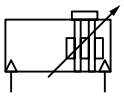
Lightweight design extrusion with universal mounting grooves

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

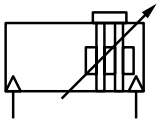
Max strokes:
Ø 16 to 40 mm: 27.9' (8500 mm)
Ø 50 and 63 mm: 26.2' (8000 mm)
Ø 80 mm: 18' (5500 mm)

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

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.

Strokes (on request)	
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**

* For C/146100 & C/146200 only

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

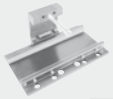
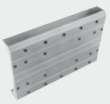
C/146***/MD/****/****
Effective stroke
Distance between carriage centers (inches)

1 Not available on 16, 20, 80 mm bores.
† Order PM option as 1462**

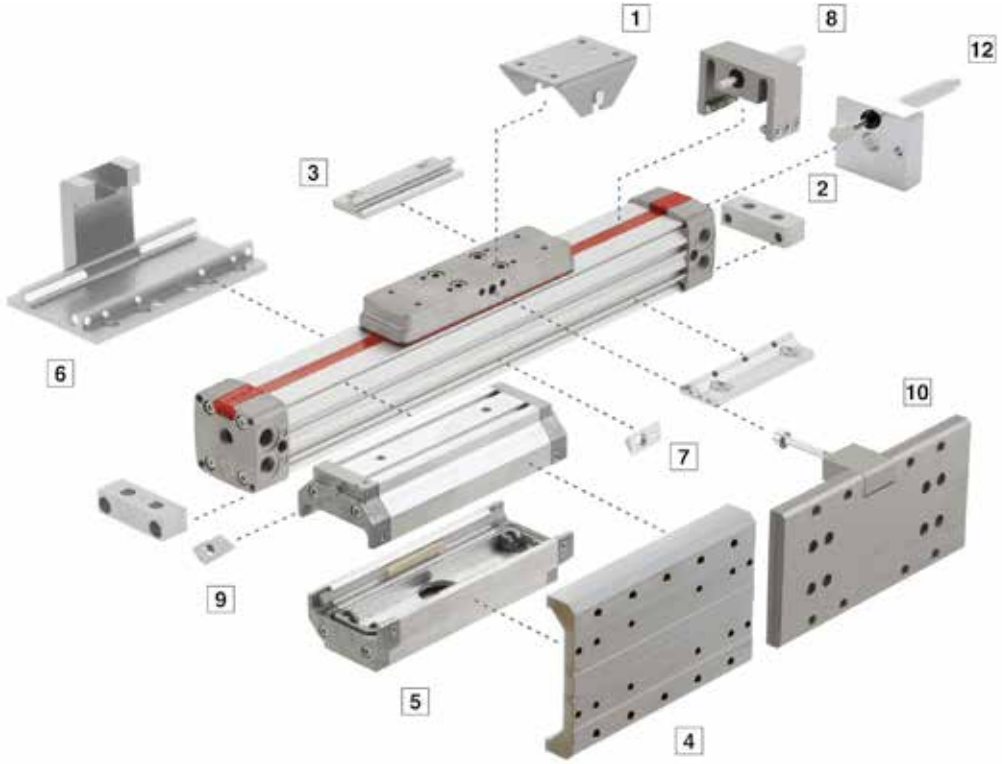
Ordering information

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

	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
Ø mm						
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

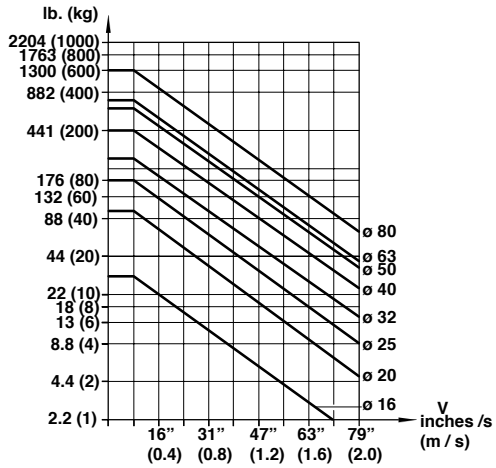
	Assembly kit for caged ball linear motion guide	Adjustable stop	Assembly kit for shock absorbers	Groove key for profile barrel	Groove key for guiding bridge
					
Ø mm	10	8	12	7	9
25	QM/146225/P/70	QM/146125/75	QM/146125/67	M/P74065	M/P74065
32	QM/146232/P/70	QM/146132/75	QM/146132/67	M/P74065	M/P74065
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



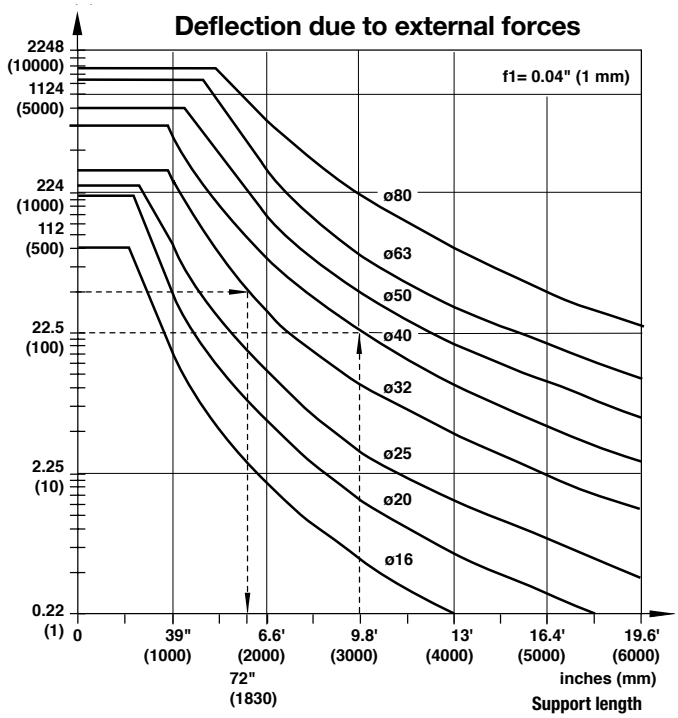
Cushioning Performance

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



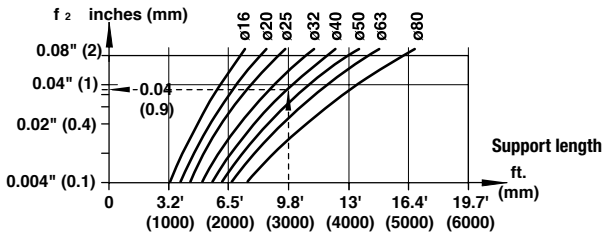
Example:

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) **0.07"(1.8 mm)**
2. Deflection due to cylinder weight diagram 2 **+ 0.04"(0.9 mm)**

Total deflection: **0.2" (2.7 mm)**

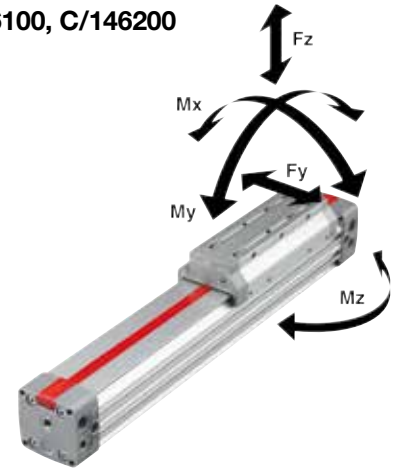
Max. permitted deflection (f1 + f2) **< 0.04"(1 mm)**

A deflection of more than 0.12" (3 mm) is not permitted. **39"(1000 mm) Stroke**

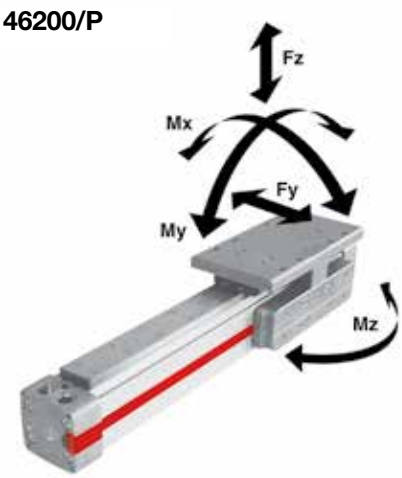
Theoretical forces, air consumption, cushioning length, holding forces

