1. REPAIR GUIDE

Without fail, remove Type FEB 12 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. Precautions in Disassembly and Reassembly of the Main Body

The **[Bold]** numbers in the descriptions below correspond to the item numbers in the Parts List and exploded assembly diagram.

1-1-1. Disassembly

(1) Removal of the Drill Chuck **[8]**: (Fig. 7)

Remove the Drill Chuck **[8]** from the Spindle Gear and Set **[14]** of the fully assembled driver drill in accordance with the following procedures.

(a) Set the Shift Knob **[16]** to the "L" position to shift the gears to the low-speed setting.

(b) Align the white line on the Cap **[9]** with the drill mark ($\diamondsuit\backslash\backslash\backslash\backslash$).

(c) Fully open the jaws of the Drill Chuck **[8]**, and remove the M5 x 20 Flat Hd. Screw **[7]**. (Be sure to remember that the M5 x 20 Flat Hd. Screw **[7]** is left-hand threaded, and must be loosened by turning it to the right [clockwise].)

(d) Insert an M10 hex. bar wrench into the Drill Chuck **[8]**, and strike it gently in a counterclockwise direction with a wooden or plastic hammer to loosen it. After the drill chuck has been loosened, continue to rotate it counterclockwise by hand to remove it from the main body.
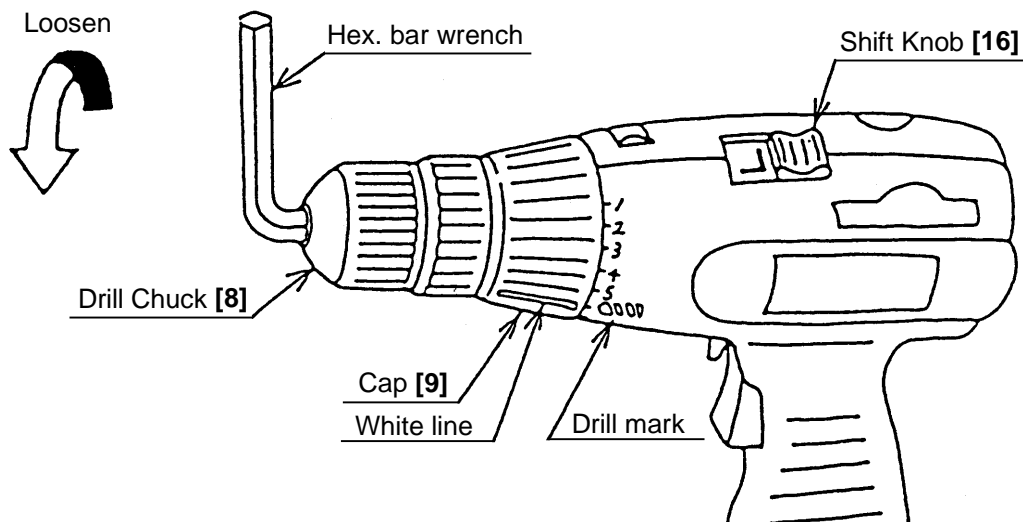

Loosen
Hex. bar wrench
Shift Knob **[16]**
Drill Chuck **[8]**
Cap **[9]**
White line
Drill mark

Fig. 7

(2) Disassembly of housing (B):

Remove the seven D3 x 14 Tapping Screws **[4]** 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 removed individually. First, remove the Shift Arm **[15]** and Shift Knob **[16]**, being very careful not to allow the Shift Spring **[17]** to fly out unexpectedly.

(4) Removal of the Motor **[21]**

   (a) Take off the Cap **[9]**, Spring Holder **[10]**, Spring **[11]**, Thrust Plate **[12]**, and Steel Balls **[13]**, in that order. At this time, be particularly careful not to lose the four Steel Balls **[13]**.

   (b) Remove the four D3 x 8 Tapping Screws **[18]**, and remove the Motor **[21]**.

(5) Disassembly of electric components

   [NOTE] The three lead wires from the FET (Field Effect Transistor) and the two lead wires from the diode are permanently connected to the DC-speed control switch **[21]** and should not be detached.

