OFFICIAL USE
For ASC

CORDLESS HAMMER DRIVER DRILL
DDF485

REPAIR MANUAL

November 2018
Ver.1

1 CONTENTS

2 CAUTION

Repair the machine in accordance with “Instruction manual” or “Safety instructions”.
Follow the instructions described below in advance before repairing:

- Wear gloves.
- In order to avoid wrong reassembly, draw or write down where and how the parts are assembled, and what the parts are. It is also recommended to have boxes ready to keep disassembled parts by group.
- Handle the disassembled parts carefully. Clean and wash them properly.

3 NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R298	1/2” Drive long hex socket 10	removing Drill chuck
1R359	Drill chuck removal jig	removing Drill chuck

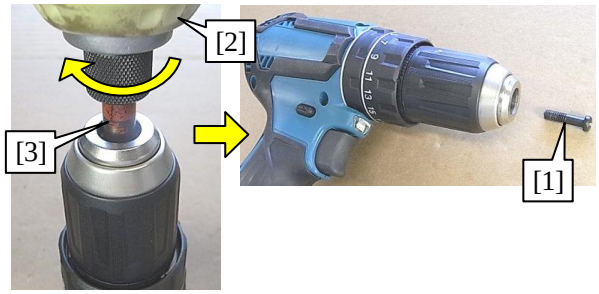
4 TIGHTENING TORQUE SPECIFICATIONS

Q’ty	Parts to fasten			Fastener	Tightening torque (N･m)
3	Controller terminal unit	⇔	Stator	M3x6 Flat head screw	0.4～0.6
3	Controller sensor board	⇔	Stator	PT 2x6 Tapping screw	0.40～0.55

5 REPAIR
5-1 Drill chuck
5-1-1 Disassembling

1 Remove Battery from the machine.

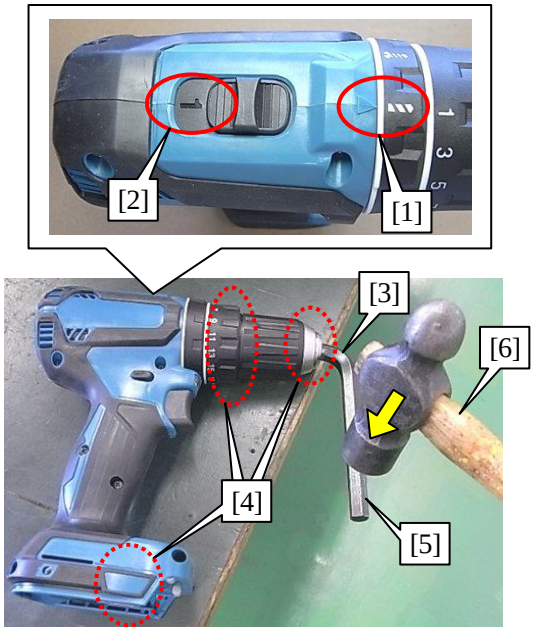
Fig. 1



2 Remove M6×22 (-) Flat head screw [1] by turning it clockwise with Impact driver [2].

Tips
Stable operation is available if you tighten the claws of Drill chuck with a Round - bit [3] in advance.

Fig. 2



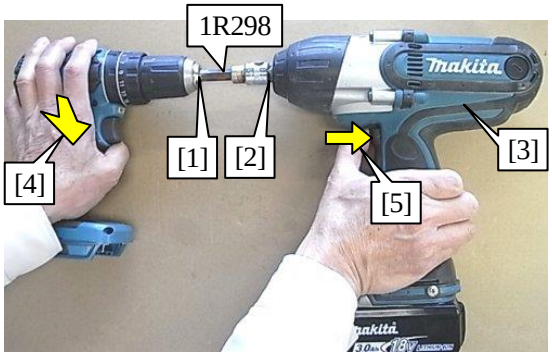
3 Set the machine **drill mode** [1] and Speed change lever to **1** (low speed mode) [2].

