



Moment of inertia



Technical data



Caution for safety
(Read before installing)



MRTH

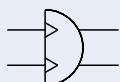
Male pivot gear
(standard type)

MRTH-D

Male pivot gear
(double end rod type)

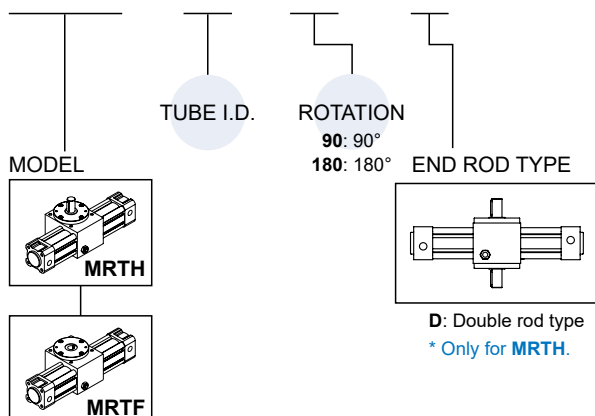
MRTF

Female pivot gear



Order example

MRTH — 40 — 90 — D



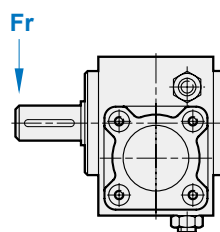
Features

- The body is manufactured in anodized aluminium alloy, and has been designed looking at the harmonious aesthetic development.
- Pinion and rack produced from carbon steel reduces backlash within the mechanism.
- Rotation adjustment screw.
- Magnetic as standard.

Specification

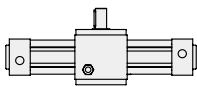
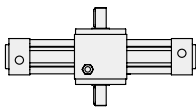
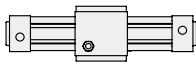
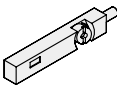
Model		MRTF, MRTH, MRTH-D	
Tube I.D. (mm)		40	63
Standard rotation		90±5°, 180±5°	
Rotating shaft dia. (mm)		16	24
Initial position of slot (mm)		See dimensional feature	
Medium		Filtered air with or without lubrication	
Operating pressure range		0.13~0.7 MPa	
Ambient temperature		-5~+60°C (No freezing)	
Max. allowable axial thrust (kg)		10	12
Cushion angle		74°	75°
Max. allowable kinetic energy	90°	0.266J	0.675J
	180°	0.58J	1.54J
Max. allowable radial trust (Fr)		514.5 N	725.2 N
Sensor switch		LN65 	

Max. allowable radial trust

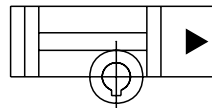


Cylinder weight

Unit: kg

Model	MRTH		MRTH-D		MRTF		LN65
Fig							
Tube I.D./Angle	90°	180°	90°	180°	90°	180°	Sensor switch
40	3.30	3.40	3.35	3.45	3.14	3.24	0.03
63	5.80	6.20	5.95	6.35	5.47	5.87	

Compressed air consumption for a complete cycle



Unit: L/cycle

Model	Rotation	Operating pressure (MPa)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
MRTH40	90°	0.1571	0.2352	0.3133	0.3915	0.4696	0.5477	0.6259	0.7040	0.7821	0.8603
MRTF40	180°	0.3141	0.4704	0.6267	0.7829	0.9392	1.0955	1.2517	1.4080	1.5643	1.7205
MRTH63	90°	0.4383	0.6564	0.8744	1.0925	1.3105	1.5286	1.7466	1.9647	2.1828	2.4008
MRTF63	180°	0.8766	1.3127	1.7488	2.1850	2.6211	3.0572	3.4933	3.9294	4.3655	4.8016