   Remove the two M3 x 10 FT Screws **[25]**. The FET of the DC-speed control switch **[22]** and the Fin Ass'y **[26]** can then be disassembled. Then, use a soldering iron to disconnect the lead wires of the DC-speed control switch **[22]** from the Motor **[21]** and the lead wires of the DC-speed control switch **[22]** from the Terminal **[27]**.

1-1-2. Reassembly

Perform reassembly in the reverse order of disassembly while observing the given precautions and taking care of the following points.

(1) Reassembly of electric components

   (a) Ensure that the wiring is connected as shown in the diagram in Fig. 8.
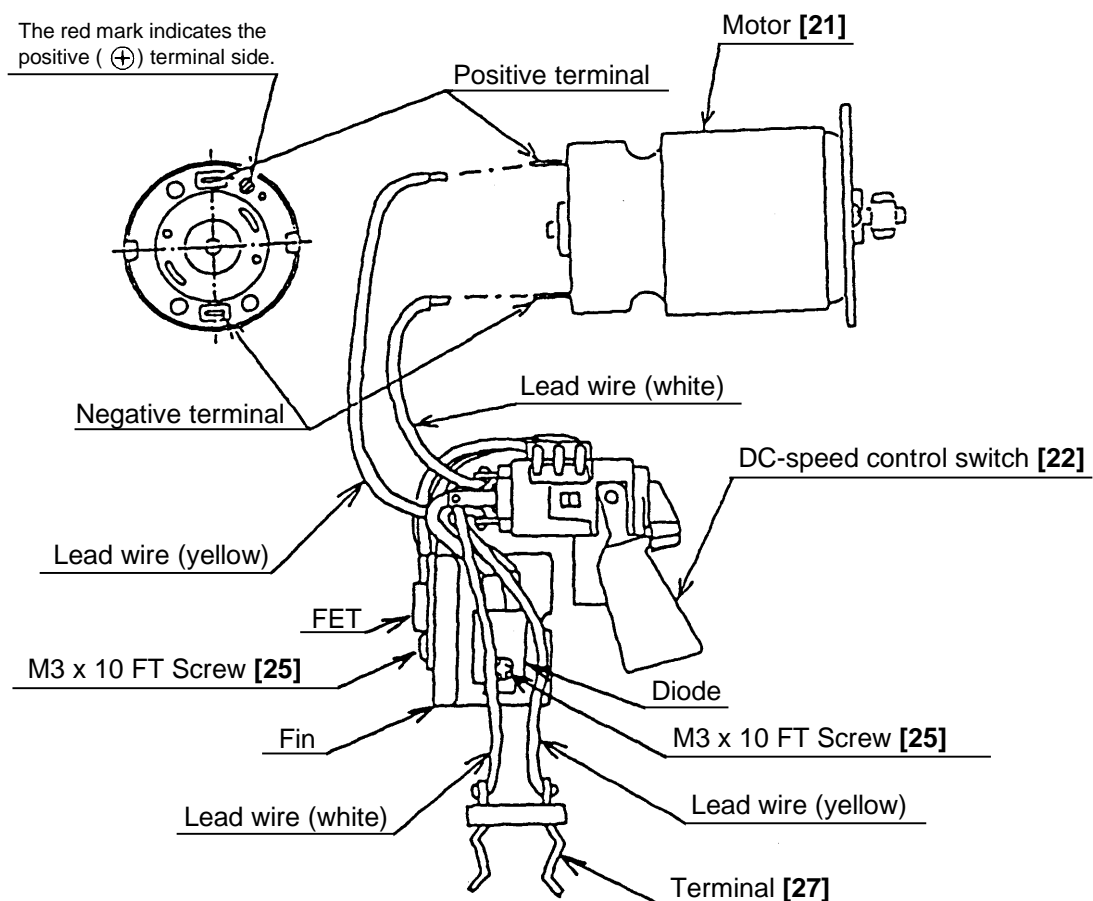

Fig. 8

(2) Connecting the Spindle and Gear Set **[14]** and the electric components assembled as described in Para. (1)

