



# MODEL FCJ 65V

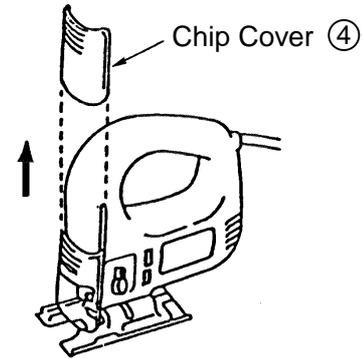
## 1. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY:

The circled numbers in the descriptions below correspond to the item numbers in the Parts List and exploded diagram.

### 1-1. Disassembly:

#### 1-1-1. Remove the Chip Cover (4).

In the same manner as it is slide up and down for positioning, slide the Chip Cover (4) upward to remove it from the main body.



How to remove Chip Cover

#### 1-1-2. Disassembly of Housing (B):

- (1) Remove the Hexagon Socket Hd. Bolt M4 x 16 (30) with the accessory Hexagon Bar Wrench 3MM (501) and remove the Base (28).
- (2) Remove the seven Tapping Screws (W/Flange) D4 x 20 (BLACK) (17) and take off the Housing (B) of the Housing (A), (B) Set (5).

#### 1-1-3. Removal of the Roller Holder (16):

Remove the Roller Holder (16) from the Housing (A) of the Housing (A), (B) Set (5). The Felt (15) and the Needle Roller (14) can be taken out simultaneously.

#### 1-1-4. Disassembly of the Armature (45), Stator (47), Gear (38) and the Holder (43):

- (1) Remove the two Brush Holders (21) from the Housing (A) of the Housing (A), (B) Set (5) and take out the two Carbon Brushes (20).
- (2) From the Housing (A) of the Housing (A), (B) Set (5) simultaneously take out the Armature (45), Stator (47), Gear (38), and the Holder (43).
- (3) Separate the Holder (43) from the Armature (45).

#### 1-1-5. Disassembly of the Gear (38), and the Holder (43):

Remove the Retaining Ring For D7 Shaft (37) (being very careful not to stretch it excessively and distort its inner diameter). The Gear (38), two Balance Weights (40), Orbital Cam (41) and the Washer (A) (42) can then be removed from the Holder (43). At this time, be very careful not to lose the Needle Roller (39).

#### 1-1-6. Removal of the Plunger (35):

Remove the Plunger (35) and the Plate Holder (31) from the Housing (A) of the Housing (A), (B) Set (5). The Set Ring (53), Felt (A) (52), Metal (51), Metal (A) (34), and the Plate (33) can be taken out at the same time.

#### 1-1-7. Disconnecting Leadwires and Electrical Parts:

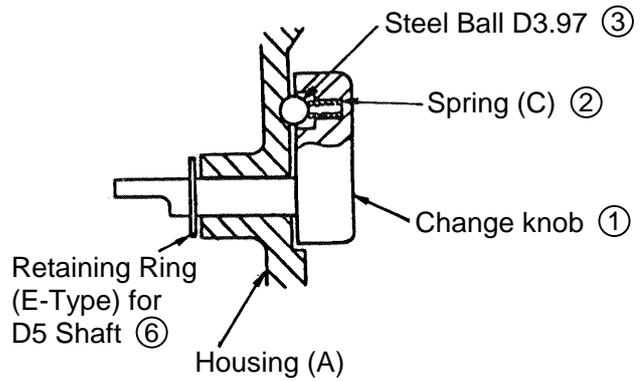
- (1) Loosen the minus screws on the Switch (8) with a small minus screwdriver, and disconnect the leadwires of the Stator (47), Noise Suppressor (9), and the Cord (23).
- (2) After removing the Tube (D) (7) and the Connector (12) which connect the Stator (47), Noise Suppressor (9) and the Cord (23), the parts can be separated.
- (3) After removing the two Tapping Screws (W/Flange) D4 x 16 (17), Cord (23) and the Cord Clip (24) can be removed from the Housing (A) of the Housing (A), (B) Set (5).

**1-1-8. Removal of the Change Knob ① from Housing (A) of Housing (A), (B) Set ⑤.**

After removing the Retaining Ring (E-Type) for D5 Shaft ⑥ which is installed on the tip of the Change Knob inside the Housing (A) of the Housing (A), (B) Set ⑤, the Change Knob ① can be disassembled from the Housing (A) of the Housing (A), (B) Set ⑤. Be careful not to lose the Spring (C) ② and the Steel Ball D3.97 ③ which are mounted on the Change Knob ①.

