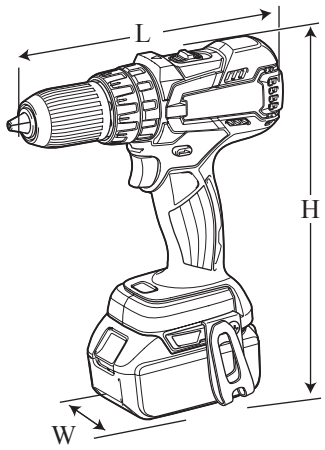
TECHNICAL INFORMATION

Models No. ► DHP480

Description ► 18V Cordless Hammer driver drill



CONCEPT AND MAIN APPLICATIONS

Model DHP480 is a superior class cordless hammer driver drill model, featuring:

- Compact tool size with an overall length of 199mm (7-7/8")
- High power and maintenance-free achieved with new BLDC(**B**rush**L**ess **DC**) motor
- Enhanced dust and drip-proof design to ensure reliable operation even under bad weather.
- Battery fuel gauge shows the remaining capacity by pulling switch trigger.

► Specification

Battery	Voltage: V	18
	Capacity: Ah	1.3, 1.5, 2.0, 3.0, 4.0, 5.0
	Energy capacity: Wh	24, 27, 36, 54, 72, 90
	Cell	Li-ion
	Charging time (approx.): min.	15, 15, 24, 22, 36, 45 with DC18RC
Max output: W		370
No load speed: min^{-1}=rpm	High	0 - 1,550
	Low	0 - 400
Impacts per minute: min^{-1} = ipm	High	0 - 23,000
	Low	0 - 6,000
Capacity of drill chuck: mm (")		1.5 (1/16) - 13 (1/2)
Capacity: mm (")	Steel	13 (1/2)
	Wood	38 (1-1/2)
	Masonry	13 (1/2)
Torque setting		16 stage + drill mode
Clutch torque setting: N.m (in.lbs)		1.0 - 5.0 (9 - 44)
Max lock torque: N.m (in.lbs)		60 (530)
Max fastening torque: N.m (in.lbs)	Soft joint	36 (320)
	Hard joint	54 (480)
Electric brake		Yes
Mechanical speed control		Yes (2 speed)
Variable speed control		Yes
Reversing switch		Yes
LED job light		Yes
Weight according to EPTA-Procedure 01/2003: kg (lbs)		1.5 (3.2)*1 1.7 (3.8)*2

Dimensions: mm (")	
Length (L)	199 (7-7/8)
Width (W)	79 (3-1/8)
Height (H)	243 (9-9/16)*1
	260 (10-1/4)*2

***1**: with BL1815, BL1815N or BL1820
***2**: with BL1830, BL1840 or BL1850

► Standard equipment

Battery*3
Charger*3
Battery cover*4
Plastic carrying case*3
Belt clip
+ – bit 2-45

***3**: Battery, charger and Plastic carrying case are not supplied with "Z" model
***4**: Supplied with the same quantity of extra Battery
Note: The standard equipment may vary by country or model variation.

► Optional accessories

Fast charger DC18RC
Charger DC18SD
Charger DC24SC
Automotive charger DC18SE

Battery BL1815
Battery BL1815N
Battery BL1820

Battery BL1830
Battery BL1840
Battery BL1850

Drill bits for wood
Drill bits for steel
Drill bits for masonry

Driver bits
Bit holder

Repair

CAUTION: Repair the machine in accordance with "Instruction manual" or "Safety instructions".

[1] NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R298	Hex bar 10 with square socket	removing Drill chuck
1R359	Chuck removing tool	removing Drill chuck (If it is impossible to remove as per the illustration in **Figs. 1** and **2**.)
---	Hex wrench 10	removing Drill chuck

[2] LUBRICATION

It is not required to lubricate, because this product has gear mechanism of factory assembled.

[3] DISASSEMBLY/ASSEMBLY

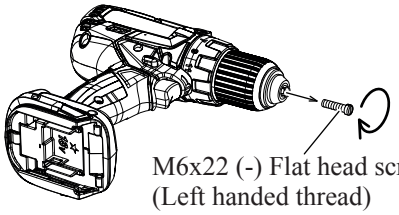
[3] -1. Drill chuck

DISASSEMBLING

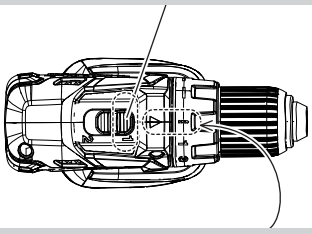
(1) Remove M6x22 (-) Flat head screw. Then, preset the machine as drawn in **Figs. 1-2** and **1-3**. And then, set 1R298 to the machine. (**Fig. 2**)

Fig. 1

1. Open Drill chuck fully and remove M6x22 Flat head screw by turning it **clockwise** with Slotted screwdriver.
   Note: Use Impact driver to unscrew M6x22 (-) Flat head screw if it cannot be removed manually.

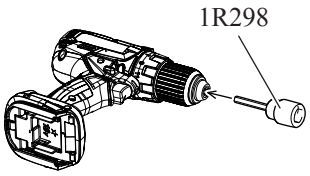


2. Set Speed change lever to Low speed mode designated with 1.



3. Set Change ring to Drill mode.

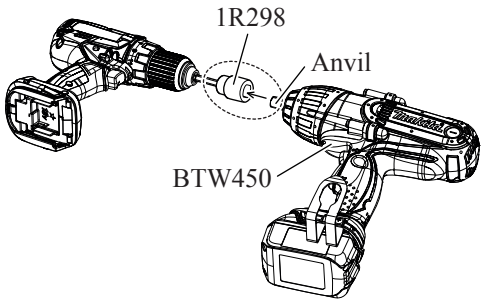
4. Set 1R298 to Keyless drill chuck.



(2) For removing Keyless drill chuck, it is necessary to use Impact wrench with strong fastening torque such as Model BTW450 (440 N.m in max fastening torque).
Remove Drill chuck as drawn in **Fig. 2**.

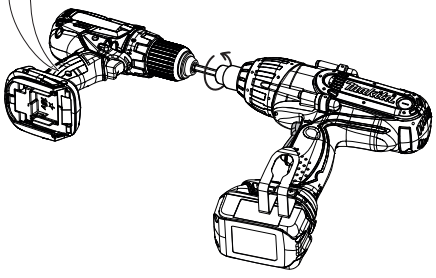
Fig. 2

1. Fit Anvil of TW450D to the socket of 1R298.



2. Firmly holding the machine at its grip portion, remove Keyless drill chuck by driving BTW450 in reverse mode.

Firmly hold the grip portion during the work.



