



# ELECTROMAGNETIC CLUTCH & BRAKE SPRING—ACTUATED BRAKE BXH

## 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.

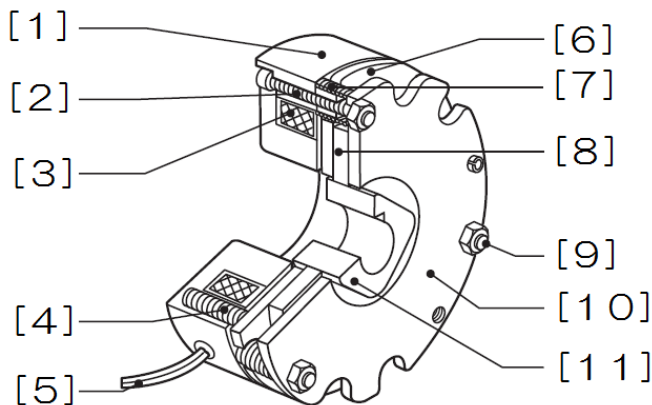
☆ First, please check that it is the correct product and if the product was damaged during transportation.

### CONTENTS

- |                        |                             |
|------------------------|-----------------------------|
| 1. STRUCTURE AND PARTS | 5. CONNECTION               |
| 2. NOTES               | 6. OPERATION CHECK          |
| 3. MOUNTING            | 7. MAINTENANCE & INSPECTION |
| 4. RELEASE             |                             |

## 1. STRUCTURE AND PARTS

**Note** This product is used for holding only. Do not use for braking.





- [1] Stator [2] Stud bolt [3] Coil [4] Torque spring [5] Lead wires [6] Armature  
[7] Auxiliary spring [8] Rotor [9] Hexagon nut [10] Plate [11] Rotor hub

## 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

	<p><b>Do not use the product in a bad environment.</b>  <b>Product is for dry use; do not allow exposure to water or oil/grease.</b></p>		<p><b>Request disposal with a waste-collection company, or dispose of according to laws and regulations.</b></p>
	<p>Operating temperature range :                  -10~+40°C</p> <p>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.</p>		<p>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.</p>
	<p><b>Comes as a finished product. Do not disassemble, modify, or additionally process the product.</b></p>		<p><b>This product is used for holding only. Do not use for braking.</b></p>
	<p>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.</p>		<p>This product releases when the coil is energized; use after checking the intended application or purpose of use.</p>

## 2. 3 IMPORTANT POINTS BEFORE MOUNTING

	<p><b>Do not carry with the lead wire dangling.</b>  <b>Do not pull or bend the lead wire forcefully.</b></p>		<p><b>Tolerance of the shaft should be finished to h6 or js6 class. Remove oil, dirt, dust, etc. from the shaft.</b></p>
	<p>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.</p>		<p>This will affect the accuracy of the brake attachment surface.</p>
	<p><b>Do not use any bolt or screw other than the bolts on the product.</b></p>		<p><b>Make sure to keep fluctuations in power supply voltage to within ±10% of the rated voltage.</b></p>
	<p>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.</p>		<p>Extreme fluctuations in power voltage may prevent the brake from reaching optimal performance.</p>
	<p><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></p>		<p><b>Implement screw-locking measures such as an adhesive thread-locking compound to bolts and screws used to install brakes.</b></p>
	<p>Operation with the components in contact or forcefully inserting the rotor hub may damage the brake.</p>		<p>Loosening of the bolts or screws due to operational vibration, etc. may allow the product to detach and cause an accident.</p>

### 3. MOUNTING

#### 3.1 ACCURACY OF BRAKE ATTACHMENT SURFACES

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

**Note**

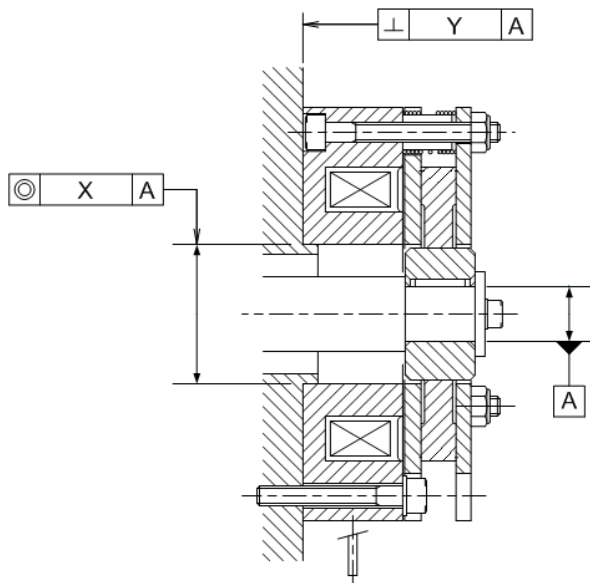
Finished tolerance of the shaft should be “h6 or js6 class”.

