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# Small interactive clutch, TW type

## Reverse input shutoff type(OSCM-TW)



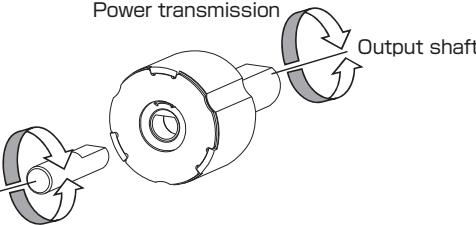
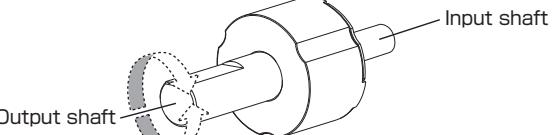
Small interactive clutches are a mechanical component that is able to transmit mechanical power at the same speed (1:1) without needing electrical power for controlling the transmission and blockage of the mechanical power like a motor, solenoid, or electromagnetic clutch.

The "reverse input shutoff type" is useful such as for elimination of rotational inertia in rotational control, fixed feeding (indexing), and locking mechanisms during transport because it is able to block reverse input from the output shaft to the input shaft using a lock function.

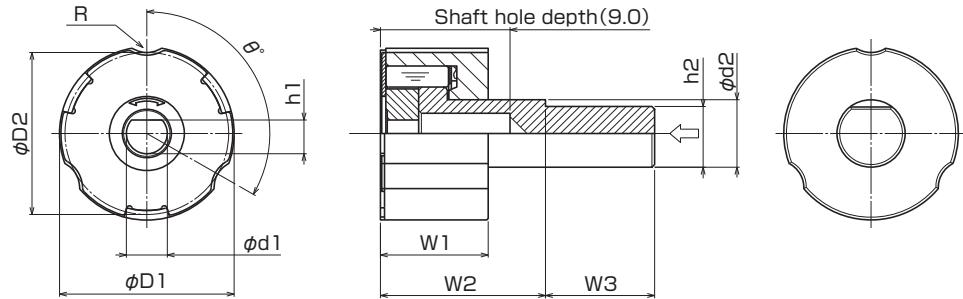


Origin Co., Ltd.

## 01 Specifications for the Standard Models

Power transmission from input shaft	Reverse input blocked by locking the output shaft
 <p>Transmission of power from input shaft to output shaft</p>	 <p>Transmission to input shaft blocked by locking</p>

### Dimensions



Unit=mm

Nominal Number	Dimension									
	Input shaft		Output shaft		Outside dia.	Width			Groove	
	Hole diameter $\phi d_1^{+0.08}_0$	D height $h_1^{+0.10}_0$	Shaft diameter $\phi d_2^{-0.10}_0$	D height $h_2^{-0.10}_0$	$\phi D_1^{+0.05}_0$	$W_1^{+0.10}_{-0.20}$	$W_2^{+0.10}_{-0.30}$	$W_3^{+0.10}_{-0.10}$	Inscribed circle $\phi D_2^{+0.02}_{-0.05}$	$R^{+0.07}_0$
OSCM3-5TW	3	2.5	5	4.5	12.8	7.9	12	8	12	2

Unit=mm

Specification							
Tolerable locking torque	Braking torque	Allowable rotation speed	Ambient temperature range	Recommended shaft material	Quantity of Grooves	Distance between Grooves $\theta$	
$\leq 200$ mN·m	<3 mN·m	<560 rpm	0°C to 60°C	SUM, SUS	3	120	

## 02 Product description

### 1. Energy saving

- This is an eco-friendly clutch that does not use any electrical power. It keeps friction losses down to offer a transmission efficiency of over 95%.

### 2. Space saving

- The concentric axle structure enables space saving layout design and allows for direct motor connection.

### 3. Simple design

- Mechanical power transmission from input to output uses same speed transmission (1:1).

### 4. Interactive clutch

- It can be used in forward and reverse directions (clockwise and counterclockwise directions).

### 5. Single unit supply

- Can be supplied either in the assembled state or as a single unit.

## 03 Recommended input shaft

When using the interactive clutch, use an input shaft with the following specifications.

