

Miniature One-way Clutch



Miniature One-way Clutch

We can provide you with various types of miniature one-way clutches, both high- and low-load types with shaft diameters between 4 mm and 12 mm, based on our highly advanced technical know-how and abundant experience.

Features

- Creation of detent protrusions over the surface of the outer-race diameter prevents creeping without strict setting of dimensional tolerance over the engaged surfaces.
- Prefilled optimal grease eliminates replenishment of oil and grease in normal operating conditions.
- Preassembled integrated modules made of synthetic-resin housing and one-way clutch are available. Custom design for various items such as gears, timing pulleys, cams, and rubber rollers are also available. Please contact JTEKT.



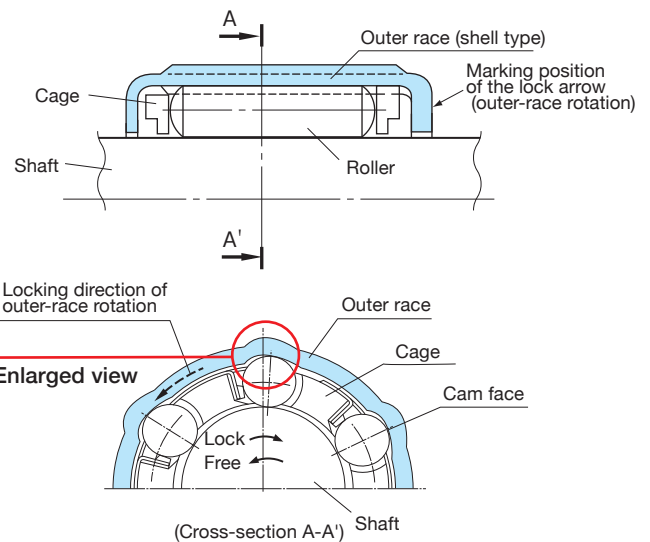
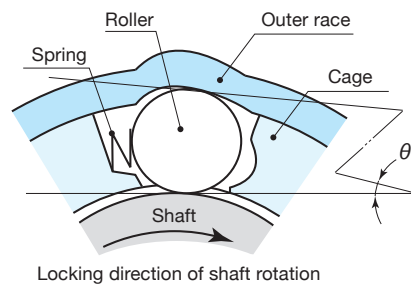
Structure and principles

Clutch engagement

Clockwise shaft rotation at the cross-section A-A' presses the roller on the cam surface of the outer race, locking the cam surface and the shaft by wedge action and driving the outer race.

Clutch disengagement

Counterclockwise shaft rotation at the cross-section A-A' detaches the roller from the cam surface of the outer race and allows rotation of the shaft without driving the outer race.



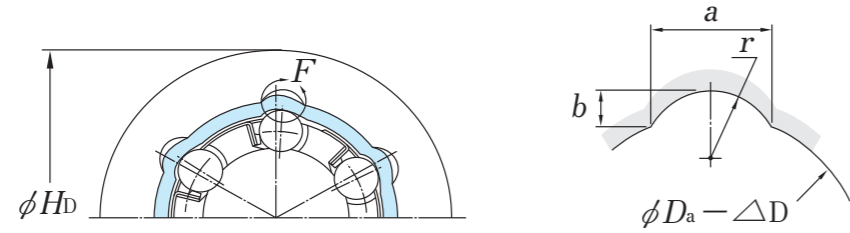
Types and characteristics

| | EWC series (with synthetic resin spring) | | 1WC series (with metal spring) |
|-----------------------------|---|---------------|--------------------------------|
| | High-load type | Low-load type | Torque capacity |
| | EWC···C | EWC···A | 1WC |
| Torque capacity | High load | Low load | High load |
| Operating temperature range | -10~+70°C | | -10~+90°C |
| Lock life | More than 1 million lock times (subject to torque capacity not exceeding the one described in the specifications and dimensions) | | |
| Insert molding | Not available | | Available |

Housing dimensions and accuracy

Tolerances of housing dimensions and accuracy depend on the materials and wall thickness. So, please consult JTEKT.

The following table shows the interference for polyacetal housing and steel housing (ΔD). The recommended plane roughness for steel housing inside diameter is 6S.



Housing shape

Enlarged section F

Shaft dimensional tolerances and accuracy

In general, an inner race is not used; instead, the shaft functions as a bearing ring. Therefore, to fully demonstrate the clutch functions, the following dimensional tolerances and accuracies must be satisfied.

