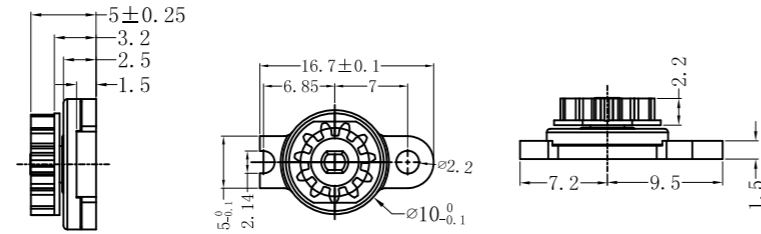
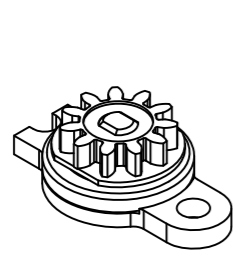


Model: PR-T001A-Two way



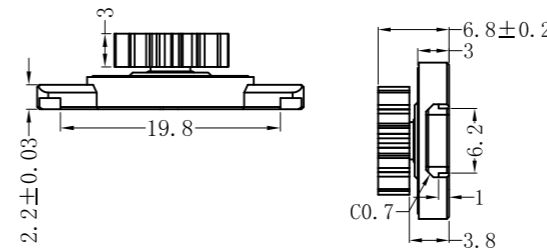
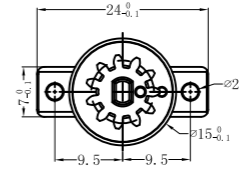
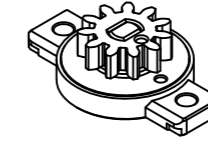
<b>Torque</b>	20-135 GF.CM
---------------	--------------

Static Storage Temperature	Dynamic Working Temperature	Body Material	Shaft Material	Gear Material	Oil
-40°C-110°C	-5°C-50°C	PC	POM	POM	Silicone Oil

External Diameter	Dividing Dia	Gear No	Modulus	Pressure Angle
7.8	6.6	11	0.6	20°

Remarks: T001B has no gear.  
Gears are alternative.

Model: PR-T009-Two way

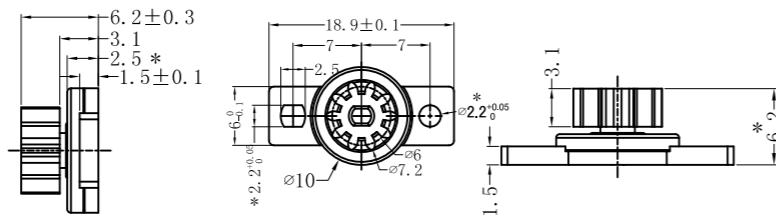
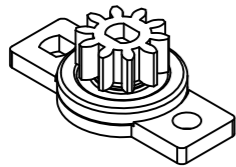


<b>Torque</b>	30-350 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Gear Material</b>	POM
<b>Oil</b>	Silicone Oil

<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°

Remarks:  
Compared with T009, T009C is gearless, and T009E is different with the body height 7.3 ±0.3mm.

Model: PR-T002A-Two way



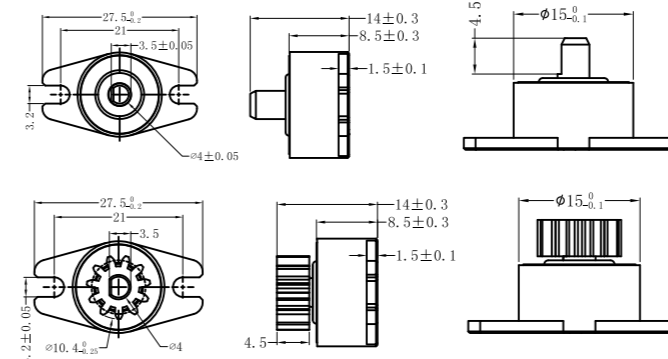
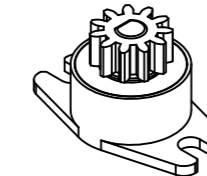
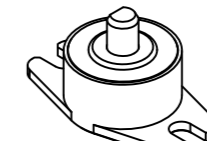
<b>Torque</b>	20-135 GF.CM
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Static Storage Temperature	Dynamic Working Temperature	Body Material	Gear Material	Shaft Material	Oil
-40°C-110°C	-5°C-50°C	PC	POM	POM	Silicone Oil

External Diameter	Dividing Dia	Gear No	Modulus	Pressure Angle
7.2	6	10	0.6	20°

Remarks: T002B has no gear.  
Gears are alternative.

Model: PR-T018A-One/Two way

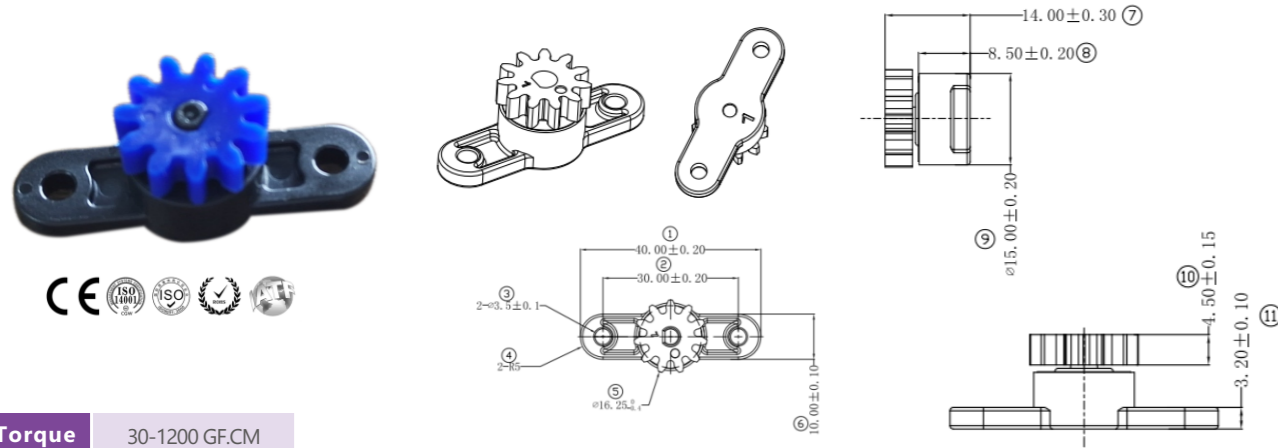


<b>Torque</b>	30-1200 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Gear Material</b>	POM
<b>Oil</b>	Silicone Oil

<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°

Remarks:  
T018B is unidirectional while T018A bidirectional. Gears are alternative.