Items	Input shaft specifications		
	Shaft shape	Shaft diameter	D cut part
		$\phi 3$ $^{+0.01}_{-0.04}$	$\phi 2.5$ $^{+0.05}_{-0.10}$
		3mm to 8mm	

## 04 Operation Environment

Operation environment conditions	Operation environment
Temperature	0 to 60 °C
Humidity	90%RH or less

Note) ·Please consult us if you use this product in the operation environment other than 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. The lock function may be degraded by radial loads and unbalanced loads. Please check before using.
2. The outer ring of the interactive clutch is impregnated with oil. This oil was selected for use with interactive clutches. Care is required because if another type of oil (grease or oil) gets inside, there is a risk of losing the lock function.
3. Please be cautious of the impacts and vibrations to the interactive clutch because there is a risk of losing the lock function.

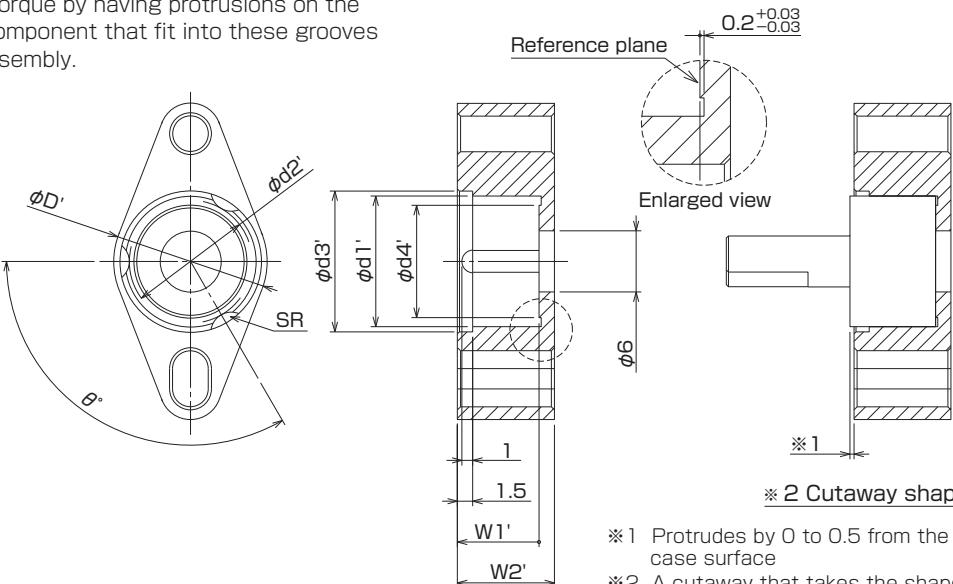
## 06 Cautions when press fitting gears, etc. onto the output shaft

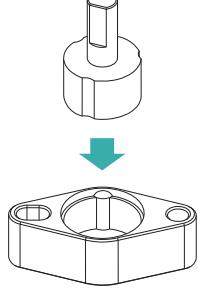
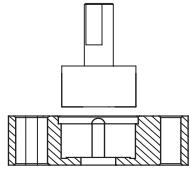
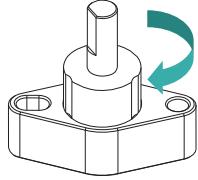
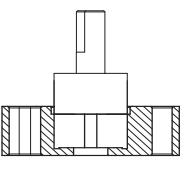
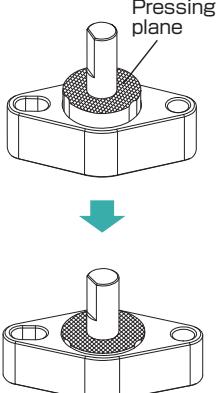
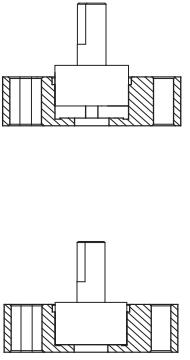
1. When press fitting gears and pulleys onto the output shaft, press fit with the input shaft end face on the reverse side seated properly.
2. Please do not use a hammer to press fit the gears and pulleys onto the output shaft. This may cause the shaft to deform, causing internal damage to the shaft and shortening the life.
3. When connecting the output shaft using a coupling, try as much as possible to keep the shaft centers aligned. If the shafts are misaligned, it will reduce the life of the product.
4. Attach gears, pulleys, etc. as close to the base of the shaft as possible.

## 07 Design reference material

This design reference material describes the basic procedures when designing and fabricating plastic cases, etc. from Origin recommended material for use with the small interactive clutch.

The specifications may differ from this design material such as for special shapes, when using materials other than the recommended material, and for special usage environments. This material should be treated merely as reference material for the design.