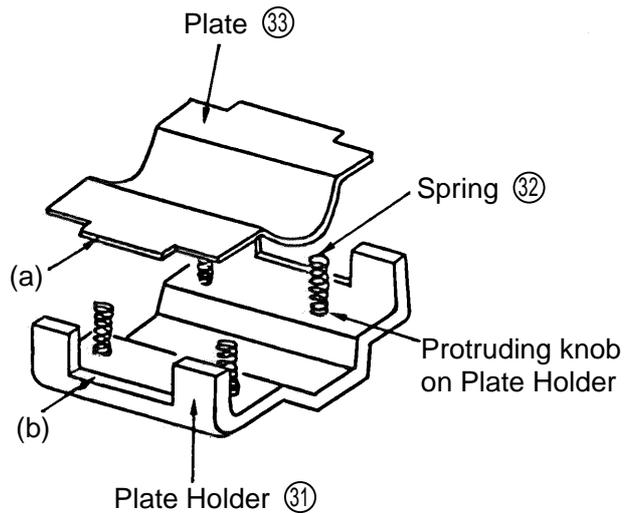
**1-2. Reassembly:**

Reassembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items.



(1) Assemble the Spring (C) ② and the Steel Ball D3.97 ③ into the Change Knob ① as illustrated.

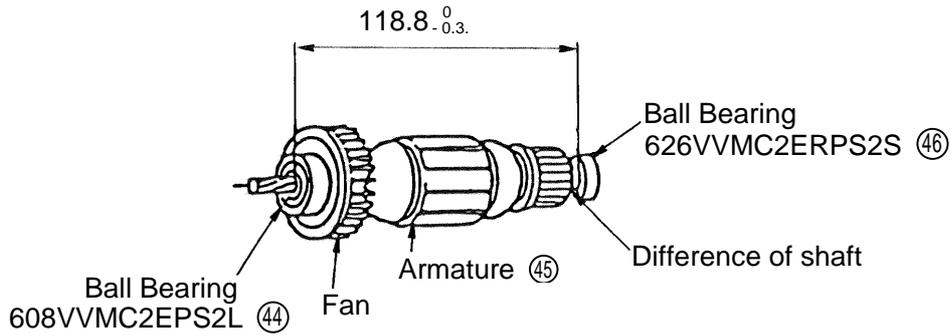
(2) Perform wiring by referring to Paragraph 1-6. [Wiring Diagram and Leadwire Arrangement]. Carefully observe the terminal numbers marked on the Switch ⑧ and ensure that the leadwires are connected to the correct terminals. Finally, ensure that the terminal screws are properly tightened.



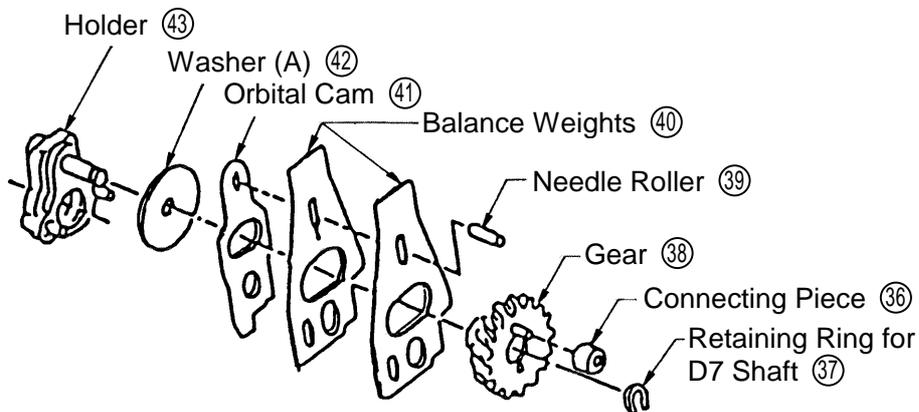
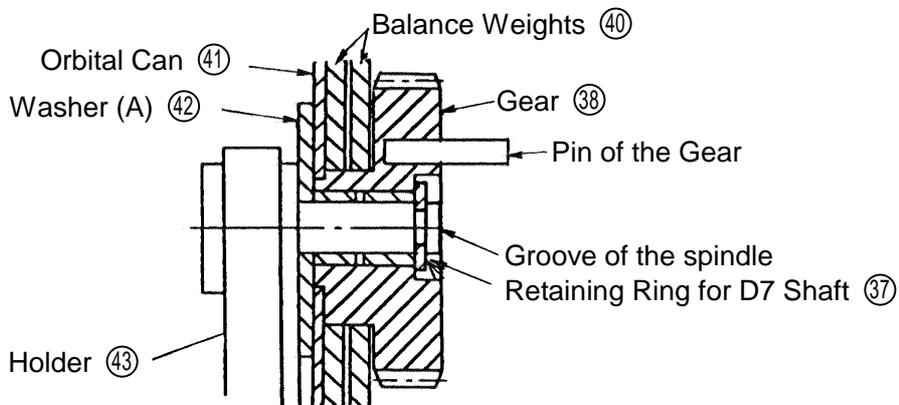
(3) As illustrated, carefully mount the four Springs ③2 on the protruding knobs on the Plate Holder ③1. Then, slide the (a) portions (both sides) of the Plate ③ into the (b) portions (both sides) of the Plate Holder ③1 and confirm that the Springs ③2 are stable and function properly when the Plate is depressed repeatedly.