**[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>06</b>	<b>0.4</b>	<b>0.04</b>
<b>08</b>	<b>0.4</b>	<b>0.05</b>
<b>10</b>	<b>0.4</b>	<b>0.05</b>
<b>12</b>	<b>0.6</b>	<b>0.06</b>
<b>16</b>	<b>0.6</b>	<b>0.07</b>



#### 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.

A “spigot joint for positioning (fitting tolerance H9, spigot joint depth 3 or 4 mm)” is located on the inner diameter of the stator to use for center alignment.

(2)

Affix the rotor hub on the shaft.

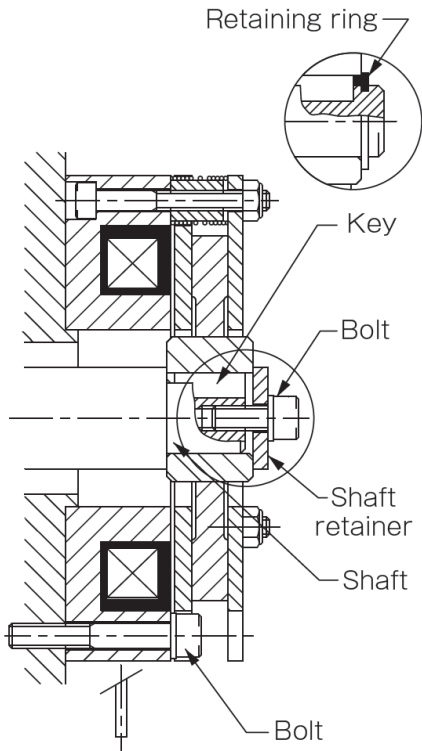
Affix the rotor hub on the shaft with a snap ring, bolt, etc. so that it does not move in the axial direction.

**Note**

Install an optional silencing spring on the rotor hub.

**Note**

Keyway width tolerance for the rotor hub is "P9 class".



(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.

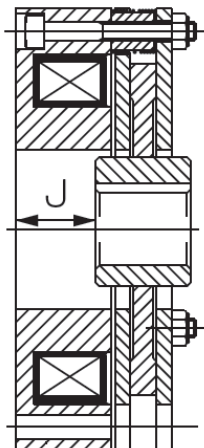
**Note**

Applying excessive force when inserting to 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 the table.

SIZE	J [mm]
<b>06</b>	<b>20.5</b>
<b>08</b>	<b>20</b>
<b>10</b>	<b>21</b>
<b>12</b>	<b>19</b>
<b>16</b>	<b>22.5</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.

**【INSTALLATION BOLT SPECIFICATIONS AND TIGHTENING TORQUES】**

※Select the bolt length and tightening torque values according to the material of the tap holes.

※Tightening torques in the table are recommended values ( $\pm 10\%$  tolerance) when using hexagon socket head cap screws with a strength category of 10.9.

SIZE	Nominal size	Tightening torque [N · m]
<b>06</b>	<b>M4</b>	<b>3.4</b>
<b>08</b>	<b>M5</b>	<b>7.0</b>
<b>10</b>	<b>M6</b>	<b>11.8</b>
<b>12</b>	<b>M6</b>	<b>11.8</b>
<b>16</b>	<b>M8</b>	<b>29.5</b>

## 4. RELEASE

### 4. 1 NORMAL CONDITIONS

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

### 4. 2 MANUAL RELEASE

(1) Using the tap holes in the plate

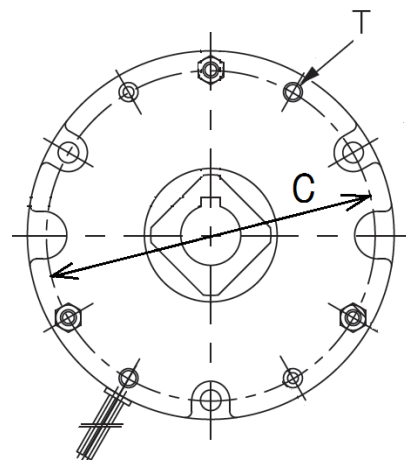
Alternately tighten bolts in the tap holes on the plate to press the armature. The size and number of bolts depends on the size of the product.