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) 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



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

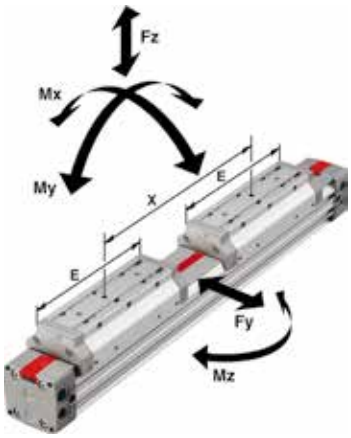
Loading values for LINTRA® cylinders with double carriages

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:

$$\frac{Mx}{Mx\ max} + \frac{My}{My\ max} + \frac{Mz}{Mz\ max} + \frac{Fy}{Fy\ max} + \frac{Fz}{Fz\ max} \leq 1$$

C/146100/MD



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

Ø mm	Precision roller guide C/146200/MD Fy. Fz lbf (N)	Mx lbf in (Nm)	My. Mz 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	228	1104	–	1224	1500	1788	2076	2364	2652	2940	3216
	(1180)	(26)	(125)	–	(138)	(170)	(202)	(234)	(267)	(299)	(332)	(363)
32	351	444	1788	–	–	2076	2448	2832	3192	3564	3948	4320
	(1560)	(50)	(202)	–	–	(235)	(277)	(320)	(361)	(403)	(446)	(488)
40	674	1032	4524	–	–	–	5004	5712	6408	7104	7812	8520
	(3000)	(116)	(511)	–	–	–	(566)	(645)	(724)	(803)	(883)	(962)
50	899	1716	5256	–	–	–	5256	5952	6660	7356	8052	8748
	(4000)	(194)	(594)	–	–	–	(594)	(673)	(753)	(831)	(910)	(989)
63	1439	3192	14724	–	–	–	–	–	15648	16368	18756	20364
	(6400)	(360)	(1664)	–	–	–	–	–	(1768)	(1850)	(2119)	(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.

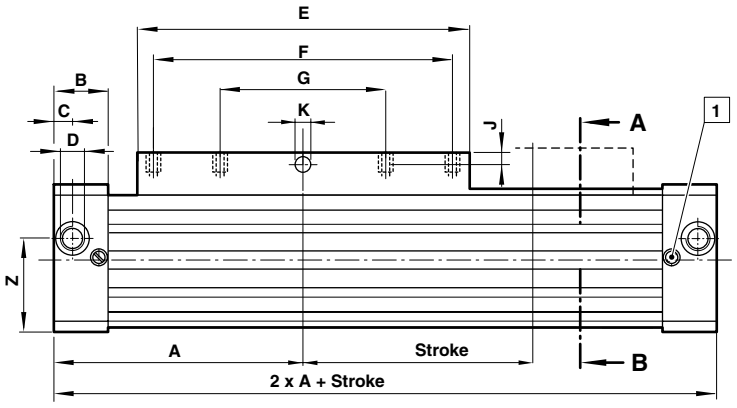
The reference point from which the moments for all cylinders should be calculated is the center line of the pistons.

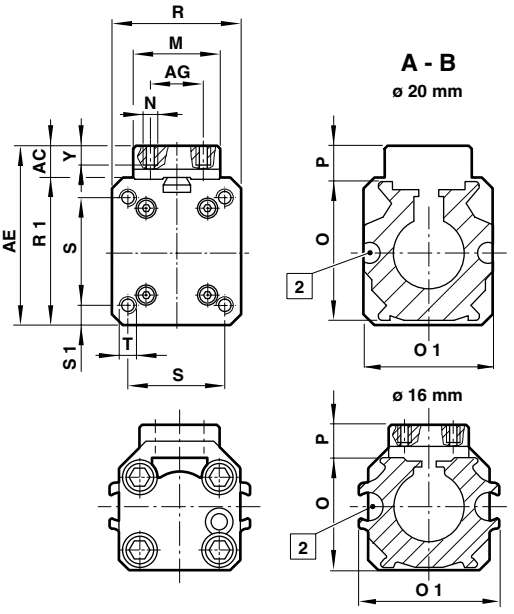
For speeds up to 2 m/s please use our calculation program LINTRA® PNEUCALC. It is available upon request.

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

$$\frac{Mx}{Mx\ max} + \frac{My}{My\ max} + \frac{Mz}{Mz\ max} + \frac{Fy}{Fy\ max} + \frac{Fz}{Fz\ max} \leq 1$$

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



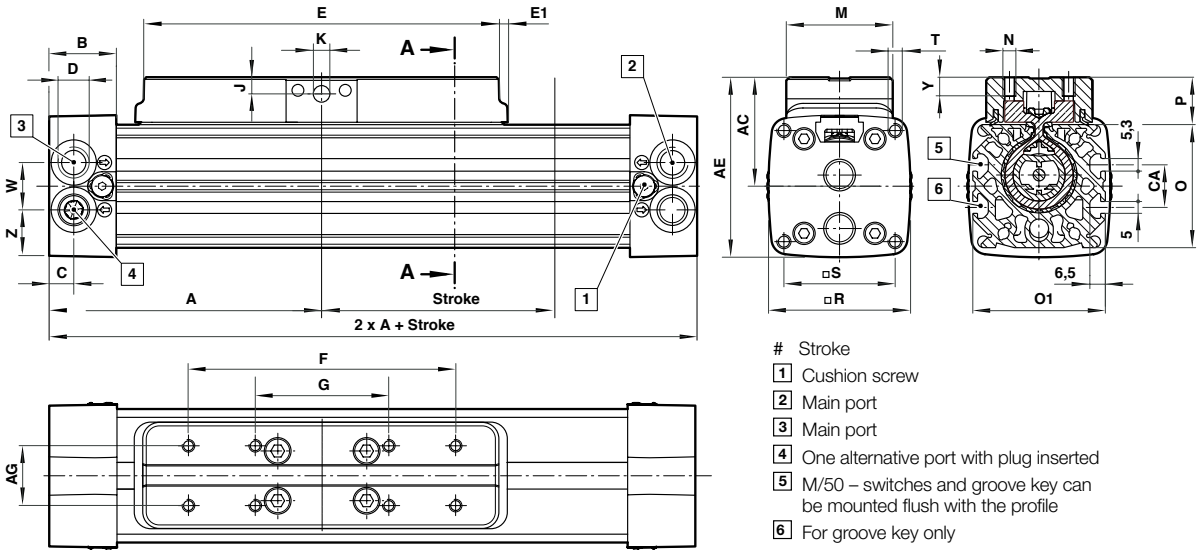


1 Cushion screw
2 M/50 – switches and groove key can be mounted flush with the profile

Type	Ø	A	AC	AE	AG	B	C	D	E	F	G	J	Ø K^{D7}		
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 kg)	0.33 lbs. (0.15 kg)

* deep

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



Stroke
1 Cushion screw
2 Main port
3 Main port
4 One alternative port with plug inserted
5 M/50 – switches and groove key can be mounted flush with the profile
6 For groove key only

