

# Instruction Manual for Bellows Coupling Mini



Thank you for purchasing Bellows Coupling. At first, make sure the unit delivered matches your order and no shortages exist in the parts provided. Any such shortages or other delivery errors must be reported immediately to your distributor.

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

## Cautions for safety

When using the product, read thoroughly the Instruction Manual and handle it correctly paying a sufficient attention to the safety.

Safety precautions in this manual are classified into two categories: "Warning" and "Caution".

 <b>Warning</b>	Death or serious injury may result from misusing the product.
 <b>Caution</b>	Minor or moderate injury, as well as damage to the product may result from misusing the product.

Notice that although categories under "Caution", subjects discussed may lead to serious results depending on the situation.

Make sure to follow the important contents written in "Warning" and "Caution".

And also the quality control is paid attention sufficiently. Preparing the unexpected accidents, enough consider the safety action.

This manual should remain with the Jaw-flex Coupling at all time. To ensure safety, this manual should be kept as an easy reference to anyone using the units at all time.

## Warning

### [General]

- Make sure to install a safety cover.

Injury may occur; when a hand or finger touch the product due to the rotating parts. Make sure to put the safety cover to prevent the body from the rotating parts for preventing the danger.

Set a safety mechanism to stop the rotating parts immediately when the cover is lifted.

- Transporting, installing, operating, maintaining or inspecting must be carried out by skilled and professional engineers. Injury or machine breakage may occur.
- When the coupling is used with vehicles that carry human, set a safety device at the device side for the safety purpose. Bodily injury or machine breakage due to the runaway/falling may occur.
- When the coupling is used for the lifting/lowering device, set a safety device at the device side in order to prevent from falling. Bodily injury or machine breakage due to falling may occur.

### [Transportation]

- Never step under the product when it is elevated for transportation. Bodily injury due to the falling may occur.

### [Installation]

- Wear the proper clothing and safety gear (safety glasses, gloves, safety shoes, etc.) when mounting or dismounting the coupling.
- Make sure to turn off the power in advance, and prevent from the switch turning on suddenly.
- Make sure to tighten the bolts securely and prevent the bolts from loosening completely.
- Critical condition such as the breakage of the bolts may occur depending on the state of tightening of the bolts. Make sure to tighten the bolts certainly.

### [Operation]

- Never approach or contact to the rotating parts (coupling, shaft, etc.) during operation. Getting into the machine or bodily injury may occur.

### [Maintenance and inspection]

- Never approach or contact to the rotating parts (coupling, shaft etc.) when maintaining or inspecting during operation. Getting into the machine or bodily injury may occur.
- Make sure to turn off the power in advance, and prevent from the switch turning on suddenly. In addition, make sure to stop the rotation of the drive or driven machine certainly.



## Caution

### [General]

- Never use the coupling at the condition except for the product specification. Injury or machine breakage may occur.
- Never use the broken coupling. Injury or machine breakage may occur.
- Never remove the name plate attached to the product.

### [Upon delivery on the coupling]

- In case the wooden crate, pay attention to the box nail when unpacking. Injury may occur.

### [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]

- Pay extra attention so that the equipment will not fall or rollover during the transportation.
- In case the product is heavy, injury or throwing out the back may happen when handling by hands. Use the hoist with I-bolt. Remove the I-bolt after installation.
- When hoisting the product to transport, confirm the mass of product and use the hoisting attachment with load less than the rated load of the hoisting attachment. Breakage, falling, injury and breakage of the equipment may occur.

### [Installation]

- Never touch the inner diameter portion and the edge portion of any parts with bare hands. Injury may occur.
- Regarding the alignment of the drive and driven shaft to which coupling are mounted, make sure to adjust within the recommended value on alignment in the instruction manual.

### [Operation]

- Pay attention to keep hands and body away from the coupling and machine during operation. Injury may occur.
- Stop the operation immediately when the abnormality happens. Breakage of equipment may occur.

### [Maintenance and inspection]

- Wear an appropriate clothes and protective equipment (safety glass, gloves, safety shoes etc.)
- Organize the surroundings, maintain and inspect under the safety condition to prevent the secondary accident.
- Observe the Ordinance on Labor Safety and Hygiene 2-1-1 general standards.
- Confirm periodically whether the mounting condition of the product (alignment etc.) is maintained as the recommended condition in the instruction manual.

