



# MODEL VTP 16A

## 1. ASSEMBLY/DISASSEMBLY:

The circled figures in the descriptions below correspond to the part numbers listed in the Parts Price List.

### 1-1 Motor Disassembly

#### A. Remove the Handle Cover

Loosen the 4  $\phi$  x 20 +Hd. Tapping Screw (52) (53 for VTP-16A), and remove the Handle Cover (53) (55 for VTP-16A).

#### B. Remove the Carbon Brush

Loosen the Brush Cap (39) (40 for VTP-16A) with a minus-head screw-driver, and remove the Carbon Brush (40) (41 for VTP-16A) from the Brush Holder.

#### C. Separate the Gear Cover from the Housing.

Loosen the 5  $\phi$  x 35 + Hd. Tapping Screws (22), and separate the Gear Cover from the Housing. Then, remove the Inner Cover Ass'y (29) and the connected Armature Ass'y (33) from the Housing (42) (43 for VTP-16A).

#### D. Remove the Armature Ass'y from the Inner Cover Ass'y.

As illustrated in Fig. 8-1, support the Inner Cover Ass'y (29) with a tubular jig, and push down on the tip of the Pinion Gear on the Armature Ass'y (33).

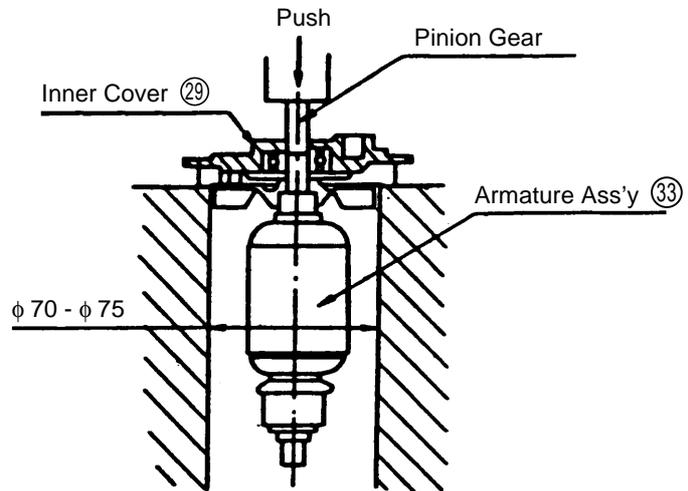


Fig. 8-1

### 1-2 Speed Change-Over Disassembly:

#### A. Remove the Lever.

After removing the M5 Special Screw (27); the Shift Lever (26), Shift Spring (25), Seal Plate (24), and Super Lock Washer (23) can be disassembled.

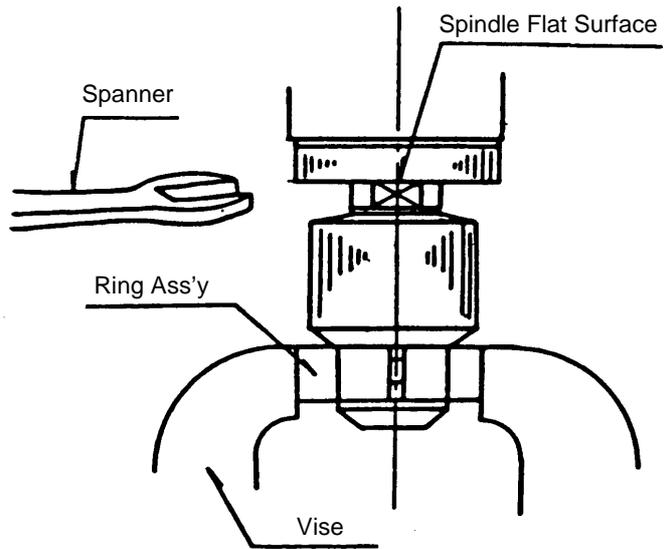
#### B. Remove the Gears.

Withdrawing the Second Pinion Ass'y (28), remove the Shift Rod Ass'y (18) and Gear Ass'y (20) together.

