



PNEUMAX



SERIES 1800 ELECTRIC CYLINDERS

QUALITY AND PERFORMANCE

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Electric cylinders

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Pneumax

Smart Technologies and Human Competence

Founded in 1976, **Pneumax S.p.A.** is today one of the leading, international manufacturers of components and systems for automation. It is at the fore front of a group comprised of **29 companies**, with over **850 employees** worldwide.

Ongoing investment in research and development has allowed **Pneumax** to continually expand its range of standard products and customised solutions, adding to the well-established pneumatic technology, a range of electric drive actuators and fluid control components.

The desire to provide the service and specific application skills has led to the creation of 3 business units, dedicated to Industrial Automation, Process Automation and Automotive sector.





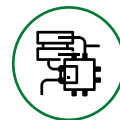
The ability to provide various technologies and solutions for each of our clients applications is the main objective of the Company, making Pneumax the ideal strategic partner.

What defines us is the “**Pneumax Business Attitude**”, born out of the capacity to combine industry sectors, technology and our application skills via the clients collaboration with our business and product specialists. The most effective solutions are studied around the TCO (Total cost of ownership) related to the entire life cycle of the product.

This represents the main Pneumax distinguishing factor.



**Pneumatic
technology**



**Electric
actuation**



**Fluid
control**

Electric cylinders series 1800



- Ø 32, 40, 50, 63
- Fixing interface ISO 15552
- Versions with linear or parallel motors
- SIEMENS brushless motors
- IP Rating IP65
- Anti-rotating piston
- Adapted for use with magnetic sensors
- A vast range of accessories and motor fixing interfaces

The Series 1800 Electric cylinders offer additional functions to that of a standard pneumatic cylinder, with the possibility to totally manage the complete working cycle, with control over acceleration and deceleration and the ability stop in mid position with precision and repeatability to fractions of a millimetre.

The actuators are available four sizes, 32-40-50-63, with in-line or parallel mounted electric motors with a fixing interface according to ISO 15552 standard and with IP65 IP rating.

The motor drives a ball screw transmission that converts the motors rotary motion into a linear motion.

The internal piston is non-rotating with built in calibrated slides to reduce any torsional backlash of the piston rod and to obtain optimal precision for positioning.

The actuators are fitted with magnetic pistons for use with external sensors or external linear position transducers.

It is possible to access the ball screw through a hole in the barrel for the purpose of lubrication.

Motors: brushless SIEMENS (IP65), relativ encoder (100W, 400W, 750W, 1000W, 1500W, 2000W).

Versions with brake and positioning encoders are available upon request.

In the event of the customer wanting to use they're own electric motor, Pneumax can provide the required assembly kits upon request.

Servo Drives: SIEMENS 220 ... 240V 1AC/3AC; a version for multi-axis interpolation is available upon request.

**Depending on the wiring, the motors even if of the same type, can rotate in different directions.
The moving direction of the piston rod depends on the direction of rotating ball screw.**



Construction characteristics

Mounting Standard	ISO 15552 (only for fixing interface)
Rod version	non rotation piston rod
Transmission type	ball screw
Rod	stainless steel
Head nut	stainless steel
Heads	anodised aluminium
Profiled tube	anodised aluminium

Operational characteristics		U.M.	Value
Environment temperature	°C		0/+60
Storage temperature	°C		-20/+60
IP Rating	-		IP65
Air relative humidity	%		90% (condensation not admitted)
Out of control impact at the end of the stroke	-		NOT ADMITTED (recommended addition to stroke min. 30mm)
Magnetic piston	-		yes

Technical characteristics		U.M.	Size 32				Size 40				Size 50				Size 63			
Ball screw pitch		mm	5	10	12	5	10	16	5	10	20	5	10	25				
Ball screw diameter		mm	12				16				20				25			
Maximum torque admitted		In-line motor	1.8	3.0	4.1	5.8	7.0	6.1	7.8	13.1	22.0	12.2	20.0	34.3				
		Parallel motor											15.0					
Friction torque		Nm	0.1				0.2				0.3				0.5			
Coefficient of dynamic axial load		N	4.700	4.700	5.450	15.200	9.600	9.600	17.650	18.300	12.350	23.500	27.150	13.600				
Admitted axial load		N	1.950	1.650	1.900	6.550	3.900	2.150	8.750	7.350	6.200	13.750	12.750	7.750				
Efficiency		-	0.9															
Maximum stroke		mm	800								1000				1200			
Minimum stroke		mm	30															
Maximum admitted rotary speed		rpm	(see the graphs in the Technical data section)															
Maximum admitted linear speed		m/s	(see the graphs in the Technical data section)															
Maximum admitted acceleration		m/s²	5	13	15	4	12	20	4	10	20	4	10	20				
Repetition accuracy		mm	±0.015															
Maximum axial play		mm	≤0.02				≤0.04				≤0.04				≤0.05			
Maximum rod rotation angle (°)			±0.25															



The following combinations are available to order:

Cylinder which can be assembled with an IN-LINE motor	Cylinder which can be assembled with a PARALLEL mounted motor	Cylinder + IN-LINE motor	Cylinder + PARALLEL motor
			
Motors	Servo Drives, filters, cables		Motors fixing kits (in-line or parallel version)
			
Fixing and accessories			
			

Cylinder ordering codes (with or without motor)

18A

-

-

- - - -

-

- - - -

Motor Assembly Position

A

IN-LINE position

B

PARALLEL position
(transmission ratio: 1:1)

Size

A

32

B

40

C

50

D

63

Stroke (mm)*

Size 32 (max. 800)

Size 40 (max. 800)

Size 50 (max. 1000)

Size 63 (max. 1200)

Ball screw pitch

A

pitch 5

B

pitch 10

C

pitch 12
(only Ø32)

D

pitch 16
(only Ø40)

E

pitch 20
(only Ø50)

F

pitch 25
(only Ø63)

Motor

0000

Without motor

BRUSHLESS SIEMENS

B001

motor cod. 1800B0400801
0,32 Nm - 100W

available on
size 32 and 40

B002

motor cod. 1800B0601401
1,27 Nm - 400W

available on
size 32, 40 and 50

B003

motor cod. 1800B0801900
2,39 Nm - 750W

available on
size 40, 50 and 63

B004

motor cod. 1800B0801901
3,18 Nm - 1000W

available on
size 50 and 63

B005

motor cod. 1800B1001900
4,78 Nm - 1500W

available on
size 50 and 63

B006

motor cod. 1800B1001901
6,37 Nm - 2000W

available on
size 63

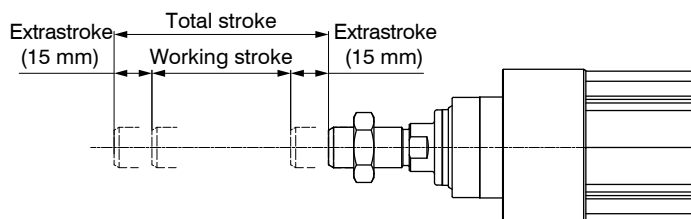
200 .. 240V 3AC - IP65 - SIEMENS

* Stroke definition

To avoid damage, it is important to prevent collision at the end of the stroke of the piston. Therefore, add an additional 30mm to the required stroke length.

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To avoid damage, it is important to prevent collision at the end of the stroke of the piston. Therefore, add an additional 30mm to the required stroke length.



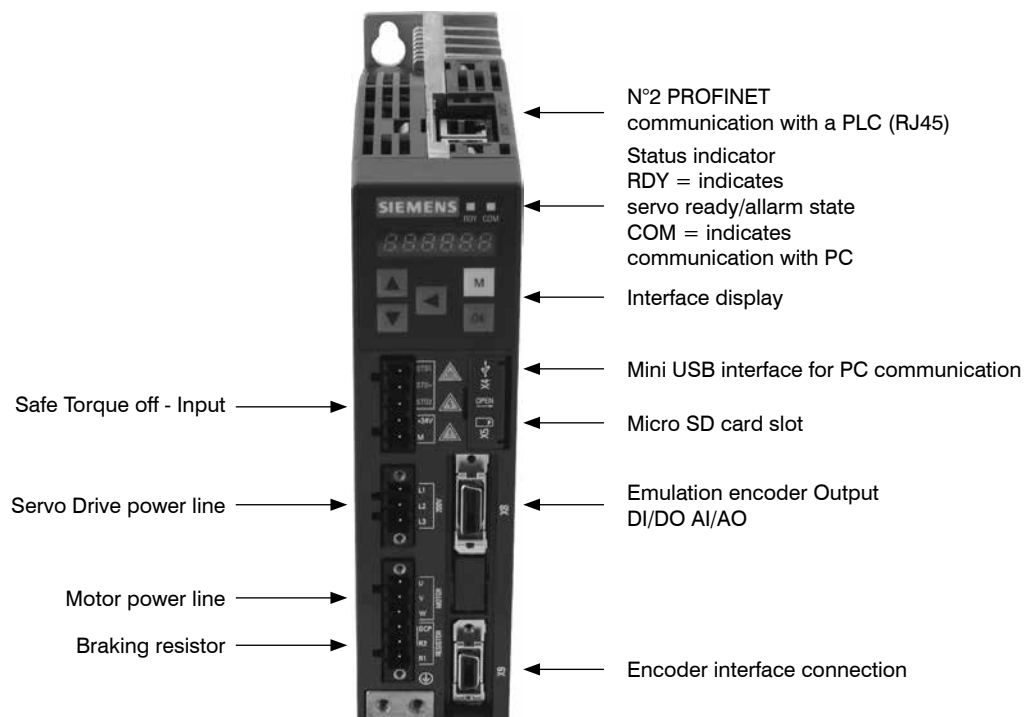
SIEMENS motors with brake or absolute encoder are available upon request.



BRUSHLESS SIEMENS MOTORS with incremental encoder without brake (Motors with absolute encoders or brake are also available upon request)							
Ordering code		1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901
Torque	rated	0,32 Nm	1,27 Nm	2,39 Nm	3,18 Nm	4,78 Nm	6,37 Nm
	maximum	0,96 Nm	3,82 Nm	7,20 Nm	9,54 Nm	14,30 Nm	19,10 Nm
Usable cylinders sizes		32 and 40	32, 40 and 50	40, 50 and 63	50 and 63		63
rpm		5000 max, 3000 rated					
Rated voltage		200 ... 240V 1AC/3AC			200 ... 240V 3AC		
Rated power		100 W	400 W	750 W	1.000 W	1.500 W	2.000 W
Moment of inertia (10 ⁻⁴ Kgm ²)		0,052	0,351	0,897	1,15	2,04	2,62
Temperature	storage	-20°C ... +65°C (-4°F ... +149°F)					
	operation	0°C ... +40°C (-32°F ... +104°F)					
Thermal class		B (130°C/266°F)					
Relative atmospheric humidity (storage and operation)		90% a 30°C (86°F) (no condensation)					
IP Rating		Motor IP65 - Connector IP20				IP65	
Weight (g)		630	1.460	2.800	3.390	5.350	6.560



SERVO DRIVES SIEMENS							
Ordering code		1800AZ0001	1800AZ0003	1800AZ0004	1800AZ0005	1800AZ0006	1800AZ0007
Usable motor		1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901
Line frequency		50Hz / 60Hz ±10 %					
Communication		n°2 PROFINET communication with a PLC (RJ45)					
Maximum motor power		100 W	400 W	750 W	1.000 W	1.500 W	2.000 W
Frame size		FSA	FSB	FSC	FSD		
Dimensions	Height	45mm	55mm	80mm	95mm		
	Width	170mm					
	Depth	170mm			195mm		
Output current	rated	1,2A	2,6A	4,7A	6,3A	10,6A	11,6A
	max.	3,6A	7,8A	14,1A	18,9A	31,8A	34,8A
Line supply voltage		200 ... 240V 1AC/3AC (-15%/+10 %)				200 ... 240V 3AC (-15%/+10%)	
Line capacity	single-phase 1AC	0,5kVA	1,2kVA	2kVA	-	-	-
	three-phase 3AC	0,5kVA	1,1kVA	1,9kVA	2,7kVA	4,2kVA	4,6kVA
Cooling		Natural cooling				Fan cooling	
Weight (g)		1.100	1.200	2.000	2.500		
USB interfaces		mini USB					
Digital outputs		4 inputs, NPN/PNP; 2 outputs, NPN/PNP					
SD card slot		micro Sd					
Safety functions		STO (safe torque off) SIL2					





Electric cylinders Series 1800

ELECTRIC ACTUATION



FILTER

Ordering code	1800FT0001 (for 3AC)			1800FT0002 (for 3AC)		
	1800FT0003 (for 1AC)			/		
Usable motor	1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901



3Mtr Motor Cable ORANGE (3, 5, 10, and 20Mtr cables are available upon request)

Ordering code	1800CM000103			1800CM000203		
Usable motor	1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901
IP Rating	IP20			IP65		



3Mtr Encoder Cable GREEN (3, 5, 10, and 20Mtr cables are available upon request)

Ordering code	1800CE000103			1800CE000203		
Usable motor	1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901
IP Rating	IP20			IP65		

SIEMENS motor fixing KITS code



Cylinder size	MOTOR ordering code	Fixing KITS ordering code			
		IN LINE version	Weight (g)	PARALLEL version	Weight (g)
32	1800B0400801	18KL0001	250	18KP0001	200
	1800B0601401	18KL0002	290	18KP0002	240
40	1800B0400801	18KL0003	320	18KP0001	200
	1800B0601401	18KL0004	360	18KP0002	240
	1800B0801900	18KL0005	510	18KP0003	390
	1800B0801901	18KL0005	510	18KP0003	390
50	1800B0601401	18KL0006	517	18KP0004	485
	1800B0801900	18KL0007	890	18KP0005	655
	1800B0801901	18KL0007	890	18KP0005	655
	1800B1001900	18KL0008	1390	18KP0006	1150
63	1800B0801900	18KL0009	1090	18KP0005	655
	1800B0801901	18KL0009	1090	18KP0005	655
	1800B1001900	18KL0010	1590	18KP0006	1150
	1800B1001901	18KL0010	1590	18KP0006	1150

