G18005

SANKI SBV TYPED

BRAKE MOTORS

INSTRUCTION MANUAL

Safety precautions

Requirements

1. Make sure that this instruction manual is delivered to the end user of brake motor.
2. Make sure to read this manual before installing or using the brake motor.
3. Store this manual in a place for quick reference.

SANKI CO., Ltd.

CONTENTS

1. GENERAL

The purpose of this instruction is to describe the construction, installation and maintenance of Sanki SBV series brake motors.

The pertinent sections of this instruction manual should be studied before any attempt is made to install and operate the motors.

2. CONSTRUCTION & ACTION

Sanki SBV series brake motors are three phase induction motors with dry type single disc, spring actuated electromagnetic friction brake.

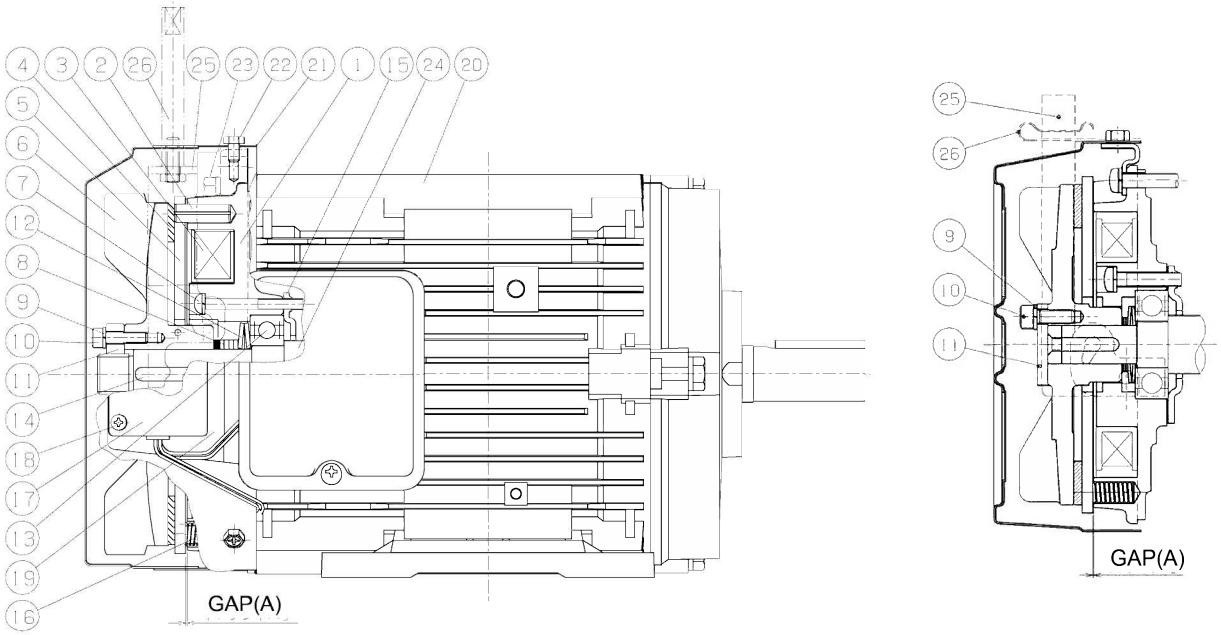
2.1 Start

When the brake motor is switched on, D.C. is applied to the magnetic coil through power unit ⑰ and the armature ⑤ is pulled instantaneously. The brake is then released and the motor will start rotating.

2.2 Stop

When the brake motor is switched off, the friction disc ⑥ and brake shoe ④ is forced together by the brake spring ⑯ to create friction. The brake is then applied.

