

**New 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

Technical data

Medium:

Compressed air. filtered.
lubricated or non-lubricated

Operation:

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

Models:

C/146000 with internal guide
C/146100 with external adjustable guide
C/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:

16, 20, 25, 32, 40, 50, 63, 80 mm

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: aluminum diecast, molded plastic (Ø 16) and
anodized aluminum (Ø 20 & 80)

Yoke: anodized aluminum, molded plastic (Ø 16 & 20)

Carriage, closer & cover: aluminum diecast

Guiding bridge and profile barrel: anodized aluminum

Seal strip, wiper and piston seal: polyurethane

Cover strip: polyamide

Other seals: nitrile rubber

**Ordering example**

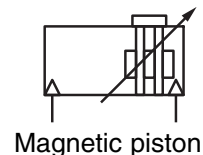
see page 2

Mountings and switches

see page 3 & 4

Cylinder with linear position sensor**C/146000/F1**

see page 2 & 20



Magnetic piston

Symbol	Type (magnetic piston)	Description	Page
	C/146000/M	With internal guide	7
	C/146100/M	With external adjustable guide	9, 10
	C/146200/M	With precision roller guide (ø 25 ... 63 mm)	13
	C/146200/PM	With added caged ball linear motion guide (ø 25 ... 63 mm)	15
	C/146000/MC	With alternative ports (ø 25...63 mm)	29
	C/146100/MC		
	C/146200/MC		
	C/146100/MD	Cylinder with double carriages With external adjustable guide (ø 16 ... 80 mm)	11, 12
	C/146200/MD	With precision roller guide (ø 25 ... 63 mm)	14
	C/146000/L3	Active holding brake (ø 25 ... 63 mm) Applying pressure activates the brake The brake lining is pushed against a stainless steel strip. To release, depressurize.	16, 17
	C/146000/L4	Passive holding brake; (ø 25 ... 63 mm) Applying pressure releases the brake. When the pressure is released the brake lining is pushed against the stainless steel strip by a spring loaded plate.	18, 19
	C/146000/F1	With internal guide and linear position sensor (ø 32 ... 63 mm) Electrical data of linear position sensor: Operating voltage: 10 ... 30 V d.c.. resolution 16 bit. Repeat accuracy 0.006 %. output 4 ... 20 mA. short-circuit protection Linearity 0.05 % of measuring range. protection class IP67	20
	C/146100/F1	With external adjustable guide and linear position sensor (ø 32 ... 63 mm)	21
	C/146200/F1	With precision roller guide and linear position sensor (ø 32 ... 63 mm)	21

Options selector

C / 146 ★★ ★ / MC / ★★ ★ ★

Optional finish	Substitute
Standard non-anodized caps	Blank
Black anodized caps and carriage	A
Black anodized caps and carriage with stainless steel hardware	AS

Note: Options A and AS available only on metric port.

Ports	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)	
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)


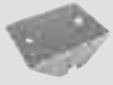




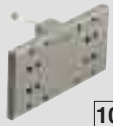




1 Not available on 16, 20, 80 mm bores.
 † Order PM option as 1462**

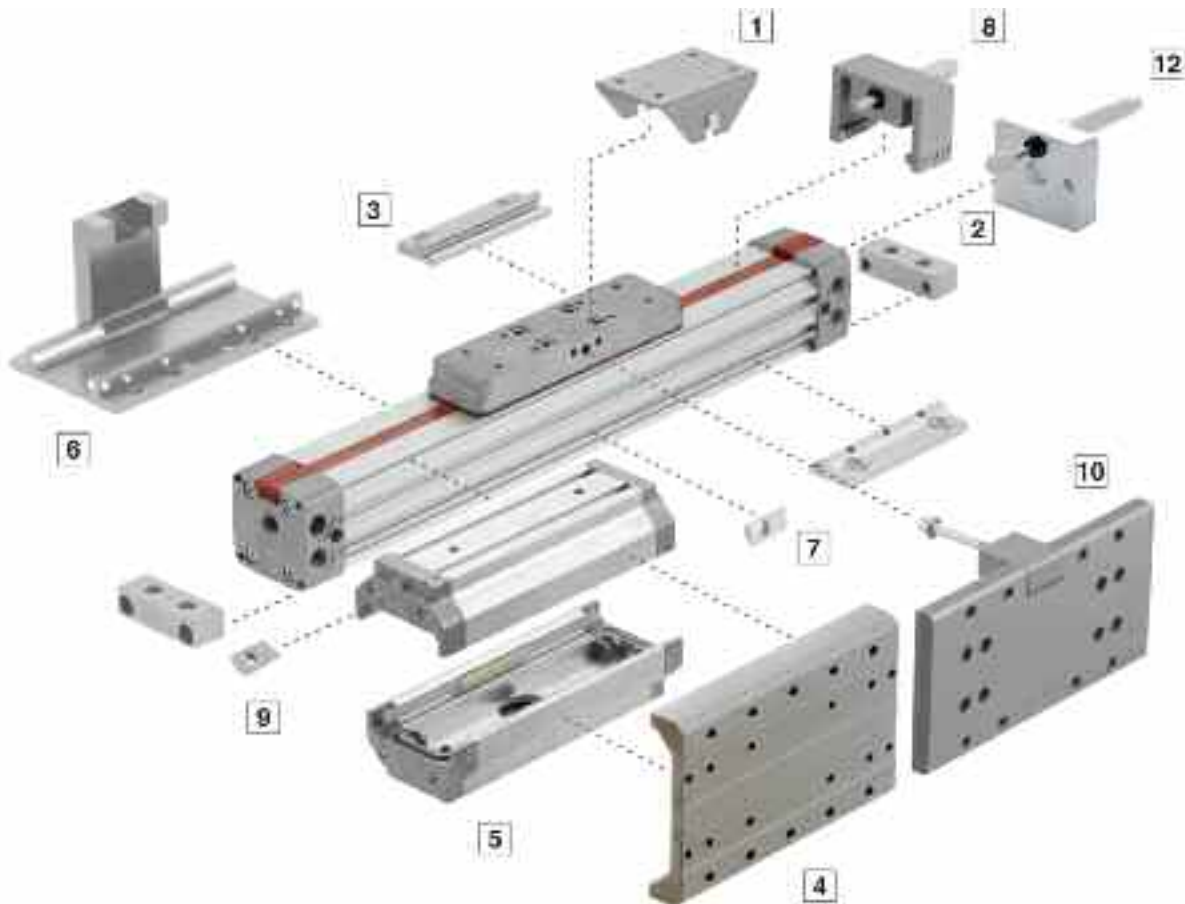
Note: Disregard option positions not used.
 For combinations of cylinder variants consult our Technical Service.
 This options selector explains only the cylinder variants.
 Additional variants/options are not possible.

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 Carriage
	 2	 1	 6	 4	 3	 5
Ø mm	Page 21	Page 23	Page 22	Page 24	Page 21	Page 24
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	
	 10	 8	 12	 7	 9	
Ø mm	Page 16	Page 24	Page 25	Page 22	Page 22	
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	



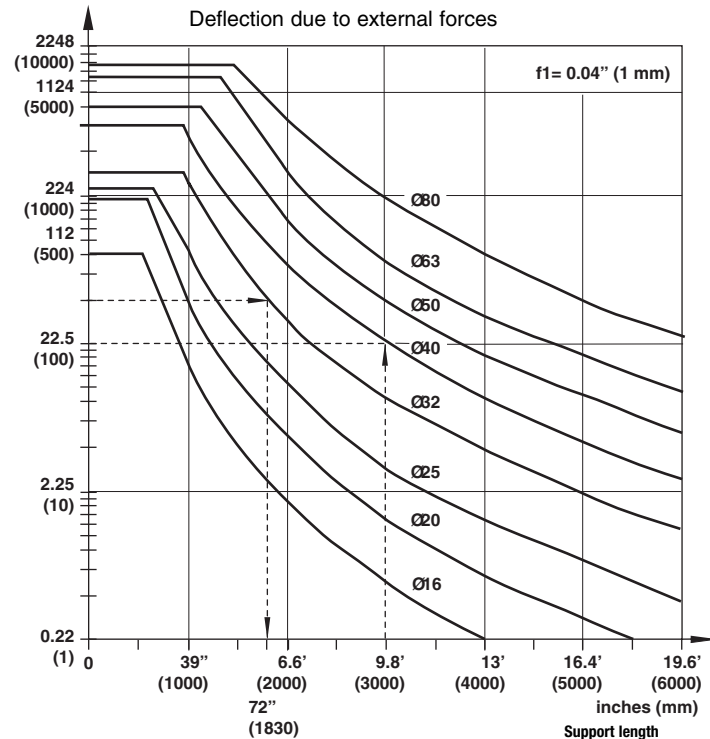
Type	With cable		With connector (M8x1)		Current max.	Temperature °F	LED	Features	Cable Connector length	Cable type	Cable with connector straight	Datasheet
	Reed	Solid state	Voltage V AC	V DC								
M/50/LSU*/V	-	-	10 to 240	10 to 170	180 mA	-4 to +176	•	-	8', 33'	PVC 2 x 0.25	-	N/en 4.3.005
M/50/LSU/5U	-	-	10 to 240	10 to 170	180 mA	-4 to +176	•	-	16'	PUR 2 x 0.25	-	N/en 4.3.005
TM/50/RAU/2S	-	-	10 to 240	10 to 170	180 mA	-4 to +302	-	-	6.5'	Silicone 2 x 0.25	-	N/en 4.3.005
M/50/RAC/5V	-	-	10 to 240	10 to 170	180 mA	-4 to +176	-	Changeover	16'	PVC 3 x 0.25	-	N/en 4.3.005
M/50/LSU/CP	-	-	10 to 60	10 to 75	180 mA	-4 to +176	•	Plug M8x1	16'	PVC 3 x 0.25	M/P73001/5	N/en 4.3.005
-	M/50/EAP*/V	-	-	10 to 30	150 mA	-4 to +176	•	PNP	8', 33'	PVC 3 x 0.25	-	N/en 4.3.007
-	M/50/EAP/CP	-	-	10 to 30	150 mA	-4 to +176	•	PNP, plug M8x1	16'	PVC 3 x 0.25	M/P73001/5	N/en 4.3.007
-	M/50/EAP/CC	-	-	10 to 30	150 mA	-4 to +176	•	PNP, plug M12x1	16'	PVC 3 x 0.25	M/P34614/5	N/en 4.3.007
-	M/50/EAN*/V	-	-	10 to 30	150 mA	-4 to +176	•	NPN	8', 33'	PVC 3 x 0.25	-	N/en 4.3.007
-	M/50/EAN/CP	-	-	10 to 30	150 mA	-4 to +176	•	NPN, plug M8x1	16'	PVC 3 x 0.25	M/P73001/5	N/en 4.3.007