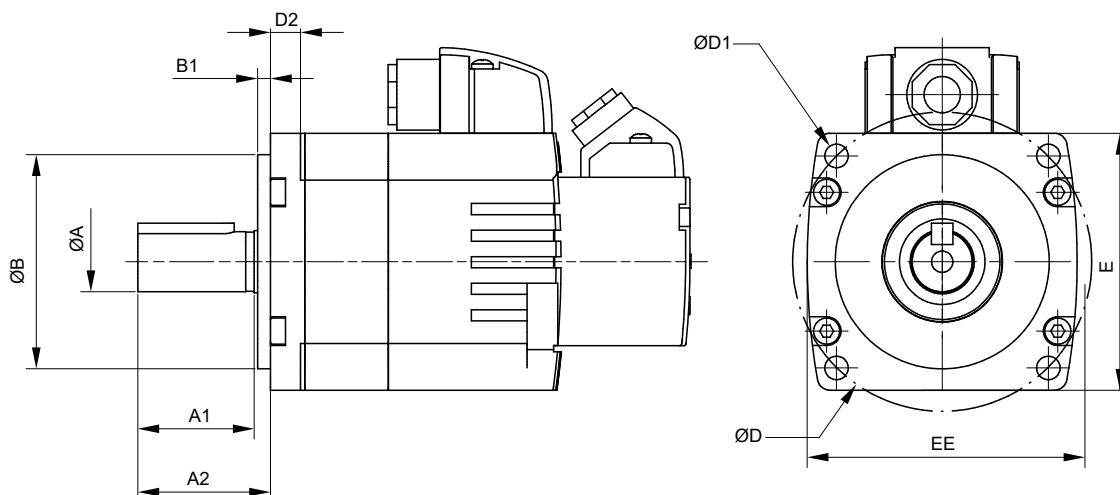
In the event of the customer wanting to use they're own motor, assembly kits for different brands of motor are available upon request. Please complete the table below and contact our technical office.

ØA	
A1	
A2	

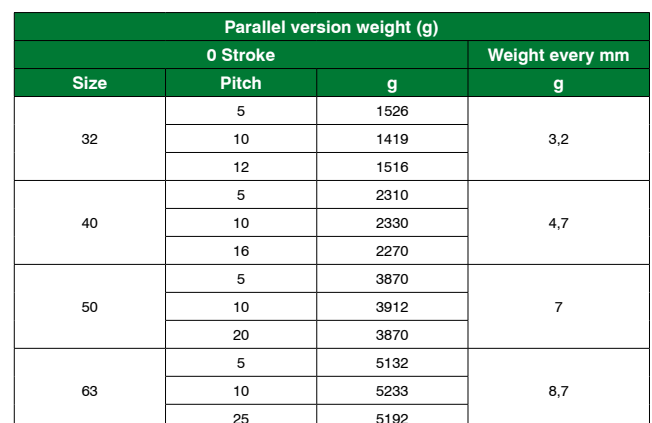
ØB	
B1	

ØD	
ØD1	
D2	

E	
EE	

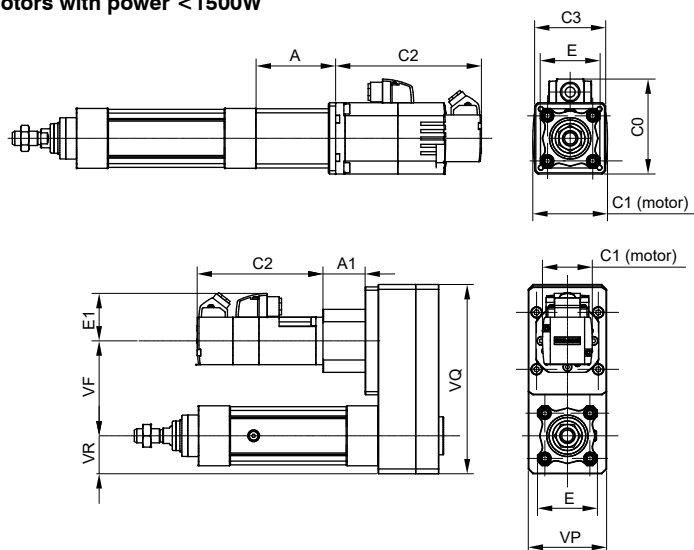


ELECTRIC ACTUATION

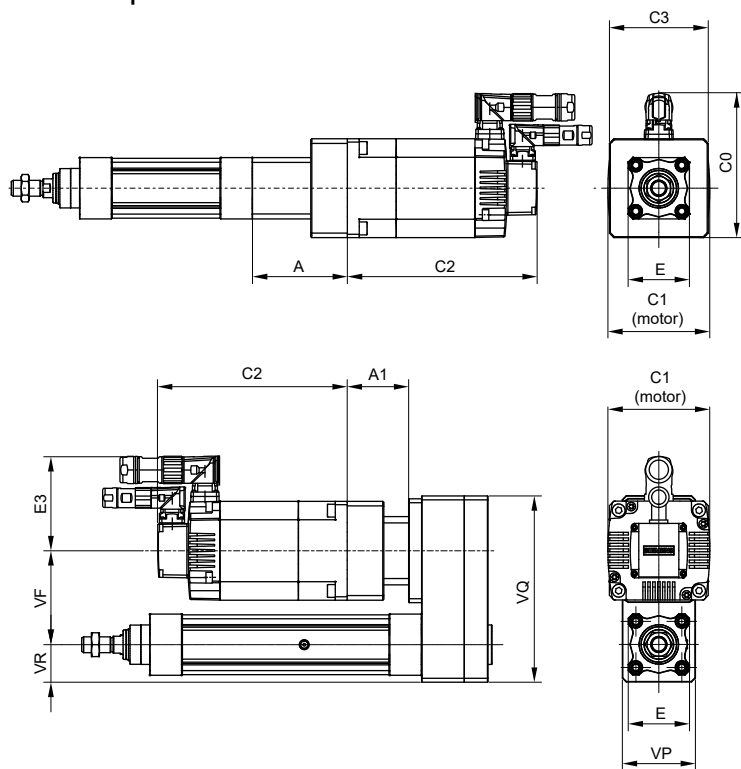


Cylinder dimensions with BRUSHLESS SIEMENS motor

Motors with power <1500W



Motors with power ≥1500W

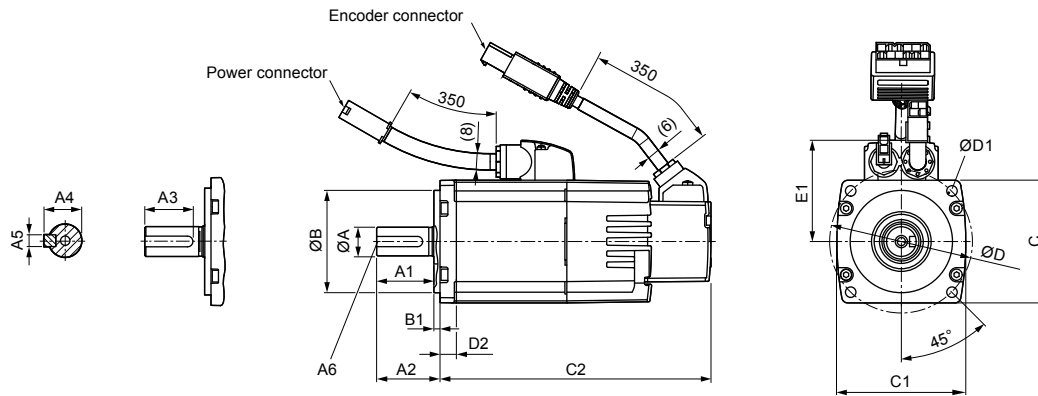


Cylinders weight + Motors (g)					
Size	Motor	Pitch	0 Stroke		Weight every mm (g)
			In-line version (g)	Parallel version (g)	
32	0,32 Nm	5	1624	2356	3,2
	100W	10	1517	2249	
	1800B0400801	12	1614	2346	
	1,27 Nm	5	2494	3226	
	400W	10	2387	3119	
40	1800B0601401	12	2484	3216	4,7
	0,32 Nm	5	1986	3140	
	100W	10	2006	3160	
	1800B0400801	16	1946	3100	
	1,27 Nm	5	2856	4010	
	400W	10	2876	4030	
	1800B0601401	16	2816	3970	
	2,39 Nm	5	4346	5500	
50	750W	10	4366	5520	7
	1800B0801900	16	4306	5460	
	1,27 Nm	5	3752	5815	
	400W	10	3794	5857	
	1800B0601401	20	3752	5815	
	2,39 Nm	5	5465	7325	
	750W	10	5507	7367	
	1800B0801900	20	5465	7325	
	3,18 Nm	5	6055	7915	
	1000W	10	6097	7957	
	1800B0801901	20	6055	7915	
	4,78 Nm	5	8515	10370	
63	1500W	10	8557	10412	8,7
	1800B1001900	20	8515	10370	
	2,39 Nm	5	6389	8587	
	750W	10	6490	8688	
	1800B0801900	25	6449	8647	
	3,18 Nm	5	6979	9177	
	1000W	10	7080	9278	
	1800B0801901	25	7039	9237	
	4,78 Nm	5	9439	11632	
	1500W	10	9540	11733	
	1800B1001900	25	9499	11692	
	6,37 Nm	5	10649	12842	
63	2000W	10	10750	12943	8,7
	1800B1001901	25	10709	12902	

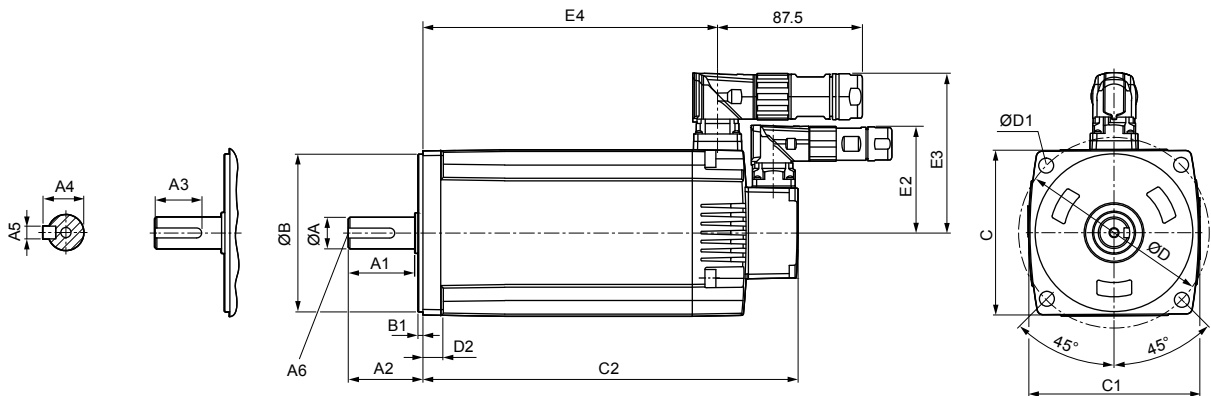
Size	Motor	A	A1	C0	C1	C2	C3	E	E1	E3	VF	VP	VQ	VR
32	cod. 1800B0400801 (0,32 Nm - 100W)	58	35	62,5	42	106	45	45	40	/	60	53	121	26,5
	cod. 1800B0601401 (1,27 Nm - 400W)	64	41,5	80	63	123	60	45	50	/	60	53	121	26,5
40	cod. 1800B0400801 (0,32 Nm - 100W)	61	35	65	40	106	50	50,5	40	/	80	66	159,5	32
	cod. 1800B0601401 (1,27 Nm - 400W)	67	41,5	80	63	123	60	50,5	50	/	80	66	159,5	32
	cod. 1800B0801900 (2,39 Nm - 750W)	73	47,5	100	83	139	80	50,5	60	/	80	66	159,5	32
	cod. 1800B0601401 (1,27 Nm - 400W)	72	46	81	63	123	62	62	50	/	95	74	188,5	38
50	cod. 1800B0801900 (2,39 Nm - 750W)	86	52	100	83	139	80	62	60	/	95	74	188,5	38
	cod. 1800B0801901 (3,18 Nm - 1000W)	86	52	100	83	159	80	62	60	/	95	74	188,5	38
	cod. 1800B1001900 (4,78 Nm - 1500W)	96	62	171	103	192	100	62	/	98	95	74	188,5	38
	cod. 1800B0801900 (2,39 Nm - 750W)	86	52	100	83	139	80	72	60	/	104	86	209	43
63	cod. 1800B0801901 (3,18 Nm - 1000W)	86	52	100	83	159	80	72	60	/	104	86	209	43
	cod. 1800B1001900 (4,78 Nm - 1500W)	96	62	171	103	192	100	72	/	98	104	86	209	43
	cod. 1800B1001901 (6,37 Nm - 2000W)	96	62	171	103	216	100	72	/	98	104	86	209	43

