



# MODEL DC 120V

## 1. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY:

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

### 1-1. Disassembly:

#### (1) Disassembly of parts within the handle Cover:

- (a) Loosen the five D4 x 20 Tapping Screws (32), and remove the Handle Cover (33) from the Housing Ass'y (31).
- (b) Remove the Brush Caps (28) with a minus hd. screwdriver, and take out the Carbon Brushes (29).
- (c) To remove the Cord (48), loosen the two D4 x 16 Tapping Screws (45) which fix the Cord Clip (46), and remove the Cord (48) together with the Cord Armor (47).
- (d) Loosen the two M3.5 plus hd. screws in the Switch, and cut the grounding wire of the Noise Suppressor. The Noise Suppressor (39) can then be removed.
- (e) Loosen the M3.5 plus hd. screw in the Switch (36) and remove the leadwire together with terminal. The Switch (36) can then be taken out.
- (f) Loosen the M3.5 plus hd. Screw in the Switch (36), and cut the Connectors (35), (43) which are connecting the black and white/plus leadwires and two leadwires of th Stator Ass'y (23). The Control Circuit (39) can then be taken out.

#### (2) Disassembly of the Armature and Stator:

- (a) Loosen the D5 x 35 Tapping Screw w/Flange (7) that fastens the Gear Cover (8), and remove the Gear Cover portion from the Inner Cover Ass'y (11). Then extract the Armature Ass'y (20) together with the Inner Cover Ass'y (11) from the Housing Ass'y (31).

- (b) Extract the Armature Ass'y (20) from the Inner Cover Ass'y (11). As shown in Fig. 1, support the Inner Cover Ass'y (11) with a tubular jig, and push down on the tip end of the pinion gear of the Armature Ass'y (20).

- (c) To remove the Stator Ass'y (23), first remove the Brush Terminals (24) from the Brush Holders (30), and cut off the Connectors (35) (43) crimp-fitted to the control circuit. Then loosen the D5 x 60 Hexagon Hd. Tapping Screw (22), and tap gently on the side surface of the Housing with a wooden hammer to loosen and remove the Stator Ass'y (23).

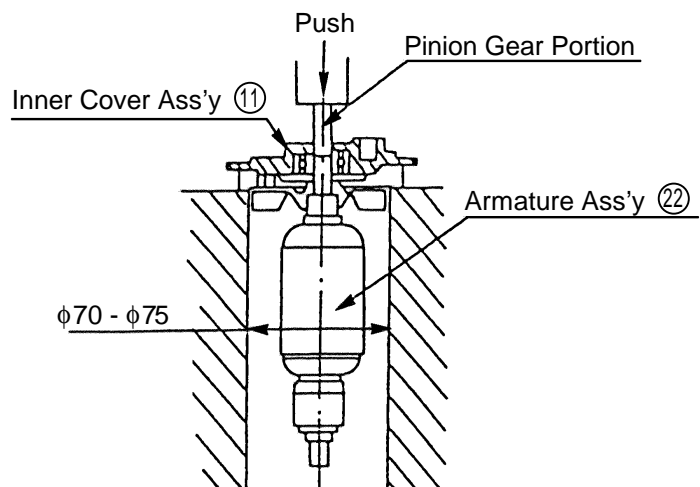
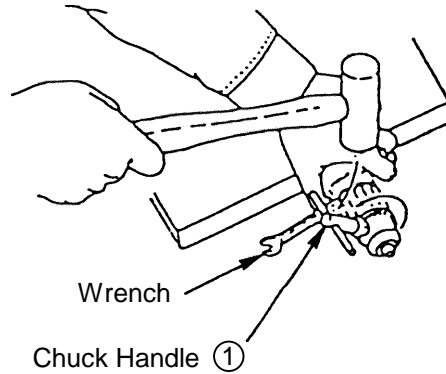


Fig. 1

(3) Disassembly of the Drill Chuck:

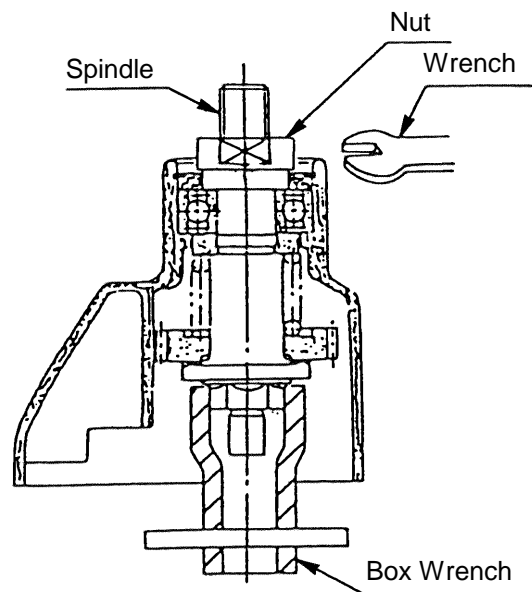
The Drill Chuck ② is in contact with the Nut ③ screwed onto the Spindle ⑱, and is fastened by a UNF5/8-16 (right-hand thread). Apply a 21 mm wrench to the flat surfaces of the Nut ③ to keep it from turning, insert the Chuck Handle ① into the handle-hole of the Drill Chuck ②, as shown in Fig. 2, and tap gently on the end of the Chuck Handle ① with a wooden hammer to loosen the Drill Chuck ② in a counter-clockwise direction when viewed from the drill chuck end. When it has been loosened, remove the Drill Chuck ② by turning it to the left (counter-clockwise) by hand.



**Fig. 2**

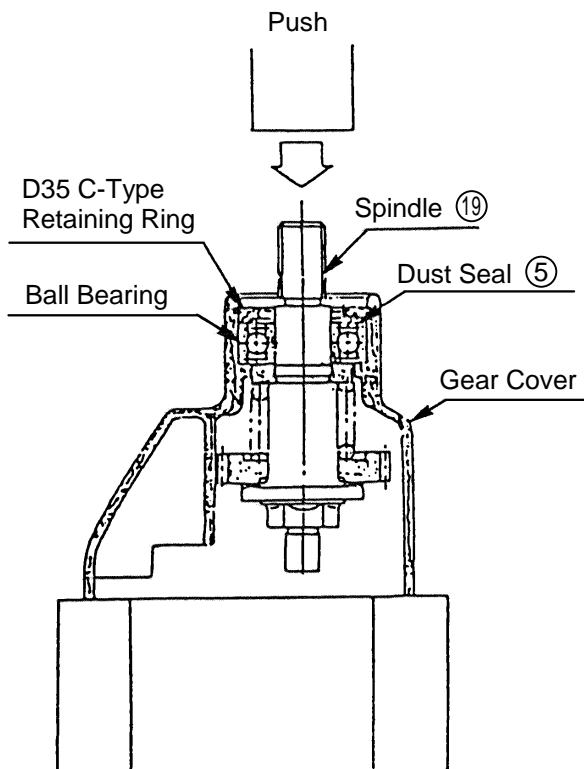
(4) Disassembly of the Nut:

The Nut ③ is fixed to the Spindle ⑱ by a UNF5/8-16 (right-hand thread). As illustrated in Fig. 3, secure the Spindle ⑱ by fitting a 17 mm box spanner or the like onto its hexagonal portion. Then, fit a 21 mm wrench onto the flat surfaces of the Nut ③, and turn the wrench to remove the Nut.

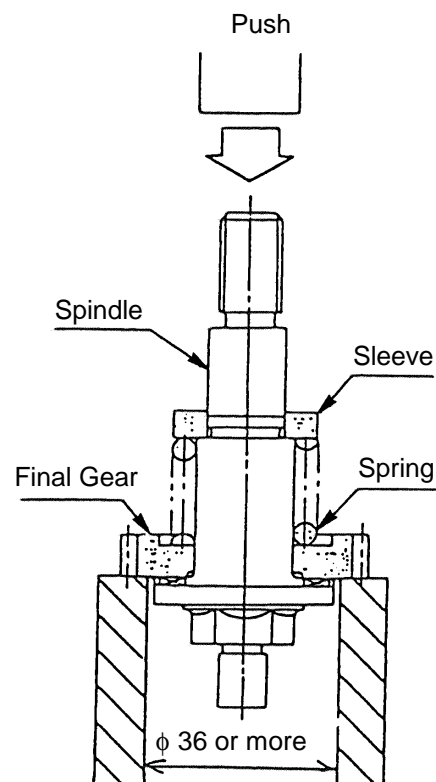


**Fig. 3**

(5) Disassembly of Parts on the Spindle Sections:



**Fig. 4**



**Fig. 5**

- (a) After removing the Nut (3), push down the end surface of the Spindle (19) with a hand press or similar device in the direction indicated by the arrow mark in Fig. 4 to remove the Spindle and related components from the Gear Cover (8).
- (b) Next, remove the D35 C-Type Retaining Ring (4), and extract the Dust Seal (5). To extract the Ball Bearing (6), tap gently on the side surface of the Gear Cover (8) with a wooden hammer.
- (c) The Sleeve (16) is pressed-fitted onto the Spindle (19). As shown in Fig. 5, support the end surfaces of the Final Gear (18) with a cylindrical jig, and push the end surface of the Spindle (19) in the direction indicated by the arrow mark with a hand press or similar device to extract the Sleeve (16), together with the Spring (17) and the Final Gear (18).

**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) Reassembly of the Spindle Sections:

Before press-fitting the Final Gear (18) onto the Spindle (19), without fail apply grease (Doublex 251, Code No. 921042, is recommended) on the pawls of the Spindle (19) and Final Gear (18). Also, apply the same grease on the inner circumference and both end surfaces of the Spindle (17), and both end surfaces of the Sleeve (16).

(2) Lubrication:

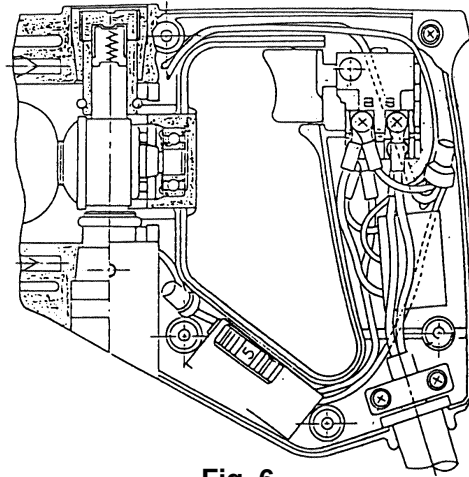
- |   |                               |                 |
|---|-------------------------------|-----------------|
| (a) Inside Gear Cover.....                  | Doublex 251 (Code No. 971042) | (35gr (0.08lb)) |
| (b) Spindle Ass'y .....                     |                               | (Coat)          |
| (c) Metal portion of Inner Cover Ass'y .... |                               | (Coat)          |
| (d) Second Pinion Ass'y.....                |                               | (Coat)          |
| (e) Armature Pinion Gear.....               |                               | (Coat)          |

(3) Tightening Torques:

(a) Nut.....	200 - 300 kg-cm	(173.6 in-lbs - 260.4 in-lbs)
(b) D4 Tapping Screws .....	20 ± 5 kg-cm	(17.4 ± 4.34 in-lbs)
(c) D5 Tappind Screws .....	30 ± 5 kg-cm	(26 ± 4.34 in-lbs)

(4) Internal Wiring:

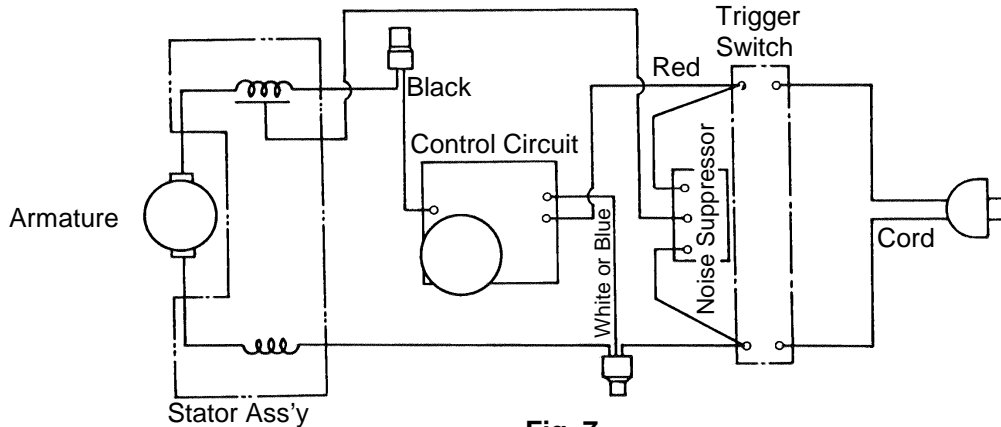
- Ensure internal wiring is performed as illustrated in Fig. 6. In particular, as the shorter (approx. 90 mm) of the two leadwires from the Stator Ass'y must be crimp-fitted with the black lead-wire from the Control Circuit shown in Fig. 7 and Fig. 8, ensure that the Stator Ass'y is installed in the correct direction.
- Ensure without fail that internal wiring does not come in contact with the Armature.
- When installing the Handle Cover, be very careful not to pinch any of the leadwires.



**Fig. 6**

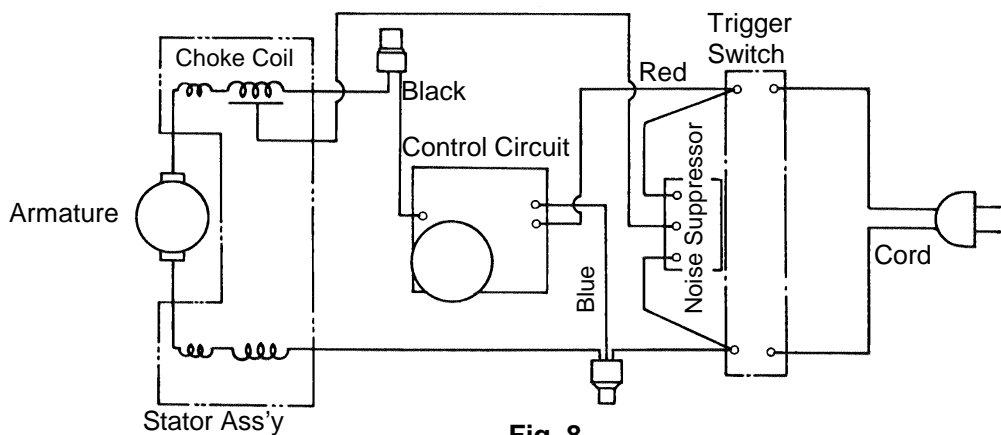
**1-3. Wiring Diagram and Leadwire Arrangement:**

Without Choke Coil:



**Fig. 7**

With Choke Coil:



**Fig. 8**

#### 1-4. Insulation Tests:

On completion of disassembly and repair measure the insulation resistance and conducts a delectric strength test.

Insulation Resistance: 7M  $\Omega$  or more with DC500 V Megohm Tester.

Dielectric Strength: AC4000 V/1 minute,

with no abnormalities ..... 220 V - 240 V

(and 110 V for U. K. products)

AC2500 V/1 minute,

with no abnormalities ..... 110 V - 127 V

(except U. K. products)

#### 1-5. No-Load Current Value:

110 V ..... 2.7 A

230 V ..... 1.45 A

240 V ..... 1.4 A

#### 1-6. Drill Chuck Runout Tolerance:

With a  $\phi 9$  mm test bar mounted in the chuck, runout should be 0.5 mm or less at a distance of 85 mm from the end of the chuck.

#### STANDARD REPAIR TIME SCHEDULES:

MODEL	Variable Fixed	10	20	30	40	50	60 min.
DC 120V		Work Flow					
		Cord Switch (C)	Gear cover Nut Dust seal BB (6003VVMC) Sleeve Spring Final gear Spindle	Housing Ass'y Stator Ass'y			
	Repair operation		BB (608VVMC) x 2 2nd pinion				
	Fixed Time (min) Switch : 0 Cord : 10 Others : 20		Inner cover Ass'y BB (609VVMC) BB holder Armature BB (608VVMC)				