* Please insert cable length

Cushioning Performance

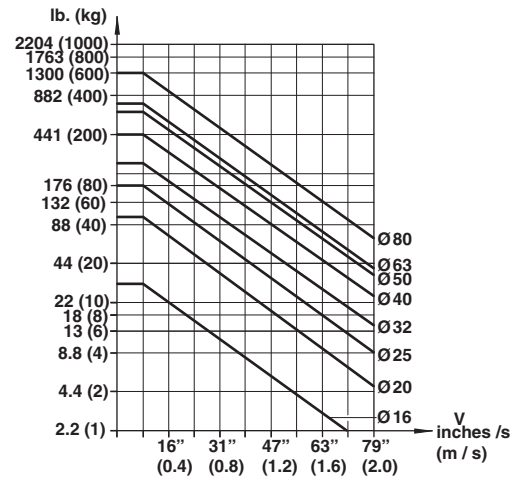
The dynamic energy of a LINTRA® cylinder is caused by direct or partial external loads which must be absorbed by pneumatic cushioning. The cushioning ability depends to a large extent on the pneumatic circuit (e. g. counter pressure, pre-exhaust). The values given in the diagram were tested with an operation 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

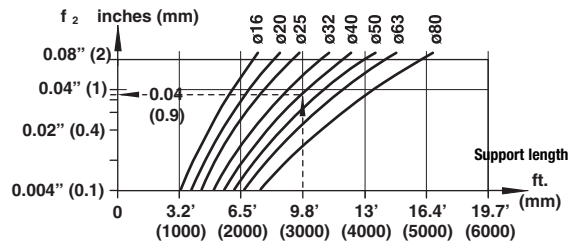


Example:

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: $0.07'' (1.8 \text{ mm}) + 0.04'' (0.9 \text{ mm}) = 0.2'' (2.7 \text{ mm})$

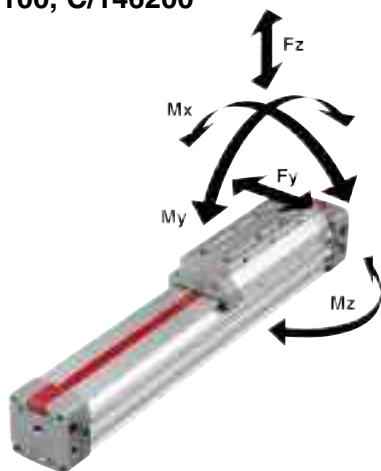
Max. permitted deflection (f1 + f2) $\leq 0.04'' (1 \text{ mm})$
39'' (1000 mm) Stroke

A deflection of more than 0.12" (3 mm) is not permitted.

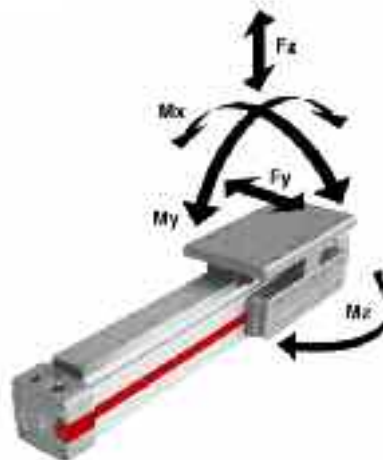
Theoretical forces, air consumption, cushioning length, holding forces

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

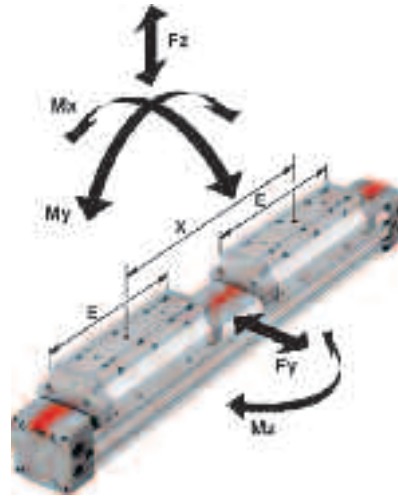
The values given in the table below show the single forces in the directions Fy and Fz and the maximum moments Mx, My and Mz. All values are applicable only for speeds of max. 0.2 m/s.

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:

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

C/146100/MD



External adjustable guide. C/146100/MD												
Ø mm	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)
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 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:

$$\frac{M_x}{M_x \max} + \frac{M_y}{M_y \max} + \frac{M_z}{M_z \max} + \frac{F_y}{F_y \max} + \frac{F_z}{F_z \max} \leq 1$$

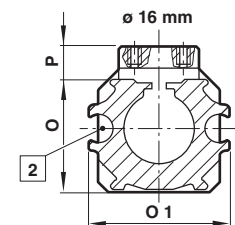
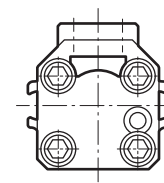
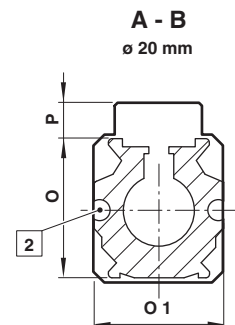
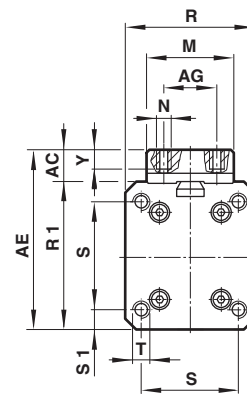
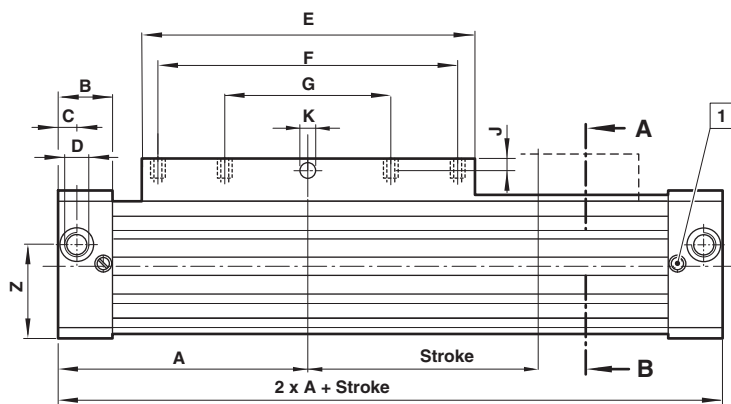
Cylinder with internal guide

C/146000 cylinder \varnothing 20 to 80 mm

M/146000 cylinder \varnothing 16 to 80 mm



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

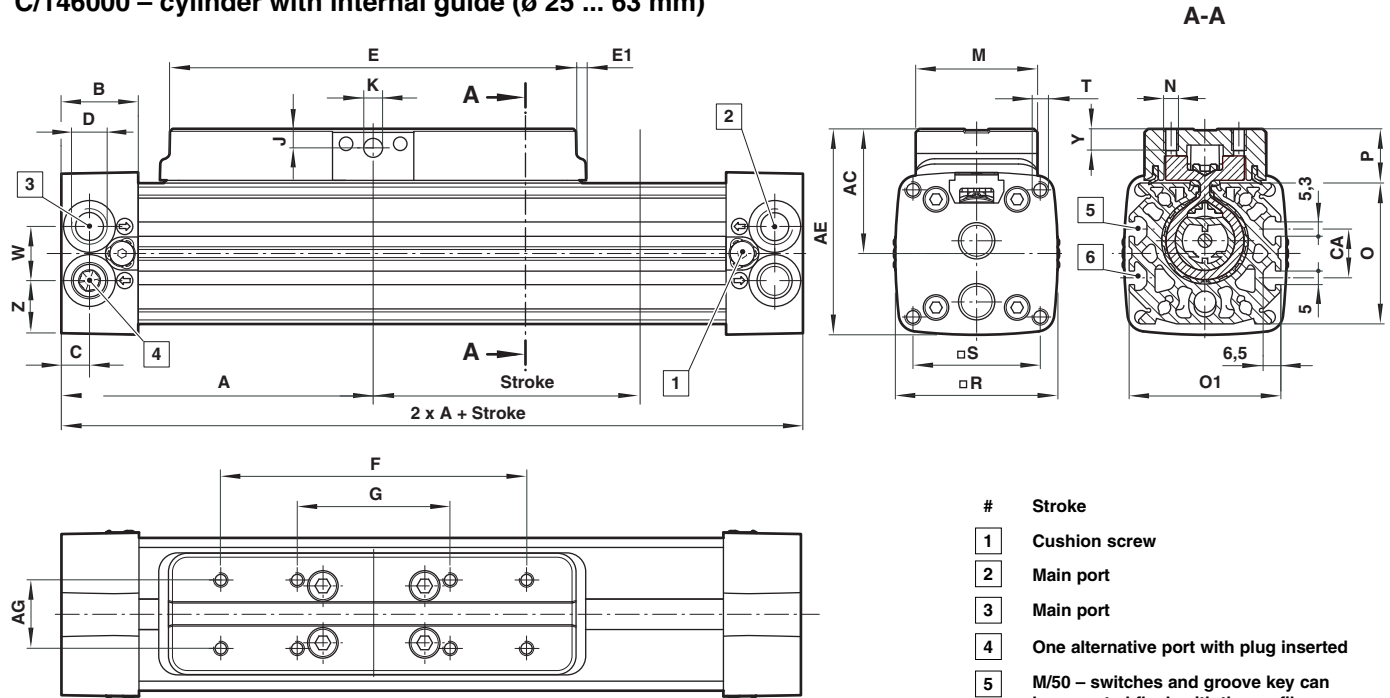


- 1** Cushion screw
- 2** M/50 – switches and groove key can be mounted flush with the profile

Type	\varnothing	A	AC	AE	AG	B	C	D	E	F	G	J	\varnothing 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	\varnothing	M	N	O	O1	P	R	R1	S	S1	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)

