



# ELECTROMAGNETIC CLUTCH & BRAKE SPRING—ACTUATED BRAKE BXW

## Instruction Manual

☆ This instruction manual describes mainly installation, removal, and notes pertaining to same for standard-specification products after purchase; see the Miki Pulley website and our latest catalog for product specifications and performance.

☆ Before use this product, read the instruction manual carefully and use the product safely and correctly.

☆ First, please check that it is the correct product and if the product was damaged during transportation.

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## 1. STRUCTURE AND PARTS

### Note

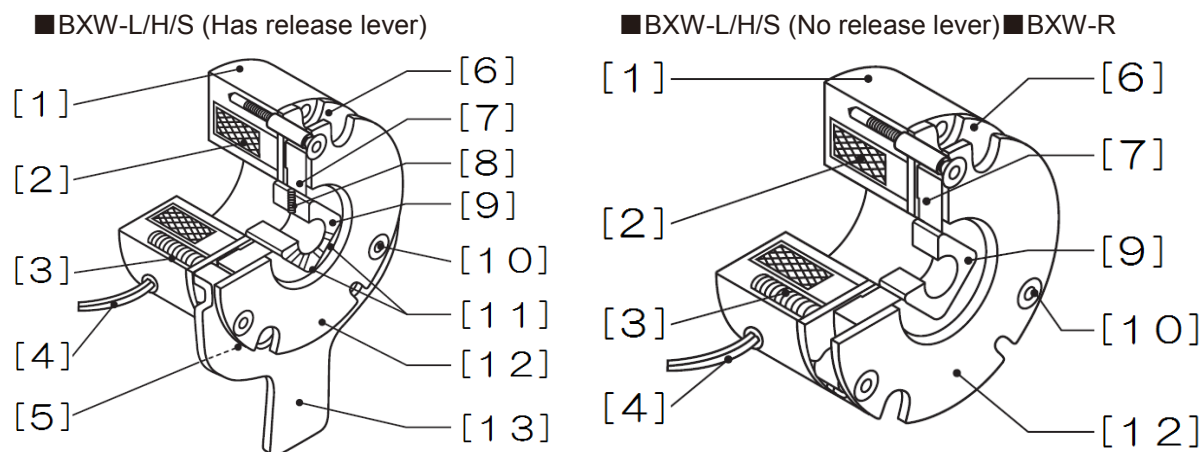
The method of installation depends on the product type.

### Note

Basic structure of BXW-R type is the same as for BXW-L/H/S types.

Dimensions, mounting and the like of BXW-R type are not interchangeable with BXW-L/H/S types.

	BXW – L Braking use	BXW – H Holding and braking use	BXW – S Holding use	BXW – R For servo motors
Mounting method	Can be mounted with the stator mounted or plate mounted.			Stator centering-mark mounting
Affix the rotor hub	Hexagon socket set screw (size 04 & 05 with keyway milling)			Press-fitting
Included or not included release lever	Option : Select included/not included (There is no release lever option for size 01.)			Not included





[1] Stator [2] Coil [3] Torque spring [4] Lead wires [5] O-ring [6] Armature [7] Rotor  
 [8] Hexagon socket set screw [9] Rotor hub [10] Hexagon socket countersunk head screw  
 [11] Silencing spring [12] Plate [13] Release lever

## 2. NOTES




### 2.1 SAFETY PRECAUTIONS

Please read carefully through the instruction manual and the technical information for proper use and safety. In this manual, safety precautions are classified by "DANGER" and "CAUTION".





#### 【CLASS】

 <b>DANGER</b>	When death or serious injury may result by mishandling.
 <b>CAUTION</b>	When disability or only physical damage may result by mishandling.





#### 【FIGURE SIGN】

 <b>PROHIBITION</b>	In the handling of the product, it indicates that prohibit the act.
 <b>CAUTION</b>	In the handling of the product, it indicates that attention is required.
 <b>MANDATORY</b>	In the handling of the product, it indicates that the action is compulsory on the basis of the instructions.