Model: PR-T018D-One/Two way



<b>Torque</b>	30-1200 GF.CM
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Static Storage Temperature	Dynamic Working Temperature	Body Material	Shaft Material	Gear Material	Oil
-40°C-110°C	-5°C-50°C	PC	POM	POM	Silicone Oil

External Diameter	Dividing Dia	Gear No	Modulus	Pressure Angle
16.25	13.75	11	1.25	20°

Model: PR-T038A-One/Two way

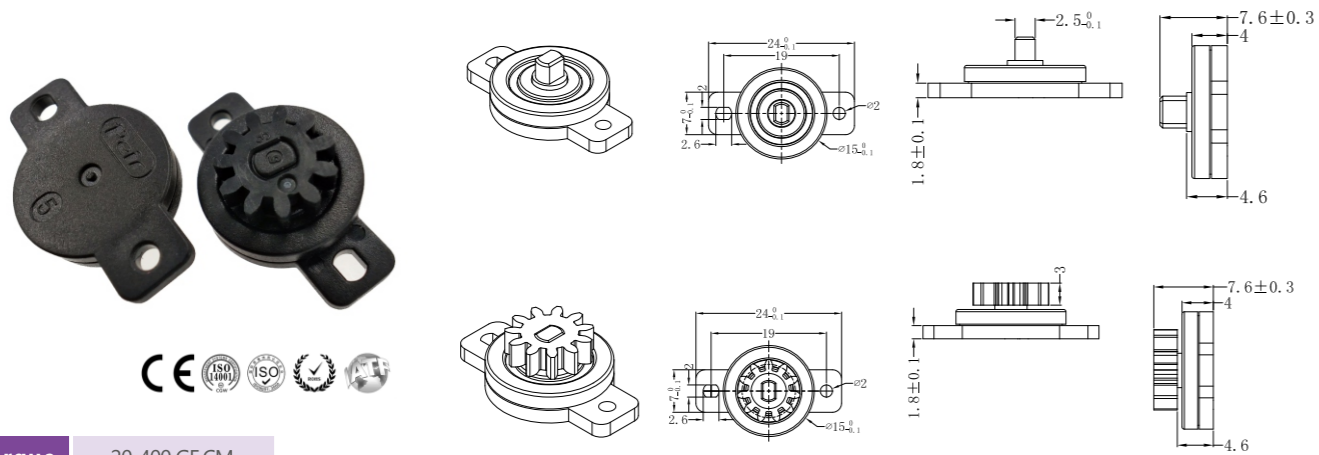


<b>Torque</b>	300-2000 GF.CM
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<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Gear Material</b>	POM
<b>Oil</b>	Silicone Oil

<b>External Diameter</b>	16.25
<b>Dividing Dia</b>	13.75
<b>Gear No</b>	11
<b>Modulus</b>	1.25
<b>Pressure Angle</b>	20°

Model: PR-T020A-Two way



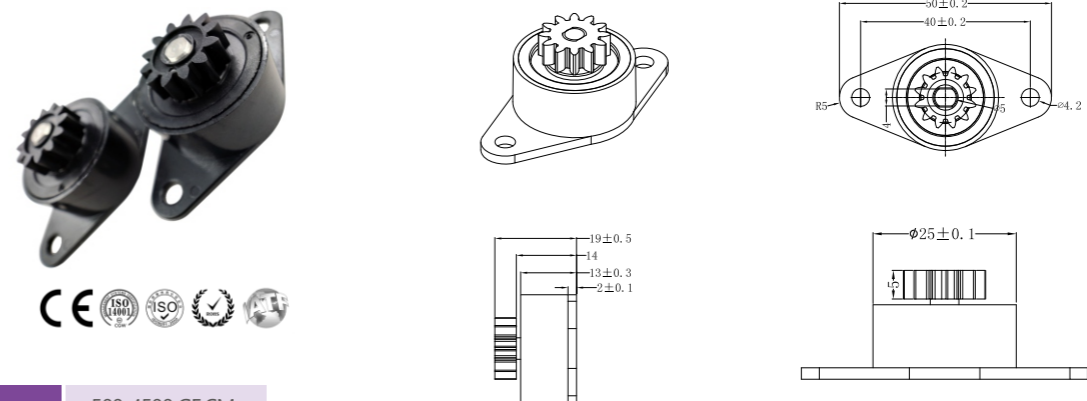
<b>Torque</b>	20-400 GF.CM
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Static Storage Temperature	Dynamic Working Temperature	Body Material	Shaft Material	Oil
-40°C-110°C	-5°C-50°C	PC	POM	Silicone Oil

External Diameter	Dividing Dia	Gear No	Modulus	Pressure Angle
10.4	8.8	11	0.8	20°

Remarks:  
Another Material of POM is available. Gears are alternative.

