Instruction Manual

BE-FLEX Coupling

Thank you for purchasing a Tsubaki Emerson coupling.
Make sure the unit delivered matches your order and no shortages exist in the parts provided. Any such shortages or other delivery errors must immediately be reported to your distributor.

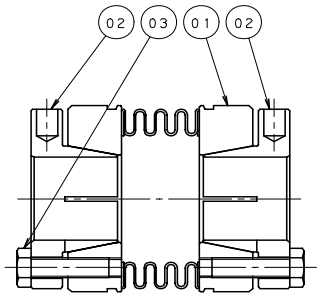
This manual should be considered an essential part of the coupling and remain with the coupling when redistributed. To ensure safety, read all instructions thoroughly before installing or working on the product.

Contents

Tsubaki Emerson Co.

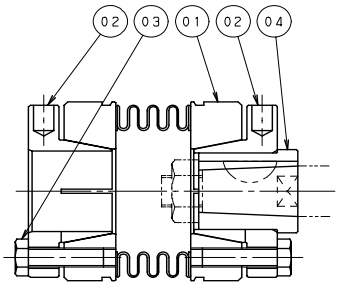
1. Structure and Parts List

Taper Lock Type



01: Bellows Unit
02: Inner Ring
03: Pressure Bolts

Adapter Type



01: Bellows Unit
02: Inner Ring
03: Pressure Bolts
04:Adapter

2. Installation

(1) Make sure the shafts being connected to the coupling have appropriate tolerance as described in Table 1.

(2) Align coupling and shafts within the allowable figures given in Table 2.

(3) Accurate alignment can extend life.

(4) Do not damage bellows when connecting the coupling to shafts. Bellows can lose durability.

(5) After the coupling and shafts are aligned, connect the shafts by tightening the pressure bolts. Tighten the diagonally opposite bolts gradually, using your hands. Then, tighten them all the way by torque wrench at the torque strengths shown in Table 3. Fixing the coupling can be made easier by placing an anti-rotation device at the opening of the inner ring outer diameter.

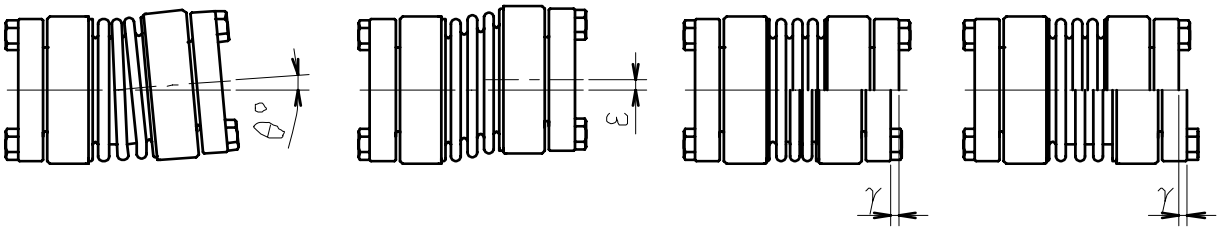
Table 1. Tolerance of Shaft Diameter

Shaft Diameter	ϕ 35	Others (except ϕ 35)
Tolerance	±0.010	h6 or h7

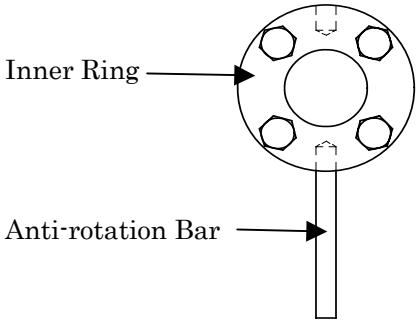
ϕ 35 corresponds to a servo motor shaft whose tolerance is (+0.010-0).
Tolerance for coupling bore with ϕ 35 is adjusted accordingly.

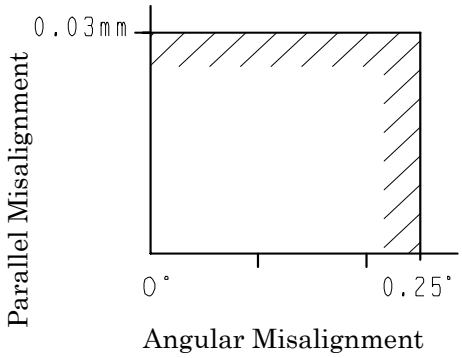
Table 2. Recommended Alignment

Model No.	Angular(θ °)		Parallel(ε mm)		Axial(γ mm)	
	Recommend	Allowable	Recommend	Allowable	Recommend	Allowable
BEF04	0.25	1	0.03	0.1	±0.20	±0.6
BEF10	0.25	1	0.03	0.1	±0.20	±0.6
BEF25	0.25	1	0.03	0.1	±0.20	±0.6

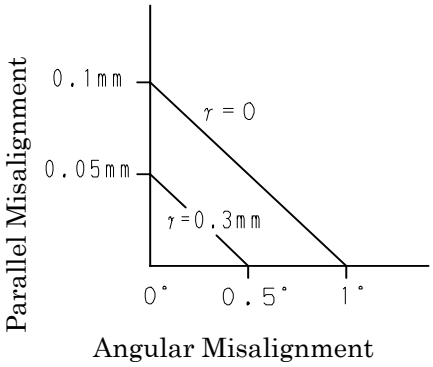


Angular Misalignment : θ Parallel Misalignment : ε Axial Misalignment : γ mm





Alignment (Recommend)