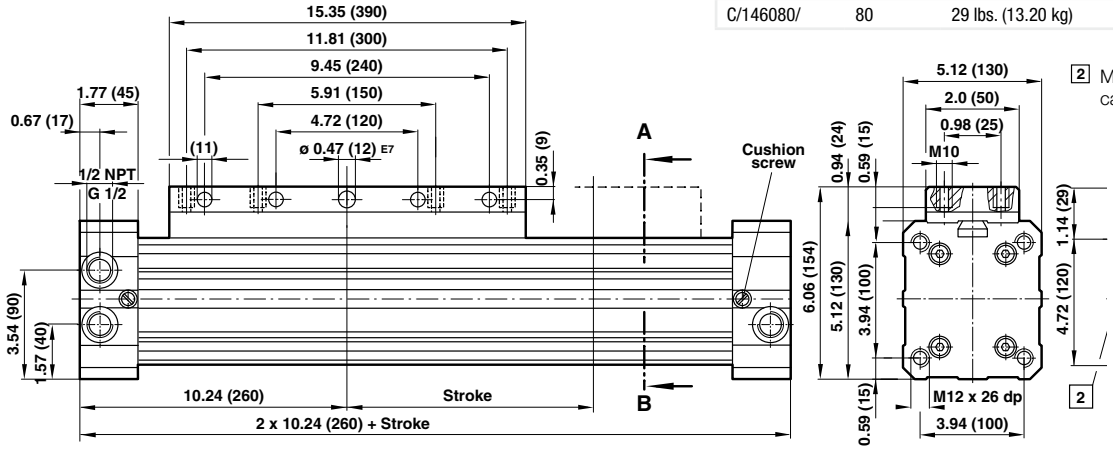
Type	Ø	A	AC	AE	AG	B	C	CA	D	E	E1	F	G	J	Ø K^{D7}
C/146025/...	25	3.94 (100)	1.42 (36)	2.36 (60)	0.78 (20)	0.91 (23)	0.33 (8.5)	– –	1/8 NPT G1/8	5.12 (130)	– –	3.54 (90)	1.77 (45)	0.19 (4.7)	0.20 (5)
C/146032/...	32	4.72 (120)	1.81 (46)	2.99 (76)	0.98 (25)	1.12 (28.5)	0.41 (10.5)	0.71 (18)	1/4 NPT G1/4	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	O 1	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

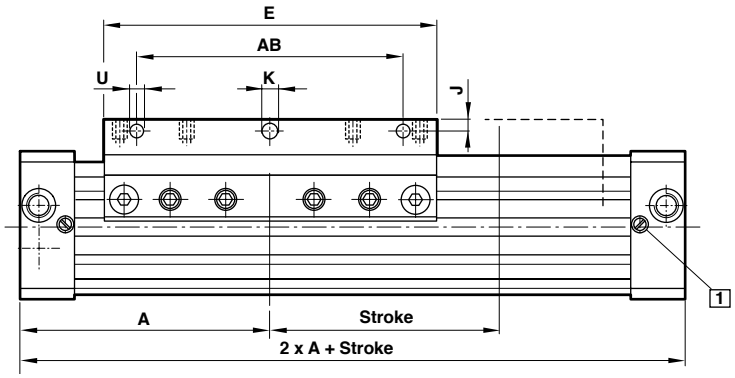
C/146080 – cylinder with internal guide (ø 80 mm)

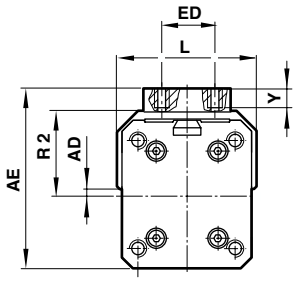
Type	Ø	Weight at 0 mm	Weight per 100 mm
C/146080/	80	29 lbs. (13.20 kg)	3 lbs. (1.50 kg)



2 M/50 – switches and groove key can be mounted flush with profile

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

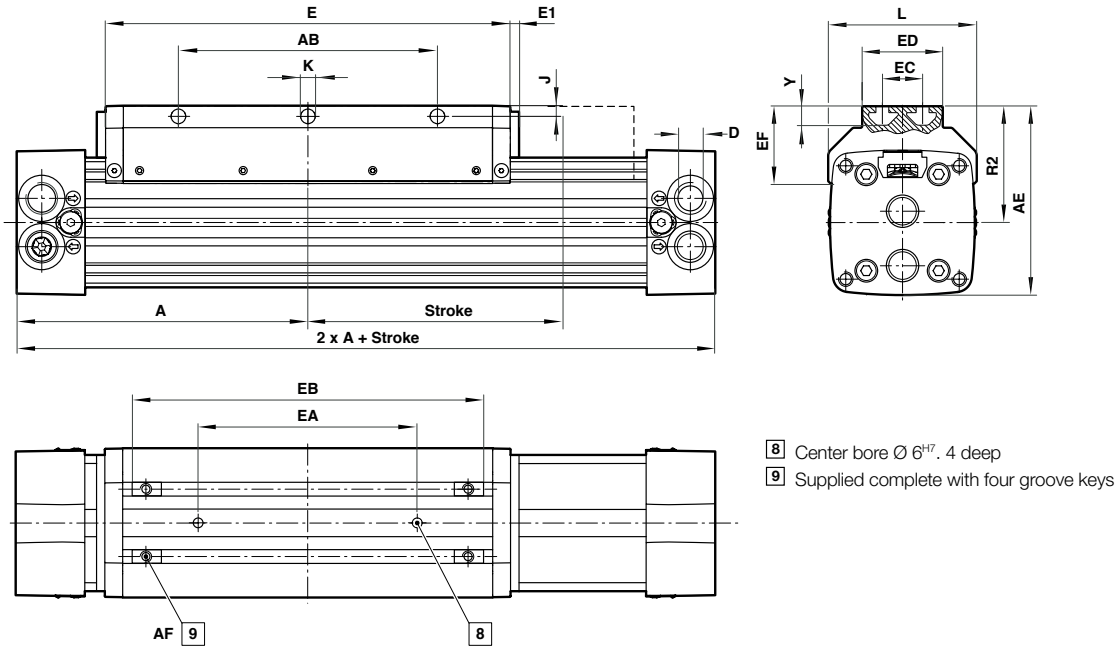




1 Cushion screw

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

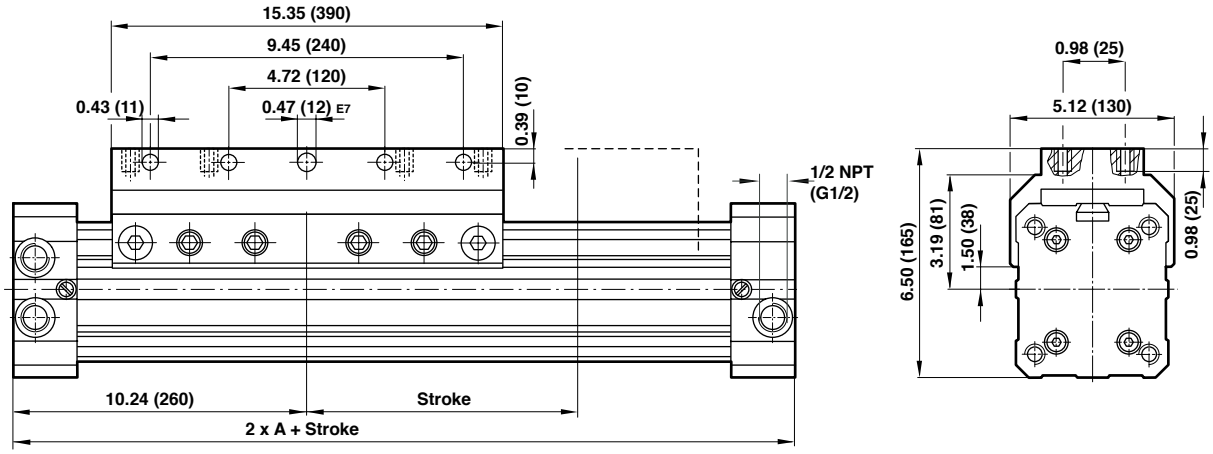
C/146100 – cylinder with external adjustable guide (ø 25 ... 63 mm)