Note: Use 1R359 to remove Keyless drill chuck if it cannot be removed in this step.
See **Figs. 6** and **7.**

Repair

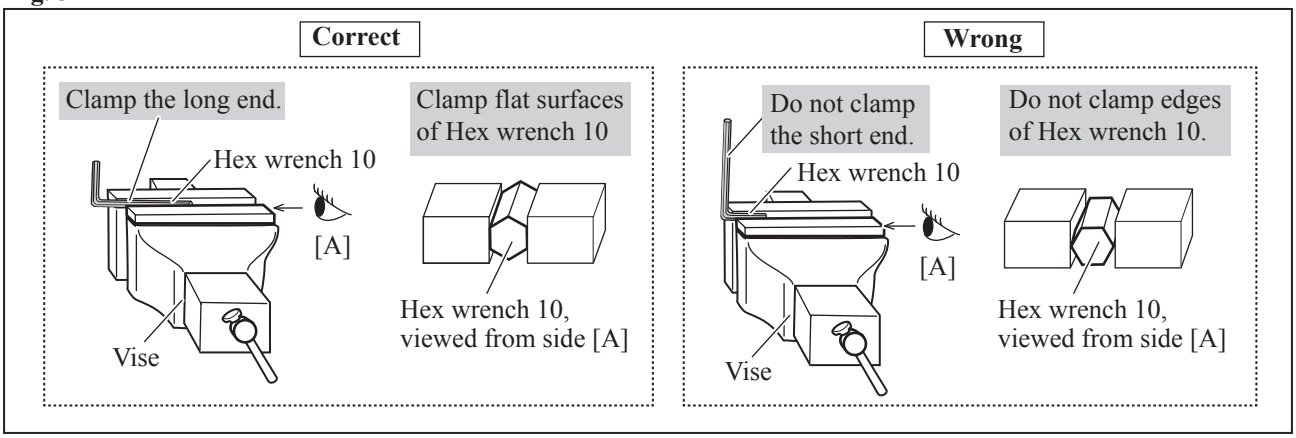
[3] DISASSEMBLY/ASSEMBLY

[3] -1. Drill chuck (cont.)

ASSEMBLING

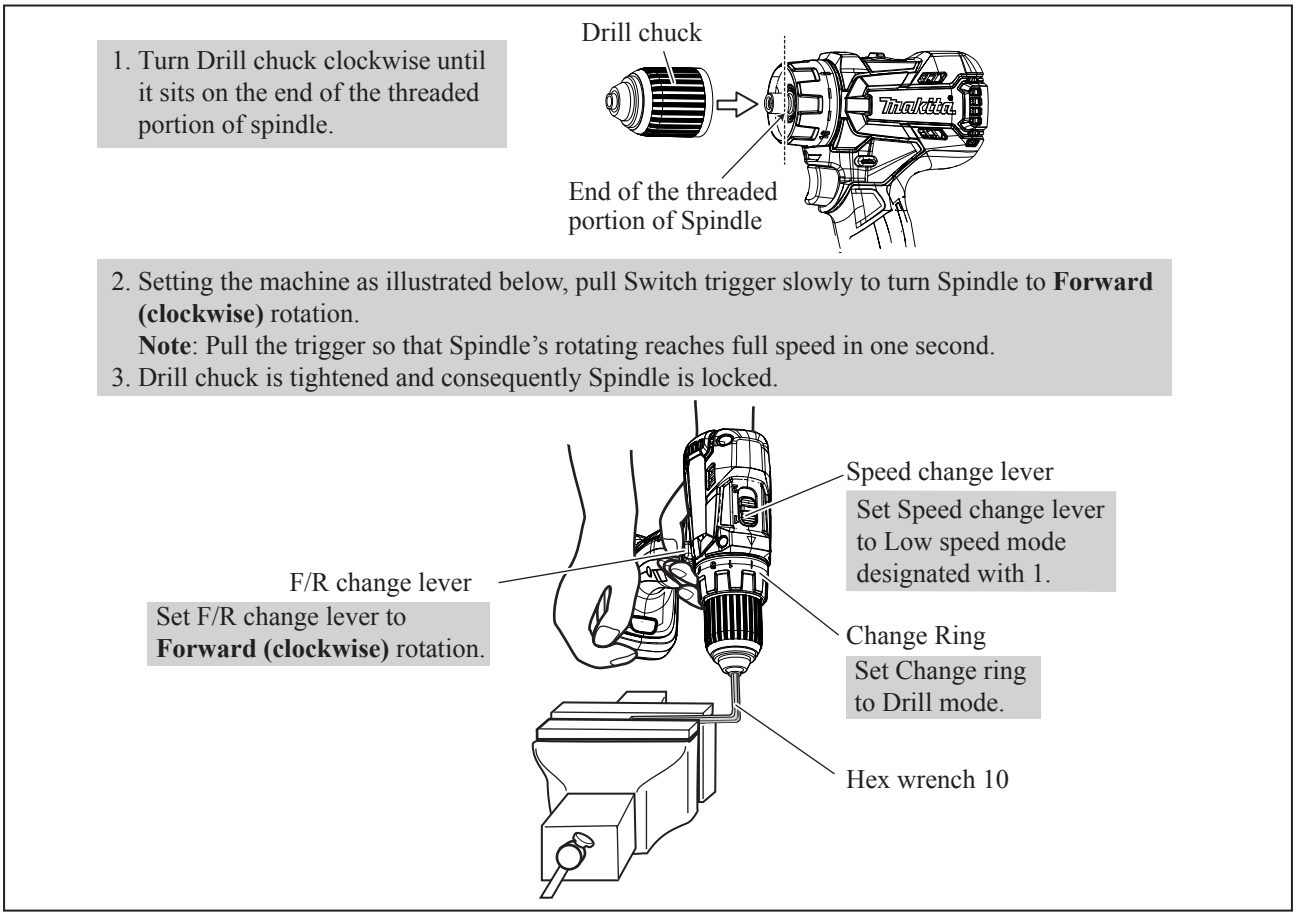
(1) Set Hex wrench 10 to Vise as drawn in **Fig. 3**.

Fig. 3



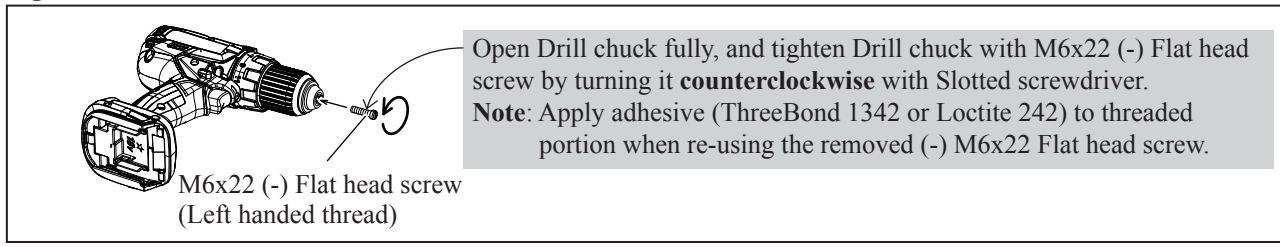
(2) Mount Drill chuck to Spindle as drawn in **Fig. 4**.

