

9. Brake Maintenance

- This section discusses the operation and maintenance of the **sumitomo brake**. (When using **another manufacturer's brake**, please refer to their maintenance manual.)
- Refer to Brake operation manual (Cat.No.MM0202) for FB-01A1, 02A1, 05A1, 01A, 02A, 05A, 1B, 2B, 3B, 5B and 8B outdoor type.



DANGER

- Do not handle the unit when cables are live. Be sure to turn off the power; otherwise, electric shock may result.
- When the motor is used for lifting, do not release the brake while a load is lifted, otherwise the load may fall, leading to an accident.
- Do not operate the motor with the brake released by the manual loosening bolt, otherwise the motor may fall or go out of control.
- Turn on and off the power to check the braking operation before starting the motor, otherwise the motor may fall or go out of control.
- Do not allow water or grease to collect on the brake, otherwise the motor may fall or go out of control due to a drop in the brake torque.



CAUTION

- After inspection and/or adjustment of the gap, do not operate the motor without replacing the fan cover; otherwise loose clothing may become caught in rotating parts and cause serious injury.
- Replacing the brake lining requires specific skills. Be sure to use a workshop specified by sumitomo for brake replacement.

· The mechanical life of the FB brake is 2,000,000 times, but periodically check the brake gap G. After use for an extended period of time, the brake lining will be abraded, making it impossible to release the brake. When the brake is used for more than 2,000,000 times, the motor may fall or go out of control because of the abrasion or breakage of mechanical parts.

9-1) Construction and Operation

Figs. 33-38 show the construction of the brake. A spring is used for braking operation (nonexcitation operation type).

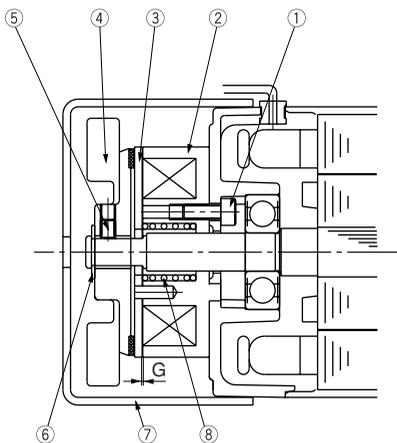


Fig.33 SB-004

No.	Part name
1	Brake restraining bolt
2	Stationary
3	Armature plate
4	Lining with fan
5	Setting bolt
6	Retaning ring
7	Cover
8	Torque spring

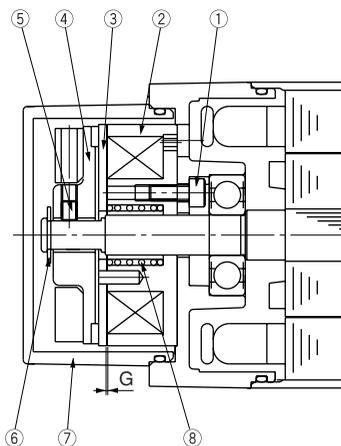


Fig.34 SB-004
(water-proof type)

No.	Part name
1	Brake restraining bolt
2	Stationary
3	Armature plate
4	Lining with fan
5	Setting bolt
6	Retaning ring
7	Cover
8	Torque spring

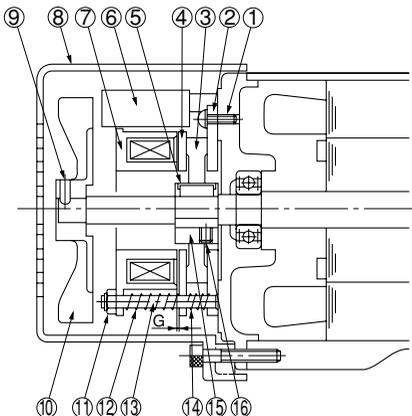


Fig.35 **FB-003, 005**

No.	Part name
1	Brake restraining bolt
2	Fixed plate
3	Brake lining
4	Armature core
5	Leaf spring
6	Rectifier
7	Stationary
8	Cover
9	Fan set bolt
10	Fan (provided for single-phase 60,90W)
11	Gap adjusting nut
12	Torque spring
13	Stud bolt
14	Sub spring
15	Boss
16	Boss setting bolt