**1-3 Impact Section Disassembly:**

A. Remove the Drill Chuck.

The Drill Chuck ② is fixed to the Spindle ③ with a 5/8" -16UN right-hand threaded screw. As illustrated in Fig. 8-2, support the Drill Chuck body with the J-118 Ring Ass'y, and fix the Ring Ass'y in a vise, ensuring that the Ring Ass'y Pin is properly inserted into the handle hole on the body.



**Fig. 8-2**

Next, apply the 19 mm Spanner to the flat surfaces on the Spindle ③, and rotate the spanner to remove the Drill Chuck Ass'y.

B. Withdraw the Spindle.

Remove the D14 Shaft C-shaped Stop Ring ⑮ from the center part (in the Gear Cover) of the Spindle ③.

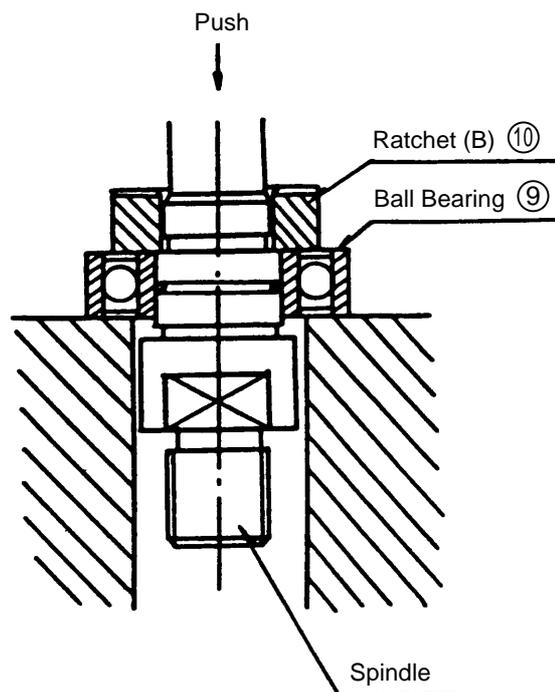
Next, after removing the D-35 hole C-shaped Stop Ring ⑦ from the Dust Seal ⑧, lightly tap the tip (Inner Cover side) of the Spindle with a wooden hammer to remove the Dust Seal ⑧ and Spindle ③. The Ball Bearing ⑨ and Ratchet (B) ⑩ are connect to the Spindle ③.

C. Remove Ratchet (B).

As illustrated in Fig. 8-3, use a tubular jig to remove Ratchet (B) ⑩.

