



# MODEL

# G 13YB1

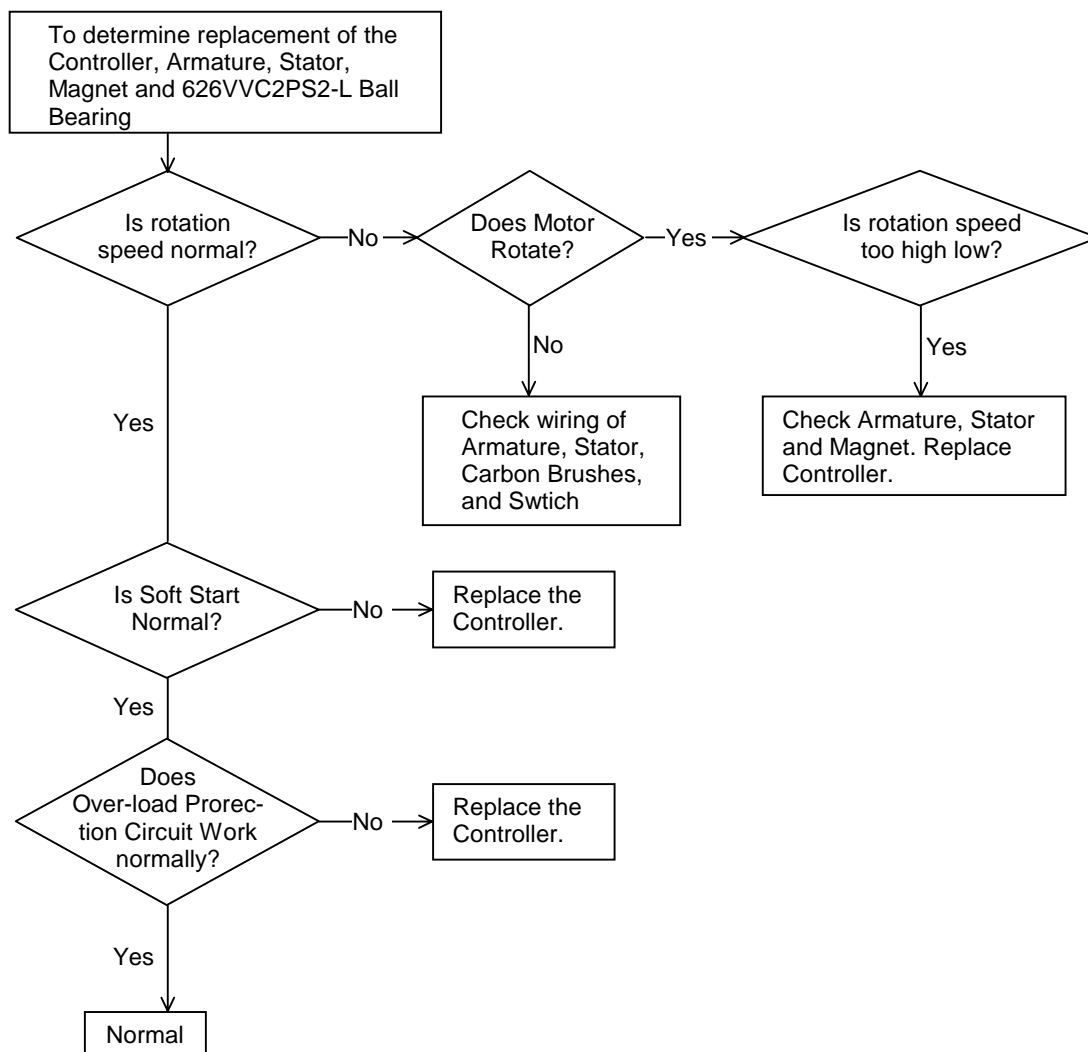
## 1. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY:

### 1-1. Precautions in Maintenance and Repair:

During repair and maintenance, particular attention must be given to the following items:

- (1) Without fail, remove the plug from the power source outlet to prevent accidental starting of the tool.
  - (2) Remove the grinding wheel to prevent it from being damaged.
  - (3) Do not strike the main body of the tool with a hammer or similar tool. The electronic control circuit built into the Controller can be damaged by the impact of a hammer or similar tool. Under no circumstances should such tools be used when the Controller is assembled in the main body.
  - (4) Do not attempt to remove the internal parts of the Controller. The Controller is the very brain of the tool, and should never be disassembled.
  - (5) When reassembling the tool, ensure without fail that the Magnet is properly installed. Also, note that the Magnet is left-hand threaded, and must be turned counter-clockwise to mount in on the Armature. On reassembly, tighten the Magnet onto the Armature with a rated torque of  $13 \pm 3$  kgf-cm.
- (NOTE) When disassembled, never place the Magnet in the vicinity of metal particles or shavings. Should such metal particles adhere to the Magnet, they could cause malfunction of the control circuit and/or serious damage to the commutator-side ball bearing of the Armature.