Model: PR-T068A-One/Two way



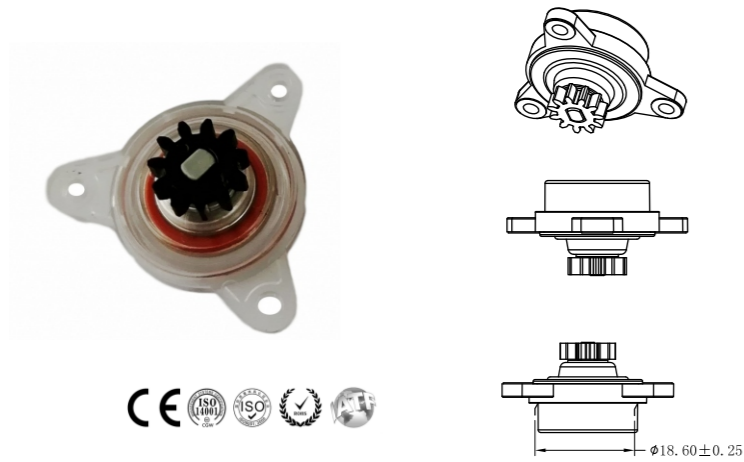
<b>Torque</b>	500-4500 GF.CM
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Static Storage Temperature	Dynamic Working Temperature	Body Material	Shaft Material	Oil
-40°C-110°C	-5°C-50°C	PC	POM+Stainless steel	Silicone Oil

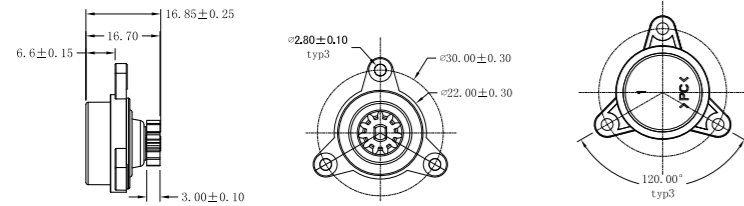
External Diameter	Dividing Dia	Gear No	Pressure Angle
14.75	12	12	20°

Remarks:  
Gears are alternative. T068A is unidirectional while T068B bidirectional.

Model: PR-T091-One way (For ice maker, etc)

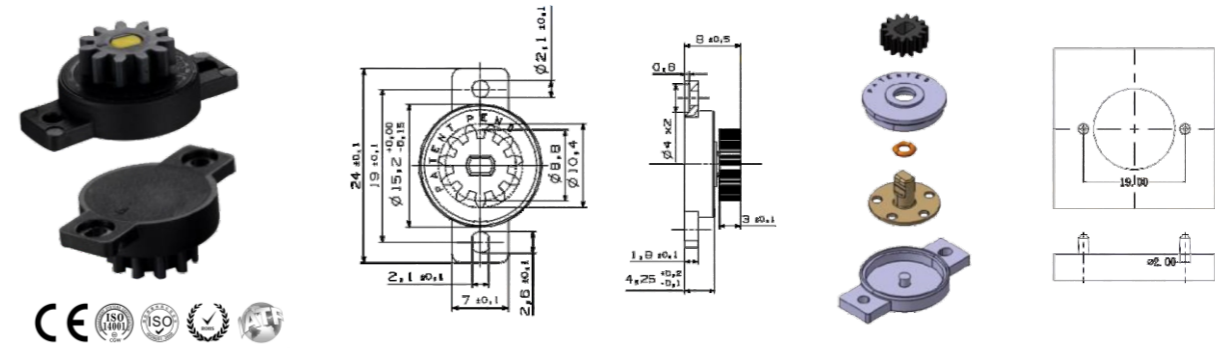


<b>Torque</b>	350-900 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-20°C-70°C
<b>Body Material</b>	PC
<b>Gear Material</b>	POM
<b>Shaft Material</b>	PA66
<b>Oil</b>	Silicone Oil



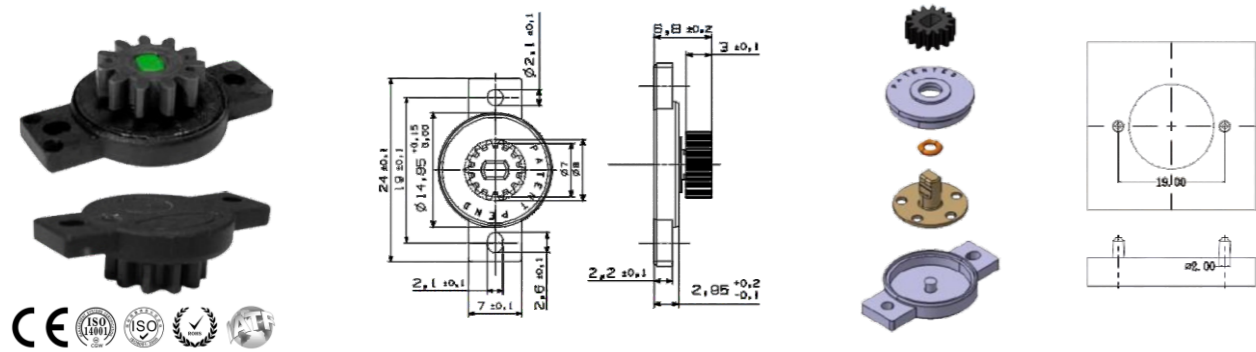
<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°

Model: PR-CB-One/Two way



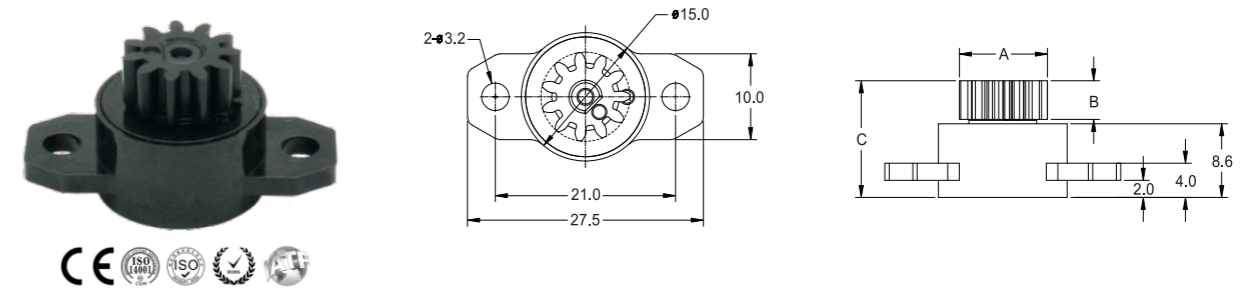
Gear Material	Shaft Material	Case	Cover	Sealing Ring	Oil
POM	POM	PA66GF13	PA66	Silicone Rubber	Silicone Oil