D. Remove Ratchet (A).

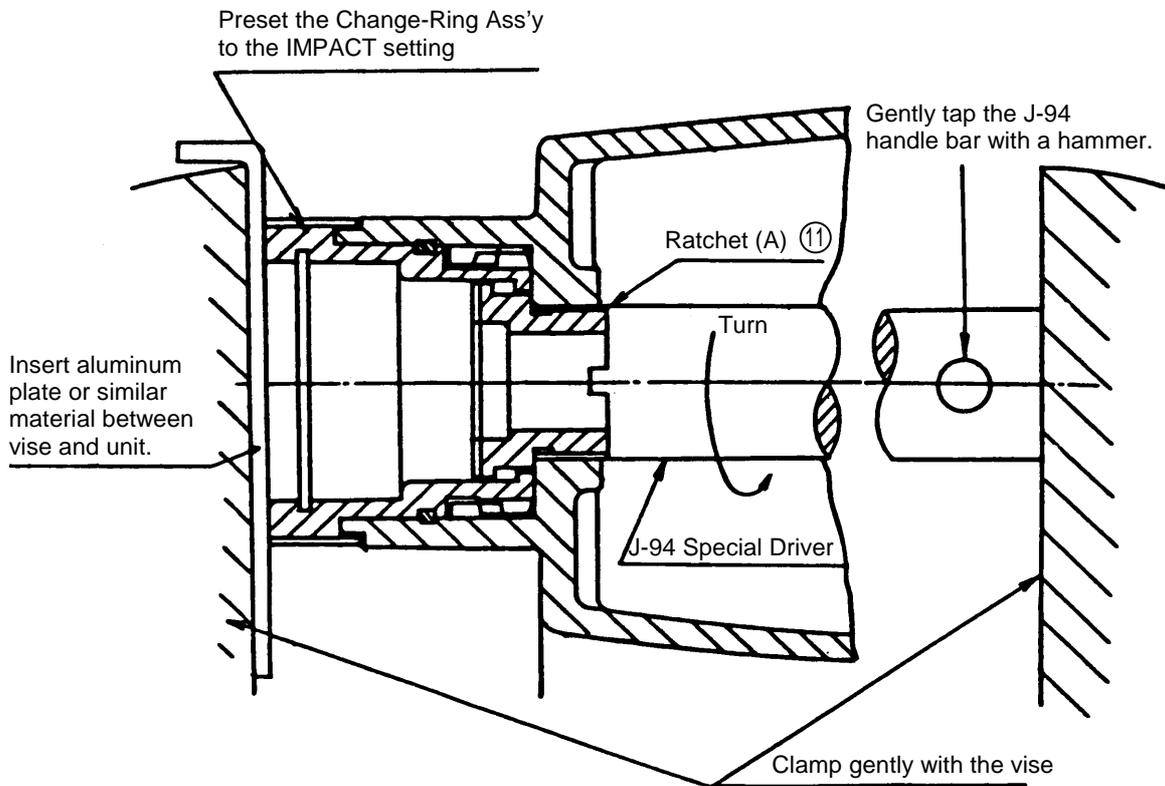
Ratchet (A) ⑪ is fixed in the Gear Cover ⑯ by a M22 left-hand threaded screw. As illustrated in Fig. 8-4, Ratchet (A) can be loosened by counter-clockwise rotation of the



**Fig. 8-3**

J-94 Special Driver after ensuring that the bit of the driver is properly aligned with the matching slot of the ratchet.

**CAUTION:** Be very careful not damage the Gear Cover during mounting and dismounting.



**Fig. 8-4**

E. Remove the Change-Ring Ass'y.

The Change-Ass'y 12 is fixed to the Gear Cover 16 by a M40 double-thread screw. It can be removed by rotating it counter-clockwise.

#### **1-4 Assembly**

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

A. Impact Section Assembly:

- (1) Apply a sufficient amount of grease (MoLub Alloy #777-1) to the O-Ring 13 mounted on the Change-Ring Ass'y 12.
- (2) In re-assembling Ratchet (A) 11, ensure that the J-94 Special Driver slot is properly aligned with the ratchet

groove and that the first two or three threads of the ratchet thread are properly meshed before rotating the ratchet clockwise to tighten it securely.

B. Speed Change-Over Section Assembly:

- (1) Ensure that Washer (B) ⑭ and the D14 Shaft C-shaped Stop Ring ⑮ are assembled prior to re-inserting the Spindle ③ through the Gear Ass'y ⑳. At the same time, apply No. 29 Hitachi Motor Grease to the Spline section.
- (2) When re-mounting the Shift Lever ⑳, do not fail to re-assemble the Super Lock Washer ㉓ on the threaded portion of the M5 Special Screw.

C. Internal Wiring.

Internal wiring should be arranged as illustrated in Fig. 8-5 and Fig. 8-6. Pay particular attention to ensure the lead wire is not pinched when the Handle Cover ⑤③ (⑤⑤ for VTP-16A) is re-assembled.

