

LINTRA®PLUS Rodless cylinders

146000, 146100, 146200

Internal, external and precision roller guided Double acting

- Lightweight design extrusion with universal mounting grooves
- Proven and patented sealing system
- Dust protection as standard (Ø 25 to 63 mm)
- Interchangeability with series C/46000

Ø 16 ... 80 mm



Technical features

Compressed air, filtered, lubricated or non-lubricated

Operation:

146000/M, 146100/M, 146200/M
Double acting with adjustable cushioning and magnetic piston

Models:

146000 with internal guide
146100 with external adjustable guide
146200 with precision roller guide

Operating pressure:

14.5 to 116 psi (1 to 8 bar)

Operating temperature:

-22°F to 176°F (-30°C to +80°C) max. (consult our Technical Service for use below 36°F [+2°C]) Cylinder diameter (mm): 16, 20, 25, 32, 40, 50, 63, 80

Max strokes:

Ø 16 to 40 mm: 27.9' (8500 mm)
Ø 50 and 63 mm: 26.2' (8000 mm)
Ø 80 mm: 18' (5500 mm)

Materials:

End covers: molded plastic (Ø 16), diecast aluminum (Ø 25 - 63) and anodised aluminum (Ø 20 & 80)
Yoke: anodised aluminum, molded plastic (Ø 16 & 20)
Carriage, closer & cover: aluminum diecast
Guiding bridge and profile barrel: anodised aluminum
Seal strip, wiper and piston seal: polyurethane
Cover strip: polyamide
Other seals: nitrile rubber

Standard models

Ø	Port size inch (mm)	Internal guide magnetic	External guide magnetic	Precision roller guide magnetic
16	- (M5)	M/146016/M/*	M/146116/M/*	-
20	1/8 NPT (G-1/8)	*146020/M/*	*146120/M/*	-
25	1/8 NPT (G-1/8)	*146025/M*	*146125/M*	*146225/M*
32	1/4 NPT (G-1/4)	*146032/M*	*146132/M*	*146232/M*
40	1/4 NPT (G-1/4)	*146040/M*	*146140/M*	*146240/M*
50	3/8 NPT (G-3/8)	*146050/M*	*146150/M*	*146250/M*
63	1/2 NPT (G-1/2)	*146063/M*	*146163/M*	*146263/M*
80	1/2 NPT (G-1/2)	*146080/M/*	*146180/M/*	-

*Insert stroke (inches for models with a "C" in the first position and mm for models with an "M" in first position)



Magnetic piston

Options selector

		C / 146 ★★ ★ / MC / ★★ ★ ★	
Ported models	Substitute		
NPT ports (Ø 20 to 80 mm)	C		
Metric ports (Ø 16 to 80 mm)	M		
Guiding system	Substitute		
Internal	0		
External	1		
Roller	2		
Cylinder Ø (mm)	Substitute		
16	16		
20	20		
25	25		
32	32		
40	40		
50	50		
63	63		
80	80		
		Strokes (on request)	Substitute
		Provide in Inches	C version
		Provide in Metric	M version
		Options (magnetic piston) STD.	Substitute
		Magnetic piston (standard on 16, 20, and 80 mm bores)	M
		Alternative ports (standard 25, 32, 40, 50, 63 mm bores)	MC ¹
		Active brake (25 to 63 mm bores)	L3
		Passive brake (25 to 63 mm bores)	L4
		With added caged ball linear motion guide	PM†
		With linear position sensor (32 to 63 mm bores)	F1
		Double carriages *	MD**

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

This options selector explains only the cylinder variants.

Additional variants/options are not possible.

* For C/146100 & C/146200 only

** MD option available in 1461** External and 1462** Roller guided carriage

C/146*** / MD / **** / *****
Effective stroke ← → Distance between carriage centers (inches)

1 Not available on 16, 20, 80 mm bores.

† Order PM option as 1462**

Ordering information

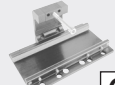
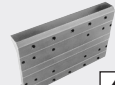
Cylinder

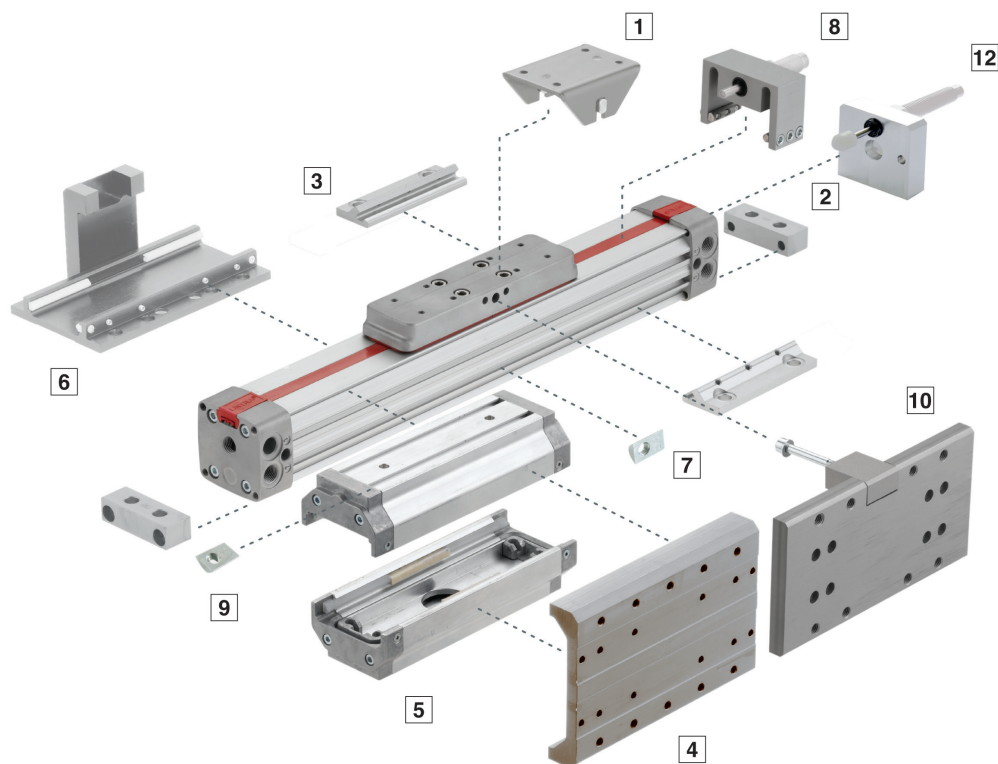
LINTRA® cylinder with internal guiding system.

Ø 32 mm cylinder diameter and 10' (3000 mm) stroke length with magnetic piston, and NPT ports.

Quote: **C/146032/MC/120**

Mountings

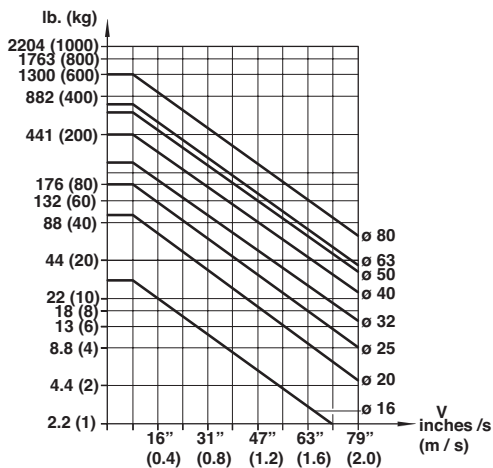
Ø mm	Type C Foot Mount	Type S Swinging Bridge	Type UV Carriage Bracket	Type UW Side Mounting Plate	Type V Center Support	Type W Secondary
	 2	 1	 6	 4	 3	 5
16	QM/146016/21	QM/146016/37	QM/146016/34	-	QM/146016/32	QM/146116/35
20	QM/146020/21	QM/146020/37	QM/146020/34	QM/146120/36	QM/146020/32	QM/146120/35
25	QM/146025/21	QM/146025/37	QM/146025/34	QM/146125/36	QM/146025/32	QM/146125/35
32	QM/146032/21	QM/146032/37	QM/146032/34	QM/146132/36	QM/146032/32	QM/146132/35
40	QM/146040/21	QM/146032/37	QM/146040/34	QM/146140/36	QM/146040/32	QM/146140/35
50	QM/146050/21	QM/146050/37	QM/146050/34	QM/146150/36	QM/146050/32	QM/146150/35
63	QM/146063/21	QM/146050/37	QM/146063/34	QM/146163/36	QM/146063/32	QM/146163/35
80	QM/146080/21	QM/146080/37	QM/146080/34	-	QM/146080/32	QM/146180/35
Ø mm	Assembly kit for caged ball linear motion guide	Adjustable stop	Assembly kit for shock absorbers	Groove key for profile barrel	Groove key for guiding bridge	
	 10	 8	 12	 7	 9	
25	QM/146225/P/70	QM/146125/75	QM/146125/67	M/P74065	M/P74065	
32	QM/146232/P/70	QM/146132/75	QM/146132/67	M/P74065	M/P74065	
40	QM/146240/P/70	QM/146140/75	QM/146140/67	M/P74065	M/P74066	
50	QM/146250/P/70	-	QM/146150/67	M/P74065	M/P41858	
63	QM/146263/P/70	-	QM/146163/67	M/P74065	M/P41858	



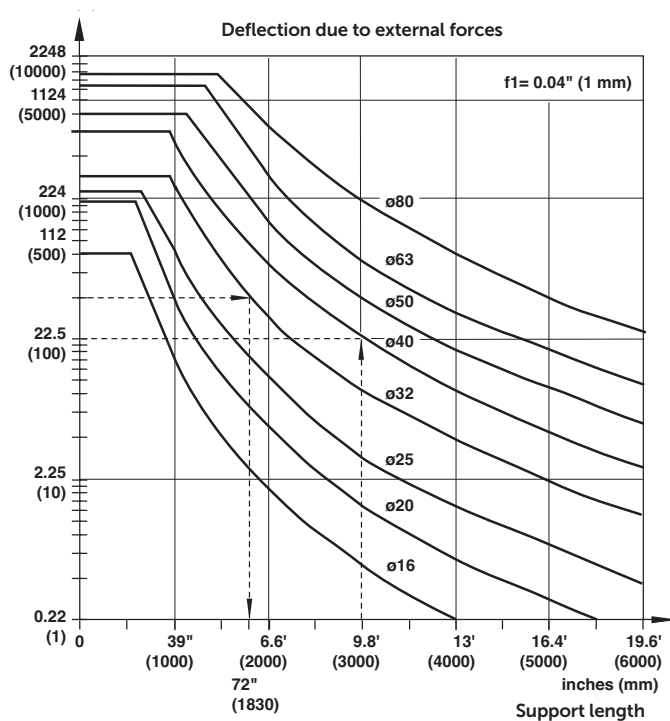
Cushioning Performance

The dynamic energy of a LINTRA® cylinder is caused by direct or partial external loads which must be absorbed by pneumatic cushioning.

The cushioning ability depends to a large extent on the pneumatic circuit (e. g. counter pressure, pre-exhaust). The values given in the diagram were tested with an operation pressure of 87 psi (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. These have to be located at the center of gravity of the mass.



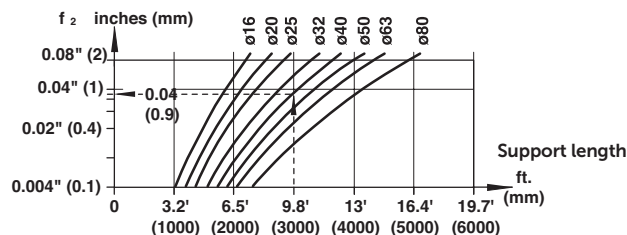
Cylinder deflection



Example:

Cylinder Ø 32 mm, stroke length 11' (3500 mm), external load 45 lbf. (200 N) and a deflection about 0.04 (1 mm).
Maximum distance between supports = 6' (1830 mm) (see diagrams).
Therefore an additional support is required.

Deflection due to cylinder weight



Example:

Cylinder Ø 40 mm. external force 40 lbf (180 N),
distance between supports 10' (3000 mm)
Required: total deflection

1. Deflection due to external force (f1)
see Diagram 1 (1mm/100 N) · 40 lbf (180 N)
 2. Deflection due to cylinder weight diagram 2
- Total deflection:

Max. permitted deflection (f1 + f2)

A deflection of more than 0.12" (3 mm)

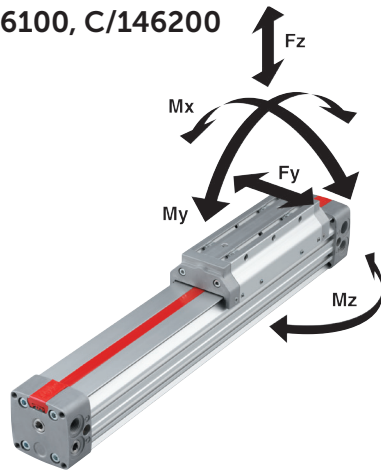
is not permitted.

$$\begin{aligned} &0.07" (1.8 \text{ mm}) \\ &+ 0.04" (0.9 \text{ mm}) \\ &\hline &0.2" (2.7 \text{ mm}) \\ &< 0.04" (1 \text{ mm}) \\ &39" (1000 \text{ mm}) \text{ Stroke} \end{aligned}$$

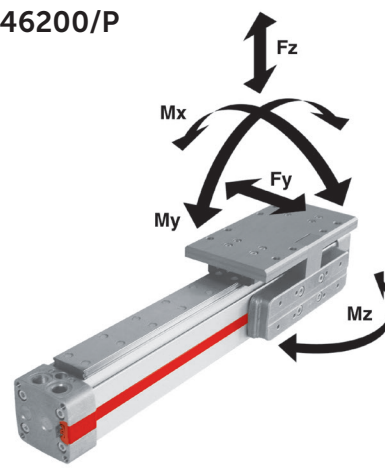
Theoretical forces, air consumption, cushioning length, holding forces

Cylinder Ø mm	Theoretical forces lbf (N) at 87 psi (6 bar)	Air consumption ft ³ /in. (l/cm) of stroke at 87 psi (6 bar)	Cushioning length inches (mm)	Holding forces lbf. (N) of brake (on dry braking surface)	
				active (L3) at 87 psi (6 bar)	passive (L4)
16	27 (120)	0.001 (0.014)	0.5 (12)	–	–
20	42 (188)	0.002 (0.022)	1 (26)	–	–
25	66 (294)	0.003 (0.035)	1 (26)	112 (5000)	50 (220)
32	108 (482)	0.005 (0.056)	1.4 (35)	202 (900)	84 (375)
40	170 (754)	0.008 (0.088)	2 (50)	337 (1500)	141 (630)
50	265 (1178)	0.012 (0.137)	2.3 (60)	562 (2500)	225 (1000)
63	420 (1870)	0.02 (0.218)	2.8 (70)	899 (4000)	371 (1650)
80	678 (3016)	0.03 (0.350)	3 (75)	–	–