### (6) Controller Troubleshooting Chart:



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

### 1-2. Disassembly of the Armature:

- (1) Loosen the M5 x 20 Machine Screw ③② and remove the Wheel Guard (A) Ass'y ③⑤.
- (2) Remove the Brush Caps ⑤①, and take out the Carbon Brushes ⑤②.
- (3) Loosen the D5 x 25 Tapping Screws ①, and remove the Gear Cover ④. Separate the Inner Cover ①① from the Housing Ass'y ④④ with a screwdriver, and remove the Inner Cover ①① together with the Armature ①②.
- (4) Holding the Armature ①②, loosen the M6 Flange Nut ⑤ with a wrench, and remove the Pinion ⑥.
- (5) Support the Inner Cover ①① with a tubular jig (inner diameter  $\phi 63 - \phi 72$  is recommended), and push down on the Armature shaft with a hand press to remove the Armature ①②. (see Fig. 3)

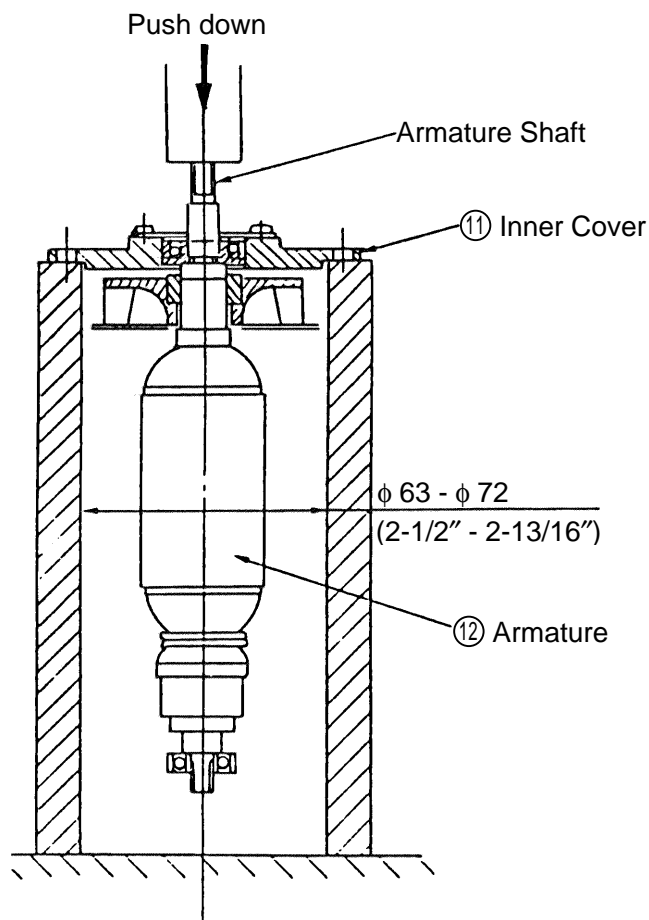


Fig. 3

### 1-3. Disassembly of the Controller:

- (1) Loosen the D4 x 16 Tapping Screw ⑥⑤, and remove the Tail Cover ⑥④.
- (2) Remove the Connectors ⑤⑨ connecting the leadwires, and remove the Cord Clip ⑦⑦ by loosening the two D4 x 16 Tapping Screws ⑤⑥. Remove the Spring ④①, and loosen the D4 x 12 Tapping Screw ⑤⑦ to remove the Side Switch ⑤⑧. Loosen the slotted hd. set screw of the Slide Switch ⑤⑧, and remove the leadwires.
- (3) Loosen the two D4 x 16 Tapping Screws ⑤⑥, and remove the Controller ⑤⑨.

#### 1-4. Disassembly of the Stator:

- (1) After removing the Armature (12) and Controller (59), disconnect the Brush Terminals (17) from the Brush Holders (53).
- (2) Loosen the two D4 x 65 Hexagon Hd. Tapping Screws (13), and remove the Stator Ass'y (15).  
(NOTE) At this time, be careful not to lose Washers (B) (16).

