CAT. No. MT008

Origin

Our Technologies Realize Your Dreams

One-Way Clutch GXZ type

RoHS Compliant

One-way clutches are compact and high-performance that utilize miniature bearing technology.
They are a mechanical component that is suitable for a wide range of applications including office equipment, control equipment, and various feed mechanisms that utilize functions such as over-running, back-running, and indexing.

Origin Co., Ltd.

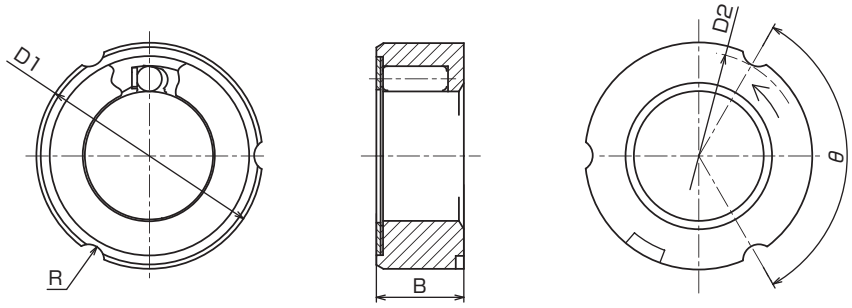
01 Specifications for the Standard Models

Naming and auxiliary symbols

OWC □ □ □ □ GX □ Z
① ② ③ ④

①OWC collective name	②Bore(Shaft size)	③Outside dia.	④Lock direction
OWC=**O**rigin One-**W**ay **C**lutch	Example ・**6**=Bore ϕ6 ・**10**=Bore ϕ10	Example ・**12**=Outside dia. ϕ12 ・**16**=Outside dia. ϕ16	・**R**=Locks when the shaft is rotated in the clockwise direction ・**L**=Locks when the shaft is rotated in the counterclockwise direction

Dimensions



Unit=mm

Nominal Number	Dimensions								Specifications		
	Shaft dia. $d\ ^{0}_{-0.03}$	Outside dia. $D1\ ^{0}_{-0.05}$	Width $B\ ^{+0.05}_{-0.20}$	Groove R $R\ ^{+0.07}_{0}$	Groove dia. $D2\ ^{+0.02}_{-0.05}$	Quantity of Grooves	Distance between Grooves θ	Quantity of rollers	Free rotating torque m N・m	Backlash deg. at 0.1N・m	Rated torque N・m
OWC 307GXLZ	$3\ ^{0}_{-0.02}$	7.2	5.4	0.6	6.6	4	90°	4	< 2	< 4	0.13
OWC 307GXRZ											
OWC 408GXLZ	4	8	6	0.6	7.4	4	90°	4	< 3	< 4	0.15
OWC 408GXRZ											
OWC 410GXLZ	4	10	5.4	1	9	2	180°	4	< 3	< 3.5	0.3
OWC 410GXRZ											
OWC 511GXLZ	5	11	5.4	1	10	3	120°	6	< 3	< 3	0.6
OWC 511GXRZ											
OWC 610GXLZ	6	10.2	8	0.6	9.6	6	60°	6	< 3	< 3	0.54
OWC 610GXRZ											
OWC 612GXLZ	6	12	5.4	1	11	3	120°	6	< 3	< 3	0.8
OWC 612GXRZ											
OWC612GXLZ B=8.4	6	12	8.4	1	11.4	3	120°	6	< 3	< 3	0.8
OWC612GXRZ B=8.4											
OWC 812GXLZ	8	12.2	8	0.6	11.6	6	60°	6	< 3	< 3	0.73
OWC 812GXRZ											
OWC 814GXLZ	8	14	5.4	1	13	3	120°	6	< 3	< 2	1.1
OWC 814GXRZ											
OWC814GXLZ B=8.4	8	14.3	8.4	1	13.8	6	60°	6	< 3	< 3	1.47
OWC814GXRZ B=8.4											
OWC 1016GXLZ	10	16	5.4	1	15	3	120°	6	< 4	< 1	1.5
OWC 1016GXRZ											

Note) 1. The clutch is engaged as the shaft rotates in the direction shown in the arrow (→) on the housing part.
The letters R and L in the nominal number indicates clutched directions, which are clockwise and counterclockwise, respectively.
2. "Rated Torque" is the value of an allowable load torque to guarantee 1 million cycle of the clutch engagement.