C/146000, C/146100, C/146200



C/146200/P



Ø mm	Internal guide C/146000					External adjustable guide C/146100			Precision roller guide C/146200				Added caged ball linear motion guide C/146200/P		
	Fy lbf. (N)	Fz lbf. (N)	Mx lbf in. (Nm)	My lbf in. (Nm)	Mz lbf in. (Nm)	Fy, Fz lbf. (N)	Mx lbf in. (Nm)	My, Mz lbf in. (Nm)	Fy lbf. (N)	Fz lbf. (N)	Mx lbf in. (Nm)	My, Mz lbf in. (Nm)	Fy, Fz lbf. (N)	Mx lbf in. (Nm)	My, Mz lbf in. (Nm)
16	9 (40)	27 (120)	2.7 (0.3)	33.6 (3.8)	9.7 (1.1)	45 (200)	17.7 (2)	48.7 (5.5)	–	–	–	–	–	–	–
20	20 (90)	63 (280)	8.0 (0.9)	106.2 (12)	31.9 (3.6)	106 (470)	53.1 (6)	159.3 (18)	–	–	–	–	–	–	–
25	28 (125)	87 (385)	13.3 (1.5)	168.2 (19)	49.6 (5.6)	133 (590)	79.7 (9)	247.8 (28)	133 (590)	266 (1180)	115.1 (13)	371.7 (42)	450 (2000)	283 (32)	1770 (200)
32	37 (165)	113 (500)	26.6 (3)	292.1 (33)	88.5 (10)	176 (780)	150.5 (17)	380.6 (43)	176 (780)	351 (1560)	221.3 (25)	566.5 (64)	899 (4000)	566 (64)	3540 (400)
40	74 (330)	223 (990)	57.5 (6.5)	743.5 (84)	212.4 (24)	360 (1600)	345.2 (39)	973.6 (110)	338 (1500)	676 (3000)	513.4 (58)	1416.2 (160)	899 (4000)	566 (64)	3540 (400)
50	99 (440)	297 (1320)	97.4 (11)	1062.1 (120)	309.8 (35)	450 (2000)	575.3 (65)	1416.2 (160)	450 (2000)	901 (4000)	858.6 (97)	2124.3 (240)	1798 (8000)	1593 (180)	7080 (800)
63	155 (690)	450 (2000)	177.0 (20)	2124.3 (240)	619.6 (70)	721 (3200)	1062.1 (120)	3097.9 (350)	721 (3200)	1441 (6400)	1593.2 (180)	4602.6 (520)	1798 (8000)	1593 (180)	7966 (900)
80	176 (780)	518 (2300)	239.0 (27)	3186.4 (360)	885.1 (100)	878 (3900)	1593.2 (180)	4602.6 (520)	–	–	–	–	–	–	–

Loading values applicable to a speed of ≤ 0.2 m/s. Maximum working life is normally reached below a speed of 1 m/s.

* The forces and moments refers to the center of the guide. They must not be exceeded in dynamic applications.

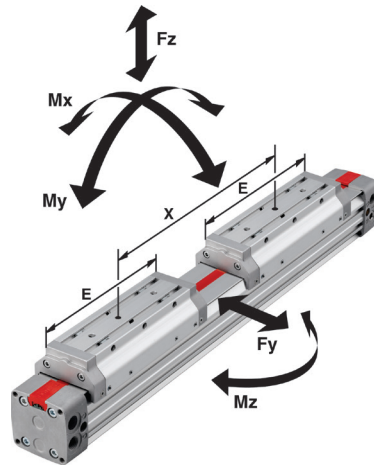
Loading values for LINTRA® cylinders with double carriages

The values given in the table below show the single forces in the directions Fy and Fz and the maximum moments Mx, My and Mz. 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 center line of the pistons.

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

$$\frac{M_x}{M_{x \max}} + \frac{M_y}{M_{y \max}} + \frac{M_z}{M_{z \max}} + \frac{F_y}{F_{y \max}} + \frac{F_z}{F_{z \max}} \leq 1$$

C/146100/MD



External adjustable guide. C/146100/MD												
Ø mm	Fy, Fz lbf (N)	Mx lbf in (Nm)	My, Mz (Nm) x min.=E lbf in (Nm)	x=4" (100 mm) lbf in (Nm)	x=6" (150 mm) lbf in (Nm)	x=8" (200 mm) lbf in (Nm)	x=10" (250 mm) lbf in (Nm)	x=12" (300 mm) lbf in (Nm)	x=14" (350 mm) lbf in (Nm)	x=16" (400 mm) lbf in (Nm)	x=18" (450 mm) lbf in (Nm)	x=20" (500 mm) lbf in (Nm)
16	90 (400)	36 (4)	120 (14)	156 (17)	204 (23)	252 (29)	312 (35)	360 (41)	420 (48)	480 (54)	528 (60)	588 (66)
20	211.33 (940)	1296 (12)	6768 (64)	—	8496 (80)	10512 (99)	1272 (119)	1236 (139)	1404 (158)	1572 (178)	1740 (197)	1920 (217)
25	265.29 (1180)	156 (18)	852 (96)	—	936 (106)	1164 (131)	1368 (155)	1596 (180)	1812 (205)	2040 (230)	2256 (255)	2472 (279)
32	350.72 (1560)	300 (34)	1368 (155)	—	—	1596 (181)	1884 (213)	2172 (246)	2460 (278)	2748 (310)	3036 (343)	3324 (375)
40	674.46 (3000)	696 (78)	3480 (393)	—	—	—	3852 (435)	4392 (496)	4932 (557)	5472 (618)	6012 (679)	6552 (740)
50	899.28 (4000)	1152 (130)	4044 (457)	—	—	—	4044 (457)	4584 (518)	5124 (579)	5652 (639)	6192 (700)	6732 (761)
63	1438.85 (6400)	2124 (240)	11328 (1280)	—	—	—	—	—	12036 (1360)	13272 (1500)	14424 (1630)	15660 (1770)
80	1753.60 (7800)	3192 (360)	16908 (1910)	—	—	—	—	—	—	17172 (1940)	18672 (2110)	20088 (2270)

Precision roller guide C/146200/MD												
Ø mm	Fy, Fz lbf (N)	Mx lbf in (Nm)	My, Mz (Nm) x min.=E lbf in (Nm)	x=4" (100 mm) lbf in (Nm)	x=6" (150 mm) lbf in (Nm)	x=8" (200 mm) lbf in (Nm)	x=10" (250 mm) lbf in (Nm)	x=12" (300 mm) lbf in (Nm)	x=14" (350 mm) lbf in (Nm)	x=16" (400 mm) lbf in (Nm)	x=18" (450 mm) lbf in (Nm)	x=20" (500 mm) lbf in (Nm)
25	265 (1180)	228 (26)	1104 (125)	—	1224 (138)	1500 (170)	1788 (202)	2076 (234)	2364 (267)	2652 (299)	2940 (332)	3216 (363)
32	351 (1560)	444 (50)	1788 (202)	—	—	2076 (235)	2448 (277)	2832 (320)	3192 (361)	3564 (403)	3948 (446)	4320 (488)
40	674 (3000)	1032 (116)	4524 (511)	—	—	—	5004 (566)	5712 (645)	6408 (724)	7104 (803)	7812 (883)	8520 (962)
50	899 (4000)	1716 (194)	5256 (594)	—	—	—	5256 (594)	5952 (673)	6660 (753)	7356 (831)	8052 (910)	8748 (989)
63	1439 (6400)	3192 (360)	14724 (1664)	—	—	—	—	—	15648 (1768)	16368 (1850)	18756 (2119)	20364 (2301)

Loading values applicable to a speed of ≤ 0.2 m/s. Maximum working life is normally reached below a speed of 1 m/s.

* The forces and moments refers to the center of the guide. They must not be exceeded in dynamic applications.

Loading values for LINTRA® cylinders with double carriages

The values given in the table below show the single forces in the directions Fy and Fz and the maximum moments Mx, My and Mz.
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 center line of the pistons.

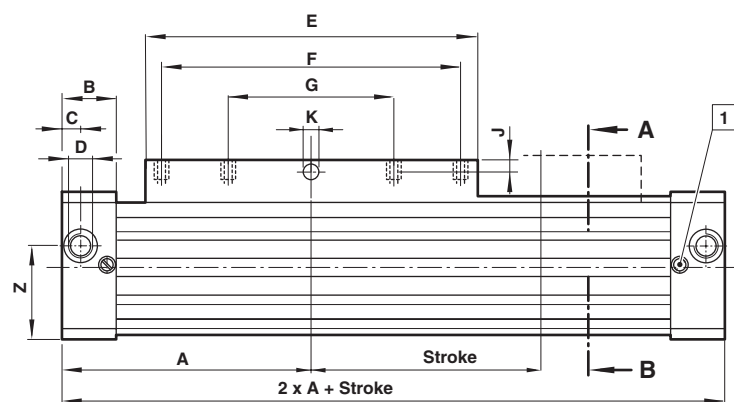
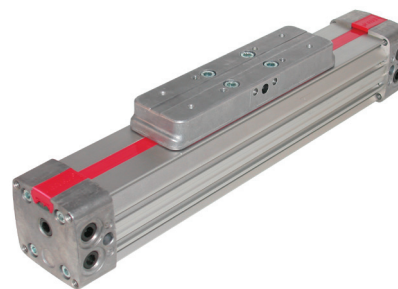
For speeds up to 2 m/s please use our calculation program LINTRA® PNEUCALC.
It is available upon request.

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

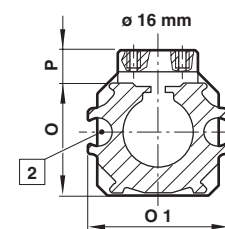
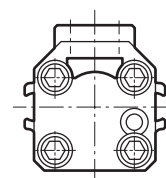
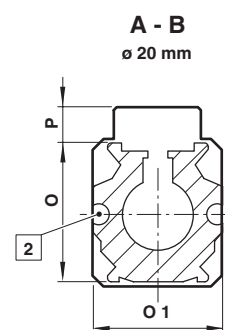
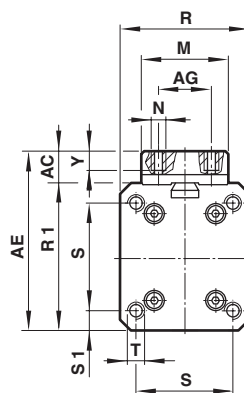
$$\frac{M_x}{M_{x \max}} + \frac{M_y}{M_{y \max}} + \frac{M_z}{M_{z \max}} + \frac{F_y}{F_{y \max}} + \frac{F_z}{F_{z \max}} \leq 1$$

C/146000 – cylinder with internal guide (ø 20 mm)

M/146000 – cylinder with internal guide (ø 16 and 20 mm)



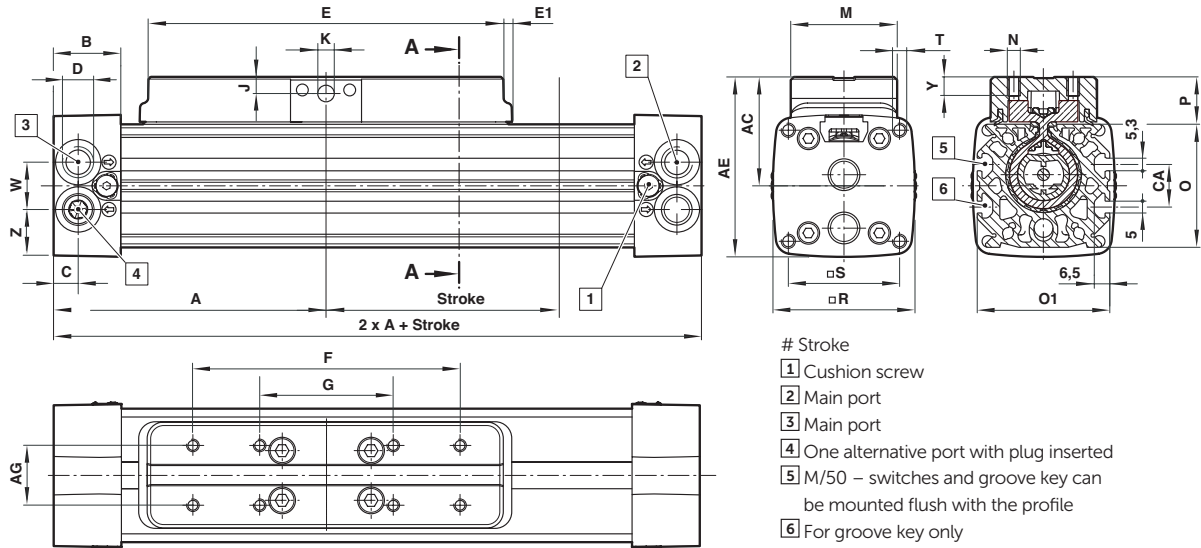
- 1 Cushion screw
2 M/50 – switches and groove key can be mounted flush with the profile



Type	Ø	A	AC	AE	AG	B	C	D	E	F	G	J	Ø K ⁰⁷		
M/146016/...	16	2.46 (62.5)	0.28 (7)	1.50 (38)	0.31 (8)	0.69 (17.5)	0.31 (8)	M5 M5	3.15 (80)	2.36 (60)	– –	0.10 (2.5)	0.12 (3)		
C/146020/...	20	3.34 (85)	0.55 (14)	2.13 (54)	0.71 (18)	0.91 (23)	0.31 (8)	1/8 NPT G1/8	4.33 (110)	3.15 (80)	1.57 (40)	0.14 (3.5)	0.17 (4.2)		
Type	Ø	M	N	O	O 1	P	R	R 1	S	S 1	T	Y	Z	Weight at 0 mm	Weight per 100 mm
M/146016/...	16	0.71 (18)	M3 M3	0.98 (25)	1.26 (32)	0.47 (12)	1.06 (27)	1.22 (31)	0.63 (16)	0.22 (5.5)	M3-5* M3-5*	0.16 (4)	0.65 (16.5)	0.35 lbs. (0.35 kg)	0.22 lbs. (0.10 kg)
C/146020/...	20	1.06 (27)	M5 M5	1.26 (32)	1.50 (38)	0.73 (18.5)	1.57 (40)	1.57 (40)	1.26 (32)	0.16 (4)	M5-12* M5-12*	0.47 (12)	0.81 (20.5)	1.10 lbs. (0.50 ka)	0.33 lbs. (0.15 ka)