Model: PR-CA-Two way



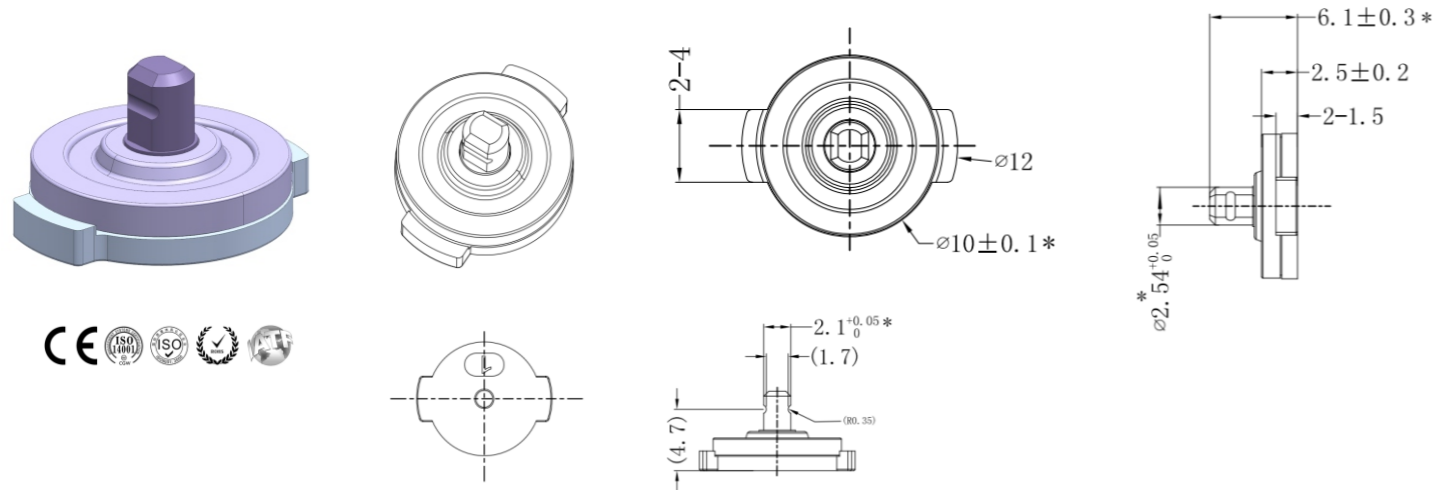
Gear Material	Shaft Material	Case	Cover	Sealing Ring	Oil
POM	POM	PA66GF13	PA66	Silicone Rubber	Silicone Oil

Model: PR-H06B/H06C-Two way



Model	A	B	C	Gear No.	Modulus	Dividing Dia	Pressure Angle	Material	Oil	Torque
H06B	10.4	4.5	13.6	11	0.8	8.8	20°	PC/ POM	Silicone Oil	25-400gf.cm
H06C	12	4.5	13.6	10	1	10	20°			

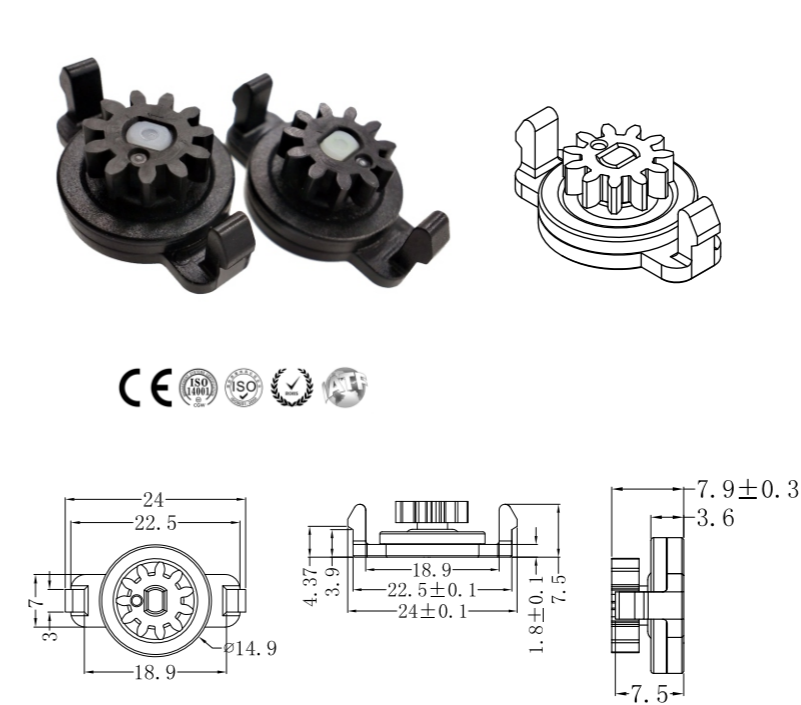
Model: PR-T002C-Two way (For medical equipment, etc)



**Torque** 20-135 GF.CM

<b>Static Storage Temperature</b>	<b>Body Material</b>	<b>Shaft Material</b>	<b>Oil</b>
-5°C-50°C	PC	POM	Silicone Oil

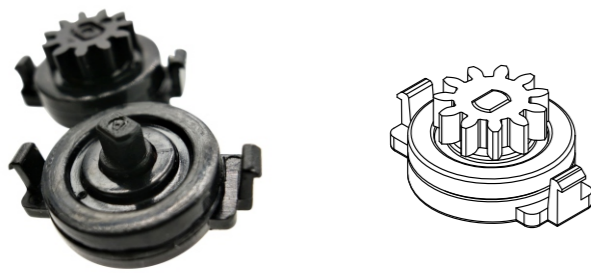
Model: PR-T035-Two way



<b>Torque</b>	50-400 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Oil</b>	Silicone Oil

