



# MODEL D 10DF2

## 1. REPAIR GUIDE:

Without fail, remove the Model EB 9 Battery from the main body of the tool before attempting repair work. Because the tool is cordless, if the battery is left in and the switch is activated inadvertently, the motor will start rotating unexpectedly and could cause serious injury.

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

The circled numbers in the descriptions below correspond to the item numbers in the Part List and exploded assembly diagram for the Model D 10DF2.

#### 1-1-1. Disassembly:

- (1) Remove the Hook (45).

Place your fingers inside the Hook (45), and expand it outward enough so that it can be removed from the main body.

- (2) Disassembly of Housing (B):

Remove the six D3 x 16 Tapping Screws (26) which fix the main body. Then grasp the lower portions of Housing (A) and Housing (B) where the battery is inserted, and gently separate them.

- (3) After Housing (B) has been removed, the parts inside may either be removed together in an assembled state, or separated and removed individually.

First, remove the Second Pinion (32) together with the Metal (36) and the 607MC3 Ball Bearing (27), which are mounted on the ends of the Second Pinion. Then, grasp the Motor (23) and the Cap (8), and lift them upward from Housing (A).

- (4) Remove the Keyless Chuck (2).

The 626VVMC2ERPS2S Ball Bearing (16) mounted at the back end of the Spindle (5) is not pressed fitted, and can be removed by hand.

When removing the Final Gear (15), be careful not to lose the three D4.76 Steel Balls (14) which are retained in the Ball Holder (13). Next, remove the Thrust Needle Bearing (12), Thrust Plate (11), Spring (10), and Spring Holder (9) in that order.

As illustrated in Fig. 5, secure a J-148 Spring Lock Jig (Special Repair Tool, Code No. 970928) in a vise, and insert the assembled Keyless Chuck (2), Spindle (5), Cap (8) and related parts into the spline hole of the J-148 Spindle Lock Jig. Next, fully open the jaws of the Keyless Chuck (2), and remove the M5 x 17 Flat Hd. Screw (1) by turning it clockwise with a slot (minus) head screwdriver.

(Carefully remember that the M5 x 17 Flat Hd. Screw is left-hand threaded, and must be loosened by turning it to the right [clockwise].)

Finally, as illustrated in Fig. 4, clamp an M10 Hexagon Bar Wrench in the Keyless Chuck (2), and turn it counter-clockwise to loosen and remove the Keyless Chuck.

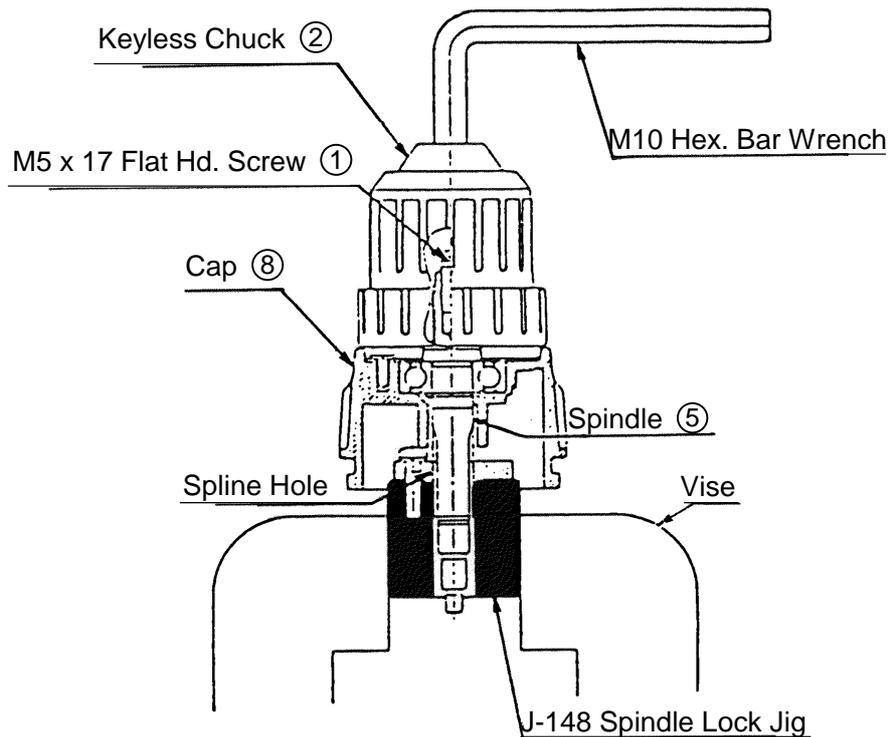


Fig. 4

(5) Disassembly of the Transmission Section:

First, remove the assembled Second Pinion (32), Metal (36), 607MC3 Ball Bearing (27) and related parts from Housing (A), as described in paragraph (3), above. The Metal (36) and the 607MC3 Ball Bearing (27) are not pressure fitted, and can be removed by hand. If it is difficult to remove the 607MC3 Ball Bearing by hand, use a bearing puller (the J-30 Bearing Puller, Code No. 970804, is recommended). Then, after removing the D5 E-Type Retaining Ring (28), Spring (A) (29) and the Low Speed Gear (31) can be removed.

(6) Disassembly of Electrical Components:

The Motor (23), Switch (41), and Fin (40) removed together as described in Para. (3), above, can be disassembled as follows. Use a soldering iron to melt soldered connections when disconnecting the leadwires of the Motor (23) from the Switch (41).

Remove the single M3 (+) Bind Screw (46), and separate the FET (Field Effect Transistor) of the Switch (41) from the Fin (40).

[NOTE] Do not disconnect the three leadwires of the FET that are soldered to the Switch (41).

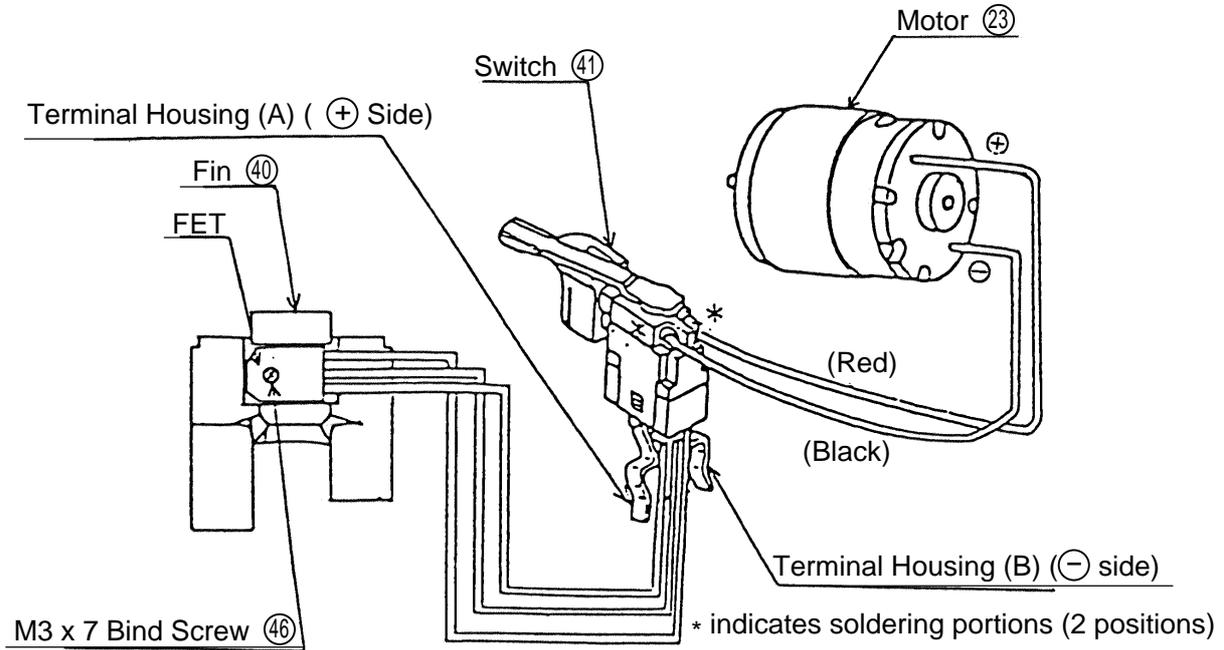
(7) Disassembly of the Housing (A) (B) Set (24):

When removing the M4 x 8 Flat Hd. Screw (39), be very careful of the Shift Spring (37) that is mounted between the assembled Shift Knob (43) and Shift Arm (38) and the Housing (A) side of the Housing (A) (B) Set (24). Also, be very careful not to lose the Damper (20) that is located in the Ring Gear (21) mounting portion.

