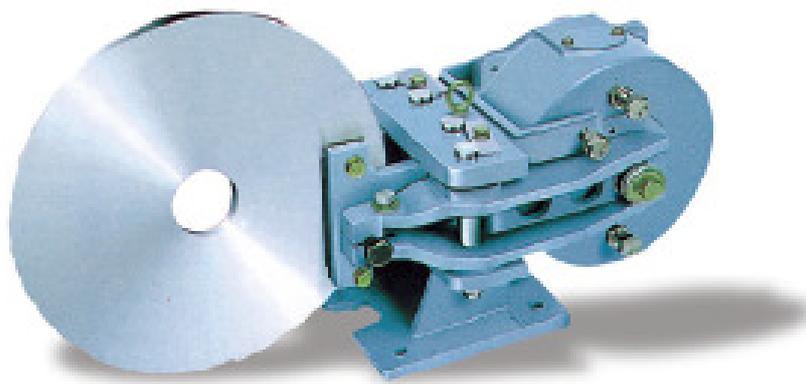


CLIPPER BRAKE

INSTRUCTION MANUAL



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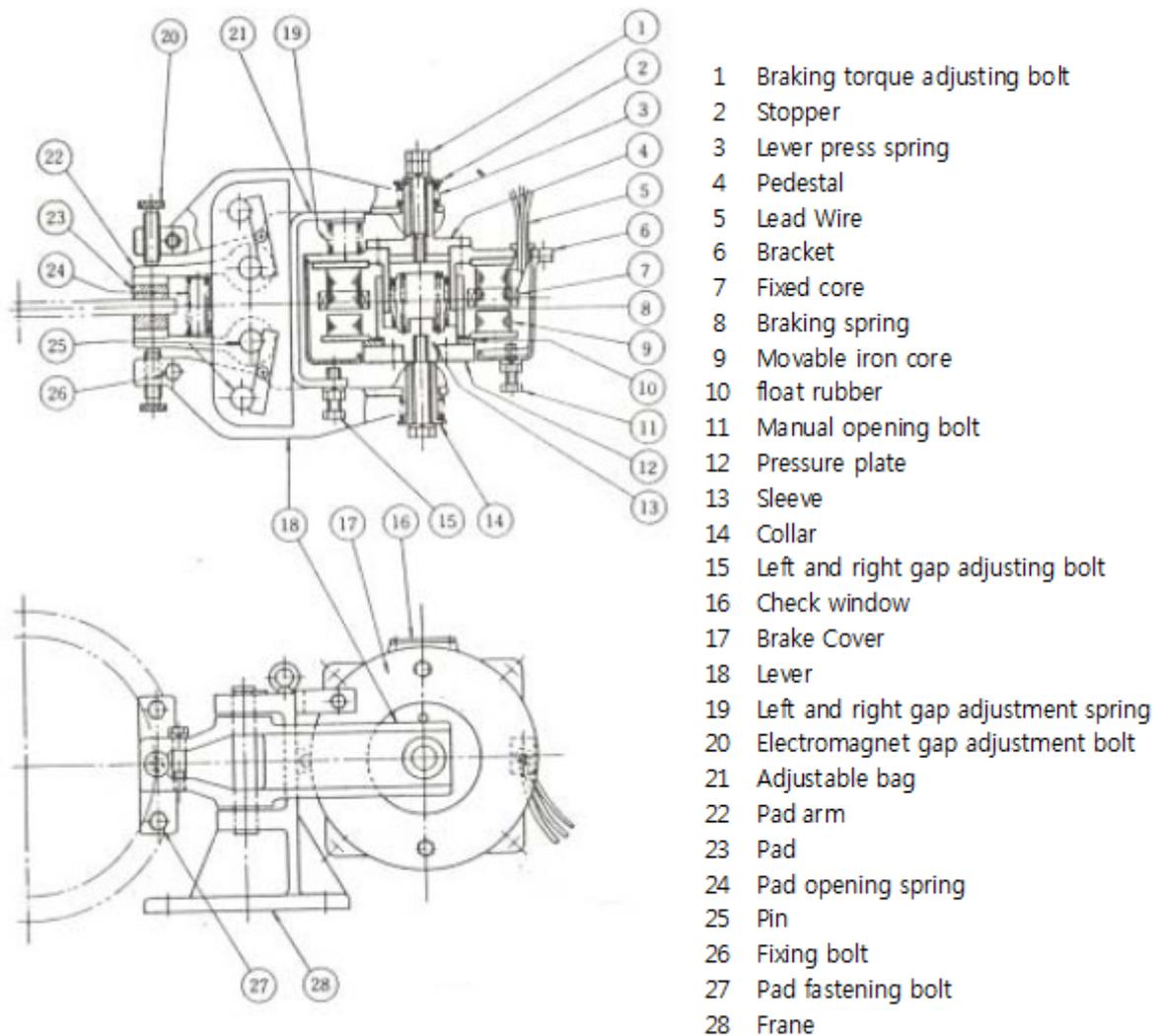
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1. Structure and Operation

Figure 1 shows the structure.