Fig. 4



(3) Secure Drill chuck as drawn in **Fig. 5**.

Fig. 5



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Drill chuck (cont.)

DISASSEMBLING

If it is difficult to remove Drill chuck as drawn in **Figs. 1** and **2**, use 1R359. (**Fig. 6**)

Fig. 6

How to Use 1R359

1) Disassemble Gear assembly until Spindle can be seen. (**Fig. 6A**)
2) Assemble Lock cam to Carrier C complete, then attach them to 1R359. (**Fig. 6B**)
3) Fix 1R359 securely in vise.
4) Insert the spline portion of Spindle into Lock cam. (right in **Fig. 6C**)
5) Remove *Chuck screw by turning it clockwise using Cordless impact driver.
   * M6x22 (-) Flat head screw (left-handed, threadlocker coated)
6) Fix one leg of a Hex wrench 10 in the jaws of Drill chuck. (left in **Fig. 6C**)
7) Attach an appropriate steel pipe to the other leg of the wrench. Drill chuck can now be removed by turning the pipe counterclockwise. (left in **Fig. 6C**)

Fig. 6A

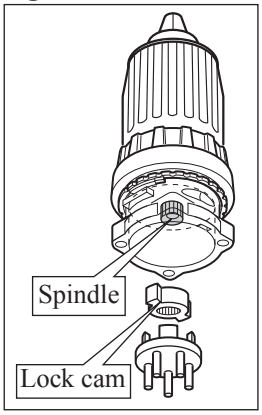


Fig. 6B

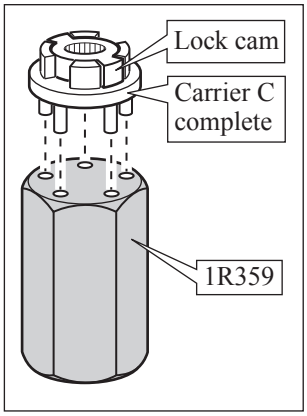
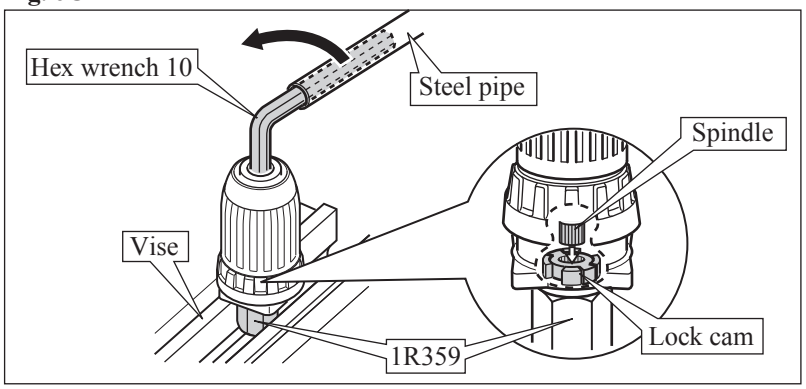


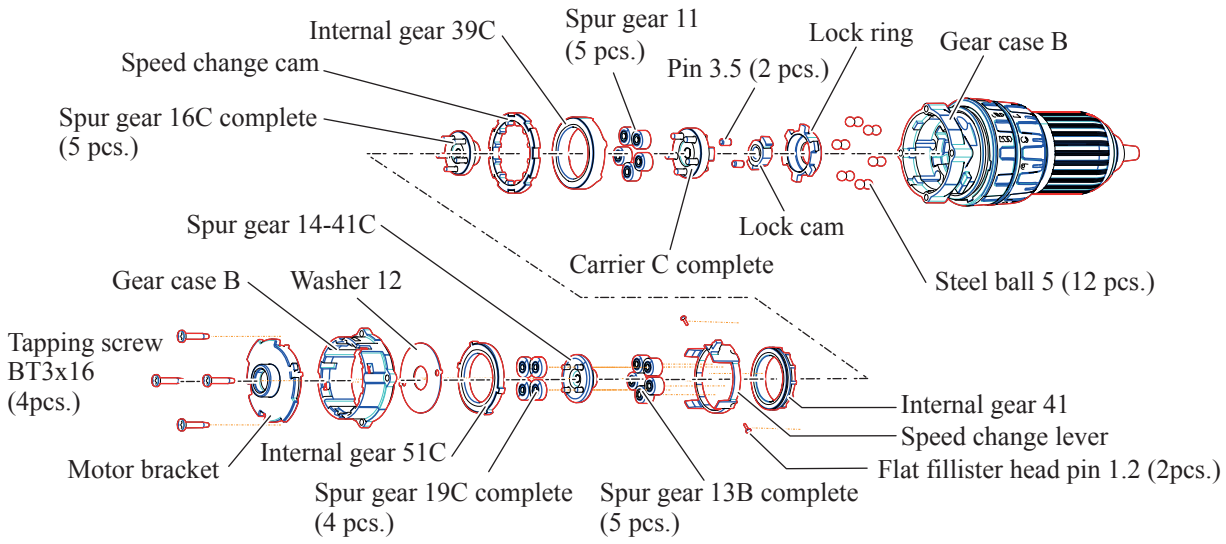
Fig. 6C



ASSEMBLING

Referring to **Fig. 7**, assemble Gear assembly.

Fig. 7



Repair

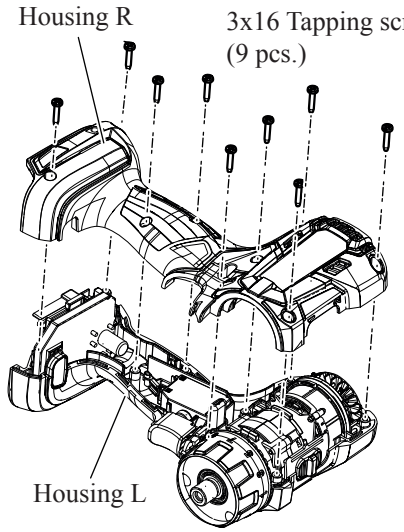
[3] DISASSEMBLY/ASSEMBLY
[3] -2. Rotor, Gear assembly

DISASSEMBLING

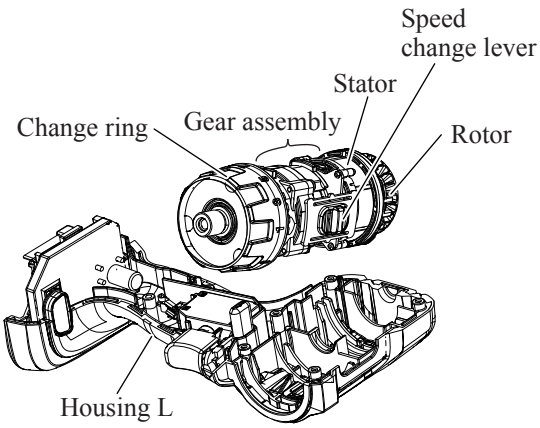
(1) Remove Drill chuck as drawn in **Figs. 1** an **2**.
(2) Disassemble Gear assembly as drawn in **Fig. 8**.