1-1-2. Reassembly:

(1) Reassembly of Electrical Components:

[1] Ensure without fail that wiring is connected as shown in the diagram (Fig. 5).

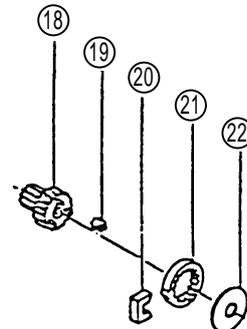


**Fig. 5 Leadwire Arrangement of Model D 10DF2**

[2] Be very careful not to bend the leadwires of the FET where they are connected to the Switch (41).

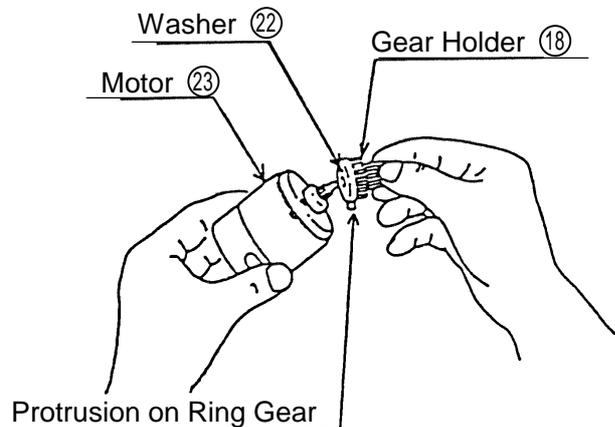
(2) Reassembly of the Motor Section:

[1] Assemble the Idle Gear (18) and Ring Gear (21) in sequence onto the Gear Holder (18), and apply grease (Hitachi Motor Grease No. 29 is recommended) to the inside of the Ring Gear. Finally, put the Washer (22) on the Ring (21). (Fig. 6)

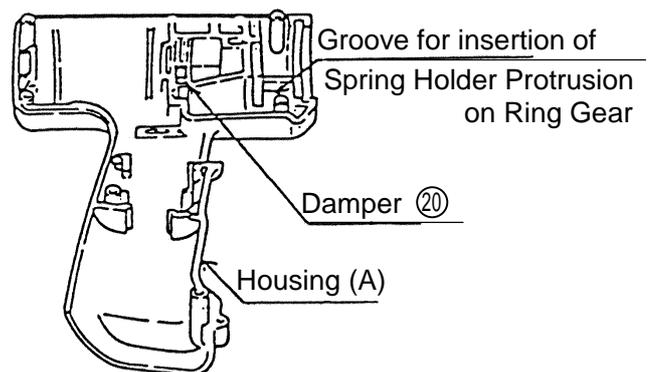


**Fig. 6**

[2] Mount the parts assembled in Para. [1], above, onto the Motor (23). (Fig. 7)



**Fig. 7**



**Fig. 8**

- [3] Assemble the Damper ⑳ into Housing (A). (Fig. 8)
- [4] Align the protrusion of the Ring Gear ㉑ with the matching recessed portion of the Damper ㉒, and install the parts assembled in Para. [2], above, into Housing (A). (Fig. 9)
  - (i) Ensure that the recessed portion of the Motor ㉓ is properly aligned with the rotation stopper portion of the Housing (A) (B) Set ㉔. (Fig. 10)

