

General

These rotary actuators convert linear motion of a piston into a rotary motion via a rack and pinion device, using a single pinion-rack system for the 6410 version and a double system on 6400 versions. The 6410 series actuators have fixed stops at 90 and 180 degrees; while on the 6400 series, rotation can be adjusted between 0 and 190 degrees using variable stops that can also be substituted with hydraulic stoppers (shock absorbers). These devices are equipped with a rotating table upon which the load is fixed.



Ordering code

6400. .

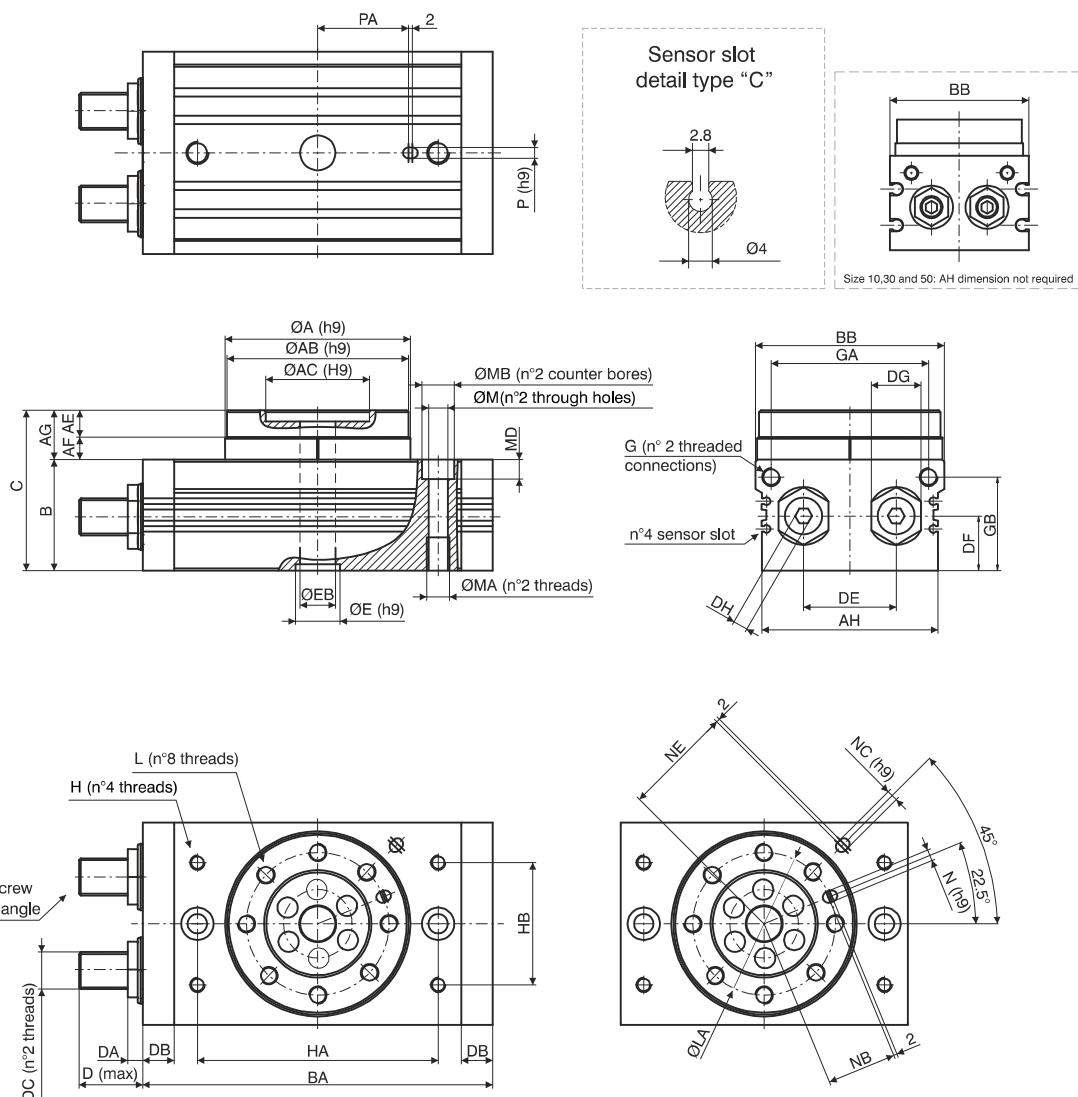
- **A** = Standard
- **R** = Cushioning
(Shock absorber)
- **10** (piston ø15)
- **30** (piston ø21)
- **50** (piston ø25)
- **100** (piston ø32)
- **200** (piston ø40)

Construction characteristics

Body	aluminium
Cover plate/End plate	aluminium
Piston seal	NBR rubber
Pinion	steel
Rack	steel
Turn table	aluminium
Cushioning	elastic bumper (hydraulic damper available on request)

Technical characteristics

Fluid	filtered and preferably lubricated air or not (If lubricated the lubrication must be continuous)
Max. pressure	10 bar (for type 100 and 200, 6 bar)
Working temperature	-5°C - +70°C
Rotation angle range	0 - 190°
Max. rotation	190°
Rotation speed	s/90° (see rotation time table)

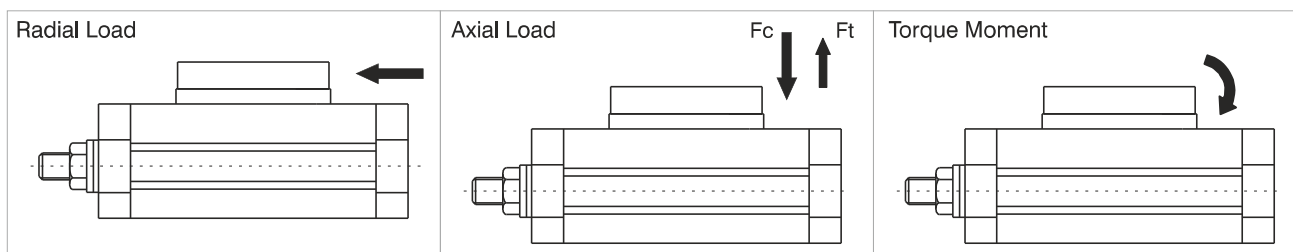


Size	10	30	50	100	200
Ø piston	Ø15	Ø21	Ø25	Ø32	Ø40
ØA ^{h9}	46	67	77	100	118
ØAB ^{h9}	45	65	75	98	116
ØAC ^{h9}	20	32	35	56	64
Useful depth	4	4.5	5	6	9
AE	8	10	12	14.5	16.5
AF	5	7	8	12.5	15.5
AG	13	17	20	27	32
AH	/	/	/	95	115
B ^{+0.5 / 0}	34	40	46	59	74
BA	92	127	152	189	240
BB ^{+0.5 / 0}	50	70	80	102	120
C ^{+0.5 / 0}	47	57	66	86	106
D	17.7	25	31.4	34.3	40.2
DA	8.6	10.6	14	8	8
DB	9.5	12	15.5	17	24
DC	M8x1	M10x1	M14x1.5	M20x1.5	M27x1.5
DE	20	29	38	50	60
DF	15.5	18.5	22	29.5	36.5
DG	12	14	19	27	36
DH	4	5	6	8	10
ØE ^{h9}	15	22	26	24	32
Useful depth	3	3	3	3.5	5.5
ØEB	5	9	10	19	24
G	M5x0.8	G1/8	G1/8	G1/8	G1/8