8 Center bore Ø 6^{H7}. 4 deep
9 Supplied complete with four groove keys

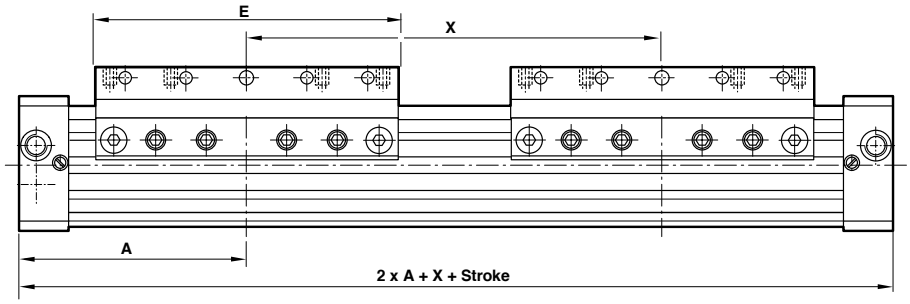
Type	Ø	A	AB	AE	AF	D	E	E1	EA ±0.05	EB	ED	EC	EF	J	Ø K	L	R 2	Y	Weight at 0 mm	Weight per 100 mm
C/146125/..	25	3.94 (100)	2.76 (70)	2.66 (67.5)	M5	1/8 NPT G1/8	5.12 (130)	– –	1.97 (50)	4.02 (102)	1.26 (32)	0.79 (20)	1.34 (34)	0.20 (5)	0.22 (5.5)	2.05 (52)	1.71 (43.5)	0.37 (9.5)	1.7 lbs. 0.75kg	0.44 lbs. 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)



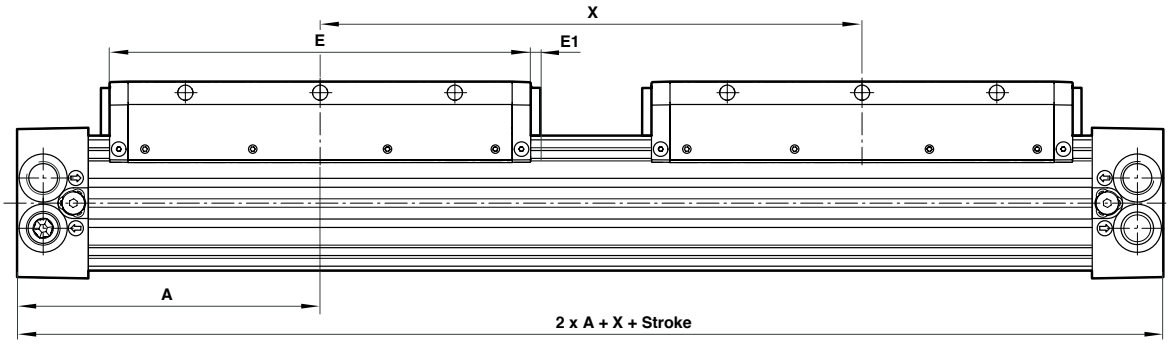
Type	Ø	Weight at 0 mm	Weight per 100 mm
C/146180/	80	29.5 lbs. (13.40 kg)	3.3 lbs. (1.50 kg)

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)



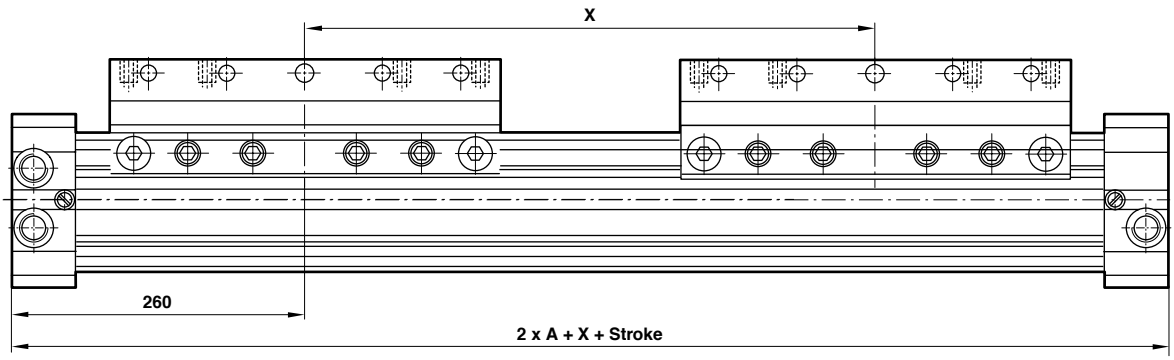
Type	Ø	A	E	X min.	X max.	Weight at 0 mm	Weight per 100 mm
M/146116/D	16	2.46 (62.5)	3.15 (80)	3.15 (80)	19.69 (500)	0.44 lbs. 0.20 kg	0.22 lbs. 0.10 kg
C/146120/D	20	3.35 (85)	4.33 (110)	4.33 (110)	19.69 (500)	1.75 lbs. 0.80 kg	0.33 lbs. 0.15kg

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



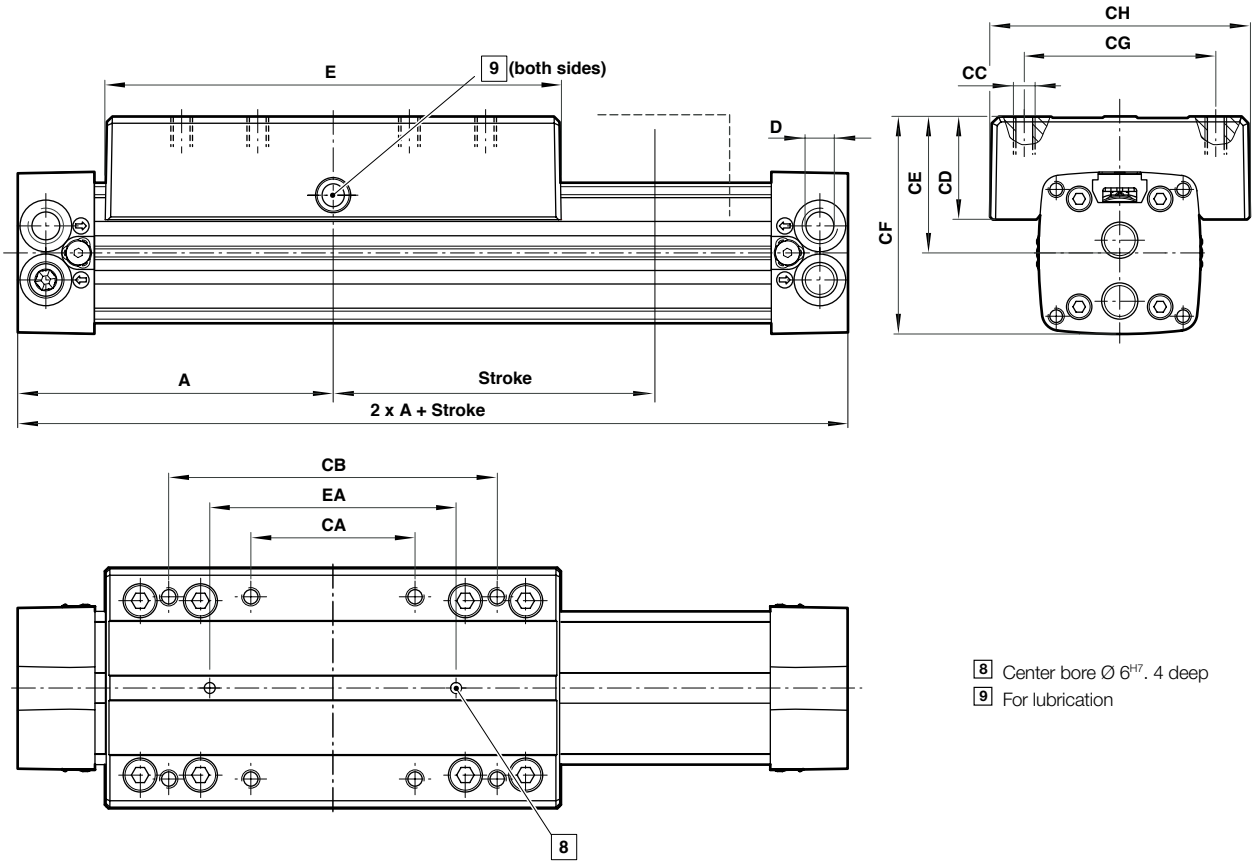
Type	Ø	A	E	E1	X min.=E*	X max.	Weight at 0 mm	Weight per 100 mm
C/146125/MD	25	3.94	5.12	–	5.12	19.69	3.3 lbs.	0.44 lbs.
		(100)	(130)	–	(130)	(500)	1.50 kg	0.20 kg
C/146132/MD	32	4.72	6.30	0.16	6.61	19.69	4.4 lbs.	0.66 lbs.
		(120)	(160)	(4)	(168)	(500)	2.00 kg	0.30 kg
C/146140/MD	40	5.91	8.46	–	8.46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