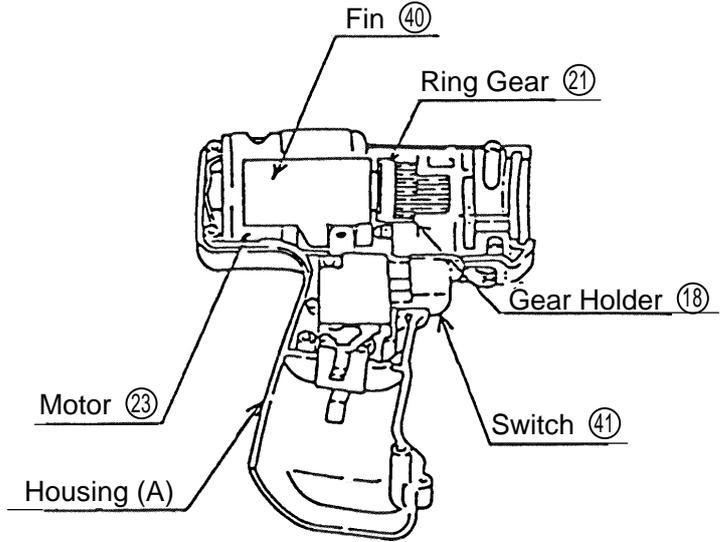


Fig. 9

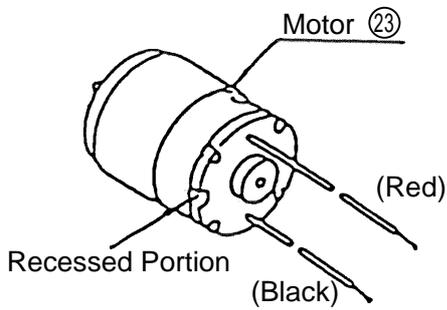


Fig. 10

(3) Reassembly of the Clutch Portion:

- [1] Beginning with the M5 x 17 Flat Hd. Screw (Left Hand) ①, assemble the Cap ⑧. (Fig. 11)
- [2] To the parts assembled in Para. [1], above, assemble the parts from the Spring Holder ⑨ to the Washer ㉗ in proper sequence.