BRUSHLESS SIEMENS motors dimensions

Motors with power <1500W

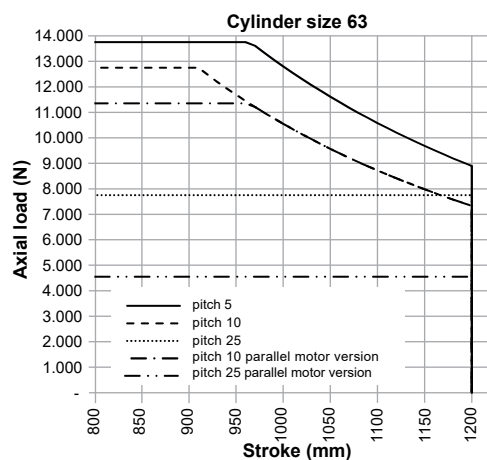
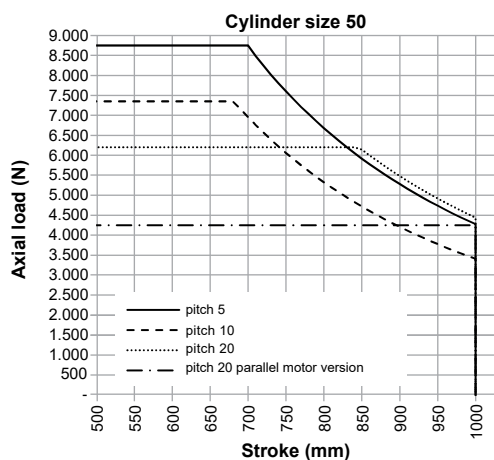
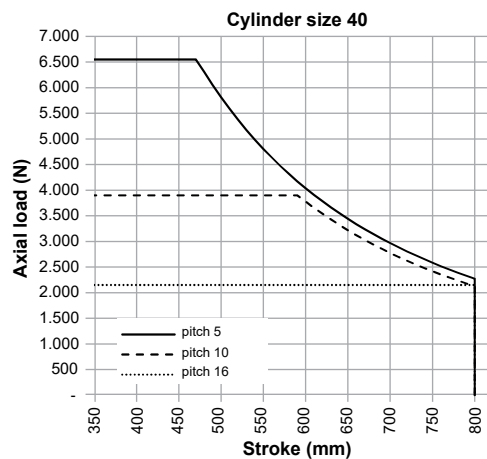
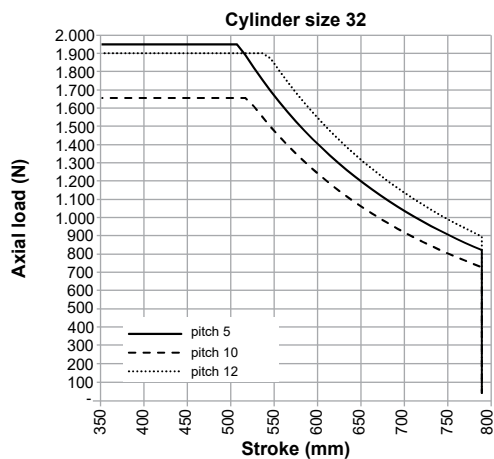


Motors with power ≥1500W

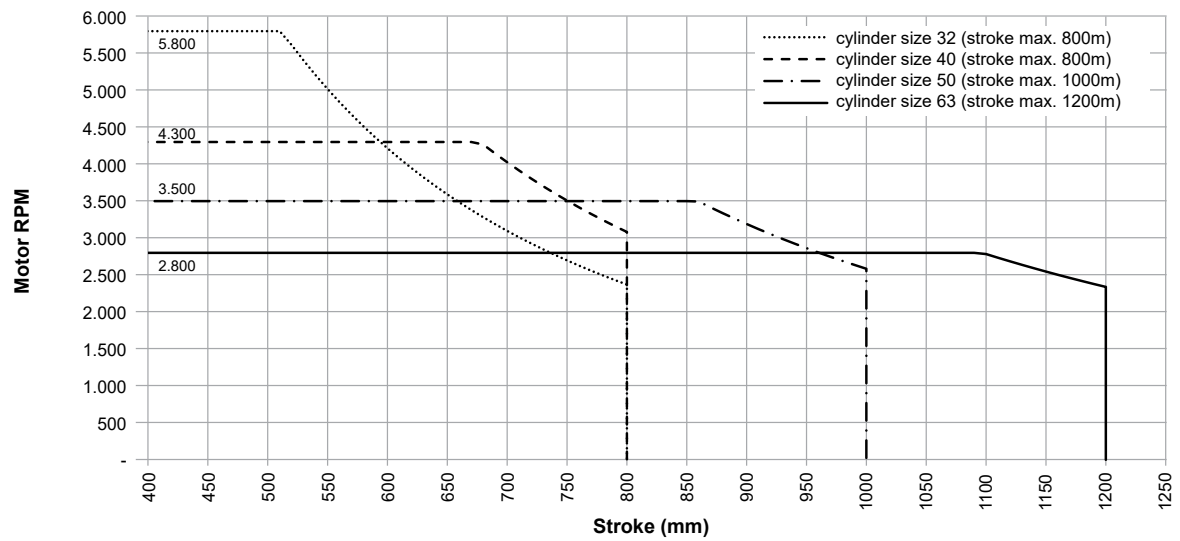


Ordering code	1800B0400801	1800B0601401	1800B0801900	1800B0801901	1800B1001900	1800B1001901
Rated torque	0,32 Nm	1,27 Nm	2,39 Nm	3,18 Nm	4,78 Nm	6,37 Nm
Power	100 W	400 W	750 W	1.000 W	1.500 W	2.000 W
Overall dimensions						
ØA	8 h6	14 h6	19 (+0/-0,013)	19 (+0/-0,013)	19 (+0/-0,013)	19 (+0/-0,013)
A1	22	26	30	30	40	40
A2	25	31	35	35	45	45
A3	17,5	22,5	28	28	28	28
A4	9	16	21,5	21,5	21,5	21,5
A5	3	5	6	6	6	6
A6	M3x8	M4x15	M6x16	M6x16	M6x16	M6x16
ØB	30 (+0/-0,02)	50 (+0/-0,03)	70 (+0/-0,03)	70 (+0/-0,03)	95 (+0/-0,03)	95 (+0/-0,03)
B1	2,5 (+0/-0,2)	3 (+0/-0,2)	3 (+0/-0,3)	3 (+0/-0,3)	3 (+0/-0,3)	3 (+0/-0,3)
C	40	60	80	80	100	100
C1	42	63	83	83	103	103
C2	106	123	139	159	192	216
ØD	Ø46	Ø70	Ø90	Ø90	Ø115	Ø115
ØD1	4,5	5,5	7	7	9	9
D2	6	8	8	8	12	12
E1	40	50	60	60	/	/
E2	/	/	/	/	65,5	65,5
E3	/	/	/	/	98	98
E4	/	/	/	/	143,5	167,5
Weight (g)	630	1460	2800	3390	5350	6560

Axial load admissible as a function of stroke

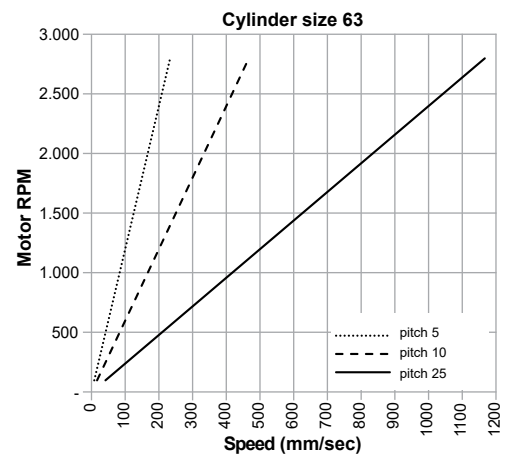
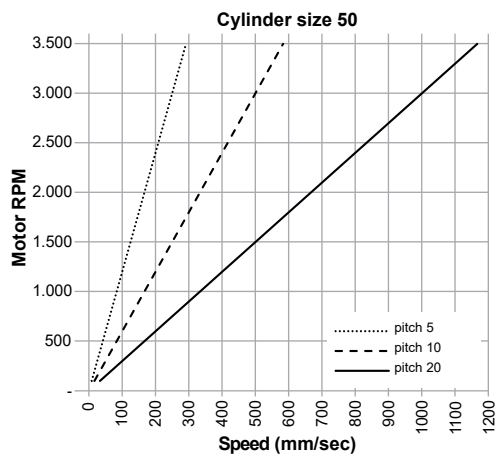
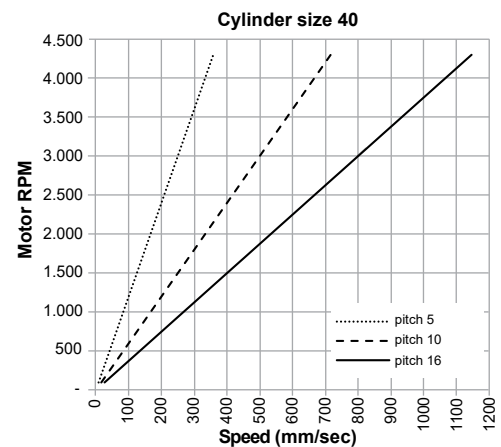
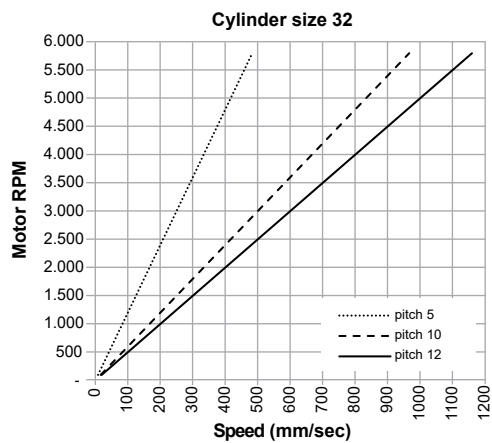


Maximum RPM subject to stroke



Speed: According to Motor (RPM)

Please note: take in consideration the maximum number of revolutions shown in the previous graph.



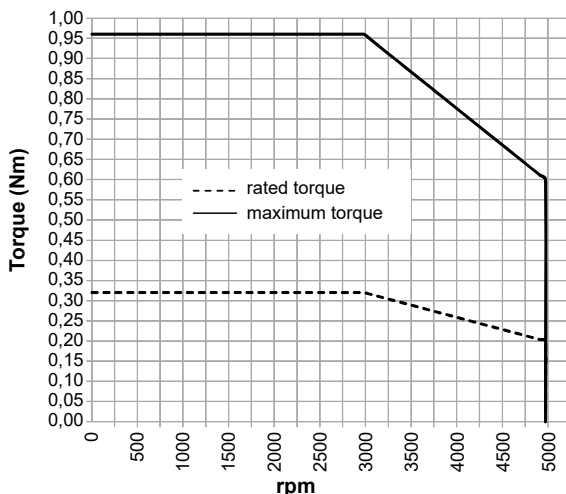
Admissible axial load as a function of stroke

Power Supply Voltage: 230 VAC

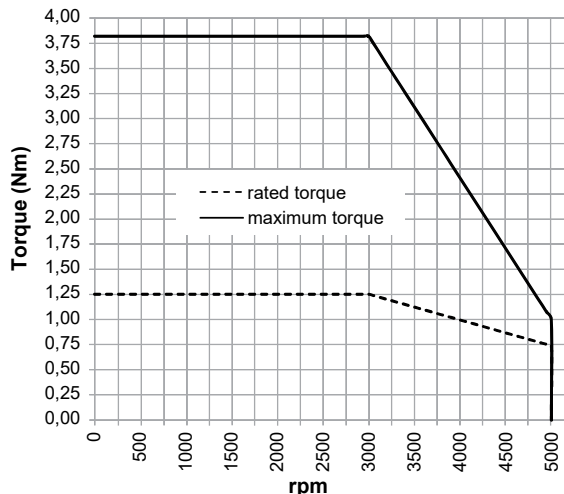
Torque values below the rated torque line are continuously rated.

Torque values below the maximum torque line but above the rated torque line are momentary values not continuous.