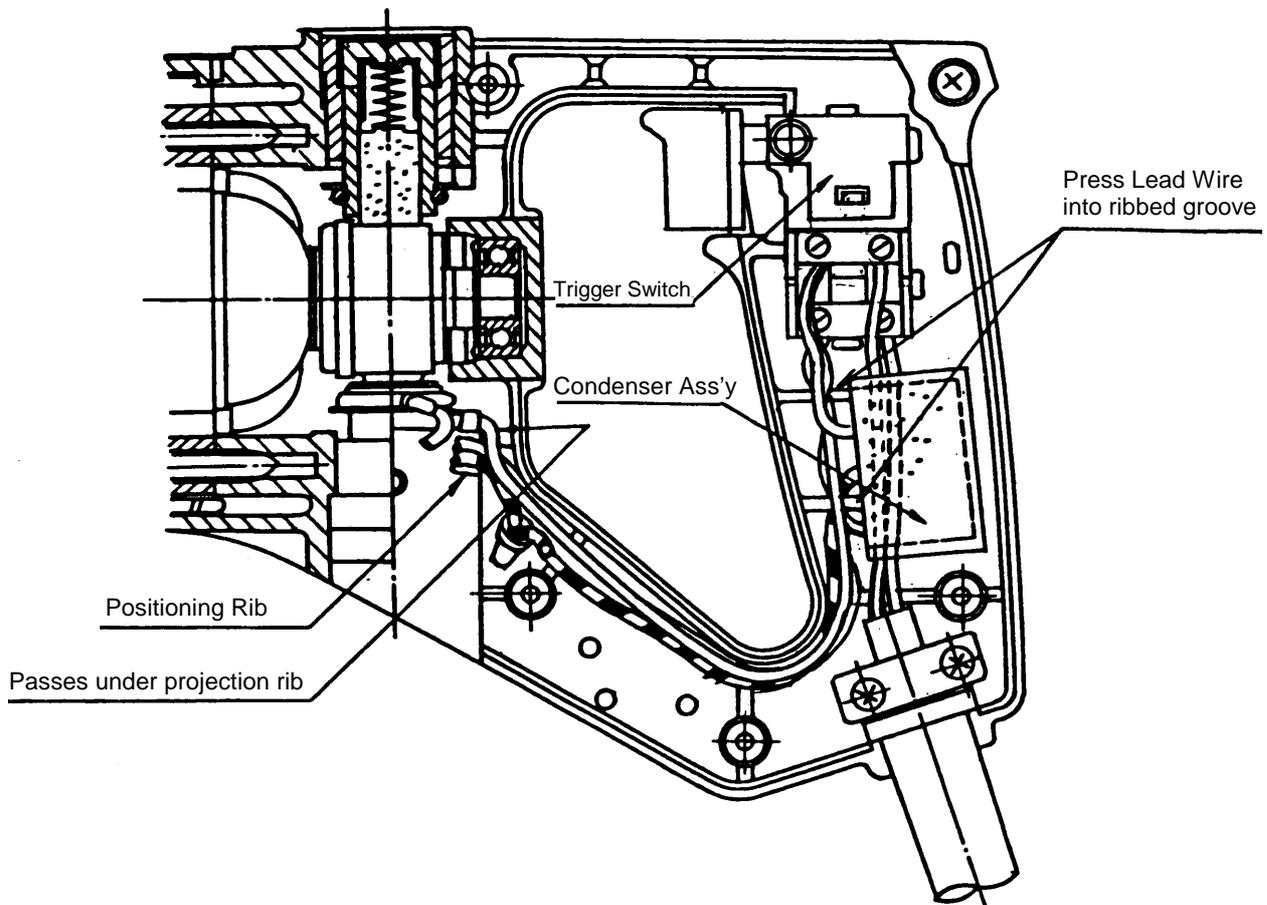


Fig. 8-5 (VTP-16A)