## DANGER

	<b>Make sure that the main power of the product is off before mounting or performing maintenance/inspection.</b>		<b>Set up a safety mechanism such as a safety brake to avoid any danger.</b>
	It is extremely dangerous if the driving part starts operating by accident while handling the product.		The driven and driving sides could become completely detached if the product is damaged while in operation and not immediately halted.
	<b>Do not use in flammable environments.</b>		<b>Be sure to use a safety cover.</b>
	There is a danger of explosion due to sparks from machinery or the product in operation. In particular, explosion can occur easily in environments with oil/grease or flammable gas.		It is extremely dangerous if hands, fingers, hair, clothing, etc. get caught in the product or a rotating part while in operation.

## CAUTION

	<b>Do not touch the hot brake body or power supply.</b>		<b>Always use bolts specified by Miki Pulley and a calibrated torque wrench correctly to install brakes at the specified tightening torque.</b>
	Hot while in operation; will result in burn injuries if touched. Warm surroundings will prevent brake body heat from dissipating; locate in a well-ventilated area.		Depending on the tightening adjustment of bolts or screws, exceptionally dangerous situations such as product damage or performance degradation could occur.
	<b>Be careful lifting a heavy weight. Do not lift with a bad posture.</b>		<b>Use a safety glasses or gloves.</b>
	Straining yourself to lift a heavy product or using a torque wrench, or an awkward posture when installing the product in a machine could cause back injury.		Sharp portions of product bore diameter, keyway, shaft keyway, etc. may cause injury. Wear protective equipment to also prevent burn injuries and electric shock.

## 2. 2 IMPORTANT POINTS OF PRODUCT SPECIFICATIONS

	<b>Do not use the product in a bad environment. Product is for dry use; do not allow exposure to water or oil/grease.</b>		<b>Request disposal with a waste-collection company, or dispose of according to laws and regulations.</b>
	Operating temperature range : — 10~+40°C Do not use the product in an environment where water, oil, or chemicals may spill (no matter how little), that is corrosive, where temperature is extremely high or low, that is dusty, where condensation forms, that is exposed to wind and rain, or that is subject to a high degree of vibration/impact; may cause product damage or performance deterioration.		When disposing of the product, request disposal with professionals, or dispose of according to law and local regulations if disposing of product by yourself. Do not dispose of or leave unattended where children play or in a public space.
	<b>Comes as a finished product. Do not disassemble, modify, or additionally process the product.</b>		<b>Check that the brake is no longer released before operating.</b>
	We do not guarantee quality nor shall we be liable for damages in the event of damage or affected performance of the product or of injury or accident occurring as a result of the product being disassembled, modified, or additionally processed by the customer.		This product releases when the coil is energized. The brake does not work if operated while the brake is still released by the release lever, and exceptionally dangerous situations could occur.

## 2. 3 IMPORTANT POINTS BEFORE MOUNTING

	<b>Do not carry with the lead wire dangling. Do not pull or bend the lead wire forcefully.</b>		<b>Tolerance of the shaft should be finished to h7 class. Remove oil, dirt, dust, etc. from the shaft.</b>
	May break wire, and render the product unusable. If lead wire breaks or slips from your hand, the product may fall on and injure your foot.		This will affect the accuracy of the brake attachment surface. Press-fit tolerance of the shaft should be "r6 class" where it is BXW-R type.
	<b>Do not use any bolt or screw other than the bolts on the product.</b>		<b>Make sure to keep fluctuations in power supply voltage to within <math>\pm 10\%</math> of the rated voltage.</b>
	Check the strength category of the bolt or screw as well as the strength and material of where the brake is being installed. Inadequate strength will result in the product being poorly installed and may cause an accident.		Extreme fluctuations in power voltage may prevent the brake from reaching optimal performance.
	<b>Affix the rotor hub so that it does not come in contact with the armature or stator. Do not insert the rotor hub forcefully.</b>		<b>Implement screw-locking measures such as an adhesive thread-locking compound to bolts and screws used to install brakes.</b>
	Operation with the components in contact or forcefully inserting the rotor hub may damage the brake.		Loosening of the bolts or screws due to operational vibration, etc. may allow the product to detach and cause an accident.

## 3. MOUNTING

### 3. 1 ACCURACY OF BRAKE ATTACHMENT SURFACES

Make sure that the shaft concentricity (X) and the shaft perpendicularity (Y) relative to the brake mounting surface do not exceed the allowable values in the table below.