Misalignment (Allowable)

Table 3. Tightening and Transmit Torques for Taper Lock

		Tightening Torques N·m			Transmit Torques for Taper Lock N·m		
Model type		BEF04	BEF10	BEF25	BEF04	BEF10	BEF25
BORE	10	6.0	—	—	13.7	—	—
	14	—	8.3	—	—	27.4	—
	15	8.9	8.9	—	47.0	33.3	—
	17	10.1	—	—	68.6	—	—
	18	10.7	—	—	81.3	—	—
	19	11.3	11.3	—	96.0	68.6	—
	20	11.9	11.9	10.8	112	79.4	90.2
	22	12.1	12.2	11.5	136	99.0	116
	24	12.1	12.2	—	163	118	—
	25	12.1	12.2	11.5	176	127	150
	28	—	12.2	11.5	—	160	188
	30	—	12.2	11.5	—	184	216
	32	—	12.2	11.5	—	209	245
	35	—	12.2	11.5	—	250	294
	40	—	—	11.5	—	—	383
	42	—	—	11.5	—	—	422

- Bolt requirements are class 10.9, size M6.
- Bore sizes other than those shown above are also available for rush delivery.

3. Removal

Remove coupling by loosening the pressure bolts.

Use the tap hole at the end of the inner ring to remove if preferred.

4. Precautions

① Allowable ambient temperature range is –20° C ～ +100° C.
② Additional machining may deform the bellows.
③ The bellows are made from thin material to increase performance and reduce inertia. Bellows will easily deform from shock. Make sure large shock (such as from dropping) does not shift the misalignment angles to above those specified. If it does, change the coupling.

Safety precautions in this manual are classified into two categories: “WARNING” and “CAUTION”. These are defined as follows:

WARNING	Death or serious injury may result from misusing the product without following the instructions.
CAUTION	Minor or moderate injury, as well as damage to the product may result from misusing the product without following the instructions.

Notice that although categorized under “CAUTION”, subjects discussed may lead to serious results depending on the situation.

.WARNING

(General)

- Install a safety cover and prevent access to any rotating parts: otherwise injury may occur. Set a safety mechanism to stop the rotating parts when the cover is lifted.
- Transporting, installing, operating, maintaining or inspecting must be carried out by skilled and professional engineers to avoid mis-handling and hazardous situations.
- When coupling is used with vehicles that carry human, use a device to protect the vehicle: otherwise, accidents and damage may occur.
- When the coupling is used for an elevator, install a safety device on the elevator in order to prevent it from falling, which can cause damage and accidents resulting in death or injury.

(Unpacking upon delivery)

- If delivered in a wooden case, unpack with care. Sharp nails may cause injury.

(Additional machining)

- Never modify the coupling; the quality or function of the product may decrease and break or damage the machine or injure the operator.

(Transportation)

- Never step under the product when it is being elevated for transportation: otherwise, either the poduct or load may fall, causing accidents resulting in death or injury.

(Installation)

- Wear appropriate clothing and safety gear (safety goggles, gloves, shoes, etc.).
- Make sure the power is switched off, and the machine is completely stopped before installing. Take caution so that the power does not reconnect accidentally.
- Make sure to tighten and apply sufficient amount of anti-loosening agent to the hexagonal socket head cap screws.

(Operation)

- Avoid contact with any rotating parts (coupling, shaft, etc.) during operations. Rotating parts can catch approaching objects and cause serious injuries.

(Maintenance and inspection)

- Avoid contact with any rotating parts (coupling, shaft, etc.) during maintenance and inspection. Rotating parts can catch approaching objects and cause serious injuries.
- Make sure the power is switched off, and the machine is completely stopped before carrying out maintenance and inspection.
  Take caution so that the power does not reconnect accidentally.
  Make sure the driving and driven equipment are also completely stopped.

CAUTION

(General)

- Do not use coupling beyond its capacity as specified in the drawing. Exceeding its capacity can break the machine and cause injuries.
- Do not use damaged couplings. They can break your equipment and cause injuries.

(Transportation)

- Pay extra attention so that the equipment will not fall or rollover during transportations.

(Installation)

- Do not touch the edge and inner diameter of any part with bare hands to avoid possible injury.
- Make sure to align the drive and driven shafts as instructed in the manual when installing the coupling

(Operation)

- Do not touch the coupling during operation s to avoid injuries.
- Immediately stop the machine upon any sign of abnormal operation.

(Maintenance and inspection)

- Wear appropriate clothing and safety gear (safety goggles, gloves, shoes, etc.).
- Clean the surrounding area and maintain a clutter-free space to avoid secondary accidents.
- Comply with Ordinance on Labor Safety and Hygiene 2-1-1 general standards.
- Conduct periodic inspections to make sure that the drive and driven shafts are aligned as described in the manual, and that the rubber and plastic parts are not worn or deformed.

(Environment)

- Coupling scraps should be disposed as general waste by skilled professionals.
- This coupling meets RoHS (Restriction of Certain Hazardous Substances) standards and contains no hazardous chemicals.