The Clipper Brake adopts an alternating current type electromagnet and when the power source is cut off, the braking spring 8 opens the left and right iron cores 9, 7 simultaneously to the right and left through the pedestal 4 and the pressure plate 12, 18), the left and right pad arm (22) is pressed by the electromagnet gap adjustment bolt (20) at the end of the lever to generate braking force.



Lever pressing spring (3) is installed so that the pedestal (4) and the pressure plate (12) are always in contact with the circular part of the lever (18) Also, because of the electromagnet gap control bolt (20) and pad arm (22) eh pad opening spring (24), there is no touching due to constant contact.

Most of the surface of the disc is directly exposed to the outside, so the heat dissipation is good and the temperature rise of the pad is small, so it is resistant to abrasion and long life.

2. Installation

At the time of shipment, the manual opening bolt is tightened and the

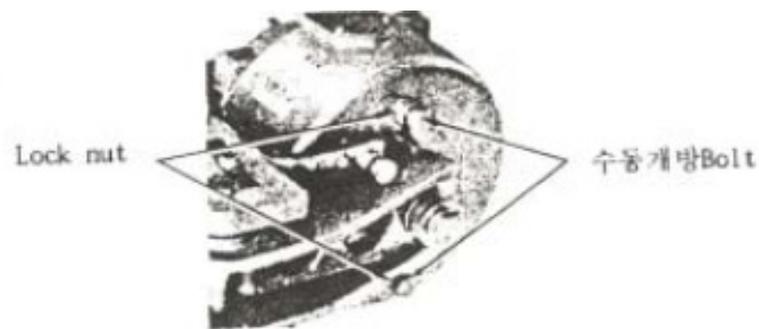
electromagnet is sucked and delivered. Follow the procedure below to install it.

(1) Place the brake in the installation position

Slide the brake onto the disc to position the disc and pad, and gently assemble the frame mounting bolts.

(2) Brakes the brake.

Loosen the lock nut of the manual opening bolt (red mark) and lock the lock nut again in the case of turning the manual opening bolt about 7 mm counterclockwise. Then the brake is in the braking state and the gap of the electromagnet is open. (Figure 2)



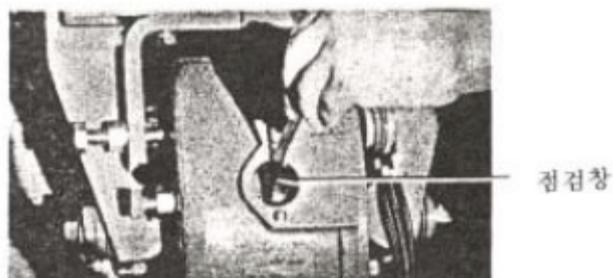
Drawing 2

(1) Fix the brake to the mounting position.

After confirming that the entire area of the pad is in contact, tighten the frame completely with the mounting bolt.

(2) Check the gap of the electromagnet.

Open the inspection window and check the gap of the electromagnet with Thickness Gauge as shown below (Figure 3).



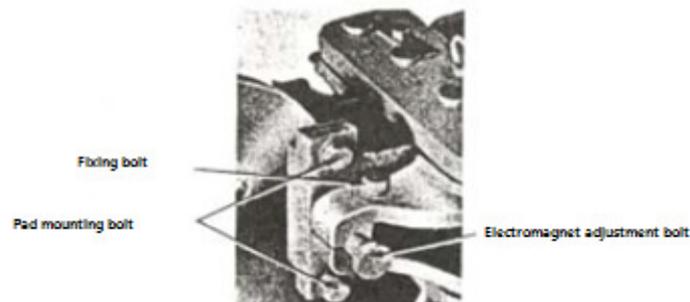
Drawing 3

If the thickness of the disc is correct, the gap of the electromagnet is the minimum gap shown in Table 1.

<表1>

Type	Maximum Gap of electromagnet	Minimum Gap of Electromagnet
TB-CA20	2.5	1.5
TB-CA50 TB-CA90	3.0	1.5
TB-CA150 TB-CA250	3.5	2.0

If the gap of the electromagnet is larger than the minimum gap shown in Table 1, loosen the fixing bolt and turn the electromagnet gap adjusting screw so that the gap of the electromagnet is narrowed.