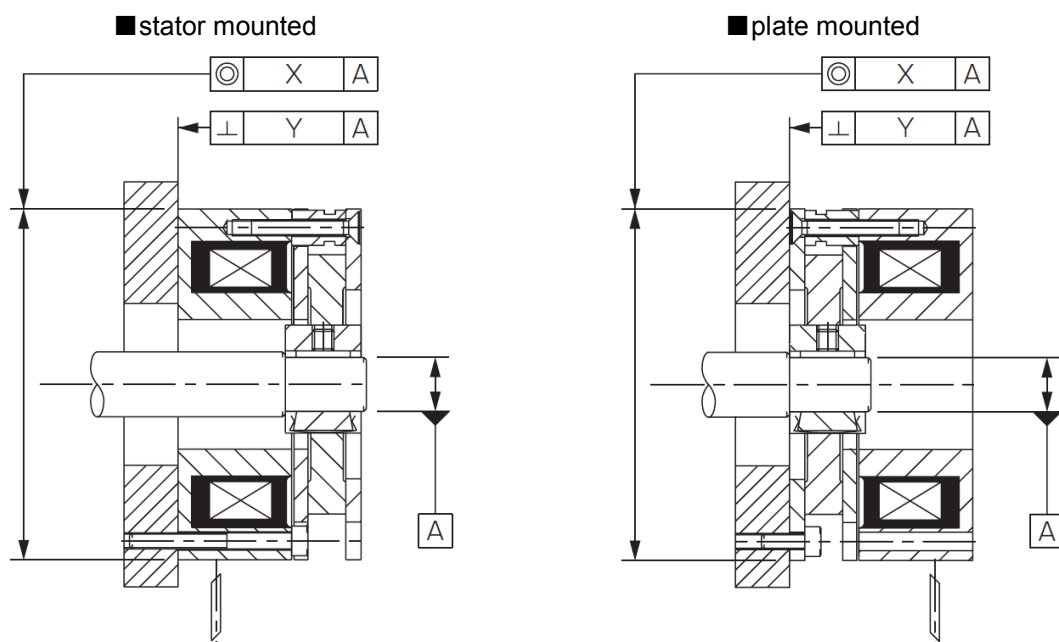
A "spigot joint for positioning (fitting tolerance f8, spigot joint depth 4mm)" where it is BXW-R type is located on the outer diameter of the stator to use for center alignment.

#### 【ACCURACY OF BRAKE ATTACHMENT SURFACES】

※Accuracy value is indicated by T.I.R.

(Total Indicator Reading = difference in minimum and maximum runout values)

SIZE	Concentricity (X) T.I.R. [mm]	Perpendicularity (Y) T.I.R. [mm]
<b>01</b>	<b>0.05</b>	<b>0.02</b>
<b>02</b>	<b>0.05</b>	<b>0.02</b>
<b>03</b>	<b>0.10</b>	<b>0.02</b>
<b>04</b>	<b>0.10</b>	<b>0.02</b>
<b>05</b>	<b>0.10</b>	<b>0.02</b>

**Note**

Finished tolerance of the shaft should be “h7 class” where the BXW-L/H/S type , and “r6 class” where it is BXW-R type.

## 3. 2 MOUNTING

(1)

Affix the brake on the installation surface within the installation accuracy values above.

The brake can be affixed temporarily; it will be secured in place with a torque wrench at the end of the installation. Refer to 【INSTALLATION BOLT SPECIFICATIONS AND TIGHTENING TORQUES】 for bolt specifications.

**Note**

【BXW-L/H/S】Can be mounted with the stator mounted or plate mounted.

【BXW-R】Stator centering-mark mounting

(2)

Affix the rotor hub on the shaft.

Affix the rotor hub by tightening the hexagon socket set screws evenly to the tightening torque values in 【INSTALLATION BOLT SPECIFICATIONS AND TIGHTENING TORQUES】 using a calibrated torque wrench correctly.

Also implement screw-locking measures such as an adhesive thread-locking compound at the same time. Never allow adhesive, etc. to adhere anywhere other than the set screws.