* deep

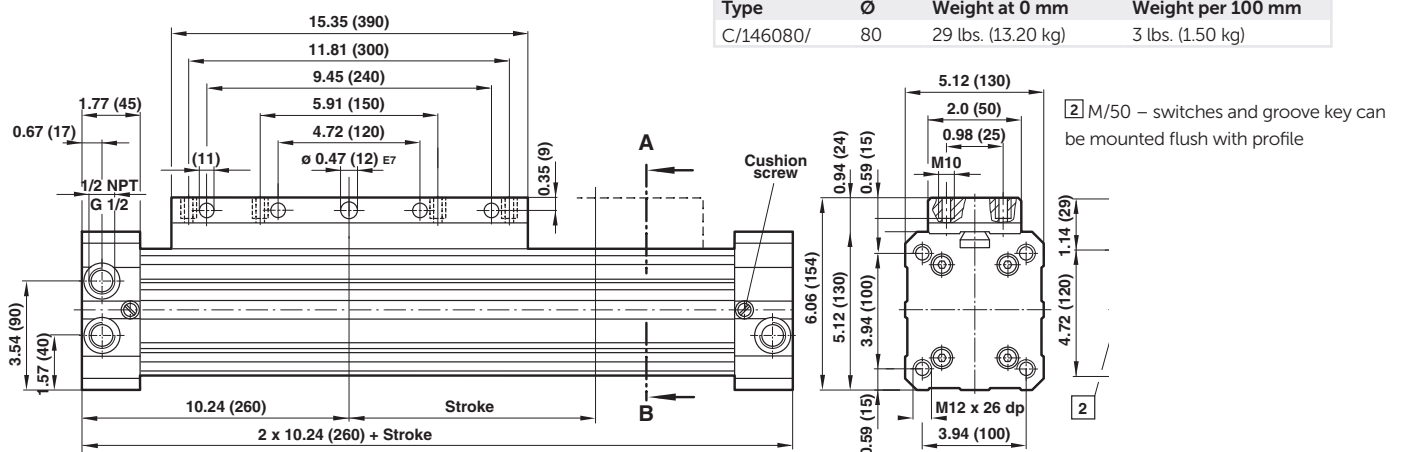
C/146000 – cylinder with internal guide (ø 25 ... 63 mm)



Type	Ø	A	AC	AE	AG	B	C	CA	D	E	E1	F	G	J	Ø K ^{D7}
C/146025/...	25	3.94 (100)	1.42 (36)	2.36 (60)	0.78 (20)	0.91 (23)	0.33 (8.5)	–	1/8 NPT G1/8	5.12 (130)	–	3.54 (90)	1.77 (45)	0.19 (4.7)	0.20 (5)
C/146032/...	32	4.72 (120)	1.81 (46)	2.99 (76)	0.98 (25)	1.12 (28.5)	0.41 (10.5)	0.71 (18)	1/4 NPT G1/4	6.30 (160)	0.14 (3.5)	4.72 (120)	2.36 (60)	0.28 (7)	0.28 (7)
C/146040/...	40	5.91 (150)	2.07 (52.5)	3.54 (90)	0.98 (25)	1.12 (28.5)	0.45 (11.5)	0.71 (18)	1/4 NPT G1/4	8.46 (215)	–	6.30 (160)	3.15 (80)	0.28 (7)	0.28 (7)
C/146050/...	50	7.09 (180)	2.58 (65.5)	4.33 (110)	0.98 (25)	1.50 (38)	0.59 (15)	0.94 (24)	3/8 NPT G3/8	9.84 (250)	–	7.48 (190)	3.74 (95)	0.37 (9.5)	0.35 (9)
C/146063/...	63	8.46 (215)	2.85 (72.5)	4.92 (125)	0.98 (25)	1.50 (38)	0.67 (17)	–	1/2 NPT G1/2	12.60 (320)	–	9.45 (240)	4.72 (120)	0.37 (9.5)	0.35 (9)
Type	Ø	M	N	O	O1	P	R	S	T	W	Y	Z	Weight at 0 mm	Weight per 100 mm	
C/146025/...	25	1.26 (32)	M5 M5	1.57 (40)	1.81 (46)	0.63 (16)	1.89 (48)	1.46 (37)	M5-13* M5-13*	0.63 (16)	0.28 (7)	0.63 (16)	1.5 lbs. 0.7 kg	0.55 lbs. 0.25 kg	
C/146032/...	32	1.77 (45)	M5 M5	2.05 (52)	2.20 (56)	0.79 (20)	2.36 (60)	1.85 (47)	M6-17* M6-17*	0.79 (20)	0.31 (8)	0.79 (20)	3 lbs. 1.40 kg	0.66 lbs. 0.30 kg	
C/146040/...	40	1.77 (45)	M6 M6	2.56 (65)	2.68 (68)	0.79 (20)	2.93 (74.5)	2.28 (58)	M8-20* M8-20*	0.98 (25)	0.31 (8)	0.98 (25)	5.5 lbs. 2.50 kg	0.93 lbs. 0.42 kg	
C/146050/...	50	1.97 (50)	M8 M8	3.15 (80)	3.31 (84)	1.00 (25.5)	3.50 (89)	2.76 (70)	M8-20* M8-20*	1.18 (30)	0.43 (11)	1.16 (29.5)	9.7 lbs. 4.40 kg	1.3 lbs. 0.62 kg	
C/146063/...	63	1.97 (50)	M8 M8	3.74 (95)	3.82 (97)	0.98 (25)	4.13 (105)	3.31 (84)	M10-24* M10-24*	1.38 (35)	0.43 (11)	1.38 (35)	15.2 lbs. 6.90 kg	2 lbs. 0.9 kg	

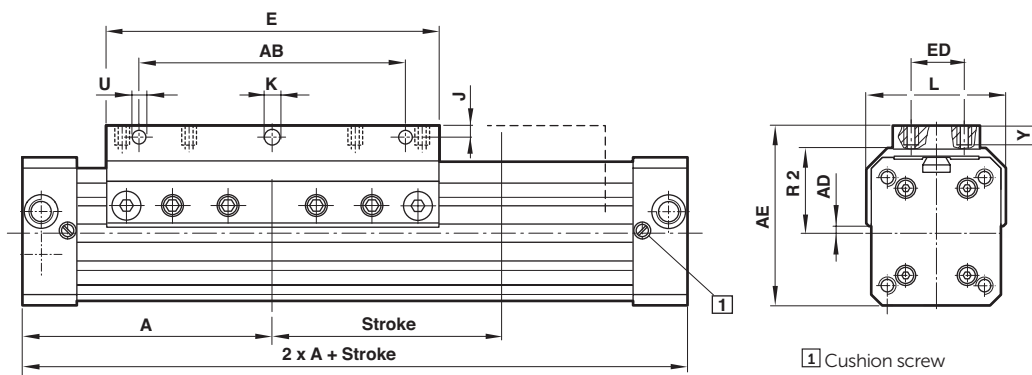
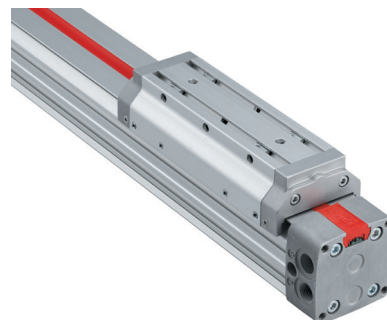
* deep

C/146080 – cylinder with internal guide (ø 80 mm)



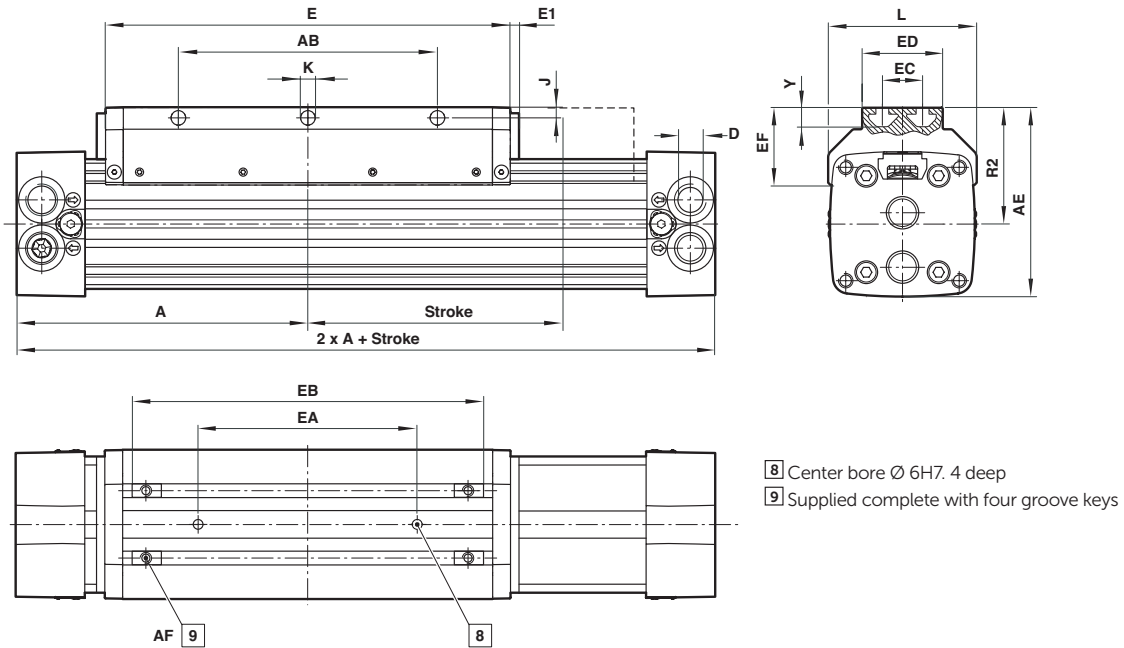
C/146100 – cylinder with external guide (ø 20 mm)

M/146100 – cylinder with external guide (ø 16 & 20 mm)



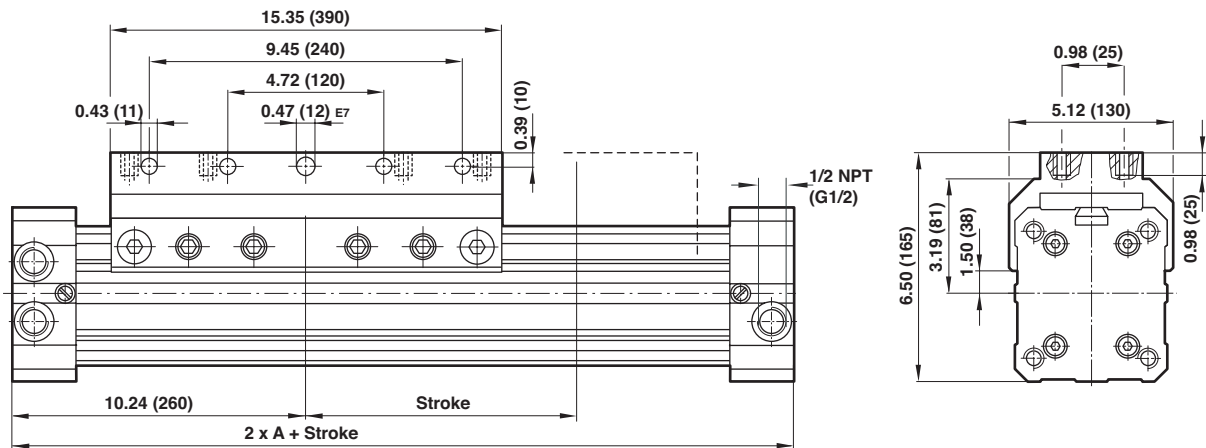
Type	Ø	A	AB	AE	AD	E	ED	J	Ø K	L	R 2	U	Y	Weight at 0 mm	Weight per 100 mm
M/146116/...	16	2.46 (62.5)	—	1.50 (38)	0.30 (7.5)	3.15 (80)	0.71 (18)	—	—	1.22 (31)	0.73 (18.5)	—	0.20 (5)	0.31 oz. 0.18 kg	0.22 lbs. 0.10 kg
C/146120/...	20	3.35 (85)	2.36 (60)	2.32 (59)	0.26 (6.5)	4.33 (110)	1.06 (27)	0.30 (7.5)	0.22 (5.5)	1.65 (42)	0.94 (24)	0.22 (5.5)	0.47 (12)	1.3 oz. 0.60 kg	0.33 lbs. 0.15 kg

C/146100 – cylinder with external adjustable guide (ø 25 ... 63 mm)



Type	Ø	A	AB	AE	AF	D	E	E1	EA ±0.05	EB	ED	EC	EF	J	Ø K	L	R 2	Y	Weight at 0 mm	Weight per 100 mm
C/146125/..	25	3.94 (100)	2.76 (70)	2.66 (67.5)	M5	1/8 NPT G1/8	5.12 (130)	—	1.97 (50)	4.02 (102)	1.26 (32)	0.79 (20)	1.34 (34)	0.20 (5)	0.22 (5.5)	2.05 (52)	1.71 (43.5)	0.37 (9.5)	1.7 lbs. 0.75kg	0.44 lbs. 0.20 kg
C/146132/..	32	4.72 (120)	3.54 (90)	3.23 (82)	M5	1/4 NPT G1/4	6.30 (160)	0.16 (4)	2.76 (70)	5.43 (138)	1.77 (45)	0.98 (25)	1.44 (36.5)	0.20 (5)	0.22 (5.5)	2.52 (64)	2.05 (52)	0.26 (6.5)	3.3 lbs. 1.50 kg	0.66 lbs. 0.30 kg
C/146140/..	40	5.91 (150)	4.72 (120)	3.84 (97.5)	M6	1/4 NPT G1/4	8.46 (215)	—	4.13 (105)	7.60 (193)	1.77 (45)	0.98 (25)	1.69 (43)	0.20 (5)	0.26 (6.6)	3.11 (79)	2.36 (60)	0.37 (9.5)	5.7 lbs. 2.60 kg	0.93 lbs. 0.42 kg
C/146150/..	50	7.09 (180)	6.30 (160)	4.59 (116.5)	M8	3/8 NPT G3/8	9.84 (250)	—	5.31 (135)	8.98 (228)	1.97 (50)	0.98 (25)	1.87 (47.5)	0.26 (6.5)	0.35 (9)	3.62 (92)	2.83 (72)	0.45 (11.5)	10 lbs. 4.50 kg	1.4 lbs. 0.62 kg
C/146163/..	63	8.46 (215)	7.48 (190)	5.39 (137)	M8	1/2 NPT G1/2	12.60 (320)	—	5.91 (150)	11.50 (292)	1.97 (50)	0.98 (25)	2.32 (59)	0.30 (7.5)	0.35 (9)	4.33 (110)	3.33 (84.5)	0.65 (16.5)	16 lbs. 7.20kg	2 lbs. 0.90 kg

