# Model:PR-T099B-One way



| Torque | 3-15KGF.CM |
|---|---|
| Max Opening Angle | 110° |
| Static Storage Temperature | −40°C - 110°C |
| Dynamic Working Temperature | −5°C - 50°C |
| Body Material | PA66 |
| Shaft Material | Zinc Alloy |
| Oil | Silicone Oil |

# Model: PR-T099E-One way



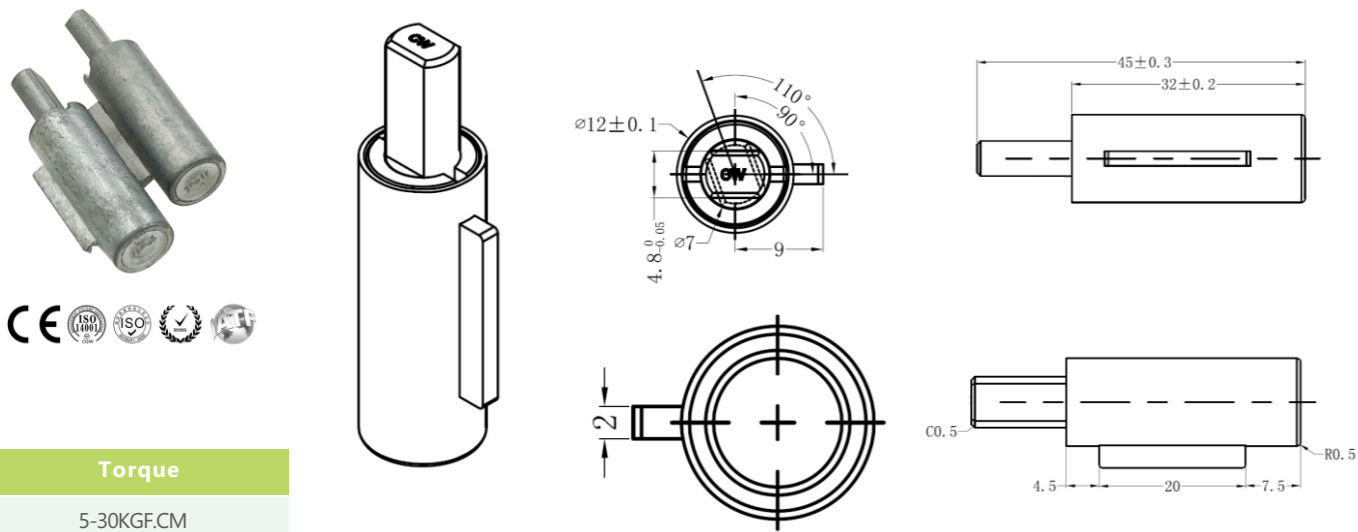| Torque | 10-40 KGF.CM |
|---|---|

| Max Opening Angle | Static Storage Temperature | Dynamic Working Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 110° | −40°C - 110°C | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