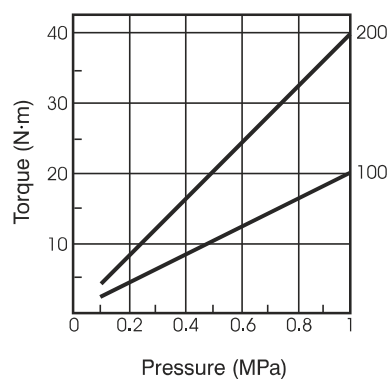
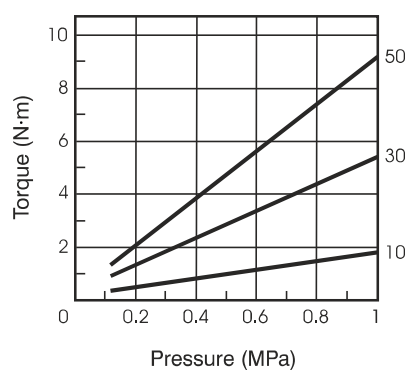
Size	10	30	50	100	200
Ø piston	Ø15	Ø21	Ø25	Ø32	Ø40
GA	34.5	50	63	85	103
GB	27.8	32	37.5	50.5	65.5
H	M5x0.8	M6x1	M8x1.25	M8x1.25	M12x1.75
Useful depth	8	8	8	10	13
HA	60	84	100	130	150
HB	27	37	50	66	80
L	M5x0.8	M6x1	M8x1.25	M10x1.5	M12x1.75
Useful depth	8	10	12	14.5	16.5
LA	32	48	55	77	90
M	6.8	8.6	10.5	10.4	14.2
MA	M8x1.25	M10x1.5	M12x1.75	M12x1.75	M16x2
Useful depth	12	15	18	18	25
MB	11	14	18	17.5	20
MD	6.5	8.5	10.5	10.5	12.5
N ^{h9}	3	4	5	6	8
Useful depth	3.5	4.5	5.5	6.5	8.5
NB	15	23	26.5	37.5	44
NC ^{h9}	/	/	/	6	8
Useful depth	/	/	/	4.5	4.5
NE	/	/	/	59	69
P ^{h9}	/	/	/	6	8
Useful depth	/	/	/	4.5	6.5
PA	/	/	/	49	54
Weight (gr)	530	1230	2080	4100	7650

Permissible Loads

		Size				
		10	30	50	100	200
Radial Load (N)		80	200	320	400	550
Axial Load (N)	F _c	80	370	450	710	1000
	F _t	75	200	300	500	750
Torque Moment (Nm)		2,5	5,5	9,5	18	25



Torque Diagrams



Rotation time (sec./90°)

Dimension	With adjusting screw	With hydraulic decelerator
10 - 30 - 50	0.2 - 1	0.2 - 0,7
100	0.2 - 2	0.2 - 1
200	0.2 - 2.5	0.2 - 1

Kinetic energy

Dimension	With adjusting screw	With hydraulic decelerator
10	0.006	Please apply to our tech-dpt for info (as general rule expressed valves can be multiplied by 3)
30	0.045	
50	0.08	
100	0.30	
200	0.52	



Ordering code

6410.Ø.

50

63

80

100

90 = rotation 90°

180 = rotation 180°

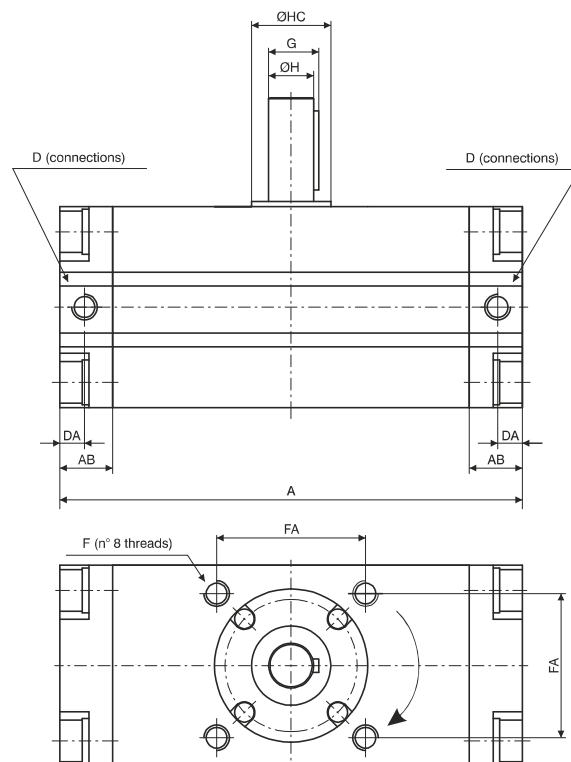
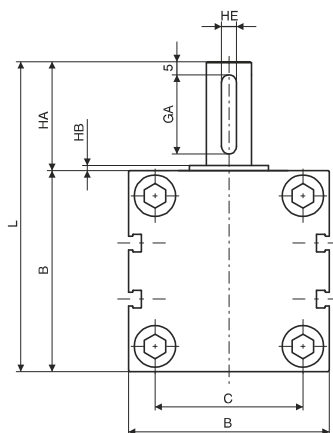
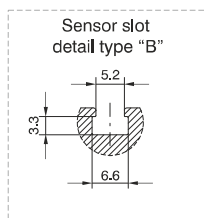
Construction characteristics

Body	aluminium
Piston	aluminium
End plate	aluminium
Piston seal	NBR rubber
Pinion	steel
Rack	steel

Technical characteristics

Fluid	filtered and preferably lubricated air or not (If lubricated the lubrication must be continuous)
Max. pressure	10 bar
Working temperature	-5°C - +70°C

Overall dimensions Ø50 and Ø100



Bore		Ø50	Ø63	Ø80	Ø100
A	90°	156	175	199	259
	180°	189	214	243	325
AB		17	20	23.5	25
B		64	77	93	113
D		G1/8	G1/8	G1/4	G3/8
DA		8.5	10	12	12.5
F		M8x1.25	M10x1.5	M12x1.75	M12x1.75
	Useful depth	8	12	13	14
FA		48	60	72	85
G		17	19.5	22.5	28
GA		25	30	40	45
H		15	17	20	25
HA		36	41	50	60
HB		2.5	2.5	3	4
HC		25	30	35	40
HE		5 ^{0/-0.03}	6 ^{0/-0.03}	6 ^{0/-0.03}	8 ^{0/-0.036}
L		100	118	143	173
Weight (gr)	90°	1500	2500	4300	8500
	180°	1700	3000	5000	9500

Allowable Loads

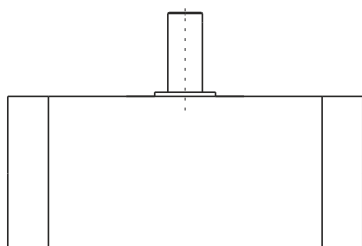
Radial Load (N)

Axial Load in compression(N)

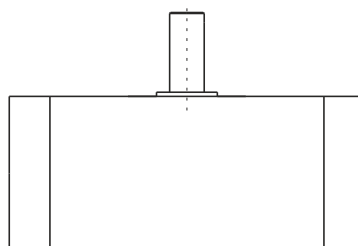
Tensile Axial Load (N)

Bore			
Ø50	Ø63	Ø80	Ø100
200	300	400	600
500	600	900	1000
200			

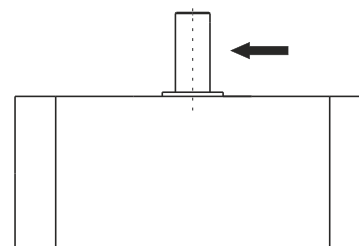
Compression
Axial Load



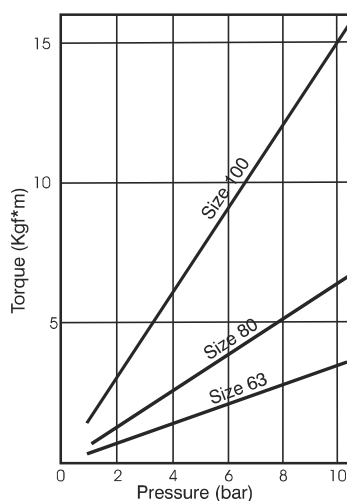
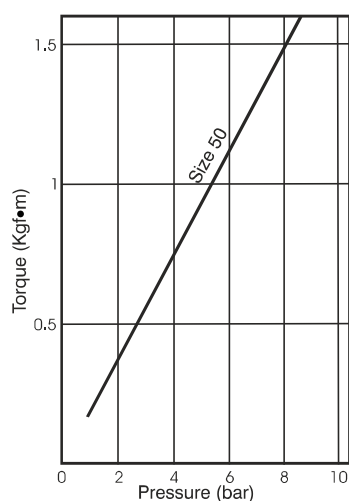
Tensile
Axial Load