(4) Reassembly of the Armature ④5 and the Stator ④7:

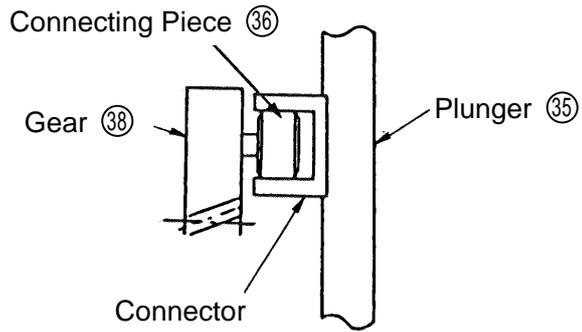
Press-fit the Ball Bearing 608VVMC2EPS2L ④4 and the Ball Bearing 626VVMC2ERPS2S ④6 to the Armature ④5. Stop the press-fitting when the Ball Bearing 608VVMC2EPS2L ④4 comes into contact with the Fan. Use vernier calipers or similar gauge and check if the press-fitting dimension is  $118.8_{-0.3}^0$ . Carefully prevent excessive pressing in as it may deform or damage the Fan. Since insufficient press-fitting will cause heat generation because of the loss of the thrust of the Armature ④5, press in the Ball Bearing 626VVMC2ERPS2S ④6 until it comes into contact with the shaft shoulder portion. Insert the Armature ④5 into the Holder ④3, and put the assembly into the Stator ④7.



(5) The Washer (A) (42), Orbital Cam (41) and the two Balance Weights (40) must be mounted between the Holder (43) and the Gear (38) as illustrated below. At this time, pay particular attention to ensure that the Orbital Cam and the Balance Weights are mounted in the proper direction. Finally, be very careful not to excessively pry open the Retaining Ring for D7 Shaft (37) when fitting it onto the spindle portion of the Holder (43). If the Retaining Ring for D7 Shaft is bent or distorted, it will not fit tightly on the spindle, and could easily slip off or break during operation. After mounting the Retaining Ring for D7 Shaft, check it carefully and confirm that it is properly installed and does not slide excessively freely within the groove on the spindle of the Holder (43). If it is excessively loose, it must be replaced by a new one.

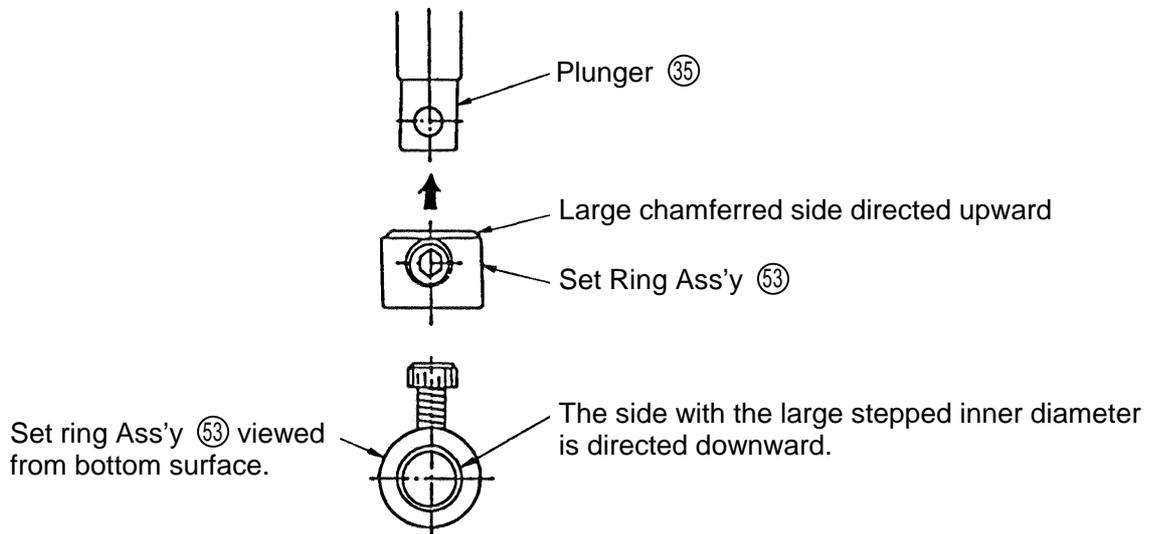


(6) Install the Armature (45), Stator (47) Holder (43) and the Gear (38) into the Housing (A) of the Housing (A), (B) Set (5) at the same time. As illustrated, install the Connecting Piece (36) into the "U" shaped portion of the Plunger (35). Next, properly install the Ball Bearing 626VVMCZERPS2L (46) of the Armature into the groove of the Housing (A). Finally, confirm that the Armature (45) rotates smoothly.