Fig. 8

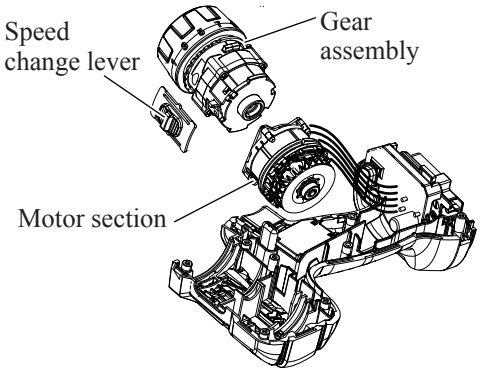
1. By unscrewing nine 3x16 tapping screws, remove Housing R from Housing L.



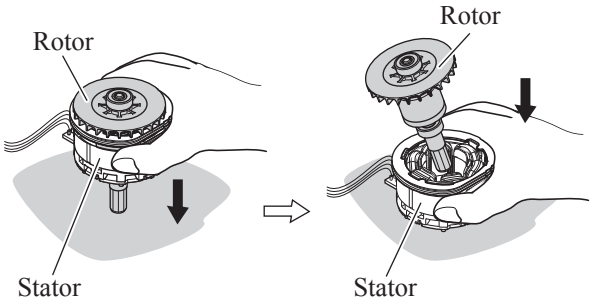
2. Remove Gear assembly section (Gear assembly, Change ring, Speed change lever) and Motor section (Rotor and Stator) from Housing L.



3. Remove Speed change lever from Gear assembly.
Note: Be careful not to lose Compression spring 4.
4. Separate Gear assembly from Motor section.



5. Put Rotor section on a workbench so that the drive end of Rotor touches the workbench. Press Stator down to separate it from Rotor.



Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -2. Rotor, Gear assembly (cont.)

Caution for Handling of Rotor

When handling or storing multiple Rotors, be sure to keep a proper distance between Rotors as shown in **Fig. 9A** because Rotor is a strong magnet, failure to follow this instruction could result in:

- Finger injury caused by pinching between Rotors pulling each other
- Magnetic loss of Rotors or damage on the magnet portion of Rotor. (**Fig. 9B**)

Fig. 9A

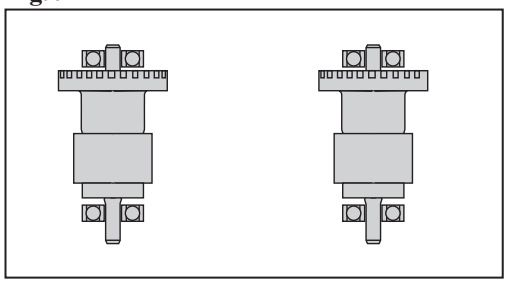
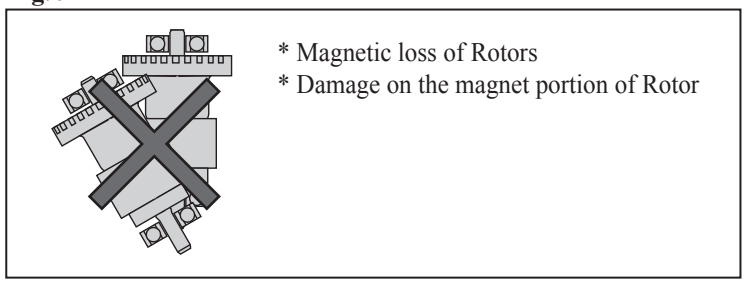