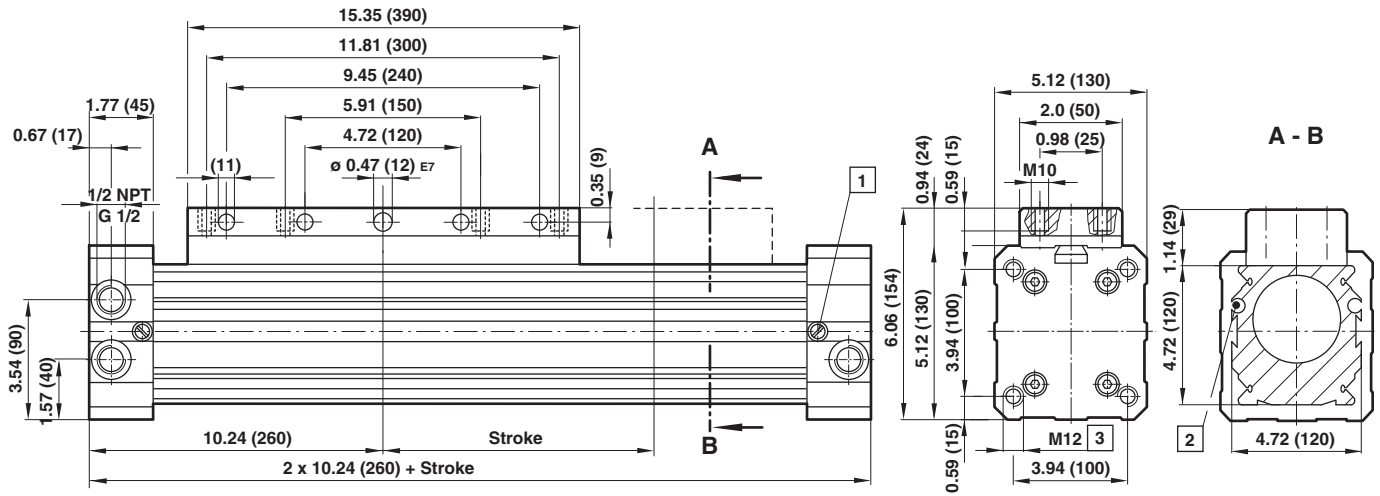


- # Stroke
- 1 Cushion screw
- 2 Main port
- 3 Main port
- 4 One alternative port with plug inserted
- 5 M/50 – switches and groove key can be mounted flush with the profile
- 6 For groove key only

Type	Ø	A	AC	AE	AG	B	C	CA	D	E	E1	F	G	J	Ø K ⁰⁷
C/146025/...	25	3.94 (100)	1.42 (36)	2.20 (56)	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)	3.25 (82.5)	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)



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

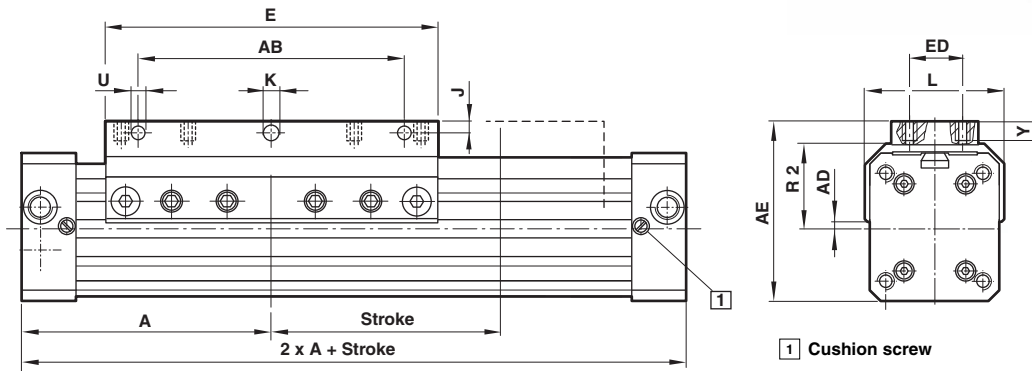
- 1 Cushion screw
- 2 M/50 – switches and groove key can be mounted flush with the profile
- 3 26 deep

Cylinder with external adjustable guide

C/146100 cylinder ø 20 to 80 mm
M/146100 cylinder ø 16 to 80 mm



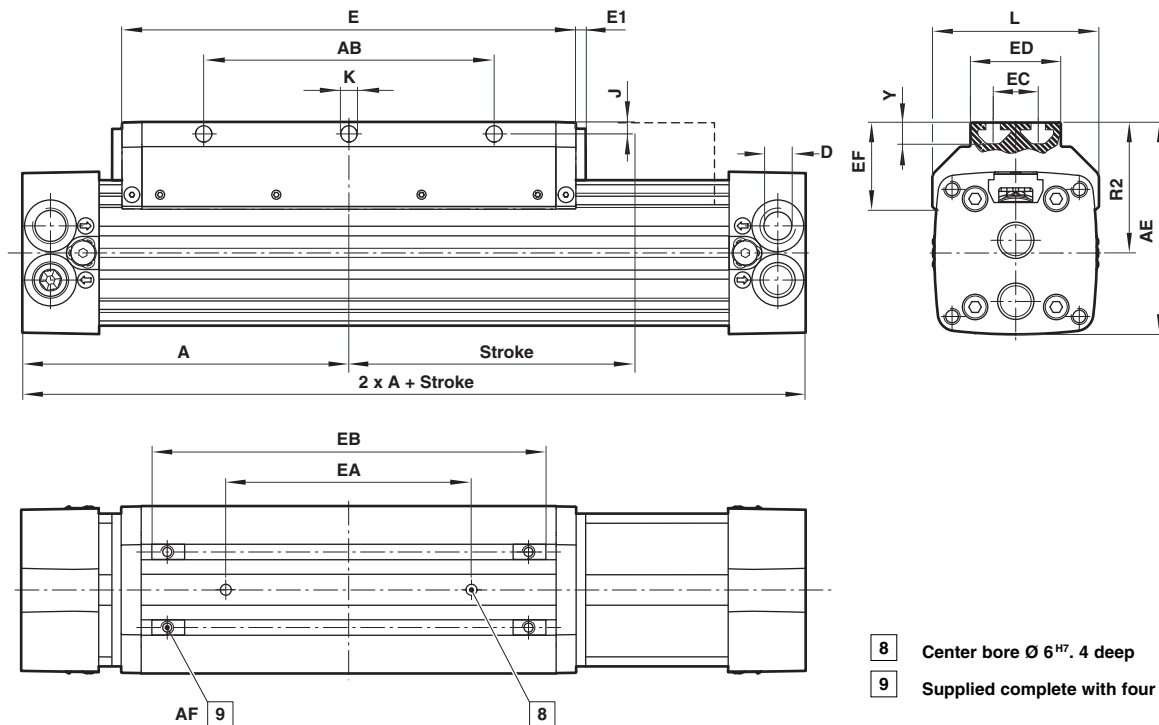
C/146100 – cylinder with external guide (ø 20 mm)
M/146100 – cylinder with external guide (ø 16 & 20 mm)



- 1 Cushion screw

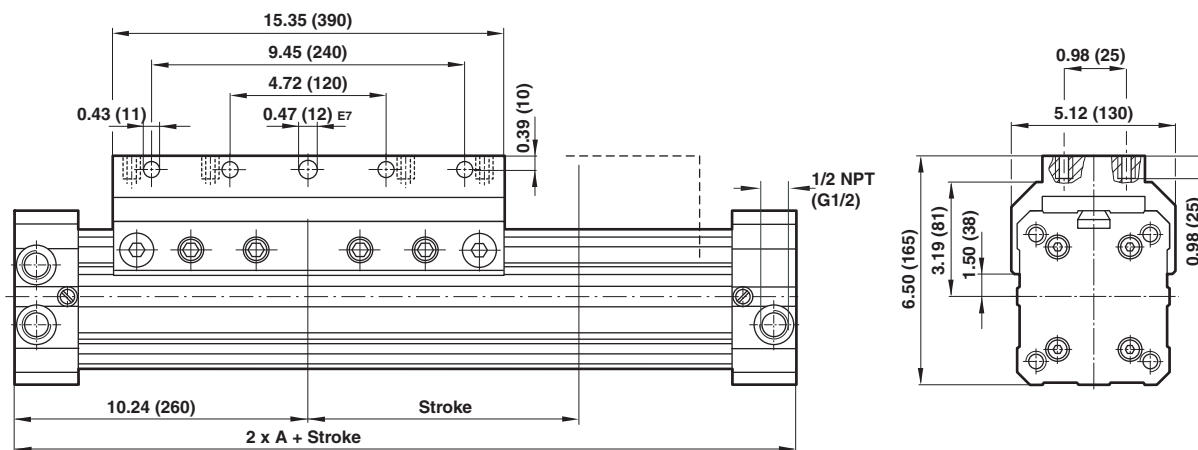
Type	Ø	A	AB	AE	AD	E	M	J	ØK	L	R 2	U	Y	Weight at 0 mm	Weight per 100 mm
M/146116/...	16	2.46	–	1.50	0.30	3.15	0.71	–	–	1.22	0.73	–	0.20	0.31 oz.	0.22 lbs.
		(62.5)	–	(38)	(7.5)	(80)	(18)	–	–	(31)	(18.5)	–	(5)	0.18 kg	0.10 kg
C/146120/...	20	3.35	2.36	2.32	0.26	4.33	1.06	0.30	0.22	1.65	0.94	0.22	0.47	1.3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

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



Type	∅	A	AB	AE	AF	D	E	E1	EA ±0.05	EB	ED	EC	EF	J	∅ 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)	-	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 (∅ 80 mm)



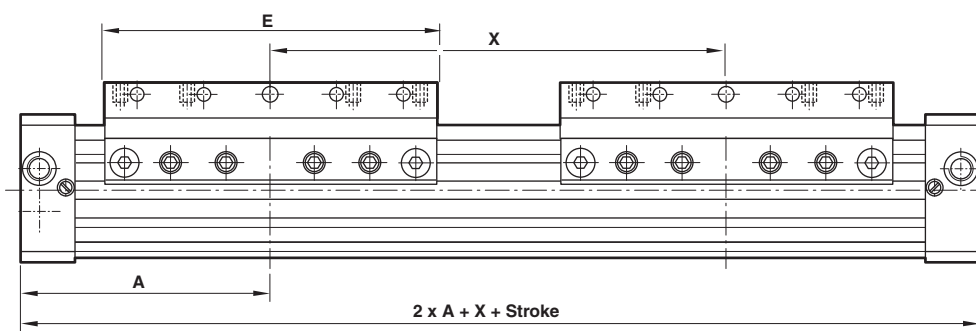
Type	∅	Weight at 0 mm	Weight per 100 mm
C/146180/	80	29.5 lbs. (13.40 kg)	3.3 lbs. (1.50 kg)

Cylinder with external adjustable guide and double carriages

C/146100 cylinder \varnothing 20 to 80 mm
M/146100 cylinder \varnothing 16 to 80 mm

