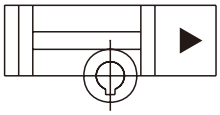
Compressed air consumption for a complete cycle



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 MRTF40	90°	0.1571	0.2352	0.3133	0.3915	0.4696	0.5477	0.6259	0.7040	0.7821	0.8603
	180°	0.3141	0.4704	0.6267	0.7829	0.9392	1.0955	1.2517	1.4080	1.5643	1.7205
MRTH63 MRTF63	90°	0.4383	0.6564	0.8744	1.0925	1.3105	1.5286	1.7466	1.9647	2.1828	2.4008
	180°	0.8766	1.3127	1.7488	2.1850	2.6211	3.0572	3.4933	3.9294	4.3655	4.8016
MRTH80 MRTF80	90°	0.8480	1.2698	1.6917	2.1135	2.5354	2.9572	3.3791	3.8009	4.2228	4.6447
	180°	1.6959	2.5396	3.3834	4.2271	5.0708	5.9145	6.7582	7.6019	8.4456	9.2893

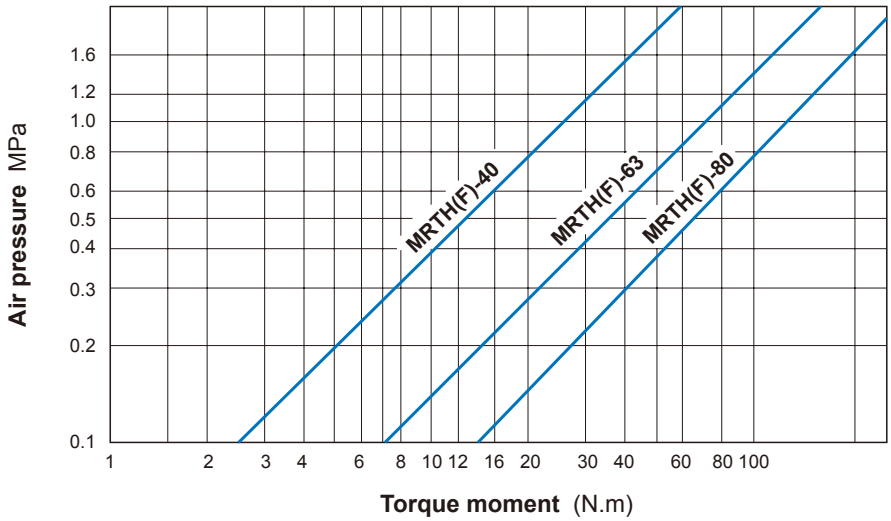
Model	MRTH, MRTF		
Tube I.D.(mm)	40	63	80
Constant K	0.3491	0.3927	0.4712

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



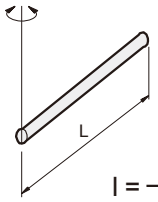
Kinetic energy of rotation motion

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

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

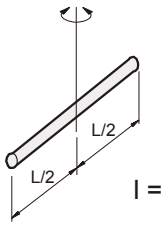
Equation table moment of inertia

(1)



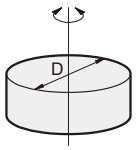
$$I = \frac{ML^2}{3}$$

(2)



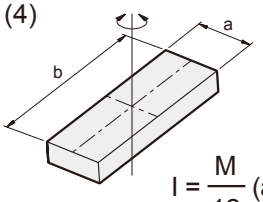
$$I = \frac{ML^2}{12}$$

(3)



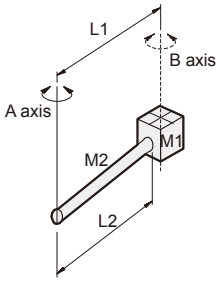
$$I = \frac{MD^2}{8}$$

(4)



$$I = \frac{M}{12}(a^2+b^2)$$

(5)

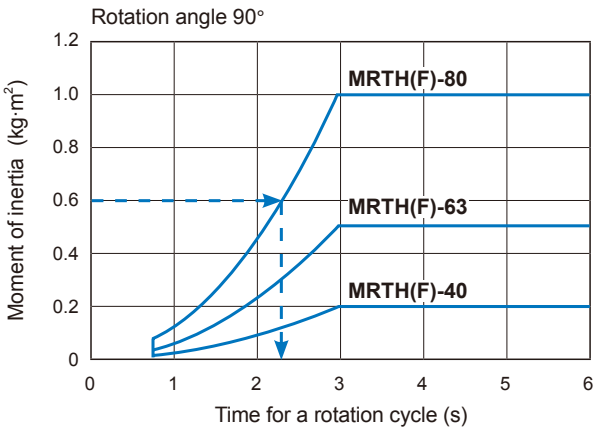


$$I = I_1 + M_1 L_1^2 + \frac{M_2 L_2^2}{3}$$

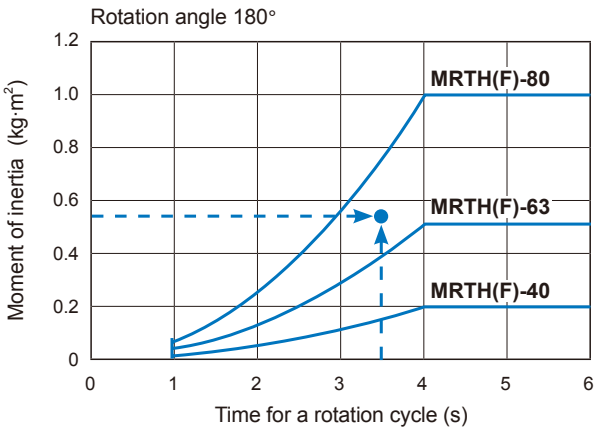
I_1 = Obtain the center of gravity of the load (M_1) as I_1, a provisional shaft (B).

I (**I$_1$**):	Moment of inertia	(Kg·m^2)
M (**M$_1$**,**M$_2$**):	Load mass	(Kg)
L, **a**, **b**:	Side length	(m)
D:	Diameter	(m)

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·m^2: 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·m^2 and at the rotation time setting of 3.5 seconds: The model will be MRTH(F)-80.