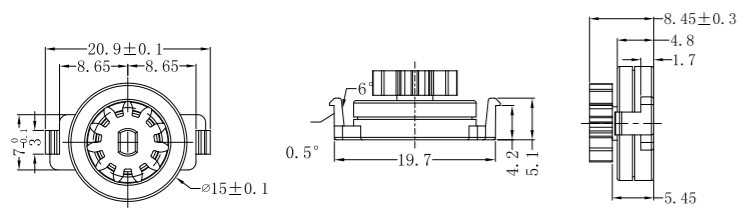
<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°

Model: PR-T033A-Two way

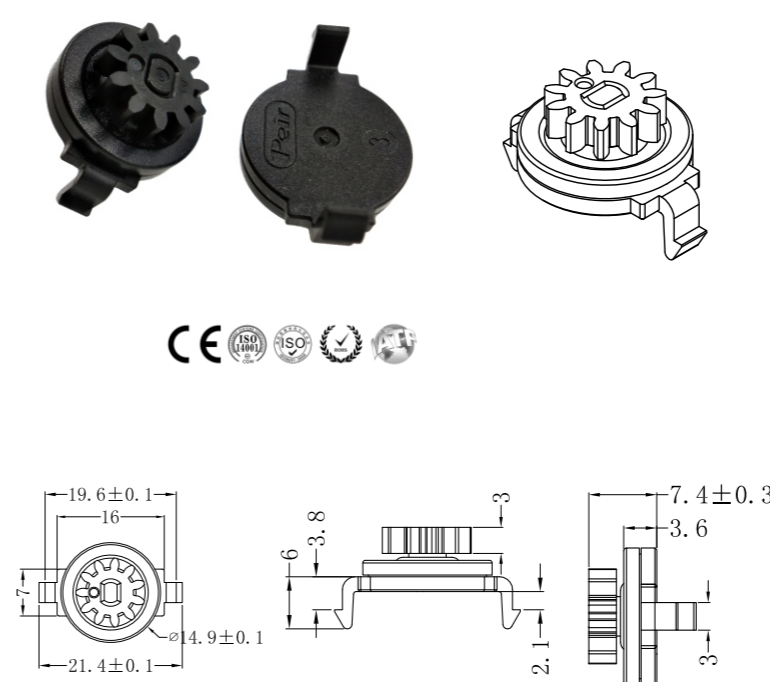


<b>Torque</b>	30-400 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Gear Material</b>	POM
<b>Oil</b>	Silicone Oil

<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°



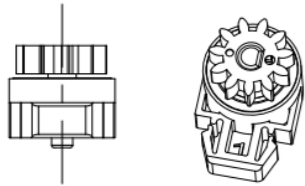
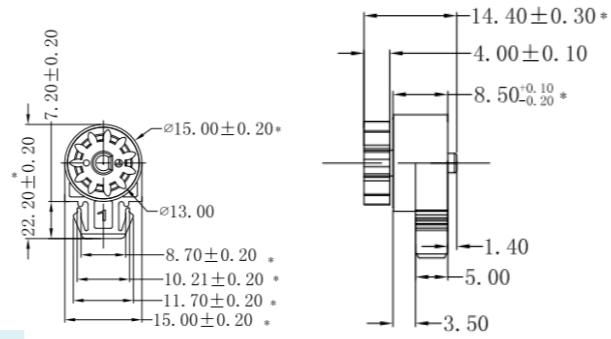
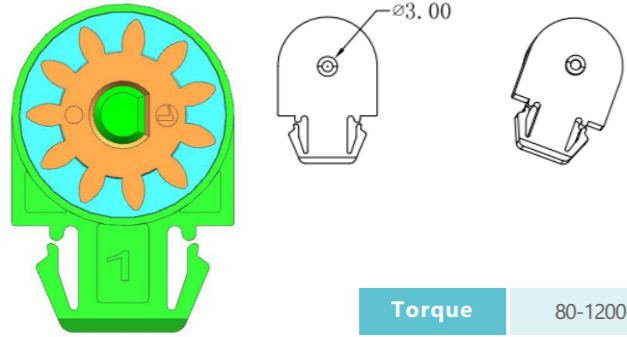
Model: PR-T036-Two way



<b>Torque</b>	30-300 GF.CM
<b>Static Storage Temperature</b>	-40°C-110°C
<b>Dynamic Working Temperature</b>	-5°C-50°C
<b>Body Material</b>	PC
<b>Shaft Material</b>	POM
<b>Gear Material</b>	POM
<b>Oil</b>	Silicone Oil

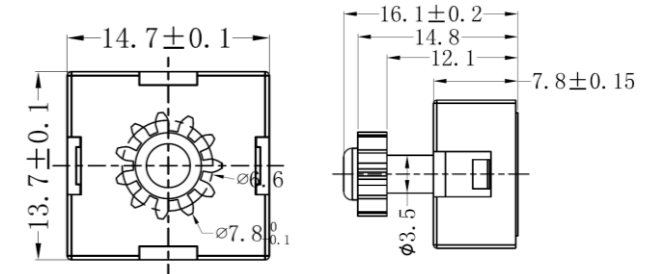
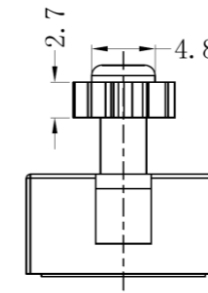
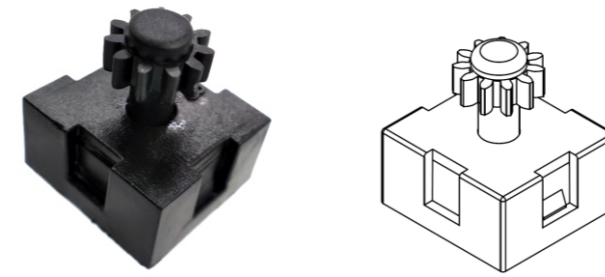
<b>External Diameter</b>	10.4
<b>Dividing Dia</b>	8.8
<b>Gear No</b>	11
<b>Modulus</b>	0.8
<b>Pressure Angle</b>	20°