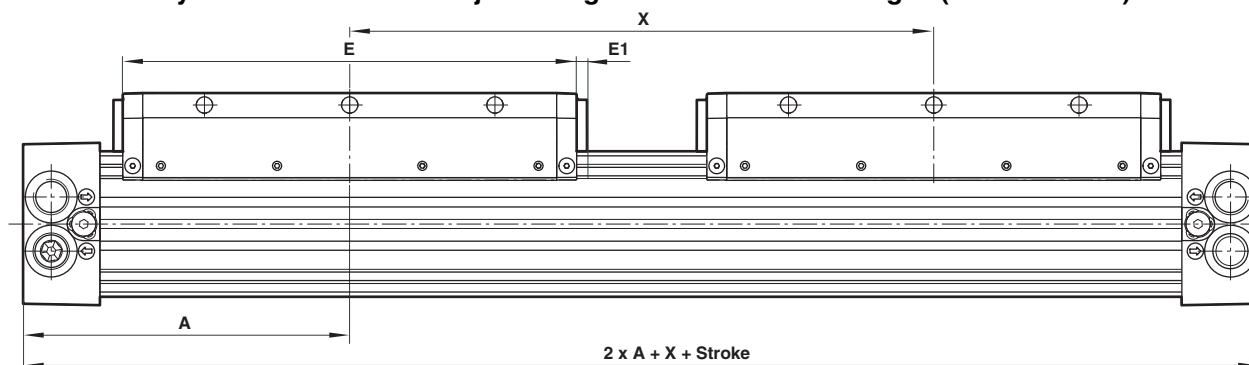


C/146100/MD – cylinder with external adjustable guide and double carriages(\varnothing 20 mm)
M/146100/MD – cylinder with external adjustable guide and double carriages(\varnothing 16 and 20 mm)



Type	\varnothing	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

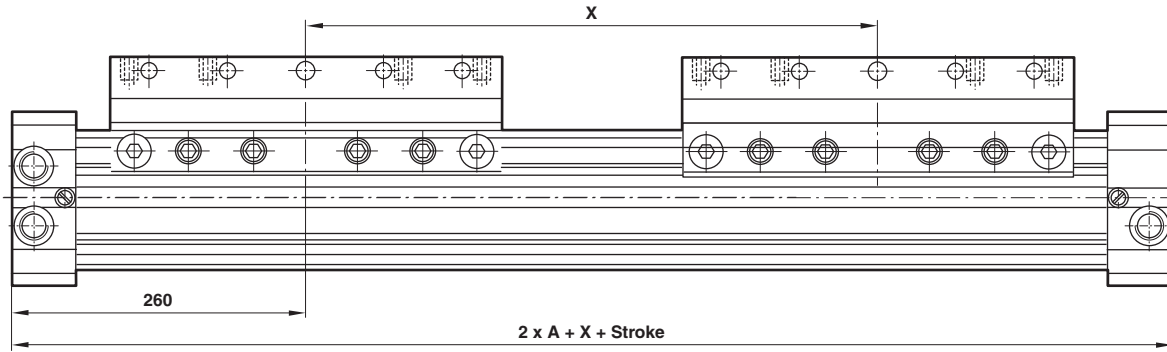
C/146100/MD – cylinder with external adjustable guide and double carriages (\varnothing 25 ... 63 mm)



Type	\varnothing	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

* For 32 mm bore X min = E + (2 x E1)

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



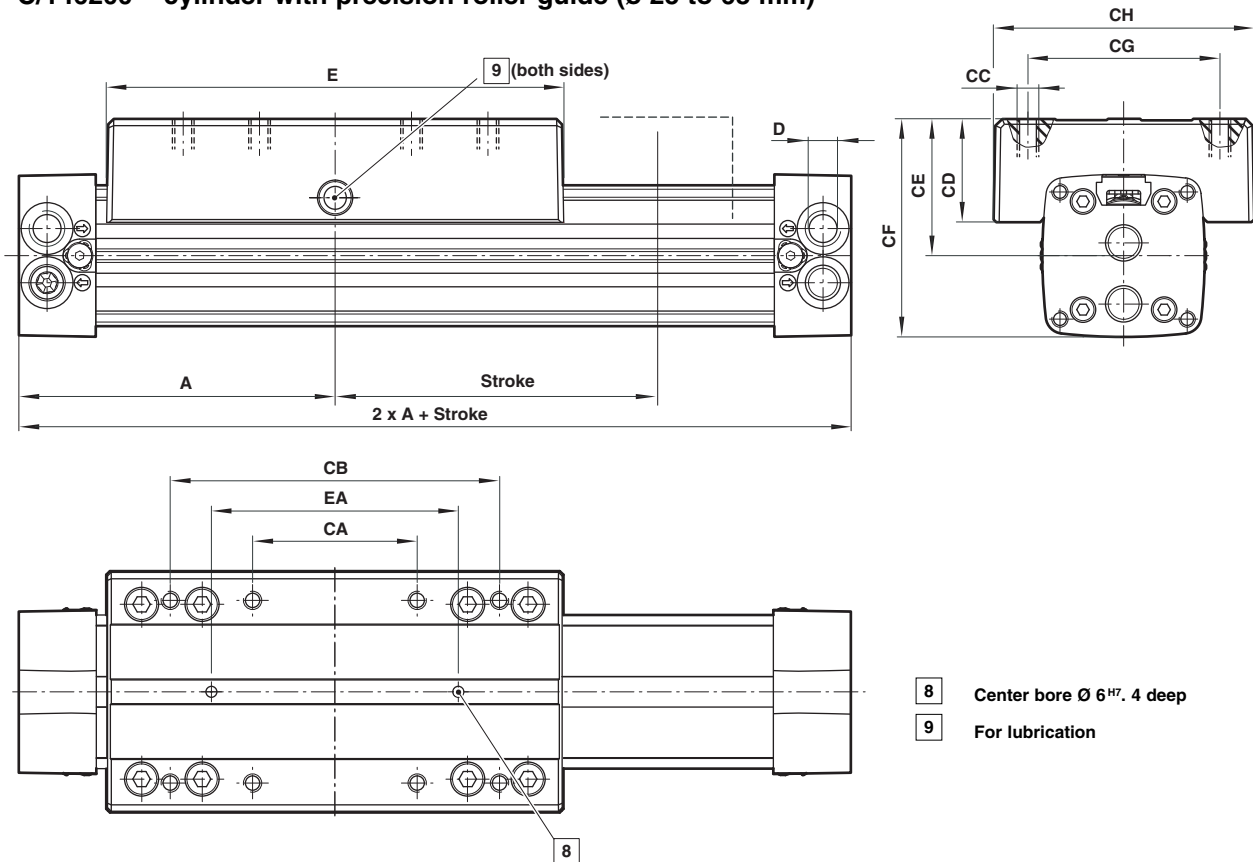
Type	Ø	A	X min.	X max.	Weight at 0 mm	Weight per 100 mm
C/146180/D	80	10.53 (260)	15.4 (390)	19.7 (500)	35 lbs. (15.90 kg)	3.3 lbs. (1.50 kg)

Cylinder with precision roller guide

C/146200 cylinder ø 25 to 63 mm



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



For complete cylinder dimensions see page 10.

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	1.77	3.54	M6-14*	1.42	1.65	2.60	2.36	3.35	1/8 NPT	5.91	2.76	3.3 lbs.	0.44 lbs.
		(100)	(45)	(90)	M6-14*	(36)	(42)	(66)	(60)	(85)	G1/8	(150)	(70)	1.50 kg	0.20 kg
C/146232/...	32	4.72	2.36	4.72	M8-16*	1.50	1.97	3.15	2.95	3.86	1/4 NPT	7.09	3.54	6 lbs.	0.88 lbs.
		(120)	(60)	(120)	M8-16*	(38)	(50)	(80)	(75)	(98)	G1/4	(180)	(90)	2.80 kg	0.40 kg
C/146240/...	40	5.91	3.15	5.91	M8-16*	1.65	2.26	3.74	3.62	4.65	1/4 NPT	8.46	4.53	10 lbs.	1 lbs.
		(150)	(80)	(150)	M8-16*	(42)	(57.5)	(95)	(92)	(118)	G1/4	(215)	(115)	4.50 kg	0.45 kg
C/146250/...	50	7.09	3.54	7.09	M10-20*	1.73	2.64	4.39	3.94	5.20	3/8 NPT	9.84	5.31	18 lbs.	2 lbs.
		(180)	(90)	(180)	M10-20*	(44)	(67)	(111.5)	(100)	(132)	G3/8	(250)	(135)	8.20 kg	0.90 kg
C/146263/...	63	8.46	4.72	9.45	M10-20*	1.85	2.93	5.00	4.33	5.51	1/2 NPT	12.60	7.87	28 lbs.	2.2 lbs.
		(215)	(120)	(240)	M10-20*	(47)	(74.5)	(127)	(110)	(140)	G1/2	(320)	(200)	12.50 kg	1.00 kg

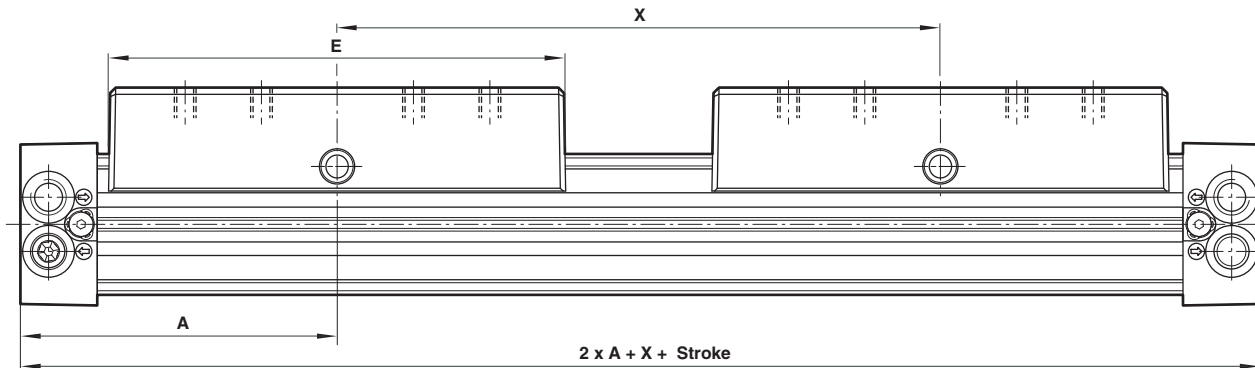
*1 deep

Cylinder with precision roller guide and double carriages

C/146200/MD
ø 25 to 63 mm



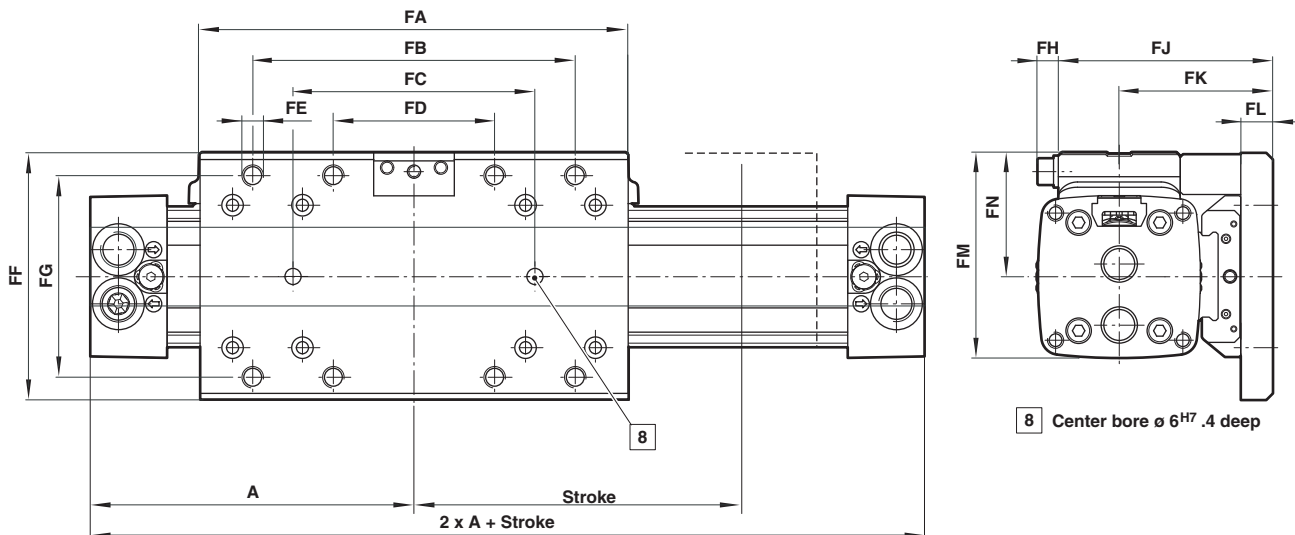
C/146200/MD – cylinder with precision roller guide and double carriages