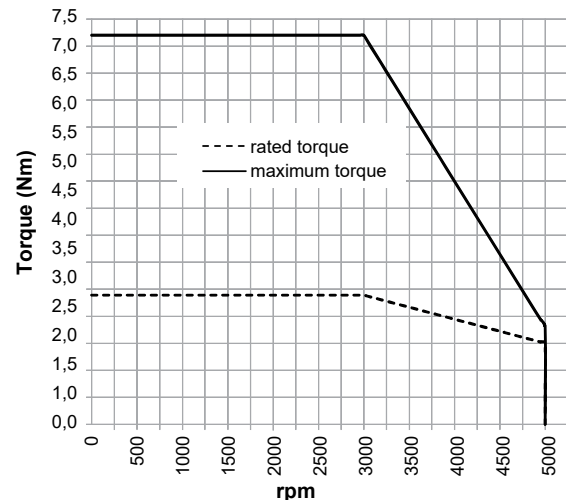
Motor cod. 1800/B0400801



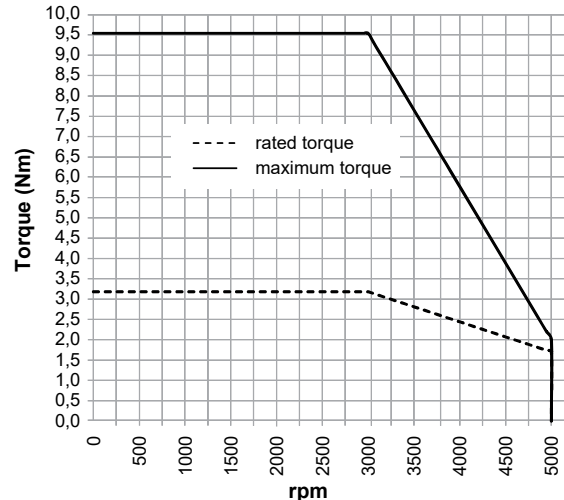
Motor cod. 1800/B0601401



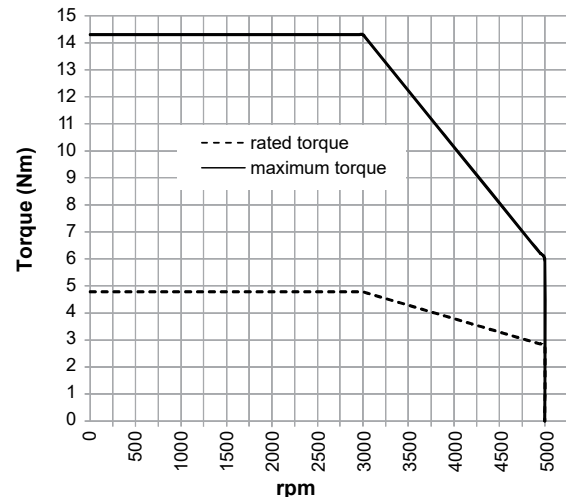
Motor cod. 1800/B0801900



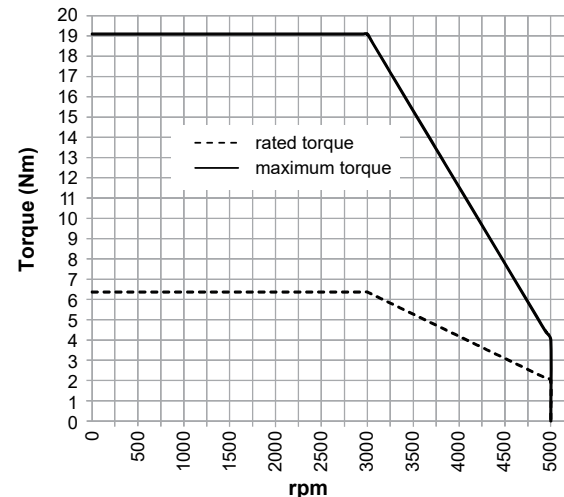
Motor cod. 1800/B0801901



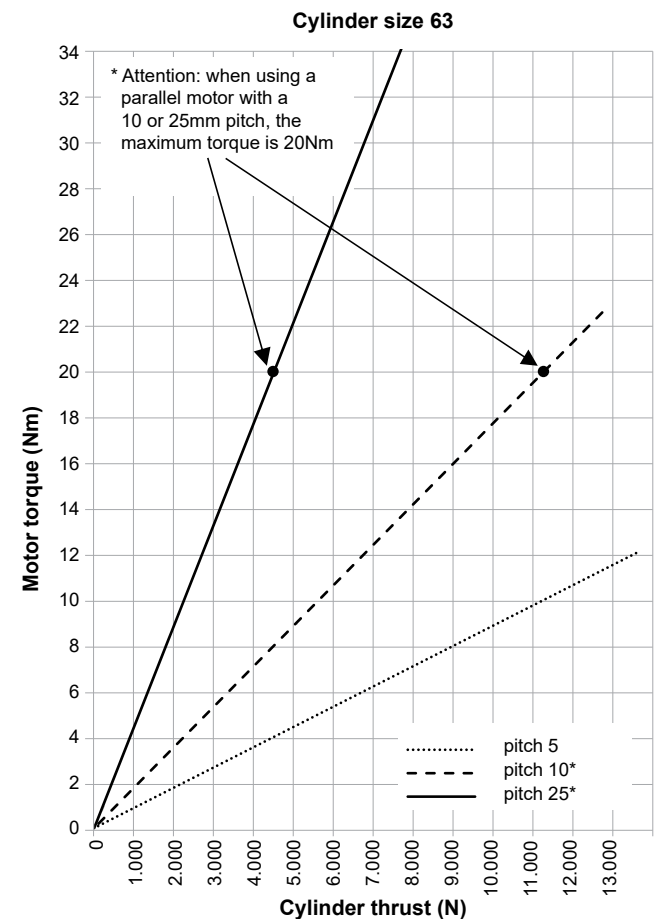
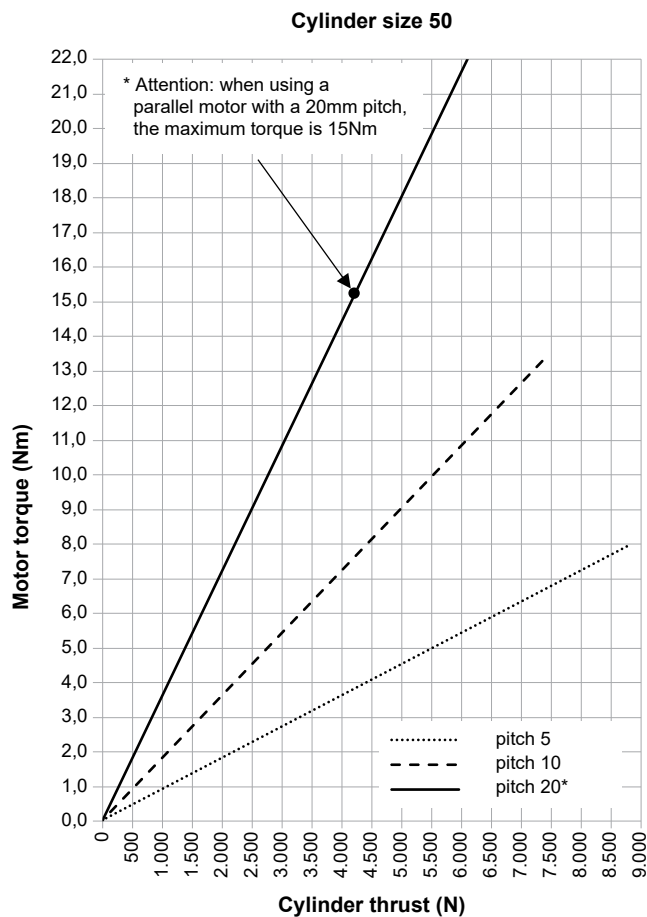
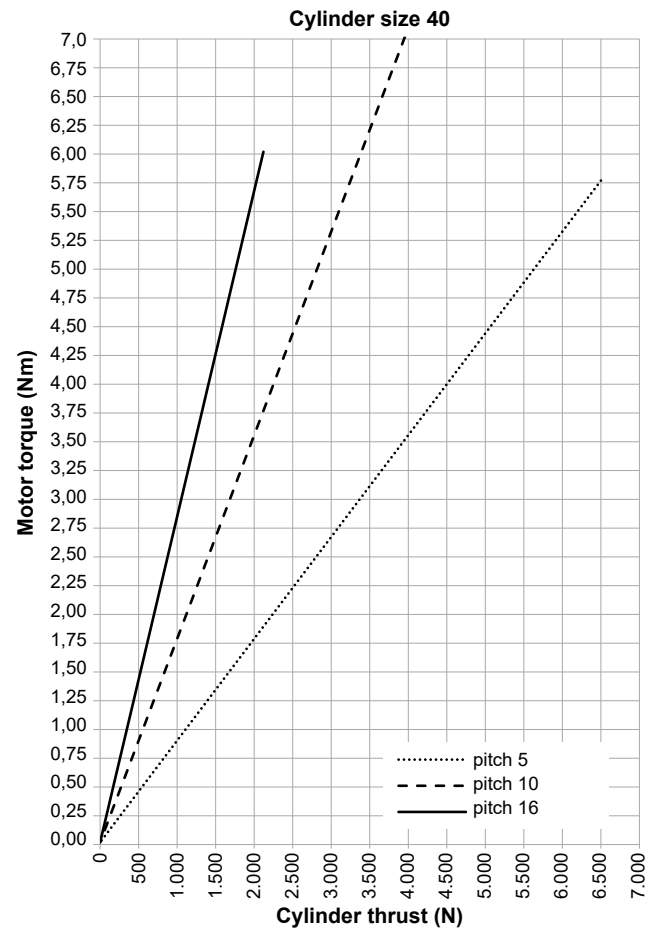
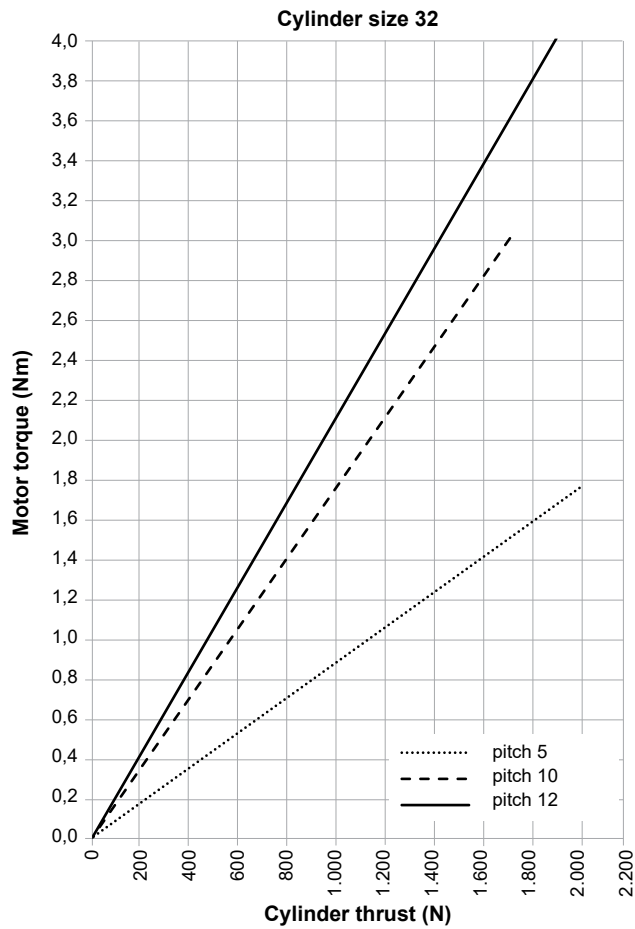
Motor cod. 1800/B1001900



Motor cod. 1800/B1001901

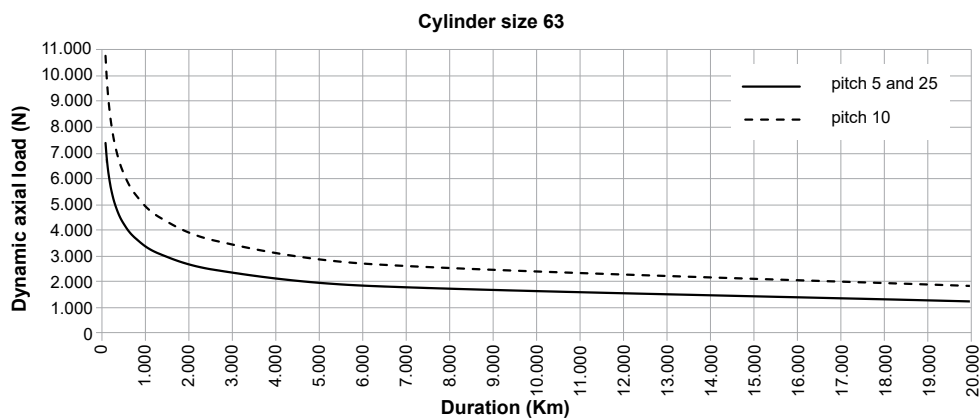
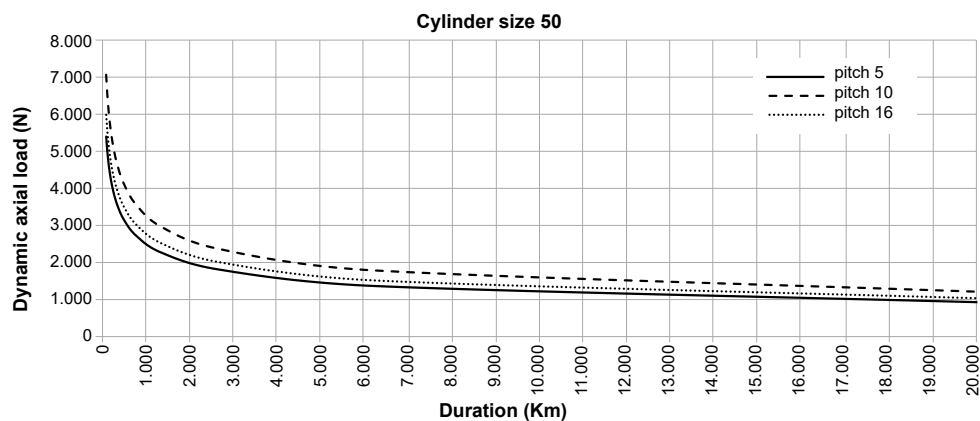
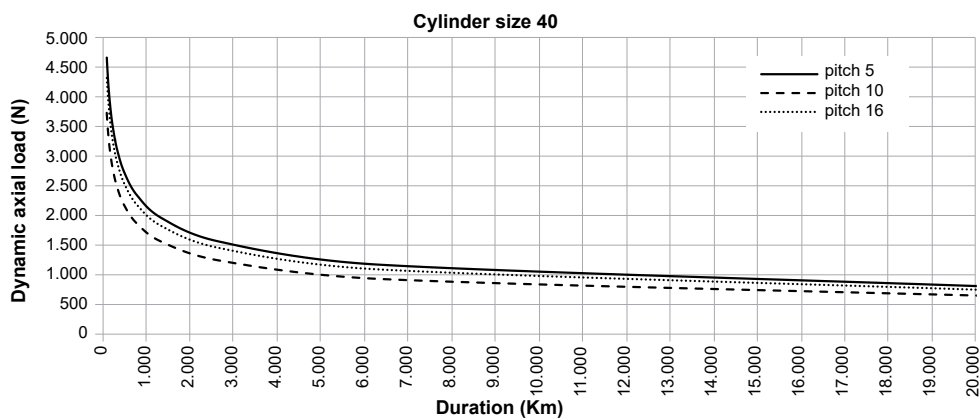
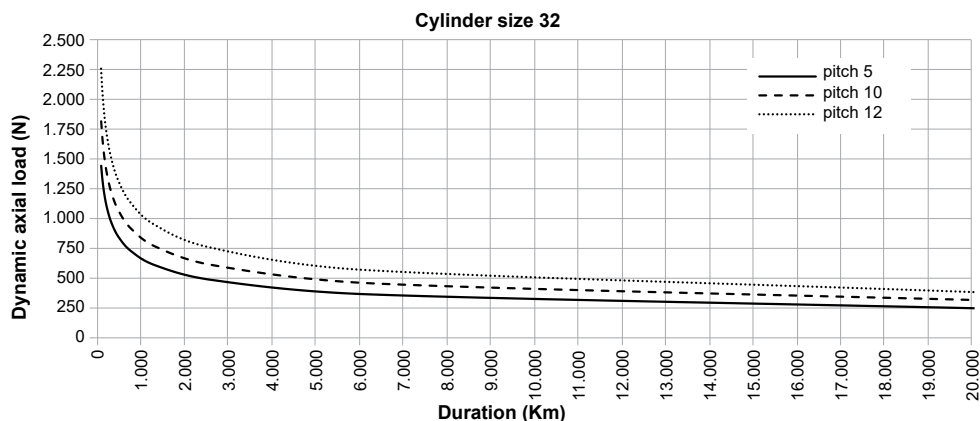