A B



Structural section drawings A: [IKH3-FBKA21E 4P 1.5kW SBV-H090-150L]
B: [IK-FBKK8 4P 0.4kW SBV-071-040L]

P No	Name	P No	Name
1	Field core (Bearing bracket)	14	Key
2	Spring pin	15	Fixing plate
3	Magnet coil	16	Brake spring
4	Brake shoe	17	Power unit
5	Armature	18	Pan head screw
6	Friction disc	19	Plate for Power unit
7	Hex. Socket head screw	20	Motor
8	Shim washer	21	Fan cover (Brake cover)
9	Sprig washer	22	Foxing Screw
10	Hex. Socket head screw	23	Hex.nut
11	Fixing nut (Bolt)	24	Shaft
12	Conical spring (Compressing Spring)	25	Arm for manual release (Handle for manual release)
13	Ball bearing	26	Handle for manual release (Fastening plate)

3. INSTALLATION

3.1 Location

When installing SBV series brake motor, choose location where satisfy the following conditions;

1) Ambient temperature: -20～40℃
2) Relative humidity: Less then 85%
3) Altitude: Less then 1000m
4) Atmosphere: Corrosive or explosive gases or dust are not permissible

3.2 Power supply

Standard: A.C Three phase
200V-50Hz, 200V-60Hz or 220V-60Hz

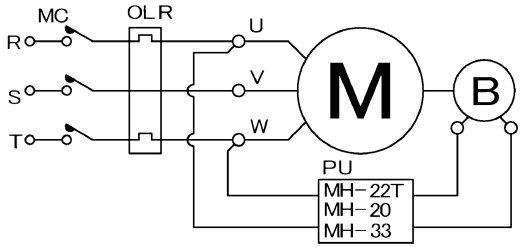
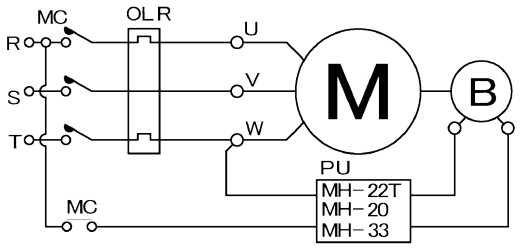
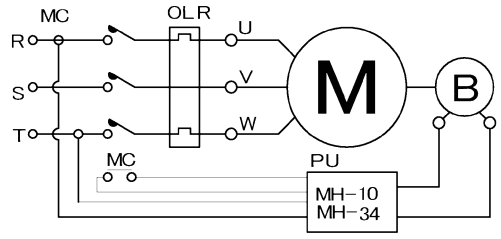
Specified: A.C Three phase, [ ]V-[ ]Hz

1) Voltage variation: Within 10%
2) Frequency variation: Within 5%

4. CONNECTION

The brake leads are connected directly to the motor leads and electrical power is supplied simultaneously to the motor and brake as shown in Fig. A

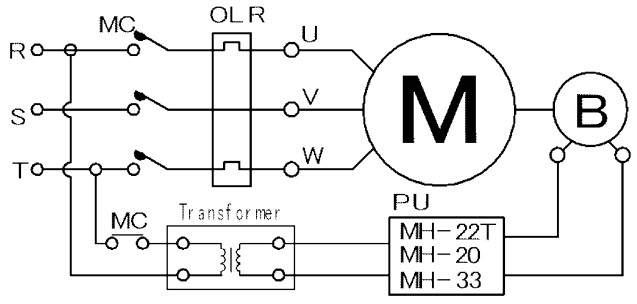
However, in some application, such as remote control of brake, installation of power factor correction capacitor or shortening the delay time, employ the separate control circuit as shown in Fig. B or C.

Fig.	Connection to power supply		Application
A	A.C. Direct circuit		Standard connection (Factory set)
B	A.C. Separate circuit		Remote control Shortening delay time Installing power factor correction capacitor
C	D.C. Separate circuit		Shorter delay time than Fig. B

MC: Magnetic contactor, OLR: Over load relay

M: Motor, B:Brake, PU: Power unit

*For the unspecified voltage, the following connection may be available.



BRAKE TYPE	POWER UNIT	TORANSFORMER CAPACITY
SBV-063-010 SBV-063-020 SBV-071-040	MH-22T	50VA
SBV-H080-075 SBV-H090-150 SBV-H100-220	MH-20	100VA
SBV-H112-370	MH-33	150VA

