

## Housing Interference Fit Design for TCJ Series One-Way Clutches

Provided as a reference for customers who plan to manufacture the housing themselves

### Recommended Housing Material | Polyacetal (POM)

Polyacetal is a functional resin with low water absorption and excellent dimensional stability. It also possesses self-lubricating properties, wear resistance, and good mechanical strength.

### Design of the One-Way Clutch Fitting Area

Design 1-1: We recommend designing the housing fit according to the outer shape of the TCJ series, referring to Table 1, while ensuring a wall thickness of at least 1 mm as shown in the figure below.

Since the coefficient of linear expansion differs by approximately an order of magnitude between resin and metal, it is necessary to set the material and mating part tolerances according to the operating temperature range (see Table 1)

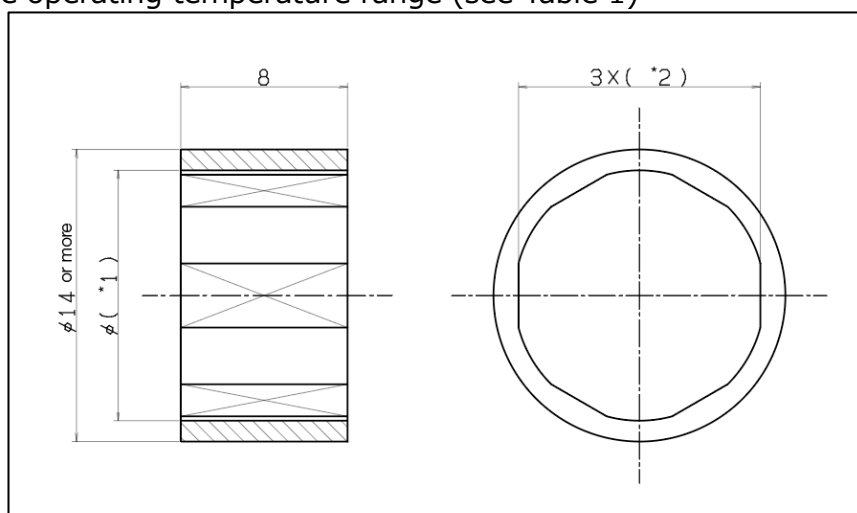


Figure 1: Design of One-Way Clutch Mating Section 1-1

Table 1: Fitting Section Specifications (\*1 \*2)

	*1		*2	
	-10℃ ~ 60℃	-10℃ ~ 140℃	-10℃ ~ 60℃	-10℃ ~ 140℃
POM	φ12.02 <sup>-0.10</sup> -0.15		11.6 <sup>-0.10</sup> -0.15	
PPS	φ12.02 <sup>-0.10</sup> -0.15	φ12.02 <sup>-0.15</sup> -0.25	11.6 <sup>-0.10</sup> -0.15	11.6 <sup>-0.15</sup> -0.25
PEEK	φ12.02 <sup>-0.10</sup> -0.15	φ12.02 <sup>-0.15</sup> -0.25	11.6 <sup>-0.10</sup> -0.15	11.6 <sup>-0.15</sup> -0.25

Design 1-2: When the housing width needs to be increased, such as for incorporating gears or timing pulleys, the housing should be designed with a wall, as shown in the figure below (see Figure 2).

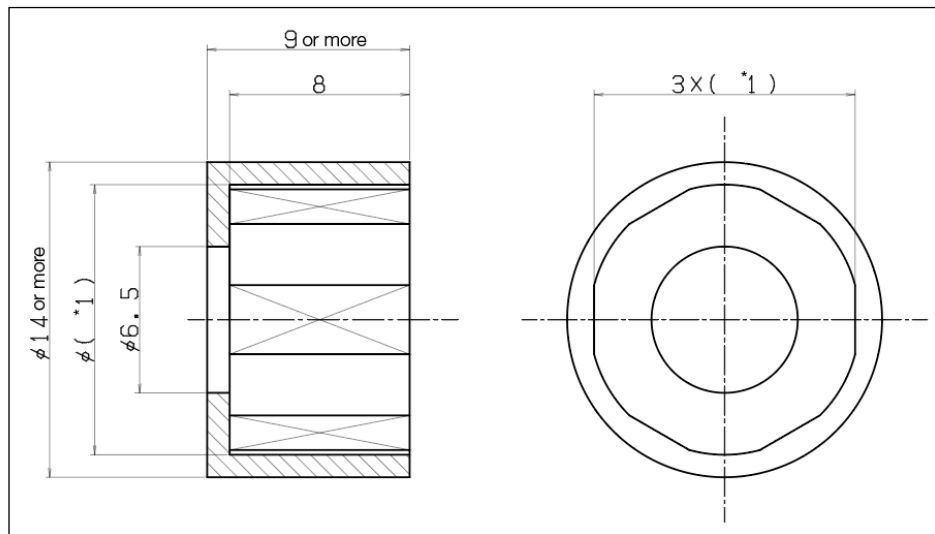


Figure 2: Design 1-2 of Wide One-Way Clutch Fitting Section

Design 2-1: In the case of a metal housing, the clutch is press-fitted into a cylindrical inner diameter, and the standard values are determined with reference to Table 2.