Remarks:
Compared with T099E, the shaft length of T099D is different, with size 12±0.2mm; T099N is different in working angle, 0-100°;
T099R is different in the position of threaded hole.
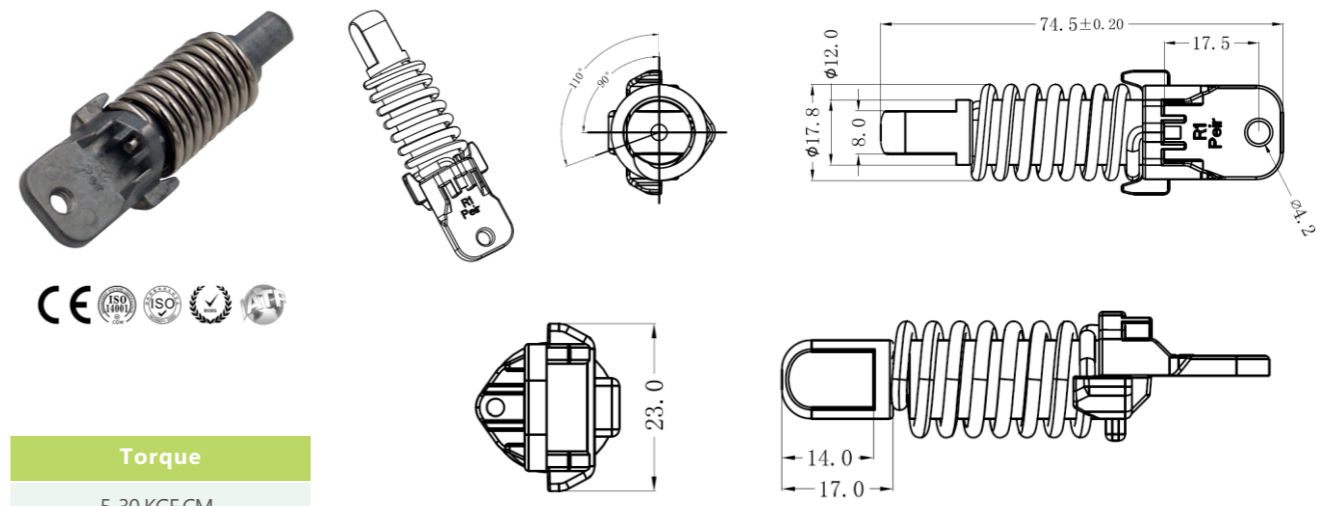
# Model:PR-T099C-One way



| Torque |
|---|
| 5-30KGF.CM |

| Max Opening Angle | Static Storage Temperature | Dynamic Working Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 110° | −40°C - 110°C | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

Remarks:
Compared with T099C, the shaft of T099A is shorter, 7mm in length; T099Q is based on C, only special with R angle on rib.

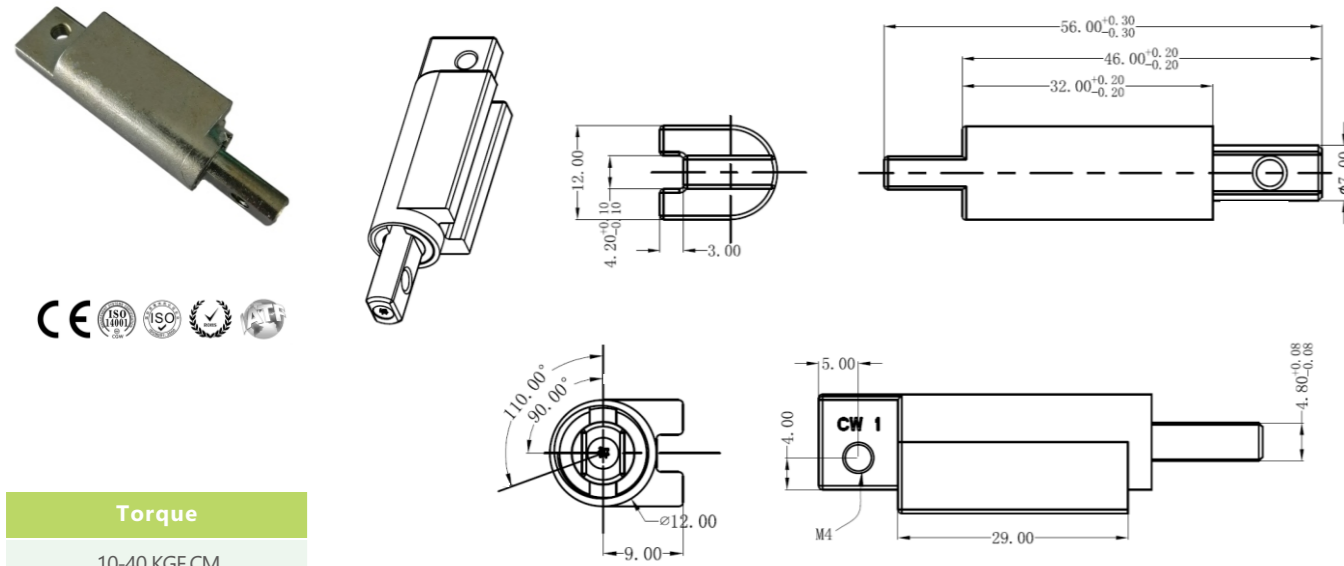# Model: PR-T099G-One way (Spring can provide assistance force.)



