

The E-cup is a friction fastener that permits center deviation and a deflection angle between the 2 shafts. The shaft tolerances, surface roughness, correct tightening of the lock bolts, and amount of misalignment are among the very important factors in order to obtain the designated performance. If you have any questions, please contact a dealer or our company.

For safe use of the product

Thank you for your purchase of an ISEL product. In order to use the product safely and obtain the designated full performance, please be sure to read the following items.

- ◎Read this instruction manual carefully and understand the contents before using the product, and be sure to observe all instructions in the manual and use the product correctly.
- ◎Be sure that you fully understand the information related to the device and safety before using the product.
- ◎After reading, be sure to store this manual carefully so that it can be referred to at any time when needed during use.

This manual classifies important precautions into two categories: DANGER and WARNING.

⚠ DANGER	⚠ WARNING
<p>Incorrect use or handling will produce dangerous conditions that may result in death or serious injury.</p>	<p>Incorrect use or handling will produce dangerous conditions that may result in injury. There is also the risk of property damage.</p>

⚠ DANGER

- ◆When using this product, be sure that the necessary mechanisms (covers, enclosures, etc.) for ensuring the safety of life and health are installed on the equipment.
- ◆Wear clothing and protective gear that is suitable for the work.
- ◆Keep the work area clean and orderly, and work safely in order to prevent secondary accidents.
- ◆In the environment where the product operates, install safety mechanisms onto all parts which may be a danger to the operator.
- ◆When performing maintenance or inspections, turn OFF the motor power (power supply) and check that the machine has fully stopped before beginning work.
- ◆Before using lift equipment, install safety measures on the equipment to prevent falling. There is the risk of death or injury, as well as damage to the equipment, if the lift part falls.
- ◆If the product is used for transporting persons, install the necessary equipment for safety.
- ◆Do not touch the product while it is operating. Doing so may result in injury, damage to the product, or other damage.
- ◆Do not use the product for any purpose other than the designated purpose, and do not modify the product. There is the risk that the designated accuracy and performance will not be possible.
- ◆If abnormal noise or vibration occurs during work, immediately discontinue operation and inspect the equipment and this product. If use is continued without inspecting, there is the risk of injury to operators, damage to equipment, and other damage.

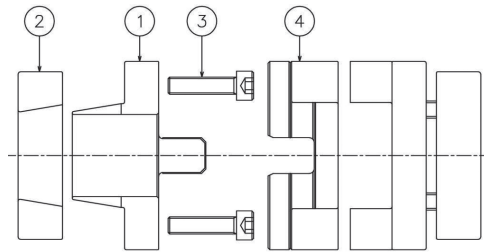
⚠ WARNING

- ◇Check that the product is the one you ordered and that there is no damage to it. If the product is not the one you ordered or is damaged, there is the risk of injury to operators, damage to equipment, and other damage.
- ◇If the shaft includes a key groove, it can be used as long as the groove width is as prescribed in the JIS standard. However the maximum allowable torque is reduced by 15% - 20%. Remove any burrs on the key groove before using.
- ◇If the product is reused, check that there is no deformation, damage, or other problem with the product or any of its components before use. If there is damage, deformation, or other problem, replace with a new

product.

- ◇When tightening lock bolts, be sure to use a torque wrench that includes a torque adjustment scale, and tighten at the designated tightening torque. Use of a plate-type torque wrench may cause slipping, deformation, and other trouble because it is difficult to check the designated torque.
- ◇Never use any bolt other than the designated bolt. There is the risk of damage to the bolt, resulting in an accident.
- ◇In order to ensure the designated performance, an opposite shaft with tolerance grade h7 and surface roughness of Ra1.6 or less is recommended.
- ◇If there is wear or looseness of the tetrafluoro resin layer on the body projecting parts, an impact load occurs and there is the risk of reduced lifetime and damage. Perform inspection regularly, and check that there is no looseness, and that there is no cracking of the body projecting parts and slider indented parts.
- ◇If the product has special specifications, it may differ in parts from the contents of this instruction manual. Please contact a dealer or our company.
- ◇If the bolts are tightened when the coupling is not connected to anything, the coupling may become deformed and be rendered unusable. Therefore check that the shaft is fully inserted into the coupling when tightening the bolts.
- ◇The E-cup Series can be used without applying oil or grease to it.