Radial Load



Torque Diagrams

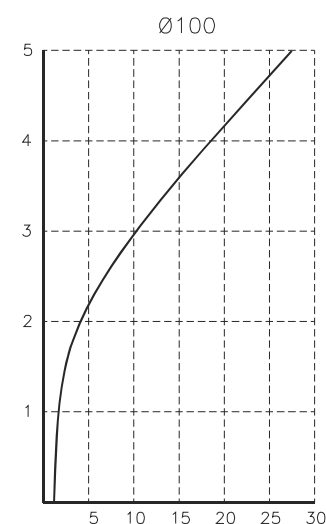
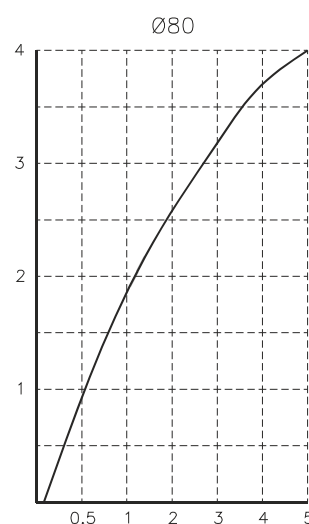
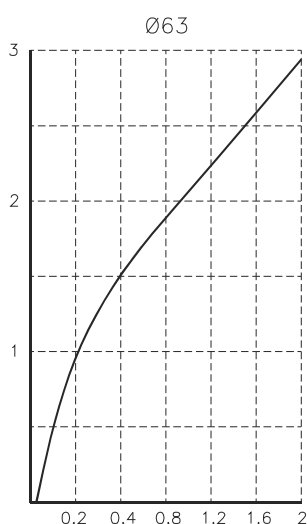
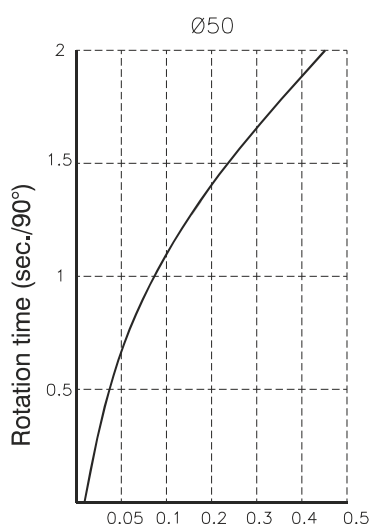


Max Kinetic energy (Kg·cm)

Kinetic energy (cushioning angle 35°)

Bore			
Ø50	Ø63	Ø80	Ø100
10	15	20	30

Rotation time according to inertial moments



Inertial moments (Kg·cm·sec²)



General

The vane type rotary actuators, 6420 series is designed to operate at 90-180 or 270 deg. In a contained space. Dimensionally are more compact than other types of rotary actuators.

The range includes bore sizes from 10 to 100 in 4 configurations:

- Basic.
- With rotary angle adjustment mechanism.
- With sensing support.
- With rotary angle adjustment mechanism and sensing support.

The bodies are in aluminium, the shafts in chrome plated steel and the seals in NBR.

The sensing support kit enables for the sensors to be positioned in any position.

The rotary angle adjustment mechanism enables the adjustment of the complete rotation on bore sizes 10 to 40 while on the others sizes carries as standard hydraulic dampers which enable the adjustment only of the last part of the rotation.

The units can be fixed using the thread on the body or the through holes on the body.

On bore sizes 50 to 100 the shaft runs into ball bearings which ensure high resistance. o rotante è guidato su cuscinetti a sfere che assorbono i carichi radiali e assiali, garantendo durata e affidabilità.

Ordering code

6420.Ø.
 Ø10
 Ø15
 Ø20
 Ø30
 Ø40
 Ø50
 Ø63
 Ø80
 Ø100

Rotation angle

90 = 90°
180 = 180°
270 = 270°

Version

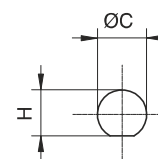
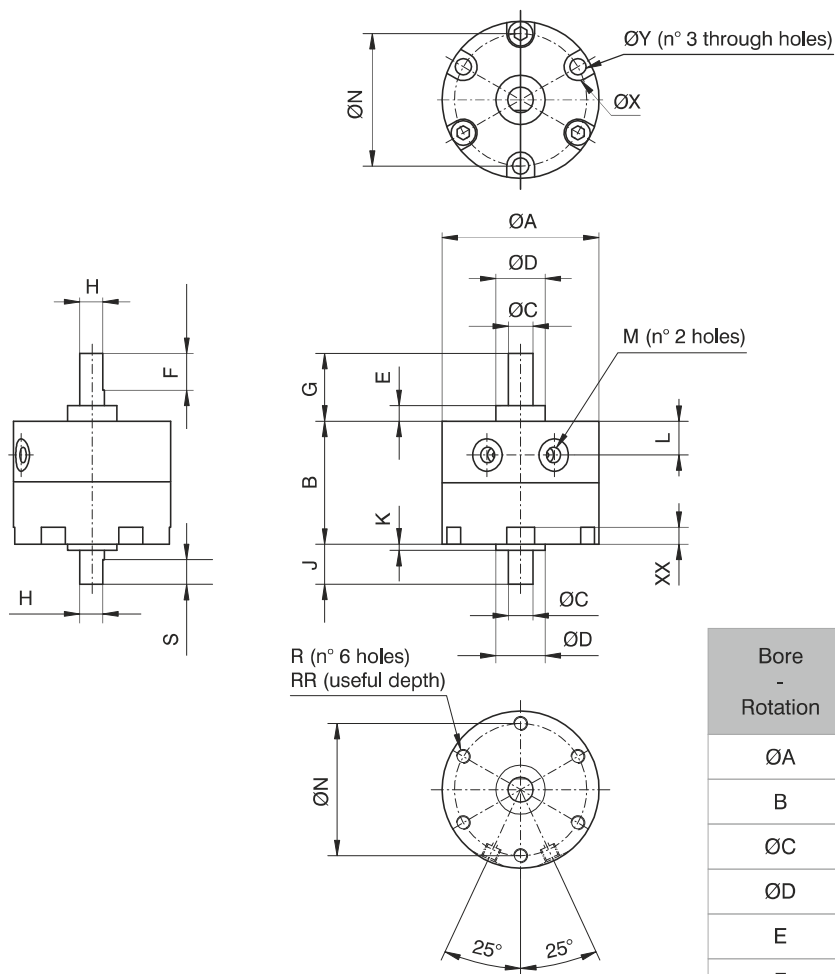
/ = Without adjustable rotation angle, and without sensor support
R = With adjustable rotation angle
S = With sensor supports
T = With adjustable rotation angle and sensor supports

Construction characteristics

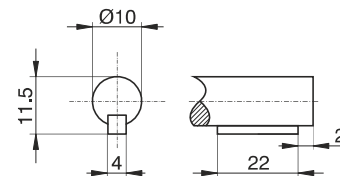
Body	aluminium
Rod	steel
Seals	NBR
Vane	vulcanized NBR rubber on steel core
Cushoning	elastic bumper; hydraulic dampers from size Ø50 - Ø100 versions R or T