When connecting the Spindle and Gear Set **[14]** and the electric components assembled as described in Para. (1) above, ensure that the colored lead wires soldered to the Motor **[21]** are correctly positioned with relation to the notched portion of the Spindle and Gear Set **[14]** before fastening the two sections with the four D3 x 8 Tapping Screws **[18]**. (See Fig. 9)
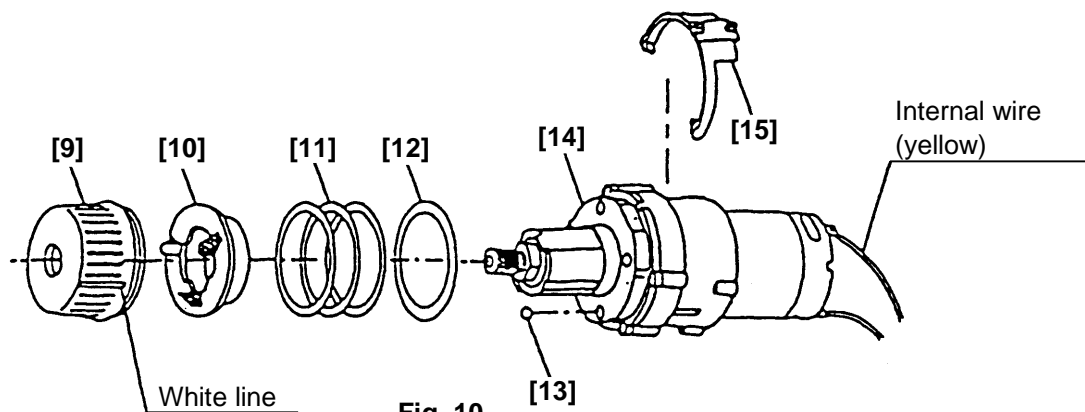
Spindle and Gear Set **[14]**

Internal wire (yellow)

Motor **[21]**

Notched portion

Tapping Screw D3 x 8 **[18]**
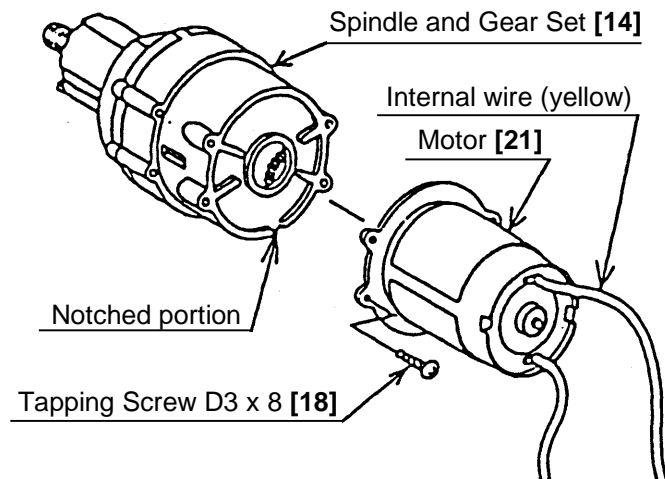
Fig. 9
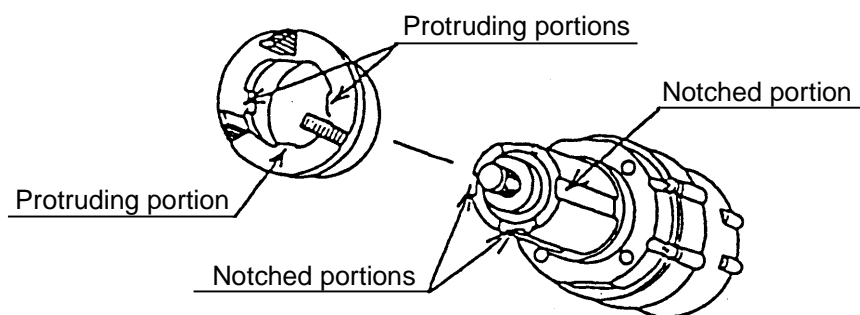
(3) Reassembly of the clutch section

Assemble the Cap **[9]** and Shift Arm **[15]** onto the Spindle and Gear Set **[14]**. (See Fig. 10)

During assembly, be very careful not to allow the four Steel Balls **[13]** to drop out of the Spindle and Gear Set **[14]**.