Model: PR-PR-T089A-One/Two way (For kettle, etc)



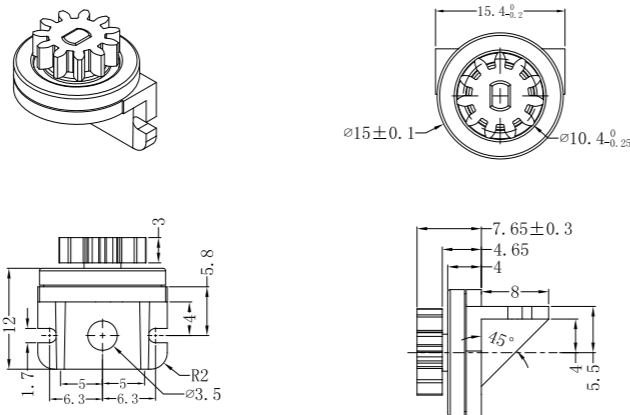
<b>Torque</b>	80-1200 GF.CM	
<b>Static Storage Temperature</b>	-40°C - 110°C	
<b>Dynamic Working Temperature</b>	-5°C - 50°C	
<b>Oil</b>	Silicone Oil	
<b>Body Material</b>	PC	
<b>Shaft Material</b>	POM	
<b>Gear Material</b>	POM	
<b>External Diameter</b>	13	
<b>Dividing Dia</b>	11	
<b>Gear No</b>	11	
<b>Modulus</b>	1.0	
<b>Pressure Angel</b>	20°	

Model: PR-T096A-Two way (For kettle, etc)



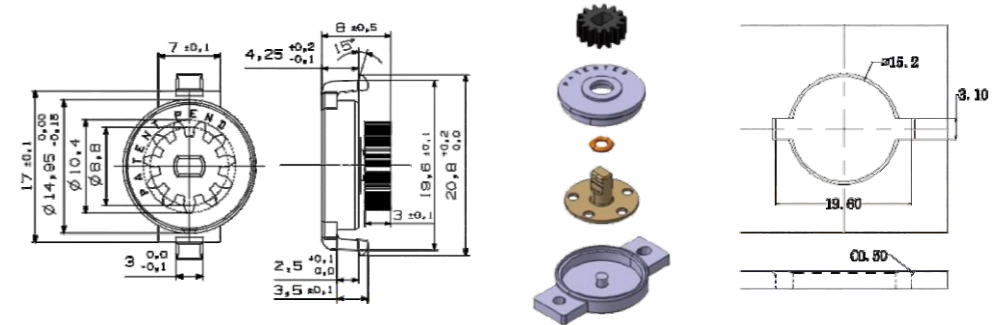
<b>Torque</b>	30-100 GF.CM	
<b>Static Storage Temperature</b>	-40°C - 110°C	
<b>Dynamic Working Temperature</b>	-5°C - 50°C	
<b>Body Material</b>	POM	
<b>Gear Material</b>	POM	
<b>Shaft Material</b>	POM	
<b>Oil</b>	Silicone Oil	

Model: PR-T090A-Two way



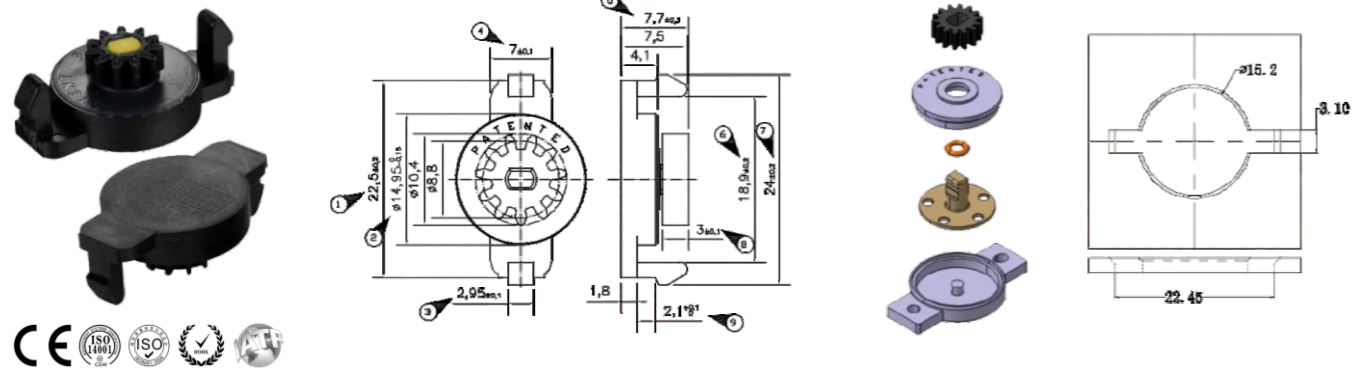
<b>Torque</b>	30-250 GF.CM				
<b>Static Storage Temperature</b>	-40°C-110°C		<b>Body Material</b>	PC	
<b>Dynamic Working Temperature</b>	-5°C-50°C		<b>Shaft Material</b>	POM	
<b>Oil</b>	Silicone Oil				
<b>External Diameter</b>	10.4	<b>Dividing Dia</b>	8.8	<b>Gear No</b>	11
		<b>Modulus</b>	0.8	<b>Pressure Angle</b>	20°