Technical characteristics

Fluid	Filtered and not lubricated air
Working pressure	1,5 - 7 bar
Temperature	0°C - 50°C
Rotation range	90° - 180° - 270°
Max. allowed leak	Ø10 - Ø40 = 0,3 NI/min / Ø50 - Ø100 = 0,5 NI/min

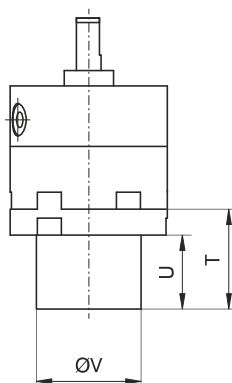


- Ø10 - Ø30 long shaft
- Ø10 - Ø40 short shaft

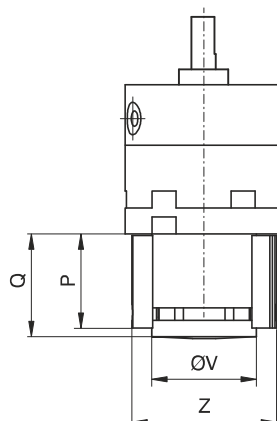


- Ø40 long shaft

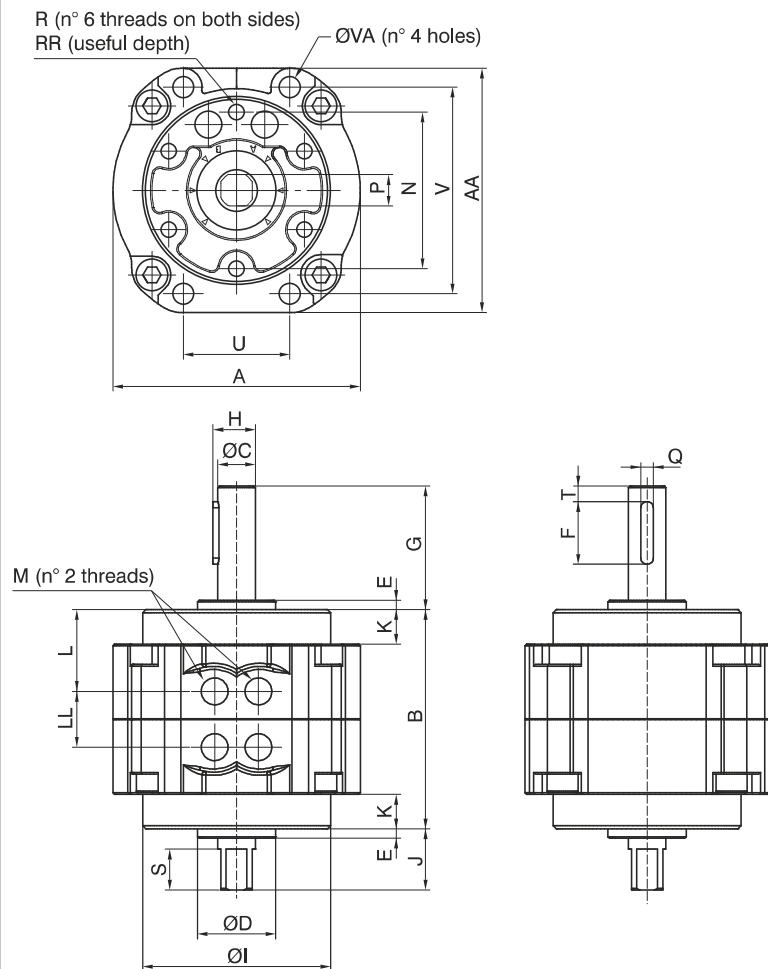
Adjustable rotation angle version



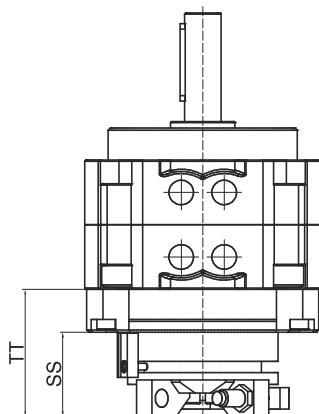
With sensor support version



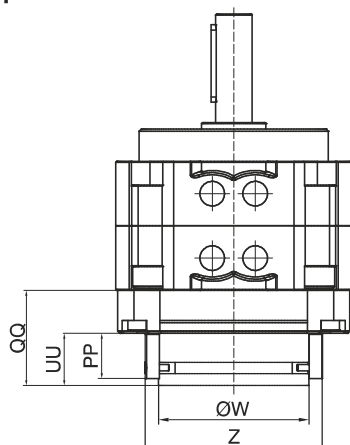
Bore - Rotation	10 - 90°	15 - 90°	20 - 90°	30 - 90°	40 - 90°
	10 - 180°	15 - 180°	20 - 180°	30 - 180°	40 - 180°
	10 - 270°	15 - 270°	20 - 270°	30 - 270°	40 - 270°
ØA	30	35	44	51	64
B	17	20,1	29,1	40	45
ØC	4	5	6	8	10
ØD	9	12	14	16	25
E	3	4	4,5	5	6,5
F	9	10	10	12	22
G	14	18	20,3	22	30
H	3,5	4,5	5,5	7,5	9
J	8	9	9,6	13	15
K	1	1,5	1,6	2	4,5
L	4,2	5	8,5	11	9,5
M	M5x0,8	M5x0,8	M5x0,8	M5x0,8	M5x0,8
ØN	24	29	36	43	56
P	23,3	28	28	30,8	33
Q	24	29,5	30,5	34	36
R	M3x0,5	M3x0,5	M4x0,7	M5x0,8	M5x0,8
RR	3	3	4,5	9	9
S	5	6	7	8	9
T	24	28	28,5	32,5	34,5
U	18	22	21	24	26
ØV	18	24	30	34	34
ØX	6	6	7,5	9	9
XX	3,5	3,5	4,5	5,5	5,5
ØY	2,3	2,3	3,2	4,2	4,2
Z	29	34	42	47	47
Weight (gr.)	Base	28	48	112	200
	With regulation rotation system	78	116	240	390