(a) When assembling the Spindle Holder **[10]** onto the Spindle and Gear Set **[14]**, ensure that the notched portions of the Spindle and Gear Set **[14]** are properly aligned with the matching protruding portions of the Spring Holder **[10]**. (See Fig. 11)

[9]   **[10]**   **[11]**   **[12]**   **[14]**   **[15]**   Internal wire (yellow)

White line   **Fig. 10**   **[13]**

Protruding portions

Notched portion

Protruding portion

Notched portions

Fig. 11

–3–

(b) When assembling the Cap **[9]** onto the components assembled as described in Para. (a) above, ensure that the white line on the Cap **[9]** is properly aligned with relation to the colored lead wires soldered to the Motor **[21]**. (See Fig. 10)

(c) When assembling the Shift Arm **[15]** onto the Spindle and Gear Set **[14]**, ensure that the protruding portions of the Shift Arm **[15]** are properly fitted into the matching grooves of the ring gear inside the Spindle and Gear Set **[14]**. (See Fig. 12)

Shift Arm **[15]**

Protruding portions

Ring gear

Spindle and Gear Set **[14]**

Grooves
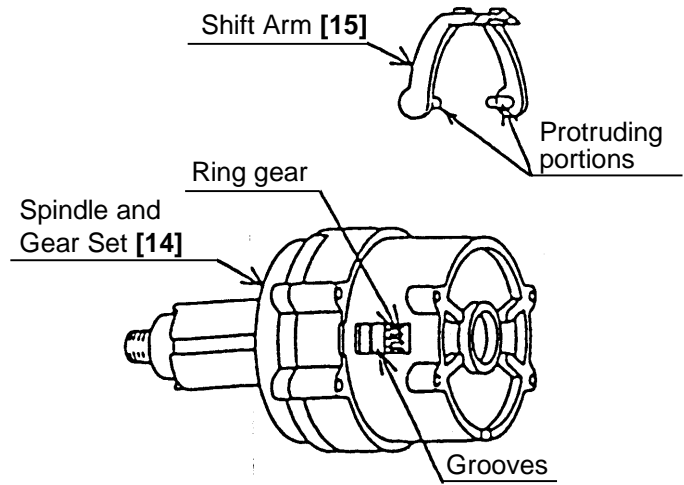
Fig. 12

(d) Insert the Shift Spring **[17]** into the Shift Knob **[16]**. (See Fig. 13)

(e) Assemble Bit Holder (A) **[19]** and Bit Holder (B) **[5]** respectively into housing (A) and housing (B) of the Housing (A) (B) Set **[3]**. At this time, ensure that the insert portions of the bit holders are properly installed into the insert receiving sockets of the housings. (See Fig. 14)