The bolt tips will push against the armature and release the shaft with about a 90° rotation. Do not force the bolts in more than that.

**Note**

Remove the bolts after completing work. The brake will be inoperable if bolts are left in.

SIZE	T Tap holes [mm]	C (P.C.D.) [mm]
<b>06</b>	<b>2 – M5</b>	<b>73</b>
<b>08</b>	<b>2 – M5</b>	<b>86</b>
<b>10</b>	<b>2 – M6</b>	<b>104</b>
<b>12</b>	<b>4 – M6</b>	<b>124</b>
<b>16</b>	<b>4 – M8</b>	<b>143</b>



(2) Using a release lever (OPTION)

Pulling the release lever releases the shaft.

Be sure to pull the release lever in the direction of the stator (dotted line in figure).

The dimension of gap b between the release lever and armature when braking/holding is 0.4 mm or more initially and a minimum of 0.1 mm as a usage limit.

As a result, depending on size, usage may not be possible up to the limit air gap values in 【CONTROL AIR GAP VALUE】 in "7. MAINTENANCE & INSPECTION" (dimension a in the figure).

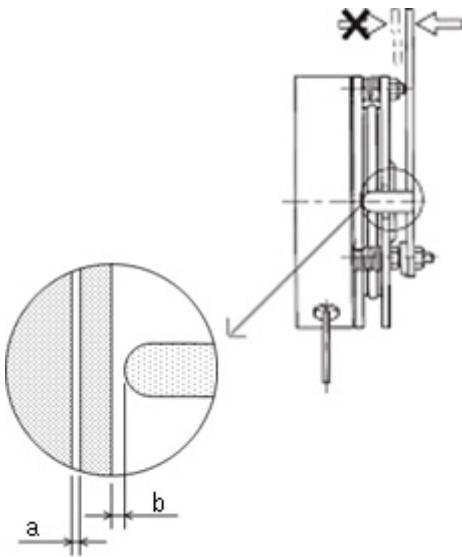
**Note**

Do not use excessive force on the release lever.

**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 DC 24 V , DC 45 V , DC 90 V . Users who use any of our recommended power supplies (listed in our catalog).

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

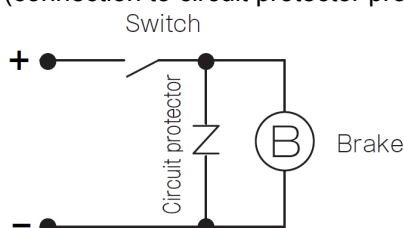
### 5.2 SWITCHING

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

#### Note

Replacement of the brake body is recommended once the limit air gap is almost reached.

Continuing to use the brake beyond the limit amount of wear of the rotor (friction material) risks the brake no longer working. Always use the brake within the limit air gap specification.

Air gap adjustment is not guaranteed for this brake. Never disassemble.

#### Note

As described in "4. RELEASE", dimension of gap b between the release lever and armature when braking/holding is important when a release lever is included, and so usage may not be possible up to the limit air gap values in the table depending on the size.

#### [CONTROL AIR GAP VALUE]

SIZE	Initial/ Not included release lever [mm]	Initial/ Included release lever [mm]	Limit [mm]
<b>06</b>	<b>0.10~0.20</b>	<b>0.10~0.20</b>	<b>0.5</b>
<b>08</b>	<b>0.10~0.20</b>	<b>0.15~0.25</b>	<b>0.5</b>
<b>10</b>	<b>0.15~0.25</b>	<b>0.20~0.30</b>	<b>0.6</b>
<b>12</b>	<b>0.15~0.25</b>	<b>0.20~0.30</b>	<b>0.6</b>
<b>16</b>	<b>0.20~0.30</b>	<b>0.20~0.30</b>	<b>0.6</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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