4 Fix the shorter leg of Hex wrench 10 [3] in the jaws of Drill chuck.

5 In order not to break Spindle, three circled portions [4] of the machine on a workbench.

6 Hit the other end of Hex wrench 10 [5] with an iron hammer [6] to remove Dill chuck while pushing three portions.

Fig. 3



7 If it is difficult to remove Dill chuck, follow the steps below.

8 Fix 1R298 in Drill chuck [1].

9 Insert 1R298 into Square drive [2] of DTW450 [3].

10 Hold the machine body of DHP485 [4] firmly.

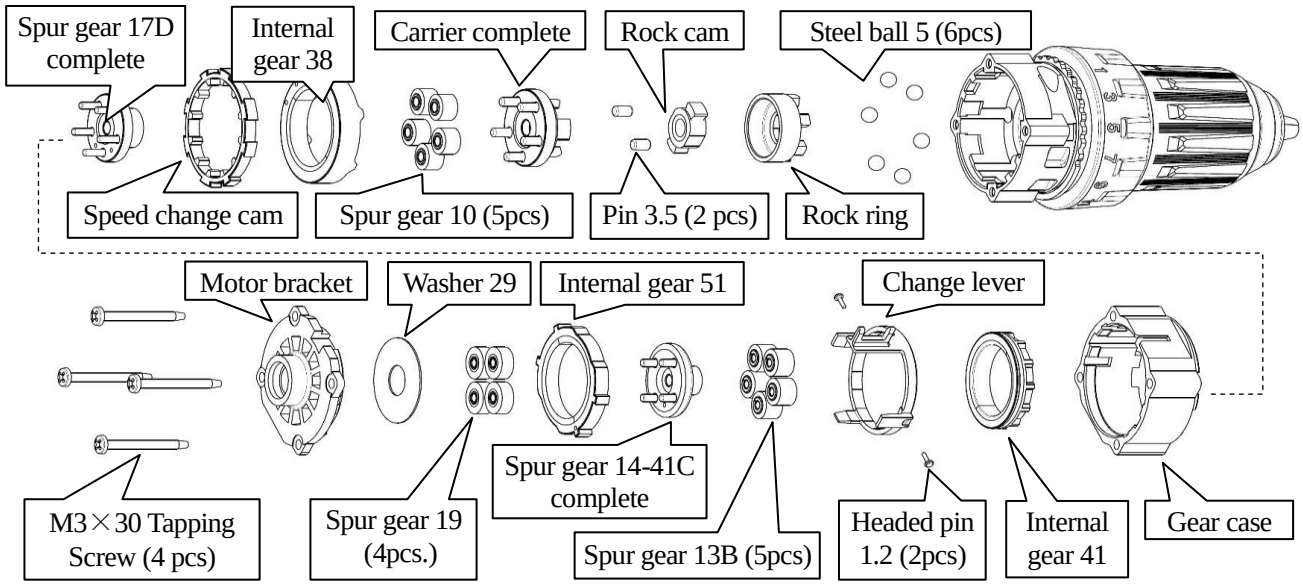
11 Push the upper side of Rocker switch of DTW450 [5] to turn 1R298 counterclockwise.

Fig. 4

12 Use 1R359 to remove Drill chuck if it cannot be removed in the previous steps.

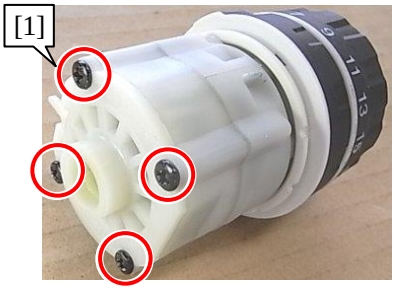
13 The components of Gear assembly are as follows.