#### 1-5. Disassembly of the Gear:

- (1) Loosen the M4 x 12 Machine Screws (28), and remove the Packing Gland (27) together with the Spindle (31), and Gear (22) from the Gear Cover (4) in a single body.
- (2) When it is necessary to remove the Gear (22) from the Spindle (31), it is highly recommended that the special repair tools described below be utilized.

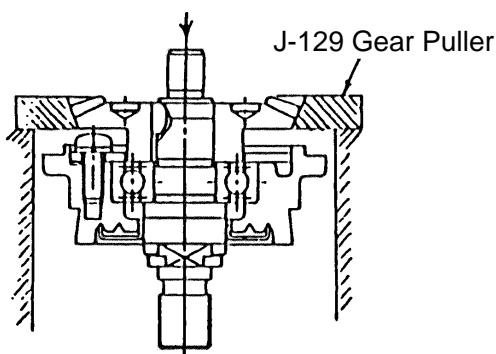


Fig. 4

As illustrated in Fig. 4, support the angled surface of the Gear (22) with a J-129 Gear Puller (special repair tool, Code No. 970905), rest the J-129 Gear Puller on a J-130 Sleeve (special repair tool, Code No. 970907), and push down on the tip of the Spindle (31) with a hand press to remove the Gear (22).

#### 1-6. Precautions on Reassembly:

- 1) Thoroughly coat grease (Hitachi Motor Grease N.P.C. SEP-3A, Code NO. 930035, is recommended) on the gear teeth of the Gear and Pinion. Special attention must be given to ensure that the grease is applied properly all the way to the base of each of the gear teeth.  
Failure to do so could result in early wear and/or damage to the Gear and Pinion.
- 2) Liberally Moisten the Inner Circumference of the Felt Packing with Machine Oil:  
Failure to properly moisten the inner circumference of the Felt Packing could cause early wear and/or damage of the Ball Bearing.
- 3) When replacing the Gear Cover Assembly with a new one, apply mixed oil into the inner roller of the Needle Bearing (Metal).  
Mixed Oil: Mix Hitachi Power Tool Grease No.2 (Unilube No. 00, Code No. 939302, is recommended) and Turbine Oil.  
Mixture Ratio: 1:1 (Weight Ratio)  
Supply Amount: 0.5cc

#### 1-7. Amount of Lubricant:

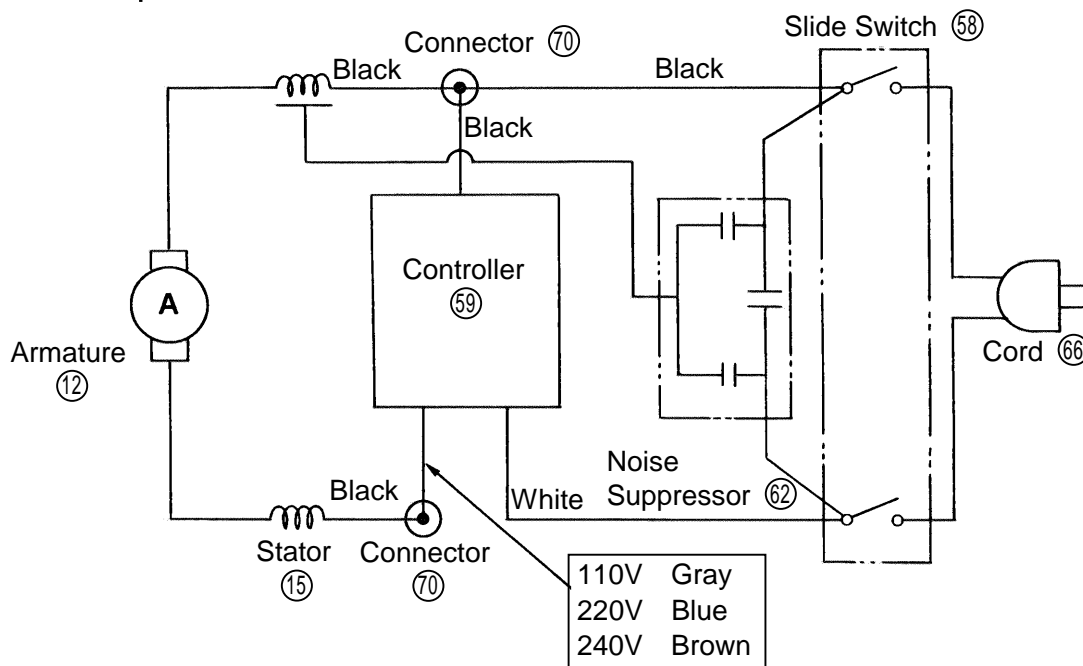
- Pinion chamber of Gear Cover (4) (supply from Inner Cover side) 8gr. of N.P.C. SEP-3A Grease (Code No. 930035).  
Also, thoroughly apply Grease on the gear teeth of the Gear and Pinion. (see Para. 1-6.)
- Needle Bearing (Metal) Mixed Oil 0.5cc  
Mixed Oil: Hitachi Power Tool Grease No. 2 (Code No. 939302) and Turbine Oil.  
Mixture Ratio: 1:1 (Weight Ratio)