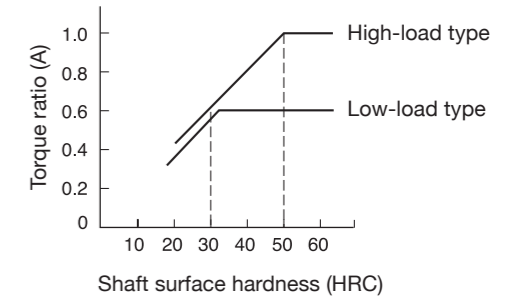
| | High-load type (EWC···C, 1WC···) | Low-load type (EWC···A) |
|------------------------------|-------------------------------------|----------------------------|
| Shaft tolerance zone class | h8 | |
| Surface hardness | 50 HRC or more | 30 HRC or more |
| Surface roughness (Ra) | 0.3a or less | 0.8a or less |
| Circularity and cylindricity | 0.005 mm or less | |

- 1) Shaft diameter dimensional tolerance in case clutch engagement accuracy is not required or no radial load and moment are applied:
- Shaft diameter 6 mm or less and EWC0809: 0 to 0.040 mm
 - Shaft diameter 8 mm or more (except EWC0809): h10

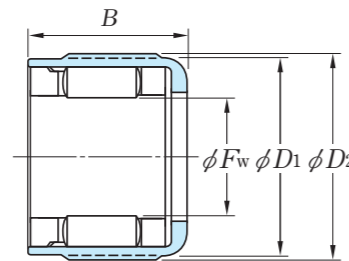
- 2) Surface hardness in case that load torque is smaller than torque capacity.

- The chart to the right shows the target value of shaft surface hardness against torque ratio (A).

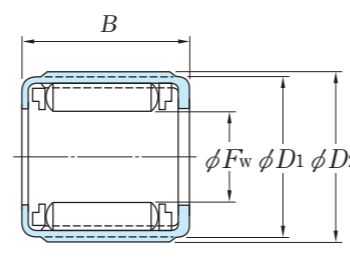
Where:
 Torque ratio (A) = $\frac{\text{load torque}}{\text{torque capacity of high-load type}}$



Model series and dimensions



EWC series (with resin spring)



1WC series (with metal spring)