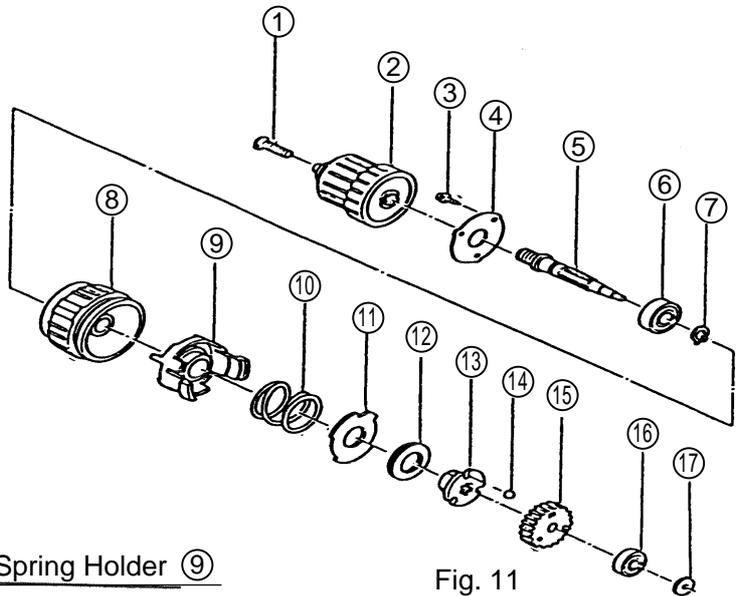


Fig. 11

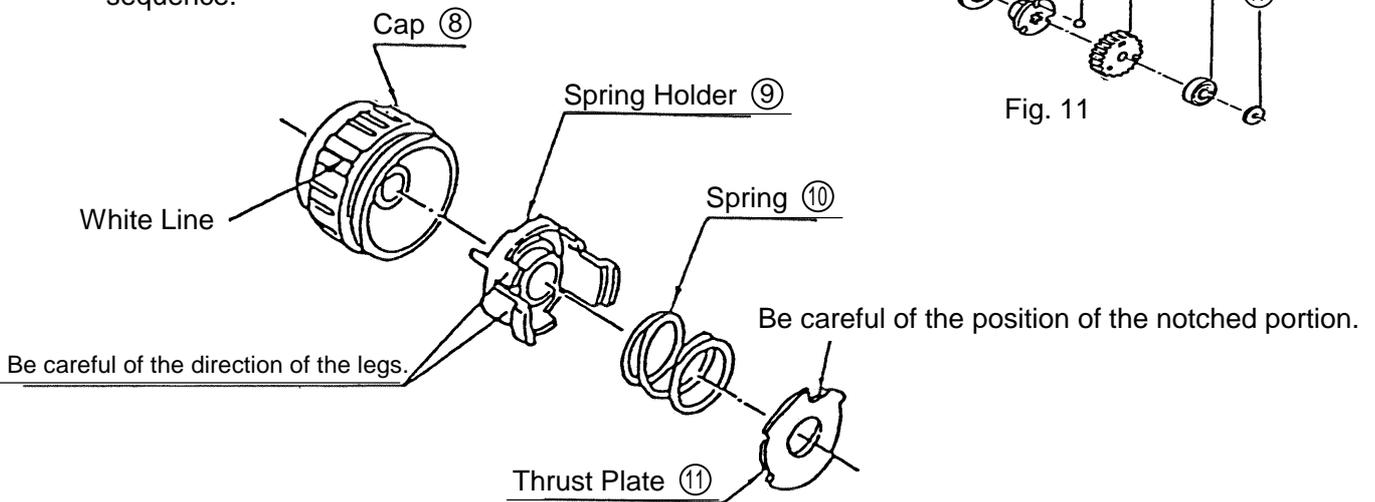
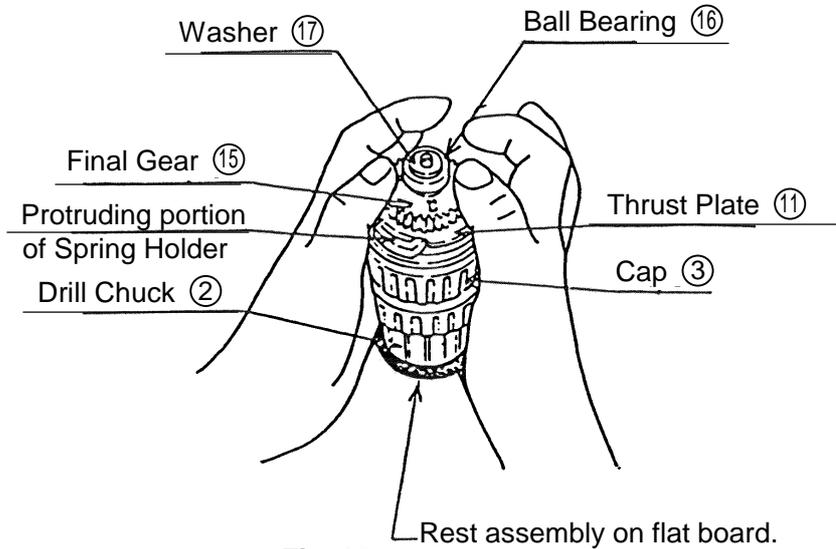


Fig. 12

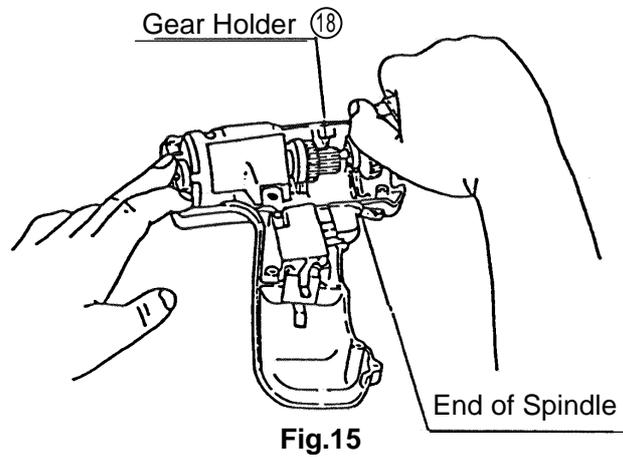
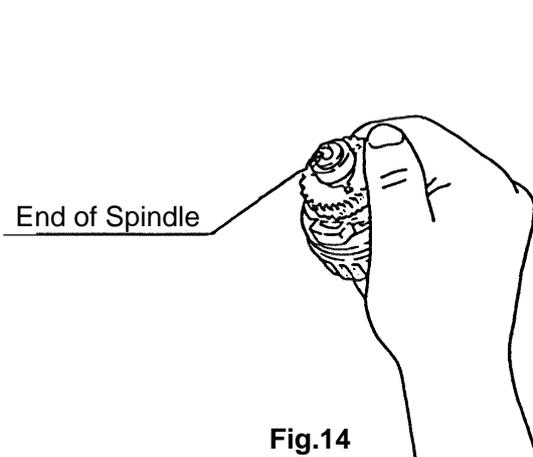
- (i) When assembling the Spring Holder ⑨ and the Thrust Plate ⑪, be particularly careful of their positioning in relation to the Cap ⑧. (Fig. 12)
- (ii) When the white line on the Cap ⑧ is aligned with the NO. 1 clutch setting on the Housing (A) (B) Set ⑳, the Spring Holder ⑨ and Thrust Plate ⑪ must be directed as indicated in Fig. 12. At that time, the Spring Holder ⑨ is at its maximum depth within the Cap ⑧.