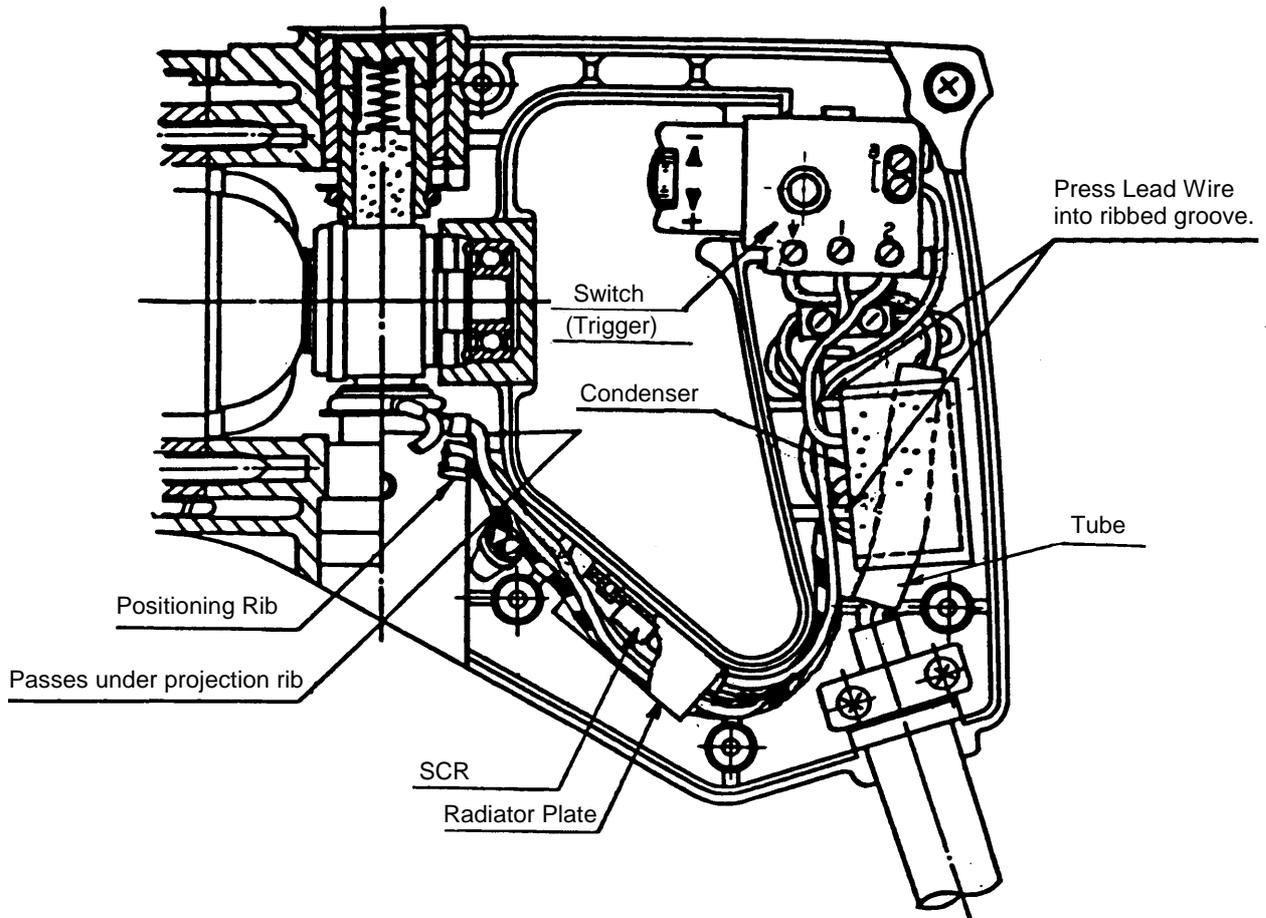


Fig. 8-6 (VTV-16)