14 Apply a small amount of Makita grease FA No.2 when you dismantle Gear assembly, if needed.



5-1-2 Assembling

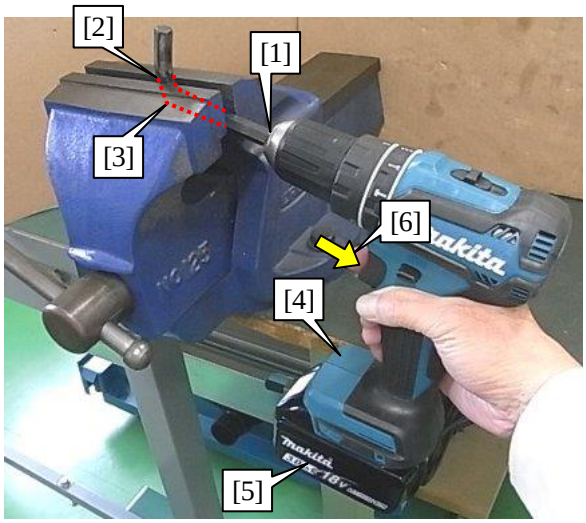
Fig. 5



1 Assemble all component parts of Fig.4.

2 Tighten four M3X30 Tapping screws [1] by using DF010D with Clutch position No.7.

Fig. 6



3 Turn Drill chuck clockwise until it seats on the end of the threaded portion of Spindle.

4 Fix the longer leg of Hex wrench 10 in the jaws of Drill chuck [1], then clamp L-shaped portion of Hex wrench 10 with Vise [2].

Note
L-shaped portion of Hex wrench 10 [3] must be fixed securely.

5 Housing R [4] must be touched on the side surface of workbench.

Note
Battery portion [5] must not be touched to the workbench.

6 Pull Switch trigger [6] slowly with Drill mode / Speed change 1/ Forward clockwise until Spindle is locked.

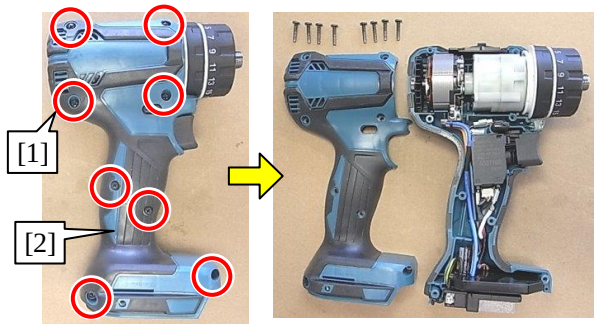
Note
Pull Trigger so that Spindle's rotating reaches full speed in one second.

7 Apply adhesive (Loctite 272 or ThreeBond 1303B) to the threaded portion when re-using the removed M6x22 (-) Flat head screw [7].

5-2 Gear assembly, Rotor
5-2-1 Disassembling

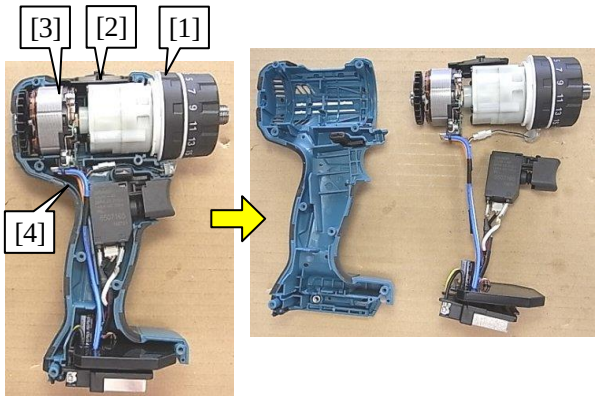
1 Disassemble Drill chuck according to process beforehand. (5-1-1)

Fig. 7



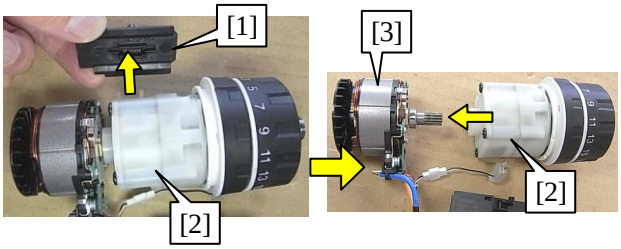
2 Remove Housing R [2] by loosening eight 3x16 Tapping screws [1].

Fig. 8



3 Remove Gear assembly [1], Speed change lever [2], Motor section [3] from Housing L [4] at the same time.

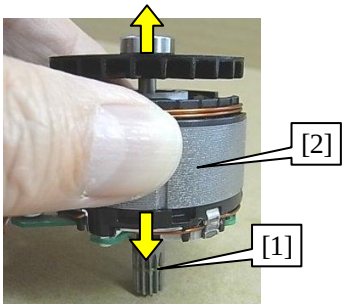
Fig. 9



4 Remove Speed change lever [1] from Gear assembly [2].

5 Remove Motor section [3] from Gear assembly [2].

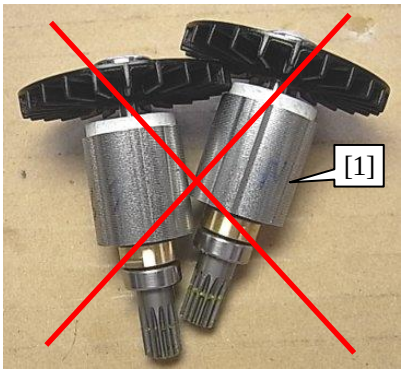
Fig. 10



6 Press the drive end [1] of Rotor against the workbench, then remove Rotor from Stator [2] by pushing down Stator to the workbench.