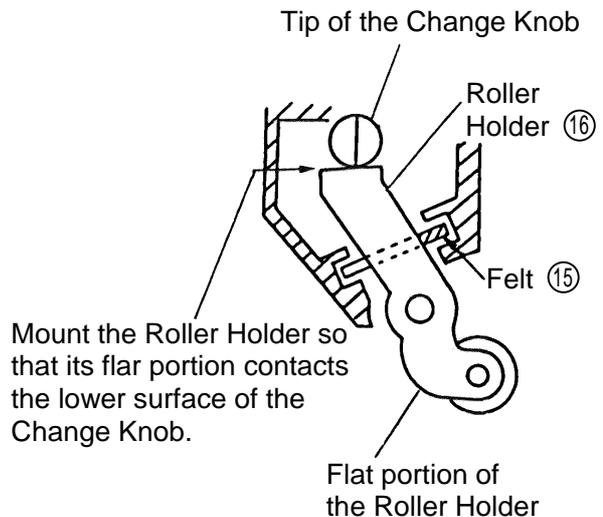
(7) Reassembly of the Plunger and Set Ring Ass'y:

Insert the Set Ring Ass'y (53) into the Plunger (35) after confirming its direction and position, and tighten the Hex. Socket Hd. Bolt M4 x 8 (27).



Assembly of Plunger and Set Ring Ass'y

(8) When installing the Roller Holder (16) into the Housing (A) of the Housing (A), (B) Set (5), ensure without fail that the two Metals (B) (13) are properly mounted. The mounting positions of the Roller Holder (16) and the Felt (15) must be as illustrated below.

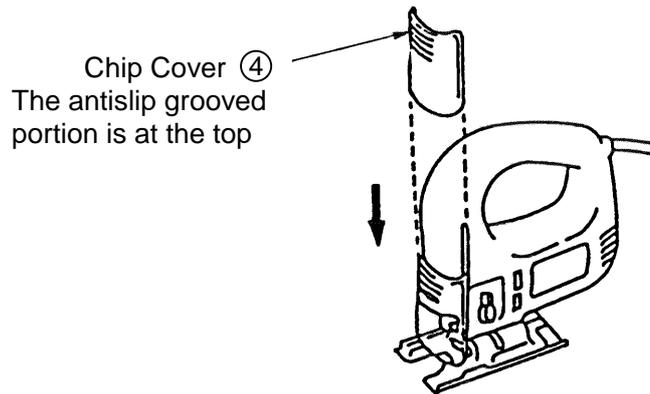


(9) When mounting the Housing (B) of the Housing (A), (B) Set (5), be very careful to avoid loosening or pinching any of the leadwires, or crushing or otherwise damaging the Felt (15) and the Felt (A) (52). Also, carefully confirm that the Metals (B) (13) are properly installed.

**1-3. Other:**

(1) When re-mounting the Housing (A) of the Housing (A), (B) Set ⑤, be very careful to ensure that the leadwires are not excessively slack, and that they are not pinched between components during reassembly.

(2) When reassembling the Chip Cover ④ onto the main body, be sure it is mounted in the correct direction.



**1-4. Lubrication:**

Apply grease (Hitachi Motor Grease No. 29 [Code Number 930035] is recommended) in the following places.

- Insert 7 grams within the gear chamber of the Housing (A)
- Insert 5 grams within the gear chamber of the Housing (B)
- Thoroughly coat the teeth, inner surface and Pin portions of the Gear ③⑧, the sliding portions of the Balance Weights ④⑩ and the Orbital Cam ④①.
- Thoroughly coat the inner and outer portions of the Connecting Piece ③⑥.
- Thoroughly coat the surface of the Plate ③③ where it slides against the connector portion of the Plunger ③⑤.
- Thoroughly coat the pinion portion of the Armature ④⑤.