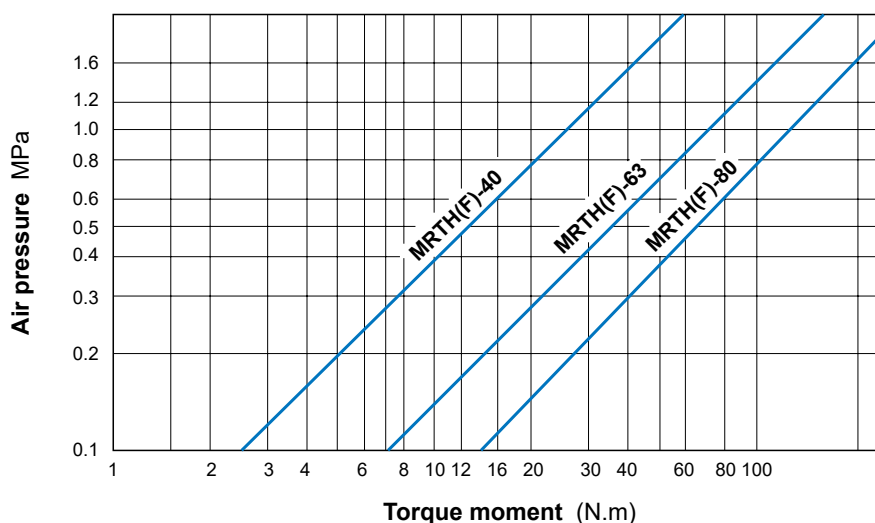
Model	MRTH, MRTF	
Tube I.D.(mm)	40	63
Constant K	0.3491	0.3927

The method of calculation (Compressed air consumption)

$$Q = 2 \times K \times A \times n \times Dg \times \frac{P+0.101}{0.101} \times 10^{-6}$$

Q:	Compressed air consumption (L/cycle)
A:	Piston area (mm ²)
Dg:	Rotation
P:	Air pressure (MPa)
K:	Constant
n:	Cycle of operation (cycle/min)