Insert portion

Bit Holder (A) **[19]**

Insert receiving pocket

Shift Knob **[16]**

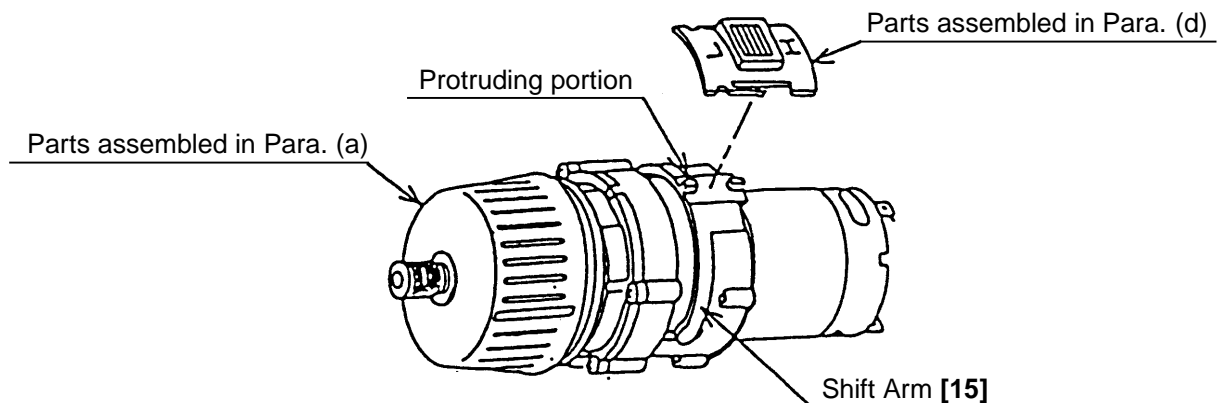Shift Spring **[17]**

Housing (A)
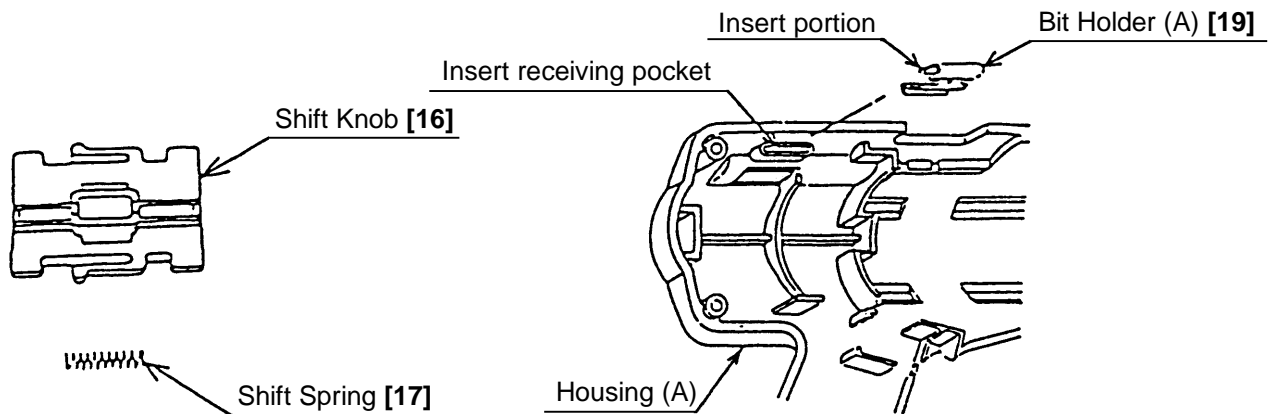
Fig. 13
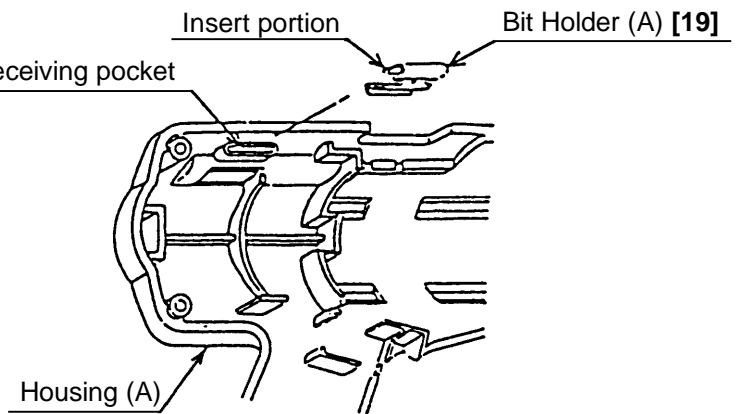
Fig. 14

(f) Mount the components assembled as described in Para. (d) onto the protruding portions of the Shift Arm **[15]** that is mounted on the components assembled as described in Para. (a). (See Fig. 15)

Parts assembled in Para. (d)

Protruding portion

Parts assembled in Para. (a)