| Torque |
|---|
| 5-30 KGF.CM |

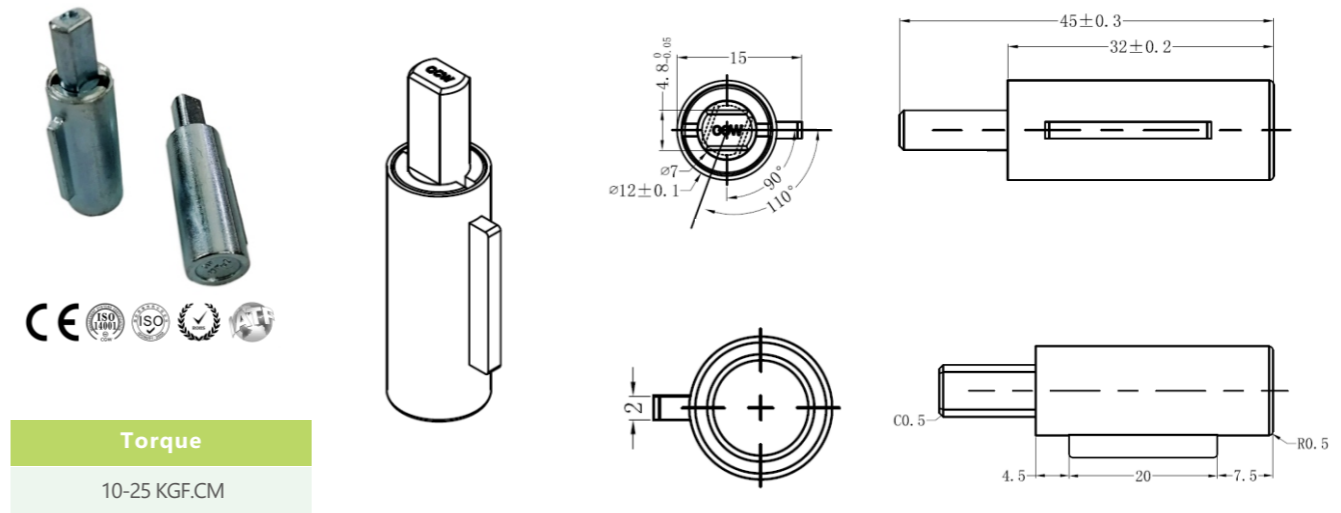| Max Opening Angle | Static Storage Temperature | Dynamic Working Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 110° | −40°C - 110°C | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

| Spring |
|---|
| Music Wire 9.25 |

## Model: PR-T099K-One way (For dishwasher, etc)

### Torque

10-40 KGF.CM

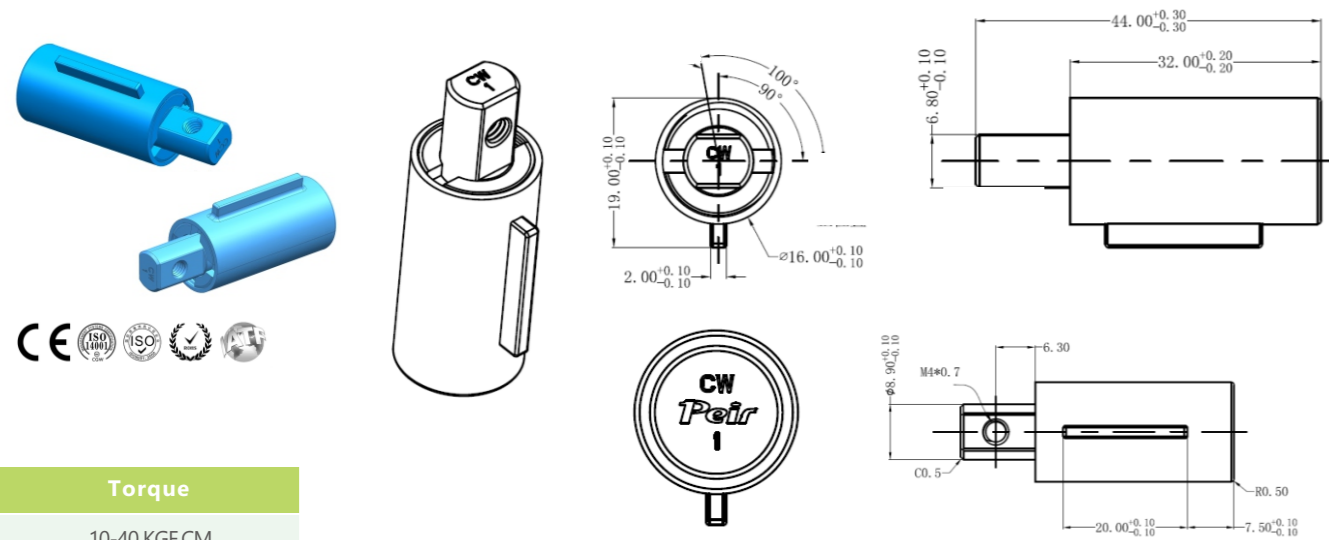| Max Opening Angle | Static Storage Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|
| 110° | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

