



MODEL

DH 18VB

1. REPAIR GUIDE:

1 - 1. Precautions and Suggestions for Disassembly and Reassembly of the Main Body:

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

1 - 1 - 1. Disassembly:

(1) Chuck Section:

As shown in Fig. 1, slide the Grip [2] as far as it will go in the direction indicated by the arrow mark, and remove the Front Cap [1]. The Grip [2], Ball Holder [3] inside the Grip, Holder Spring [4], and the two Steel Balls D7.0 [12] can be removed from the Cylinder [13].

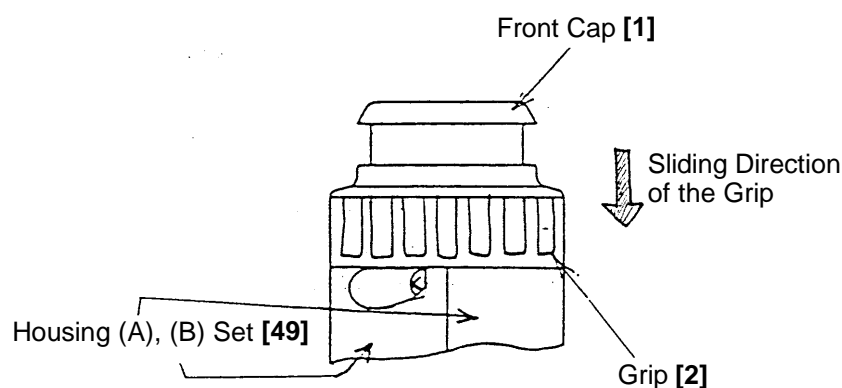


Fig. 1

(2) Housing:

First, remove all the components of the Chuck section as described above. Then, remove the seven black Tapping Screws (W/Flange) D4 x 20 [47] and the two Tapping Screws (Class 2) D4 x 14 [46].

As shown in Fig. 2, insert screwdrivers into the portions where Housing (A) and Housing (B) are joined at the Handle end and at the Chuck end, and pry upward gently to separate them.

[NOTE]

There is a convex portion for grease sealing where Housing (A) and Housing (B) are joined at the Mechanical Section. Do not insert a screwdriver into this convex portion.

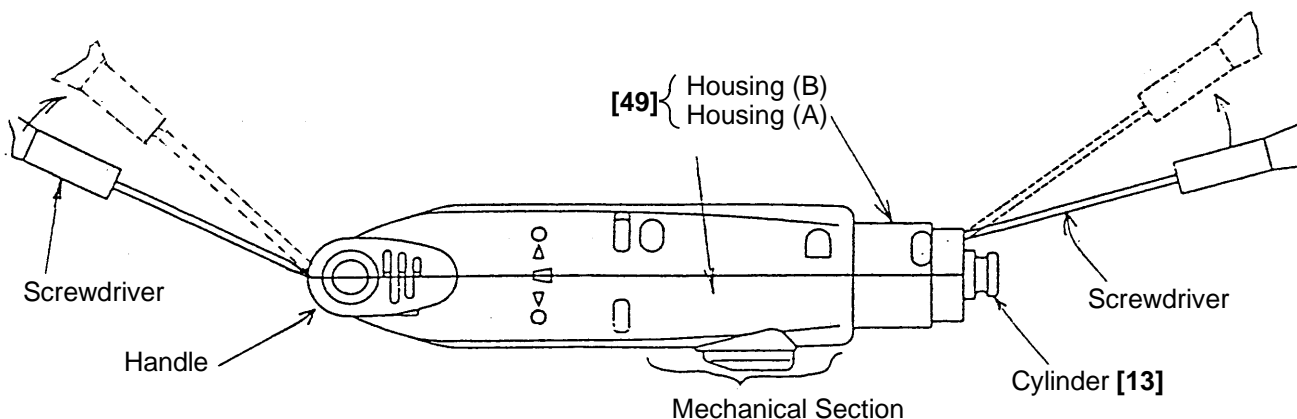


Fig. 2

(3) Carbon Brushes:

Remove the chuck section and Housing (B) as described above. Holding the Carbon Brush [65] end, extract the Brush Holder [64] from Housing (A). The Brush Holder [64] can be easily removed by lifting it upward with a small screwdriver. Be careful not to damage the leadwires by pulling them forcefully or by scratching them with the screwdriver.

As shown in Fig. 3, push the Carbon Brush [65] fully into the Brush Holder [64], and disconnect the brush terminals attached to Internal Wires (B) [54], [55] from the Carbon Brush [65].

Then, remove the Carbon Brush [65] from the Brush Holder [64].

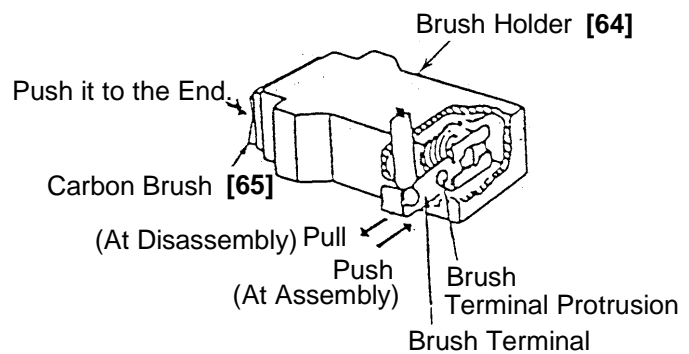


Fig. 3

(4) Mechanical Section:

Remove the chuck section and Housing (B) as described above. Lift all the components (the Bushing Ass'y [6], Cylinder [13], Piston [25], Inner Cover [28], Second Shaft [31], Armature Ass'y [42], and Stator (A) [43]) together out of Housing (A).