5-2-2 Assembling

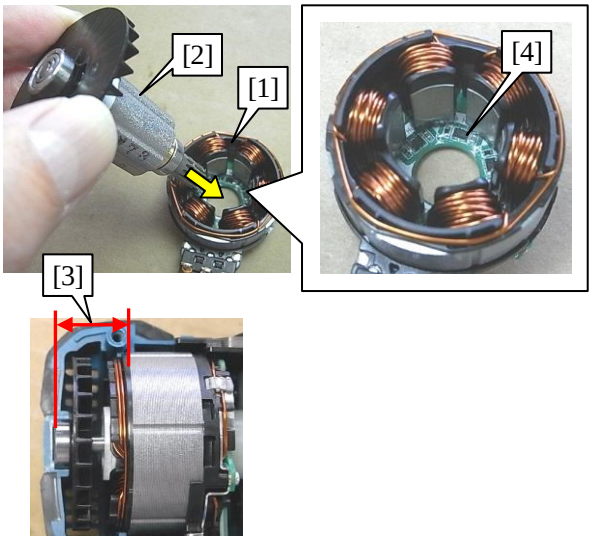
Fig. 11



1 Rotor [1] is a strongly magnetic body. When handling or storing Rotors, therefore protect Rotors from deterioration due to the magnetic force as follows.

Note
Be sure to provide a proper distance between Rotors to Protect from: · Demagnetization by contact of Rotors. · Scratches on Rotor periphery, damage of Fan and internal crack of Rotor by strong collision of Rotors. Also be sure to remove metal particles attached on Rotor surface, which will cause unusual noise and trouble.

Fig. 12

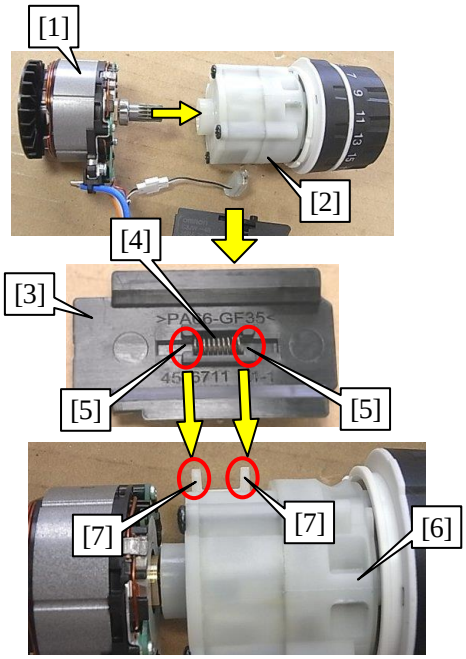


2 While pushing Stator [1] against the workbench, insert Rotor [2] straight down into Stator.

3 A correctly assembled Motor section will fit in Housing L exactly as indicated by [3].

Note
• Do not pinch your finger between Rotor and Stator, because Rotor is a strong magnet and pulled towards Stator. • Once Rotor has been inserted, do not force it into Stator any further or you will break the printed wiring board [4] of Controller.