Shift Arm **[15]**

Fig. 15

(g) Mount the components assembled as described in Para. (f) onto the components assembled as described in Para. (e). At this time, ensure that colored leadwires soldered to the Terminal **[27]** are properly aligned with relation to housing (A) and housing, (B). (See Fig. 16)
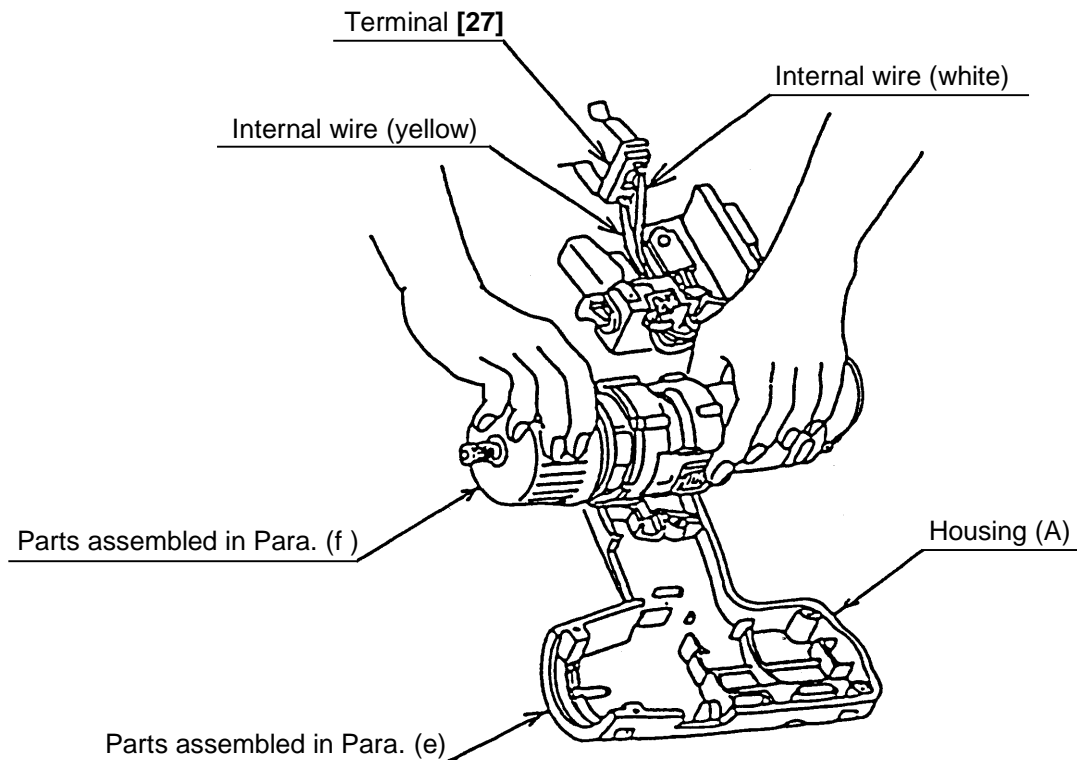
Fig. 16

(4) Other Precautions on Reassembly

  (a) On completion of reassembly, set the Shift Knob **[16]** to the "H" position, and confirm that the spindle rotates smoothly when the Drill Chuck **[8]** is moved by hand. Also, before turning the switch ON, confirm that the Cap **[9]** can be properly aligned with the clutch number positions, marked on the Housing (A),(B) Set **[3]**.

    Confirm that the Drill Chuck **[8]** rotation conforms with the setting position of the reversing switch. When the reversing switch is set to the (R) side, the Drill Chuck **[8]** must rotate to the right (clockwise) when viewed from the rear (the end opposite from the drill chuck).

    Also, confirm that the rotation speed of the Drill Chuck **[8]** changes properly between high and low speeds when the Shift Knob **[16]** position is changed.

    Check the run-out of the Drill Chuck **[8]**. With a 6 mm test bar (Special Repair Tool J-223-2, Code No. 305713) mounted in the Drill Chuck **[8]**, ensure that run-out is not more than 0.5 mm when measured at a distance of 50 mm from the end of the chuck.

  (b) (+) Tapping Screws   D3 x 8   **[18]**   0.59 - 0.78 Nm (6 - 8 kgfcm, 5.2 - 6.9 In-lbs)
       (+) Tapping Screws   D3 x 14   **[4]**   0.98 - 1.5 Nm (10 - 15 kgfcm, 8.7 - 13.0 In-lbs)
       (+) FT Screw   M3 x 10   **[25]**   0.88 - 1.1 Nm (9 - 11 kgfcm, 7.8 - 9.5 In-lbs)
       Flat Hd Screw   M5 x 20   **[7]**   3.9 Nm (40 kgfcm,   34.7 In-lbs)
       Drill Chuck **[8]**   3.9 Nm (40 kgfcm,   34.7 In-lbs)

1-2. Precautions in Disassembly and Reassembly of the Model UC 12SC charger

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

2. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL Fixed \ Variable	10	20	30	40	50	60 min.
	Work Flow					

FDS 12DV · General Assembly	Drill Chuck	Cap
		Spring Holder
		Spring
		Thrust Plate
		Steel Ball
		    (4 pcs)
		Spindle and
		    Gear Set
			Housing
			    (A)(B) Set
			Shift Arm
			Shift Knob
			DC-speed
			    control switch
			Motor
			Fin Ass'y
			Terminal			