Extract the Armature Ass'y [42] from the Stator (A) [43] by pulling it forward (away from the Handle). The mechanical section can then be removed.

Disconnect the Ball Bearing [29] and the Spacer [30] from the end of the Second Shaft [31].

Remove the Thrust Plate [15] from the groove of the Clutch [32].

Turn the Second Shaft [31] so that the Piston [25] moves to its maximum upper position (Inner Cover [28] side). The arm of the Reciprocating Bearing [33] can then be disconnected from the Piston [25]. The Cylinder [13] and the components mounted on it can then be taken out together from the Inner Cover [28].

Remove the Piston [25] from the Cylinder [13], and remove the Striker [23] from the Piston [25]. Remove the Armature Ass'y [42] from the Inner Cover [28]. This completes disassembly of the main components.

(5) Cylinder and Second Gear (Slip Mechanism):

Remove the Bushing Ass'y [6] from the Cylinder [13]. Extract the Retaining Ring for D25 Shaft [8] from the Cylinder [13], and take off the Washer [9], Spring (A) [10], and the Second Gear [11].

(6) Cylinder and Second Hammer:

As illustrated in Fig. 4, use a J-85 Punch (A) (Special Repair Tool, Code No. 970826) to strike the Stopper Ring [22] through the holes ($\phi 4$ mm) provided on the Cylinder [13] so that the Stopper Ring is disconnected from the groove inside the Cylinder. The Hammer Holder [21], Second Hammer [18], O-Ring [20] can then be removed from the Cylinder [13].

Note that the Stopper Ring [22] will be deformed during removal and must be replaced with a new one.

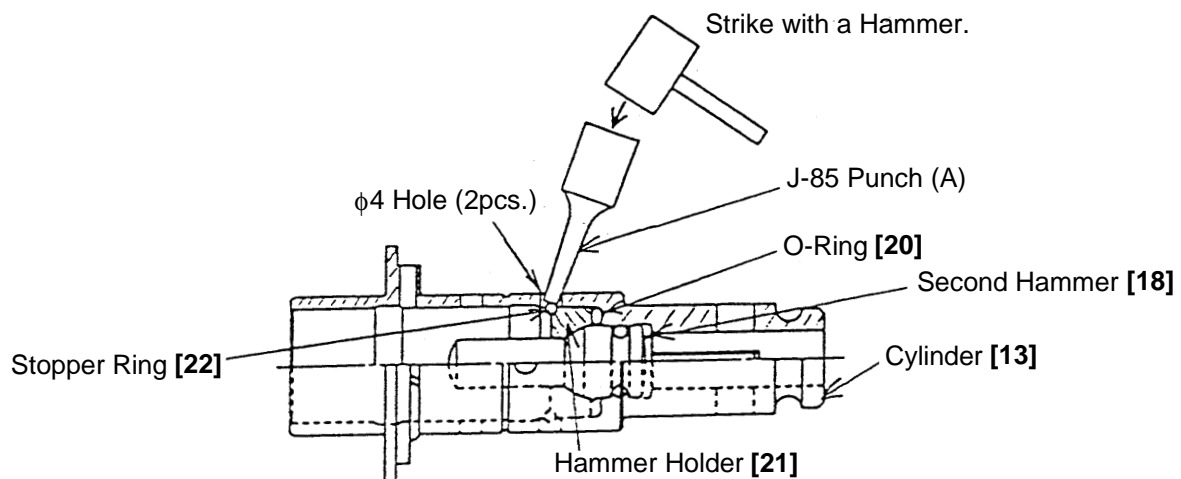


Fig. 4

(7) Second Shaft and Clutch:

Remove Washer (B) D12.5 [36] from the Second Shaft [31], and extract the First Gear [35] with a bearing puller. Then take out the Needle Gauge [34], Reciprocating Bearing [33] and Clutch [32].

(8) Removal of Rubber Seal (A),(B) and (C):

To remove Rubber Seal (A) [57], Rubber Seal (B) [58] and Rubber Seal (C) [56] from Housing (A) and (B), insert a slender-tipped tool (e.g. small screwdriver) inside each and pry it gently off. As damage to the Rubber Seals will cause grease leakage, be very careful not to damage them during removal.

Also, as Rubber Seal (B) [58] is adhered to Rubber Seal (A) [57] with silicon rubber, peel them off slowly so as not to tear them.

(9) Lever and Stopper:

Remove the Tapping Screw (W/Flange) D3 x 10 (black) [51] on the Lever [59] from the inside of Housing (A), and pull out the Stopper [50] with a pair of pliers. Then extract and disassemble the Lever [59] from the outside of Housing (A).

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) Application of Special Grease:

Insert 5g of special grease into the Cylinder [13], 10g into the Inner Cover [28], and 30g into the Mechanical Section of Housing (B).