Adjustable rotation angle version

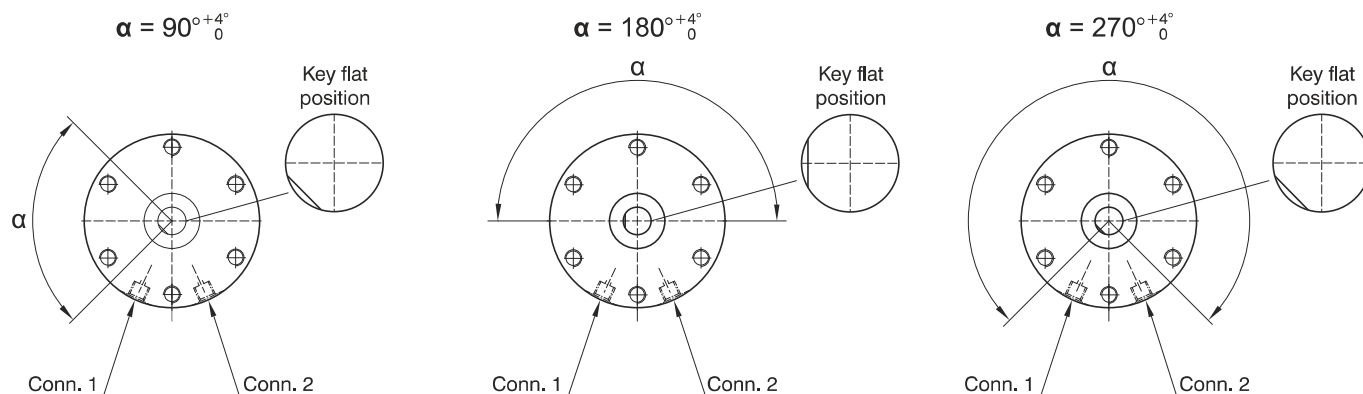


With sensor support version



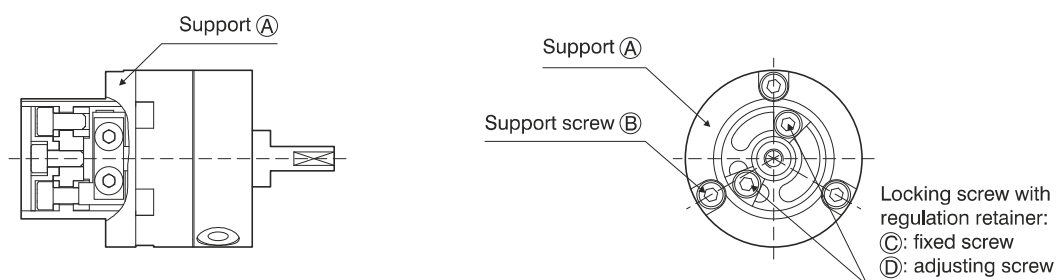
Bore - Rotation	50 - 90°	63 - 90°	80 - 90°	100 - 90°
	50 - 180°	63 - 180°	80 - 180°	100 - 180°
	50 - 270°	63 - 270°	80 - 270°	100 - 270°
A	79	98	110	140
AA	78	98	110	140
B	70	80	90	103
ØC	12	15	17	25
ØD	25	28	30	45
E	3	3	3	4
F	20	25	36	40
G	39,5	45	53,5	65
H	13,5	17	19	29
ØI	60	75	88	108
J	19,5	21	23,5	30
K	11	14	15	11,5
L	26	28,9	30	35,4
LL	18	22,2	30	32,2
M	G1/8"	G1/8"	G1/4"	G1/4"
N	50	60	70	80
P	10	12	13	19
PP	21	21	21	21
Q	4	5	5	7
QQ	39,4	43	44	48,5
R	M6x1	M8x1,25	M8x1,25	M10x1,5
RR	8	10	14	14
S	13	14	16	16
SS	38	38	39	39,5
T	5	7,5	5	5
TT	53	56,5	59	63
U	34	39	48	60
UU	24,5	24,5	24,5	24,5
V	66	83	94	120
ØVA	6,5	9	9	11
ØW	60	60	70	70
Z	73	73	83	83
Weight (gr.)	Base	760	1290	1920
	With regulation rotation system	1100	1690	2370

ROTATING SHAFT KEY FLAT POSITION



ROTATION ANGLE SETUP

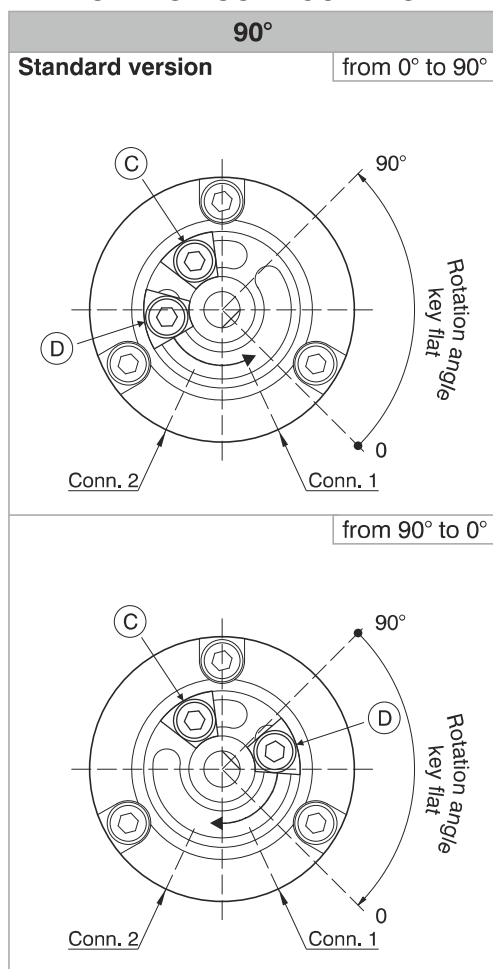
To regulate the rotation angle (codes 6420..R or T), follow the instructions below



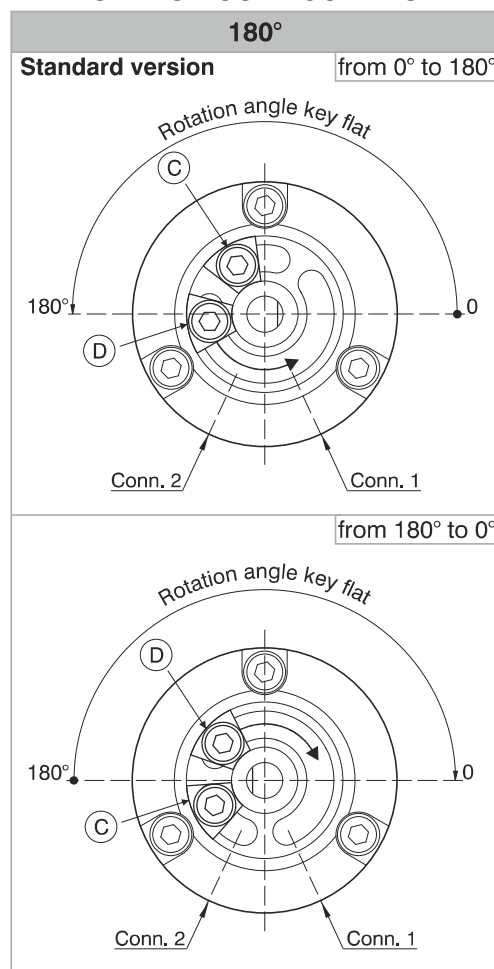
Phase 1 : Choose the regulation configuration based on the following options
(consider the actuator base position):

rotation 90°, regulation 0 - 90°, rotation 180°, regulation 0 - 180°, rotation 270°, regulation 0 - 175°