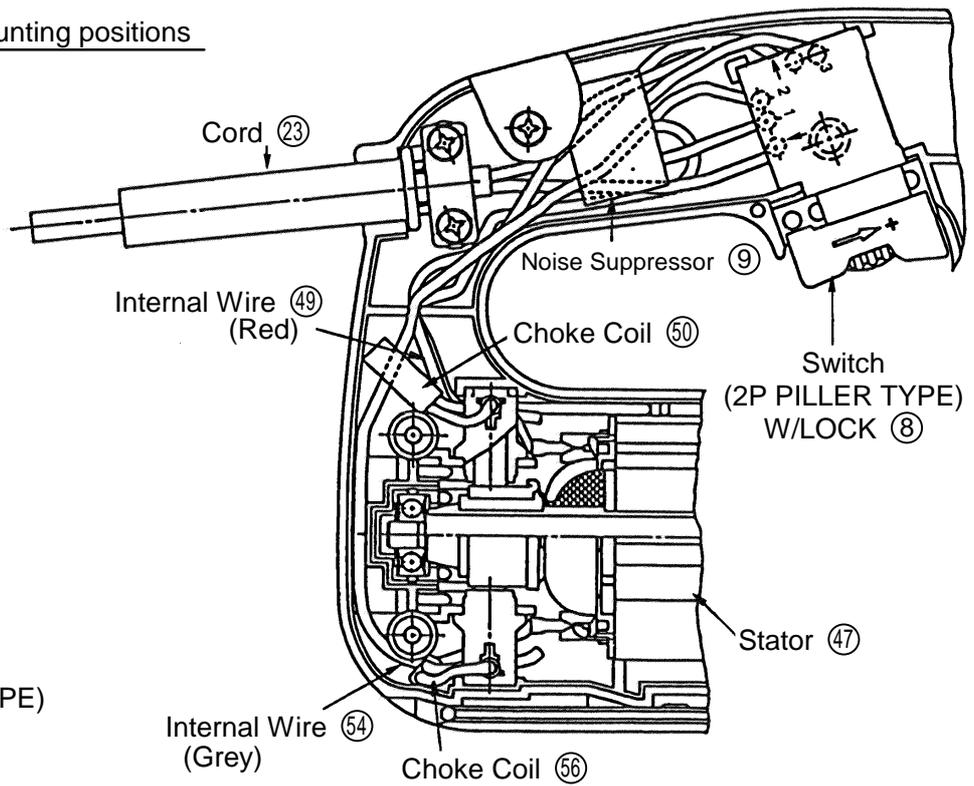
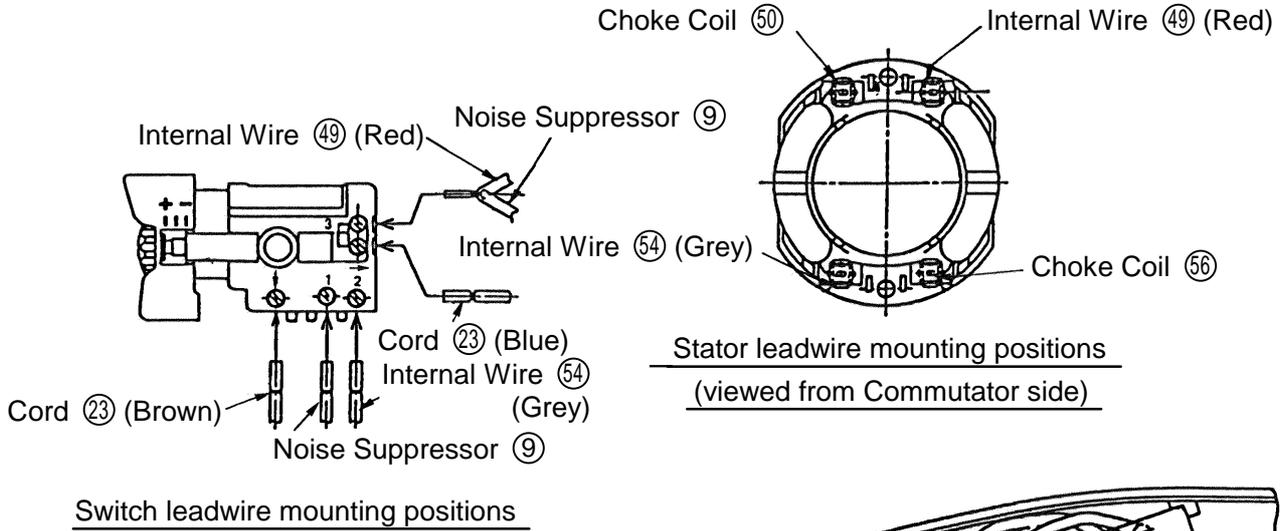
**1-5. Tightening Torques:**

- Tapping Screw (W/Flange) D4 x 20 (Black) ①⑦
  - Tapping Screw (W/Flange) D4 x 16 ②⑤
  - Hex. Socet Hd. Bolt M4 x 16 ③⑩
  - Hex. Socet Hd. Bolt M4 x 8 ②⑦
- } 20 ± 5 kgf-cm
- } 5 ± 2 kgf-cm