- [3] Align component positions so that the Thrust Plate ⑪ and the protruding portion of the Spring Holder ⑨ do not overlap. Insert the Final Gear ⑮ horizontally by holding it between the thumbs. (Fig. 13)

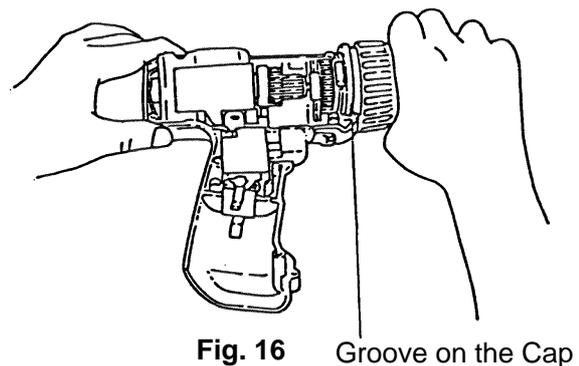


**Fig. 13**

- [4] In the assembled state described in Para. [3], above, hold the assembly in one hand as shown in Fig. 14 and insert the end of the Spindle ⑤ diagonally and from above a little into the metal of the Gear Holder ⑱. (Fig. 15)



- [5] Align the groove of the Cap ⑧ and the protruding portion of the Spring Holder ⑨ with the matching grooves on Housing (A), and install them by lifting up on the Gear Holder ⑱. (Fig. 16)



(4) Reassembly of the Second Pinion Portion:

- [1] Assemble the parts from the Ball Bearing ⑳ to the D4 x 7 Metal ㉞ in proper sequence. (Fig. 17)

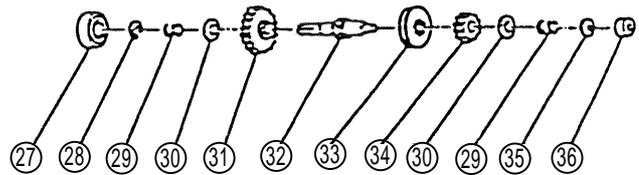


Fig. 17

- (i) Apply grease (Hitachi Motor Grease No. 29 is recommended) to all sliding portions, rotating portions, and gear meshing portions. In particular, if the Second Pinion ㉒, High Speed Gear ㉔ or Low Speed Gear ㉑ are replaced, apply a generous amount of grease to the outer circumference of the Second Pinion ㉒ and the inner circumferences of the High Speed Gear and Low Speed Gear.

- [2] Install the parts assembled in Para. [1], above, into Housing (A). (Fig. 18)