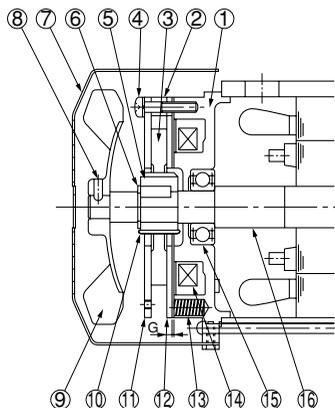


Fig.36 **FB-01A1, 02A1, 05A1, 01A, 02A, 05A**

No.	Part name
1	Stationary core
2	Spacer
3	Brake lining
4	Assembling bolt
5	Boss
6	Shaft retaining C-ring
7	Cover
8	Fan set bolt
9	Fan (Not provided for FB-01A1, 01A)
10	Leaf spring
11	Fixed plate
12	Armature plate
13	Spring
14	Electromagnetic coil
15	Ball bearing
16	Motor shaft

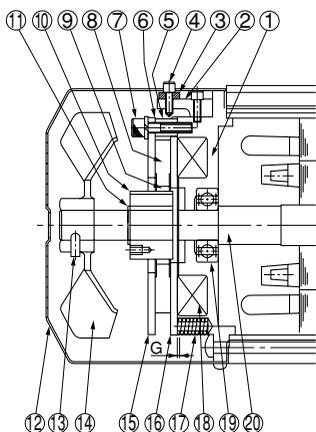


Fig.37 **FB-1B, 2B, 3B**

No.	Part name
1	Stationary core
2	Release fitting
3	Manual release prevention spacer
4	Brake release bolt
5	Spacer
6	Gap adjusting shim
7	Assembly bolt
8	Brake lining
9	Leaf spring
10	Boss
11	Shaft retaining C-ring
12	Cover
13	Fan set bolt
14	Fan
15	Fixed plate
16	Armature plate
17	Spring
18	Electromagnetic coil
19	Ball bearing
20	Motor shaft

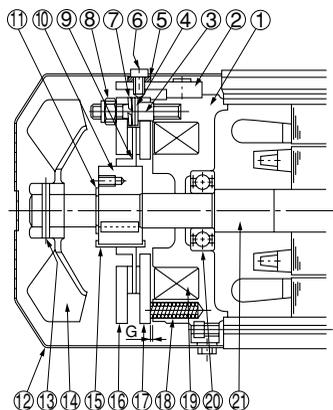


Fig.38 **FB-5B, 8B**

No.	Part name
1	Stationary core
2	Release fitting
3	Stud bolt
4	Adjusting washer
5	Manual release prevention spacer
6	Brake release bolt
7	Spring washer
8	Gap adjusting nut
9	Brake lining
10	Boss
11	Shaft retaining C-ring
12	Cover
13	Spring pin
14	Fan
15	Leaf spring
16	Fixed plate
17	Armature core
18	Spring
19	Electromagnetic coil
20	Ball bearing
21	Motor shaft

9-2) Manual Release Operation of Brake (FB-1B-8B FB-01A1-05A1 Optional:FB-01A-05A)

To manually release the brake without turning on the power, operate the brake release device as follows:

- (1) Remove the brake release bolts arranged diagonal to each other, and remove the spacer. Then screw in the bolts with a hexagon wrench, and the brake will be released. Be careful not to turn the brake release bolts excessively. (Check to see if the brake is released, while turning the brake release bolts.) (See Fig.39.)
- (2) To return to the original state after releasing the bolts, re-install the spacer, which was removed in step (1), to the original position for safety. (See Fig.40.)

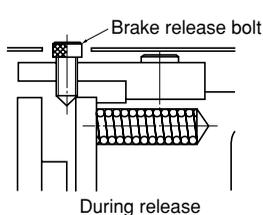


Fig.39

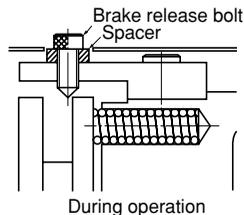


Fig.40

9-3) Gap Inspection

When the brake is used for a long time, the brake lining becomes abraded and the brake cannot be released. Periodically check the gap G as follows :

- (1) Remove the cover.
- (2) Insert the feeler gauge between the stationary and armature cores to measure the gap. When the gap is near the limit shown in Table 12, adjustment is necessary. Measure three points along the circumference. (The minimum thickness of the gap adjusting shim for FB-1B-3B is 0.2mm.)