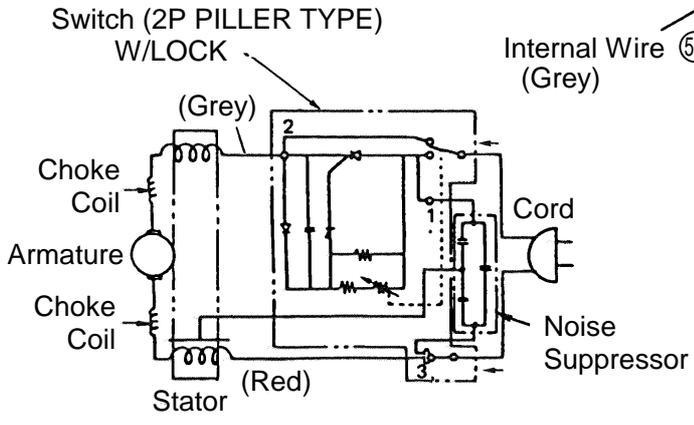
**1-6. Wiring Diagrams and Leadwire Arrangements:**

(1) For Model with a Noise Suppressor and Choke Coil:

The numbers 1, 2 and 3 in the diagrams refer to Switch terminal numbers.

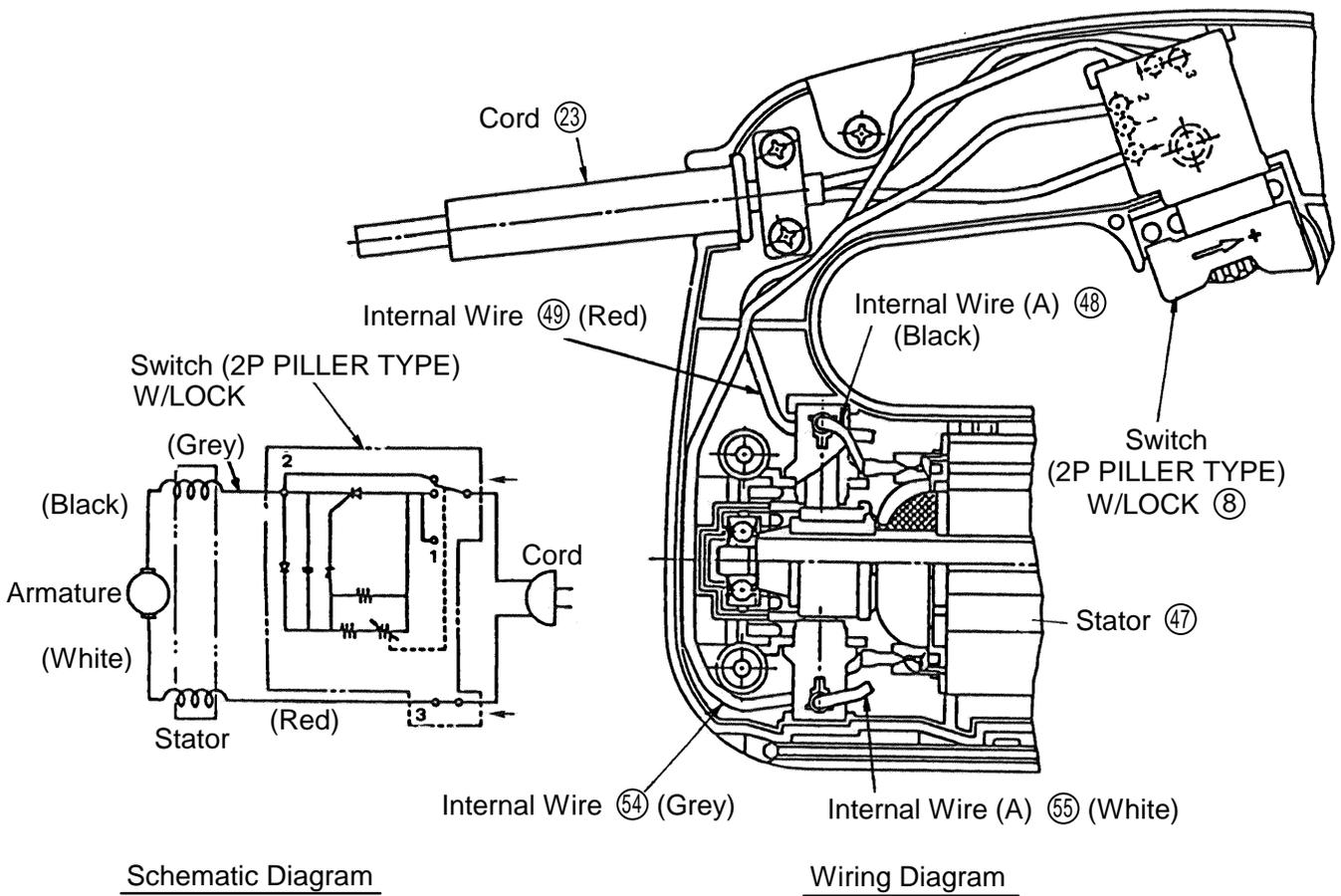
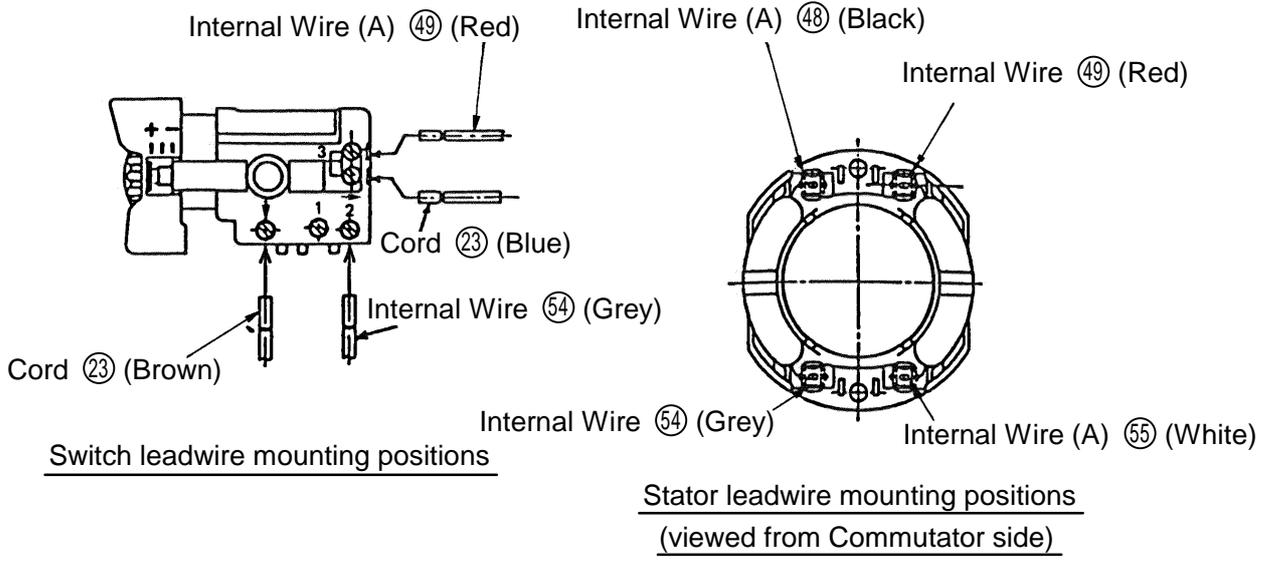