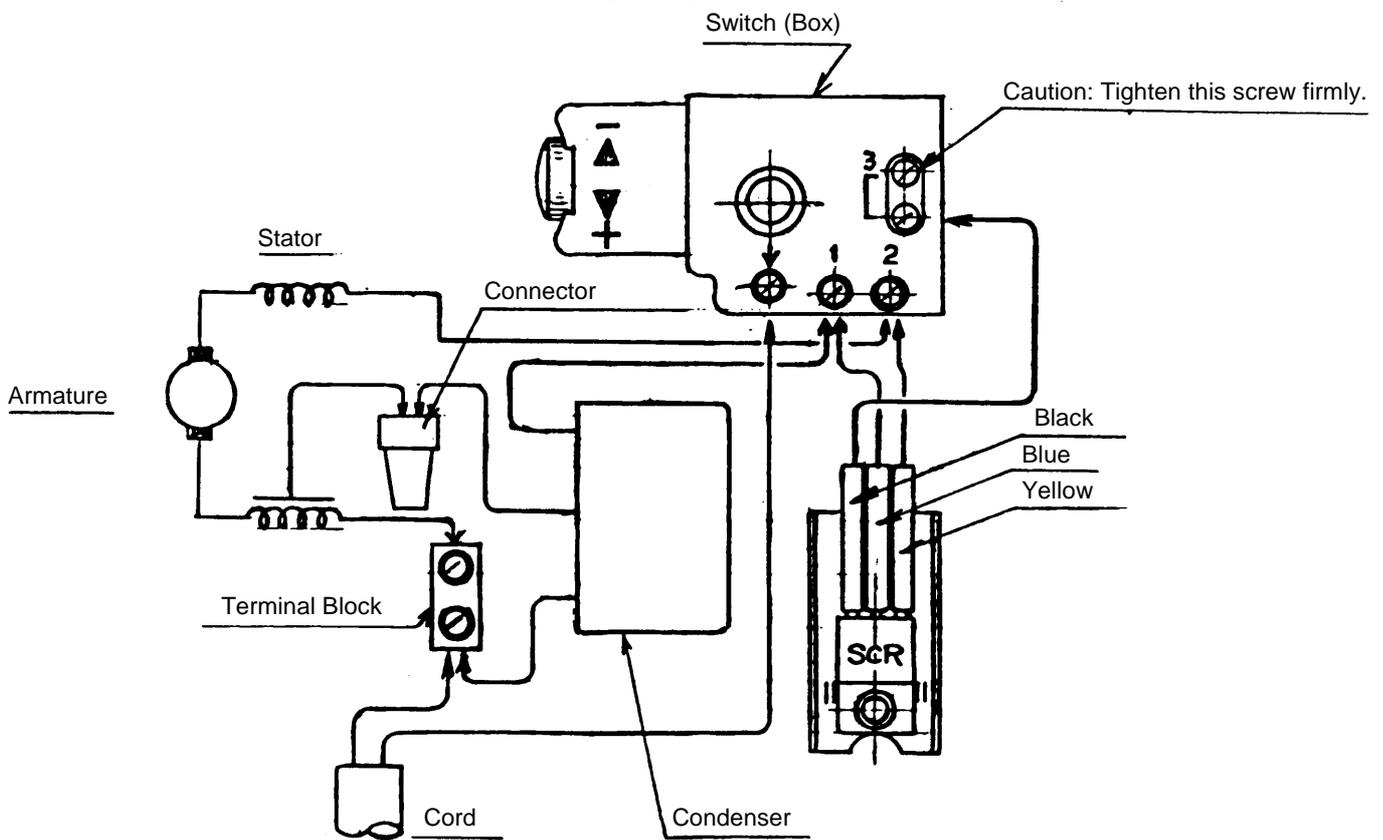
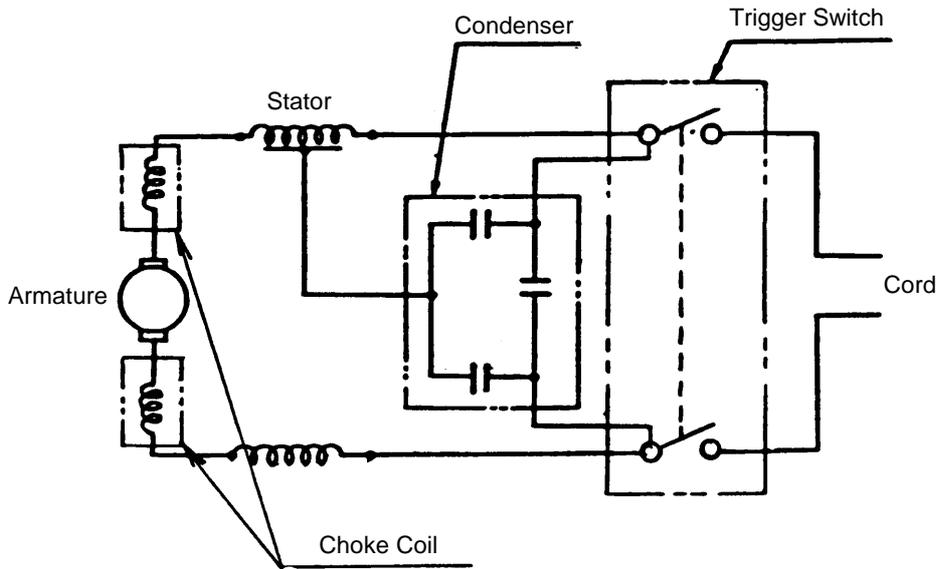


Fig. 8-7

D. When assembling the Fan Guide (43) (44) for VTP-16A, ensure that the Rubber Packing (34) is inserted into the mounting holes (two places).