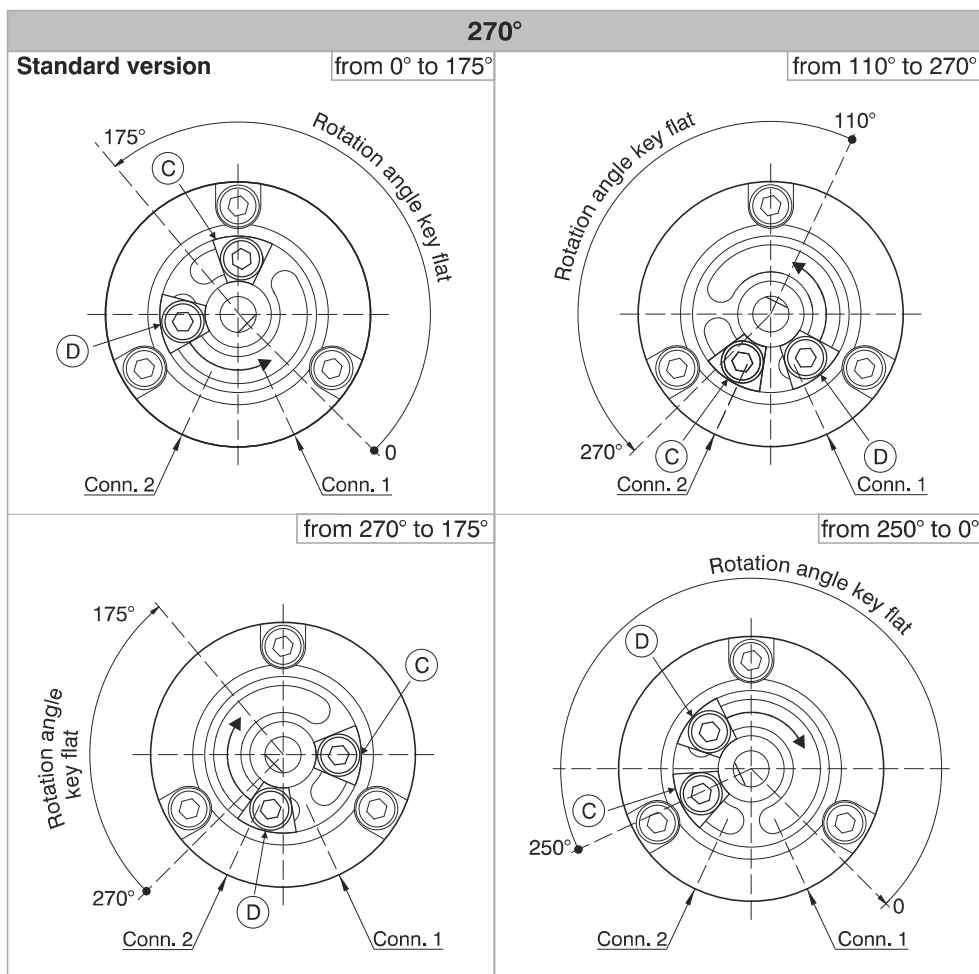
ROTATION CONFIGURATION



ROTATION CONFIGURATION



ROTATION CONFIGURATION



Ⓒ = Fixed screw Ⓓ = Adjusting screw

Phase 2 : If the desired settings do not correspond to the basic version settings:

- remove screw (E) and disk (F) or (G) (depending on the version) (see figure 1)
- remove screws (B), the actuator support (A) (see figure 1) and unlock blocking screws (C) and (D) (see rotation configuration)
- position screws (C) and (D) and the key flat of rotating shaft as indicated in the chosen rotation configuration in order to align the key flat of rotating shaft (see figure 2)
- re-assemble actuator support (A), tighten screws (B)
- position screws (C) and (D) according to the desired adjustment and tighten the screws
- re-assemble disk (F) or (G) and screw (E)

Figure 1

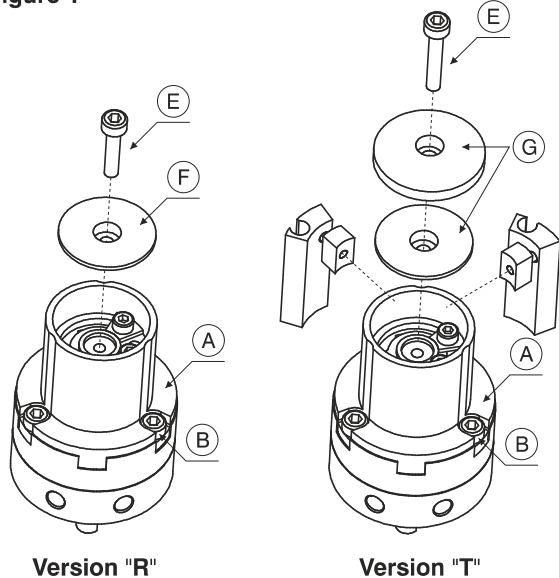
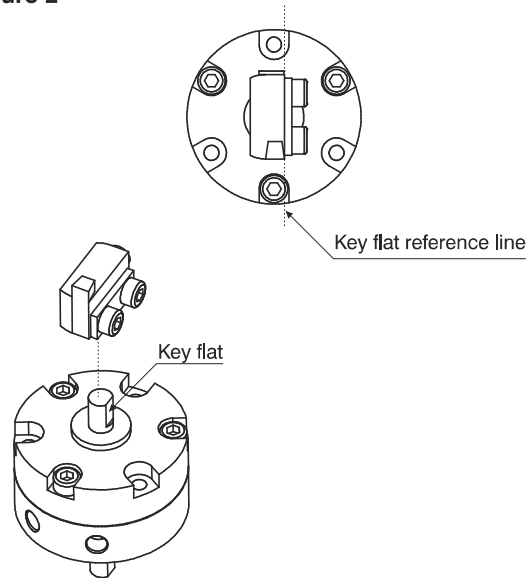
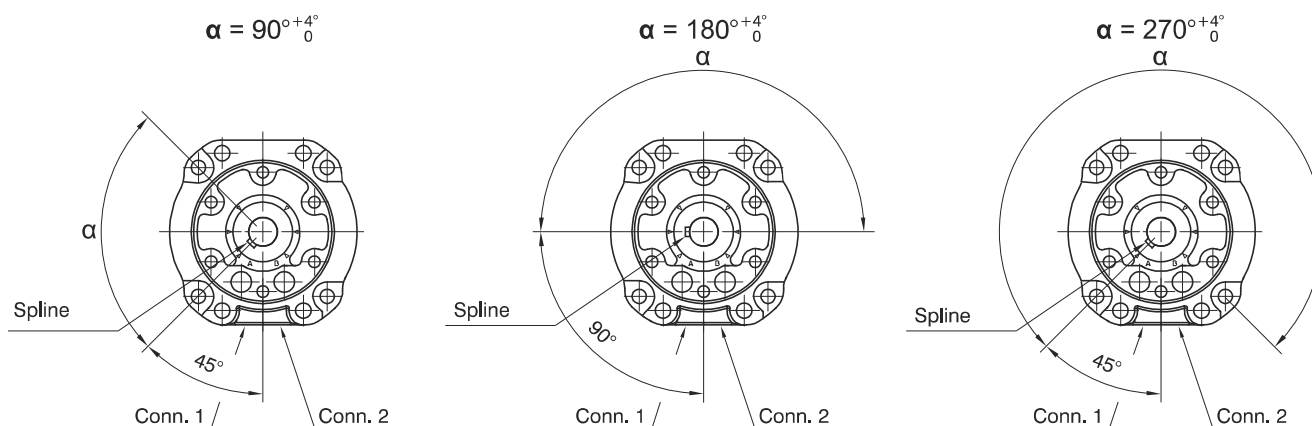