02 Features

1. Used under wide range of environmental conditions
   A metal constructed component shows superior heat resitnace.
2. Miniature-size
   A smaller diatmeter with thin thickness allow saving a space in equipment.
3. Right and Left clutch directions
   Two types, R and L, are available. The type "R" clutches in the clockwise direction, whereas the type "L" in the counterclock direction.
4. Supply as a single functional component
   A shield plate holds the internal parts, which allow suppying products as single functional unit.
5. Easy Assembly into gears and pulleys
   It is fairly easy to assemble into resin-based gears and pulleys.

03 Shaft Specifications

The shafts utilized in Origin clutches are recommended to satisfy the following specifications.

Specification head	Specifications of adaptable shaft
Materials	Use steel such as SUM, SUS and SUJ-2.
Hardness	Use a heat-treated shaft.
Surface roughness	Though 0.8S is recommended, this may vary by operation conditions

04 Operation Environment

Operation environment	Recommended ranges
Temperature	0 to 60 ℃
Humidity	90%RH or less

Note) ·Please consult us if you use Origin products under different operation environment not specified above.
·Since the operation environment described here is based on our experiences and testing data, it may not be applied to the products in same way under different circumstances.
For this reason, we do not guarantee that the content of this catalogue will apply to your operation condition exactly in the same way.
Please make final decision at one of your company premises before using this product.

05 Cautions

1. Radial load and eccentric load could affect clutch performances. Please confirm these in advance.
2. Since special grease is used inside Origin one-way clutches, it would also affect performances if other lubricants are introdeced.
3. Please do not use a plated or black oxided shaft. The treated surface is come off or peeled and introduced into the clutch mechanism, which would cause a malfunction of the component.
4. Any shocks and/or vibrations could also affect the clutch function.

06 Design Reference

This design reference material describes the basic procedures when designing and fabricating gears, pulleys, etc. from Origin recommended material for use with the OWC-GXZ type.
The specifications may differ from this design material such as in the case of special shapes, the case of using materials other than the recommended material, and the case of special usage environments.
Treat this as a reference for designing.

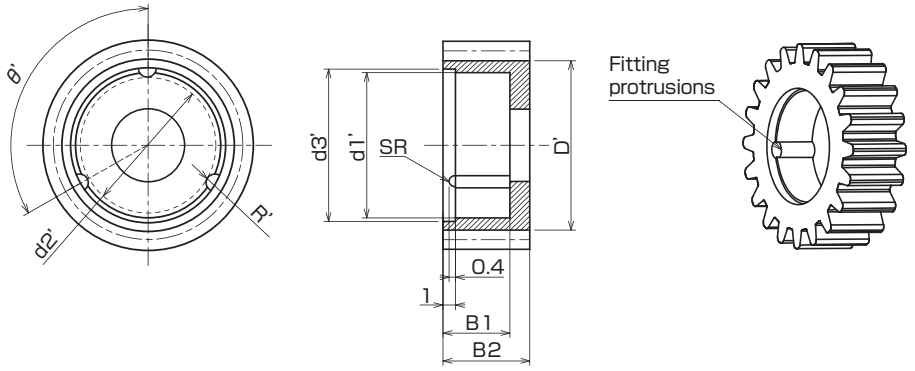
Stage	Work details
Design	

Mating component material selection

Origin recommended material: "DURACON" M90 by Polyplastics Co. Ltd. or equivalent product

Mating component design

Origin one-way clutches have grooves in the outer circumference face, and are able to support high rotation torques by having protrusions on the mating component that fit into these grooves during assembly.



Mating component　List of fitting dimensions - Origin recommended material　Unit=mm

Model	Minimum outer diameter D'	Minimum width B2	Bore $d1'^{-0.08}_{-0.13}$	Depth $B1^{+0.15}_{+0.05}$	Protrusion radius $R'^{0}_{-0.05}$	Inscribed circle diameter $d2'^{0}_{-0.05}$	Inner diameter (relief) $d3'^{+0.07}_{+0.02}$	Number of protrusions N'	Protrusion interval θ'±30°
OWC 307GXZ	10	6.5	7.2	5.4	0.6	6.6	7.2	4	90°
OWC 408GXZ	10	7.0	8	6	0.6	7.4	8	4	90°
OWC 410GXZ	12	6.5	10	5.4	1	9	10	2	180°
OWC 511GXZ	13	6.5	11	5.4	1	10	11	3	120°
OWC 612GXZ	14	6.5	12	5.4	1	11	12	3	120°
OWC 814GXZ	16	6.5	14	5.4	1	13	14	3	120°
OWC1016GXZ	18	6.5	16	5.4	1	15	16	3	120°

Cautions

1. Material

The above design values are for the case of using Origin recommended material. When using other materials, please consult with us as the design may need to be changed (such as changing the press fitting margin).