Cylinder thrust according to the motor torque



Service life

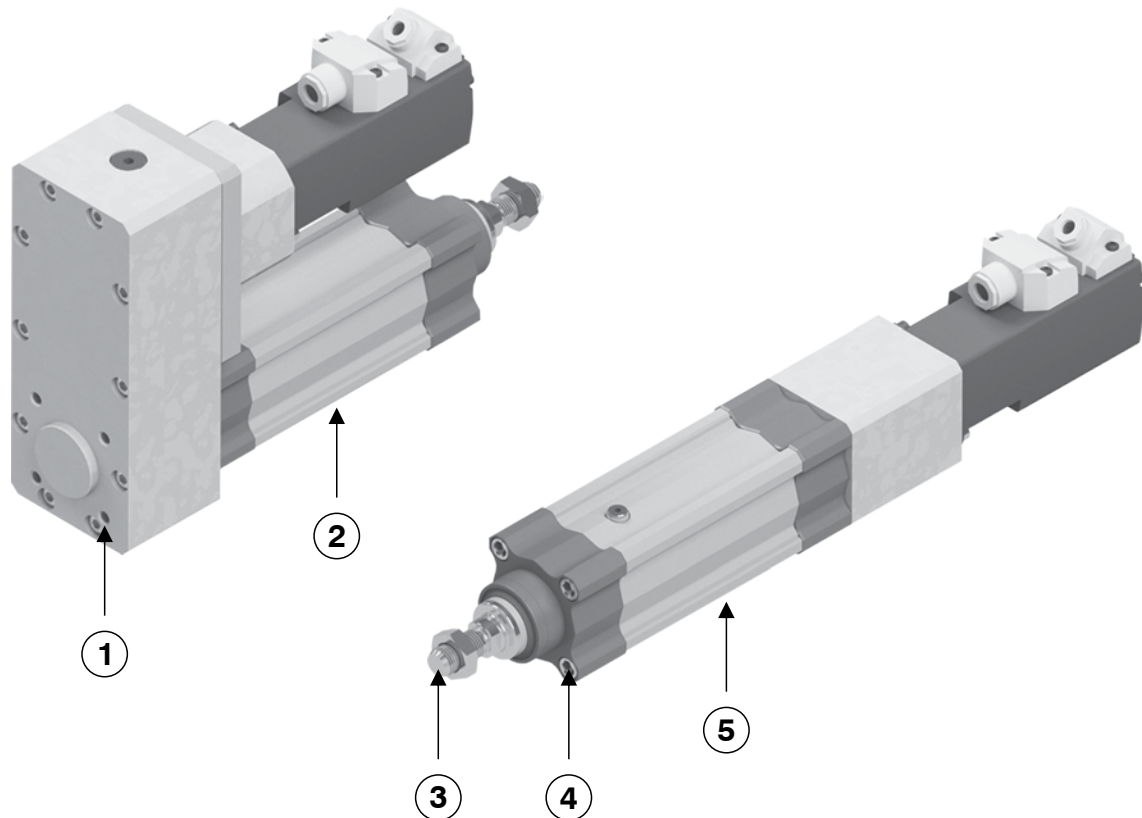
Please note: the actual duration may vary depending on the application



Cylinder fixing

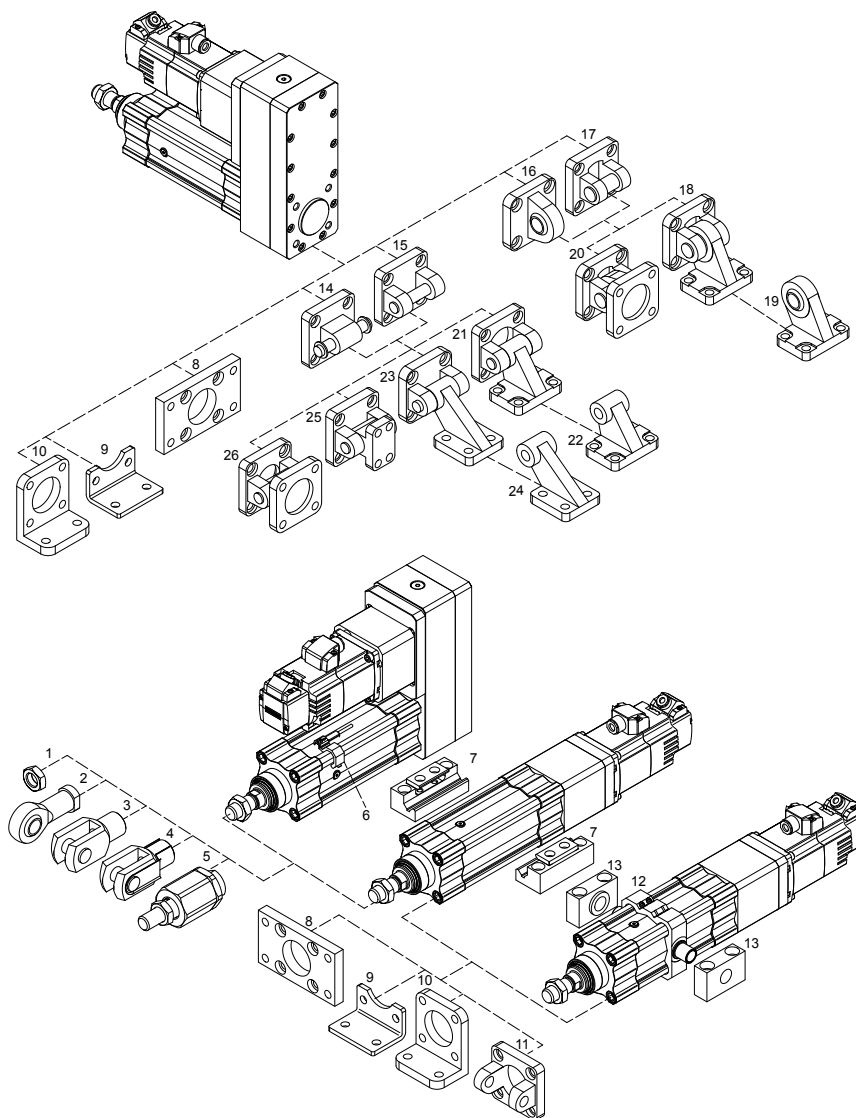
The cylinder fixing interface (mounting holes and piston rod dimensions) conform to the ISO 15552 Standard. Therefore the cylinders can be fixed with:

- the threaded holes (pos.1 and pos.4)
- the thread on the rod (pos.3)
- on the barrel (pos.5 and pos.2)



The following page shows all the fixing devices suitable for fixing the cylinders to the in-line or parallel mounted motors.

Fixing devices available



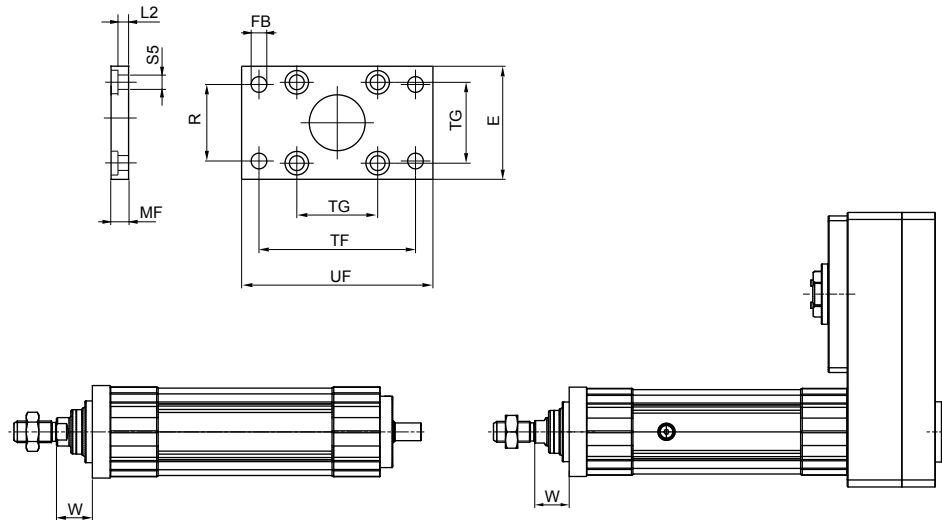
Position	Description	Aluminium	Steel
1	Rod nut	/	1320.Ø.18F
2	Ball joint	/	1320.Ø.32F
3	Fork	/	1320.Ø.13F
4	Fork with clips	/	1320.Ø.13/1F
5	Self-aligning joint	/	1320.Ø.33F
6	Sensor bracket	1320._S	/
7	Intermediate supports	1800.Ø.02F	
8	Flange (MF1)	1390.Ø.03FP	1380.Ø.03F
9	Short mounting foot brackets (MS1)	/	1320.Ø.05/1F
10	Standard mounting foot brackets	1320.Ø.05F	/
11	Front clevis (not according to standard ISO 15552)	1380.Ø.08F	1320.Ø.19F
12	Intermediate trunnion	1320.Ø.12BF	1320.Ø.12F
13	Support for intermediate trunnion	1320.Ø.12/1F	/
14	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
15	Rear female clevis (MP2)	1380.Ø.09F	1320.Ø.20F
16	Rear male clevis (with jointed head - MP6)	1380.Ø.15F	1320.Ø.25F
17	Rear narrow clevis (AB6)	1380.Ø.30F	1320.Ø.29F
18	Complete square angle trunnion (pos.17+19)	/	1320.Ø.27F
19	Simple square counter clevis	/	1320.Ø.28F
20	Square angle trunnion with jointed head (pos.16+17)	1380.Ø.36F	1320.Ø.26F
21	Square angle trunnion (AB7) (pos.15+22)	1380.Ø.35F	1320.Ø.23F
22	Simple square counter clevis	1320.Ø.11/2F	1320.Ø.24F
23	Simple rear trunnion with support brackets (pos.24+15)	1380.Ø.11F	/
24	Simple square counter clevis	1320.Ø.11/1F	/
25	Standard trunnion	1380.Ø.10F	/
26	Standard complete trunnion (pos.14+15)	1380.Ø.22F	1320.Ø.22F

Front flange (MF1)

Plate which allows anchorage of the cylinder at a right angle to the plane.