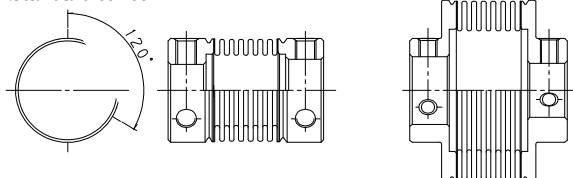
### [Environment]

- When scrapping the product, it should be disposed as general waste.

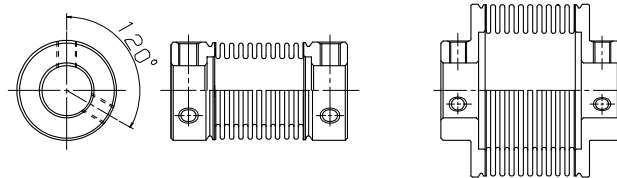
## 1. Structure

### 1 Standard Model

#### Standard series

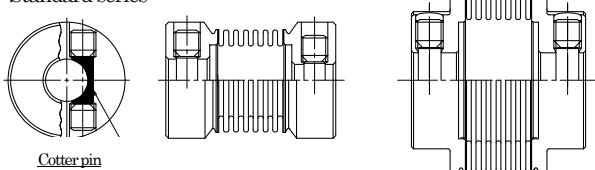


#### Long Series

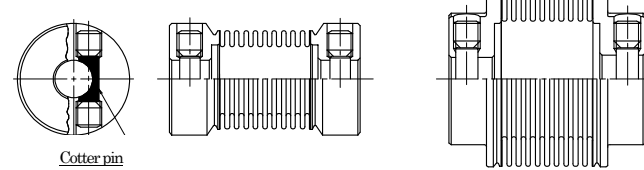


### 2 Fine Setting Type 1

#### Standard series



#### Long Series



## 2. Installation

<Standard Model>

1. **Tighten** two set screws to install the coupling on the shafts.
2. For the shaft to be connected with hub, the recommended shaft diameter **tolerance is h6 or h7**.
3. Make sure that the shafts to be connected do not exceed the angular, **parallel** or axial misalignment values indicated in the below Table1 and Table2.
4. Exact alignment increases the service life of coupling. Try to reduce the misalignments as much as possible.

5. During operation, when dynamic axial endplay occurs, make sure to mount the coupling within the maximum axial misalignment value in which the endplay limit  $\gamma' (\pm \text{mm})$  should be included. Accordingly, the maximum misalignment value of  $\gamma 0 (\pm \text{mm})$  is  $\gamma 0 < |\gamma - \gamma'|$ .
6. Care should be taken to not damage the bellows. Damaged bellows may lower the durability performance of the coupling.
7. After aligning properly, tighten two set screws completely to the correct tightening torque as indicated in Table3.
8. **Use the adhesive for metal to prevent set screw from coming loose.**  
(Recommended adhesive; Loctite 262)

Table1. Standard series

Table2. Long series

Model No.	Allowable Misalignment			Endplay $\gamma' (\pm \text{mm})$
	parallel $\alpha (\text{mm})$	Angular $\beta$	Axial $\gamma (\pm \text{mm})$	
BM0516A	0.1	1° 30'	1.0	0.25
BM0516B				
BM0518F1				
BM1020	0.13	2°	1.0	0.25
BM1022F1				
BM1522	0.13	2°	1.0	0.25
BM1524F1				
BM3030	0.2	2°	1.5	0.35
BM3030F1				
BM4040	0.25	2°	1.5	0.4
BM4040F1				

Model No.	Allowable Misalignment			Endplay $\gamma' (\pm \text{mm})$
	parallel $\alpha (\text{mm})$	Angular $\beta$	Axial $\gamma (\pm \text{mm})$	
BM0516AL	0.2	2°	1.3	0.35
BM0516BL				
BM0518F1L				
BM1020L	0.25	3°	1.3	0.35
BM1022F1L				
BM1522L	0.25	3°	1.3	0.35
BM1524F1L				
BM3030L	0.4	3°	2.0	0.45
BM3030F1L				
BM4040L	0.5	3°	2.0	0.55
BM4040F1L				