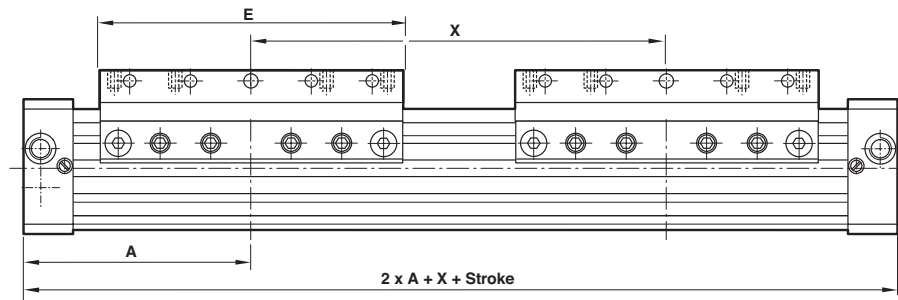
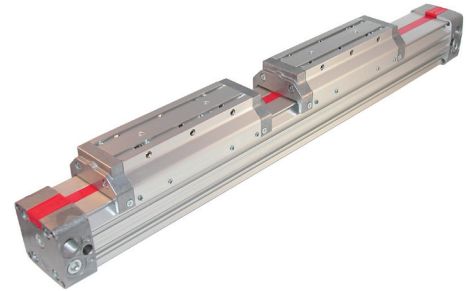
C/146180 – cylinder with external adjustable guide (ø 80 mm)



Type	Ø	Weight at 0 mm	Weight per 100 mm
C/146180/	80	29.5 lbs. (13.40 kg)	3.3 lbs. (1.50 kg)

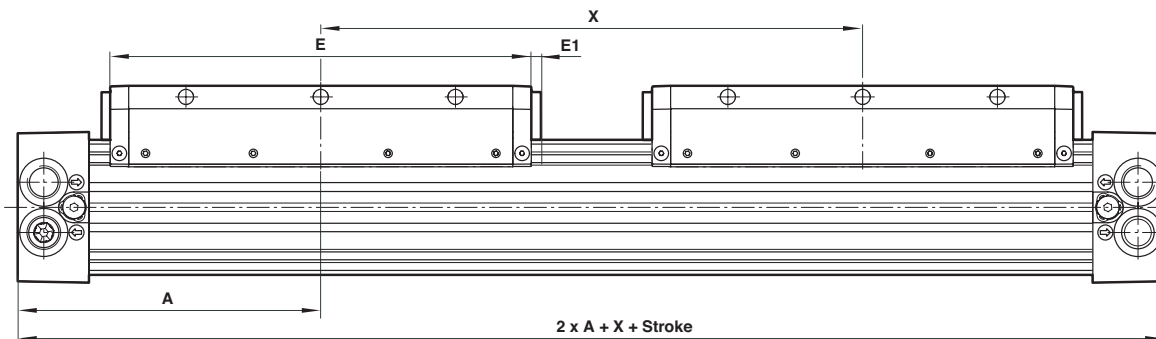
C/146100/MD – cylinder with external adjustable guide and double carriages(ø 20 mm)

M/146100/MD – cylinder with external adjustable guide and double carriages(ø 16 and 20 mm)



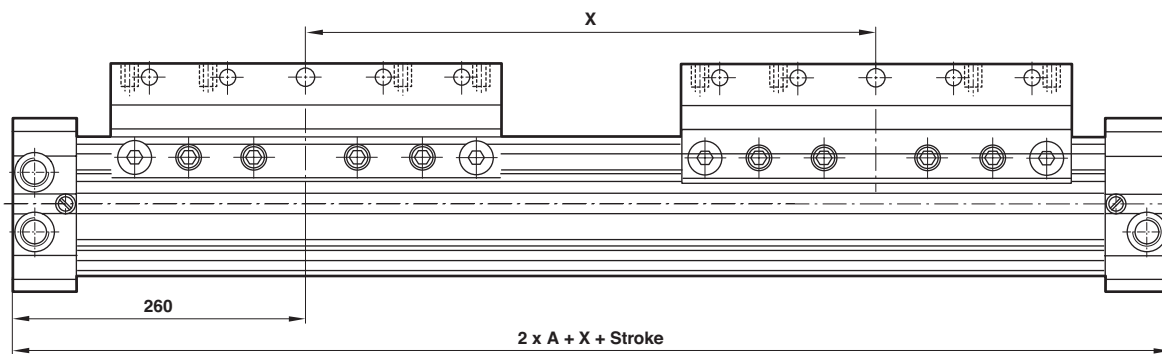
Type	Ø	A	E	X min.	X max.	Weight at 0 mm	Weight per 100 mm
M/146116/D	16	2.46 (62.5)	3.15 (80)	3.15 (80)	19.69 (500)	0.44 lbs. 0.20 kg	0.22 lbs. 0.10 kg
C/146120/D	20	3.35 (85)	4.33 (110)	4.33 (110)	19.69 (500)	1.75 lbs. 0.80 kg	0.33 lbs. 0.15kg

C/146100/MD – cylinder with external adjustable guide and double carriages (ø 25 ... 63 mm)



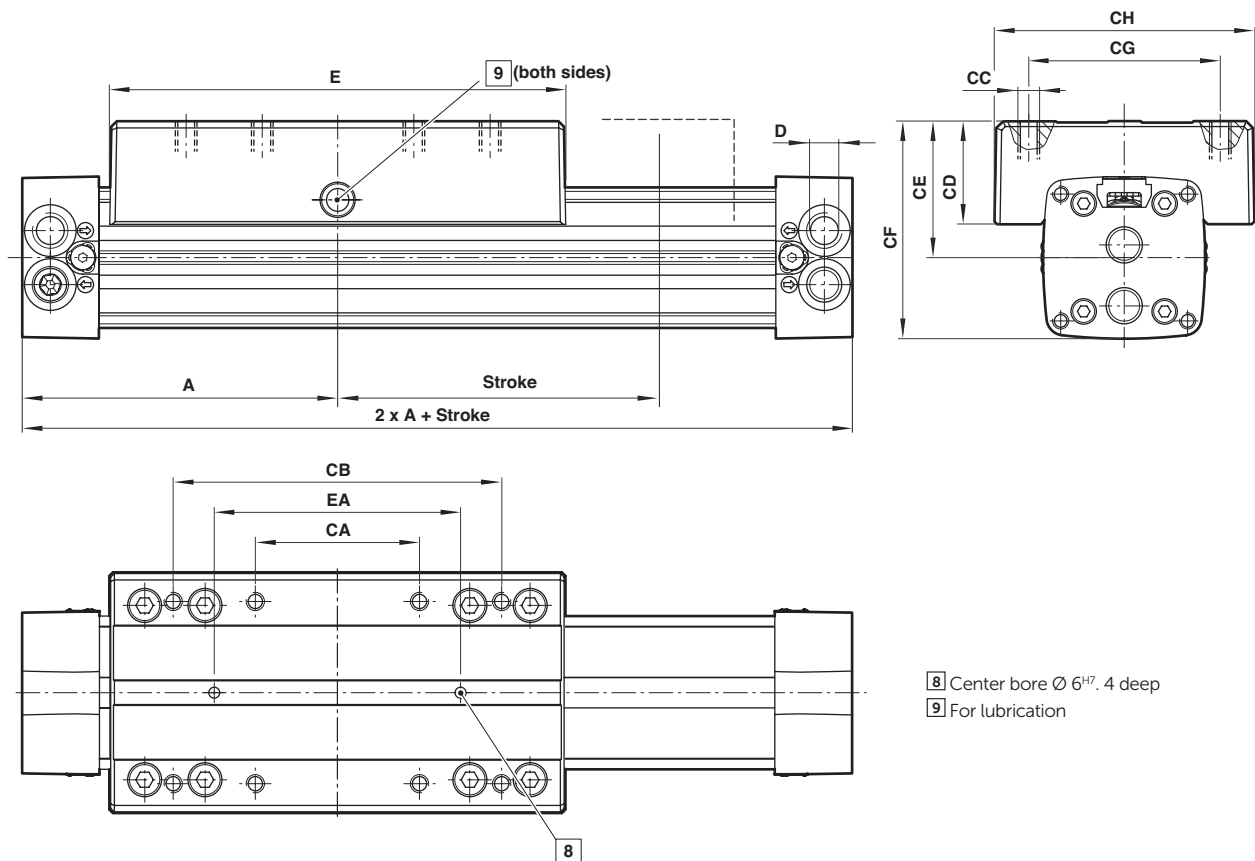
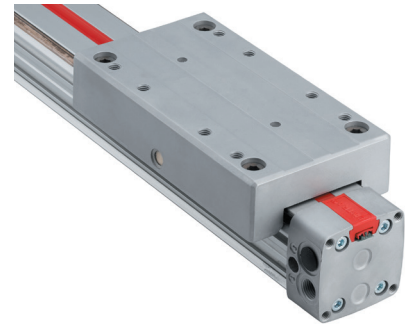
Type	Ø	A	E	E1	X min.=E*	X max.	Weight at 0 mm	Weight per 100 mm
C/146125/MD	25	3.94 (100)	5.12 (130)	–	5.12 (130)	19.69 (500)	3.3 lbs. 1.50 kg	0.44 lbs. 0.20 kg
C/146132/MD	32	4.72 (120)	6.30 (160)	0.16 (4)	6.61 (168)	19.69 (500)	4.4 lbs. 2.00 kg	0.66 lbs. 0.30 kg
C/146140/MD	40	5.91 (150)	8.46 (215)	–	8.46 (215)	19.69 (500)	7 lbs. 3.20 kg	0.93 lbs. 0.42 kg
C/146150/MD	50	7.09 (180)	9.84 (250)	–	9.84 (250)	19.69 (500)	12 lbs. 5.40 kg	1.4 lbs. 0.62 kg
C/146163/MD	63	8.46 (215)	12.60 (320)	–	12.60 (320)	19.69 (500)	18.5 lbs. 8.40 kg	2.2 lbs. 1.00 kg

C/146180/MD – cylinder with external adjustable guide and double carriages (ø 80 mm)



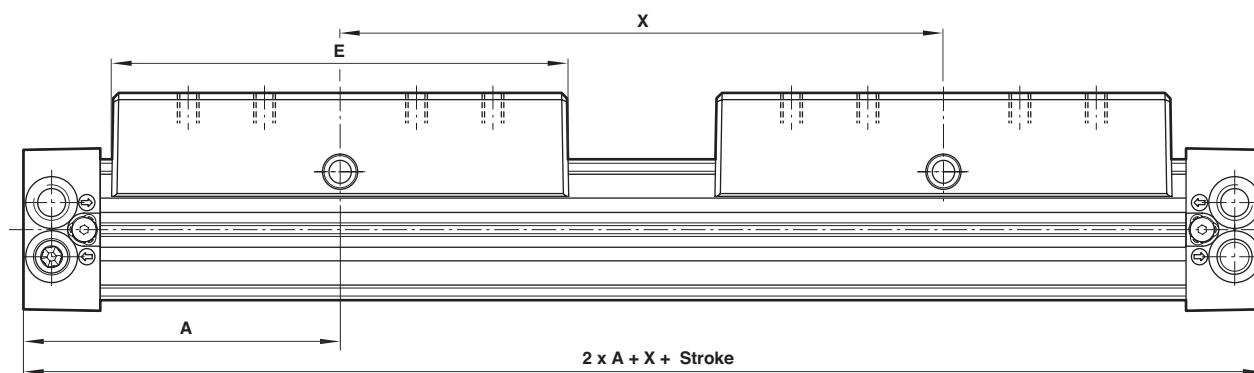
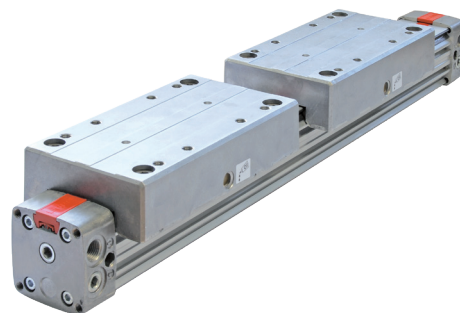
Type	Ø	A	X min.	X max.	Weight at 0 mm	Weight per 100 mm
C/146180/D	80	10.53 (260)	15.4 (390)	19.7 (500)	35 lbs. (15.90 kg)	3.3 lbs. (1.50 kg)

C/146200 – cylinder with precision roller guide (ø 25 to 63 mm)



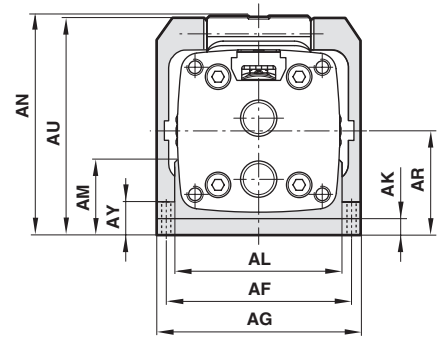
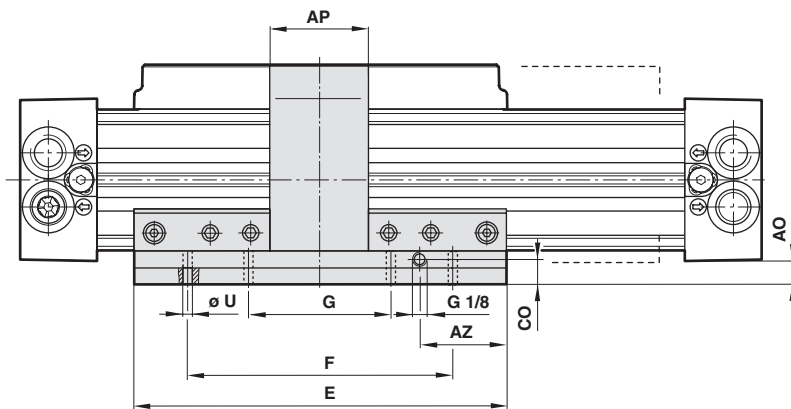
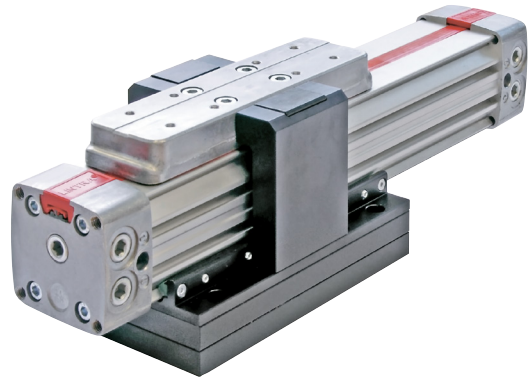
Type	Ø	A	CA	CB	CC	CD	CE	CF	CG	CH	D	E	EA ±0.05	Weight at 0 mm	Weight per 100 mm
C/146225/...	25	3.94 (100)	1.77 (45)	3.54 (90)	M6-14* M6-14*	142 (36)	1.65 (42)	2.60 (66)	2.36 (60)	3.35 (85)	1/8 NPT G1/8	5.91 (150)	2.76 (70)	3.3 lbs. 1.50 kg	0.44 lbs. 0.20 kg
C/146232/...	32	4.72 (120)	2.36 (60)	4.72 (120)	M8-16* M8-16*	150 (38)	1.97 (50)	3.15 (80)	2.95 (75)	3.86 (98)	1/4 NPT G1/4	7.09 (180)	3.54 (90)	6 lbs. 2.80 kg	0.88 lbs. 0.40 kg
C/146240/...	40	5.91 (150)	3.15 (80)	5.91 (150)	M8-16* M8-16*	165 (42)	2.26 (57.5)	3.74 (95)	3.62 (92)	4.65 (118)	1/4 NPT G1/4	8.46 (215)	4.53 (115)	10 lbs. 4.50 kg	1 lbs. 0.45 kg
C/146250/...	50	7.09 (180)	3.54 (90)	7.09 (180)	M10-20* M10-20*	173 (44)	2.64 (67)	4.39 (111.5)	3.94 (100)	5.20 (132)	3/8 NPT G3/8	9.84 (250)	5.31 (135)	18 lbs. 8.20 kg	2 lbs. 0.90 kg
C/146263/...	63	8.46 (215)	4.72 (120)	9.45 (240)	M10-20* M10-20*	185 (47)	2.93 (74.5)	5.00 (127)	4.33 (110)	5.51 (140)	1/2 NPT G1/2	12.60 (320)	7.87 (200)	28 lbs. 12.50 kg	2.2 lbs. 1.00 kg