Apply special grease to the lip portion of the Oil Seal [5]; the inner circumference of the Needle Bearing [7]; the clutch-ratchet portion of the Second Gear [11]; the clutch-ratchet portion of the Cylinder [13]; the roller portion of the Thrust Needle Bearing [14]; the inner circumference of the Needle Bearing [17]; O-Ring (B) [19] on the Second Hammer [18]; the O-Ring [20]; O-Ring (A) [24] on the Striker [23]; the inner and outer circumferences of the Piston [25]; the inner and outer circumferences of the Piston Pin [26]; Washer (A) [27]; the ratchet portion of the Clutch [32]; the ratchet portion, inside portion, and arm portion of the Reciprocating Bearing [33]; the roller portion of the Needle Gauge [34]; and the O-Ring (1AP-10) [60] on the Lever [59].

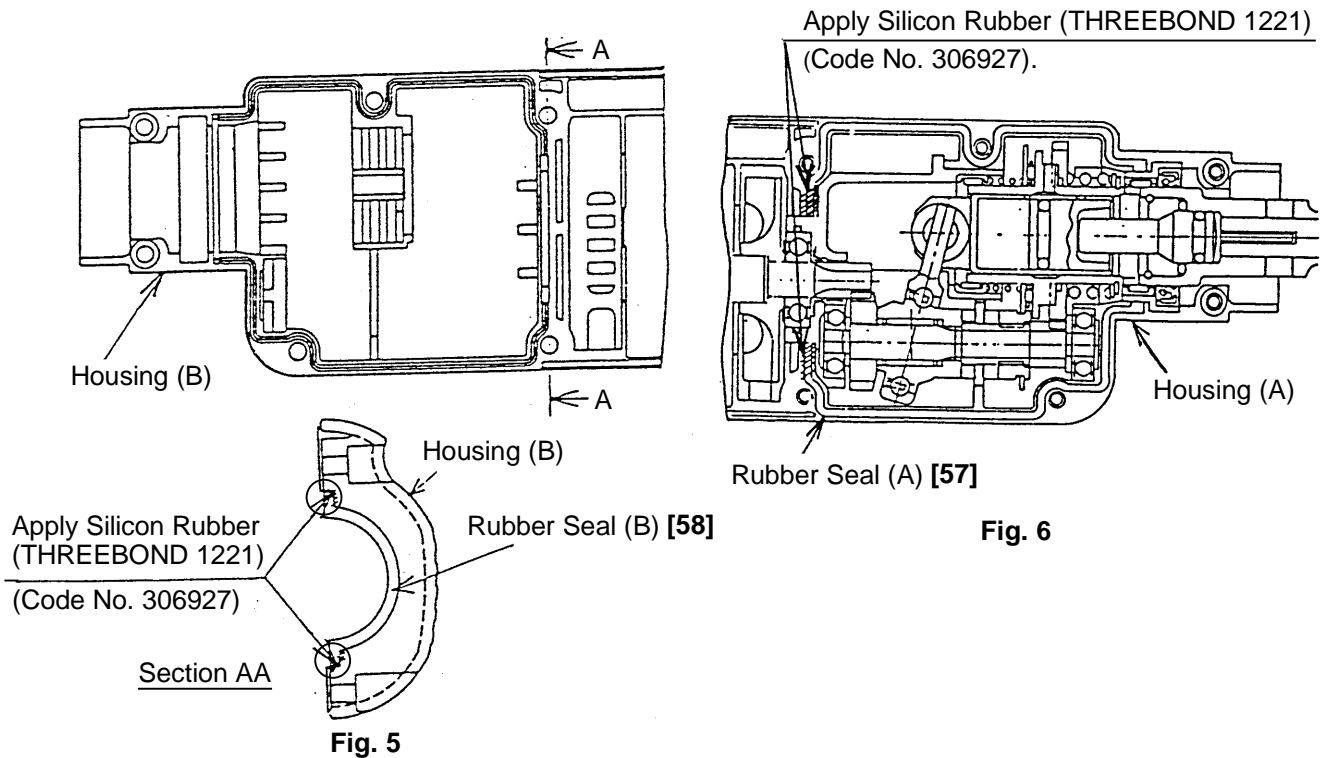
(2) Removal of Special Grease:

Thoroughly remove any grease that may adhere to Rubber Seal (A) [57], Rubber Seal (B) [58], Rubber Seal (C) [56], the grooves and convex portions of Housing (A) and (B) where the Rubber Seals are installed, the outer circumference of the Bushing Ass'y [6], the $\phi 32\text{mm}$ portion and $\phi 27\text{mm}$ groove portion of the Inner cover [28], and the O-Ring [37].

Pay particular attention to the Rubber Seals. Grease on the Rubber Seals could cause grease leakage, so carefully ensure they are wiped clean.

(3) Assembly of Rubber Seals (A) and (B):

To prevent slippage when Housing (B) is assembled to Housing (A), apply silicon rubber (THREEBOND 1221, Code No. 306927) to Rubber Seal (B) [58] before assembling it onto Housing (B), as shown in Fig. 5. Also, when assembling Housing (A) and Housing (B), apply the same silicon rubber to Rubber Seal (A) [57], as shown in Fig. 6, to ensure better sealing of grease.



(4) Lever Position for Reassembly:

Before installing the components of the Mechanical Section, set the Lever [59] to "Rotation + Hammering" (hammer mark) position.

(5) Assembly of the Stopper Ring:

After assembling the O-Ring [20], Second Hammer [18], O-Ring (B) [19], and Hammer Holder [21] into the Cylinder [13], insert the Stopper Ring [22] into the Cylinder [13] at an angle.