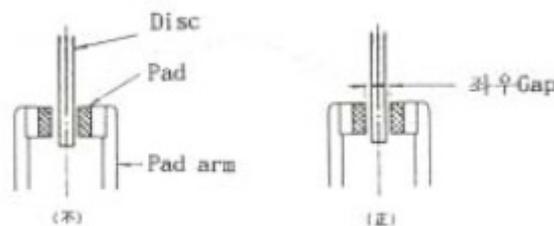
Drawing 4

At this time, when the electromagnet gap adjustment bolt is turned clockwise, the gap of the electromagnet becomes narrower, and when turned counterclockwise, it becomes

wider. After adjusting the gap, tighten the fixing bolt enough. Also, if the gap of the electromagnet is narrower than the minimum gap of Table 1, no adjustment is necessary if the disc and pad are not in contact during operation.

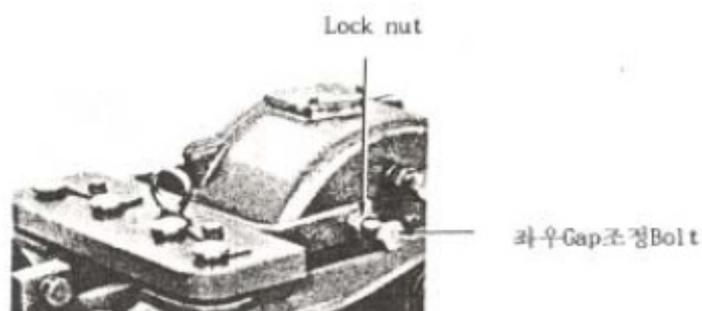
(1) Adjust the left and right gaps of the disc and the pad. When only the brake is wired to draw the electromagnet

There are two ways to make adjustments with the electromagnet being sucked by using the manual opening bolt. In the latter case, loosen the lock nut sufficiently and tighten the two manual open bolts (2) in red clockwise alternately to make the electromagnet aspirated. At this time, make sure that the left and right Gpa of the Disc Pad are the same, and if they are not the same, adjust it to the same gap with the left and right Gap adjustment bolts.



Drawing 5

Adjust the lock nut to the left and right Gap adjustment bolt. After adjustment, lock the lock nut sufficiently. When adjusting the left and right gaps of the disc and pad, loosen the lock nut of the manual opening bolt (red indicator) and lock the lock nut again by turning the manual opening bolt of the red indicator counterclockwise about 7 mm. This completes the installation and adjustment.



Drawing 6

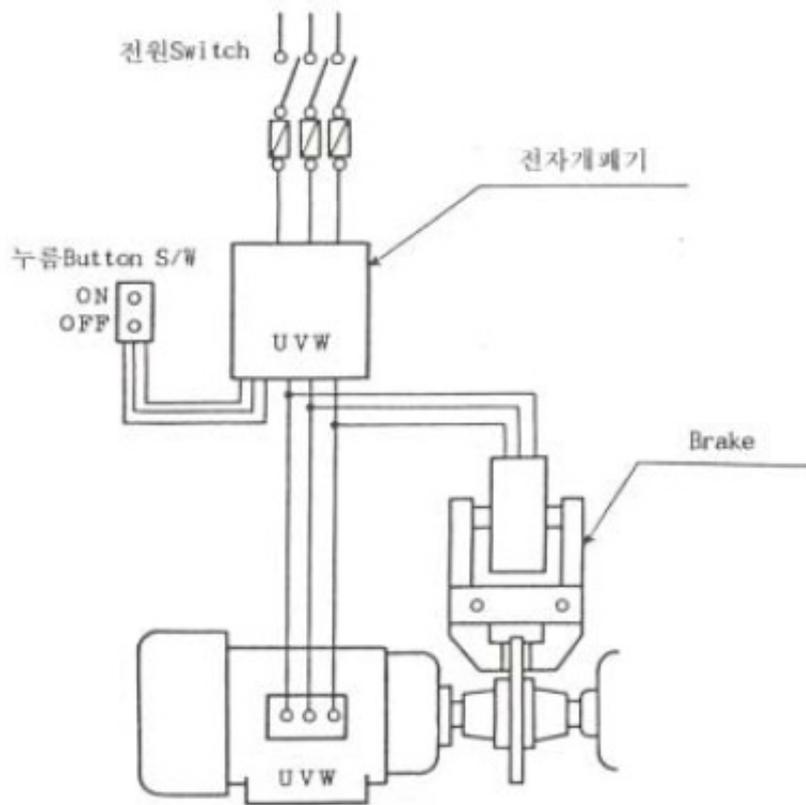
Note) Please reaffirm the following points.