Model: PR-CD-Two way



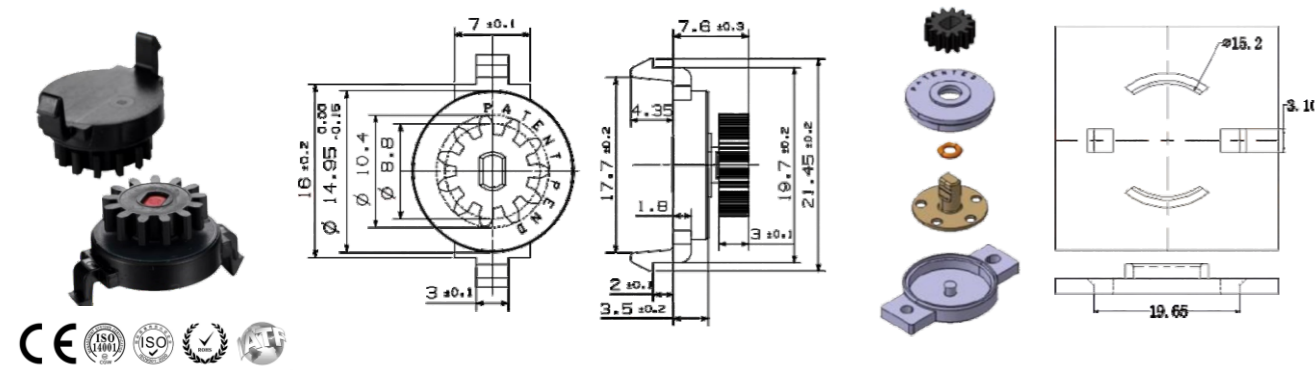
<b>Gear Material</b>	<b>Shaft Material</b>	<b>Case</b>	<b>Cover</b>	<b>Sealing Ring</b>	<b>Oil</b>
POM	POM	PA66GF13	PA66	Silicone Rubber	Silicone Oil

Model: PR-CG-Two way



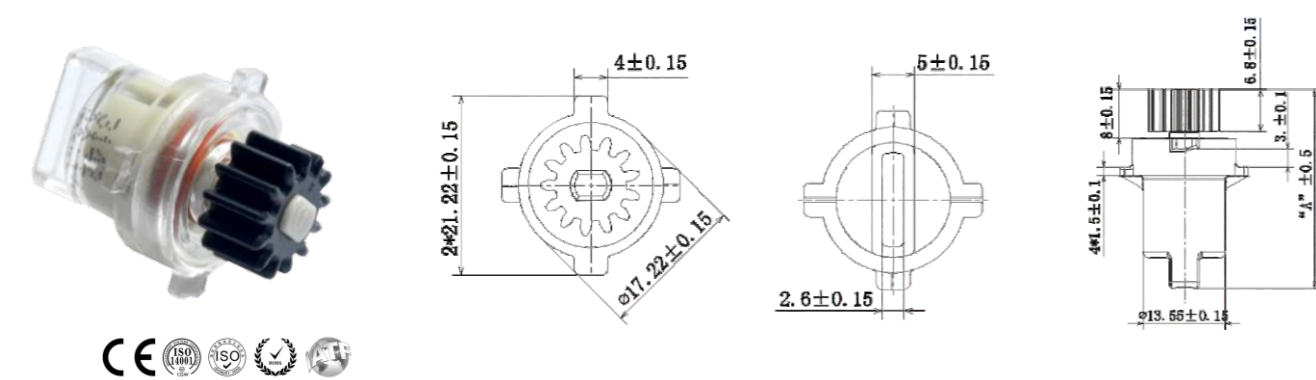
Gear Material	Shaft Material	Case	Cover	Sealing Ring	Oil
POM	POM	PC	PC	Silicone Rubber	Silicone Oil

Model: PR-CJ-Two way



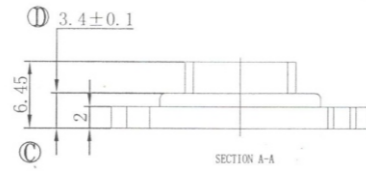
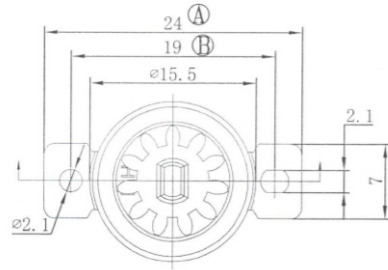
Gear Material	Shaft Material	Case	Cover	Sealing Ring	Oil
POM	POM	PC	PC	Silicone Rubber	Silicone Oil

Model: PR-DA007-Two way (For automotive centre armrest, etc)



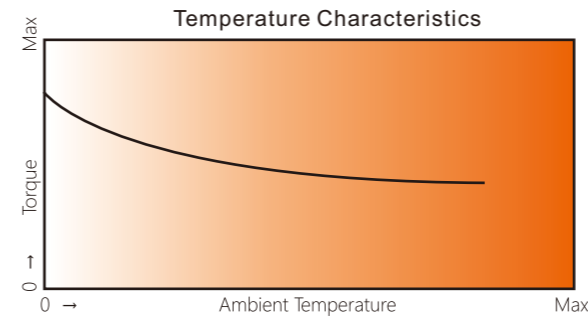
Torque	1-5.3Ncm
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Model: PR-H46-Two way

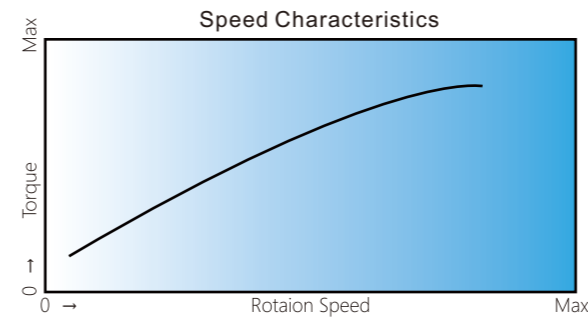


Torque	Material	Oil	Dividing Dia	Gear No	Modulus	Pressure Angle
30-160 GF.CM	PC/POM	Silicone Oil	8.8	11	0.8	20°

Rotary Damper Temperature & Speed Characteristics

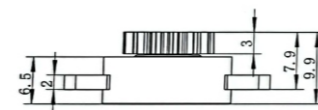
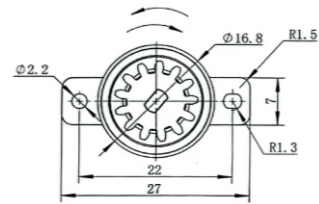
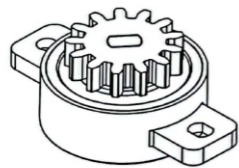


**Temperature Characteristics**  
The torque of the rotary damper varies according to the temperature. The higher temperature for the lower torque; The lower temperature for the higher torque. When the temperature returns to normal, the damper characteristics will return to normal as well.