## Model: PR-T099S-Two way

### Torque

10-25 KGF.CM

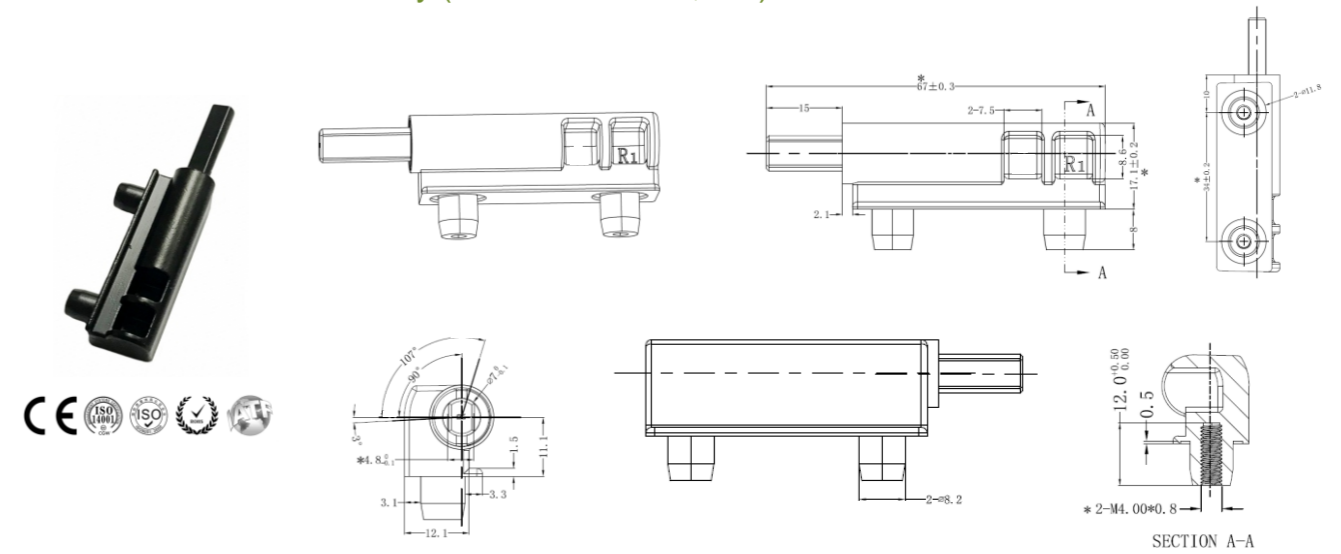| Max Opening Angle | Static Storage Temperature | Dynamic Working Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 110° | −40°C - 110°C | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

## Model: PR-T099M-One way

### Torque

10-40 KGF.CM

| Max Opening Angle | Static Storage Temperature | Dynamic Working Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 100° | −40°C - 110°C | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