Output torque table

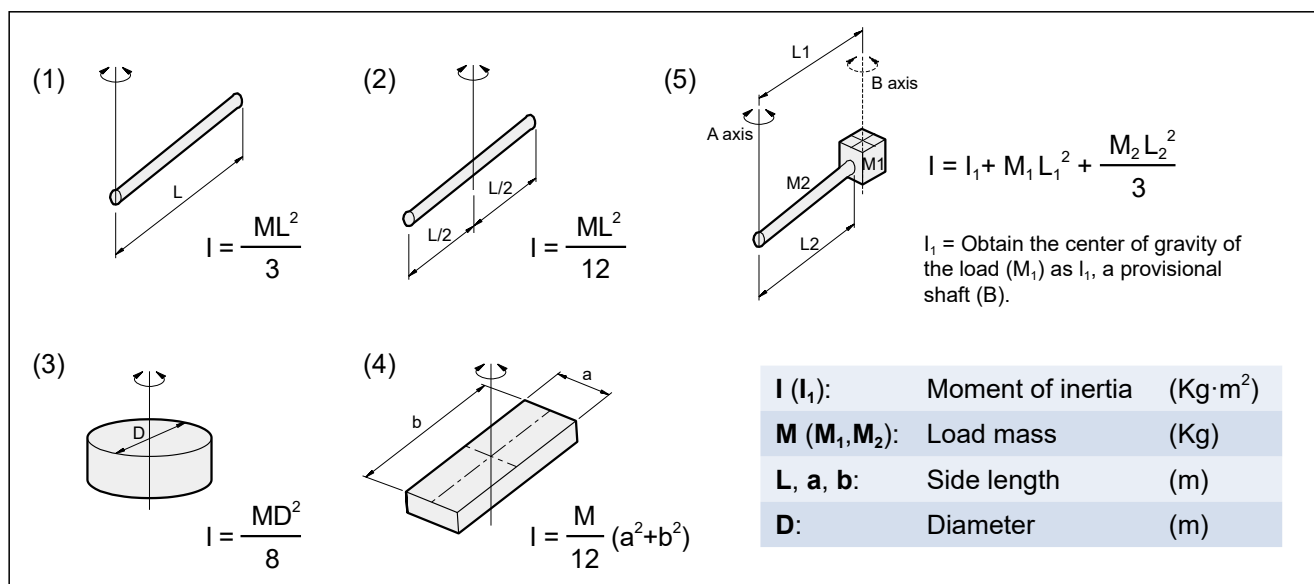


Kinetic energy of rotation motion

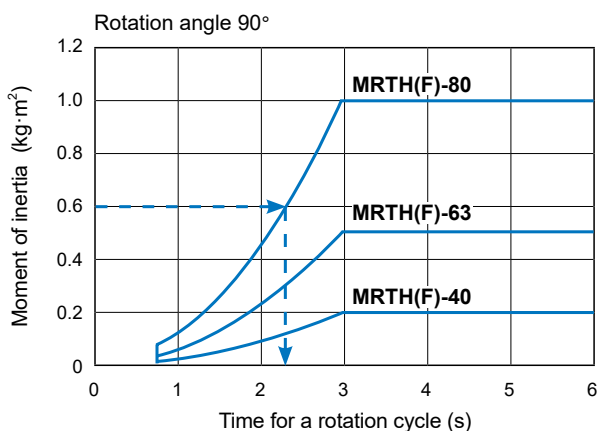
$$E = \frac{1}{2} \times I \omega^2$$

E:	Kinetic energy	(J)
I:	Moment of inertia	(Kg·m ²)
ω:	Angle speed	(rad/s)

Equation table moment of inertia

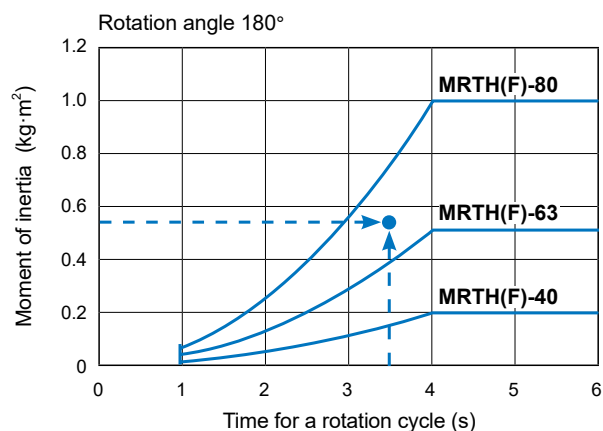


Moment of inertia



Example 1

When there are constraints for the moment of inertia of load, but not for rotation time. From "rotation angle = 90°", MRTH(F)-80, to operate at the load moment of inertia 0.6 kg·m²: MRTH(F)-80 will be 2.3 seconds or higher.



Example 2

When there are constraints for the moment of inertia of load, but not for rotation time. From "rotation angle = 180°", to operate at the load moment of inertia 0.5 kg·m² and at the rotation time setting of 3.5 seconds: The model will be MRTH(F)-80.

MRTH / MRTF Inside structure & Parts list ø40, ø63

ROTARY ACTUATOR

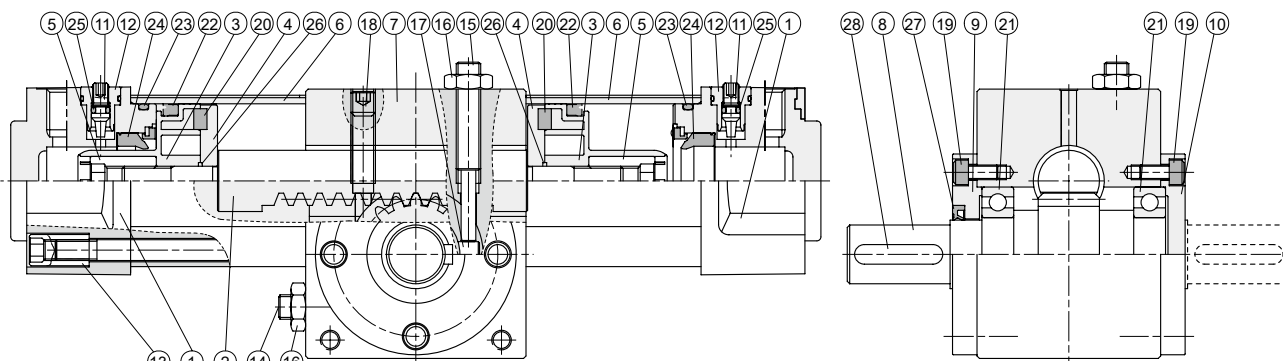


How to order the seal kit

MRT ☐ SK ☐	H F	Tube I.D.	Seal kit	Tube I.D.	Seal kit
		40	MRTHSK40 - Including No.22,23,24,25,26,27	40	MRTFSK40 - Including No.22,23,24,26,27
		63	MRTHSK63 - Including No.22,23,24,25,26,27	63	MRTFSK63 - Including No.22,23,24,26,27