Then, as shown in Fig. 7, use a J-234 Stopper Ring Mounting Jig (Special Repair Tool, Code No. 306884) and a manual press to push the Stopper Ring into the groove inside the Cylinder.

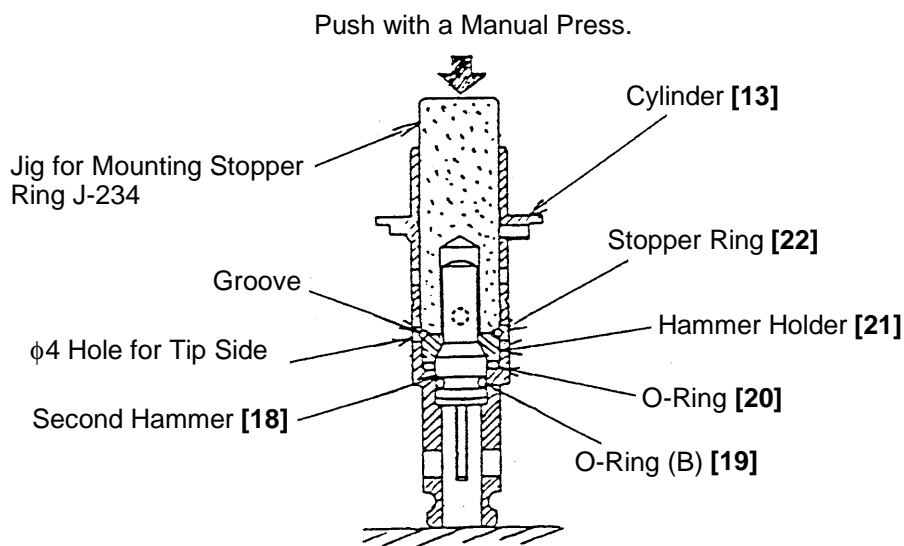


Fig. 7

(6) Assembly of the First Gear:

Mount the First Gear [35] so that its chamfered side is facing the Reciprocating Bearing [33], and press fit it onto the Second Shaft [31] until the end surface of the First Gear [35] is aligned with the end surface of the Second Shaft [31].

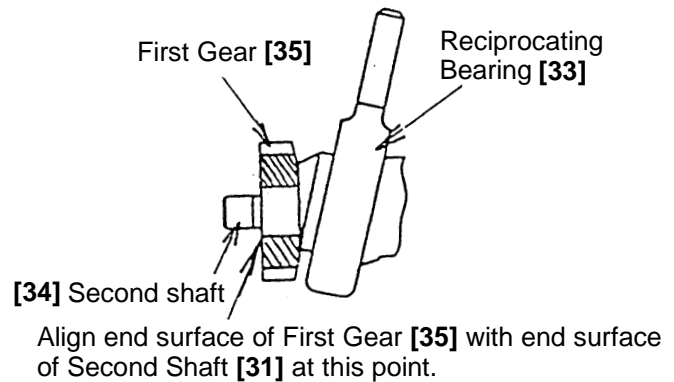


Fig. 8

(7) Inspection and Assembly of Carbon Brushes:

The motor is equipped with consumable auto-stop type Carbon brushes [65].

When the Carbon Brushes [65] become worn, the motor automatically stops. Always use HITACHI No. 80 Carbon Brushes (see Fig. 9) for replacement. Never use other carbon brushes

To ensure smooth brush operation in the brush holders, inspect them periodically and remove any dust from the Carbon Brushes [65].

To assemble, push the Carbon Brush [65] fully into the Brush Holder [64] and insert the brush terminals of Internal Wire (B) [54] and [55], as shown in Fig. 3 on P. S2. Then, holding the Carbon Brush [65], insert the Brush Holder [64] into Housing (A). Finally, ensure that internal wiring is correct as shown in Figs. 11 and 12, and that the internal wires are not in danger of contacting the Armature Ass'y [42]. When reassembling the Housing, be careful not to pinch the internal wires between Housing (A) and Housing (B). (See Fig. 13)

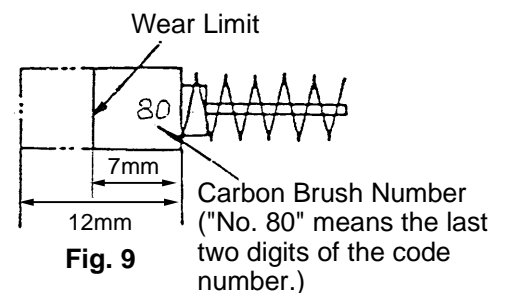


Fig. 9

(8) Installation of the Noise Suppressor Ground Wire:

When installing the Stator (A) [43] into Housing (A), be very careful not to pinch the ground wire (silver color) of the Noise Suppressor [66] between them.

(9) Tapping Screw Assembly Positions:

The mounting positions for the two Tapping Screw (Class 2) D4 x 14 [46] are shown in Fig. 10. Do not mistake the black Tapping Screw (W/Flange) D4 x 20 [47] for the black Tapping Screw (Class 2) D4 x 14 [46].