| Shaft diameter | F_w | D_1 | D_2 | B | A | Torque capacity | Designation | | Number of protrusions on outer race (equal intervals) | Housing recommended dimensions (polyacetal resin) | | | | | | Housing recommended dimensions (steel) | | | | | | (Reference) weight | |
|----------------|-------|-------|-------|------|-----|-----------------|--------------------------------|--------------------------------|---|---|-------|-------|-------|-------|------------|--|-------|-------|-------|-------|------------|--------------------|-----|
| | | | | | | | EWC series (with resin spring) | 1WC series (with metal spring) | | H_b | a | b | r | D_a | ΔD | H_b | a | b | r | D_a | ΔD | EWC | 1WC |
| | | | | | | | mm in | mm in | | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | mm in | g |
| 4 | 4 | 8 | 8.4 | 6 | 2.6 | 0.08 | EWC0406A | — | 4 | 12 | 2.65 | 0.50 | 2 | 8 | 0.06 | 10 | 2.9 | 0.65 | 2 | 8 | 0.03 | 1 | — |
| | 4 | 8 | 8.4 | 6 | 2.6 | 0.15 | EWC0406C | — | 4 | 12 | 2.65 | 0.50 | 2 | 8 | 0.06 | 10 | 2.9 | 0.65 | 2 | 8 | 0.03 | 1 | — |
| 6 | 6 | 10 | 10.4 | 6 | 2.8 | 0.19 | EWC0606XC | — | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | 1.4 | — |
| | 6 | 10 | 10.4 | 7.5 | 2.8 | 0.25 | EWC0608XA | — | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | 1.7 | — |
| | 6 | 10 | 10.4 | 7.5 | 2.8 | 0.44 | EWC0608XC | — | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | 1.7 | — |
| | 6 | 10 | 10.4 | 8 | 2.8 | 0.25 | EWC0608A | — | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | 1.7 | — |
| | 6 | 10 | 10.4 | 8 | 2.8 | 0.44 | EWC0608C | — | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | 1.7 | — |
| | 6 | 10 | 10.4 | 8 | 2.8 | 0.44 | — | 1WC0608 | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | — | 2 |
| | 6 | 10 | 10.4 | 12 | 2.8 | 0.88 | — | 1WC0612 | 6 | 14 | 2.8 | 0.57 | 2 | 10 | 0.08 | 12.5 | 3.1 | 0.85 | 2 | 10 | 0.03 | — | 3 |
| 8 | 8 | 12 | 12.4 | 9 | 2.6 | 0.49 | EWC0809A | — | 6 | 16 | 2.6 | 0.48 | 2 | 12 | 0.1 | 14 | 3 | 0.7 | 2 | 12 | 0.035 | 2.4 | — |
| | 8 | 12 | 12.4 | 9 | 2.6 | 0.88 | EWC0809C | — | 6 | 16 | 2.6 | 0.48 | 2 | 12 | 0.1 | 14 | 3 | 0.7 | 2 | 12 | 0.035 | 2.4 | — |
| | 8 | 14.2 | 15 | 12 | 3.6 | 1.18 | EWC0812A | — | 6 | 18.5 | 3.6 | 0.87 | 2.3 | 14.2 | 0.11 | 17.5 | 3.9 | 1.15 | 2.3 | 14.2 | 0.035 | 5.8 | — |
| | 8 | 14.2 | 15 | 12 | 3.6 | 1.96 | EWC0812C | — | 6 | 18.5 | 3.6 | 0.87 | 2.3 | 14.2 | 0.11 | 17.5 | 3.9 | 1.15 | 2.3 | 14.2 | 0.035 | 5.8 | — |
| | 8 | 14.2 | 15 | 12 | 3.6 | 1.96 | — | 1WC0812 | 6 | 18.5 | 3.6 | 0.87 | 2.3 | 14.2 | 0.11 | 17.5 | 3.9 | 1.15 | 2.3 | 14.2 | 0.035 | — | 7 |
| | 8 | 14.2 | 15 | 14.5 | 3.6 | 2.65 | — | 1WC0815 | 6 | 18.5 | 3.6 | 0.87 | 2.3 | 14.2 | 0.11 | 17.5 | 3.9 | 1.15 | 2.3 | 14.2 | 0.035 | — | 8 |
| | 8 | 14.2 | 15 | 14.5 | 3.6 | 2.65 | — | 1WC0815 | 6 | 18.5 | 3.6 | 0.87 | 2.3 | 14.2 | 0.11 | 17.5 | 3.9 | 1.15 | 2.3 | 14.2 | 0.035 | — | 8 |
| 10 | 10 | 16 | 17 | 10 | 5 | 1.18 | EWC1010A | — | 6 | 21 | 5 | 1.2 | 3.2 | 16 | 0.13 | 19 | 5.3 | 1.4 | 3.2 | 16 | 0.035 | 6 | — |
| | 10 | 16 | 17 | 10 | 5 | 1.96 | EWC1010C | — | 6 | 21 | 5 | 1.2 | 3.2 | 16 | 0.13 | 19 | 5.3 | 1.4 | 3.2 | 16 | 0.035 | 6 | — |
| | 10 | 16 | 17 | 12 | 5 | 1.37 | EWC1012A | — | 6 | 21 | 5 | 1.2 | 3.2 | 16 | 0.13 | 19 | 5.3 | 1.4 | 3.2 | 16 | 0.035 | 6.8 | — |
| | 10 | 16 | 17 | 12 | 5 | 2.35 | EWC1012C | — | 6 | 21 | 5 | 1.2 | 3.2 | 16 | 0.13 | 19 | 5.3 | 1.4 | 3.2 | 16 | 0.035 | 6.8 | — |
| | 10 | 16 | 17 | 12 | 5 | 2.35 | — | 1WC1012 | 6 | 21 | 5 | 1.2 | 3.2 | 16 | 0.13 | 19 | 5.3 | 1.4 | 3.2 | 16 | 0.035 | — | 8 |
| 12 | 12 | 18 | 19 | 16 | 5.1 | 6.28 | — | 1WC1216 | 8 | 23 | 5.1 | 1.2 | 3.3 | 18 | 0.14 | 21 | 5.4 | 1.4 | 3.3 | 18 | 0.035 | — | 12 |

Multi-function devices



Automatic teller machines (ATMs)



Applications of miniature one-way clutch

This product has gained a high reputation for use in clutch systems in a variety of equipment and derices throughout a variety of fields, such as office automation equipment, including paper copiers and printers.



Various types of ticket vending machines



Fishing tackle (reels)

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