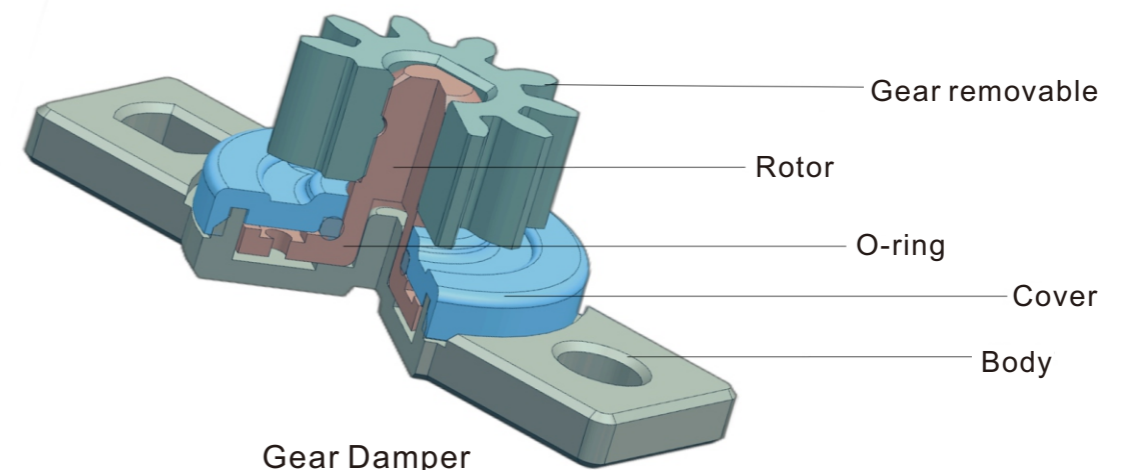


**Speed Characteristics**  
The torque of the rotary damper varies according to rpm. In general, if the rpm goes up, the torque increases; If the rpm goes down, the torque decreases. In addition, please note that the starting torque slightly differs from the rated torque. (The torque value indicated in the product data is measured at the rotation speed of 20r/min)

Model: PR-H53-One way



Torque	Material	Oil
80-450 GF.NCM	PC/POM	Silicone Oil



**Torque calculation method in different scenarios**

**1. Controlled slow closing down. (From 90° - 0°)**

Shown on the right figure, the flat starts to close down from position of less than 90 to horizon position.

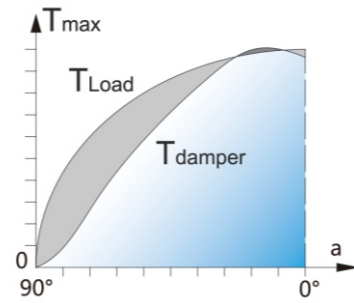
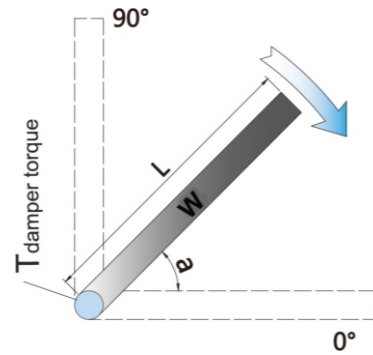
$$T = (W * g) * (L/2) * (\cos a)$$

Example:

W=2KG, L=300mm

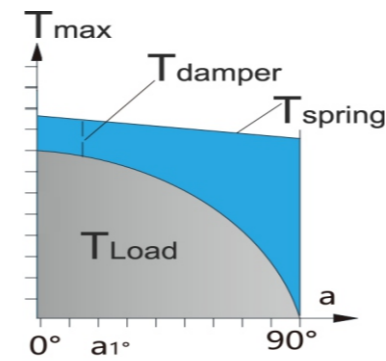
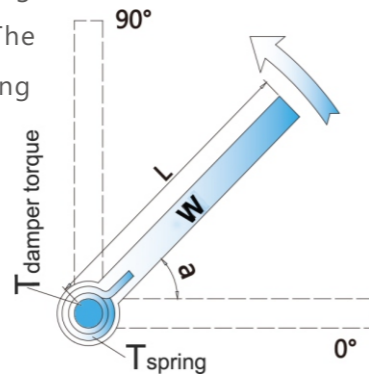
$$T_{max} = (2 * 9.8) * (0.3/2) = 2.94 \text{ Nm}$$

$$T_{damper} = 0 - 3.0 \text{ Nm}$$



**2. Damper and springs achieve soft opening. (0° ~ 90°)**

As the right picture shows, the flat open along the axis when the spring exerts force on it. The graph below shows the relation among spring Force T, gravity of flat W and the resistance of rotation of damper:



Example:

W=1 KG, L=200mm

$$T_{load} = 1 * 9.8 * (0.2/2) = 0.98 \text{ Nm}$$

$$T_{spring} = 1.2 \sim 0.5 \text{ Nm}$$

$$T_{damper} \leq F_{spring} - F_{load}$$

$$= (1.2 - 0.98) \text{ Nm} \sim (0.5 - 0) \text{ Nm}$$

$$= 0.22 \sim 0.5 \text{ Nm}$$

Note:

T: Torque.

L/2: 1/2 the length of the cover from the pivot to the end (Center of gravity).

W: Actual weight of lid.

a: Max angle between the cover and horizontal position.