Figure 2

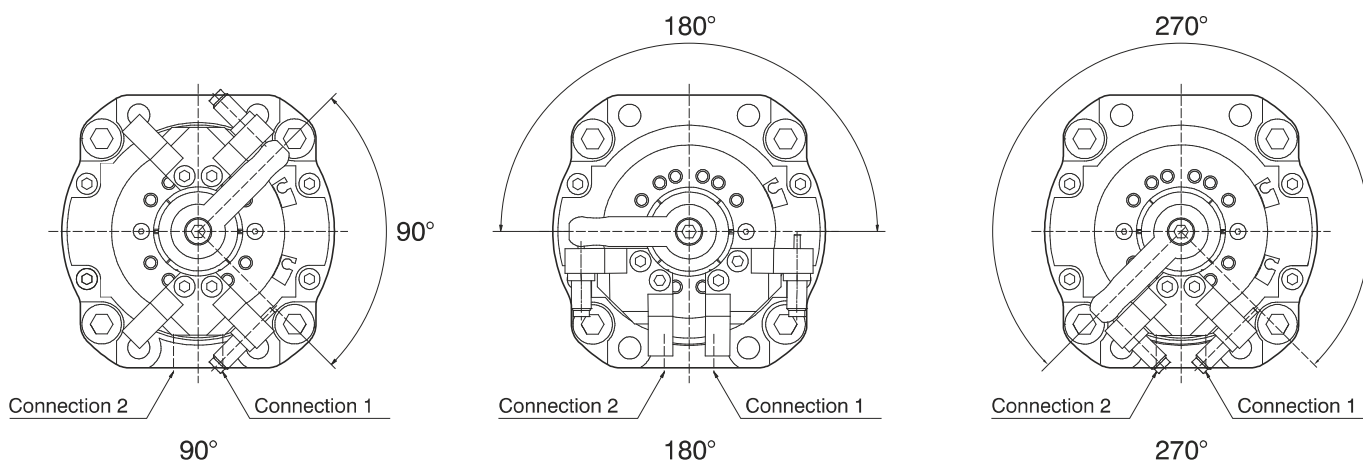


ROTATING SHAFT SPLINE POSITION



ROTATION ANGLE SETUP

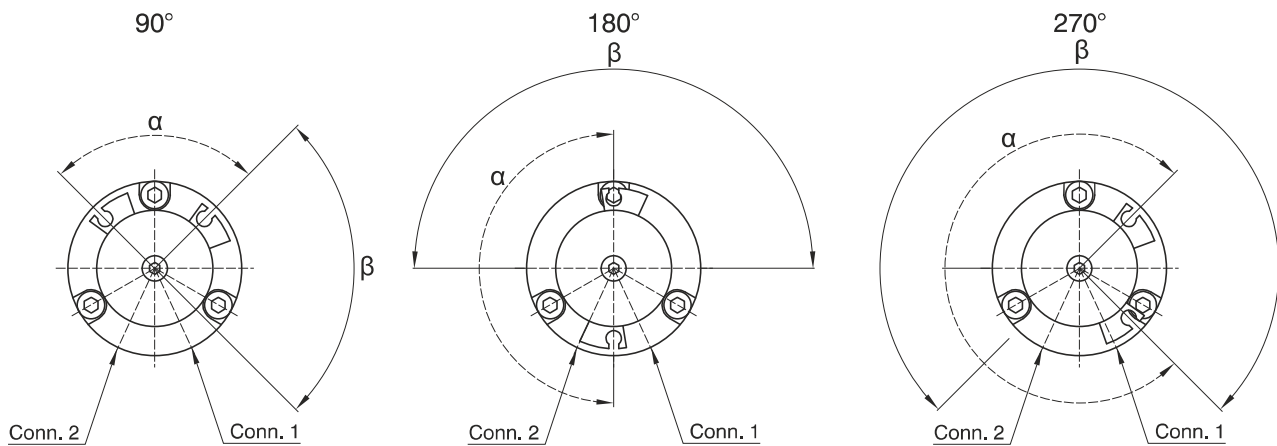
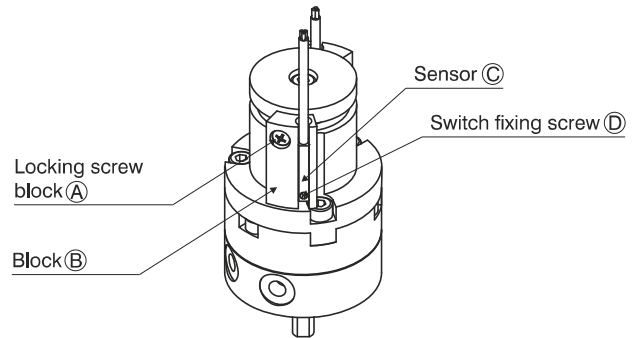
The version with adjustable rotation angle (cod. 6420..R or T) is available with hydraulic dampers which enable to regulate the rotation angle by 10° and to decelerate moving mass.



Phase 1 - Unfasten screw (A)

Phase 2 - Assemble the switch (C) into the dedicated housing (B) and lock with screw (D)

Phase 3 - Rotate block (B) in the desired position (see following image)



α - magnet rotating angle

β - shaft key flat rotating angle

For correct functionality position the switch within angle α

Phase 4 - tighten screw (A)

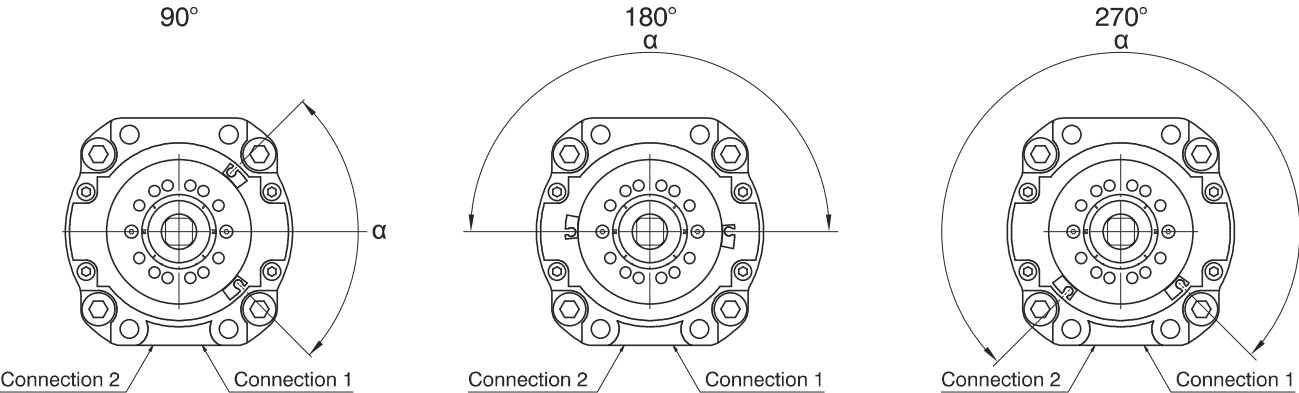
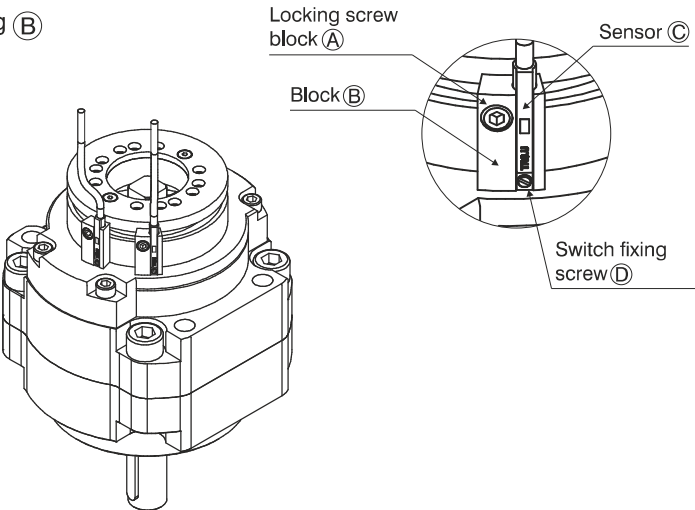
Phase 5 - repeat the following phases for the second switch

AVAILABLE SENSORS

	Code
	1581.U
	TRS.U
	1581.HAP
	THS.P

	Code
	1583.DC
	1583.HAP
	THR.P

- Phase 1** - Unfasten screw (A)
Phase 2 - Assemble the switch (C) into the dedicated housing (B) and lock with screw (D)
Phase 3 - Rotate block (B) in the desired position (see following image)



α - magnet rotating angle (that corresponds to the shaft key flat rotating angle)
For correct functionality position the switch within angle α

- Phase 4** - tighten screw (A)
Phase 5 - repeat the following phases for the second switch