**Note**

【BXW-L/H/S】Affix the rotor hub by tightening the hexagon socket set screws. Keyway width tolerance for the rotor hub is “P9 class”. If no keyway is present, rework the shaft with a flat face.

【BXW-R】Affix the rotor hub by press-fitting.

(3)

Insert the rotor hub in the square hole in the rotor. Position the rotor hub so that it does not come in contact with the armature. Do not insert into the rotor forcefully.

Installation can be made easier by pre-aligning the square hole in the rotor with the center of the inner diameter of the plate, or by installing with the brake energized and released.

**Note**

Applying excessive force when inserting the rotor hub will crack the rotor and render the brake no longer able to work.

(4)

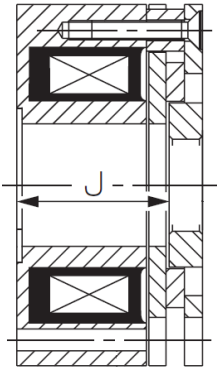
Check the distance from the extreme surface of the rotor hub to the installation surface of the brake with “dimension J in catalog”.

Note also that since the BXW-R type is constructed so that the rotor hub does not go through the stator, affix it by press-fitting it onto the shaft at a position that does not touch the armature when they are assembled. Check with 【RECOMMENDED ROTOR HUB INSTALLATION LOCATION DIMENSIONS】.

【RECOMMENDED ROTOR HUB INSTALLATION LOCATION DIMENSIONS】

■ BXW-R

SIZE	J [mm]
<b>01</b>	<b>26</b>
<b>03</b>	<b>26</b>
<b>05</b>	<b>25.5</b>



(5)

Affix the brake by tightening the bolts evenly to the tightening torque values in 【INSTALLATION BOLT SPECIFICATIONS AND TIGHTENING TORQUES】 using a calibrated torque wrench correctly.

Also implement screw-locking measures such as an adhesive thread-locking compound at the same time. Never allow adhesive, etc. to adhere anywhere other than the bolts. Adhesive adhering to the brake may inhibit brake operation.

**Note**

When installing the plate, be sure the plate is pressed against the entire installation surface.

【INSTALLATION BOLT SPECIFICATIONS AND TIGHTENING TORQUES】

※Bolts should be hexagon socket head cap screw, with a strength category of 10. 9.

※Select the bolt length according to your design specifications.

■ BXW-L/H/S

SIZE	Brake body installation Hexagon socket head cap screw		Rotor hub installation Hexagon socket set screw	
	Nominal size	Tightening torque [N · m]	Nominal size	Tightening torque [N · m]
<b>01</b>	<b>M2.5</b>	<b>0.7</b>	<b>M3</b>	<b>0.7</b>
<b>02</b>	<b>M3</b>	<b>1.3</b>	<b>M3</b>	<b>0.7</b>
<b>03</b>	<b>M3</b>	<b>1.3</b>	<b>M3</b>	<b>0.7</b>
<b>04</b>	<b>M3</b>	<b>1.3</b>	<b>M4</b>	<b>1.7</b>
<b>05</b>	<b>M4</b>	<b>3.1</b>	<b>M4</b>	<b>1.7</b>

## ■ BXW-R

SIZE	Brake body installation Hexagon socket head cap screw	
	Nominal size	Tightening torque [N · m]
<b>01</b>	<b>M3</b>	<b>1.3</b>
<b>03</b>	<b>M3</b>	<b>1.3</b>
<b>05</b>	<b>M4</b>	<b>3.1</b>

## 4. RELEASE

### (1) Normal conditions

When the coil is energized, the rotor becomes free and the shaft is released.

### (2) Manual release

Even when not energized (braking/holding), pulling the release lever releases the shaft. Note that the direction of pulling the release lever changes with the installed direction.

However, the release lever returns to its original position when not gripped, and cannot be held in a releasing position.

#### 【Operating force of release lever】

Do not use excessive force on the release lever.

Structurally, drag torque (idling torque) at about 10% of the rate torque is generated when released using the release lever, as opposed to when released by energizing the coil.