MRTH

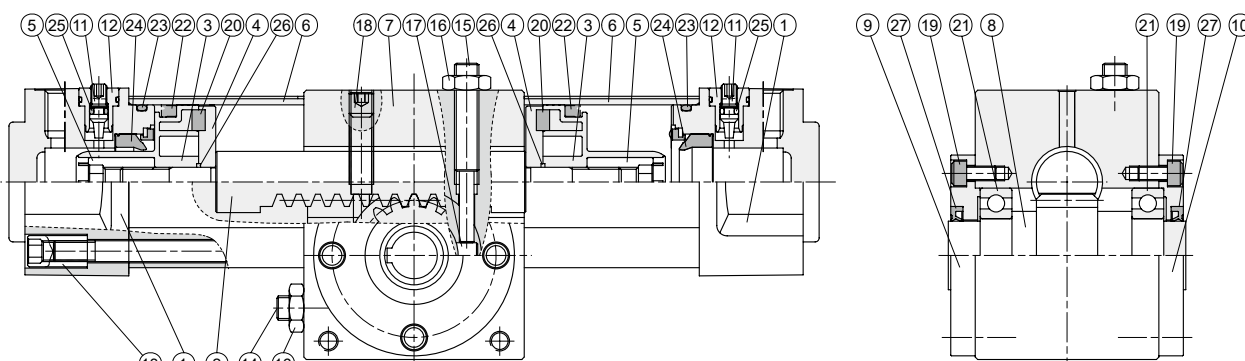
MRTH-D



Parts list

No.	Part name	Q'y	No.	Part name	Q'y	No.	Part name	Q'y
1	End cap	2	11	Cushion needle	2	21	Ball bearing	2
2	Rack	1	12	Washer	2	22	Piston packing	2
3	Piston	2	13	Tie bolt	8	23	Cylinder gasket	2
4	Magnet holder	2	14	Adjusting screw	1	24	Cushion packing	2
5	Piston nut	2	15	Adjusting screw	1	25	O-ring	2
6	Cylinder tube	2	16	Lock nut	2	26	Piston gasket	2
7	Housing	1	17	Stopper pin	1	27	Rod packing	1
8	Pinion shaft	1	18	Set screw	1	28	Key (MRTH-D=2)	1
9	End cover	1	19	Hexagon socket head screw	8			
10	End cover	1	20	Magnet	2			

MRTF



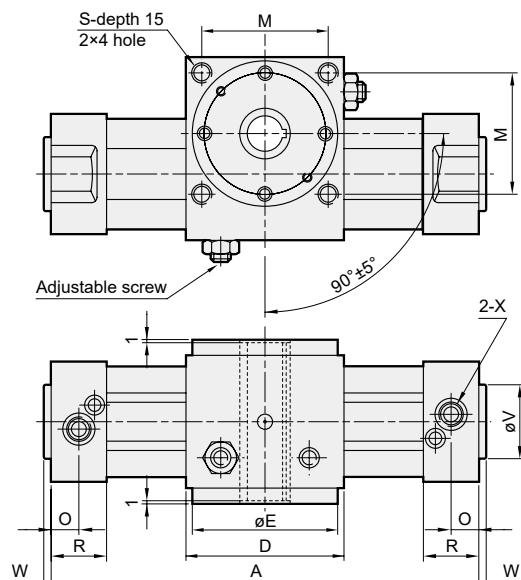
Parts list

No.	Part name	Q'y	No.	Part name	Q'y	No.	Part name	Q'y
1	End cap	2	10	End cover	1	19	Hexagon socket head screw	8
2	Rack	1	11	Cushion needle	2	20	Magnet	2
3	Piston	2	12	Cushion plug	2	21	Ball bearing	2
4	Magnet holder	2	13	Tie bolt	8	22	Piston packing	2
5	Piston nut	2	14	Adjusting screw	1	23	Cylinder gasket	2
6	Cylinder tube	2	15	Adjusting screw	1	24	Cushion packing	2
7	Housing	1	16	Lock nut	2	25	O-ring	2
8	Pinion shaft	1	17	Stopper pin	1	26	Piston gasket	2
9	End cover	1	18	Set screw	1	27	Rod packing	2