- Signing of the inspection window
- Fixed position of manually developed bolt (about 7mm in red color)
- Confirmation of tightening of lock nut and fixing bolt

Remark) In the standard type, if the Disc axis has a life span, there is no mounting direction of the brake.

3. Wiring

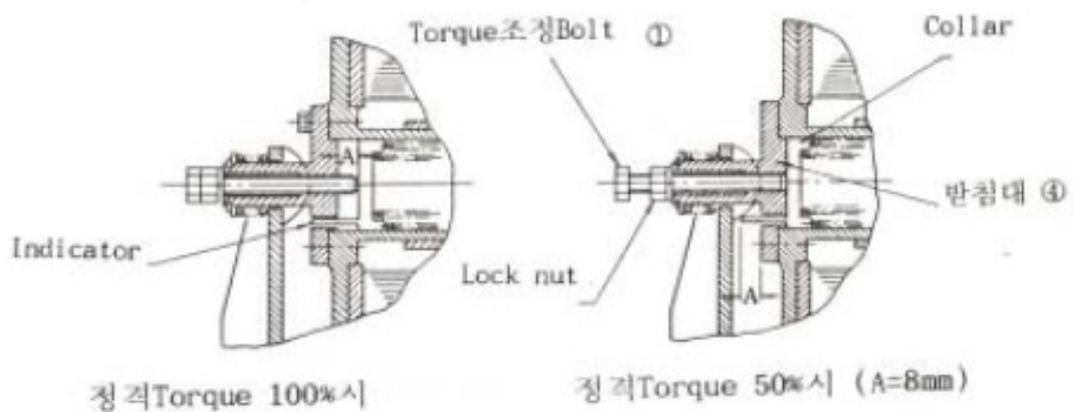
The lead wire of this brake is marked with U V W. Since the motor to which the brake is mounted is directly connected to the motor, please refer to Fig. 7 for the connection between the lead wire and the power supply. Also, the electromagnet has slight movement.



Drawing 7

4. Adjustment of braking torque

The braking torque can be varied in the range of about 50 to 100% by



adjusting the torque adjusting bolt (1). The actual item will be delivered with the maximum braking torque.

Drawing 8

5. Maintenance

(1) Adjustment at the beginning of use

Since the disc and pad are not in contact with each other at the initial stage of use, the wear of the pad is relatively fast, so the gap of the electromagnet becomes wider, resulting in malfunction. In some cases, the electromagnet coil may be damaged. Therefore, at the beginning of use, occasionally open the inspection window and check with Thickness Gauge as shown in Fig. When the gap of the electromagnet reaches the maximum gap value in Table 1, readjust according to the step (4) of Page5.

(2) Adjustments thereafter

When the pad is fully in contact, the wear is reduced, allowing several tens to hundreds of thousands of adjustments to be made with one adjustment. Check the gap of the electromagnet by setting the standard of the number of times according to the application.

(3) Replacement of Pad

Since the pad is a consumable item, if the remaining thickness reaches 2 ~ 3mm, replace it with a new one. Open the brake with the manual brake release bolt (Fig. 2) and remove the pad fastening bolt (Fig. 4). The pad can be removed like the mounting plate. Spare Pad is available at our company.

(4) How to replace the electromagnet

4-1) Disassembly

To disassemble, follow the steps below.

- a. Set the electromagnet gap to 0 with the manual opening bolt (11).
- b. Release left and right Gap adjustment Bolt (15) and remove left and right Gap adjustment spring (19).
- c. Stopper (2) Remove the fixing snap ring, and remove the stopper (2) and the lever press spring (3).
- d. Loosen the braking torque adjusting bolt (1). Collar (14) Loosen the mounting bolt and pull out the collar (14).
- e. Remove the electromagnet part from the body of the brake.
- f. Releasing the pedestal (4) mounting bolt and pulling the pedestal (4), the brake spring (8) and spring seat come off.
- g. Brake cover (17) Remove the mounting bolt and remove the brake cover from the bracket (6).
- h. Remove the fixed iron core (7) mounting bolt and remove the fixed iron core (7).