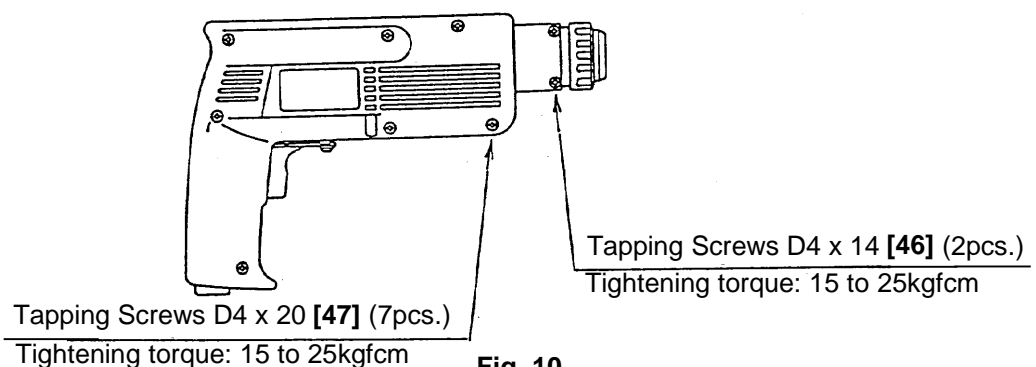


Fig. 10

1 - 1 - 3. Tightening Torque of Screws:

Tapping Screw D4 x 16 [71]	}	15-25kgfcm (Nm)
Tapping Screw D4 x 20 [47]		
Tapping Screw D4 x 14 [46] (Class 2)		
Tapping Screw D3 x 10 [51]		6-10kgfcm (Nm)

1 - 1 - 4. Special Grease:

Conventional grease for hammers and hammer drills is used.

500g canned grease: Code No. 980927

70g tube grease: Code No. 308471

30g tube grease: Code No. 981840

1 - 1 - 5. Wiring Diagrams:

The wiring should be conducted by referring to Fig. 6 or Fig. 7.

[A] For F. R. Germany, U. K., France, Sweden, Norway, Denmark, Italy, Holland, Austria, Finland, New Zealand, South Africa and Switzerland:

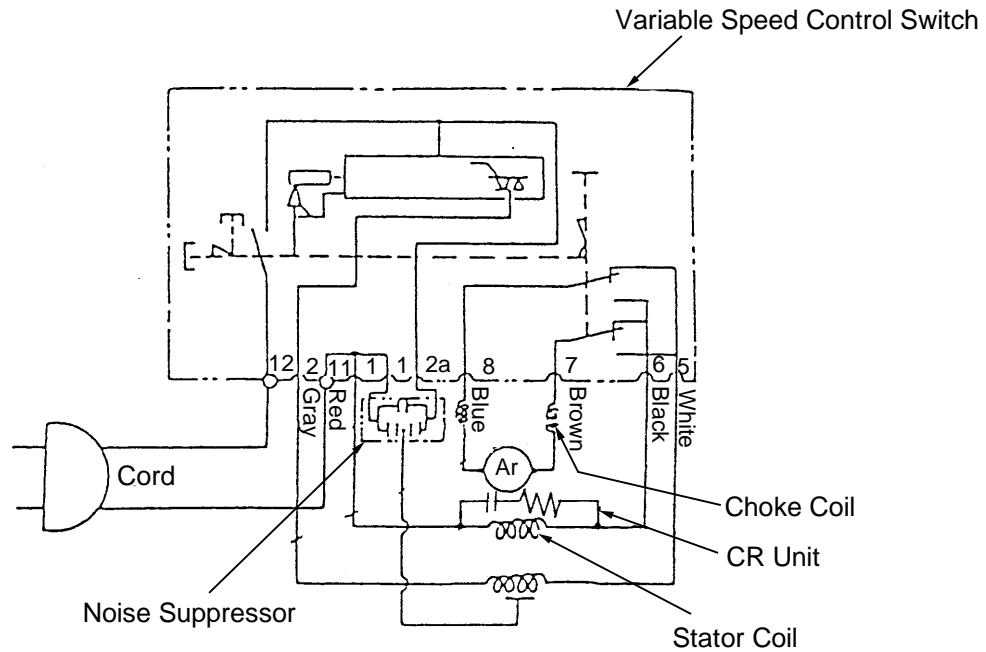


Fig. 11

[B] Products without Noise Suppressor:

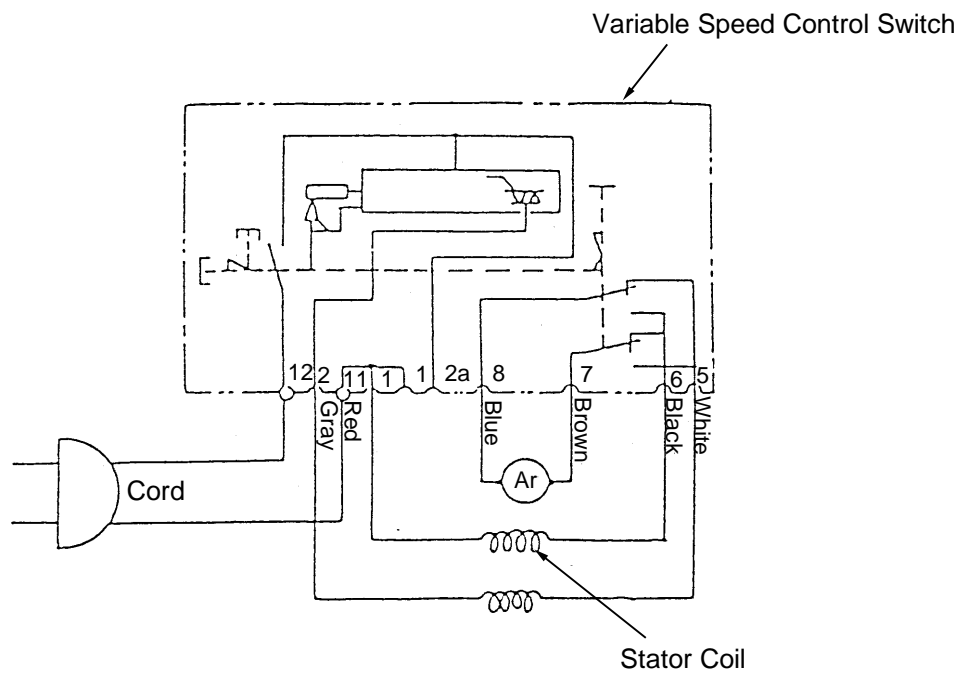


Fig. 12

1 - 1 - 6. Internal Wire Arrangement and Wiring Work:

A. Internal Wire Arrangement

* Put the lead wires of the stator under the carbon brush.