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

Cylinder with added caged ball linear motion guide

C/146200/PM
 ø 25 to 63 mm



8 Center bore ø 6^{H7}.4 deep

Type	Ø	A	FA	FB	FC ±0.05	FD	FE	FF	FG	FH	FJ	FK	FL	FM	FN	Weight at 0 mm	Weight per 100 mm
C/146225/PM/..	25	3.94 (100)	5.12 (130)	3.54 (90)	2.76 (70)	1.77 (45)	M6	2.83 (72)	2.36 (60)	0.28 (7)	2.40 (61)	1.77 (45)	0.39 (10)	2.36 (60)	1.42 (36)	4 lbs. 1.90 kg	0.88 lbs. 0.40 kg
C/146232/PM/..	32	4.72 (120)	6.30 (160)	4.72 (120)	3.54 (90)	2.36 (60)	M8	3.62 (92)	2.95 (75)	0.30 (7.5)	3.13 (79.5)	2.24 (57)	0.47 (12)	2.99 (76)	1.81 (46)	6.4 lbs. 2.90 kg	1.1 lbs. 0.50 kg
C/146240/PM/..	40	5.91 (150)	8.46 (215)	5.91 (150)	4.53 (115)	3.15 (80)	M8	4.13 (105)	3.62 (92)	0.30 (7.5)	3.37 (85.5)	2.48 (63)	0.47 (12)	3.52 (89.5)	2.07 (52.5)	10.4 lbs. 4.70 kg	1.4 lbs. 0.65 kg
C/146250/PM/..	50	7.09 (180)	9.84 (250)	7.09 (180)	5.31 (135)	3.54 (90)	M10	5.16 (131)	3.94 (100)	0.37 (9.5)	4.29 (109)	3.31 (84)	0.59 (15)	4.33 (110)	2.58 (65.5)	18.7 lbs. 8.50 kg	2.5 lbs. 1.10 kg
C/146263/PM/..	63	8.46 (215)	12.60 (320)	9.45 (240)	3.94 (100)	4.72 (120)	M10	5.51 (140)	4.33 (110)	0.37 (9.5)	4.55 (115.5)	3.56 (90.5)	0.59 (15)	4.92 (125)	2.95 (75)	24 lbs. 11.0 kg	3 lbs. 1.40 kg

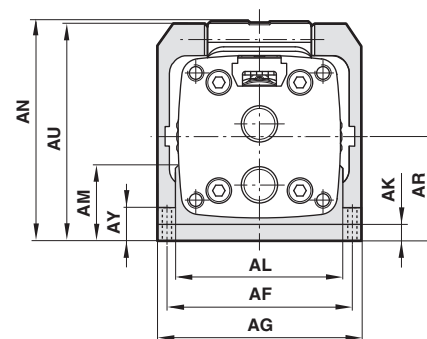
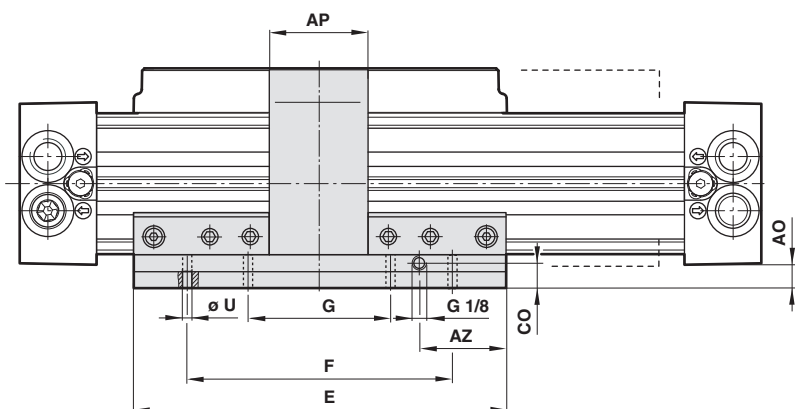
Note: stroke max. ø 25 = 900. ø 32 & 40 = 1500. ø 50 & 63 = 2600

Cylinder with active brake

C/146000/L3
 ø 25 to 63 mm

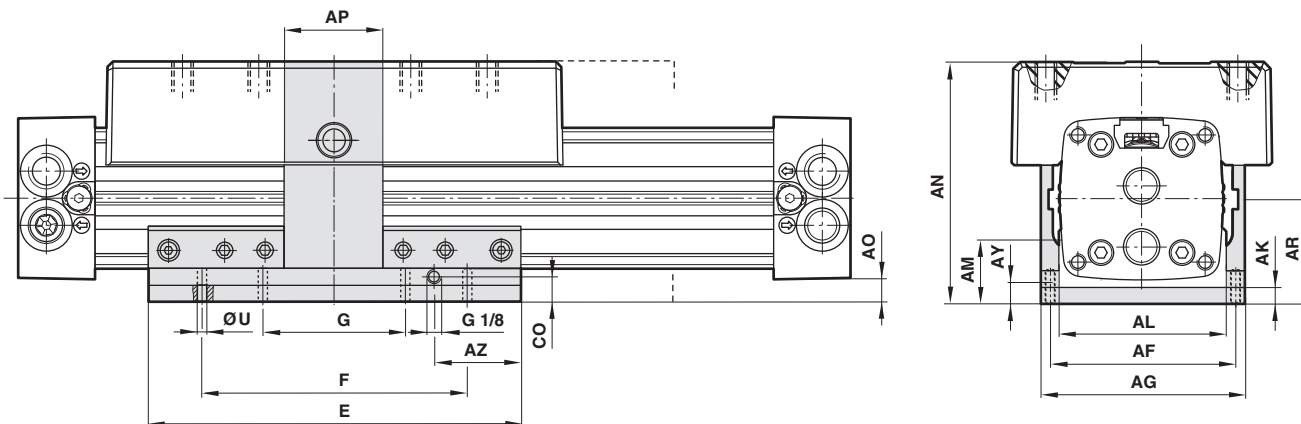


C/146000/L3 – cylinder with active brake (ø 25 ... 63 mm)



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)



Missing cylinder dimensions see pages 10 and 13.

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	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.	0.44 lbs.
C/146232/L3 32	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.	0.75 lbs.
C/146240/L3 40	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.	1.1 lbs.
C/146250/L3 50	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.	1.7 lbs.
C/146263/L3 63	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.	2.2 lbs.

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

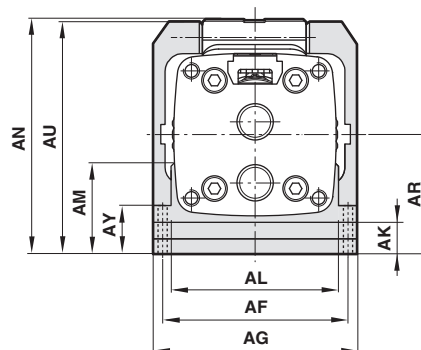
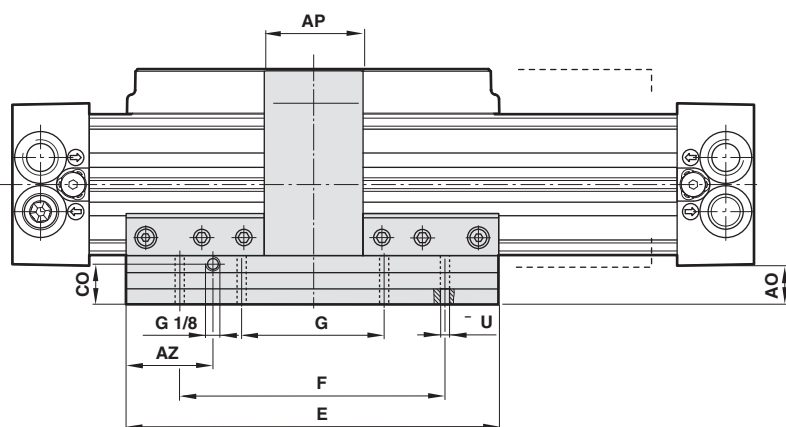
Cylinder Ø mm	Theoretical forces lbf (N) at 87 psi (6 bar)	Air consumption ft ³ /in. (l/cm) of stroke at 87 psi (6 bar)	Cushioning length inches (mm)	Holding forces lbf. (N) of brake (on dry braking surface) active (L3) at 87 psi (6 bar)
25	66 (294)	0.003 (0.035)	1 (26)	112 (5000)
32	108 (482)	0.005 (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)