4-2) Assembly

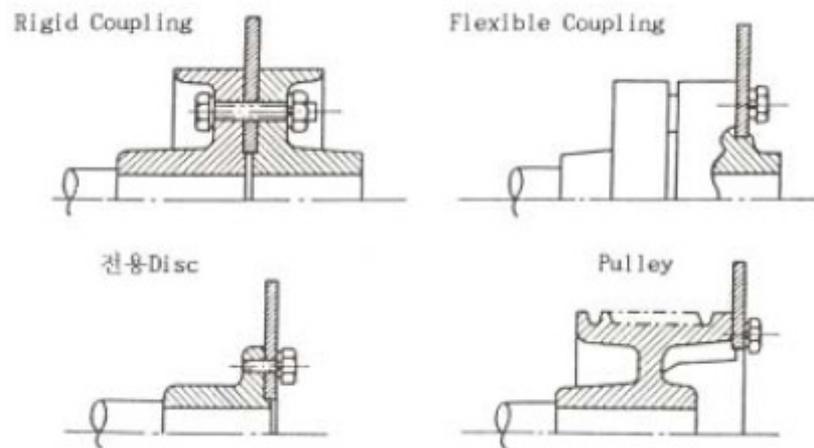
For assembly, please reverse the 4-1) repair.

6. Mounting Disc

Disc materials are recommended as follows: First, GCD-40 (spheroidal graphite cast iron type 1) is not annealed, and GC-30 is ferritic. However, less than 11kW, less frequent venom, SS41 (SS41) is no big deal.

The disc shake should be less than 0.05mm from the center of the wear surface, the shake after mounting should be less than 0.1mm, and the surface roughness should be less than 10s.

Please refer to Figure 9 for how to mount the Disc.



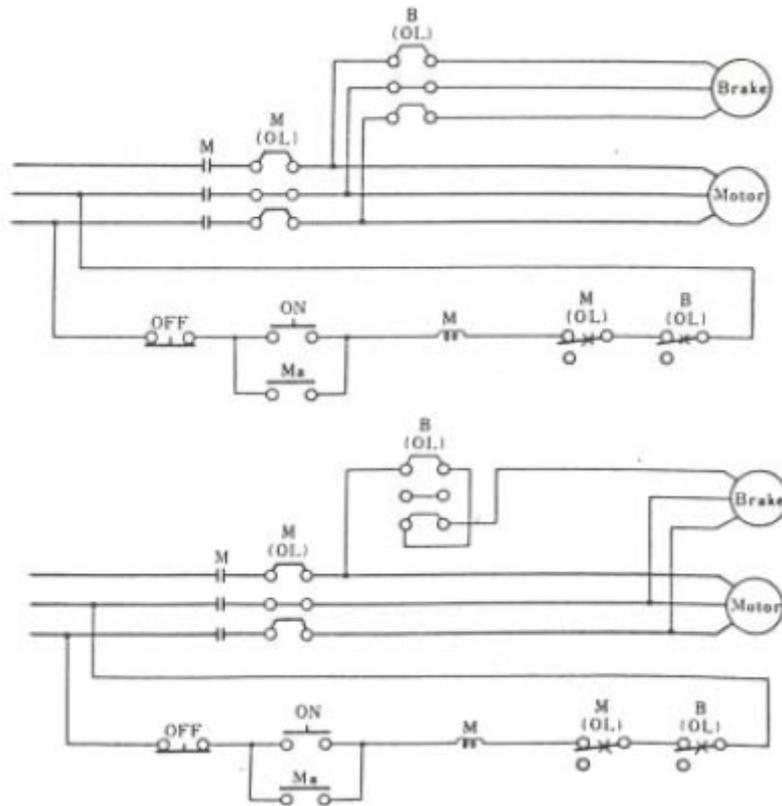
Drawing 9

7. Protection of Electronic Coil

(1) Protection against overcurrent

The electromagnet may not be able to suck the electromagnet due to installation defect or maintenance failure, or the overcurrent (8 to 20 times of exciting current) may flow due to exceeding the rated gap or due to supply voltage drop. In this case, the coils may be damaged. Use a thermal overcurrent relay to protect this.

Figure 10 shows a typical use case, and Figure 11 is the simplest example of detecting only the over gap of an electromagnet. Table 2 shows the thermal set current for each type.

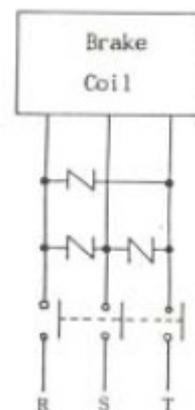


Drawing 10

(2) Protection against surge voltage

This brake has a motor as standard as shown in the wiring diagram on page 8.

When isolating from the brake, use the following varistor to absorb the surge voltage.



Varistor type (less than 440V)	
Marcon	TNR-15G821K
National	ERZ-C14DK821

For other varistors, please use the same or equivalent products.