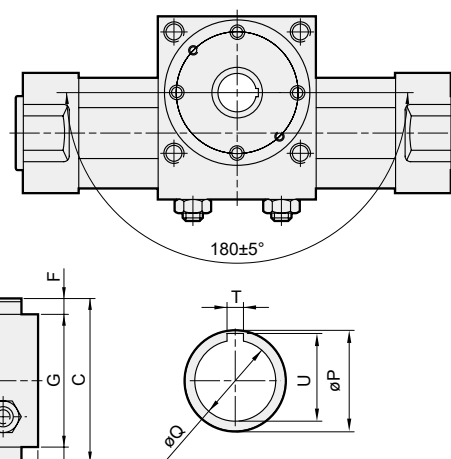
ROTARY ACTUATOR

MRTF

Angle of rotation 90°



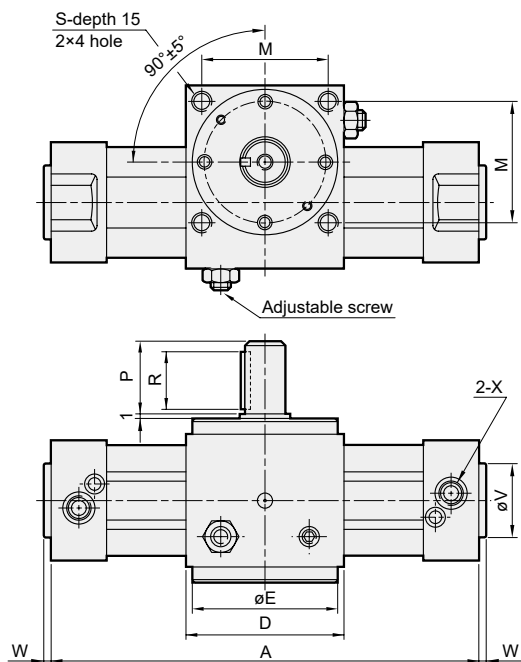
Angle of rotation 180°



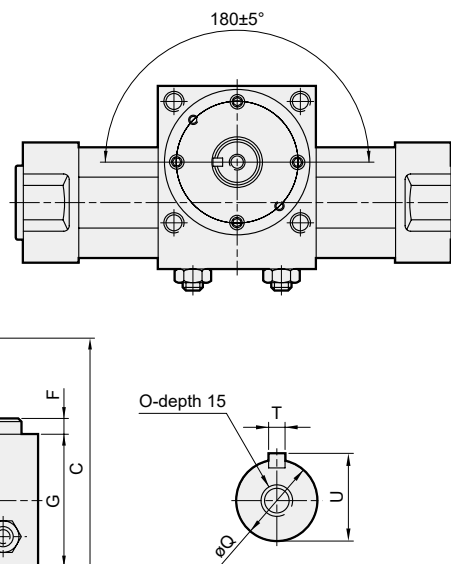
Code Tube I.D.	A		C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Z
	90°	180°																						
40	263	326	81	75	72	8	65	53	37.5	93	27.5	60	38	15	25	14	30	M6	5	16.5	35	5	G1/4	M6
63	306	377	95	90	82	10	75	75	42.5	110	30	70	56.5	16	30	19	32	M8	6	22	45	4	G3/8	M8

MRTF

Angle of rotation 90°



Angle of rotation 180°



Code Tube I.D.	A		C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Z
	90°	180°																						
40	263	326	112	75	72	8	65	53	37.5	93	27.5	60	38	M5	30	16	25	M6	5	18	35	5	G1/4	M6
63	306	377	138	90	82	10	75	75	42.5	110	30	70	56.5	M8	42	24	36	M8	8	27	45	4	G3/8	M8