Cylinder with passive brake

C/146000/L4
 ø 25 to 63 mm

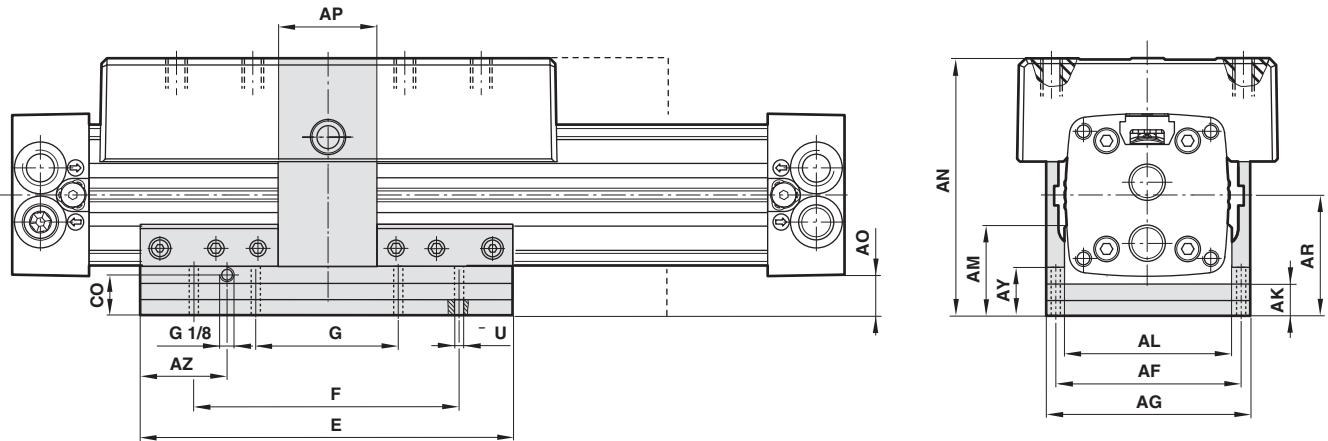


C/146000/L4 – cylinder with passive brake (ø 25 ... 63 mm)



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

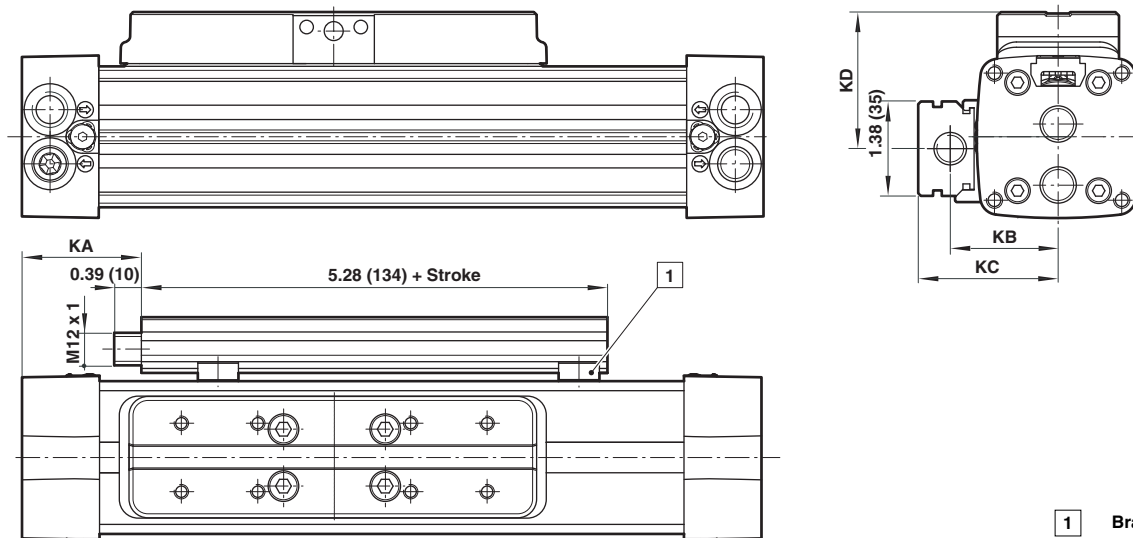
Cylinder Ø mm	Theoretical forces lbf (N) at 87 psi (6 bar)	Air consumption ft ³ /in. (l/cm) of stroke at 87 psi (6 bar)	Cushioning length inches (mm)	Holding forces lbf. (N) of brake (on dry braking surface) passive (L4)
25	66 (294)	0.003 (0.035)	1 (26)	50 (220)
32	108 (482)	0.005 (0.056)	1.4 (35)	84 (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)

Cylinder with linear sensor and internal guide

C/146000/F1
 ø 32 to 63 mm

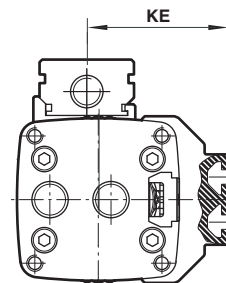
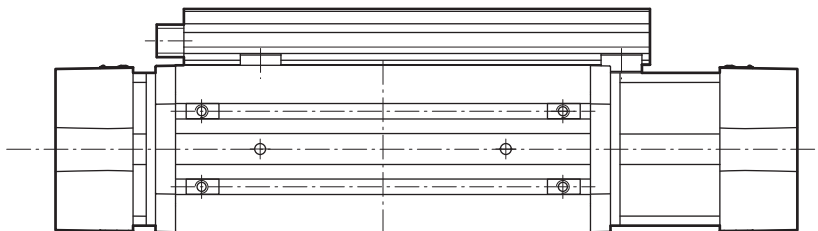


C/146000/F1 – cylinder with linear sensor and internal guide

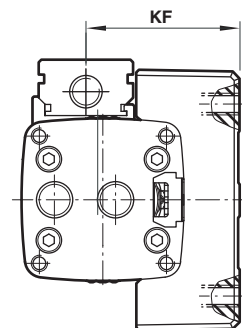
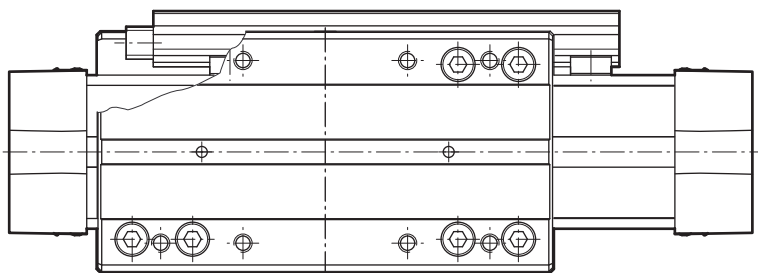


1 Bracket

C/146100/F1 – cylinder with linear sensor and external adjustable guide

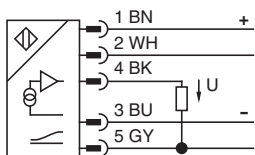


C/146200/F1 – cylinder with linear sensor and precision roller guide



Type	Ø	KA	KB	KC	KD	KE	KF
C/146.32/F1/...	32	1.73 (44)	1.57 (40)	2.03 (51.5)	1.99 (50.5)	2.20 (56)	2.22 (56.5)
C/146.40/F1/...	40	2.91 (74)	1.81 (46)	2.26 (57.5)	2.22 (56.5)	2.52 (64)	2.46 (62.5)
C/146.50/F1/...	50	4.09 (104)	2.13 (54)	2.58 (65.5)	2.70 (68.5)	2.95 (75)	2.76 (70)
C/146.63/F1/...	63	5.47 (139)	2.40 (61)	2.83 (72)	2.66 (67.5)	3.13 (79.5)	2.74 (69.5)

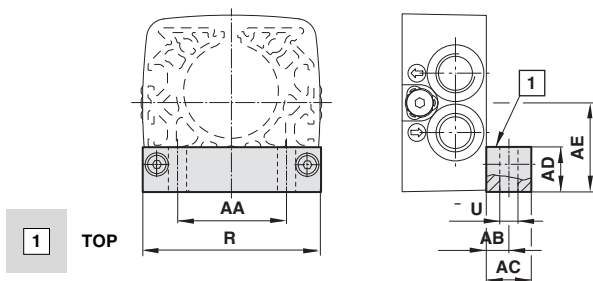
Connector details



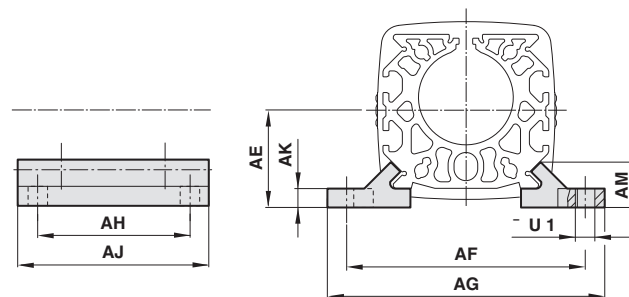
Pin- No.	Colour	Function
1	Brown	+
2	White	Program input
3	Blue	-
4	Black	Output +
5	Grey	Output -

Electrical data of linear position sensor:
 Operating voltage: 10 ... 30 V d.c., resolution 16 bit.
 Repeat accuracy 0.006 % output 4 ... 20 mA, short-circuit protection
 Linearity 0.05 % of measuring range, protection class IP67

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



Center support V
QM/1460XX/32



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)	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)	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)	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)	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)	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 a Center support mounting the word **TOP** should be visible on the top face of the mount. This will change the "AE" dimension as shown below.

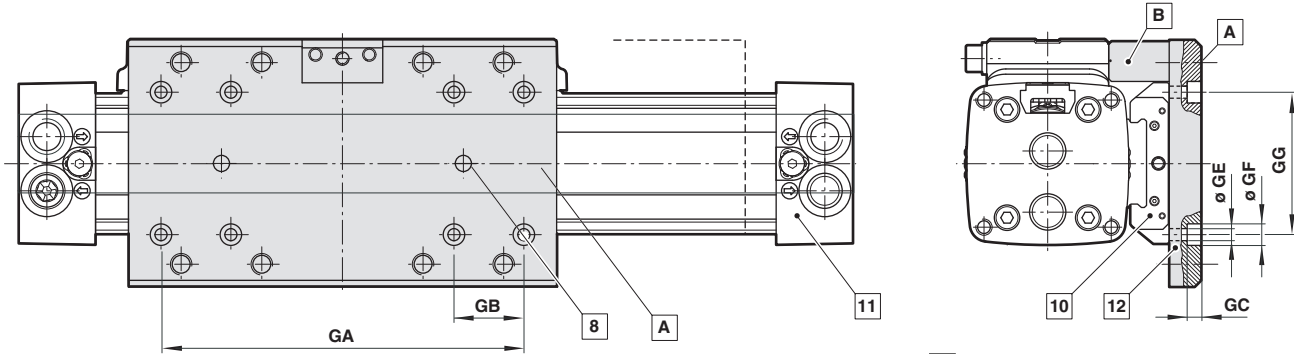
Type*	Ø	AE
QM/146025/21	25	1.04 (26.5)
QM/146032/21	32	1.30 (33)
QM/146040/21	40	1.59 (40.5)
QM/146050/21	50	1.93 (49)
QM/146063/21	63	2.26 (57.5)

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

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.