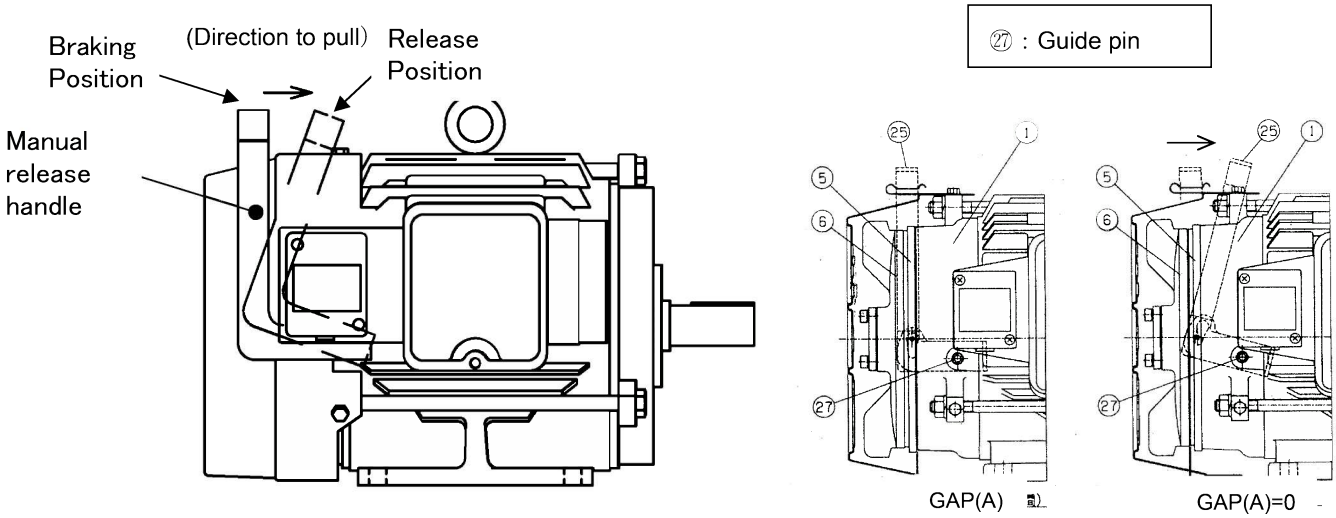
5.MANUAL RELEASE (with Release handle)

Handle for manual release is available as option.

Brake is operated with the manual release handle.

5.1 Lock Type Operation (SBV model, 0.1~0.4kW):

- While the brake is on, push the manual release handle ㉕ in the direction shown in the diagram below.
- The release handle ㉕ is now fixed and the brakes are released.
- Please make sure to return the release handle to the fastening plate above the fan cover after use.



5.2 Unlock Type Operation (SBV-H model, 0.75~3.7kW):

- While the brake is on, pull the manual release handle ㉖ in the direction shown in the diagram below.
- The brakes are released while the manual release handle ㉖ is being pulled.
- Let go of the release handle ㉖ after use and the handle will return to the default position automatically.
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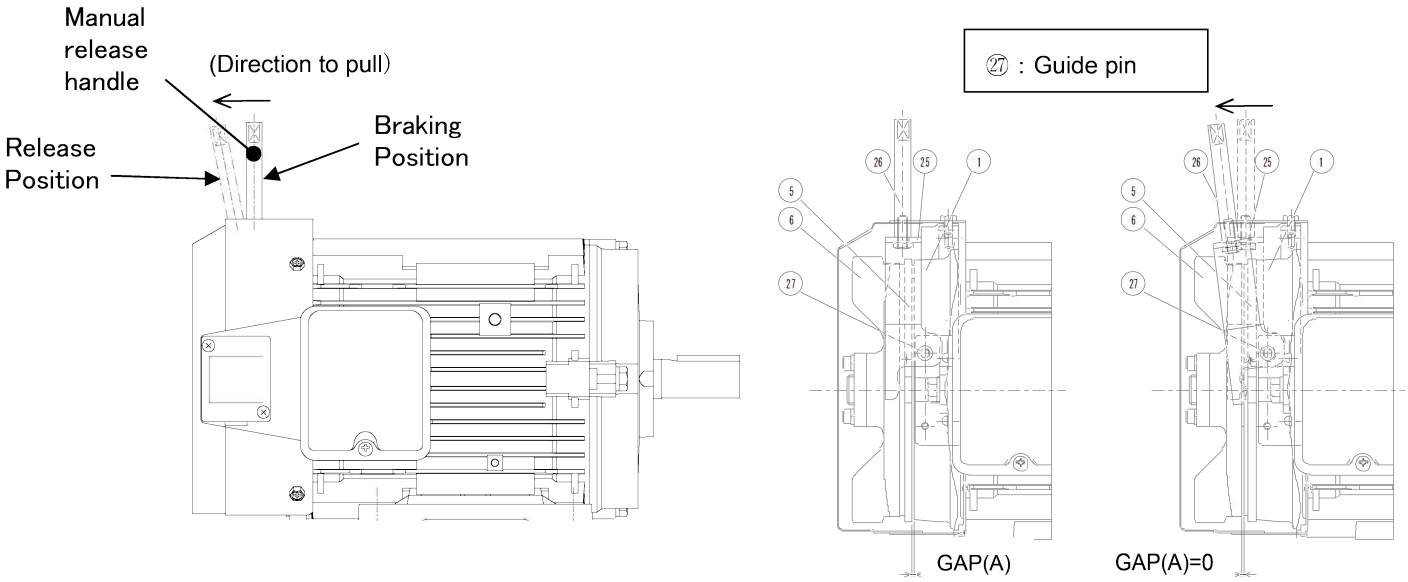