C/146200/MD – cylinder with precision roller guide and double carriages



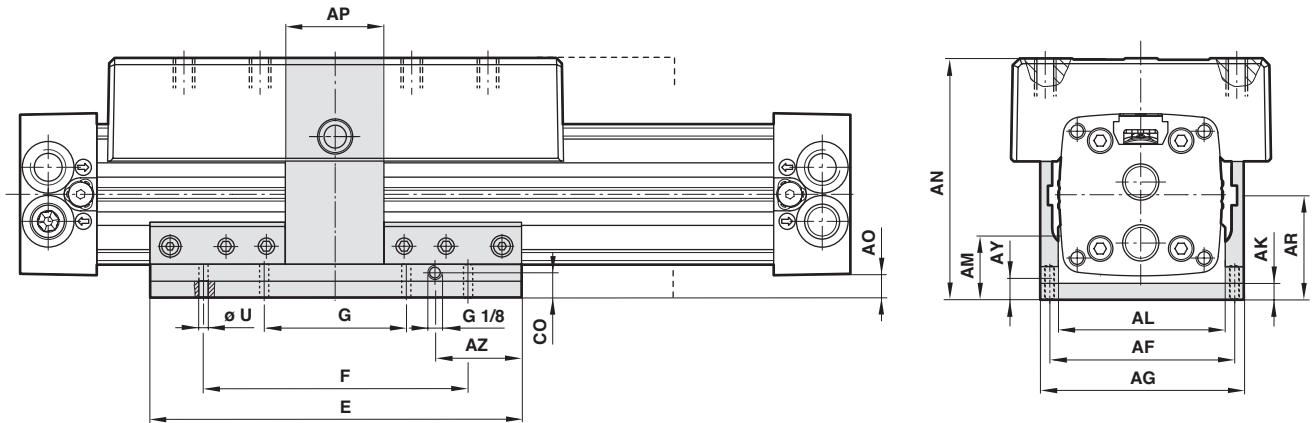
Type	Ø	A	E	X min.	X max.	Weight at 0 mm	Weight per 100 mm
C/146225/MD/...	25	3.94 (100)	5.91 (150)	5.91 (150)	19.69 (500)	5.7 lbs. 2.60 kg	0.44 lbs. 0.20 kg
C/146232/MD/...	32	4.72 (120)	7.09 (180)	7.09 (180)	19.69 (500)	9.3 lbs. 4.20 kg	0.88 lbs. 0.40 kg
C/146240/MD/...	40	5.91 (150)	8.46 (215)	8.46 (215)	19.69 (500)	15 lbs. 7.00 kg	1 lbs. 0.45 kg
C/146250/MD/...	50	7.09 (180)	9.84 (250)	9.84 (250)	19.69 (500)	24 lbs. 11.1 kg	2 lbs. 0.90 kg
C/146263/MD/...	63	8.46 (215)	12.60 (320)	12.60 (320)	19.69 (500)	45 lbs. 20.6 kg	2.2 lbs. 1.00 kg

C/146000/L3 – cylinder with active brake (ø 25 ... 63 mm)



Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146025/L3	25	2.44 (62)	2.95 (75)	0.47 (12)	2.05 (52)	1.12 (28.5)	2.89 (73.5)	0.53 (13.5)	1.77 (45)	1.48 (37.5)	2.87 (73)	0.65 (16.5)	1.18 (30)	0.24 (6)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	3.5 lbs. 1.60 kg	0.44 lbs. 0.2 kg
C/146032/L3	32	3.07 (78)	3.62 (92)	0.47 (12)	2.52 (64)	1.14 (29)	3.54 (90)	0.55 (14)	2.17 (55)	1.73 (44)	3.52 (89.5)	0.69 (17.5)	1.28 (32.5)	0.24 (6)	6.30 (160)	4.72 (120)	2.36 (60)	0.35 (9)	5.5 lbs. 2.50 kg	0.75 lbs. 0.35 kg
C/146040/L3	40	3.70 (94)	4.41 (112)	0.47 (12)	3.19 (81)	1.36 (34.5)	4.07 (103.5)	0.53 (13.5)	2.56 (65)	2.01 (51)	4.06 (103)	0.71 (18)	2.07 (52.5)	0.24 (6)	8.46 (215)	6.30 (160)	3.15 (80)	0.35 (9)	9.3 lbs. 4.20 kg	1.1 lbs. 0.50 kg
C/146050/L3	50	4.41 (112)	5.20 (132)	0.47 (12)	3.70 (94)	1.40 (35.5)	4.90 (124.5)	0.57 (14.5)	2.95 (75)	2.34 (59.5)	4.88 (124)	0.73 (18.5)	2.56 (65)	0.24 (6)	9.84 (250)	7.48 (190)	3.74 (95)	0.43 (11)	15 lbs. 6.90 kg	1.7 lbs. 0.75 kg
C/146063/L3	63	4.45 (113)	5.91 (150)	0.47 (12)	4.41 (112)	1.67 (42.5)	5.53 (140.5)	0.61 (15.5)	3.54 (90)	2.68 (68)	5.51 (140)	0.81 (20.5)	4.53 (115)	0.24 (6)	12.60 (320)	9.45 (240)	4.72 (120)	0.51 (13)	25 lbs. 11.5 kg	2.2 lbs. 1.0 kg

C/146200/L3 – cylinder with precision roller guide and active brake (ø 25 ... 63 mm)

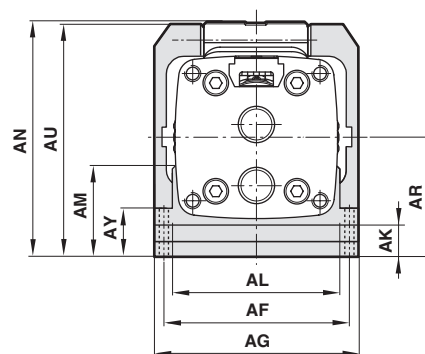
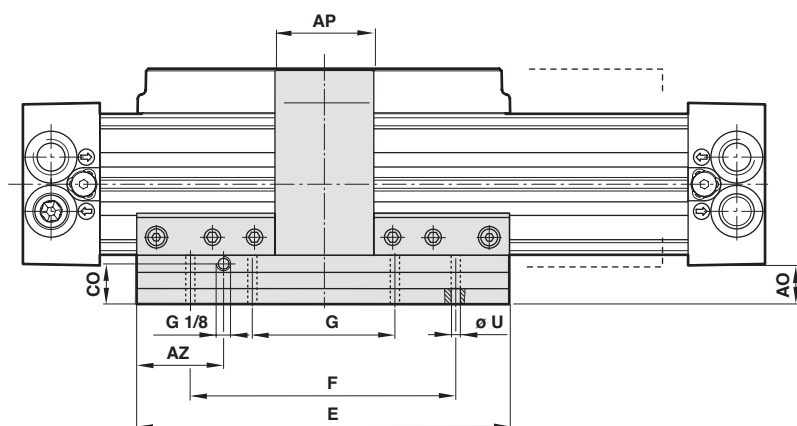
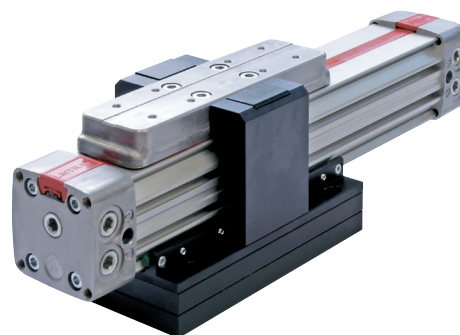


Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146225/L3	25	2.44 (62)	2.95 (75)	0.47 (12)	2.05 (52)	1.12 (28.5)	3.13 (79.5)	0.53 (13.5)	1.57 (40)	1.48 (37.5)	2.87 (73)	0.65 (16.5)	1.18 (30)	0.24 (6)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	3.4 lbs. 1.55 kg	0.44 lbs. 0.2 kg
C/146232/L3	32	3.07 (78)	3.62 (92)	0.47 (12)	2.52 (64)	1.14 (29)	3.70 (94)	0.55 (14)	2.17 (55)	1.73 (44)	3.52 (89.5)	0.69 (17.5)	1.28 (32.5)	0.24 (6)	6.30 (160)	4.72 (120)	2.36 (60)	0.35 (9)	8.6 lbs. 3.90 kg	0.75 lbs. 0.35 kg
C/146240/L3	40	3.70 (94)	4.41 (112)	0.47 (12)	3.19 (81)	1.36 (34.5)	4.27 (108.5)	0.53 (13.5)	2.56 (65)	2.01 (51)	4.06 (103)	0.71 (18)	2.07 (52.5)	0.24 (6)	8.46 (215)	6.30 (160)	3.15 (80)	0.35 (9)	13.7 lbs. 6.20 kg	1.1 lbs. 0.50 kg
C/146250/L3	50	4.41 (112)	5.20 (132)	0.47 (12)	3.70 (94)	1.40 (35.5)	4.98 (126.5)	0.57 (14.5)	2.95 (75)	2.34 (59.5)	4.88 (124)	0.73 (18.5)	2.56 (65)	0.24 (6)	9.84 (250)	7.48 (190)	3.74 (95)	0.43 (11)	23.6 lbs. 10.70 kg	1.7 lbs. 0.75 kg
C/146263/L3	63	5.20 (132)	5.91 (150)	0.47 (12)	4.41 (112)	1.67 (42.5)	5.61 (142.5)	0.61 (15.5)	3.15 (80)	2.68 (68)	5.51 (140)	0.81 (20.5)	4.53 (115)	0.24 (6)	12.60 (320)	9.45 (240)	4.72 (120)	0.51 (13)	25.4 lbs. 11.50 kg	2.2 lbs. 1.00 kg

Theoretical forces, air consumption, cushioning length, holding forces for active brake

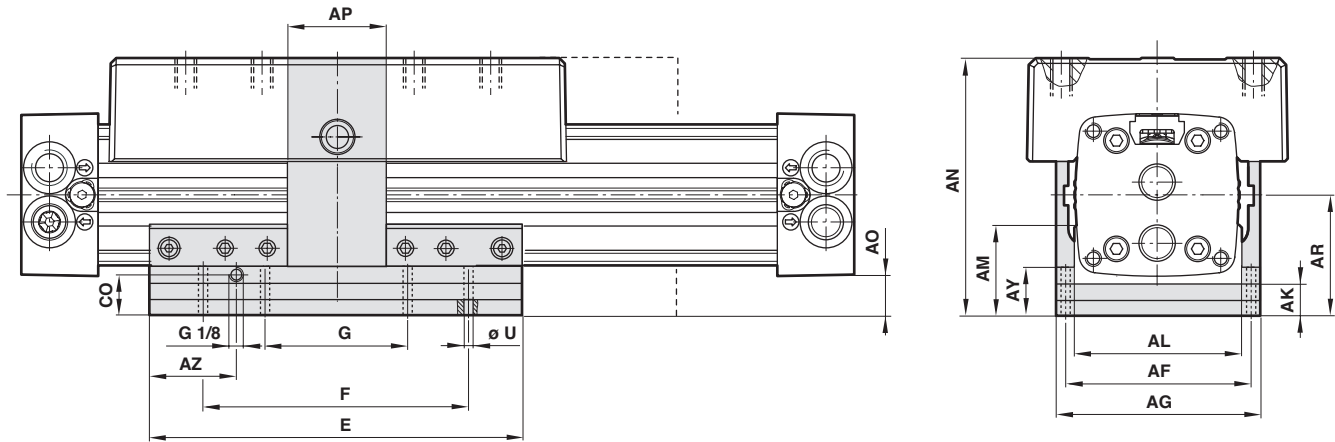
Cylinder Ø mm	Theoretical forces lbf (N) at 87 psi (6 bar)	Air consumption ft ³ /in. (l/cm) of stroke at 87 psi (6 bar)	Cushioning length inches (mm)	Holding forces lbf. (N) of brake (on dry braking surface) active (L3) at 87 psi (6 bar)
25	66 (294)	0.003 (0.035)	1 (26)	112 (5000)
32	108 (482)	0.005 (0.056)	1.4 (35)	202 (900)
40	170 (754)	0.008 (0.088)	2 (50)	337 (1500)
50	265 (1178)	0.012 (0.137)	2.3 (60)	562 (2500)
63	420 (1870)	0.02 (0.218)	2.8 (70)	899 (4000)

C/146000/L4 – cylinder with passive brake ($\varnothing$ 25 ... 63 mm)



Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146025/L4	25	2.44 (62)	2.95 (75)	0.87 (22)	2.05 (52)	1.52 (38.5)	3.29 (83.5)	0.93 (23.5)	1.77 (45)	1.87 (47.5)	3.27 (83)	1.04 (26.5)	1.18 (30)	0.63 (16)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	4.2 lbs. 1.90 kg	0.44 lbs. 0.2 kg
C/146032/L4	32	3.07 (78)	3.62 (92)	0.94 (24)	2.52 (64)	1.61 (41)	4.02 (102)	1.02 (26)	2.17 (55)	2.20 (56)	4.00 (101.5)	1.16 (29.5)	1.28 (32.5)	0.71 (18)	6.30 (160)	4.72 (120)	2.36 (60)	0.35 (9)	5.7 lbs. 2.60 kg	0.77 lbs. 0.35 kg
C/146040/L4	40	3.70 (94)	4.41 (112)	0.94 (24)	3.19 (81)	1.83 (46.5)	4.55 (115.5)	1.00 (25.5)	2.56 (65)	2.48 (63)	4.53 (115)	1.18 (30)	2.07 (52.5)	0.71 (18)	8.46 (215)	6.30 (160)	3.15 (80)	0.35 (9)	10.4 lbs. 4.70 kg	1.1 lbs. 0.50 kg
C/146050/L4	50	4.41 (112)	5.20 (132)	1.18 (30)	3.70 (94)	2.11 (53.5)	5.61 (142.5)	1.28 (32.5)	2.95 (75)	3.05 (77.5)	5.59 (142)	1.44 (36.5)	2.56 (65)	0.94 (24)	9.84 (250)	7.48 (190)	3.74 (95)	0.43 (11)	15.9 lbs. 7.20 kg	1.7 lbs. 0.75 kg
C/146063/L4	63	5.20 (132)	5.91 (150)	1.18 (30)	4.41 (112)	2.38 (60.5)	6.24 (158.5)	1.32 (33.5)	3.54 (90)	3.39 (86)	6.22 (158)	1.52 (38.5)	4.53 (115)	1.65 (42)	12.60 (320)	9.45 (240)	4.72 (120)	0.51 (13)	27.3 lbs. 12.40 kg	2.2 lbs. 1.0 kg