QC/146200/PM/70 – assembly kit for caged ball linear motion guide (ø 25 ... 63 mm)



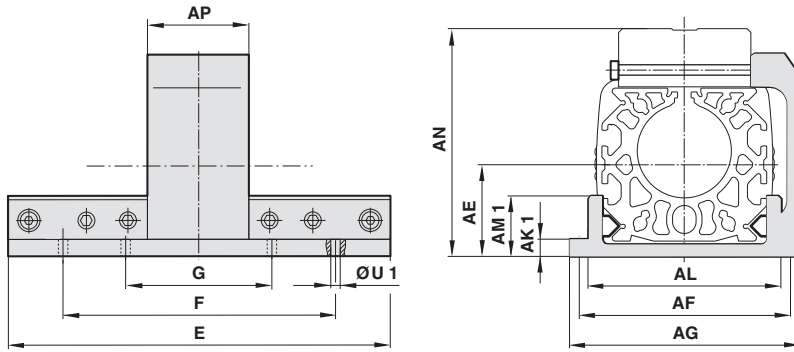
- Kit consists of:
- A** Adapter plate
 - B** Driver and mounting hardware

- 11** Standard cylinder C/146000
- 12** Assembly kit for caged ball linear motion guide

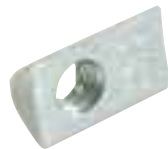
- 8** Center bore $\text{Ø } 6^{\text{H7}}$, 4 deep
- 10** Not included: Recommended supplier/series for caged ball linear motion guide
 - Cylinder $\text{Ø } 25$
THK/SHW12CAM
 - Cylinder $\text{Ø } 32$ and 40
IKO/LWFF33
NSK/LW17ELZ
THK/SHW17CAM
 - Cylinder $\text{Ø } 50$ & 63
IKO/LWFF42
NSK/LW27ELZ
THK/SHW27CA

Type	Ø	GA	GB	GC	Ø GE	Ø GF	GG	Weight
QM/146225/P/70	25	4.37 (111)	0.71 (18)	0.20 (5)	0.13 (3.4)	0.26 (6.5)	1.38 (35)	0.62 lbs. 0.28 kg.
QM/146232/P/70	32	5.31 (135)	1.02 (26)	0.18 (4.5)	0.18 (4.5)	0.31 (8)	2.09 (53)	1.04 lbs. 0.47 kg.
QM/146240/P/70	40	6.97 (177)	1.02 (26)	0.18 (4.5)	0.18 (4.5)	0.31 (8)	2.09 (53)	1.04 lbs. 0.47 kg.
QM/146250/P/70	50	8.46 (215)	1.57 (40)	0.26 (6.5)	0.26 (6.6)	0.43 (11)	2.76 (70)	2.91 lbs. 1.32 kg.
QM/146263/P/70	63	11.22 (285)	1.57 (40)	0.26 (6.5)	0.26 (6.6)	0.43 (11)	2.76 (70)	3.97 lbs. 1.80 kg.

Carriage plate mounting UV

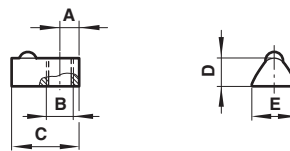


Type	Ø	AE	AF	AG	AK1	AL	AM1	AN	AP	E	F	G	ØU1	Wt
QM/146016/34	16	0.63 (16)	1.57 (40)	1.97 (50)	0.14 (3.5)	1.22 (31)	0.33 (8.5)	1.59 (40.5)	1.18 (30)	3.15 (80)	2.36 (60)	0.22 (5.5)	0.22	0.22 lbs. 0.1 kg.
QM/146020/34	20	0.85 (21.5)	2.05 (52)	2.44 (62)	0.22 (5.5)	1.65 (42)	0.57 (14.5)	2.20 (56)	1.42 (36)	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.



Groove key for carriage

Type	Ø	A	B	C	D	E	Weight
M/P74065	25	0.16 (4)	M5	0.47 (12)	0.17 (4.25)	0.31 (8)	0.02 lbs. 0.01 kg.
M/P74065	32	0.16 (4)	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	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	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	0.91 (23)	0.30 (7.5)	0.53 (13.5)	0.07 lbs. 0.03 kg.

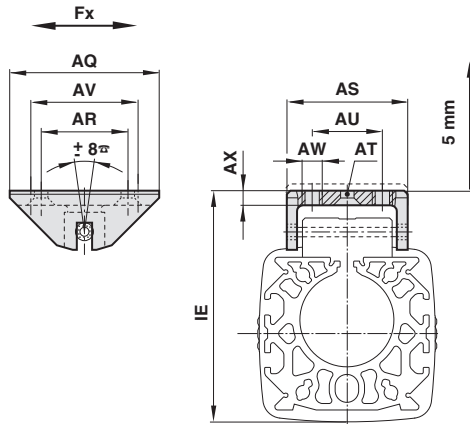


Groove key for profile barrel

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

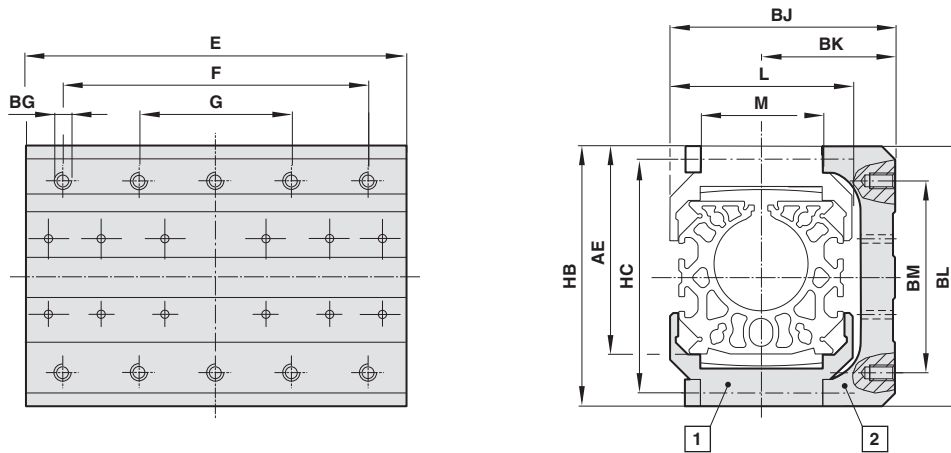
Swinging bridge S
QM/1460XX/37

For cylinders with internal guiding only



Type	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 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 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 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 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 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 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 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 M8	0.26 (6.5)	168.5+5	540 lbf. 2400 N	1.1 lbs. 0.5 kg.

Secondary carriage W QM/461XX/35
Side mounting plate UW QM/461XX/36



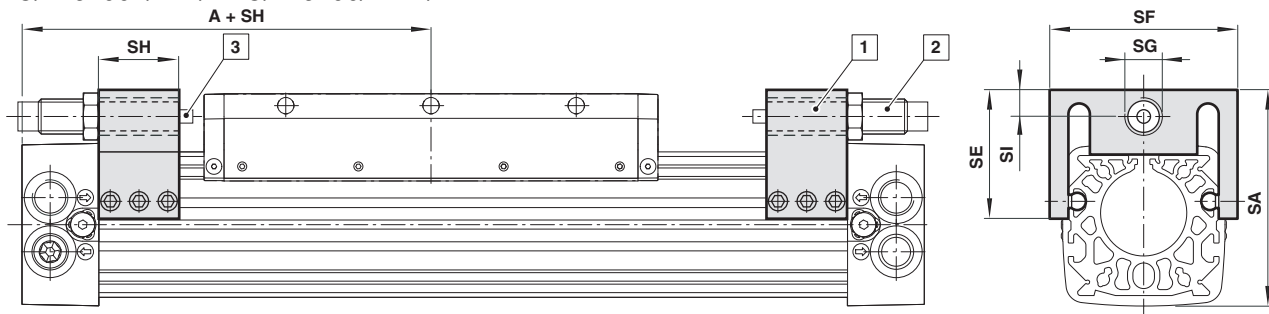
- 1 Secondary carriage – W
- 2 Side mounting plate – UW

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

Adjustable stop

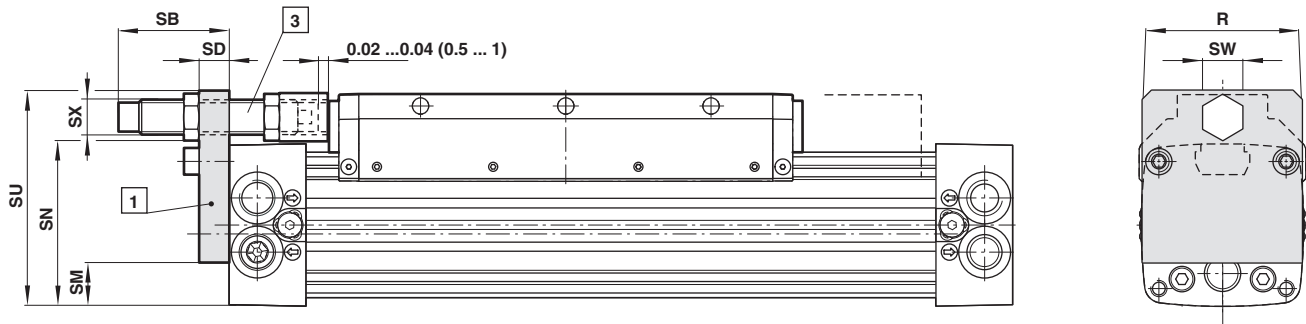
For C/146100. /... ..M. C/146200/.... ..M/



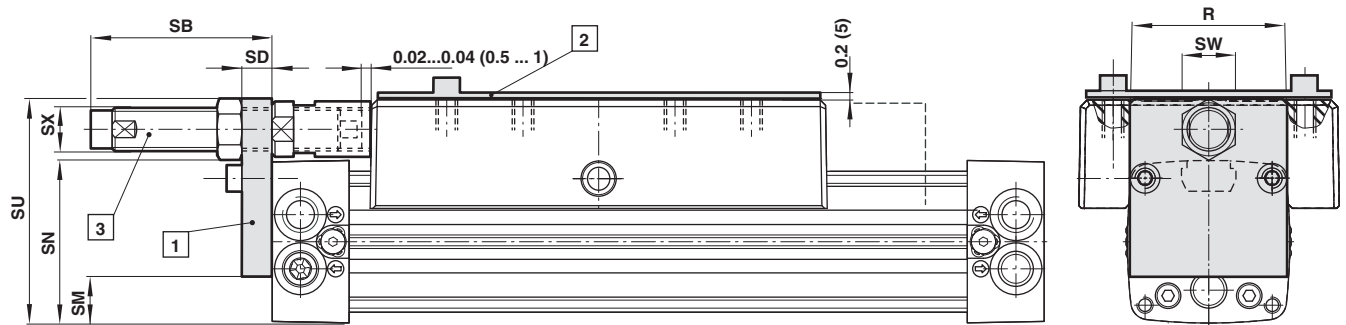
Type	Ø	A	SA	SE	SF	SG	SH	SI	Weight
QM/146125/75	25	3.94 (100)	2.64 (67)	1.89 (48)	2.48 (63)	M14x1.5 M14x1.5	1.18 (30)	0.41 (10.5)	0.26 lbs. 0.12 kg
QM/146132/75	32	4.72 (120)	3.15 (80)	1.89 (48)	2.76 (70)	M14x1.5 M14x1.5	1.18 (30)	0.41 (10.5)	0.37 lbs. 0.17 kg
QM/146140/75	40	5.91 (150)	4.02 (102)	2.44 (62)	3.27 (83)	M20x1.5 M20x1.5	1.18 (30)	0.59 (15)	0.49 lbs. 0.22 kg