However, since the outer diameter tolerance range of the one-way clutch is 0.06 mm, we recommend finalizing the design while checking the actual part. (See Figure 3.)

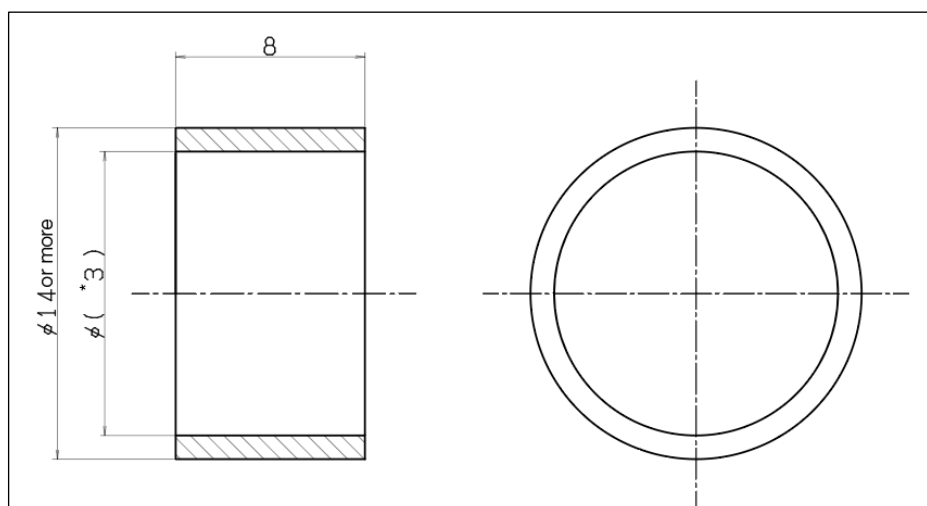


Figure 3: Design 2-1 of One-Way Clutch Fitting Section for Metal Housing

Table 2: Fitting Standards for Metal Housing (Note 3)

	*3	
	-10℃ ~ 110℃	110℃ ~ 140℃
Steel • Cast iron	φ12.02 <sup>-0.005</sup> <sub>-0.010</sub>	φ12.02 <sup>-0.005</sup> <sub>-0.010</sub>
Stainless steel	φ12.02 <sup>-0.010</sup> <sub>-0.015</sub>	φ12.02 <sup>-0.015</sup> <sub>-0.020</sub>
Aluminum	φ12.02 <sup>-0.020</sup> <sub>-0.025</sub>	

**Design 2-2:** When using a metal housing with a width of 9 mm or more, design with reference to the diagram below (Figure 4).

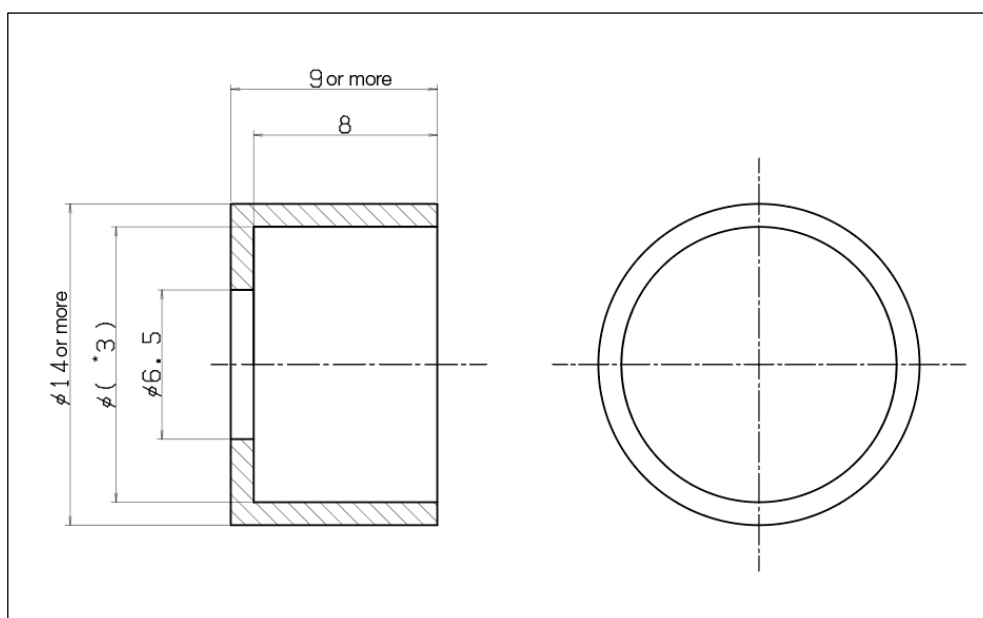


Figure 4: Design 2-2 of Wide Metal Housing One-Way Clutch Fitting Section

## Conclusion

We also offer the option of machining the housing and assembling the one-way clutch in-house for delivery.  
If you are interested, please contact us via our website.