## Model: PR-T099T-One way (For dishwasher, etc)

| Torque | Max Opening Angle | Static Storage Temperature | Body Material | Shaft Material | Oil |
|---|---|---|---|---|---|
| 10-40 KGF.CM | 107° | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

## Model: PR-T099W-One way
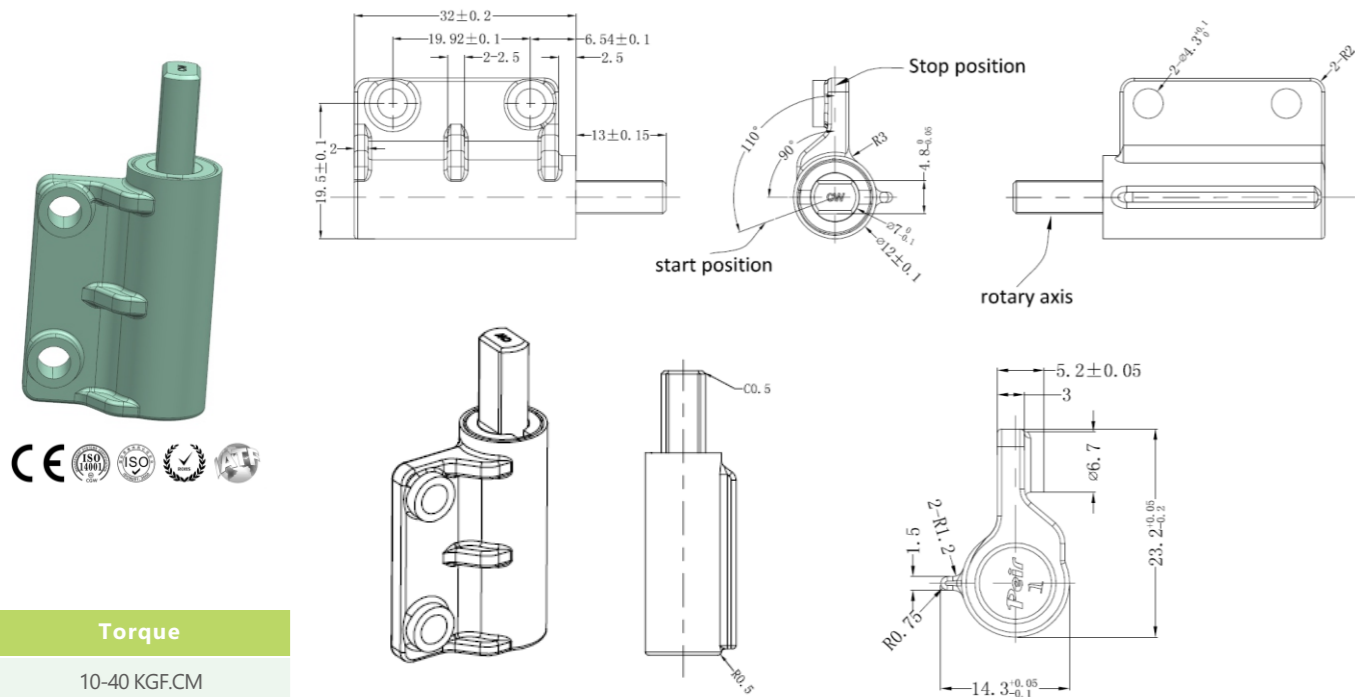
Stop position

start position

Stop position

rotary axis

| Torque |
| --- |
| 10-40 KGF.CM |

| Max Opening Angle | Static Storage Temperature | Body Material | Shaft Material | Oil |
| --- | --- | --- | --- | --- |
| 110° | −20°C - 80°C | Zinc Alloy | Zinc Alloy | Silicone Oil |

## Model: PR-T099H-One way

| Torque | Max Opening Angle | Static Storage Temperature | Body Material | Shaft Material | Oil |
| --- | --- | --- | --- | --- | --- |
| 3-15 KGF.CM | 110° | −5°C - 50°C | PA66 | Zinc Alloy | Silicone Oil |