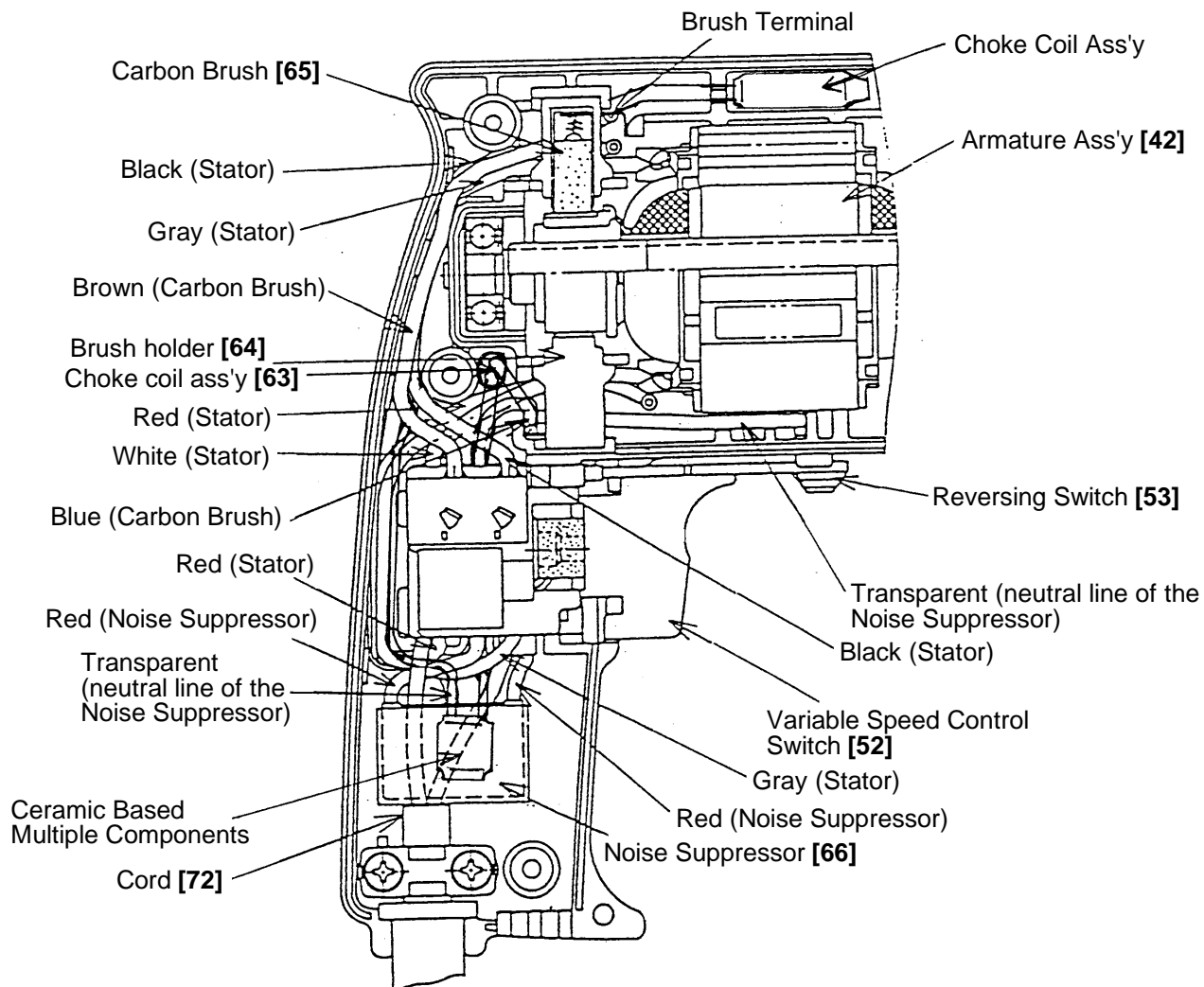


Fig. 13 Wiring Diagram

B. Products without Noise Suppressors

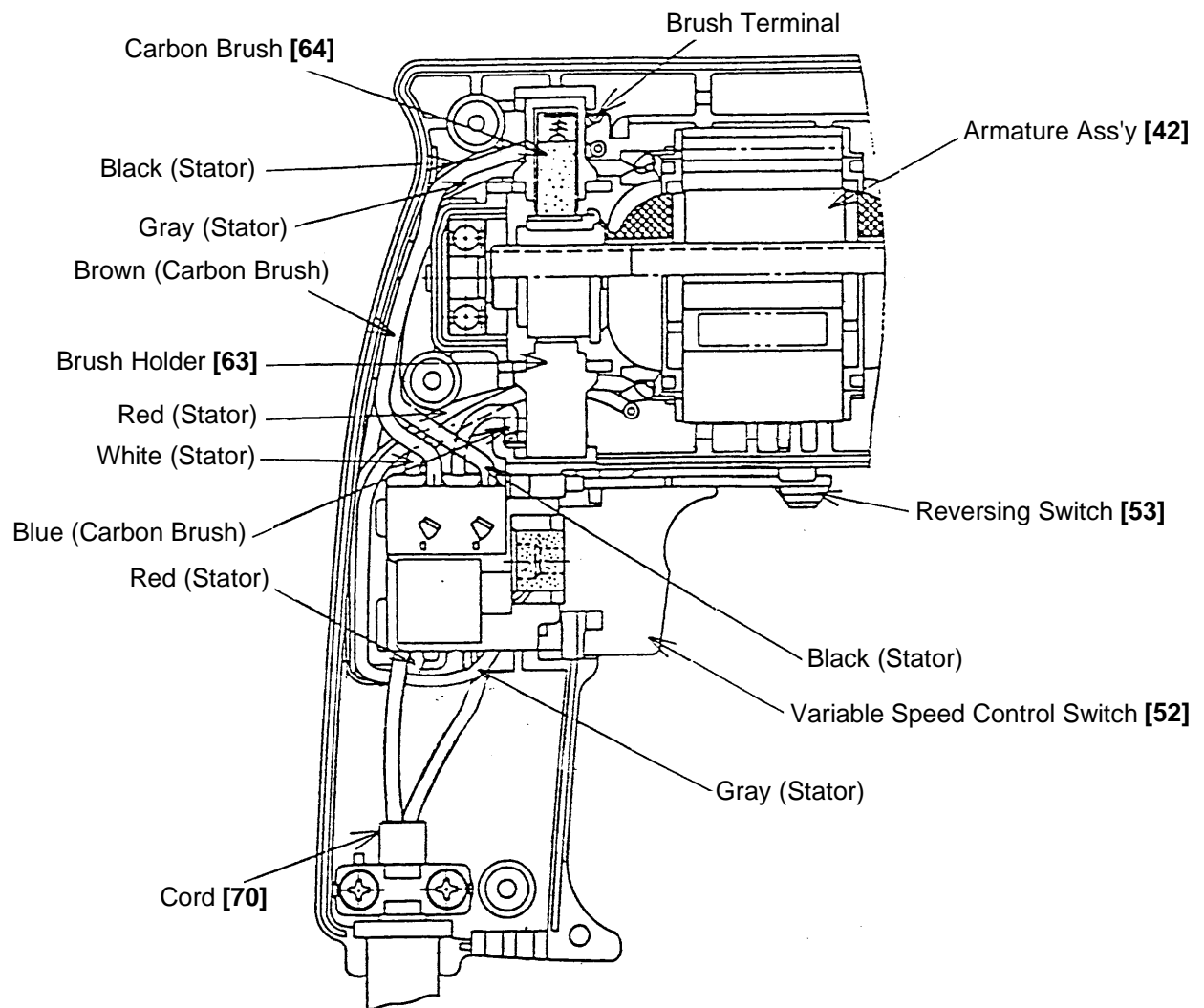


Fig. 14 Substantial Wiring Diagram

C. Additional Wiring Work

General internal wiring can be accomplished by referring to paragraph 1-1-5 and 1-1-6.

Special instructions for switch-related wiring are listed below.

(1) Disconnection of Leadwires for the Forward/Reverse Switch:

As illustrated in Fig. 15, insert a very small screwdriver or similar tool into the openings provided on the sides of the Forward/Reverse Switch, and open the terminals in the arrow 'A' direction (not marked on the switch) to release the leadwires so that they can be withdrawn.

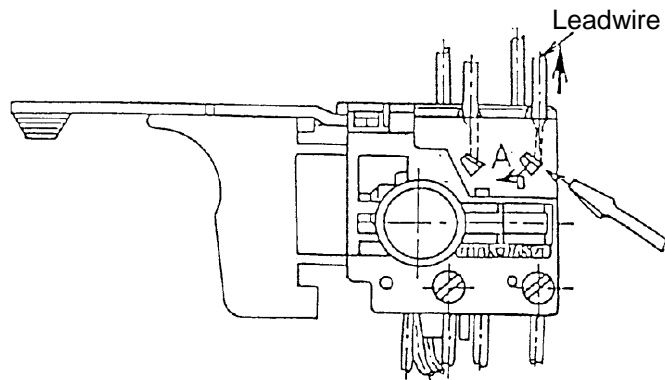


Fig. 15

(2) Removal of Leadwires from the Speed Control Switch:

As illustrated in Fig. 16, insert a very small minus screwdriver into openings a, b, and c (not marked on the switch) to release each Leadwire so that it can be withdrawn.

Remove any silicon rubber adhering to the inside of terminals No. 2 and 2a and to the tubes of the Red (Noise Suppressor) and Gray (Stator) Leadwires.