Ordering code:

Aluminium	1390.Ø.03FP
Steel	1380.Ø.03F



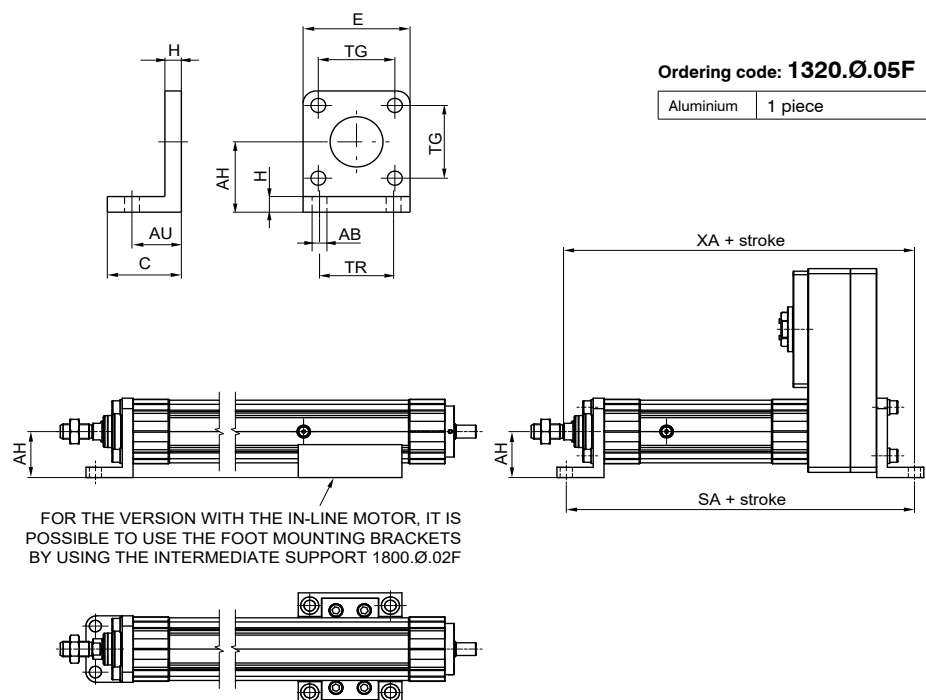
Size	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	W	L2	S5	Weight (g)	
											Steel	Aluminium
32	45	7	10	32	64	32,5	80	16	5	6,6	190	60
40	52	9	10	36	72	38	90	20	5	6,6	250	69
50	65	9	12	45	90	46,5	110	25	6,5	9	480	130
63	75	9	12	50	100	56,5	120	25	6,5	9	620	170

Standard mounting foot brackets

Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

Ordering code: **1320.Ø.05F**

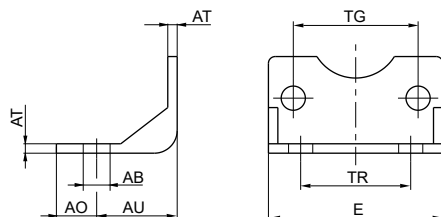
Aluminium	1 piece
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Size	AB (H 14)	AH (JS 15)	AU (±0,2)	C	E	H	SA	TG	TR (JS 14)	XA	Weight (g)
32	7	32	24	35	45	8	228.7	32.5	32	230.7	45
40	9	36	28	35	52	8	258.7	38	36	260.7	65
50	9	45	32	45	65	10	306.2	46.5	45	311.2	140
63	9	50	32	45	75	10	320	56.5	50	325	175

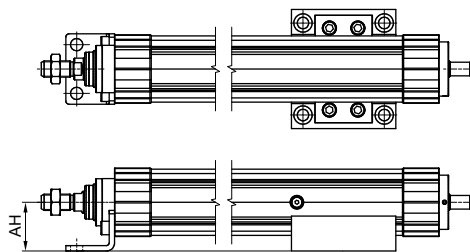
Short mounting foot brackets (in sheet metal MS1)

Elements used to anchor the cylinder parallel to the mounting plane. They are made of steel, and painted black.



Ordering code: **1320.Ø.05/1F**

Steel (1 piece)

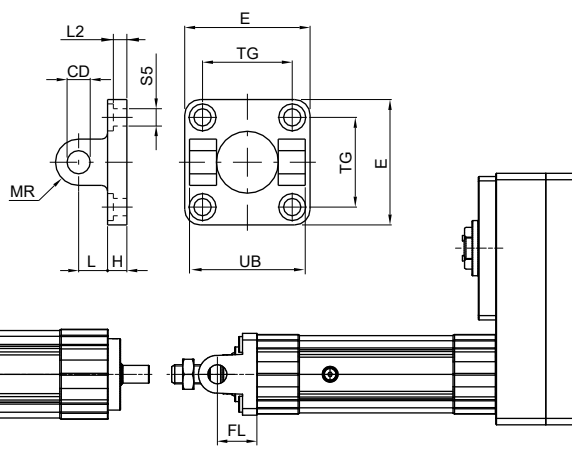


FOR THE VERSION WITH THE IN-LINE MOTOR, IT IS POSSIBLE TO USE THE FOOT MOUNTING BRACKETS BY USING THE INTERMEDIATE SUPPORT 1800.Ø.02F

Size	AB (H 14)	AH (JS 15)	AU (±0.2)	AO (±0.2)	E	AT	SA	TG	TR (JS 14)	XA	Weight (g)
32	7	32	24	11	45	4	228.7	32,5	32	230.7	65
40	9	36	28	8	52	4	258.7	38	36	260.7	80
50	9	45	32	15	65	5	306.2	46,5	45	311.2	170
63	9	50	32	13	75	5	320	56,5	50	325	190

Front clevis (not specified by ISO-VDMA standards)

Used to mount the cylinder either parallel or at a right angle to the mounting plane; allows the cylinder to self-align under load. Made of die-cast aluminium alloy or steel (see ordering code) and painted black.



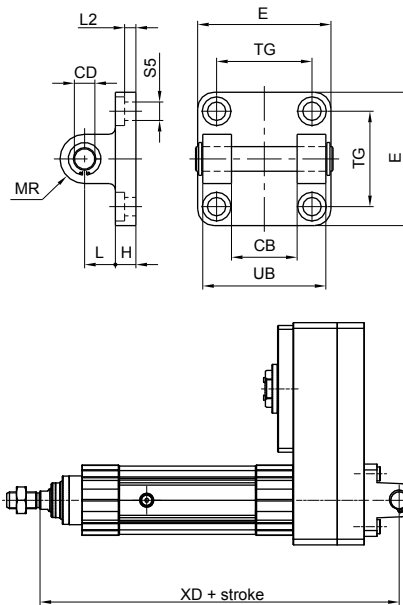
Ordering code:

Aluminium **1380.Ø.08F**
Steel **1320.Ø.19F**

Size	CD (H9)	E		FL (±0,2)	H		L		MR	TG	UB (h14)	L2 (±0,5)	S5 (H13)	Weight (g)	
		Aluminium	Steel		Aluminium	Steel	Aluminium	Steel						Aluminium	Steel
32	10	45	45	22	9	10	13	12	10	32,5	45	5,5	6,6	50	150
40	12	52	55	25	9	10	16	15	12	38	52	5,5	6,6	75	235
50	12	65	65	27	11	10	16	17	12	46,5	60	6,5	9	125	340
63	16	75	75	32	11	12	21	20	16	56,5	70	6,5	9	190	550

Rear clevis (MP2)

Similar to type 08 but includes a hinge pin. This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of die-cast aluminium or steel (see ordering code) and painted black.



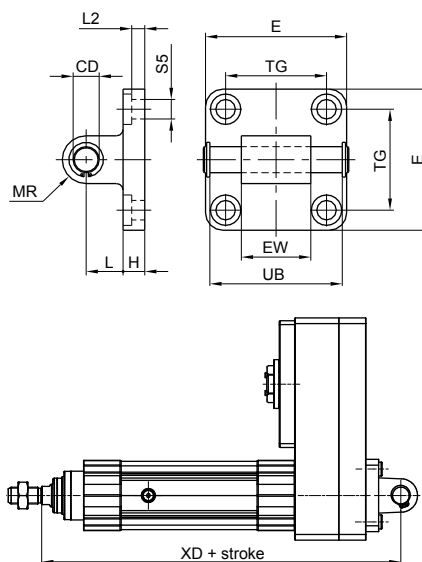
Ordering code :

Aluminium	1380.Ø.09F
Steel	1320.Ø.20F

Size	CB (H 14)	CD	E		H		L		MR	TG	UB (h14)	XD	L2 (±0,5)	S5	Weight (g)	
			Aluminium	Steel	Aluminium	Steel	Aluminium	Steel							Aluminium	Steel
32	26	10	45	45	9	10	13	12	10	32,5	45	228.7	5,5	6,6	80	180
40	28	12	52	55	9	10	16	15	12	38	52	257.7	5,5	6,6	130	290
50	32	12	65	65	11	10	16	17	12	46,5	60	306.2	6,5	9	185	400
63	40	16	75	75	11	12	21	20	16	56,5	70	325	6,5	9	310	670

Rear male clevis (MP4)

Similar to 09 and 20F clevis except for the connection, which is male rather than female. Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load. Made of die-cast aluminium or steel (see ordering code) and painted black.



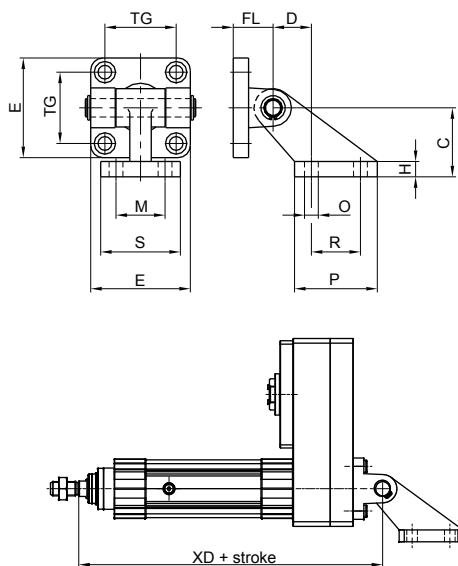
Ordering code :

Aluminium	1380.Ø.09/1F
Steel	1320.Ø.21F

Size	CD	E		EW	H		L		MR	TG	UB (±0,5)	XD	L2 (±0,5)	S5	Weight (g)	
		Aluminium	Steel		Aluminium	Steel	Aluminium	Steel							Aluminium	Steel
32	10	45	45	26 $\left(\frac{0,3}{0,8}\right)$	9	10	13	12	10	32,5	46	228.7	5,5	6,6	90	210
40	12	52	55	28 $\left(\frac{0,3}{0,8}\right)$	9	10	16	15	12	38	53	257.7	5,5	6,6	130	330
50	12	65	65	32 $\left(\frac{0,3}{0,8}\right)$	11	10	16	17	12	46,5	61	306.2	6,5	9	190	430
63	16	75	75	40 $\left(\frac{0,3}{0,8}\right)$	11	12	21	20	16	56,5	71	325	6,5	9	340	810

Simple rear trunnion with support brackets (not specified by ISO-VDMA standards)

Used to mount cylinders parallel to the plane to which the counter clevis is attached.
Allows self-alignment of the cylinder rod under load with an oscillation up to 90 degrees from the mounting plane.



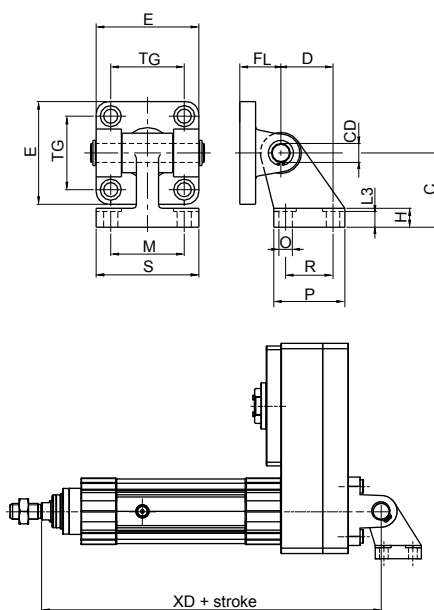
Ordering code: **1380.Ø.11F**

Aluminium

Counter clevis can be ordered separately with code **1320.Ø.11/1F**

Size	C (±0,2)	D (±0,5)	E	H	FL	M (JS 14)	TG	O (H 13)	P	R (JS 14)	S	XD	Weight (g)
32	32	18	45	8	22	25	32,5	7	37	20	41	228.7	130
40	45	25	52	10	25	32	38	9	54	32	52	257.7	260
50	45	25	65	10	27	32	46,5	9	54	32	52	306.2	330
63	63	32	75	12	32	40	56,5	11	75	50	63	325	600

Square angle trunnion



Ordering code:

Aluminium **1380.Ø.35F**

Counter clevis can be ordered separately with code **1320.Ø.11/2F**

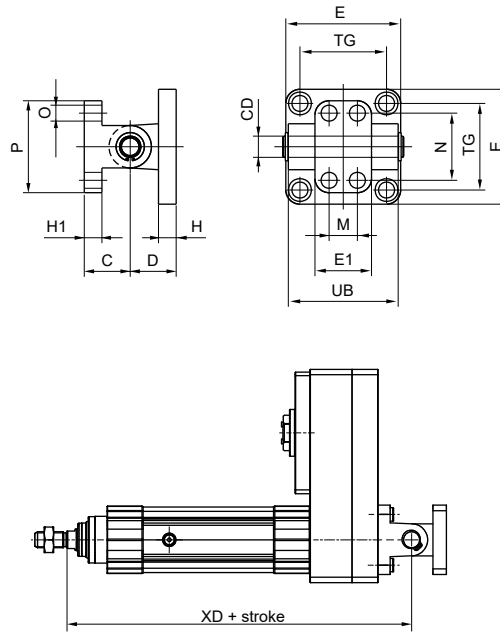
Steel **1320.Ø.23F**

Counter clevis can be ordered separately with code **1320.Ø.24F**

Size	E		TG	FL	D (JS14)	CD	C (JS15)	H		L3		R (JS14)	P	O (H13)	S	M (JS14)	XD	Weight (g)	
	Aluminium	Steel						Aluminium	Steel	Aluminium	Steel							Aluminium	Steel
32	45	45	32,5	22	21	10	32	8	8	6,4	6,5	18	31	6,6	51	38	228.7	120	340
40	52	55	38	25	24	12	36	10	10	8,4	8,5	22	35	6,6	54	41	257.7	180	500
50	65	65	46,5	27	33	12	45	12	12	10,4	10,5	30	45	9	65	50	306.2	225	640
63	75	75	56,5	32	37	16	50	14	12	12,4	10,5	35	50	9	67	52	325	435	1250

Standard trunnion (not specified by ISO-VDMA standards)

Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation of ± 60 degrees.