Model L : Braking use H : Holding and braking use		Release load [N]	Allowable load [N]
<b>02</b>	<b>12L</b>	<b>20</b>	<b>45</b>
	<b>12H</b>	<b>30</b>	<b>45</b>
<b>03</b>	<b>12L</b>	<b>30</b>	<b>60</b>
	<b>12H</b>	<b>40</b>	<b>60</b>
<b>04</b>	<b>12L</b>	<b>40</b>	<b>90</b>
	<b>12H</b>	<b>60</b>	<b>90</b>
<b>05</b>	<b>12L</b>	<b>60</b>	<b>180</b>
	<b>12H</b>	<b>120</b>	<b>180</b>

#### Note

Before using manual release, be sure to turn off the main equipment power and check that it is safe to use manual release.

Also check that the brake is no longer released before restarting operation.

## 5. CONNECTION

### 5. 1 POWER SUPPLIES

Brake voltage is DC12V, 24V, 45V, 90V, 180V .

Users can use any of our recommended power supplies (listed in our catalog) .

Make sure to keep fluctuations in voltage to within  $\pm 10\%$ .

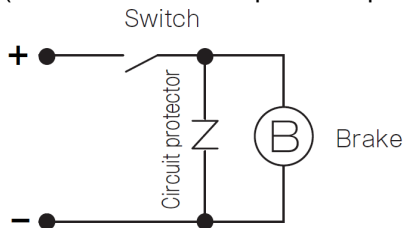
### 5. 2 SWITCHING

Set switching to the DC side. It can also be set to the AC side, however, operation time becomes longer.

### 5. 3 CIRCUIT PROTECTORS(VARISTOR)

Connect in parallel with the brake. This element does not have polarity.

Also note that our selection of recommended power supplies features units with a built-in circuit protector (connection to circuit protector prohibited).



## 6. OPERATION CHECK

### 6. 1 BRAKE OPERATION CHECK

After completing installation and wiring, first operate the brake without transmitting power to check that it operates normally.

If operation is normal, engage the brake with the driving side. Use caution, as fingers can be caught with only the operation of the brake.

### 6. 2 TEST RUN

Test run the brake. If abnormal noise or vibration is generated, stop the brake immediately and remedy the cause. Also check that the brake is running “below the allowable braking energy rate” and “below the maximum rotation speed”.



## 7. MAINTENANCE & INSPECTION

Although the product requires almost no maintenance during its life when used under normal operating conditions, periodically inspection will allow longer and better performance of its function.

Also be sure to carry out routine maintenance and inspection according to any items specified separately for the machinery or apparatus with which the brake is combined.

Periodic check points:

- ① Normal on-off operation
- ② Abnormal noise generation
- ③ Abnormal heat generation
- ④ Friction parts and revolving parts for entering or sticking of foreign objects, water, oil, grease.
- ⑤ Widening of friction part clearance
- ⑥ Large amounts of rust
- ⑦ Proper supply of exciting voltage
- ⑧ Broken lead wire or poor connection
- ⑨ Operating temperature range

### 【CONTROL AIR GAP VALUE】

SIZE	BXW – L Braking use		BXW – H Holding and braking use		BXW – R For servo motors	
	Initial [mm]	Limit [mm]	Initial [mm]	Limit [mm]	Initial [mm]	Limit [mm]
<b>01</b>	<b>0.05~0.18</b>	<b>0.35</b>	<b>0.05~0.18</b>	<b>0.23</b>	<b>0.05~0.20</b>	<b>0.22</b>
<b>02</b>	<b>0.05~0.18</b>	<b>0.35</b>	<b>0.05~0.18</b>	<b>0.23</b>		
<b>03</b>	<b>0.05~0.25</b>	<b>0.40</b>	<b>0.05~0.25</b>	<b>0.30</b>	<b>0.05~0.20</b>	<b>0.25</b>
<b>04</b>	<b>0.05~0.25</b>	<b>0.40</b>	<b>0.05~0.25</b>	<b>0.30</b>		
<b>05</b>	<b>0.05~0.25</b>	<b>0.40</b>	<b>0.05~0.25</b>	<b>0.30</b>	<b>0.05~0.20</b>	<b>0.25</b>

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# MIKI PULLEY

<http://www.mikipulley.co.jp/>

### Contact by email

Please contact us using the inquiry form and be aware that support for inquiries received on Saturdays, Sundays, holidays, New Year's, and summer business holidays will be provided on the next business day.

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