Table 12 Brake Gap

Type of brake	Gap G (mm)	
	Specification (Initial value)	Limit
SB-004	0.15-0.25	0.4
FB-003 FB-005	0.15-0.25	0.4
FB-01A1, FB-01A FB-02A1, FB-02A FB-05A1, FB-05A	0.2-0.35	0.5
FB-1B FB-2B	0.3-0.4	0.6
FB-3B		0.7
FB-5B FB-8B	0.4-0.5	1.0

9-4) Gap Adjustment

When the gap nears the limit shown in Table 12 on page 39, follow these steps to, adjust the gap:

[SB-004] (See Fig.33, 34 on page 36)

- (1) Remove cover ⑦.
- (2) Slightly loosen set bolt ⑤. (locking agent was done)
- (3) Adjust gap G by inserting the feeler gauge between the stationary core ② and armature core ③.
- (4) Apply a locking agent to set bolt ⑤ and fixed lining fan.
- (5) Install cover ⑦. (For water proof-type. Please check no crack on O-ring. If any, please exchange.)

[FB-003, 005] (See Fig.35 on page 37)

- (1) Remove cover ⑧.
- (2) Insert the feeler gauge between the stationary core ⑦ and armature core ④, and turn clockwise the gap adjusting nut ⑪ attached to the end of stud bolt ⑬.

Alternately turn the adjusting nuts, arranged at three locations around the circumference, so that all three gaps will be as specified in Table 12.

- (3) After adjusting the gap, check the brake's performance by turning the system power on and off a few times.
- (4) Apply a locking agent to the gap adjusting nut ⑪ at that time and install cover ⑧.

[FB-01A1, 02A1, 05A1, 01A, 02A, and 05A] (See Fig.36 on page 37)

- (1) Remove cover ⑦.
- (2) Slightly loosen assembly bolt ④, and turn fixed plate ⑪ counterclockwise to the maximum. Then tighten the assembly bolt. After tightening, measure the gap G, and confirm that it is between the specification and limit. (After this operation, the gap will decrease by approx. 0.3mm.)
- (3) After adjusting the gap, check the brake's performance by turning the system power on and off a few times.
- (4) Install cover ⑦.

[FB-1B, 2B, and 3B] (See Fig.37 on page 38)

- (1) Remove assemble bolt ④ and manual release prevention spacer ③.
- (2) Remove cover ⑫.
- (3) Remove fan set bolt ⑬, and remove fan ⑭.
- (4) Loosen assembly bolt ⑦, and remove spacer ⑤, gap adjusting shim ⑥, assembly bolt ⑦, and fixed plate ⑮ together as a set. Be careful not to remove assembly bolt ⑦ alone; otherwise, gap adjusting shim ⑥ will drop.
- (5) Gap adjusting shim ⑥ is approx. 0.2mm thick. Reduce the number of shims according to the amount of abrasion, and reassemble spacer ⑤, gap adjusting shim ⑥, assembly bolt ⑦, and fixed plate ⑮ together as a set.
- (6) Check the gap G, and if it is substantially different from the specification, readjust the shim.
- (7) After adjusting the gap, check the brakes performance by turning the system power on and off a few times.
- (8) Install fan ⑭, fan set bolt ⑬, and cover ⑫. Apply a locking agent to the fan set bolt at that time. Finally, install release bolt ④ and spacer ⑤. Then install assemble bolt ④ and manual release prevention spacer ③.

[FB-5B, 8B] (See Fig.38 on page 38)

- (1) Remove assemble bolt ⑥ and manual release prevention spacer ⑤.
- (2) Remove cover ⑫.
- (3) Insert the feeler gauge between stationary core ① and armature core ⑰, and turn clockwise the gap adjusting nut ⑧ attached to the end of stud bolt ③. When adjustment is impossible due to an excessively large gap, reduce the number of adjusting washers ④. Alternately turn the adjusting nuts, arranged at three locations around the circumference, so that all three gaps will be as specified in Table 12.
- (4) After adjusting the gap, check the brake's performance by turning the system power on and off a few times.
- (5) Install cover ⑫.
Then install assemble bolt ⑥ and manual release prevention spacer ⑤.

9-5) Brake Lining Replacement

When the thickness of the brake lining has reached the limit shown in Table 13 (when the brake gap has reached the limit shown in Table 12 on page 39 after gap adjustment in for FB-01A1, 02A1, 05A1, 01A, 02A, and 05A), Contact Sumitomo for brake lining replacement.

Table 13 Brake Lining Dimension

Brake Type	Brake Lining Dimension	Initial Thickness	Thickness Limit
		to (mm)	to (mm)
SB-004		5.0	4.6
FB-003 FB-005		7.0	6.2
FB-01A1, FB-01A FB-02A1, FB-02A FB-05A1, FB-05A		7.0	/
FB-1B		7.0	
FB-2B		7.8	
FB-3B		9.0	
FB-5B, 8B		10	6.0