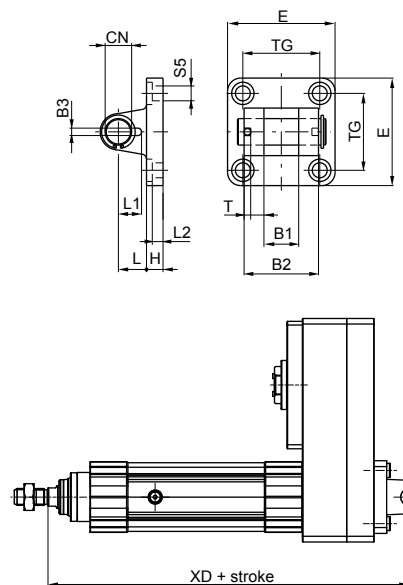
Ordering code: **1380.Ø.10F**

Aluminium

Size	CB ($\pm 0,2$)	CD	D	E	E1	H	H1	M ($\pm 0,2$)	N ($\pm 0,2$)	O	P	TG	UB	XD	Weight (g)
32	18	10	22	45	25	10	8	-	28	7	40	32.5	45	228.7	110
40	26	12	25	52	32	10	10	16	38	9	52	38	52	257.7	190
50	26	12	27	65	32	12	10	16	38	9	52	46.5	60	306.2	240
63	34	16	32	75	46	12	12	25	54	11	75	56.5	70	325	490

Rear narrow clevis

Utilised with clevis 15F or 25F allows the cylinder to oscillate in all directions. Made of die-cast aluminium or steel (see ordering code) and painted black.



Ordering code:

Aluminium	1380.Ø.30F
Steel	1320.Ø.29F

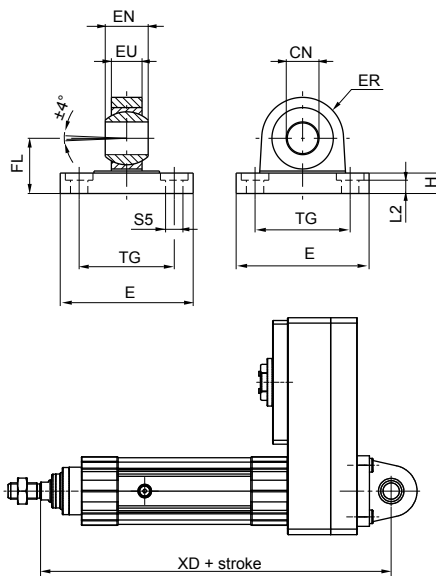
Size	B1 (H 14)	B2 (d 12)	B3 ($\pm 0,2$)	CN	E		H		L		L1	L2 ($\pm 0,5$)	S5	T	TG	XD	Weight (g)	
					Aluminium	Steel	Aluminium	Steel	Aluminium	Steel							Aluminium	Steel
32	14	34	3.3	10	45	45	9	10	13	12	11.5	5.5	6.6	3	32.5	228.7	70	160
40	16	40	4.3	12	52	55	9	10	16	15	12	5.5	6.6	4	38	257.7	115	270
50	21	45	4.3	16	65	65	11	10	16	17	14	6.5	9	4	46.5	306.2	200	370
63	21	51	4.3	16	75	75	11	12	21	20	14	6.5	9	4	56.5	325	290	670

Rear male clevis (with joined head according to DIN 648K standard)

Utilised with clevis 30F or 29F allows the cylinder to oscillate in all directions. Made of die-cast aluminium or steel (see ordering code) and painted black.

Ordering code:

Aluminium	1380.Ø.15F
Steel	1320.Ø.25F



Size	CN (H 7)	E		EN (-0.1)	ER		EU	FL (JS 15)	H		L2 (±0.5)	S5	TG	XD	Weight (g)	
		Aluminium	Steel		Aluminium	Steel			Aluminium	Steel					Aluminium	Steel
32	10	45	45	14	16	15	10.5	22	9	10	5,5	6,6	32,5	228.7	60	210
40	12	52	55	16	19	18	12	25	9	10	5,5	6,6	38	257.7	100	310
50	16	65	65	21	21	20	15	27	11	10	6,5	9	46,5	306.2	180	400
63	16	75	75	21	24	23	15	32	11	12	6,5	9	56,5	325	245	710

Complete standard trunnion (with joined head according to DIN 648K standards)

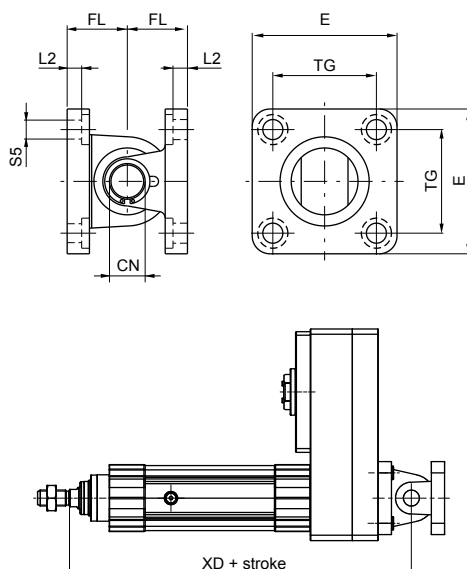
Ordering code:

Aluminium	1380.Ø.36F
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Counter clevis can be ordered separately with code **1380.Ø.15F**

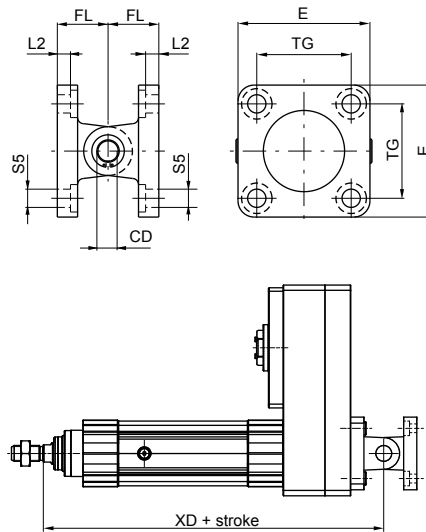
Steel	1320.Ø.26F
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Counter clevis can be ordered separately with code **1320.Ø.25F**



Size	CN	E		FL (JS 15)	L2 (±0.5)	S5	TG	XD	Weight (g)	
		Aluminium	Steel						Aluminium	Steel
32	10	45	45	22	5,5	6,6	32,5	228.7	130	380
40	12	52	55	25	5,5	6,6	38	257.7	215	580
50	16	65	65	27	6,5	9	46,5	306.2	380	770
63	16	75	75	32	6,5	9	56,5	325	535	1380

Standard complete trunnion



Ordering code:

Aluminium **1380.Ø.22F**

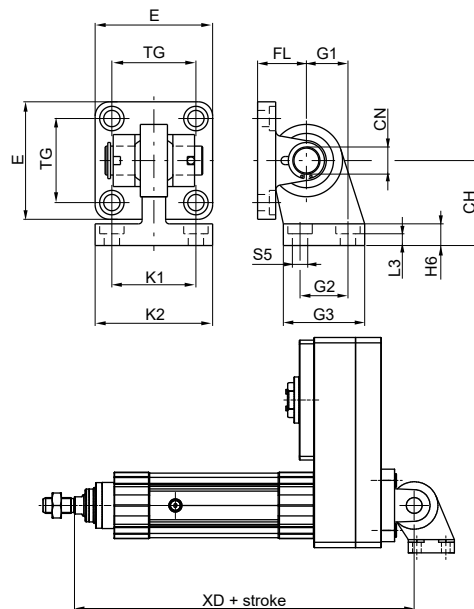
Mounting consists of rear clevis code
1380.Ø.09F + rear male clevis code
1380.Ø.09/1F (ordering separately)

Steel **1320.Ø.22F**

Mounting consists of rear clevis code
1320.Ø.20F + rear male clevis code
1320.Ø.21F (ordering separately)

Size	CD	E	FL	L2 (±0.5)	S5	TG	XD	Weight (g)
32	10	45	22	5,5	6,6	32,5	228.7	360
40	12	55	25	5,5	6,6	38	257.7	580
50	12	65	27	6,5	9	46,5	306.2	780
63	16	75	32	6,5	9	56,5	325	1370

Complete square angle trunnion (with joined head according to DIN 648K standards)



Ordering code: 1320.Ø.27F

Steel

Mounting consists of rear clevis narrow
code **1320.Ø.29F** + simple counter clevis
code **1320.Ø.28F** (ordering separately)

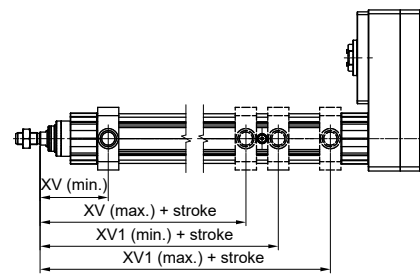
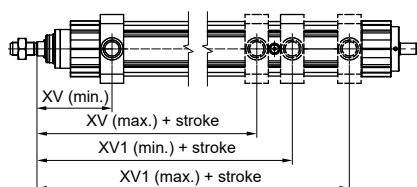
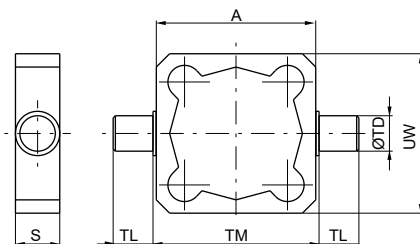
Size	CH (JS 15)	CN	E	FL (JS 15)	G1 (JS 15)	G2 (JS 14)	G3	H6	K1 (JS 14)	K2	L3 ()	S5	TG	XD	Weight (g)
32	32	10	45	22	21	18	31	10	38	51	8,5	6,6	32,5	228.7	330
40	36	12	55	25	24	22	35	10	41	54	8,5	6,6	38	257.7	480
50	45	16	65	27	33	30	45	12	50	65	10,5	9	46,5	306.2	830
63	50	16	75	32	37	35	50	12	52	67	10,5	9	56,5	325	1220

Intermediate trunnion

Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end plates of the cylinder. It is attached to the barrel by means of eight pointed grains that block in the "V" groove of the four protruding shapes. In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.



Attention: mounting of the clevis with contact to the end plates does not allow the use of the magnetic sensors as the switch limits.



Ordering code: **1320.Ø.12F**

Steel

Size	A	S	TD (e9)	TL (h14)	TM (h14)	UW	Weight (g)	Maximum axial thrust (N)
32	49	18	Ø12	12	50	59	180	790
40	62	21	Ø16	16	63	62	270	1200
50	73	21	Ø16	16	75	73	330	1900
63	87	27	Ø20	20	90	87	650	3100

Size	XV		XV1	
	min.	max. + stroke	min. + stroke	max. + stroke
32	62	51,75	87,75	120,5
40	67,5	57	96	144
50	80,5	73,75	112,75	168,5
63	83,5	76,75	121,75	179,5

Minimum cylinder stroke: 30mm (In addition to stroke required)

Intermediate trunnion

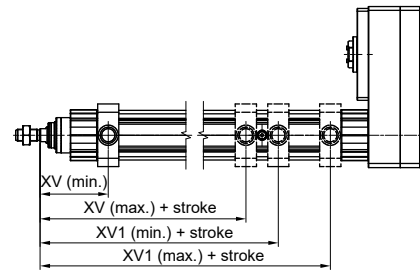
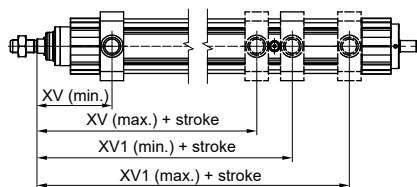
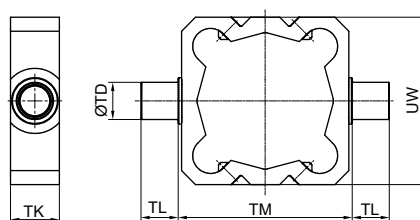
Anodized aluminium intermediate trunnion with steel bushes to be mounted on the barrel.

This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the trunnion to the extruded barrel. In the case of heavy duty applications it is recommended that the trunnion is secured using expansion pins.

In case off applications with high speed, high load and high pressure please contact our technical office.



Please note: If the trunnion is mounted in direct contact with the cylinder end cap, it will not be possible to fit magnetic sensors at the end of stroke.



Ordering code: **1320.Ø.12BF**

Aluminium with steel bushes

Size	TD	TL	TM	TK	UW	Weight (g)
32	Ø12	12	50	18	54	70
40	Ø16	16	63	21	60	110
50	Ø16	16	75	21	72	140
63	Ø20	20	90	27	87	280

Size	XV		XV1	
	min.	max. + stroke	min. + stroke	max. + stroke
32	62	51,75	87,75	120,5
40	67,5	57	96	144
50	80,5	73,75	112,75	168,5
63	83,5	76,75	121,75	179,5

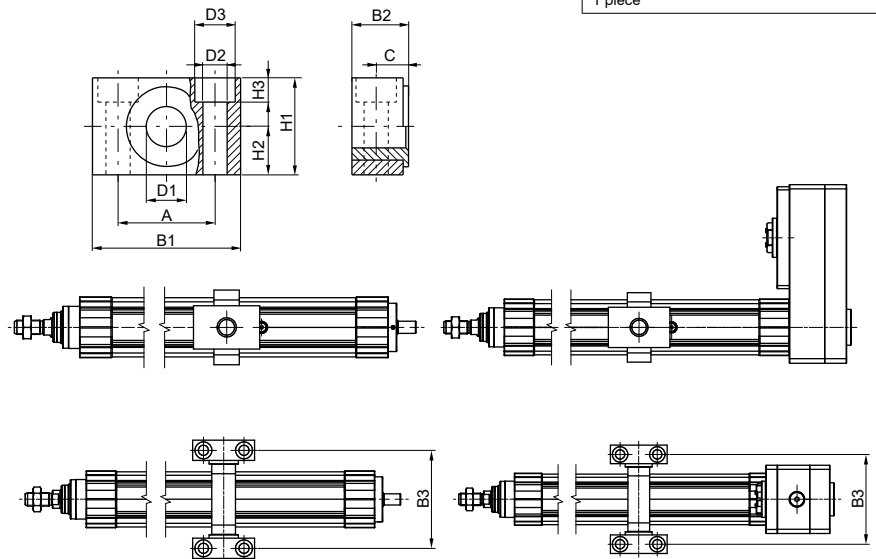
Minimum cylinder stroke: 30mm (In addition to stroke required)

Support for intermediate trunnion

Combining two supports to the intermediate trunnion it is possible to fix the cylinder on plane surface.