2. Dimensions of outer diameter

The one-way clutch and mating component are affixed by press fitting.
Since the outer diameter of the mating component may change (increase) due to the press fitting, the design needs to take the changed dimension into account.

3. Pull-out strength and retention force in the rotation direction

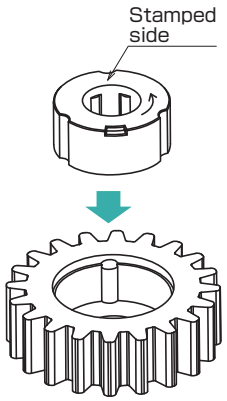
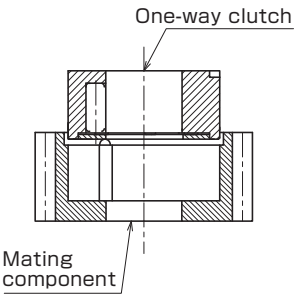
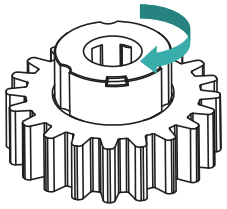
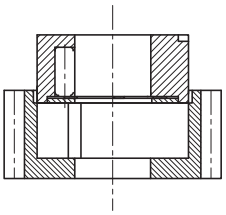
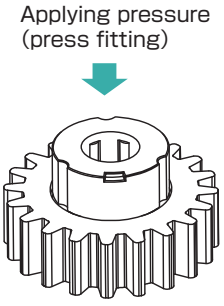
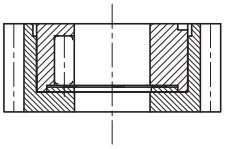
The pull-out strength and the retention force in the rotation direction differ depending on the material, press fitting margin, thickness, and cut-away shape of the mating component.
If you are using the Origin recommended material, use a press fitting margin of 0.03 to 0.13 mm (diameter) and thickness of 1.0 mm or more as a rough guide.
If you are using another material, you need to set the dimensions after checking them separately.

4. High temperature use

When used in a high temperature environment, the retaining force (rotation direction and axial direction) decreases due to reduction of the critical stress and stretching of the plastic.
When using in high temperatures, always perform plenty of checks.

5. Low temperature use

When used in a low temperature environment, shrinkage of the plastic occurs.
The dimensions need to be set (inner diameter dimension, etc.) such that there is no interference (between the plastic parts and shaft) after shrinkage.

Stage	Work details		
	Work details	Model diagram	Cross-sectional diagram
Assembly	1 **Preparation of parts and hand press** · One-way clutch · Mating component · Hand press [Cautions] · Perform the work in a clean environment to ensure that foreign matter does not get into the one-way clutch. · During the work, prevent the parts from coming into contact with each other. · During the work, do not use absorbent materials that could remove the lubricant from the one-way clutch. · Take measures against rust such as using procedures for washing hands. · Use a hand press that is able to apply pressure evenly.		
	2 **One-way clutch set** Mount the one-way clutch in the inner diameter (relief hole) of the mating component. [Cautions] · Ensure that the centers of the one-way clutch and mating component are not misaligned. · Ensure that the one-way clutch is level. · Ensure that the stamped side of the one-way clutch is facing up.		
	3 **Phase alignment** Rotate the one-way clutch to align the phases of the joining grooves and joining protrusions. [Cautions] · Ensure that the centers of the one-way clutch and mating component are not misaligned. · Ensure that the one-way clutch is level. · Ensure you do not cause scratches or defects in the joining protrusions.		
	4 **Press fitting (applying pressure)** Press fit the one-way clutch using the hand press. [Cautions] · Do not press fit the one-way clutch if it is not level · Use a guide shaft or similar. · Press fit using a constant load. · Ensure that the press fitting tool does not scratch the plastic parts. · If you are using metal or other bearings on the same axle, attach a guide shaft or similar to prevent misalignment of the centers. · Press fit basically until the one-way clutch stops at the surface position of the mating component.		

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