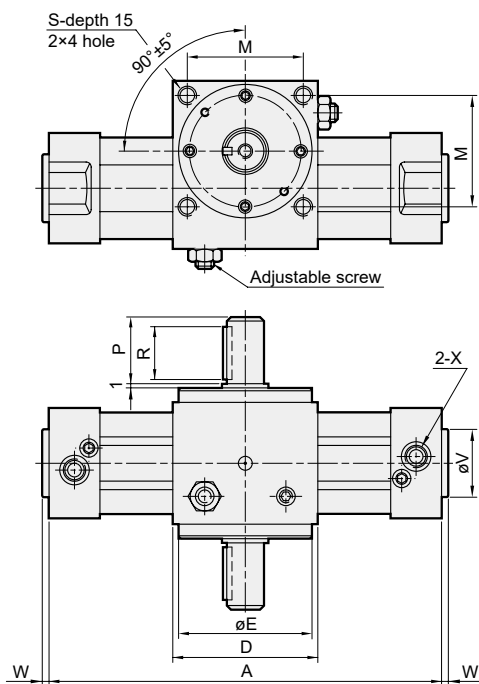
MRTH / MRTF Dimensions $\varnothing 40$, $\varnothing 63$



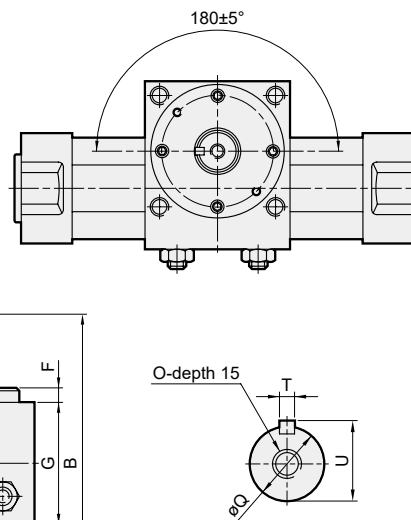
ROTARY ACTUATOR

Mindman

MRTH-D Angle of rotation 90°



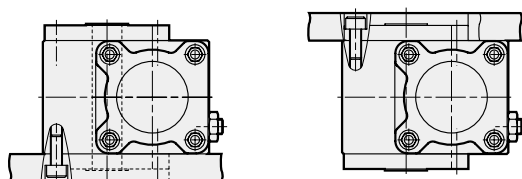
Angle of rotation 180°



Code Tube I.D.	A		B	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Z
	90°	180°																						
40-D	263	326	143	75	72	8	65	53	37.5	93	27.5	60	38	M5	30	16	25	M6	5	18	35	5	G1/4	M6
63-D	306	377	181	90	82	10	75	75	42.5	110	30	70	56.5	M8	42	24	36	M8	8	27	45	4	G3/8	M8