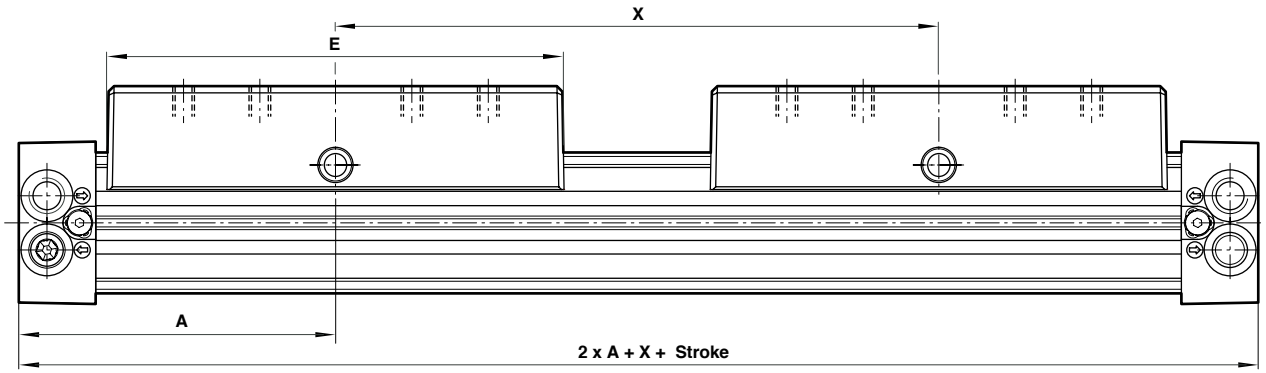
C/146200 – cylinder with precision roller guide (ø 25 to 63 mm)



8 Center bore Ø 6^{H7}. 4 deep
9 For lubrication

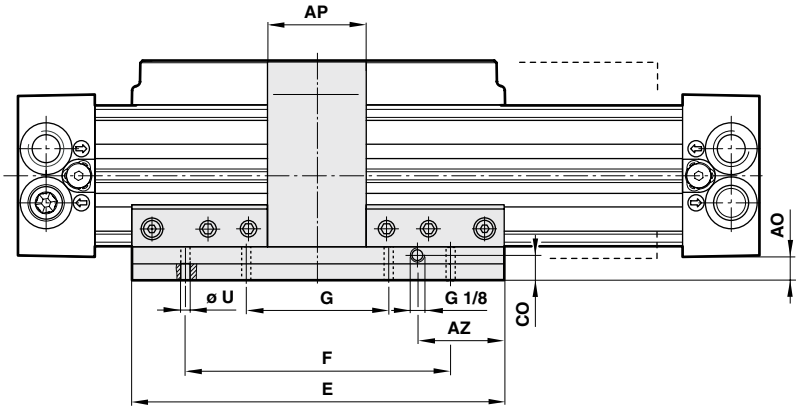
Type	Ø	A	CA	CB	CC	CD	CE	CF	CG	CH	D	E	EA ±0.05	Weight at 0 mm	Weight per 100 mm
C/146225/...	25	3.94 (100)	1.77 (45)	3.54 (90)	M6-14* M6-14*	1.42 (36)	1.65 (42)	2.60 (66)	2.36 (60)	3.35 (85)	1/8 NPT G1/8	5.91 (150)	2.76 (70)	3.3 lbs. 1.50 kg	0.44 lbs. 0.20 kg
C/146232/...	32	4.72 (120)	2.36 (60)	4.72 (120)	M8-16* M8-16*	1.50 (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*	1.65 (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*	1.73 (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*	1.85 (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

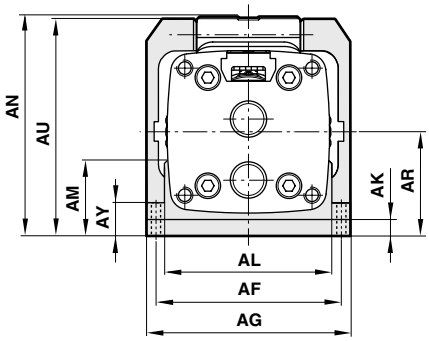
C/146200/MD – cylinder with precision roller guide and double carriages



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

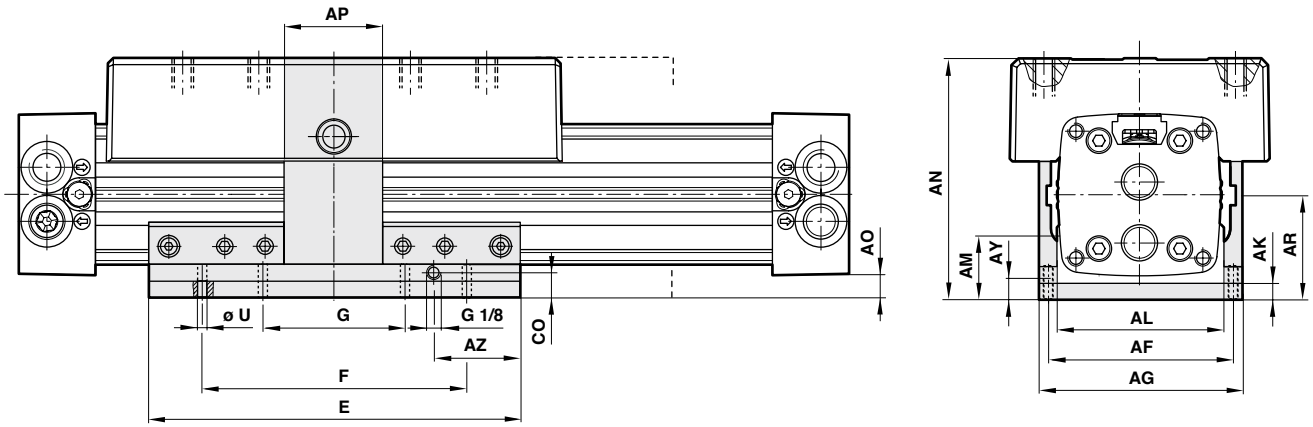
C/146000/L3 – cylinder with active brake (ø 25 ... 63 mm)





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)

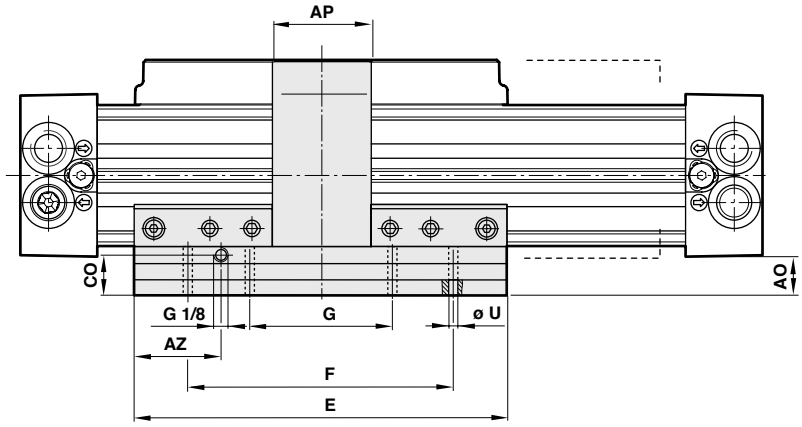


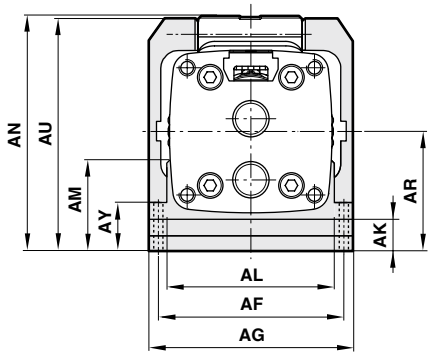
Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146225/L3	25	2.44 (62)	2.95 (75)	0.47 (12)	2.05 (52)	1.12 (28.5)	3.13 (79.5)	0.53 (13.5)	1.57 (40)	1.48 (37.5)	2.87 (73)	0.65 (16.5)	1.18 (30)	0.24 (6)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	3.4 lbs. 1.55 kg	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)