AVAILABLE SENSORS

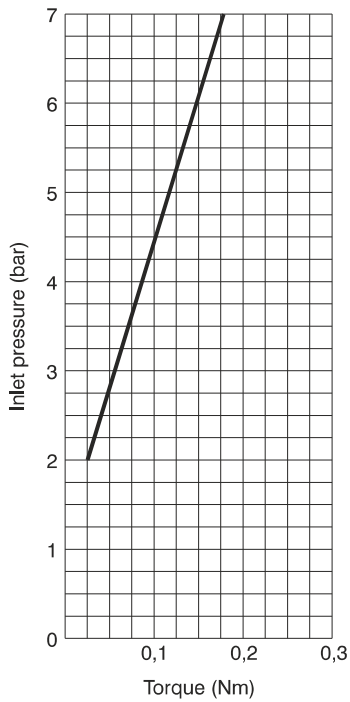
Version "S" : with sensor supports

	Code
	1581.U
	TRS.U
	1581.HAP
	Code
	1583.DC
	1583.HAP
	THR.P

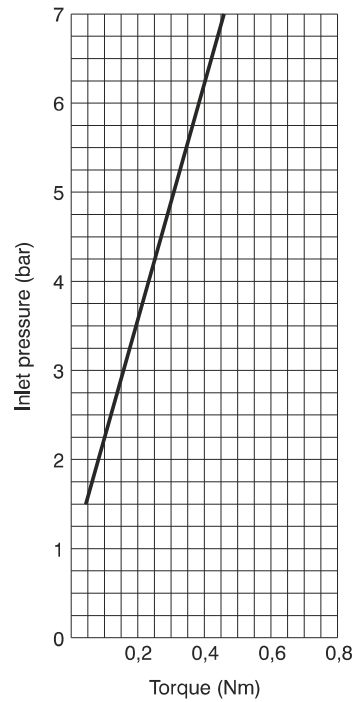
Version "T" : with adjustable rotation angle and sensor supports

	Code
	1583.DC
	1583.HAP
	THR.P

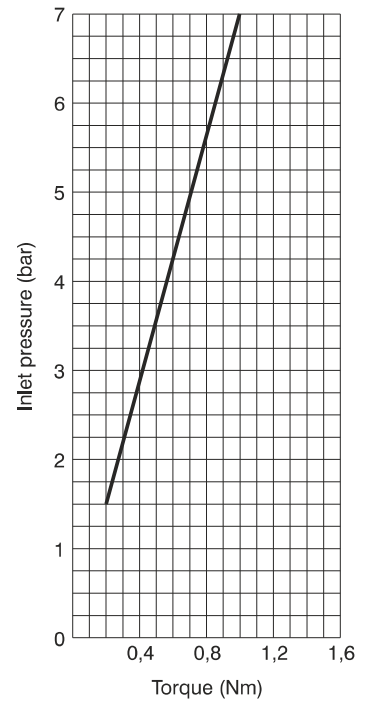
Ø10



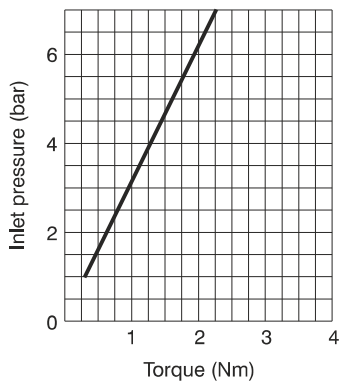
Ø15



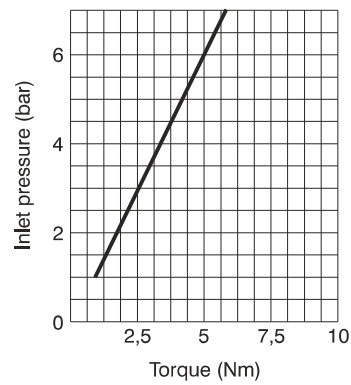
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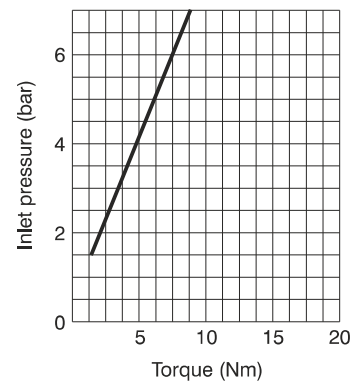
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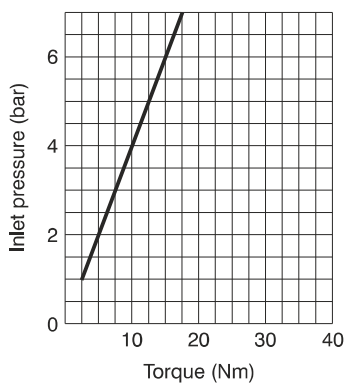
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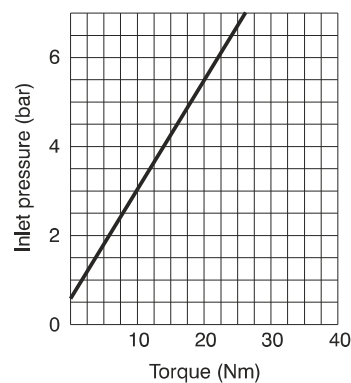
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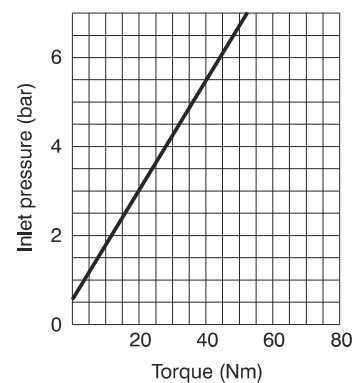
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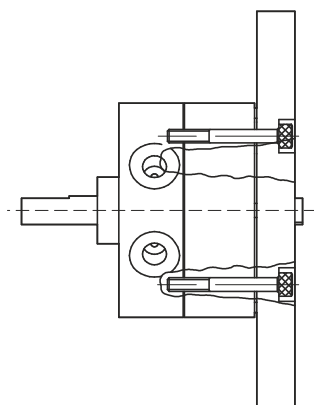
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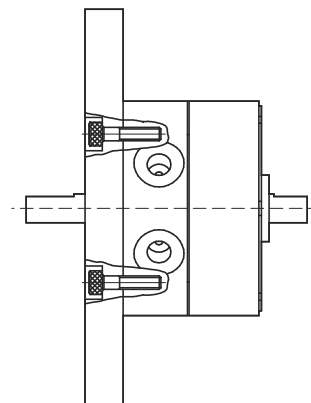
Ø100



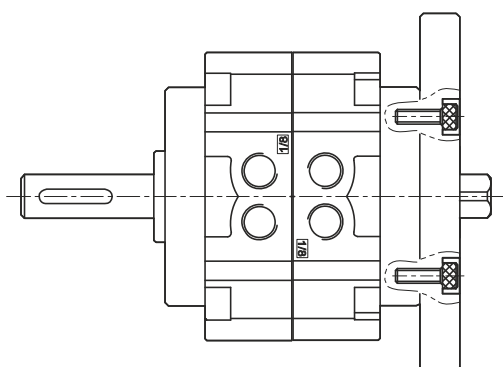
Mounting types



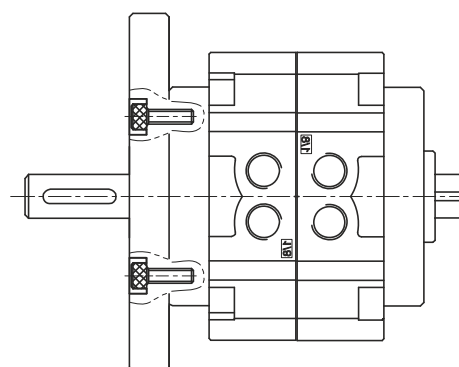
Rear mounting



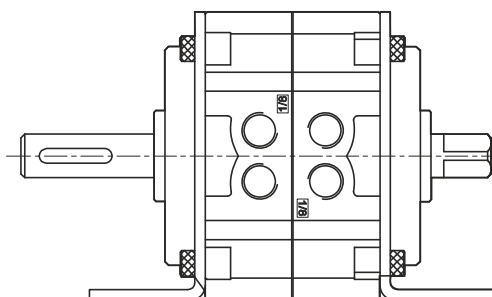
Frontal mounting



Rear mounting



Frontal mounting



Mounting with flange