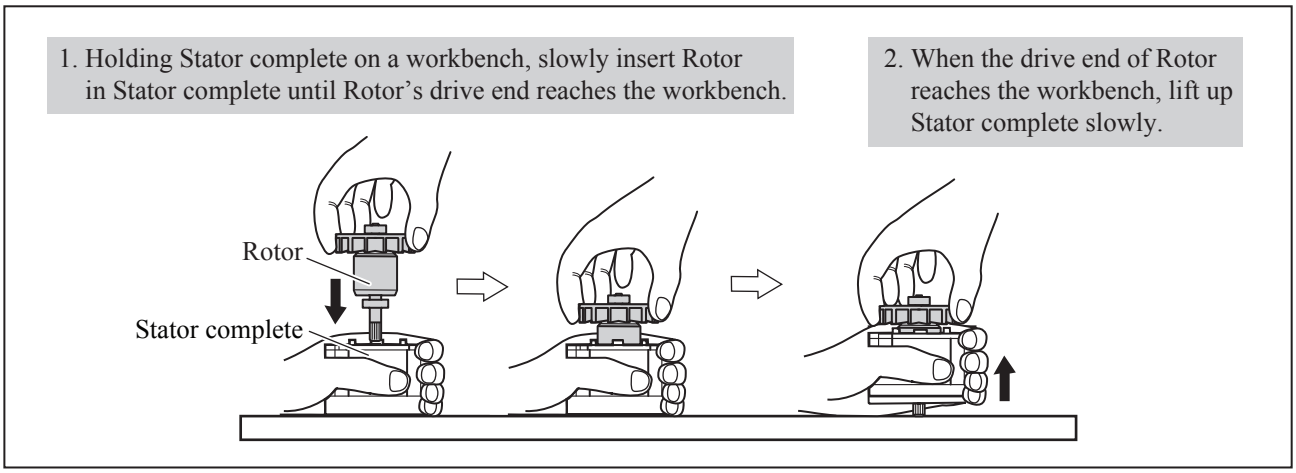
Fig. 9B



ASSEMBLING

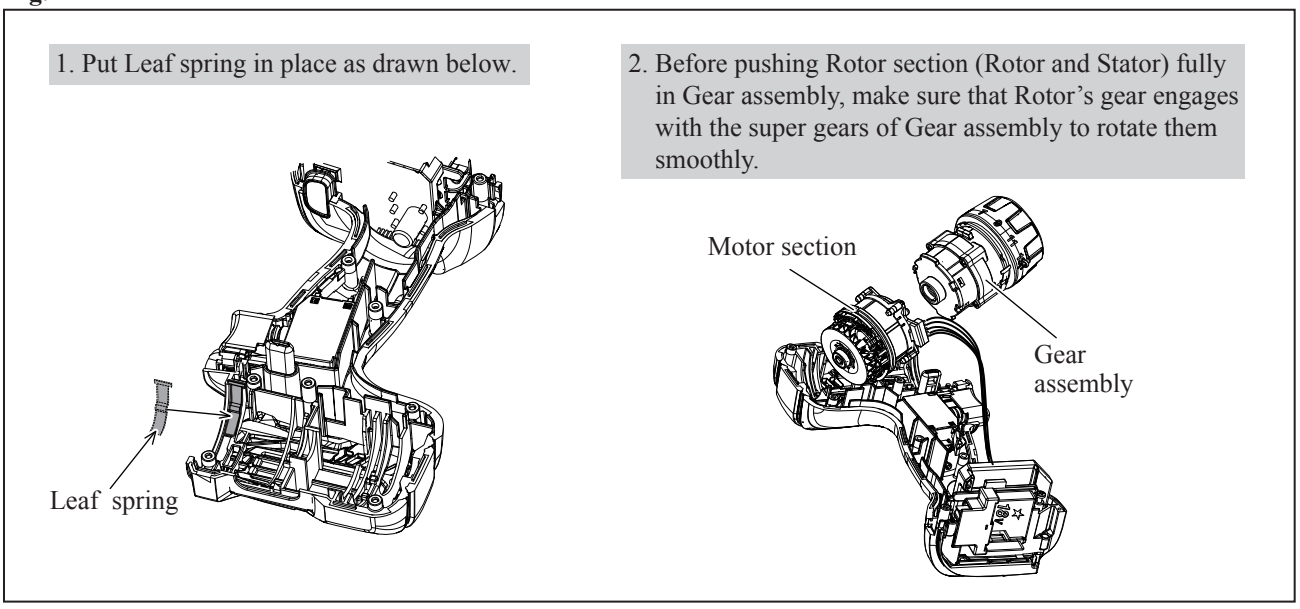
(1) Pass Rotor into Stator complete as drawn in **Fig. 10**.

Fig. 10



(2) Mount Leaf spring to Housing L, and join Gear assembly with Motor section. (**Fig. 11**)

Fig. 11



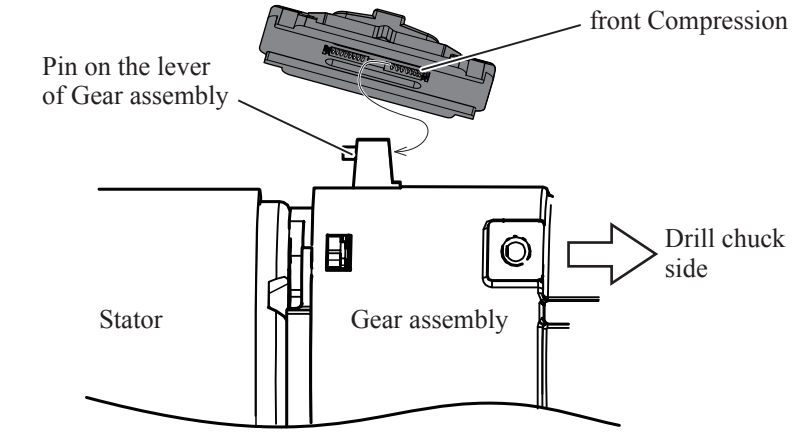
Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -2. Rotor, Gear assembly (cont.)

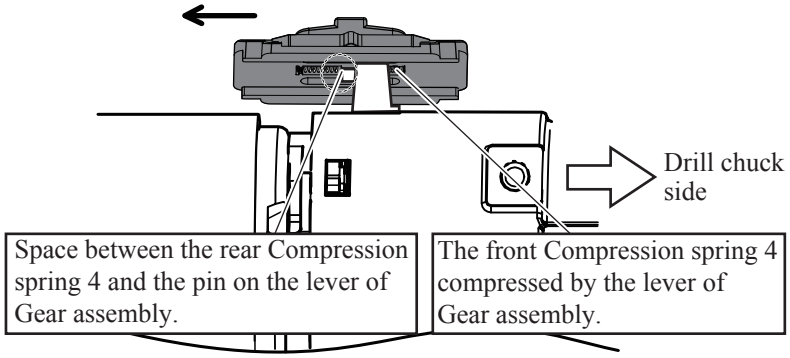
ASSEMBLING

(3) Assemble Speed change lever assembly as drawn in **Fig. 12**.

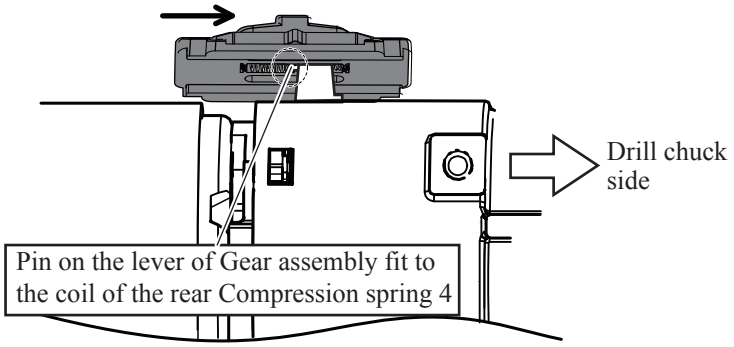
Fig. 12



1. Apply the front Compression spring 4 of Speed change lever assembly to the flat side (without pin) of Gear assembly for Speed change.



2. Push Speed change lever assembly toward Rotor side until it stops to have space between the pin of Gear assembly and the rear Compression spring 4.



3. Fit the pin of Gear assembly to Spring's coil with slowly returning Speed change lever assembly toward Drill chuck side.