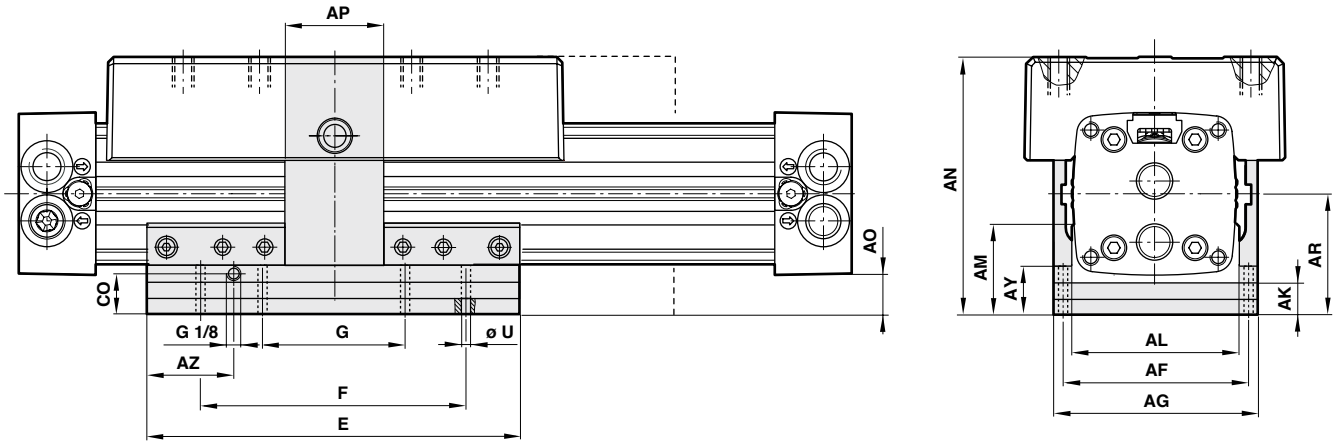
C/146000/L4 – cylinder with passive brake (ø 25 ... 63 mm)





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/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)

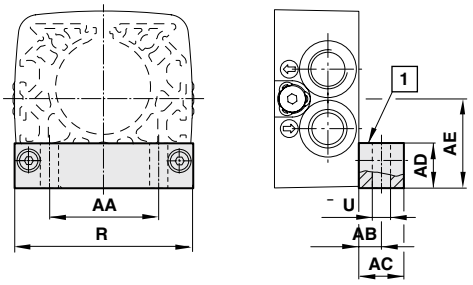


Type	Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U	Weight at 0 mm	Weight per 100 mm
C/146225/L4	25	2.44 (62)	2.95 (75)	0.87 (22)	2.05 (52)	1.52 (38.5)	3.52 (89.5)	0.93 (23.5)	1.57 (40)	1.87 (47.5)	3.27 (83)	1.04 (26.5)	1.18 (30)	0.63 (16)	5.12 (130)	3.54 (90)	1.77 (45)	0.26 (6.6)	4.2 lbs. 1.90 kg	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 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) passive (L4)
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



1 Top

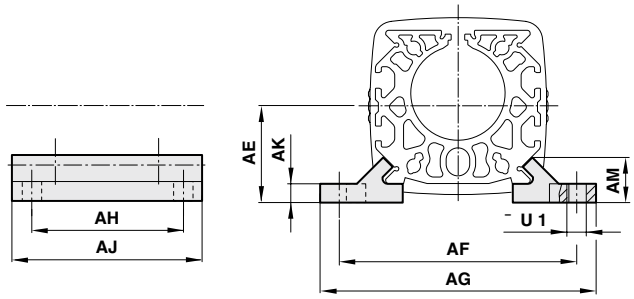
Type*	Ø	AA	AB	AC	AD	AE	R	Ø U	Wt.
QM/146016/21	16	0.63 (16)	0.39 (10)	0.59 (15)	0.12 (3)	0.63 (16)	1.06 (27)	0.22 (5.5)	0.03 lbs. 0.01 kg.
QM/146020/21	20	0.67 (17)	0.20 (5)	0.39 (10)	0.39 (10)	0.85 (21.5)	1.57 (40)	0.22 (5.5)	0.06 lbs. 0.03 kg.
QM/146025/21	25	0.71 (18)	0.28 (7)	0.59 (15)	0.53 (13.5)	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.

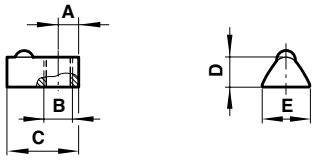
** Each part number includes left and right support brackets.

Groove key for carriage

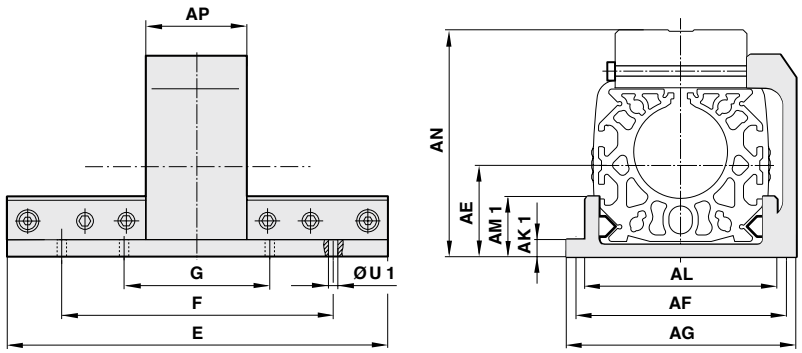
Type	Ø	A	B	C	D	E	Weight
M/P74065	25	0.16 (4)	**M5** **M5**	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.
M/P74065	32	0.16 (4)	**M5** **M5**	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.
M/P74066	40	0.18 (4.5)	**M6** **M6**	0.67 (17)	0.25 (6.25)	0.41 (10.5)	0.04 lbs. 0.02 kg.
M/P41858	50	0.30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



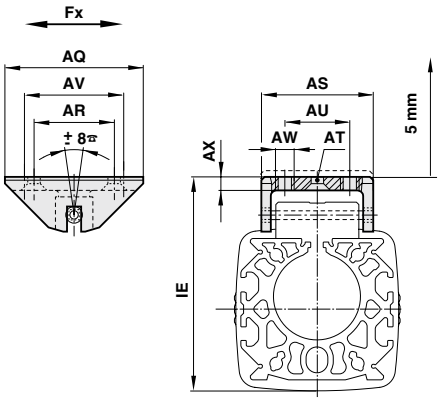
Carriage plate mounting UV



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

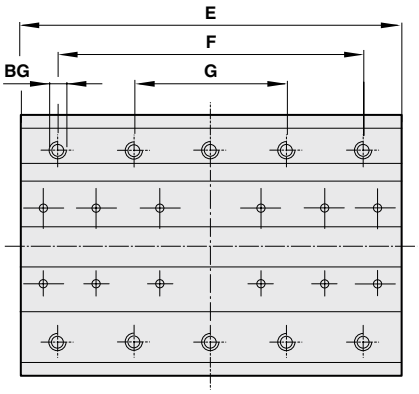
Swinging bridge S
QM/1460XX/37

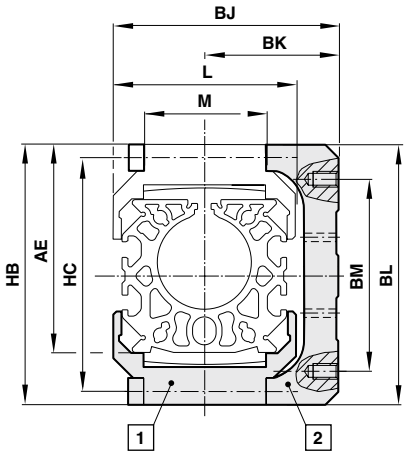
For cylinders with internal guiding only