6. BRAKE ADJUSTMENT

6.1 ADJUSTMENT FOR FRITION DISC WEAR

The magnet gap “A” (see drawing on section 2) increase as the brake shoe wear.

The magnet gap should be checked periodically and adjusted if the gap “A” exceed the rated value shown in the Table 1.

When the gap reaches approximately “Max. Allowable Gap”, it should be adjusted to “Factory Set Gap” by using the gap gauges of 0.3 or 0.4mm thickness.

Table 1.

BRAKE TYPE	Air Gap (Gap “A”)	
	Factory Set	Max. Allowable
SBV-063-010 SBV-063-020 SBV-071-040	0.3mm	0.7mm
SBV-H080-075 SBV-H090-150 SBV-H100-220	0.4mm	1.0mm
SBV-H112-370	0.5mm	1.2mm

Adjusting method should be as follows:

a. Loosen and remove the hex socket screw ⑩ and spring washer ⑨
b. Loosen and remove the friction disc fixing nut (bolt) ⑪. To loosen the nut (bolt) ⑪, use a screw driver to turn the hex socket screw ⑩ mounting hole, or use a plier to turn the outer diameter of the nut (bolt).
c. Pull out the friction disc ⑥ and remove the friction disc key ⑭.
d. Remove the shim washer ⑧ in accordance with wear thickness of the brake shoe ④. (Please keep the shim washer in a safe place to reuse them after replacing armature ⑤ and brake shoe ④ to new ones).
e. Mount the friction disc ⑥ and the key ⑭ using a resin hammer.
f. Install the Fixing nut (bolt) ⑪ and tighten. At this moment, use a gap gauge to measure gap A. Tighten the nut (bolt) till you reach “Factory Set Gap”. Please tighten and adjust so that the mounting hole of hex socket screw ⑩ and the friction disc ⑥ aligns.
g. Install the Spring washer ⑨ and hex socket screw ⑩.
h. Check if the adjustment is working fine.
   i. Turn the switch on/off of the brake power only.
   ii. Check to see if the armature ⑤ is moving towards the shaft
   *Only apply voltage to the brake`s power supply
   *Do not apply voltage to the motor
   *If there is no action, go over steps a~g and double check if the steps were performed surely.
i. Mount the fan cover ㉑ on the field core ① then tighten the fixing screw ㉒ on field core ①.
j. Reapply power to both motor and brake. If there are no problems, the adjustment is finished. If abnormalities occur, please repeat steps a~i
k. For products with manual release handle ㉕㉖, please remove the handle first before beginning the adjustment. (Follow steps on disassembling and assembling 6.3)

6.2 REPLACEMENT OF BRAKE SHOE & ARMATURE

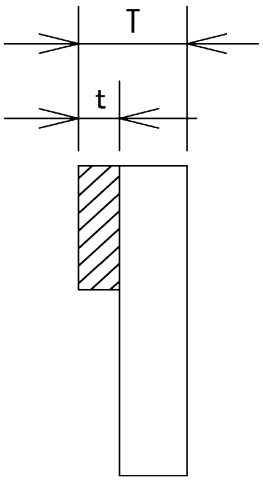
Please conduct the replacement of the break shoe and armature under manufactures supervision.