4. Slide Speed change lever assembly to the either position 2 (High speed mode) or 1 (Low speed mode).

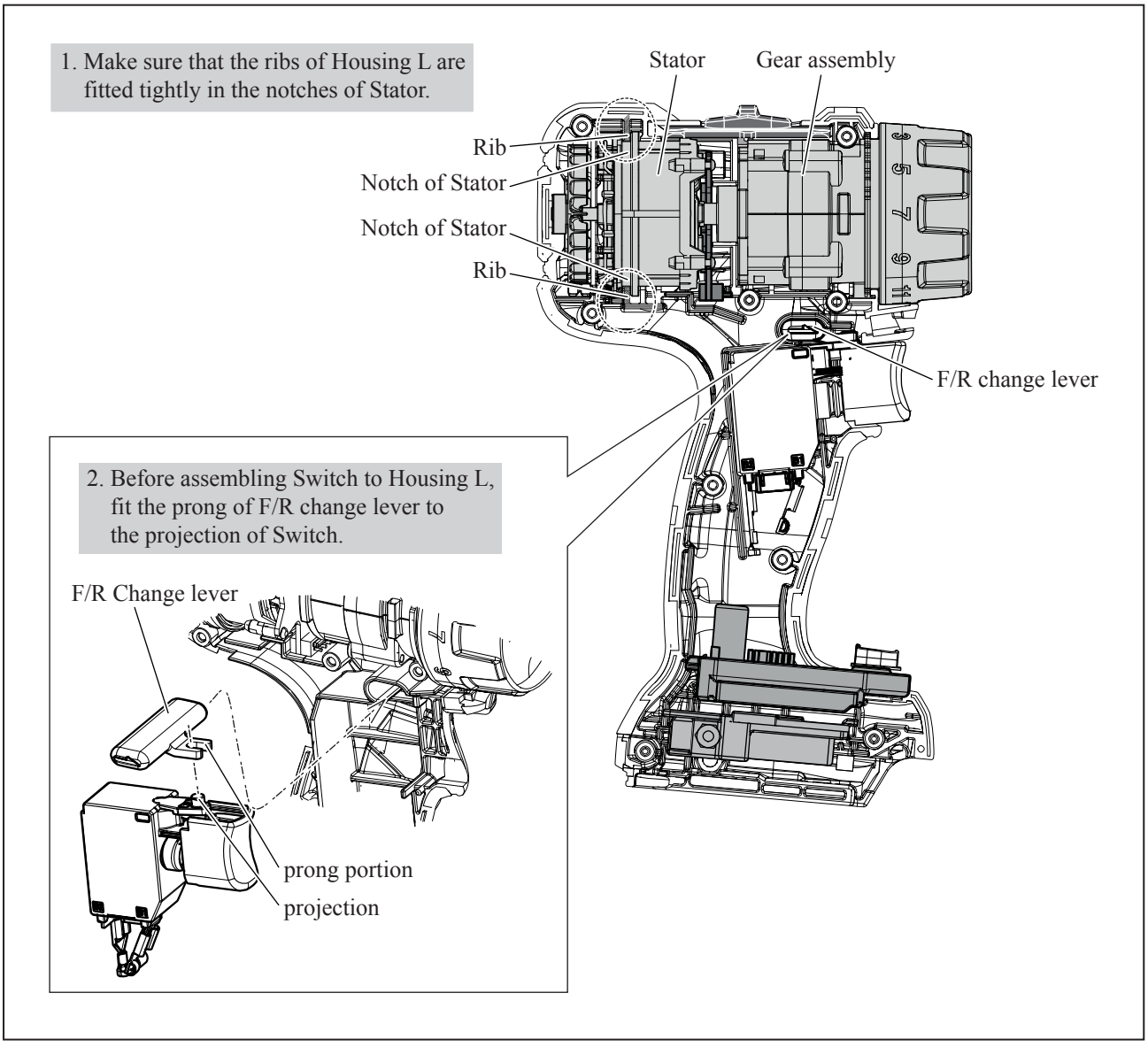
Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -2. Rotor, Gear assembly (cont.)

ASSEMBLING

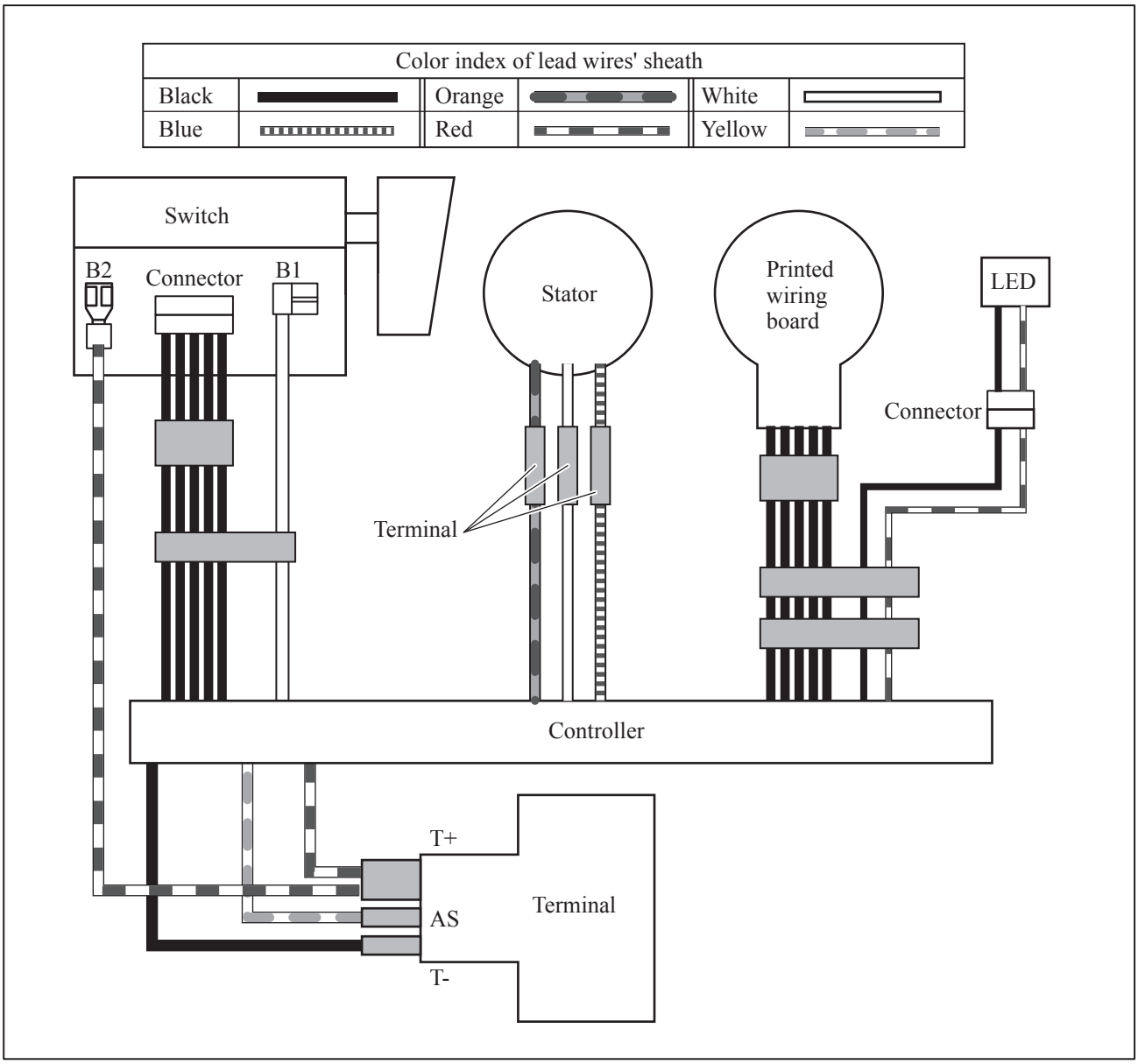
(4) Assemble Gear assembly and Rotor section to Housing L as drawn in **Fig. 13**.