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

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





1 Secondary carriage – W
2 Side mounting plate – UW

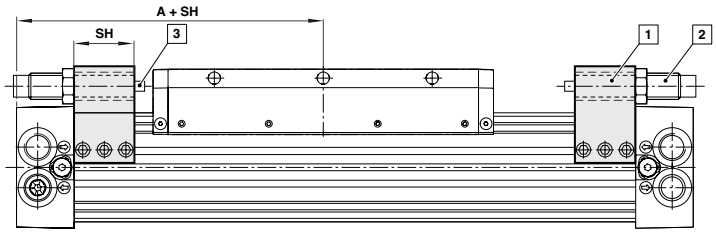
Note: Groove keys are not included in secondary carriage

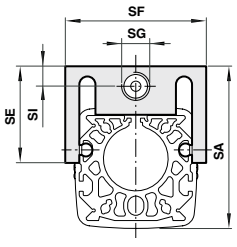
Type (W)	Type (UW)**	Ø	AE	BG	BJ	BK	BL	BM	E	F	G	HB	HC	L	M	W	UW
QM/146120/35	QM/146120/36	20	2.32		2.13	1.30	3.07	2.17	4.33	3.15	1.57	3.11	2.52	1.65	1.06	0.42 lb.	0.55 lbs.
			(59)	M 5 x 10*	(54)	(33)	(78)	(55)	(110)	(80)	(40)	(79)	(64)	(42)	(27)	0.19 kg	0.25 kg
QM/146125/35	QM/146125/36	25	2.66		2.48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





1 Assembly kit
2 Please order shock absorber separately,
3 Reaction forces (Q max)
Ø 25 = 1200 N, Ø 32 = 1500 N,
Ø 40 = 1850 N

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 (16º)	0.22 kg

* Reduction in usable stroke (each end)

Adjustable Stop Assembly Kit

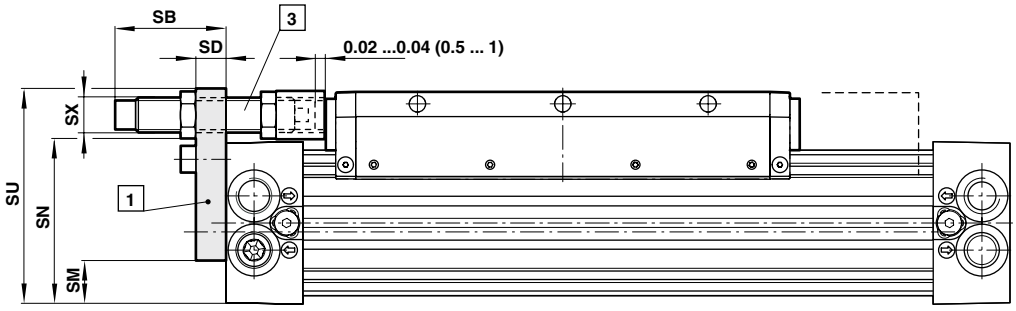
(with shock absorber option)
For C/146100 and C/146200 (25 mm - 40 mm bore)

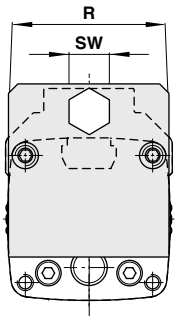
> Flexible assembly kit allows stroke adjustment from either end of the cylinder
> Integral with option for a shock absorber for impact dampening

Contact factory for more information.

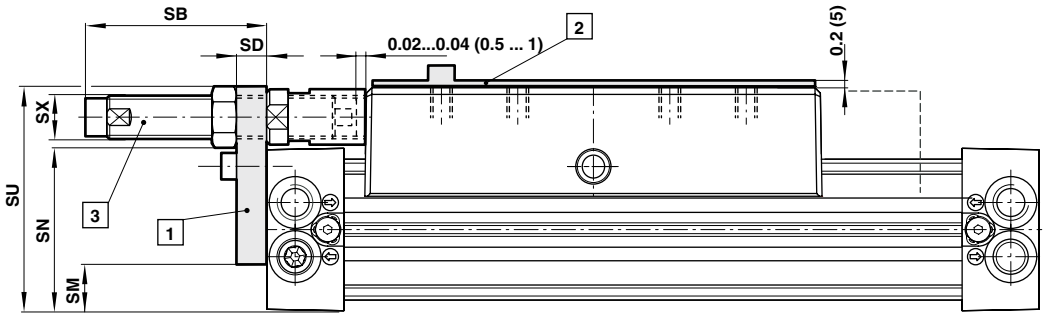
Assembly kit for shock absorber

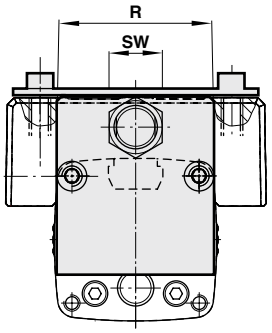
For cylinder series C/146100/M





For cylinder series C/146200/M





1 Assembly kit
2 Plate ø 40 to 63 mm bores only
3 Please order shock absorber separately.

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

Please order shock absorber and plate separately.
Attention: When using M/146200 cylinders (Ø 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

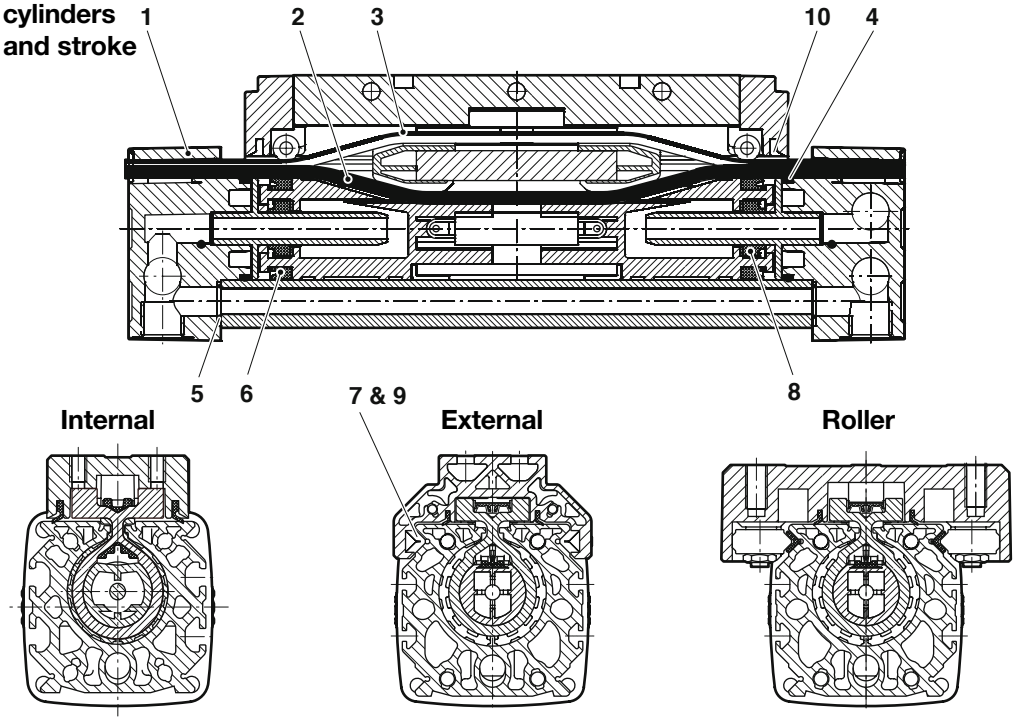
C/146...00/F1
32 mm - 63 mm bore
> Linear position sensor for continuous sensing of cylinder position
> Low profile package for easy system integration