After repeating the adjustment of brake shoe ④ until the thickness reaches the usage limit (see table 2), replace the armature ⑤ and brake shoe ④ with a new one. (The brake shoe ④ and armature ⑤ units are attached together on this brake. Therefore, the units are considered as one when replacing.)

When replacing them, make sure that the armature ⑤ and brake shoe ④ move on the Spring pin ② smoothly.

Table 2. Usage limit of Break Shoe

BRAKE TYPE	Usage limit of Brake shoe "t" Thickness (mm)	Usage limit of brake shoe & armature "T" Thickness (mm)
SBV-063-010 SBV-063-020	1.0	4.0
SBV-071-040		4.8
SBV-H080-075 SBV-H090-150 SBV-H100-220		5.8
SBV-H112-370		11.8



Please measure the total thickness "T" of both the brake shoe ④ and armature ⑤ if it is difficult to measure just the brake shoe ④. Please follow instructions to Assemble and Disassemble the brake shoe from the following steps.

6.3 DISASSEMBLE

a) Untighten the screw on the field core ①, which doubles as the anti-load-side bearing bracket, to remove the brake cover ㉑.

b) When disassembling with manual release handle

i. For lock type release handle, press the release handle lever ㉕, pull out the guide pin ㉗, and remove the handle lever ㉕.

ii. For unlock type release handle, unscrew the fixing bolt of the guide pin ㉗, and remove the release handle arm ㉕ and lever ㉖.

c) Loosen and remove the hex socket screw ⑩ and spring washer ⑨

d) Loosen and remove the friction disc fixing nut (bolt) ⑪. To loosen the nut (bolt) ⑪, use a screw driver to turn the hex socket screw ⑩ mounting hole, or use a plier to turn the outer diameter of the nut (bolt) ⑪.

e) Pull out the friction disc ⑥.

f) Remove armature and brake ⑤ shoe ④

g) If replacing the bearing or disassembling the motor, please remove the following in order. Friction disc key ⑭, shim washer ⑧, and conical spring ⑫. (For model SBV-H080-075, remove in order of friction disc key ⑭ then the compression spring ⑫).

6.4 ASSEMBLE

Assembling may be performed by following steps in section 6.3 (Disassemble) backwards, however, please be careful of the following.

a) When replacing the armature ⑤ and brake shoe ④ with a brand new unit, please make sure to install the shim washers ⑧ on the motor shaft ㉔ to match thickness of factory default settings.

b) Make sure the spring pin hole on the armature ⑤ slides well over the spring pin ② before installing.

c) Please follow steps in 6.1(Adjustment for friction disc wear) to adjust the brake gap to default settings.

d) Hammer in the friction disc key ⑭, then install the friction disc ⑥.

e) Tighten the fixing bolt (nut) ⑪.
   i. When tightening, use the gap gauge to tighten till required value and adjust the hex socket screw ⑩ to match the hole of the friction disc hole.

f) Install the hex socket screw ⑩ and the spring washer ⑨.

g) Check if the adjustment is working fine.
   i. Turn the switch on/off of the brake power only.
   ii. Check to see if the armature is moving towards the shaft
   *Only apply voltage to the brake`s power supply
   *Do not apply voltage to the motor
   *If there is no action, go over steps a~f and double check if the steps were performed surely.

h) Mount the fan cover ㉑ on the field core ① then tighten the fixing screw ㉒ on field core ①.

i) With the manual release handle
   i. Lock type Manual release handle: attach the release lever ㉕ on the guide pin
   ii. Unlock type manual release handle: install the handle arm ㉕ and lever ㉖, then install the guide pin ㉗ fixing bolt.

j) Reapply power to both motor and brake. If there are no problems, the adjustment is finished. If abnormalities occur, please repeat steps a~h

k) If replacing the armature ⑤ with a new unit, it is necessary to habituate the brake contact surface to gain full brake torque. Please operate the brake motor for about 50 times before normal operation.

(Structural drawings of the SBV model brakes may be seen on section 5)

7. BEARINGS MAINTENANCE

As grease pre-packed ball bearings are used for this brake motor, it is not necessary to change them for 2~3 years under normal condition.

However, the following periodical inspections are recommended to keep normal operation.