## Rotary Damper Temperature & Speed Characteristics

**Temperature Characteristics**

Max → Torque → 0
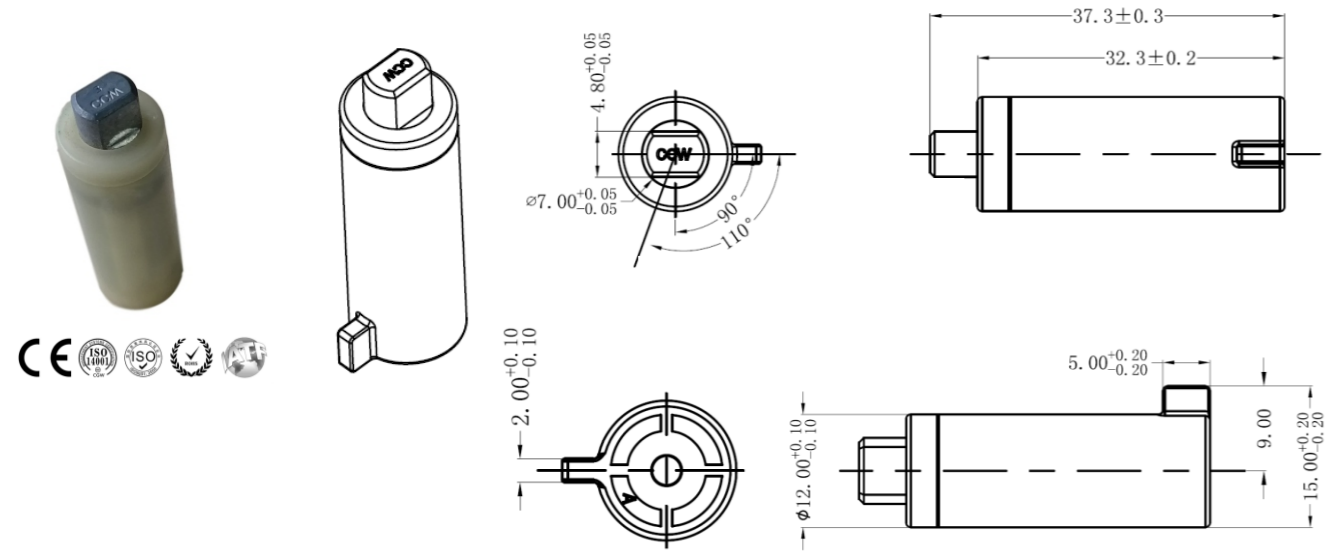
0 → Ambient Temperature → Max
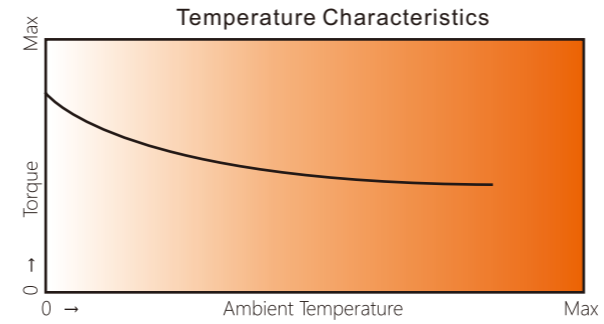
**Temperature Characteristics**

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.
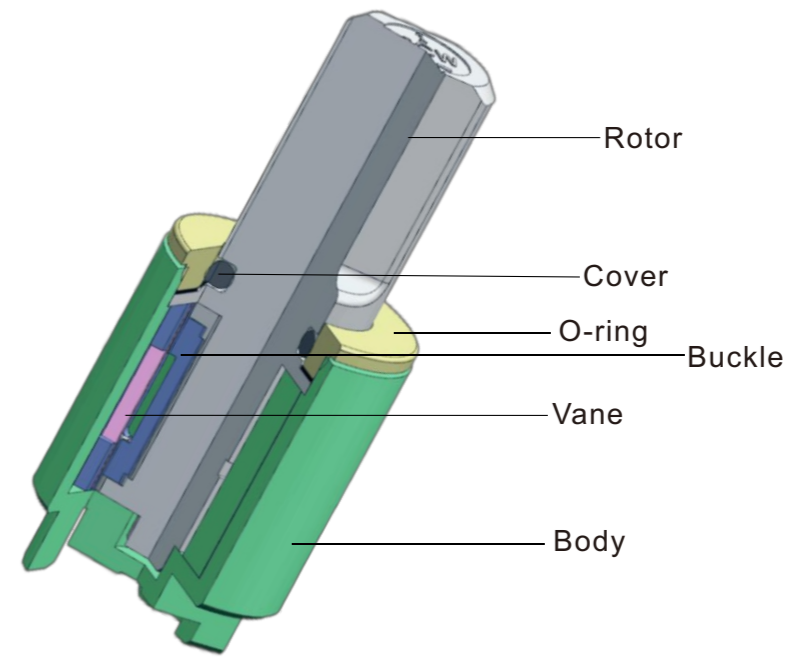
**Speed Characteristics**