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. C/146225..../M	QM/146025/00	QC/146025/88/*	2 + 3	Seal-/cover strip	1	C/P 40262/*	C/P 74131/*
				4 + 5	O-ring	2		
32	C/146032..../M. C/146232..../M	QM/146032/00	QC/146032/88/*	6	Seal	2	C/P 40344/*	C/P73936/*
				8	Seal	2		
40	C/146040..../M. C/146240..../M	QM/146040/00	QC/146040/88/*	10	Wiper	1	C/P 40263/*	C/P73945/*
					Grease	1		
50	C/146050..../M. C/146250..../M	QM/146050/00	QC/146050/88/*				C/P 40626/*	C/P73946/*
63	C/146063..../M. C/146263..../M	QM/146063/00	QC/146063/88/*				C/P 40626/*	C/P73946/*
80	C/146080..../M	QM/146080/00	QC/146080/88/*				C/P 40715/*	C/P 74232/*

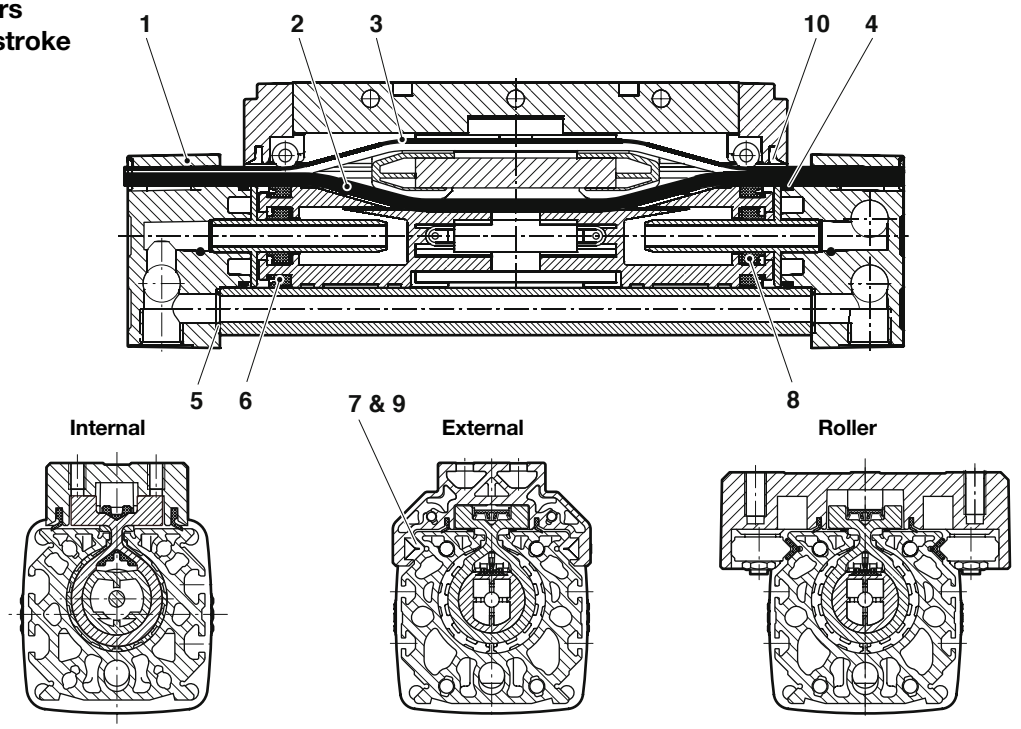
* Insert stroke length in inches
Note: Please quote the cylinder type number when ordering spare parts

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. M/146225..../M	QM/146025/00	QM/146025/88/*	4 + 5	O-ring	2	M/P 40262/*	M/P 74131/*
32	M/146032..../M. M/146232..../M	QM/146032/00	QM/146032/88/*	6	Seal	2	M/P 40344/*	M/P73936/*
40	M/146040..../M. M/146240..../M	QM/146040/00	QM/146040/88/*	8	Seal	2	M/P 40263/*	M/P73945/*
50	M/146050..../M. M/146250..../M	QM/146050/00	QM/146050/88/*	10	Wiper	1	M/P 40626/*	M/P73946/*
63	M/146063..../M. M/146263..../M	QM/146063/00	QM/146063/88/*		Grease	1	M/P 40626/*	M/P73946/*
80	M/146080..../M	QM/146080/00	QM/146080/88/*				M/P 40715/*	M/P 74232/*

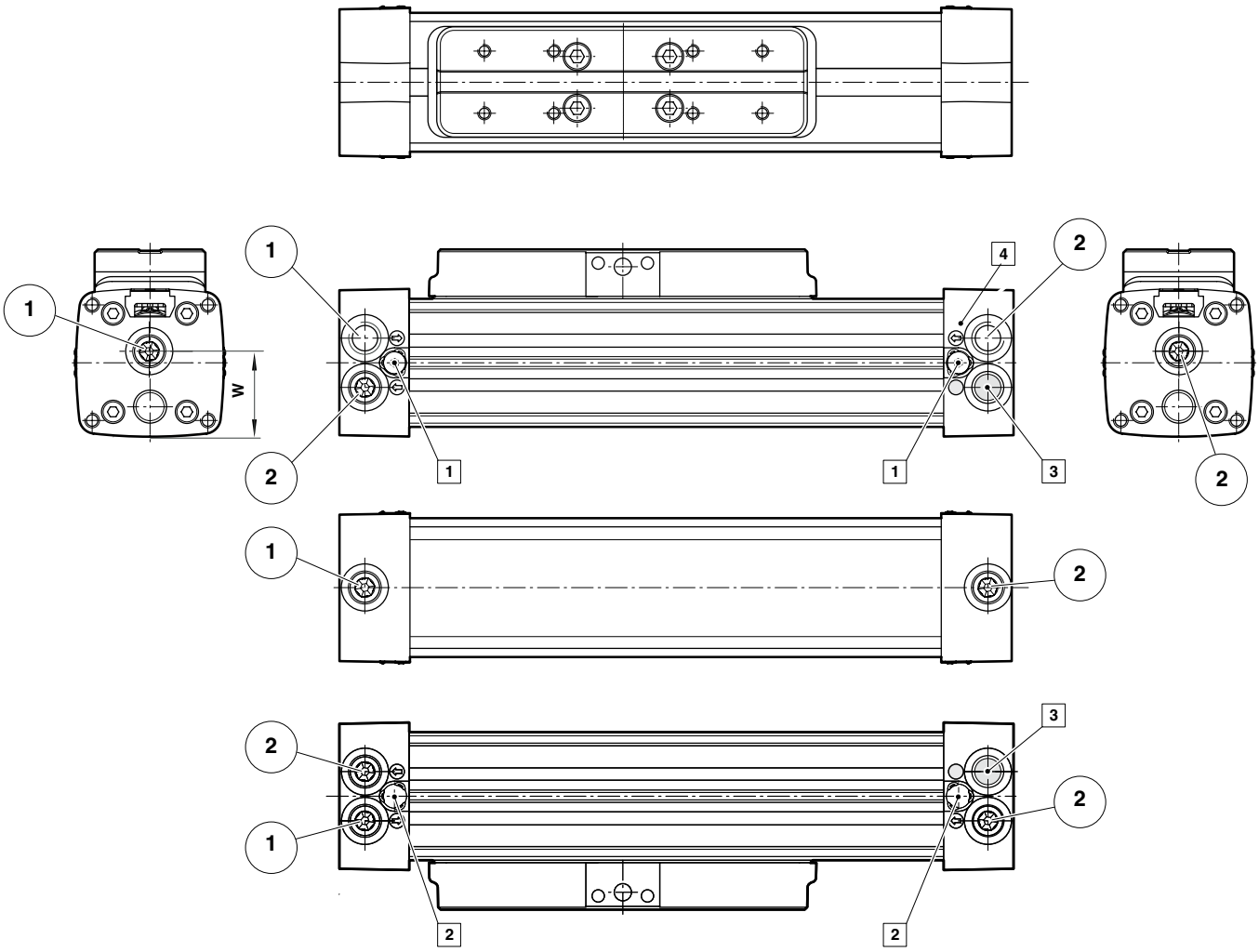
* Insert stroke length in millimeters
Note: Please quote the cylinder type number when ordering spare parts

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	QM1/46125/00	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 40626/*	M/P 74232/*
					Grease	1	M/P 40715/*	M/P 74232/*

* 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. Pressurrize 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