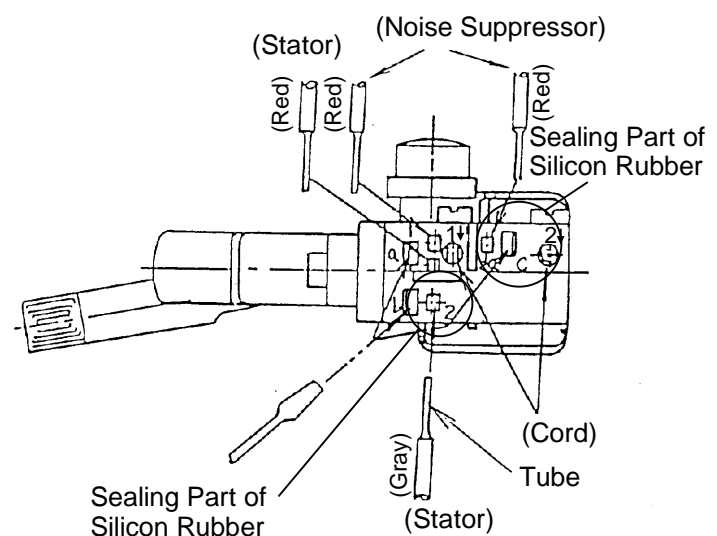


Fig. 16

(3) Connection of Leadwires to the Forward /Reverse Switch:

As illustrated in Fig. 17, insert the White Leadwire from the Stator into terminal 5, and the Black Leadwire from the Stator into terminal 6. Insert the Brown Leadwire from the Carbon Brush into terminal 7, and the Blue Leadwire from the Carbon Brush into terminal 8.

On completion, lightly pull each Leadwire to ensure that it will not come loose.

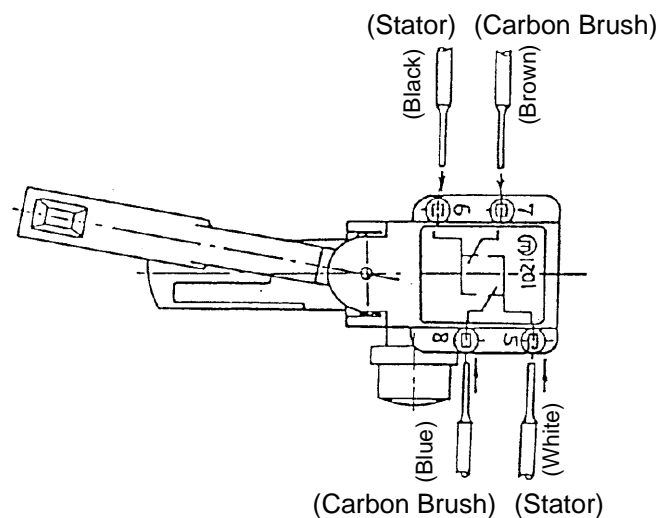


Fig. 17

(4) Connection of Leadwires to the Speed Control Switch:

As illustrated in Fig. 16, insert the Leadwires from the Cord into terminals No. 1, and 2 tighten the screws to a torque of 2.5 - 3.0 kgfcm (Nm) (2.2 - 2.6 in-lbs.) Insert the Red Leadwire from the Stator and the Red Leadwire from the Noise Suppressor into terminal No. 1, as indicated; insert the Gray Leadwire from the Stator into terminal No. 2, and the Red Leadwire from the Noise Suppressor into terminal No. 2a. On completion lightly pull each Leadwire to ensure that it will not come loose.

Be sure to plug the terminal portions of terminals No. 2 and 2a and the side window portions with silicon rubber (THREEBOND 1211 [Code No.306927]).

1 - 1 - 7. Insulation Tests:

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

Insulation Resistance: 7M Ω or more with DC500V Megohm Tester.

Dielectric Strength: AC4000V/1 minute, with no abnormalities 220V - 240V

(and 110V for U. K. products)

AC2500V/1 minute, with no abnormalities 110V - 127V

(except U. K. products)

1 - 1 - 8. No-Load Current Value:

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

Voltage	110V	115V	120V	127V	220V	230V	240V
Current (A) Max.	2.3A	2.2A	2.1A	2.0A	1.2A	1.1A	1.1A

2 STANDARD REPAIR TIME (UNIT) SCHEDULES

Model	Fixed	Variable	10	20	30	40	50	60 min.
DH18VB			Flow of works					
					Housing (A),(B) Set Switch Ass'y Rubber Seal (A),(B) Lever O-Ring (1AP-10) Stopper Brush Holder x 2 CB x 2 Cord Cord Armor	O-Ring (S-24) Fringer BB (609DD) Washer (A) x 2 Armature Ass'y Stator (A) B.B (608VV)		
			General Assembly Front Cap Grip : 0 minute Others : 20 minutes Cord : 10 minutes	Front Cap Grip Ball Holder Holder Spring	Striker O-Ring (A) Piston Piston Pin Washer (A) x 2 Inner Cover B.B (626VVMC) x 2 Spacer Second Shaft Clutch Reciprocating Bearing Needle Gauge First Gear Feather Key	Oil Seal Bush Ass'y Needle Bearing Retaining Ring x 7 Washer Spring (A) Second Gear Cylinder Thrust Needle Bearing Thrust Plate Spring (B) Needle Bearing Second Hammer O-Ring (B) O-Ring Hammer Holder Stopper Ring		