Max → Torque → 0

0 → Rotaion Speed → Max
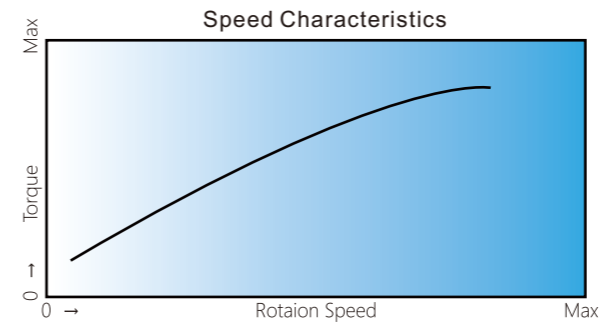
**Speed Characteristics**

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)

Rotor

Cover

O-ring

Buckle

Vane

Body

**Vane Damper**

## Torque calculation method in different scenarios

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

Showed on the right figure, the flat starts to close down from position of less than 90 to horizon position.
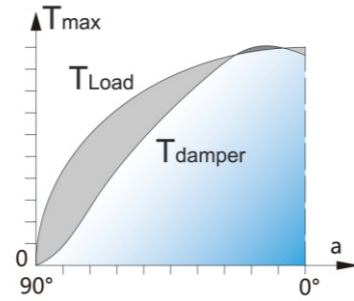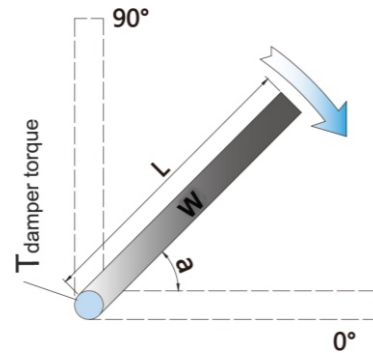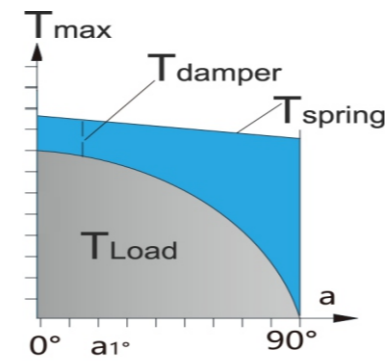
$T=(W*g)*(L/2)*(\cos a)$

Example:

W=2KG, L=300mm

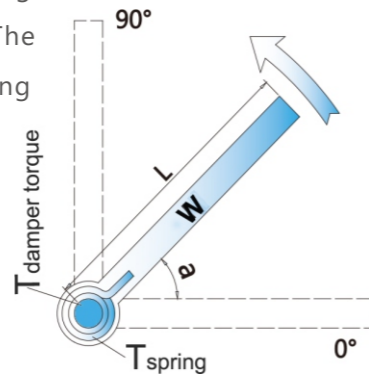T max=$(2*9.8)*(0.3/2)=2.94$ Nm

T damper=0-3.0Nm

### 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=$1*9.8*(0.2/2)=0.98$Nm

Tspring=1.2~0.5Nm

Tdamper≤Fspring-Fload

$=(1.2-0.98)$Nm~$(0.5-0)$Nm

$=0.22$~0.5Nm

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.

**Peir**

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