C/146200/L4 – cylinder with precision roller guide and passive brake (ø 25 ... 63 mm)

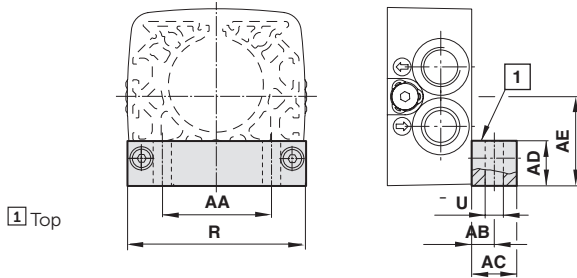


Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146225/L4	25	2.44 (62)	2.95 (75)	0.87 (22)	2.05 (52)	1.52 (38.5)	3.52 (89.5)	0.93 (23.5)	1.57 (40)	1.87 (47.5)	3.27 (83)	1.04 (26.5)	1.18 (30)	0.63 (16)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	4.2 lbs. 1.90 kg	0.44 lbs. 0.20 kg
C/146232/L4	32	3.07 (78)	3.62 (92)	0.94 (24)	2.52 (64)	1.61 (41)	4.17 (106)	1.02 (26)	2.17 (55)	2.20 (56)	4.00 (101.5)	1.16 (29.5)	1.28 (32.5)	0.71 (18)	6.30 (160)	4.72 (120)	2.36 (60)	0.35 (9)	8.8 lbs. 4.00 kg	0.77 lbs. 0.35 kg
C/146240/L4	40	3.70 (94)	4.41 (112)	0.94 (24)	3.19 (81)	1.83 (46.5)	4.74 (120.5)	1.00 (25.5)	2.56 (65)	2.48 (63)	4.53 (115)	1.18 (30)	2.07 (52.5)	0.71 (18)	8.46 (215)	6.30 (160)	3.15 (80)	0.35 (9)	14.8 lbs. 6.70 kg	1.1 lbs. 0.50 kg
C/146250/L4	50	4.41 (112)	5.20 (132)	1.18 (30)	3.70 (94)	2.11 (53.5)	5.69 (144.5)	1.28 (32.5)	2.95 (75)	3.05 (77.5)	5.59 (142)	1.44 (36.5)	2.56 (65)	0.94 (24)	9.84 (250)	7.48 (190)	3.74 (95)	0.43 (11)	24 lbs. 11.00 kg	1.7 lbs. 0.75 kg
C/146263/L4	63	5.20 (132)	5.91 (150)	1.18 (30)	4.41 (112)	2.38 (60.5)	6.32 (160.5)	1.32 (33.5)	3.15 (80)	3.39 (86)	6.22 (158)	1.52 (38.5)	4.53 (115)	0.94 (24)	12.60 (320)	9.45 (240)	4.72 (120)	0.51 (13)	27 lbs. 12.40 kg	2.2 lbs. 1.00 kg

Theoretical forces, air consumption, cushioning length, holding forces for passive brake

Cylinder Ø mm	Theoretical forces lbf (N) at 87 psi (6 bar)	Air consumption ft³/in. (l/cm) of stroke at 87 psi (6 bar)	Cushioning length inches (mm)	Holding forces lbf. (N) of brake (on dry braking surface)
25	66 (294)	0.003 (0.035)	1 (26)	50 (220)
32	108 (482)	0.005 (0.056)	1.4 (35)	84 (375)
40	170 (754)	0.008 (0.088)	2 (50)	141 (630)
50	265 (1178)	0.012 (0.137)	2.3 (60)	225 (1000)
63	420 (1870)	0.02 (0.218)	2.8 (70)	371 (1650)

Mountings (ø 16 ... 80 mm) Foot mounting C QM/1460XX/21



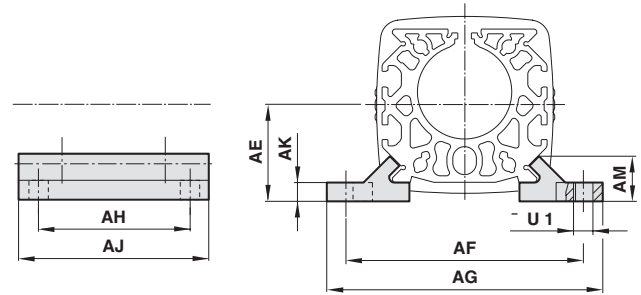
Type*	Ø	AA	AB	AC	AD	AE	R	Ø U	Wt.
QM/146016/21	16	0.63 (16)	0.39 (10)	0.59 (15)	0.12 (3)	0.63 (16)	1.06 (27)	0.22 (5.5)	0.03 lbs. 0.01 kg.
QM/146020/21	20	0.67 (17)	0.20 (5)	0.39 (10)	0.39 (10)	0.85 (21.5)	1.57 (40)	0.22 (5.5)	0.06 lbs. 0.03 kg.
QM/146025/21	25	0.71 (18)	0.28 (7)	0.59 (15)	0.53 (13.5)	0.94 (24) (26.5)	1.89 (48)	0.28 (7)	0.22 lbs. 0.1 kg.
QM/146032/21	32	1.02 (26)	0.43 (11)	0.87 (22)	0.65 (16.5)	1.20 (30.5) (33)	2.36 (60)	0.35 (9)	0.22 lbs. 0.1 kg.
QM/146040/21	40	1.18 (30)	0.43 (11)	0.87 (22)	0.77 (19.5)	1.48 (37.5) (40.5)	2.95 (75)	0.35 (9)	0.44 lbs. 0.2 kg.
QM/146050/21	50	1.65 (42)	0.47 (12)	0.98 (25)	0.94 (24)	1.77 (45) (49)	3.54 (90)	0.43 (11)	0.66 lbs. 0.3 kg.
QM/146063/21	63	1.89 (48)	0.51 (13)	0.98 (25)	1.08 (27.5)	2.13 (54) (57.5)	4.13 (105)	0.51 (13)	0.88 lbs. 0.4 kg.
QM/146080/21	80	2.52 (64)	0.49 (12.5)	0.98 (25)	1.38 (35)	2.76 (70)	5.12 (130)	0.55 (14)	0.88 lbs. 0.4 kg.

Attention: When Foot mounts are used with Center support mounts, the word TOP should NOT be visible (Foot mount should be upside down). This will change the AE dimension as shown below.

Type*	Ø	AE
QM/146025/21	25	1.04 (26.5)
QM/146032/21	32	1.30 (33)
QM/146040/21	40	1.59 (40.5)
QM/146050/21	50	1.93 (49)
QM/146063/21	63	2.26 (57.5)

* Each part number includes
(2) foot mount brackets.

Center support V QM/1460XX/32



Type**	Ø	AE	AF	AG	AH	AJ	AK	AM	Ø U1	Wt.
QM/146016/32	16	0.63 (16)	1.57 (40)	1.97 (50)	0.79 (20)	1.18 (30)	0.14 (3.5)	0.35 (9)	0.22 (5.5)	0.03 lbs. 0.01 kg.
QM/146020/32	20	0.85 (21.5)	2.05 (52)	2.44 (62)	1.77 (45)	2.36 (60)	0.18 (4.5)	0.47 (12)	0.22 (5.5)	0.07 lbs. 0.03 kg.
QM/146025/32	25	1.04 (26.5)	2.36 (60)	2.83 (72)	2.36 (60)	3.15 (80)	0.22 (5.5)	0.51 (13)	0.26 (6.6)	0.09 lbs. 0.04 kg.
QM/146032/32	32	1.20 (30.5)	2.99 (76)	3.62 (92)	2.76 (70)	3.94 (100)	0.26 (6.5)	0.53 (13.5)	0.35 (9)	0.16 lbs. 0.07 kg.
QM/146040/32	40	1.48 (37.5)	3.62 (92)	4.25 (108)	3.54 (90)	4.72 (120)	0.30 (7.5)	0.73 (18.5)	0.35 (9)	0.44 lbs. 0.2 kg.
QM/146050/32	50	1.77 (45)	4.33 (110)	5.04 (128)	4.33 (110)	5.51 (140)	0.30 (7.5)	0.73 (18.5)	0.43 (11)	0.44 lbs. 0.2 kg.
QM/146063/32	63	2.13 (54)	5.20 (132)	6.06 (154)	4.72 (120)	6.30 (160)	0.35 (9)	0.98 (25)	0.51 (13)	0.66 lbs. 0.3 kg.
QM/146080/32	80	2.76 (70)	6.10 (155)	7.09 (180)	5.51 (140)	7.09 (180)	0.47 (12)	1.11 (28.3)	0.55 (14)	0.88 lbs. 0.4 kg.

** Each part number includes left and right support brackets.



Groove key for carriage

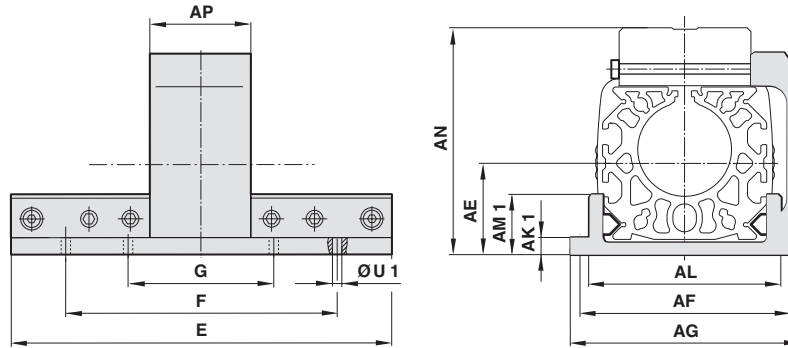
Type	Ø	A	B	C	D	E	Weight
M/P74065	25	0.16 (4)	M5 (12)	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.
M/P74065	32	0.16 (4)	M5 (12)	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.
M/P74066	40	0.18 (4.5)	M6 (17)	0.67 (17)	0.25 (6.25)	0.41 (10.5)	0.04 lbs. 0.02 kg.
M/P41858	50	0.30 (7.5)	M8 (23)	0.91 (23)	0.30 (7.5)	0.53 (13.5)	0.07 lbs. 0.03 kg.
M/P41858	63	0.30 (7.5)	M8 (23)	0.91 (23)	0.30 (7.5)	0.53 (13.5)	0.07 lbs. 0.03 kg.

Groove key for profile barrel

Type	Ø	A	B	C	D	E	Weight
M/P74065	25 - 63	0.16 (4)	M5 (12)	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.



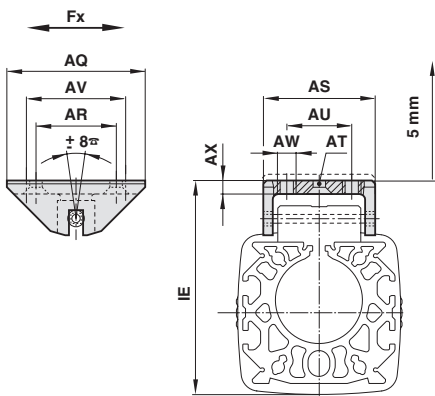
Carriage plate mounting UV



Type (UV)	Ø	AE	AF	AG	AK1	AL	AM1	AN	AP	E	F	G	ØU1	Wt
QM/146016/34	16	0.63 (16)	1.57 (40)	1.97 (50)	0.14 (3.5)	1.22 (31)	0.33 (8.5)	1.59 (40.5)	1.18 (30)	3.15 (80)	2.36 (60)	—	0.22 (5.5)	0.22 lbs. 0.1 kg.
QM/146020/34	20	0.85 (21.5)	2.05 (52)	2.44 (62)	0.22 (5.5)	1.65 (42)	0.57 (14.5)	2.20 (56)	1.42 (36)	4.33 (110)	3.15 (80)	1.57 (40)	0.22 (5.5)	0.44 lbs. 0.2 kg.
QM/146025/34	25	1.04 (26.5)	2.36 (60)	2.95 (75)	0.22 (5.5)	2.05 (52)	0.69 (17.5)	2.46 (62.5)	1.77 (45)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	0.66 lbs. 0.3 kg.
QM/146032/34	32	1.30 (33)	3.07 (78)	3.62 (92)	0.26 (6.5)	2.52 (64)	0.71 (18)	3.11 (79)	2.17 (55)	6.30 (160)	4.72 (120)	2.36 (60)	0.35 (9)	0.88 lbs. 0.4 kg.
QM/146040/34	40	1.59 (40.5)	3.70 (94)	4.41 (112)	0.30 (7.5)	3.19 (81)	0.94 (24)	3.66 (93)	2.56 (65)	8.46 (215)	6.30 (160)	3.15 (80)	0.35 (9)	1.76 lbs. 0.8 kg.
QM/146050/34	50	1.93 (49)	4.41 (112)	5.20 (132)	0.31 (8)	3.70 (94)	0.98 (25)	4.49 (114)	2.95 (75)	9.84 (250)	7.48 (190)	3.74 (95)	0.43 (11)	2.5 lbs. 1.2 kg.
QM/146063/34	63	2.26 (57.5)	5.20 (132)	5.91 (150)	0.39 (10)	4.41 (112)	1.26 (32)	5.12 (130)	3.54 (90)	12.60 (320)	9.45 (240)	4.72 (120)	0.51 (13)	4.4 lbs. 2 kg.
QM/146080/34	80	2.76 (70)	6.10 (155)	7.09 (180)	0.39 (10)	5.20 (132)	1.26 (32)	6.26 (159)	3.94 (100)	15.35 (390)	11.81 (300)	5.91 (150)	0.55 (14)	6.4 lbs. 2.9 kg.