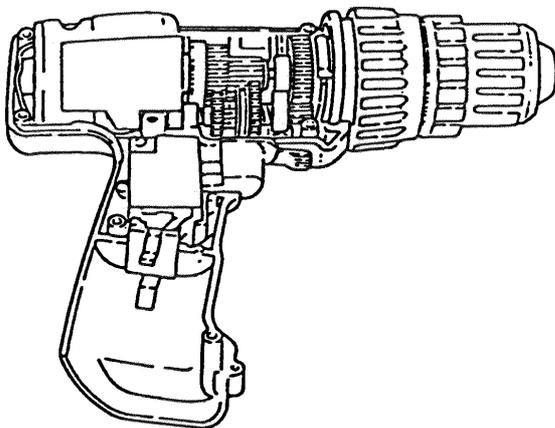


Fig. 18

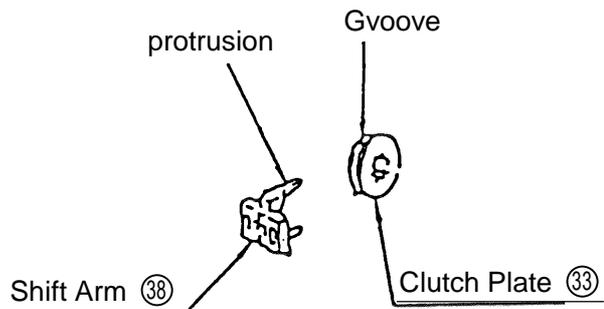


Fig. 19

- (i) Confirm that the claw portion of the Shift Arm ㉞ is properly engaged with the matching groove on the Clutch Plate ㉝. (Fig. 19)

(5) Other Precautions in Assembly:

As there are many washers, be very careful not to select the wrong ones during assembly.

Description/No.	Outer Dia. x Hole Dia.	Thickness
Washer ㉒	φ29 mm x φ9 mm	0.4 mm
Washer ㉝	φ 9 mm x φ4 mm	0.4 mm
Washer ㉑	φ12 mm x φ7 mm	0.4 mm
Washer ㉑	φ13 mm x φ4 mm	1.2 mm

On completion of reassembly, ensure that the Spindle ㉑ rotates smoothly when the Drill Chuck ㉒ is moved by hand. Before turning the switch ON, confirm that the Cap ㉑ can be properly aligned with the clutch position numbers marked on the Housing (A) (B) Set ㉑.

Confirm that the Spindle ㉑ rotation direction conforms to the setting of the reversing lever of the Switch ㉑. When the reversing lever is set to the (R) side, the Spindle must rotate to the right (clockwise) when viewed from the tail end of the tool (the end opposite the Drill Chuck). Tightening torques for fastening screws are as indicated in the following table.

- M4 x 8 Flat Hd. Screw ③⑨..... 2.5 - 3.5 kgf-cm ( 2.2 - 3.0 lbs.)
- D3 x 8 Tapping Screws ③..... 8 - 12 kgf-cm ( 6.9 - 10.4 lbs.)
- D3 x 16 Tapping Screws ②⑥..... 8 - 12 kgf-cm ( 6.9 - 10.4 lbs.)
- M3 x 7 Bind Screw ④⑥..... 3 - 5 kgf-cm ( 2.6 - 4.3 lbs.)
- M5 x 17 Flat Hd. Screw ①..... 30 - 37 kgf-cm ( 26.0 - 32.1 lbs.)
- Keyless Chuck ② ..... 130 - 170 kgf-cm (112.8 - 32.1 lbs.)

**1-2. Precautions on Disassembly and Reassembly of the Model UC 12Y Charger:**

For details concerning the disassembly, reassembly and precautions in use of the Model UC 12Y Charger, please refer to the Technical Data and Service Manual for the Model UC 12Y Charger.

**2. STANDARD REPAIR TIME (UNIT) SCHEDULE:**

Models	(Unit)					
	Fixed	Variable	10	20	30	40
D10DF2		Work Flow				
		Battery Hook			Spring Plate Cap Holder Spring Thrust Needle BB Ratchet Spindle BB (6000ZZCM) C-type Ring Second Pinion Gear Ball Holder Damper x 2 Metal x 3	
	Repair Operations	Drill Chuck	Cap Plate	Housing (A)		
	Fixed Time (unit) Battery : 0 Hook : 0 Others : 20		Spindle BB (6000ZZCM) C-Type Ring	Housing (B) Motor Switch Connector (B)		

**Standard Repair Expense Estimation**

This chart is intended to assist Hitachi Power Tools' authorized service centers in calculating standard repair expenses.

Please refer to the list of Hitachi Power Tools Standard Repair Time Schedules issued on September 20,1991 how to use this chart.