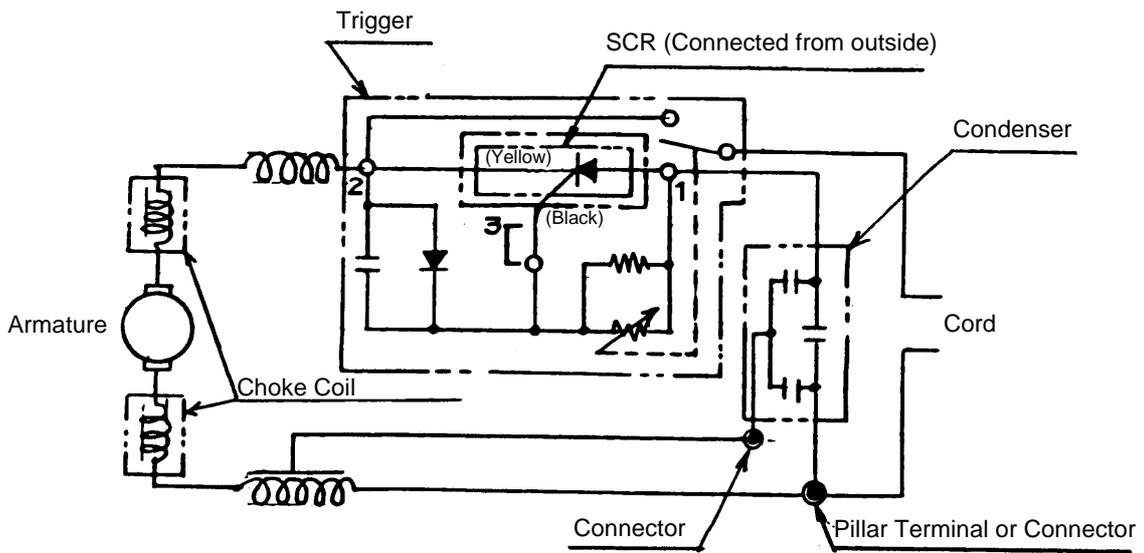
**1-5 Wiring Diagram**

VTP-16A



**Fig. 8-8**

VTV-16



**Fig. 8-9**

## 1-6 Lubricants

Hitachi Motor Grease No. 29, 40 g (1.4 oz.) .....

For the interior of Gear Cover

Molub Alloy Grease #777-1, 5 g (0.2 oz.) .....

For Ratchet (A) and (B)

Hitachi Motor Grease No. 29.....

Pinion of Armature, Gear and Ball  
Bearing ⑱

Molub Alloy Grease #777-1,.....

Inside of Change Ring (O-Ring on  
the portion of M40 double threaded  
screw)

## 1-7 Tightening Torque

a. Ratchet (A) ⑪ Left Handed Screw .....

20 - 50 kg-cm (17.4 - 43.4 Lbs. -in.)

b. Tapping Screw  $\phi$  4 .....15 - 25 kg-cm (13.0 - 21.7 Lbs. -in.)

c. Tapping Screw  $\phi$  5 .....25 - 35 kg-cm (21.7 - 30.4 Lbs. -in.)

d. M5 Special Screw ⑳ .....20 - 30 kg-cm (17.4 - 26.0 Lbs. -in.)

e. M5 Hex. Socket Bolt ㉑ .....40 - 50 kg-cm (34.7 - 43.4 Lbs. -in.)

## 1-8 Insulation Test

After overhaul, insulation testing and measurement of insulation resistance must be accomplished.