● Structural drawings



(Figure 1)

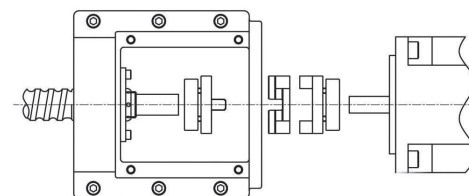
1. Body
2. Side ring
3. Locking screw
4. Slider

● Installation

- (1) Use paint thinner or other means to wipe off any corrosion, dirt, or other substance from the surface of the shaft.
- (2) Install the motor into the housing. Provisionally fasten it in place, and check that the center deviation and deflection angle of the motor and ball screw shafts are within the tolerance values. Remove the motor from the housing and install the E-cup onto both shafts. After positioning, tighten the lock bolts. (Figure 2) (Check the clearance between the slider and body.)

⚠ WARNING

- ◇If the inner diameter size is $\phi 10$ or smaller, then when surface pressure is applied to the tapered parts of the body and side ring, the inner diameter may be compressed and it may not be possible to insert the shaft.



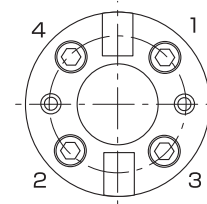
(Figure 2)

- (3) Use a torque wrench and tighten the lock bolts at diagonally opposite positions in sequence. Tighten gently at first (approximately 1/4 of the designated torque) then gradually increase the tightening force (approximately 1/2 of the designated torque), and then fully tighten the bolts at the designated torque. Finally repeat tightening of each bolt several times, working in the peripheral direction. Check that all lock bolts have been tightened at the designated torque and none were

skipped. (Figure 3) (Table 1)

When tightening, never tighten all the bolts on one side first.

Doing so will cause centering deviation.



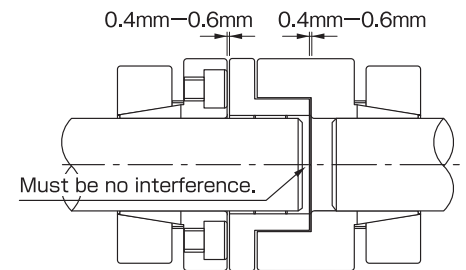
(Figure 3)

Strength category 10.9 or higher

Bolt	Tightening torque N·m
M4	2.94
M5	6.86

(Table 1)

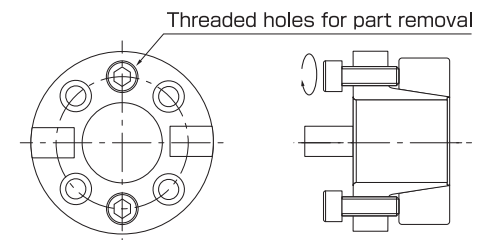
- (4) After assembling the body and side ring, again install into the housing and check that the E-cup installation position and installation length are correct. (Figure 4) Assemble so that clearance 0.5 ± 0.1 mm is maintained for both the body and slider end. Using a clearance gauge or similar item will improve workability. If the parts are pressed strongly together and there is no clearance (bottomed-out), there is the risk of damage to the slider. Also consider the amount of movement in the shaft thrust direction resulting from thermal displacement and maintain the correct clearance.



(Figure 4)

● Removal

- Check for safety before beginning removal work.
- (1) Turn OFF the motor power (power supply) and check that there is no torque or thrust force applied to the coupling, and that there is no risk of falling or other accident.
 - (2) Remove the motor from the housing. Next, working gradually in several stages, loosen each of the lock bolts in sequence. (The bolt heads should be lifted by approximately 3 mm.) Place the loosened lock bolts into all of the threaded holes for part removal, then gradually screw in the bolts in sequence with even force in order to disassemble. (Figure 5)



(Figure 5)

⚠ WARNING

- ◇Apply oil to the bolts used for part removal.
- ◇Be sure to use all of the threaded holes for part removal. Otherwise there is the risk of deformation and it may not be possible to reuse the part.

*Specifications may be changed without notice.

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