Fig. 13



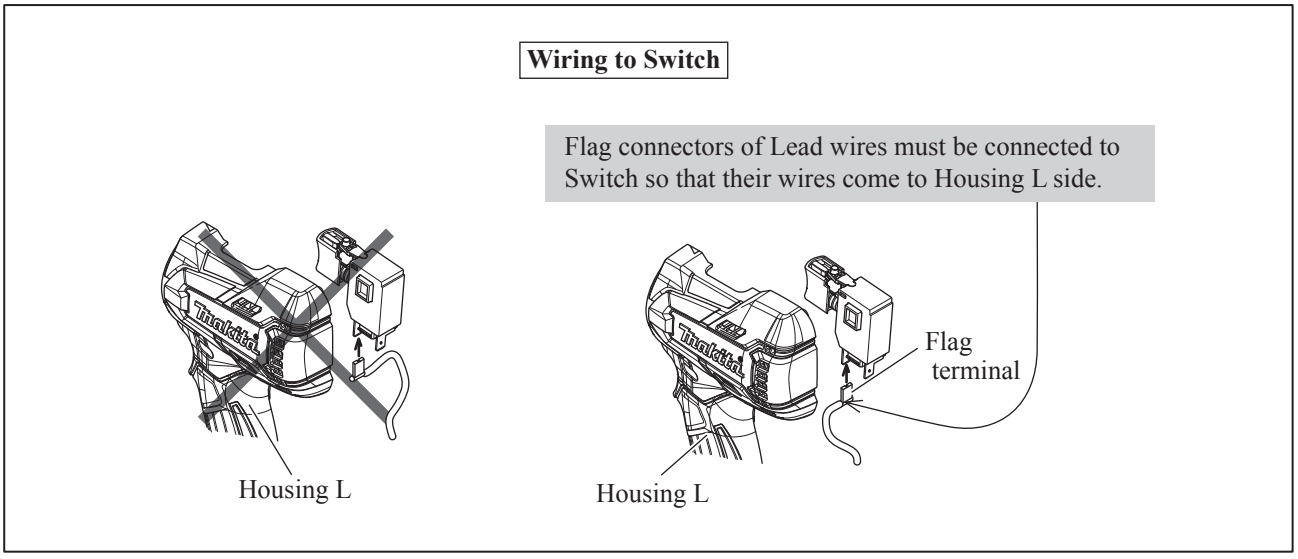
Circuit diagram

Fig. D-1



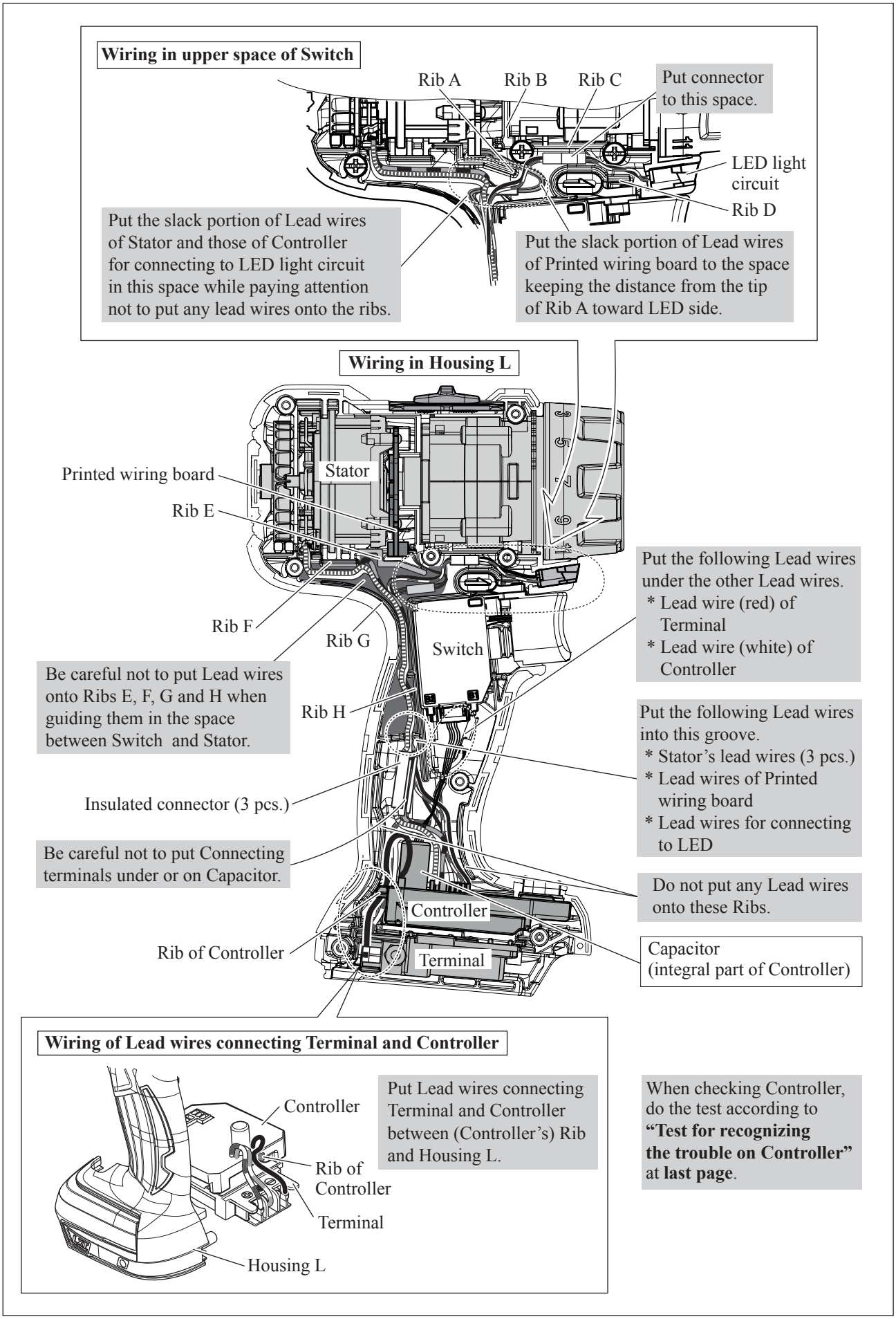
Wiring diagram

Fig. D-2



Wiring diagram

Fig. D-3



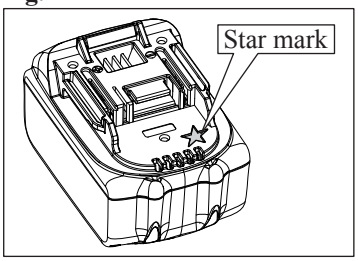
Trouble shooting

Whenever you find any trouble in your machine, first, refer to this list to check the machine for solution.

Note in Repairing

(1) Use the full charged battery which has the star mark. (**Fig. T-1**)
(2) When Housing is disassembled, check the conditions of the electrical parts (Connectors, Lead wires, Switches, etc.), Armature, Stator, Gear section, etc.
(3) Do the running test in Low speed mode (when the trigger is being pulled just a little) to check the following functions by repeating 10 times;
- F/R change lever • Operation mode change ring • High/Low speed change lever
- Variable speed control trigger

Fig. T-1



Check List for Trouble Shooting

Check the items from top of the following list. (Description of the item is referred to Circuit diagram in **Fig. D-1**.)
Change Controller if your problem cannot be solved although its corrective action has been carried out.