### 1-8. Tightening Torque of Each Screw:

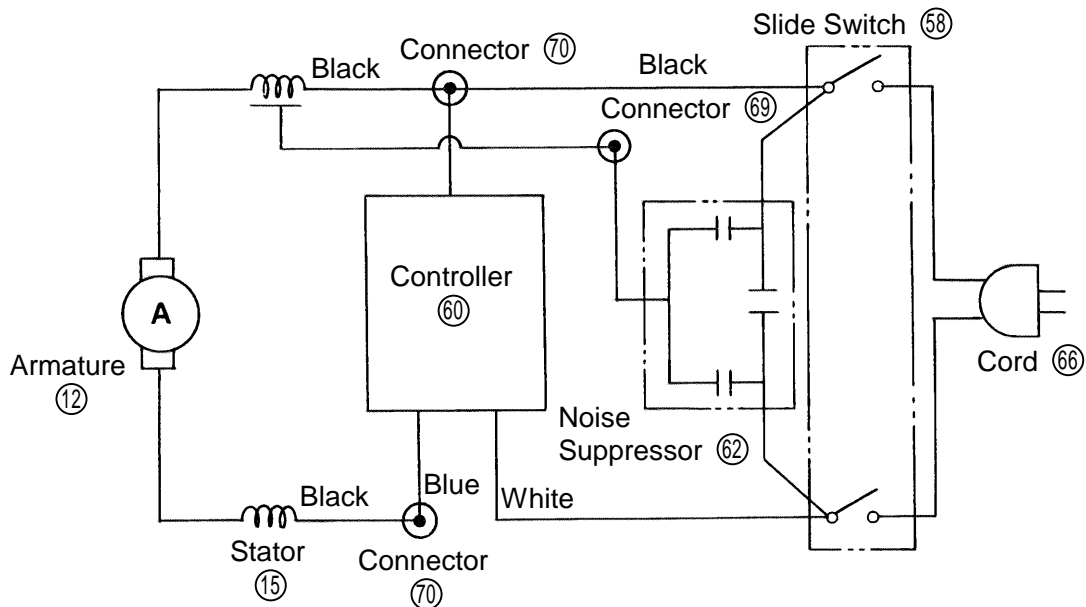
- M4 Machine Screws (7) (23) (28).....  $18 \pm 4$  kgf-cm
- D4 Tapping Screws (56) (57) (65).....  $20 \pm 5$  kgf-cm
- D5 Tapping Screws (1) (13).....  $30 \pm 5$  kgf-cm
- M6 Flange Nut (5).....  $50 \pm 10$  kgf-cm
- Magnet M6 Left Hand Thread (49).....  $13 \pm 3$  kgf-cm
- M4 Flat Hd. Screw (42).....  $6 + \begin{smallmatrix} 3 \\ 0 \end{smallmatrix}$  kgf-cm

### 1-9. Wiring Diagram

(1) Models for Europe:



(2) Models for Switzerland and Finland:



### 1-10. Remaining Reassembly:

Remaining reassembly can be accomplished by following the disassembly procedures in reverse.

### 1-11. Insulation Tests:

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

Insulation Resistance:  $7M\Omega$  or more with DC500V Megohm Tester.

Dielectric Strength: AC4000V/1 minute, with no abnormalities..... 200V - 240V  
(and 110V for U.K. products)  
AC2500V/1 minute, with no abnormalities..... 110V - 127V  
(except U.K. products)

#### CAUTION

- Ensure without fail that the insulation resistance measurement and dielectric strength test are conducted between the plugblade and some portion of the external metal, such as the gear cover.

Never carry out these tests between the two blades of the plug.

This could cause burning out of the control element.

### 1-12. No-Load Current Value:

After no-load operation for 30 minutes, the no-load current value should be as follows:

Voltage	110 V	220 V	240 V
Current (A) Max.	4.2 A	2.2 A	2.0 A