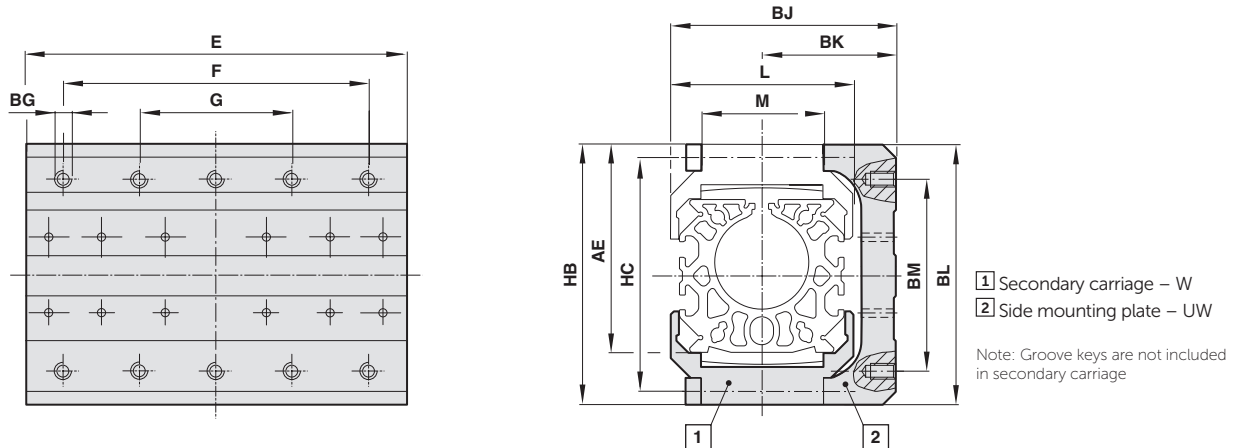
Swinging bridge S QM/1460XX/37

For cylinders with internal guiding only



Type (S)	Ø	AQ	AR	AS	AT	AU	AV	AW	AX	IE	Fx (N)	Wt.
QM/146016/37	16	1.57 (40)	— (—)	1.02 (26)	— (—)	0.47 (12)	1.18 (30)	M4	0.16 (4)	48+4	22 lbf. 100 N	0.04 lbs. 0.02 kg.
QM/146020/37	20	1.97 (50)	1.38 (35)	1.50 (38)	DIN74-Bm5	0.79 (20)	1.57 (40)	M5	0.20 (5)	65.5+5	34 lbf. 150 N	0.22 lbs. 0.1 kg.
QM/146025/37	25	2.36 (60)	1.57 (40)	1.73 (44)	DIN74-Bm5	0.79 (20)	1.77 (45)	M5	0.20 (5)	70+5	56 lbf. 250 N	0.44 lbs. 0.2 kg.
QM/146032/37	32	3.15 (80)	1.97 (50)	2.32 (59)	DIN74-Bm6	1.18 (30)	2.36 (60)	M6	0.22 (5.5)	88.5+5	92 lbf. 410 N	0.66 lbs. 0.3 kg.
QM/146032/37	40	3.15 (80)	1.97 (50)	2.32 (59)	DIN74-Bm6	1.18 (30)	2.36 (60)	M6	0.22 (5.5)	102.5+5	144 lbf. 640 N	0.66 lbs. 0.3 kg.
QM/146050/37	50	3.94 (100)	2.36 (60)	2.56 (65)	DIN74-Bm8	1.57 (40)	3.15 (80)	M8	0.26 (6.5)	124+5	225 lbf. 1000 N	1.1 lbs. 0.5 kg.
QM/146050/37	63	3.94 (100)	2.36 (60)	2.56 (65)	DIN74-Bm8	1.57 (40)	3.15 (80)	M8	0.26 (6.5)	139+5	337 lbf. 1500 N	1.1 lbs. 0.5 kg.
QM/146080/37	80	3.94 (100)	2.36 (60)	2.56 (65)	DIN74-Bm8	1.57 (40)	3.15 (80)	M8	0.26 (6.5)	168.5+5	540 lbf. 2400 N	1.1 lbs. 0.5 kg.

Secondary carriage W QM/1461**/35 Side mounting plate UW QM/1461**/36



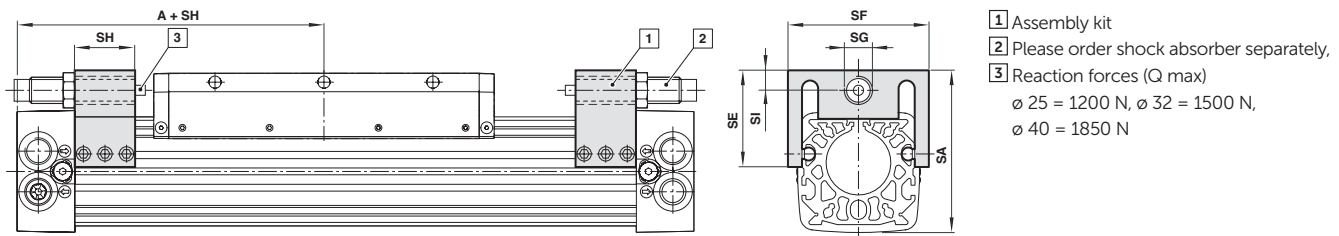
Type (W)	Type (UW)**	Ø	AE	BG	BJ	BK	BL	BM	E	F	G	HB	HC	L	M	W	UW
QM/146120/35	QM/146120/36	20	2.32 (59)	M 5 x 10*	2.13 (54)	1.30 (33)	3.07 (78)	2.17 (55)	4.33 (110)	3.15 (80)	1.57 (40)	3.11 (79)	2.52 (64)	1.65 (42)	1.06 (27)	0.42 lb. 0.19 kg	0.55 lbs. 0.25 kg
QM/146125/35	QM/146125/36	25	2.66 (67.5)	M 5 x 10*	2.48 (63)	1.46 (37)	3.39 (86)	2.56 (65)	5.12 (130)	3.54 (90)	1.77 (45)	3.43 (87)	3.03 (77)	2.05 (52)	1.26 (32)	0.60 lbs. 0.27 kg	0.73 lbs. 0.33 kg
QM/146132/35	QM/146132/36	32	3.23 (82)	M 5 x 12*	3.03 (77)	1.77 (45)	4.06 (103)	3.15 (80)	6.30 (160)	4.72 (120)	2.36 (60)	4.09 (104)	3.70 (94)	2.52 (64)	1.77 (45)	1.10 lbs. 0.50 kg	1.10 lbs. 0.50 kg
QM/146140/35	QM/146140/36	40	3.84 (97.5)	M 6 x 12*	3.03 (77)	2.30 (58.5)	4.69 (119)	3.54 (90)	8.46 (215)	6.30 (160)	3.15 (80)	4.72 (120)	4.33 (110)	3.11 (79)	1.77 (45)	1.43 lbs. 0.65 kg	2.38 lbs. 1.08 kg
QM/146150/35	QM/146150/36	50	4.61 (117)	M 6 x 15*	3.86 (98)	2.81 (71.5)	5.63 (143)	4.72 (120)	9.84 (250)	7.48 (190)	3.74 (95)	5.67 (144)	5.16 (131)	3.62 (92)	1.97 (50)	2.43 lbs. 1.10 kg	4.08 lbs. 1.85 kg
QM/146163/35	QM/146163/36	63	5.39 (137)	M 8 x 20*	4.63 (117.5)	3.33 (84.5)	7.01 (178)	5.51 (140)	12.60 (320)	9.45 (240)	4.72 (120)	6.65 (169)	6.06 (154)	4.33 (110)	1.97 (50)	4.19 lbs. 1.90 kg	7.63 lbs. 3.46 kg

*1 deep

** Provides a 50% increase in the load capabilities of Externally Guided cylinder

Adjustable stop

For M/146100, /... /M, M/146200/... /M



Models	Ø	A	SA	SE	SF	SG	SH	SI	4*	Weight
QM/146125/75	25	100	67	48	63	M14x1.5	30	10.5	25mm bore = 0.71 (18)	0.12 kg
QM/146132/75	32	120	80	48	70	M14x1.5	30	10.5	32mm bore = 0.73 (18.5)	0.17 kg
QM/146140/75	40	150	102	62	83	M20x1.5	30	15	40mm bore = 0.63 (16°)	0.22 kg

* Reduction in usable stroke (each end)

Adjustable Stop Assembly Kit

(with shock absorber option)

For C/146100 and C/146200 (25 mm - 40 mm bore)

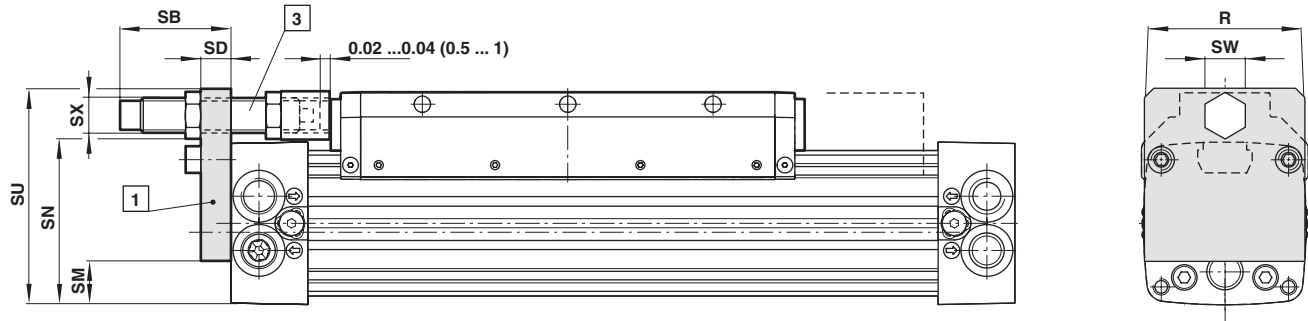
- Flexible assembly kit allows stroke adjustment from either end of the cylinder
- Integral with option for a shock absorber for impact dampening



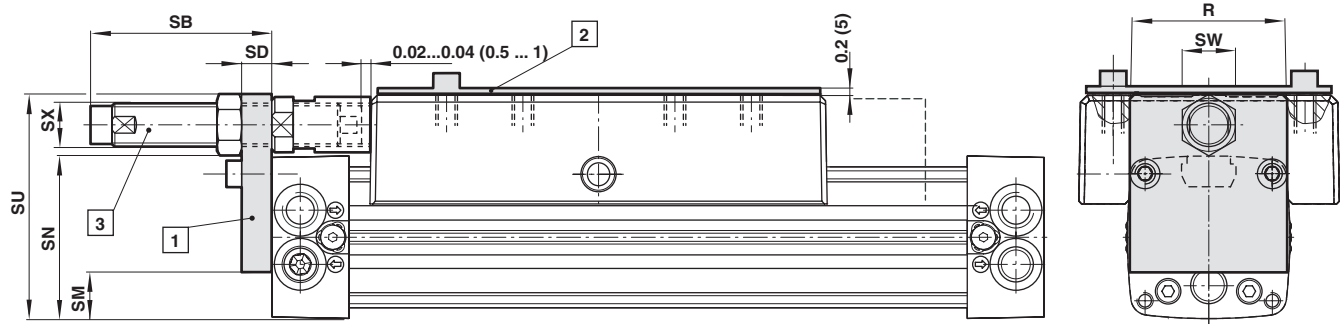
Contact factory for more information.

Assembly kit for shock absorber

For cylinder series C/146100/M



For cylinder series C/146200/M

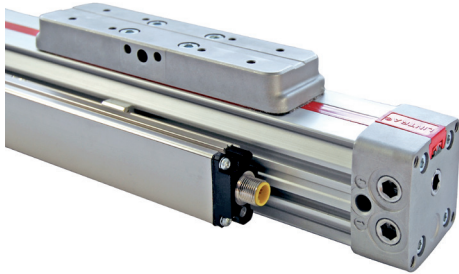


- 1 Assembly kit
- 2 Plate $\varnothing$ 40 to 63 mm bores only
- 3 Please order shock absorber separately.

Cylinder External guide	$\varnothing$	Assembly kit for shock absorber Position 1	Plate Position 2	R	S8	SD	SC	SM	SN	SU	SW	SX
C/146125	25	QM/146125/67	–	1.89 (48)	1.79 (45.5)	0.47 (12)	–	0.75 (19)	1.93 (49)	2.74 (69.5)	0.67 (17)	M14x1.5
C/146132	32	QM/146132/67	–	2.36 (60)	1.59 (40.5)	0.47 (12)	–	0.94 (24)	2.40 (61)	3.21 (81.5)	0.67 (17)	M14x1.5
C/146140	40	QM/146140/67	–	2.95 (75)	3.21 (81.5)	0.59 (15)	–	1.14 (29)	2.91 (74)	4.31 (109.5)	1.18 (30)	M25x1.5
C/146150	50	QM/146150/67	–	3.54 (90)	2.72 (69)	0.59 (15)	–	1.30 (33)	3.58 (91)	5.02 (127.5)	1.18 (30)	M25x1.5
C/146163	63	QM/146163/67	–	4.13 (105)	2.72 (69)	0.59 (15)	–	1.61 (41)	4.15 (105.5)	5.57 (141.5)	1.18 (30)	M25x1.5
C/146180	80	QM/146180/67	–	5.12 (130)	3.35 (85)	0.79 (20)	–	2.09 (53)	5.14 (130.5)	6.83 (173.5)	1.57 (40)	M33x1.5
Cylinder Roller guide	$\varnothing$	Assembly kit for shock absorber Position 1	Plate Position 2	R	SB	SD	SC	SM	SN	SU	SW	SX
C/146225	25	QM/146125/67	–	1.89 (48)	1.79 (45.5)	0.47 (12)	–	0.75 (19)	1.93 (49)	2.74 (69.5)	0.67 (17)	M14x1.5
C/146232	32	QM/146132/67	–	2.36 (60)	1.59 (40.5)	0.47 (12)	–	0.94 (24)	2.40 (61)	3.21 (81.5)	0.67 (17)	M14x1.5
C/146240	40	QM/146140/67	M/P41434	2.95 (75)	3.21 (81.5)	0.59 (15)	1.22 (31)	1.14 (29)	2.91 (74)	4.31 (109.5)	1.18 (30)	M25x1.5
C/146250	50	QM/146150/67	M/P41435	4.13 (105)	2.72 (69)	0.59 (15)	1.42 (36)	1.30 (33)	3.58 (91)	5.02 (127.5)	1.18 (30)	M25x1.5
C/146263	63	QM/146163/67	M/P41436	5.12 (130)	2.72 (69)	0.59 (15)	1.38 (35)	1.61 (41)	4.15 (105.5)	5.57 (141.5)	1.18 (30)	M25x1.5

Please order shock absorber and plate separately.

Attention: When using M/146200 cylinders ($\varnothing$ 40 to 63 mm) an extra top plate must be mounted onto the carriage as the center line of the shock absorbers has to be within the surface of the carriage.



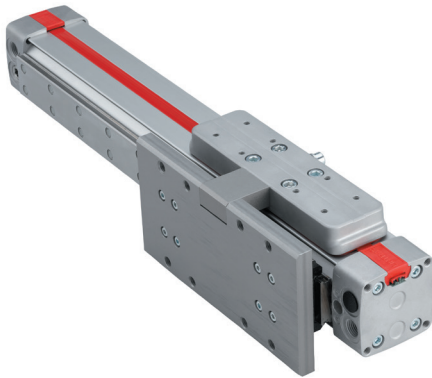
Contact factory for more information.

Cylinder with Linear Position Sensor

C/146...00/F1

32 mm - 63 mm bore

- Linear position sensor for continuous sensing of cylinder position
- Low profile package for easy system integration



Contact factory for more information.