Mounting type

MRTF

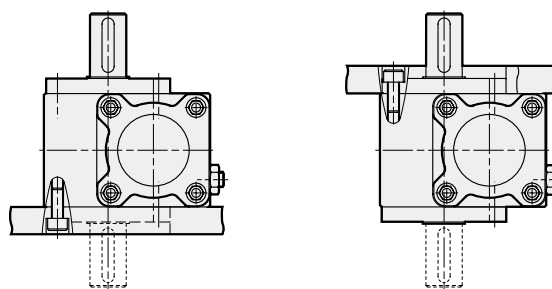


Bottom mounting

Top mounting

MRTH

MRTH-D

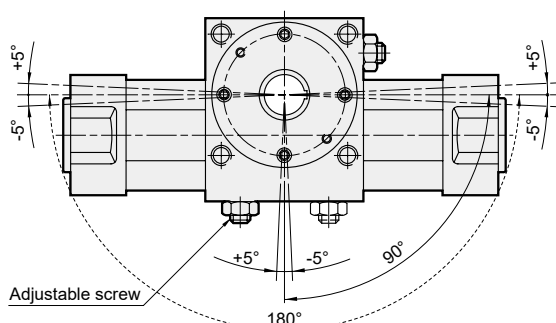


Bottom mounting

Top mounting

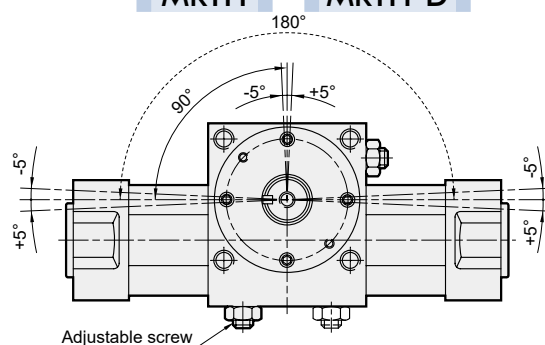
Rotating direction and adjustable angle

MRTF



MRTH

MRTH-D



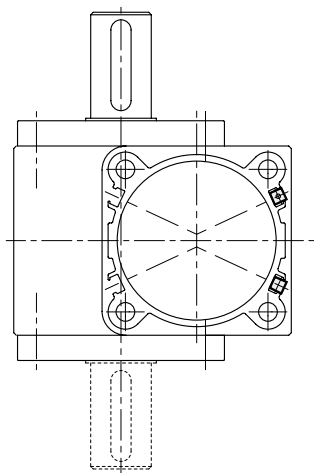
MRTH / MRTF Installation of sensor switches $\varnothing 40$, $\varnothing 63$



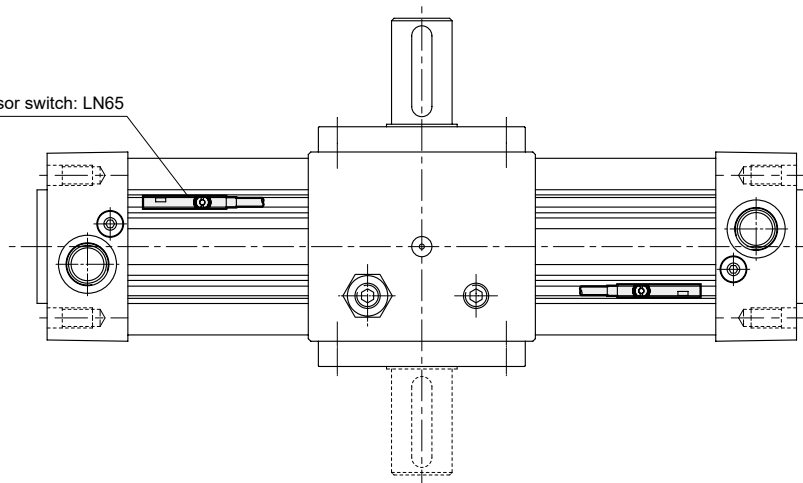
ROTARY ACTUATOR

MRTH

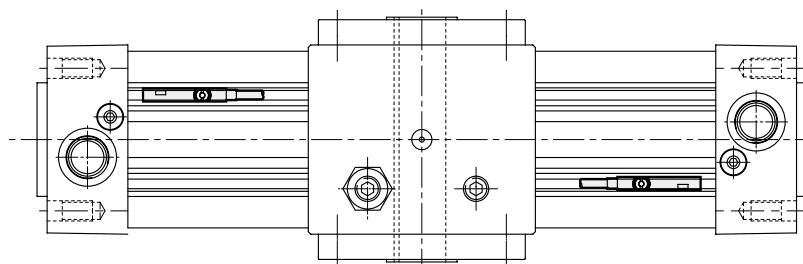
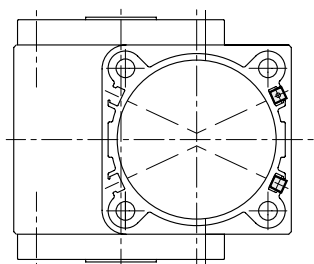
MRTH-D



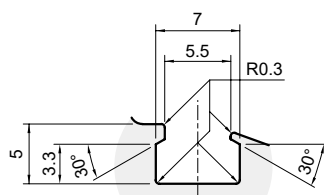
Sensor switch: LN65



MRTF



Sensor switch mounting groove



Tube I.D.	Sensor switch
40, 63	LN65