Fig1. parallel misalignment  $\alpha$

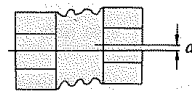


Fig2. Angular misalignment  $\beta$

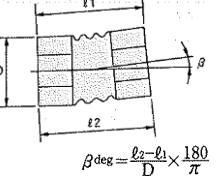


Fig3. Axial misalignment ( $\gamma$ )

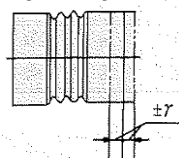
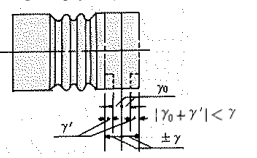


Fig4. Endplay ( $\gamma'$ )



<Fine Setting Type 1>

○ Instructions other than shaft mounting are the same with Standard Model, please make reference.

1. Insert shaft to the bore.  
(Be careful not to loosen the screw before mounting, shaft may get stuck.)
2. Loosen one set screw.
3. **Tighten** the set screw on the other side, move the cotter pin to eliminate the clearance gap and **fix** the shaft.
4. Lightly tighten the previously loosened set screw to keep it from falling.
5. **Use the adhesive for metal to prevent set screw from coming loose.**  
(Recommended adhesive; Loctite 262).

Table 3

Unit : N · cm / kgf · cm

		BM0516	BM1020	BM1522	BM3030	BM4040
Fine Setting Type 1	Screw size	M4	M5	M5	M6	M6
	Tightening torque	190{19}	370{37}	370{37}	680{68}	680{68}
Standard Model	Screw size	M3	M4	M4	M4	M4
	Tightening torque	80{8}	190{19}	190{19}	190{19}	190{19}

## 3. Removal

1. **Loosen set screws of both sides.** To **reuse** Fine Setting Type1, lightly tighten **once** loosened set screws from both sides to allow **moving shaft**, and then remove the coupling.

Removing the coupling while set screws are loosened may make reinstallation difficult.

## 4. Caution

1. The operating temperature range is  $-20^{\circ}\text{C} \sim 100^{\circ}\text{C}$ .
2. Bellows coupling has a water **resistance** and chemical resistance. **But in case of extreme**, the durability may be impaired.
3. Do not perform additional work on the bore, etc., bellows may become deformed.
4. Bellows is made with thin plate to reduce the moment of inertia. Care should be taken not to apply strong impact to bellows, risk of deformation.

**If strong impact such as falling, etc. is given, do not use its coupling. Injury or machine breakage may occur**

## Warranty

### 1. Warranty period without charge

18 month effective the date of shipment or 12 months effective the first use of Goods, including installation of Goods to Buyer's equipment or machines-whichever comes first.

### 2. Warranty coverage

Should any damage or problem with the Goods arise within the warranty period, given that the Goods were operated and maintained under instructions provided in the manual, Seller would repair and replace at no charge once the Goods are returned to Seller. The following are excluded from the warranty.

- (1) Any costs related to removing Goods from the Buyer's equipment or machines to repair or replace parts.
- (2) Costs to transport Buyer's equipment or machines to the Buyer's repair shop.
- (3) Costs to reimburse any profit loss due to any repair or damage and consequential losses caused by the Buyer.

### 3. Warranty with charge

**Seller will charge any investigation and repair of Goods caused by:**

- (1) Improper installation by failing to follow the instruction manual.
- (2) Insufficient maintenance or improper operation by the Buyer.
- (3) Incorrect installation of Goods to other equipment or machines.
- (4) Any modifications or alterations of Goods by the Buyer.
- (5) Any repair by engineers other than the Seller or those designated by the Seller.
- (6) Operation in an inappropriate environment not specified in the manual.
- (7) Force Majeure or forces beyond the Seller's control such as natural disasters and injustice done by a third party.
- (8) Secondary damage or problem incurred by the Buyer's Equipment or machines.
- (9) Defected parts supplied, or specified by the Buyer.
- (10) Incorrect wiring or parameter setting by the Buyer.
- (11) The end of life cycle of the Goods under normal usage.
- (12) Loss or damage not liable to the Seller.

### 4. Dispatch Service

Service to dispatch a Seller's engineer to investigate, adjust or trial test Seller's Goods is at the Buyer's expense.



**TSUBAKI E&M CO.**

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