Stage	Work details																						
Design	<p><b>Mating component material selection</b> Origin recommended material: "DURACON M90" by Polyplastics Co. Ltd. or equivalent product</p> <p><b>Mating component design</b> Origin small interactive clutches have grooves in the outer circumference face, and are able to maintain rotation torque by having protrusions on the mating component that fit into these grooves during assembly.</p>  <p>※1 Protrudes by 0 to 0.5 from the plastic case surface ※2 A cutaway that takes the shape into account is needed</p> <p><b>Mating component List of fitting dimensions - Origin recommended material</b> Unit=mm</p> <table border="1"> <thead> <tr> <th>Models</th> <th>Minimum outer diameter D'</th> <th>Minimum width W2'</th> <th>Bore d1' -0.03 -0.08</th> <th>Depth W1' +0.15 +0.05</th> <th>Protrusion radius R' 0 -0.05</th> <th>Inscribed circle diameter d2' 0 -0.05</th> <th>Inner diameter (relief) d3' +0.07 +0.02</th> <th>Input hole d4' 0 -0.1</th> <th>Number of protrusions N'</th> <th>Protrusion interval θ ±30°</th> </tr> </thead> <tbody> <tr> <td>OSCM3-5TW</td> <td>15</td> <td>9.2</td> <td>12.8</td> <td>8</td> <td>2</td> <td>12</td> <td>13</td> <td>11.2</td> <td>3</td> <td>120°</td> </tr> </tbody> </table> <p><b>Cautions</b></p> <p><b>1. Material</b> 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).</p> <p><b>2. Dimensions of outer diameter</b> The small interactive 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.</p> <p><b>3. Pull-out strength and retention force in the rotation direction</b> 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 0.08 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.</p> <p><b>4. High temperature use</b> 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.</p> <p><b>5. Low temperature use</b> 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.</p>	Models	Minimum outer diameter D'	Minimum width W2'	Bore d1' -0.03 -0.08	Depth W1' +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	Input hole d4' 0 -0.1	Number of protrusions N'	Protrusion interval θ ±30°	OSCM3-5TW	15	9.2	12.8	8	2	12	13	11.2	3	120°
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Stage	Work details		
	Work details	Model diagram	Cross-sectional diagram
Assembly	<p><b>Preparation of parts and hand press</b></p> <ul style="list-style-type: none"> <li>· Small interactive clutch Reverse input shutoff type (OSCM-TW)</li> <li>· Mating component</li> <li>· Hand press</li> </ul> <p><b>[Cautions]</b></p> <ul style="list-style-type: none"> <li>· Perform the work in a clean environment to ensure that foreign matter does not get into the small interactive clutch.</li> <li>· During the work, prevent the parts from coming into contact with each other.</li> <li>· During the work, do not use absorbent materials that could remove the lubricant from the small interactive clutch.</li> <li>· Take measures against rust such as using procedures for washing hands.</li> <li>· Use a hand press that is able to apply pressure evenly.</li> </ul>		
	<p><b>Small interactive clutch set</b></p> <p>Mount the small interactive clutch in the inner diameter (relief hole) of the mating component.</p> <p><b>[Cautions]</b></p> <ul style="list-style-type: none"> <li>· Ensure that the centers of the small interactive clutch and mating component are not misaligned.</li> <li>· Ensure that the small interactive clutch is leveled.</li> <li>· Ensure that the input shaft side of the small interactive clutch is facing down.</li> </ul>		
	<p><b>Phase alignment</b></p> <p>Rotate the small interactive clutch to align the phases of the joining grooves and joining protrusions.</p> <p><b>[Cautions]</b></p> <ul style="list-style-type: none"> <li>· Ensure that the centers of the small interactive clutch and mating component are not misaligned.</li> <li>· Ensure that the small interactive clutch is leveled.</li> <li>· Ensure not to scratch or crack on the joining protrusions.</li> </ul>		
	<p><b>Press fitting (applying pressure)</b></p> <p>Press fit the small interactive clutch by using the hand press.</p> <p><b>[Cautions]</b></p> <ul style="list-style-type: none"> <li>· Press fit by using a jig or similar to ensure that the small interactive clutch is not tilted when it is press fitted.</li> <li>· Press fit with constant load.</li> <li>· Ensure that the press fitting tool does not scratch the plastic parts.</li> <li>· Do not press fit any part other than the marked surface of the outer ring (hatched area) of the small interactive clutch.</li> <li>· Press fit until the small interactive clutch stops.</li> </ul>		



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Safety Precaution To avoid accidents and/or failures as well as to ensure safety, do not use this product exceeding the specifications noted in this catalog and ignoring the precautions.