0 kg	1,08 kg
M/46840/PM	40	107	140	170	35	58,5	M 10-15 deep	18-3,2 deep	14,0 kg	1,95 kg
M/46863/PM	63	136,5	180	210	44	76	M 12-18 deep	22-3,2 deep	27,7 kg	3,14 kg



Spares



Model	Spares kit	Comprising Item	Description	Quantity	Seal strip Item 8	Cover strip Item 9	Barrel Item 5
M/46820/M	QM/46820*/88	8 + 9	Seal/cover strip	1	M/P 41829/*	M/P 41831/*	M/P 41833/*
M/46825/M	QM/46825*/88	12	Seal	2	M/P 41829/*	M/P 41831/*	M/P 41834/*
M/46825/HM	QM/46825*/88	13, 14, 49, 50	'O'-Ring	2	M/P 41800/*	M/P 41801/*	M/P 41802/*
M/46832/HM	QM/46832*/88	15	Seal	2	M/P 41823/*	M/P 41824/*	M/P 41825/*
M/46840/HM	QM/46840*/88	19	Closer assy. Grease	1	M/P 41826/*	M/P 41827/*	M/P 41828/*

* Insert stroke length

Note: Please quote the cylinder type number when ordering spares kits