1) Listen to bearing sound

2) Clean the bearing surface and housing every year.

*After cleaning, put lithium-based grease on bearing surface and inside of housing.

(The interval should be considered in accordance with condition of use.)

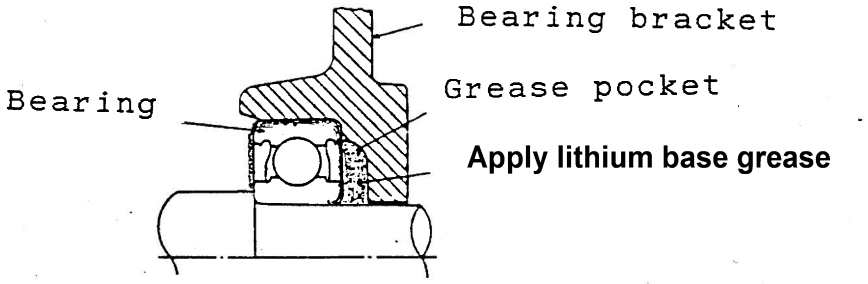


Table. 3 Bearings

Frame No.	Output(kW)		Bearing No.	
	4P	6P	D.E.	N.D.E.
63	0.1,0.2	-	6202ZZ	6202ZZ
71	0.4	0.2	6203ZZ	6203ZZ
80	0.75	0.4	6204ZZ	6204ZZ
90L	1.5	0.75	6205ZZ	6205ZZ
100L	2.2	1.5	6206ZZ	6205ZZ
112M	3.7	2.2	6207ZZ	6206ZZ

8. TROUBLE SHOOTING

Trouble		Probable cause	Probable remedy
Brake does not work properly.	Does not release.	Big air gap due to wear or brake shoe.	Adjust air gap properly. Or Renewal of disc.
		Short circuit. Or Broken wire of brake coil.	Replace N.D.E. bearing bracket includes coil.
		Low voltage. Or No power.	Supply the rated voltage.
		Defective power unit.	Replace with new unit.
		Adhesion of friction disc to brake shoe due to rust.	Clean each part.
	Slip or Braking time is long.	Wear of brake shoe.	Adjust air gap.
		Oil or foreign body on the surface of disc or shoe.	Clean each part.
		Big inertia.	Re-selection of brake motor.
		Unsatisfied rub friction disc and brake shoe.	Rub friction disc and brake shoe enough.
Motor does not rotate	Hand turning is possible when releasing brake	Defective electrical circuit.	Check the circuit.
		Broken fuse.	Change it.
		Single phase operation.	Check the circuit then repair.
		O.C.R. trip.	Solve the cause then re-set.
		Broken wire of stator winging.	Repair at motor service shop.
	Does not rotate even though release of brake.	Locking condition by rust friction disc and brake shoe.	Clean the each part.
		Wrong adjustment of air gap.	Re-adjust air gap correctly.
		Defective bearing.	Replace it with new one.
		Shaft lock by heavy load.	Check load condition.
Unusual noise		Single phase operation.	Check power supply.
		Defective bearing.	Replace it with new one.
		Defective armature & brake shoe .	Adjust air gap or change armature & brake shoe.
		Defective air gap.	Adjust air gap properly.
		Ingress of foreign body.	Remove it.
Failure in loading condition.		Low voltage.	Supply the rated voltage.
		Heavy load.	Adjust the load to proper level or re-selection of brake motor.
		Shortage of fuse capacity.	Replace it with the rated one.

9. STORAGE METHOD

9.1 Storing the motor while it is in the package

Please do not store in the following places:

- Outdoors
- Area with frequent vibration
- Area with frequent change in temperature
- Area with high humidity

9.2 When the motor is stored for a long time, please check the following items every three months:

- When you turn the shaft by hand (*), it must turn freely without unusual sound (to prevent rusting)

  (*) Do not touch the keyway with your bare hands.

- In rare cases, the motor may generate an abnormal sound when powered on due to insufficient grease lubrication on the bearings.

  In this case, the sound is not significant if it will disappear within 30 to 60 minutes. However, if the sound persists, please contact your service station.

- Insulation resistance between the lead wires and the ground shall be 1MΩ

  Do not touch the terminals with your hand when you measure the insulation.