Ordering code: 1320.Ø.12/1F

1 piece

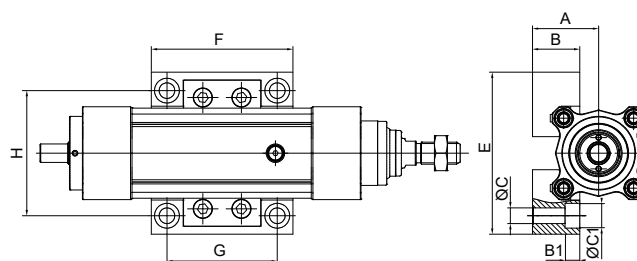


Size	A (±0.2)	B1	B2	B3	C	D1 (F7)	D2	D3	H1	H2 (±0.1)	H3	Weight (g) 1 piece
32	32	46	18	71	10.5	12	6.6	11	30	15	7	100
40	36	55	21	87	12	16	9	15	36	18	9	150
50	36	55	21	99	12	16	9	15	36	18	9	150
63	42	65	23	116	13	20	11	18	40	20	11	235

Intermediate support

Ordering code: 1800.Ø.02F

2 pieces



Attention: fixing not available on the following cylinders:

Size 40, with motor Part No. 1800B0801900 on-line

Size 50, with motor Part No. 1800B1001900 on-line

Maximum axial thrust per single support (with screws tightened to 20Nm):

Ø32 = 1950N - Ø40 = 6550N - Ø50 = 7400N - Ø63 = 7400N

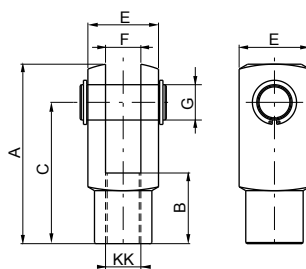
Number of supports for applications

Size	A	B	B1	C	ØC1	E	F	G	H	Weight (g)
32	32	25	8	8.5	13.5	82.5	77	60	60	313
40	36	26	8	8.5	13.5	88	77	60	68	331
50	45	31.5	8	9	14	102	77	60	81.5	391
63	50	31.5	8	9	14	111.5	77	60	91.5	391

Size	Stroke	
32	≤100	>100
40	≤80	>80
50	≤70	>70
63	≤55	>55
N° supports	1	2

Fork

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zinc-plated steel.

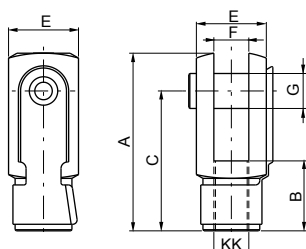


Ordering code: **1320.Ø.13F**

Steel

Fork with clips

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zinc-plated steel.

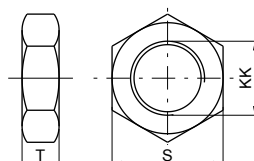


Ordering code: **1320.Ø.13/1F**

Steel

Nut

Used to block the position of the fork.



Ordering code: **1320.Ø.18F**

Steel

Size	A	B	C	E	F (B12)	G	S	T	KK	Weight (g)	
										Fork	Nut
32	52	20	40	20	10	10	17	6	M10x1.25	100	15
40	62	24	48	24	12	12	19	7	M12x1.25	140	20
50	83	32	64	32	16	16	24	8	M16x1.5	340	20
63	83	32	64	32	16	16	24	8	M16x1.5	340	20

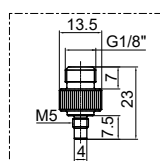
Lubrication filling syringe

Syringe complete with nozzle (M5)

For the amount of lubricant and re-fill interval, please refer to the assembly instructions.



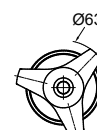
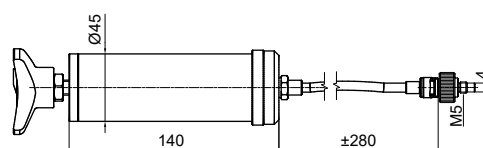
****ATTENTION:** the syringe is supplied empty



Ordering code: **1800.99.03**

Weight 420 g

Nozzle (M5) can be ordered separately with code **1800.UM5**



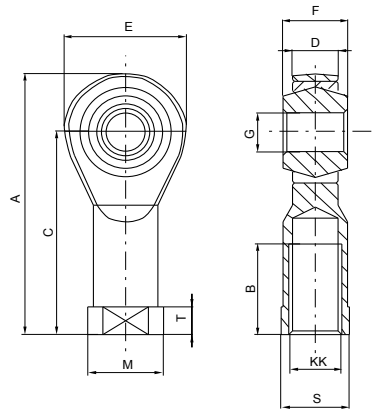
Lubrication (Grease)

For the ball screws, please use the lubricant (grease) specified.

Ordering code: **RS/GRAS19**

Weight 1.000 g

Ball joint

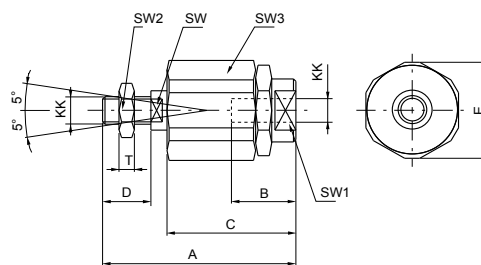


Ordering code: 1320.Ø.32F

Steel

Size	A	B	C	D (-0.1)	E	F	G (H7)	KK	M	S	T	Weight (g)
32	57	20	43	10.5	28	14	10	M10x1.25	19	17	6.5	76
40	66	22	50	12	32	16	12	M12x1.25	22	19	6.5	110
50	85	28	64	15	42	21	16	M16x1.5	27	22	8	220
63	85	28	64	15	42	21	16	M16x1.5	27	22	8	220

Self-aligning joint



Ordering code: 1320.Ø.33F

Steel

Size	A	B	C	D	E	KK	SW	SW1	SW2	SW3	T	Weight (g)
32	71	20	46	20	32	M10x1.25	12	19	17	30	6	220
40	75	20	46	24	32	M12x1.25	12	19	19	30	7	230
50	103	32	63	32	45	M16x1.5	20	27	24	41	8	660
63	103	32	63	32	45	M16x1.5	20	27	24	41	8	660

Magnetic Sensors (Limit switches)

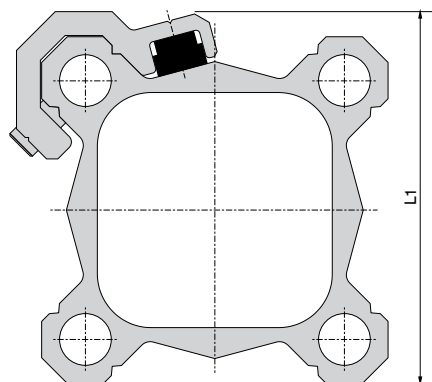
Accidental collision of a mechanical limit switch can cause damage the electric cylinder. Therefore it is advisable to use magnetic sensor limit switches.

(Important: avoid external magnetic interference near the sensors).

You can use REED or HALL effect sensors. For the types available, see following pages.

The limit switches must be fixed to the cylinder barrel profile using the appropriate aluminum mounting brackets indicated below.

Sensor brackets 1580_., MRS_., MHS_.		
Code	Size	L1
1320.AS	32	48
	40	54
1320.BS	50	66
	63	76



Assembly

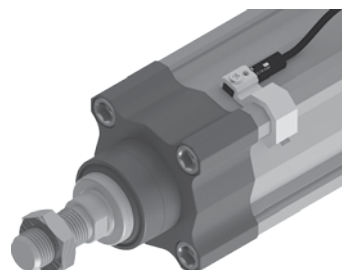
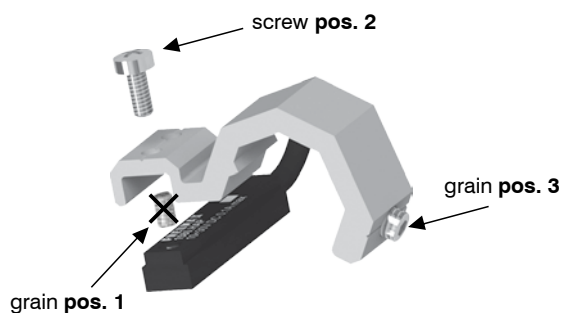
Remove the screw as shown on **pos.1** and attached to the bracket as shown in **pos.2**.

attach the switch/bracket on to the barrel in the required position and fix with the screw a shown on **pos.3**.

There after, check that the function of the switch is correct and is in the correct position byoperating the actuator slowly.

This will help avoid damage to the cylinder because of incorrect switch position.

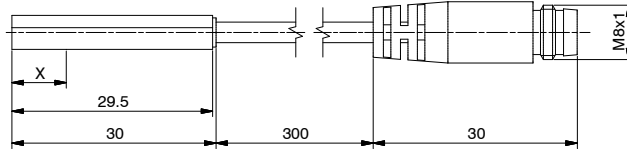
The Homing search phase must be performed at low speed(close to 10mm/sec) to avoid harmful impacts to the device.



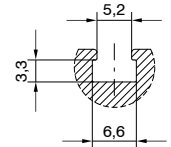
Sensor with 2,5 m. cable



Weight 27 g



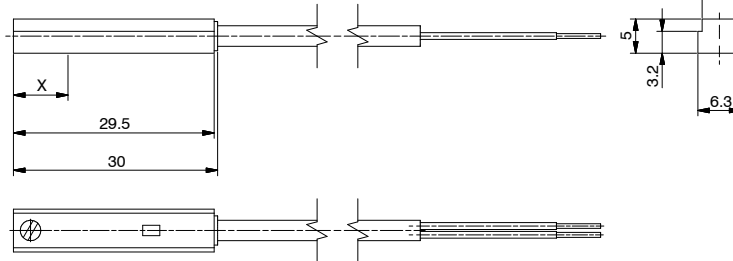
Slot detail type "B"



Sensor with cable and M8 connector



Weight 15 g

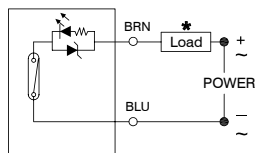


Sensor ordering codes

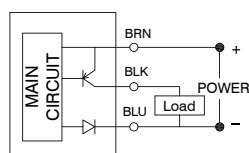
Ampulla Reed sensors, with led, Universal, N.O. (Normally open)		X=point of commutation
1580.U	(2 wires) cable 2.5 mt.	15 mm
MRS.U	(2 wires) cable 300 mm, M8 connector (use MC1 or MC2 connectors)	15 mm
1580.UAP	PNP (3 wires) cable 2.5 mt.	15 mm
MRS.UAP	PNP (3 wires) cable 300 mm, M8 connector (use MCH1 or MCH2 connectors)	15 mm

Hall effect sensors, with led, DC, N.O. (Normally open)		X=point of commutation
1580.HAP	PNP (3 wires) cable 2.5 mt.	8 mm
1580.HAN	NPN (3 wires) cable 2.5 mt.	8 mm
MHS.P	PNP (3 wires) cable 300 mm, M8 connector (use MCH1 or MCH2 connectors)	8 mm

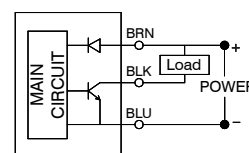
Diagrams and connections



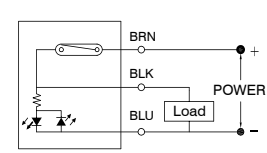
with Reed bulb (2 wires)



Hall-PNP effect (3 wires)



Hall-NPN effect (3 wires)



with Reed bulb (3 wires)

* The load (LOAD) can be connected either to negative or positive pole

TECHNICAL CHARACTERISTICS	1580.U	MRS.U	1580.UAP	MRS.UAP	1580.HAP	1580.HAN	MHS.P
Type of contact	N.O.						
Output type	/		PNP			NPN	PNP
Maximum permanent current	100mA						
Maximum permanent power	14 VA - 10 W		4 VA - 3 W		3 W		
Voltage range	5 ... 230V DC/AC	5 ... 30V DC/AC	10 ... 30 V DC/AC		10 ... 30 V DC		
Working temperature	-10°C ... +70°C						
Maximum voltage drop	3,5 V		0V **		2 V		
Cable section (mm²)	2 x 0,14 Ø3,3 mm PUR	2 x 0,14 Ø3,3 mm PUR	3 x 0,14 Ø3,3 mm PUR		3 x 0,14 Ø3,3 mm PUR		
Degree of protection	IP 67						

**Even if one sensor generates a voltage drop very close to 0 volts, we suggest to connect no more than 30 sensors in series.

Cable ordering code

Connection 2 wires	
MC1	cable 2 wires l=2.5m with M8 connector
MC2	cable 2 wires l=5m with M8 connector
MC3	cable 2 wires l=10m with M8 connector

Connection 3 wires	
MCH1	cable 3 wires l=2.5m with M8 connector
MCH2	cable 3 wires l=5m with M8 connector
MCH3	cable 3 wires l=10m with M8 connector

Connector



Connector



Sensor



Sensor



Connection 2 wires

- 1 Brown (+)
- 4 Blue (-)
- 3 Not use

Connection 3 wires

- 1 Brown (+)
- 4 Black (signal)
- 3 Blue (-)



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