- 1 Assembly kit
- 2 Please order shock absorber separately. see ACE program
- 3 Reaction forces (Q max)
ø 25 = 1200 N. ø 32 = 1500 N.
ø 40 = 1850 N

Assembly kit for shock absorber
For cylinder series C/146100/M



For cylinder series C/146200/M



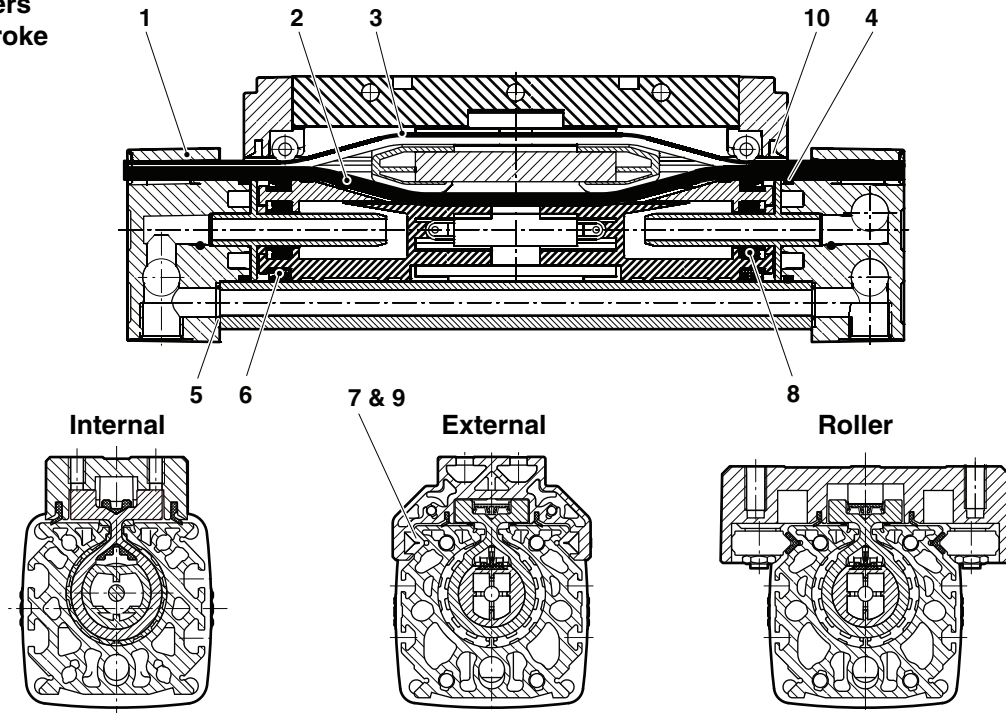
- 1** Assembly kit
- 2** Plate \varnothing 40 to 63 mm bores only
- 3** Please order shock absorber separately. see ACE program

Cylinder External guide	\varnothing	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 (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 \varnothing (40)	M33x1.5
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.

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

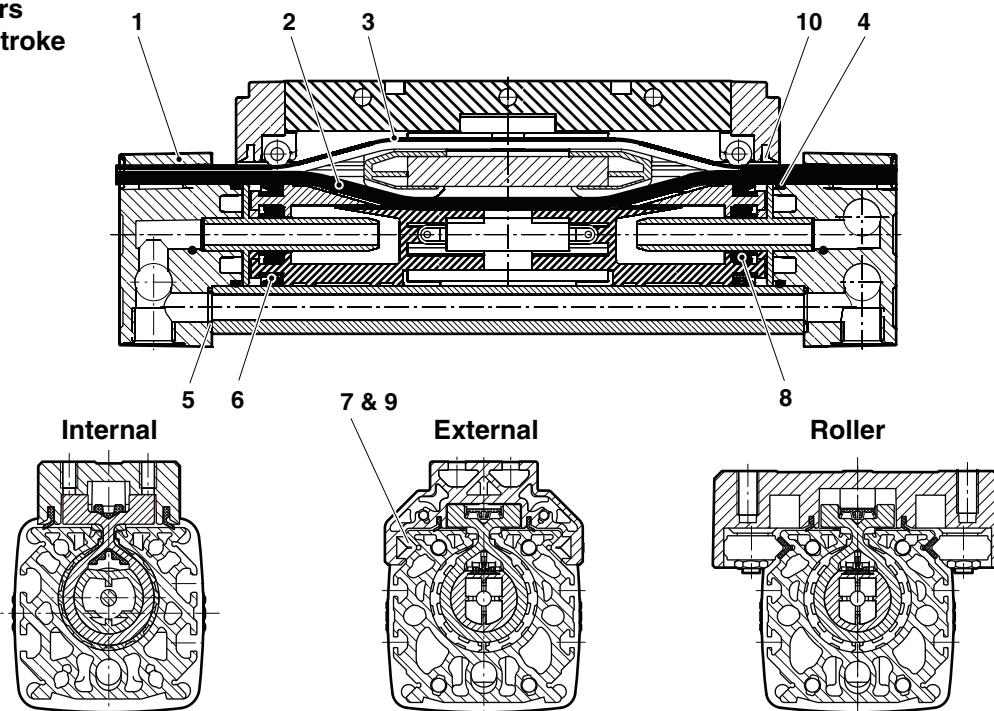
* Insert stroke length in inches
 Note: Please quote the cylinder type number when ordering spare parts

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	QM/146125/00	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 40626/*	C/P 73946/*
				10	Wiper Grease	1	C/P 40715/*	C/P 74232/*

* 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/*

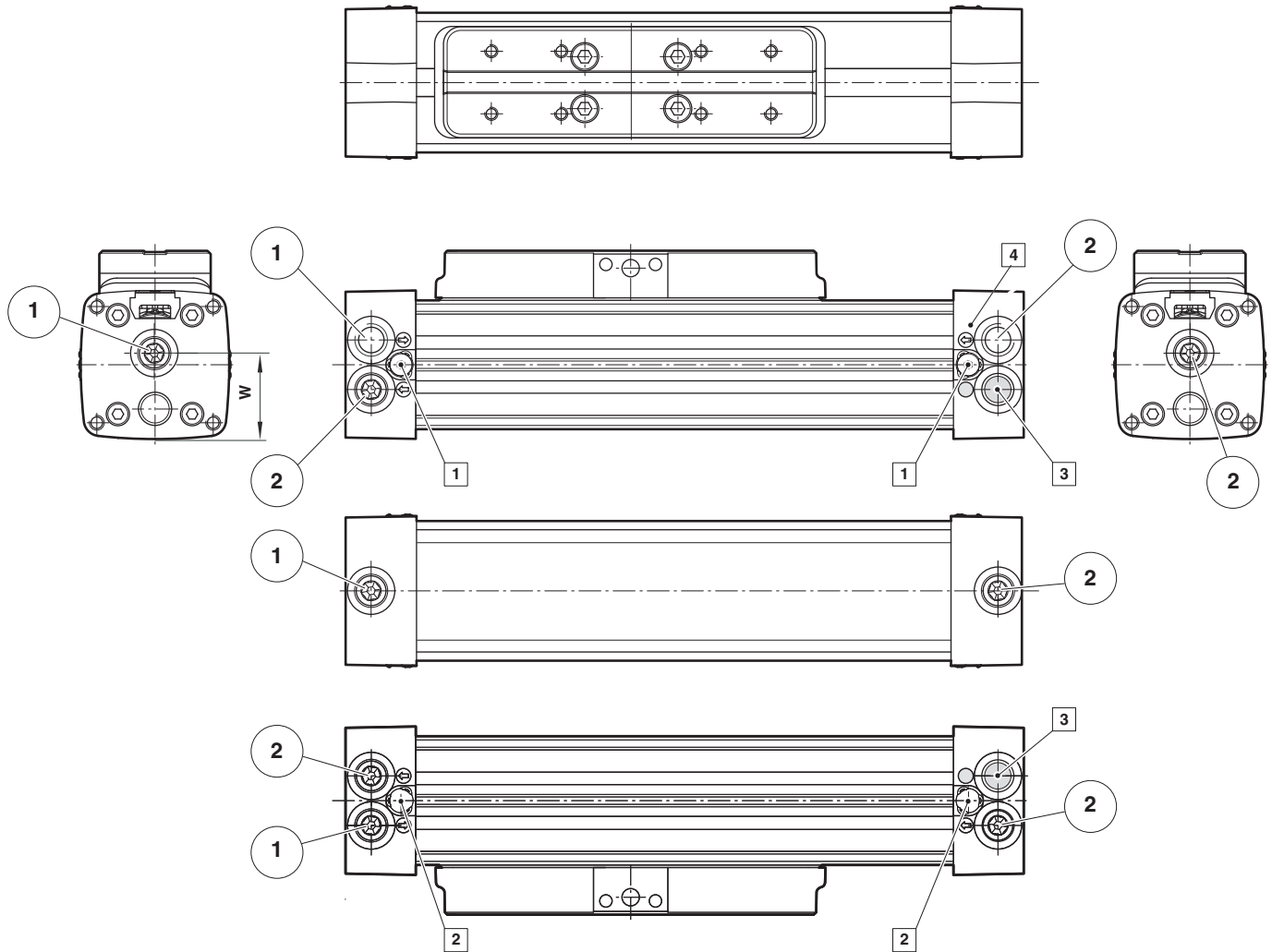
* Insert stroke length in millimeters
 Note: Please quote the cylinder type number when ordering spare parts

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

Ø	Type	Metric spares kit	Spares kit w/seal and mover 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 40262/*	M/P73936/*
40	M/146140.../M	QM/146140/00	QM/146140/88/*	7	Guide bar	4	M/P 40344/*	M/P73936/*
50	M/146150.../M	QM/146150/00	QM/146150/88/*	8	Seal	2	M/P 40263/*	M/P73945/*
63	M/146163.../M	QM/146163/00	QM/146163/88/*	9	Felt	2	M/P 40626/*	M/P73946/*
80	M/146180.../M	QM/146180/00	QM/146180/88/*	10	Wiper	1	M/P 40626/*	M/P 73946/*
					Grease	1	M/P 40626/*	M/P 73946/*
							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. 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

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

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

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

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

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