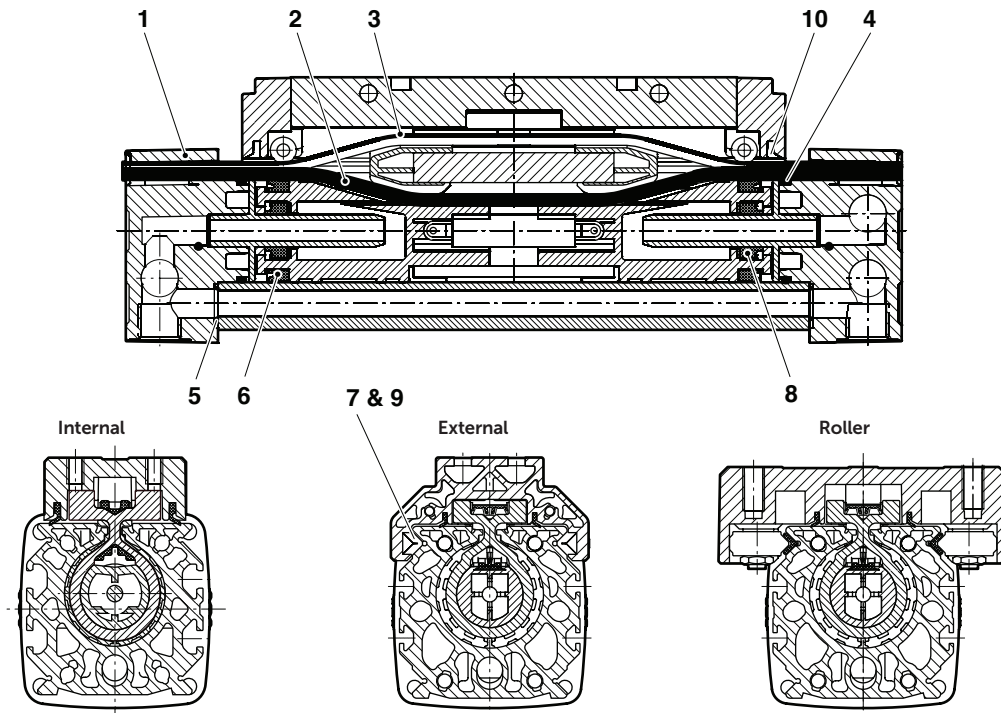
Cylinder with added Caged Ball Linear Motion Guide

For C/146200/PM

25 mm - 63 mm

- A bolt-on guiding system for greater accuracy and higher loads.
- Flexible mounting kit allows integration of customer preferred guiding system

Spares Kits for cylinders with NPT ports and stroke in inches



For C/146000. .../M. C/146200. .../M Internally and Roller guided models

Ø	Type	NPT spares kit	Spares kit w/seal and cover strip	Comprising Item	Description	Quantity	Seal strip Item 2	Cover strip Item 3
20	C/146020.../M	QM/146020/00	QC/146020/88/*	1	Clamping lever (ø 25 ... 63)	2	C/P 40262/*	C/P 74223/*
25	C/146025.../M.	QM/146025/00	QC/146025/88/*	2 + 3	Seal-/cover strip	1	C/P 40262/*	C/P 74131/*
	C/146225.../M			4 + 5	O-ring	2		
32	C/146032.../M.	QM/146032/00	QC/146032/88/*	6	Seal	2	C/P 40344/*	C/P73936/*
	C/146232.../M			8	Seal	2		
40	C/146040.../M.	QM/146040/00	QC/146040/88/*	10	Wiper	1	C/P 40263/*	C/P73945/*
	C/146240.../M				Grease	1		
50	C/146050.../M.	QM/146050/00	QC/146050/88/*				C/P 40626/*	C/P73946/*
	C/146250.../M							
63	C/146063.../M.	QM/146063/00	QC/146063/88/*				C/P 40626/*	C/P73946/*
	C/146263.../M							
80	C/146080.../M	QM/146080/00	QC/146080/88/*				C/P 40715/*	C/P 74232/*

* Insert stroke length in inches

Note: Please quote the cylinder type number when ordering spare parts

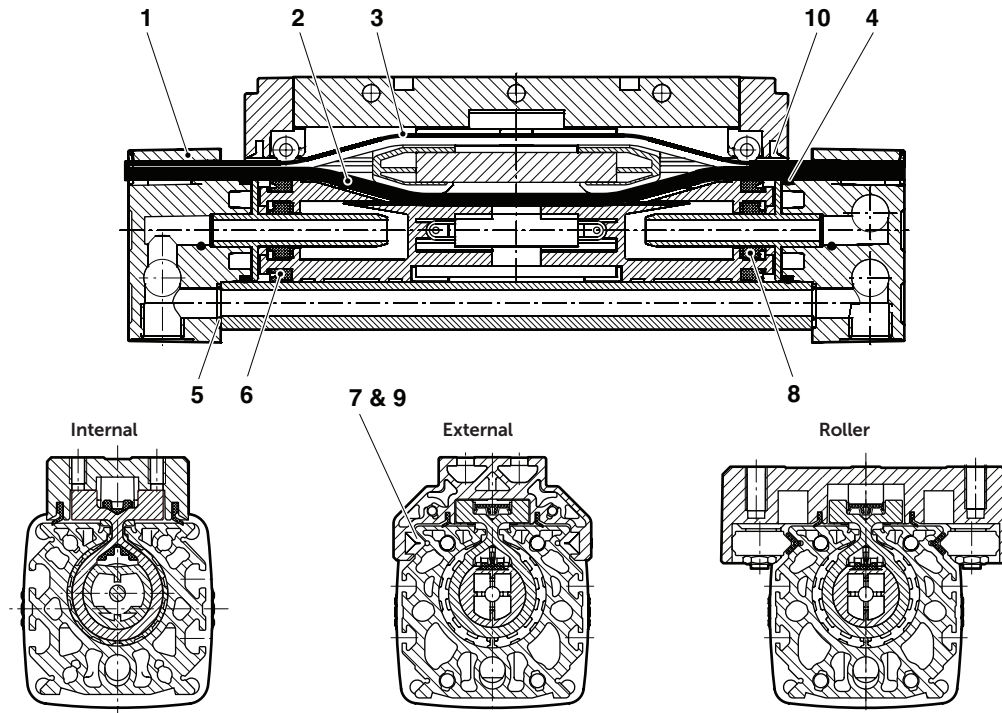
For C/146100. .../M Externally guided models

Ø	Type	NPT spares kit	Spares kit w/seal and cover strip	Comprising Item	Description	Quantity	Seal strip Item 2	Cover strip Item 3
20	C/146120.../M	QM/146120/00	QC/146120/88/*	1	Clamping lever (ø 25 ... 63)	2	C/P 40262/*	C/P 74223/*
25	C/146125.../M	QM1/46125/00	QC/146125/88/*	2 + 3	Seal-/cover strip	1	C/P 40262/*	C/P 74131/*
32	C/146132.../M	QM/146132/00	QC/146132/88/*	4 + 5	O-ring	2	C/P 40344/*	C/P73936/*
40	C/146140.../M	QM/146140/00	QC/146140/88/*	6	Seal	2	C/P 40263/*	C/P73945/*
50	C/146150.../M	QM/146150/00	QC/146150/88/*	7	Guide bar	4	C/P 40626/*	C/P73946/*
63	C/146163.../M.	QM/146163/00	QC/146163/88/*	8	Seal	2	C/P 40626/*	C/P 73946/*
80	C/146180.../M	QM/146180/00	QC/146180/88/*	9	Felt	2	C/P 40715/*	C/P 74232/*
				10	Wiper	1		
					Grease	1		

* Insert stroke length in inches

Note: Please quote the cylinder type number when ordering spare parts

Spares Kits for cylinders with Metric ports and stroke in millimeters



For M/146000. .../M. M/146200. .../M Internally and Roller guided models

Ø	Type	Metric spares kit	Spares kit w/seal and cover strip	Comprising Item	Description	Quantity	Seal strip Item 2	Cover strip Item 3
16	M/146016.../M	QM/146016/00	QM/146016/88/*	1	Clamping lever (ø 25 ... 63)	2	M/P 40262/*	M/P 74223/*
20	M/146020.../M	QM/146020/00	QM/146020/88/*	2 + 3	Seal-/cover strip	1	M/P 40262/*	M/P 74223/*
25	M/146025.../M.	QM/146025/00	QM/146025/88/*	4 + 5	O-ring	2	M/P 40262/*	M/P 74131/*
	M/146225.../M			6	Seal	2		
32	M/146032.../M.	QM/146032/00	QM/146032/88/*	8	Seal	2	M/P 40344/*	M/P73936/*
	M/146232.../M			10	Wiper	1		
40	M/146040.../M.	QM/146040/00	QM/146040/88/*		Grease	1	M/P 40263/*	M/P73945/*
	M/146240.../M							
50	M/146050.../M.	QM/146050/00	QM/146050/88/*				M/P 40626/*	M/P73946/*
	M/146250.../M							
63	M/146063.../M.	QM/146063/00	QM/146063/88/*				M/P 40626/*	M/P73946/*
	M/146263.../M							
80	M/146080.../M	QM/146080/00	QM/146080/88/*				M/P 40715/*	M/P 74232/*

* Insert stroke length in millimeters

Note: Please quote the cylinder type number when ordering spare parts

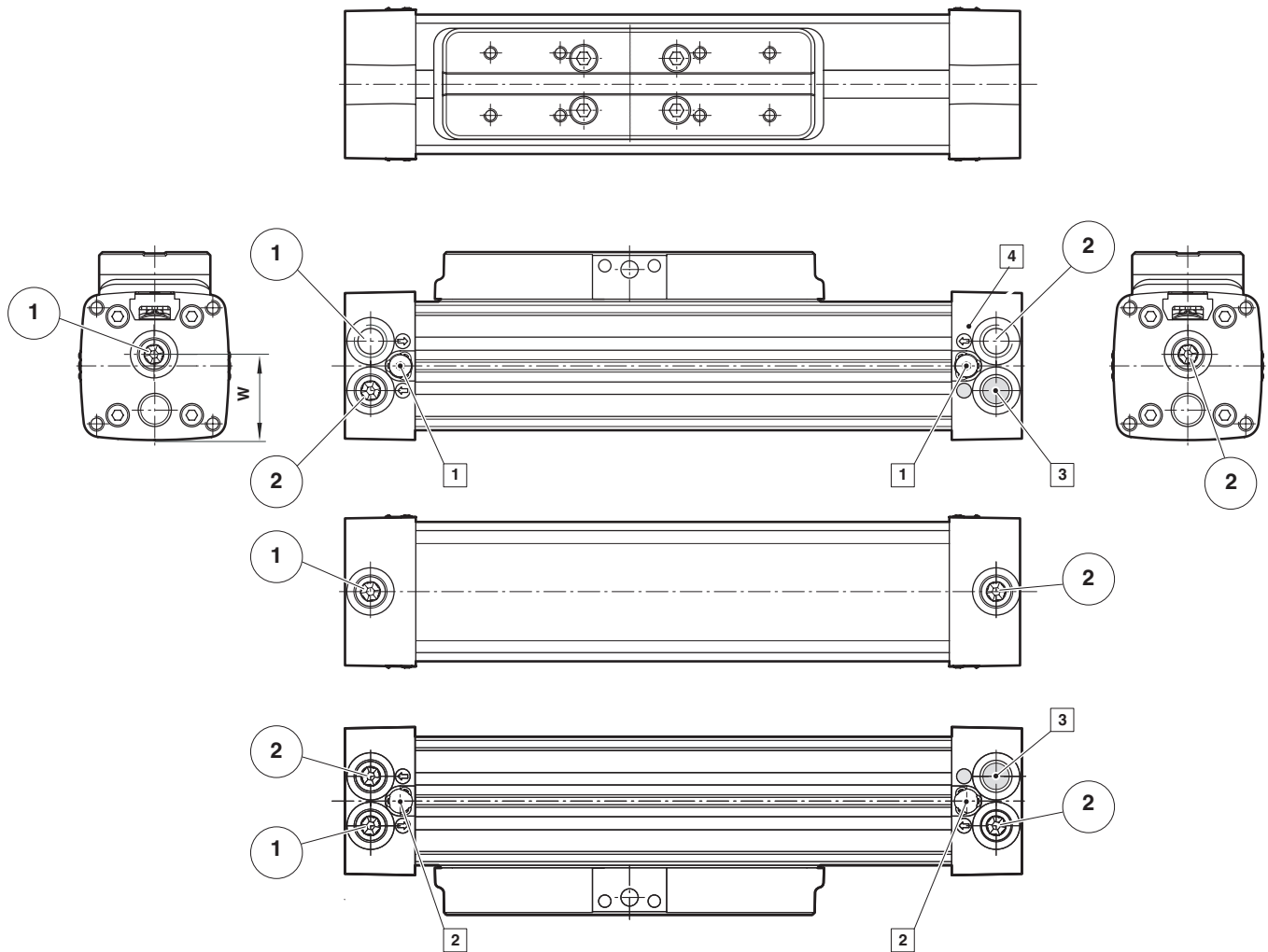
For M/146100. .../M Externally guided models

Ø	Type	Metric spares kit	Spares kit w/seal and cover strip	Comprising Item	Description	Quantity	Seal strip Item 2	Mover strip Item 3
16	M/146116.../M	QM/146116/00	QM/146120/88/*	1	Clamping lever (ø 25 ... 63)	2	M/P 40270/*	M/P 74216/*
20	M/146120.../M	QM/146120/00	QM/146120/88/*	2 + 3	Seal-/cover strip	1	M/P 40262/*	M/P 74223/*
25	M/146125.../M	QM/146125/00	QM/146125/88/*	4 + 5	O-ring	2	M/P 40262/*	M/P 74131/*
32	M/146132.../M	QM/146132/00	QM/146132/88/*	6	Seal	2	M/P 40344/*	M/P73936/*
40	M/146140.../M	QM/146140/00	QM/146140/88/*	7	Guide bar	4	M/P 40263/*	M/P73945/*
50	M/146150.../M	QM/146150/00	QM/146150/88/*	8	Seal	2	M/P 40626/*	M/P73946/*
63	M/146163.../M.	QM/146163/00	QM/146163/88/*	9	Felt	2	M/P 40626/*	M/P 73946/*
80	M/146180.../M	QM/146180/00	QM/146180/88/*	10	Wiper	1	M/P 40715/*	M/P 74232/*
					Grease	1		

* Insert stroke length in millimeters

Note: Please quote the cylinder type number when ordering spare parts

C/146000/MC – cylinder with alternative ports (ø 25 ... 63 mm)



Type	Ø	W
C/146.25/..	25	1.10 (28)
C/146.32/..	32	1.36 (34.5)
C/146.40/..	40	1.71 (43.5)
C/146.50/..	50	2.09 (53)
C/146.63/..	63	2.34 (59.5)

1. Pressurize port **2** to move carriage right to left.
2. Pressurize port **1** to move carriage left to right.
3. Port **3** lower port on right end cap is non-functioning.

- 1** Cushion screw
- 2** Hole without thread
- 3** Port without function
- 4** Moving direction