Wiring Diagram

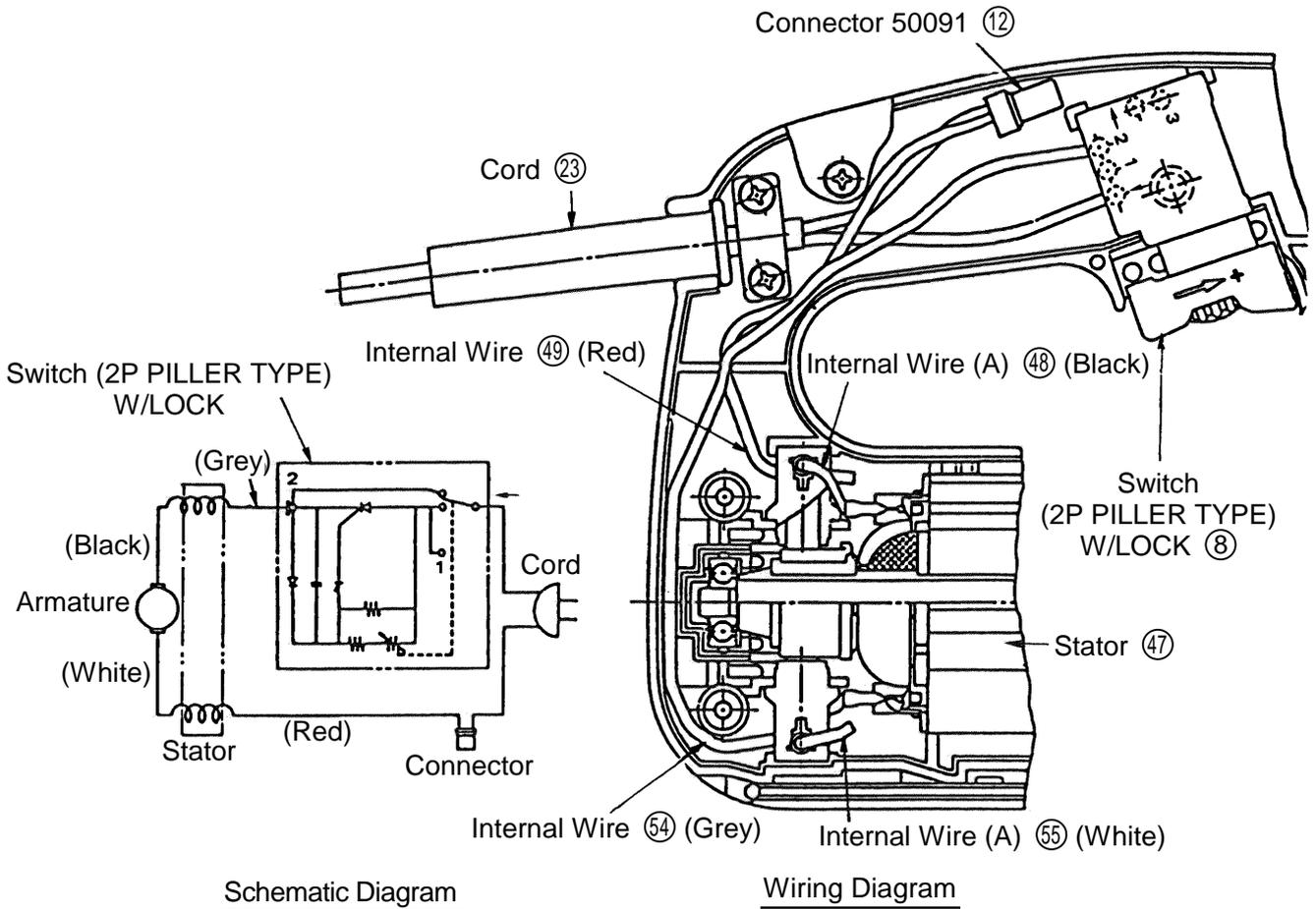
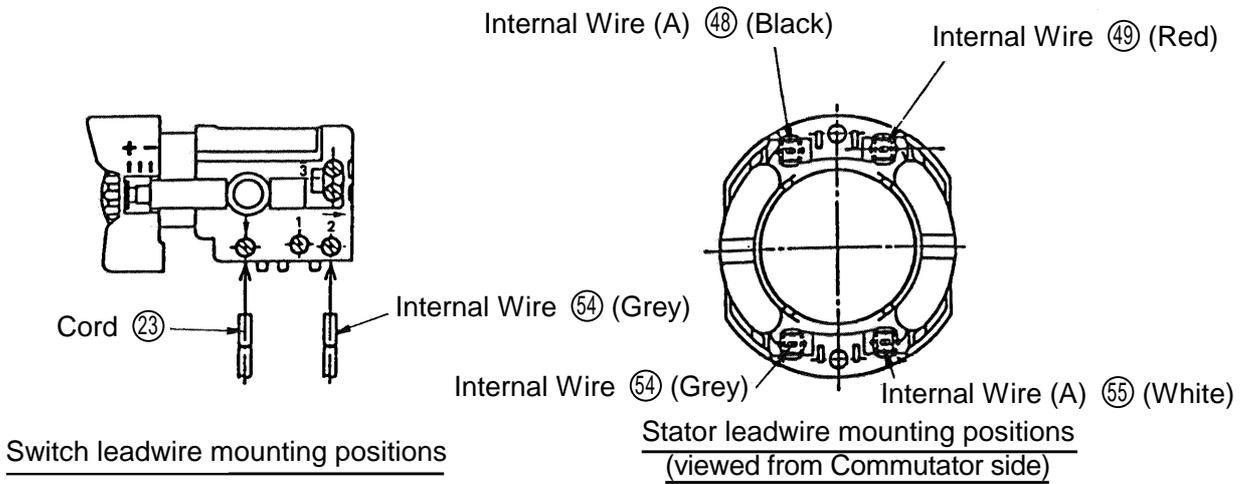


Schematic Diagram

(2) For Model without a Noise Suppressor:



(3) For Model without Noise Suppressor but With Connector:



**1-7. No-Load Current Values:**

After 30 minutes of no-load operation, current values should be as follows:

|           |                   |           |                 |
|-----------|-------------------|-----------|-----------------|
| 110 V ... | } Less than 1.8 A | 220 V ... | Less than 1.0 A |
| 115 V ... |                   | 230 V ... | Less than 0.9 A |
| 120 V ... |                   | 240 V ... | Less than 0.9 A |
| 127 V ... |                   |           |                 |

**1-8. Insulation Tests:**

On completion of disassembly and repair, measure the insulation resistance and conduct dielectric strength test.