Symptom	Cause	Corrective action
LED indicator lamps are on. (No)	Controller is broken.	Replace Controller.
Rotation speed can be changed. (No)	Connectors are in incomplete connection.	Connect it firmly.
	Lead wires are broken.	Check Lead wires, or replace it.
	Switch is broken.	Replace Switch.
Motor runs when the machine is switched on. In case of running inconstantly, go to "No". (No)	Connectors are in incomplete connection.	Connect it firmly.
LED job light are on. (No)	Lead wires are broken.	Check Lead wires, or replace it.
	LED circuit is broken.	Replace LED circuit.
	Switch is broken.	Replace Switch.
The machine does not have any trouble.		
	Switch is broken.	Replace Switch.
LED indicator lamps are on. (No)	Terminal is broken.	Check Terminal, or replace it.
	Controller is broken.	Replace Controller.
	Connectors are in incomplete connection.	Connect it firmly.
LED job light are on. (No)	Lead wires are broken.	Check Lead wires, or replace it.
	Switch is broken.	Replace Switch.
Rotor is rubbed to Stator. (No)	Controller is broken.	Replace Controller.
	Rotor is broken.	Replace Rotor.
	Stator is broken.	Replace Stator.

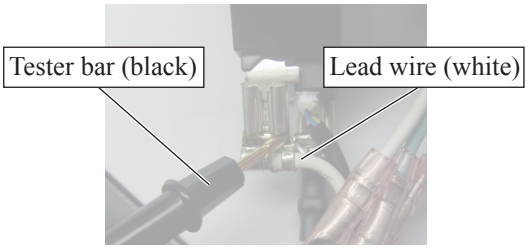
Trouble shooting

Test for recognizing the trouble on Controller

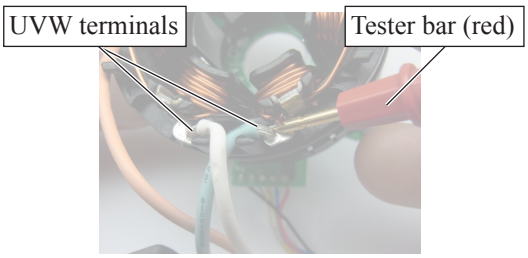
(1) Set Digital tester (1R402) to the diode mode.
(2) Attach the tester bars as drawn in **Figs. T-2** and **T-3**.

Fig. T-2

1. Attach Tester bar (black) to the terminal of Lead wire (white) which is connected to Switch.



2. Attach Tester bar (red) to any of UVW terminals of Stator unit (orange, white or blue lead wires).



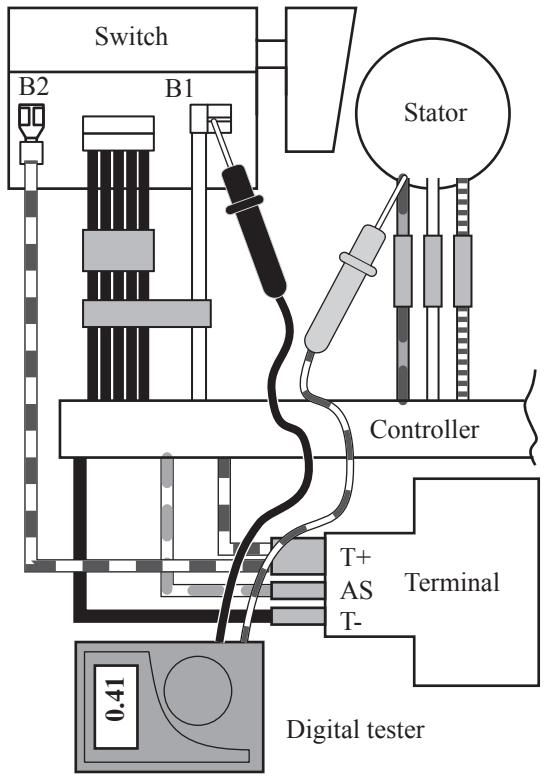
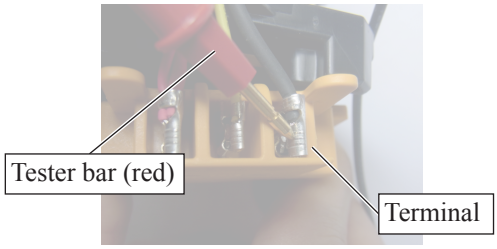
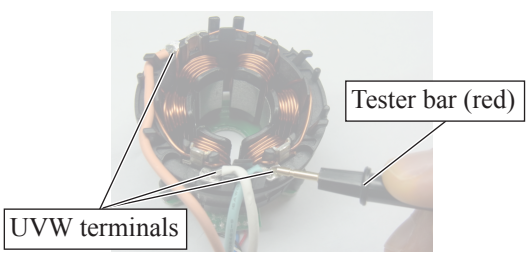


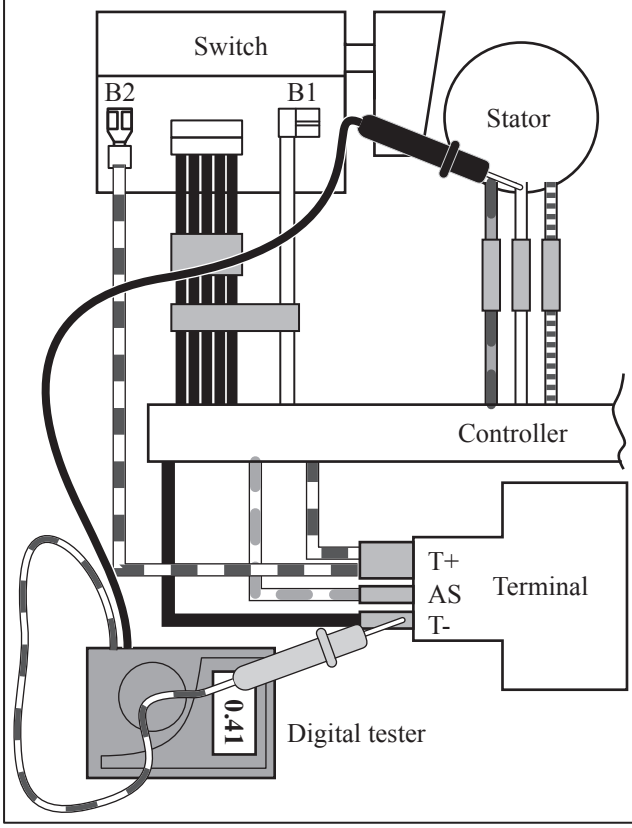
Fig. T-3

1. Attach Tester bar (red) to (-) Pole of Terminal to which Lead wire (black) is connected.



2. Attach Tester bar (red) to any of UVW terminals of Stator unit (orange, white or blue lead wires).





(3) There is no fault on Controller if Digital tester (1R402) indicates within **0.39V - 0.41V** in the both tests.
If not, **Controller is broken**. Replace it with a new one.