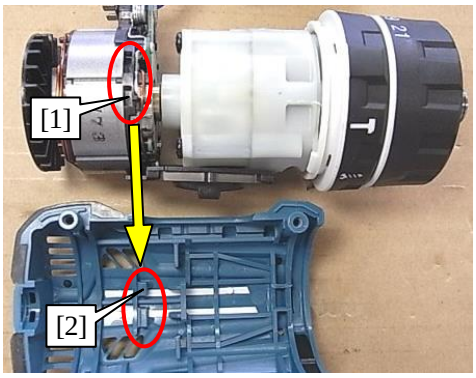
Fig. 13



4 Insert Motor section [1] into Gear assembly [2].

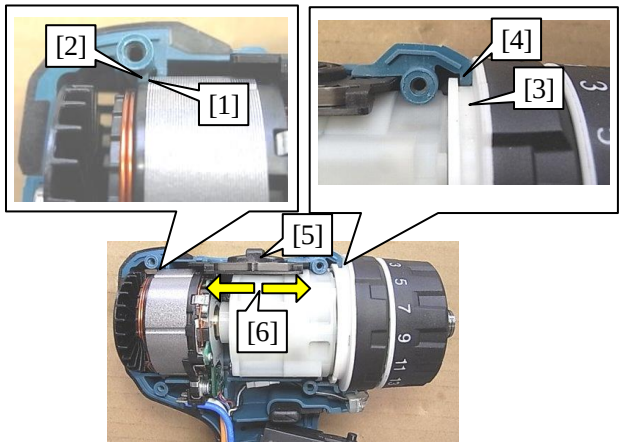
5 Fit the grooves [5] of Speed change lever [3] on both sides of Compression spring 4 [4] to the protrusions [7] of Gear assembly [6].

Fig. 14



6 Assemble Motor section with Gear assembly to Housing L by aligning the groove of Stator [1] with the projection on Housing L [2].

Fig. 15

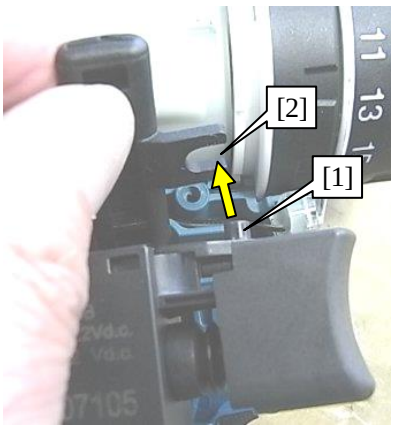


7 The edge of Stator [1] should be positioned inside the rib [2] of Housing L.

8 The groove [3] of Gear assembly should be positioned inside the rib [4] of Housing L.

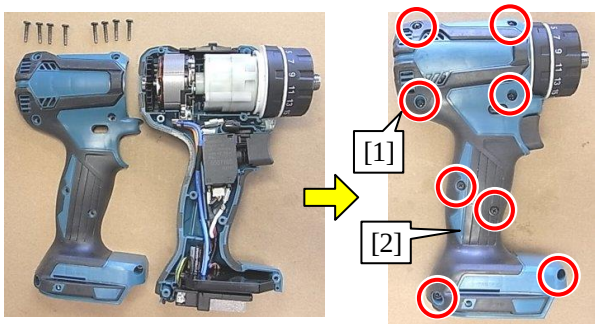
9 Shift Speed change lever [5] in either direction [6].

Fig. 16



10 Fit the protrusion [1] of Switch lever in the groove [2] of F/R change lever.

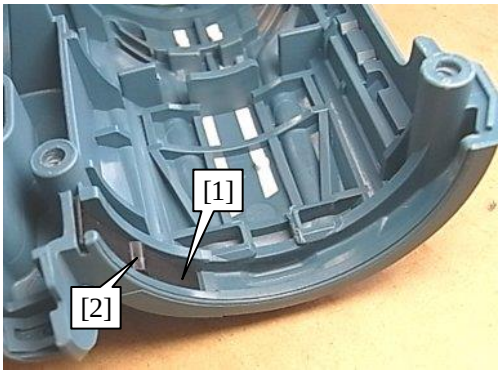
Fig. 17



11 Assemble Housing R [2] to Housing L with eight 3x16 Tapping screws [1].

5-3 Assembling of Leaf spring

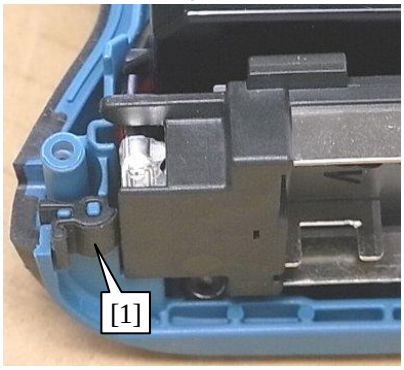
Fig. 18



1 Assemble Leaf spring [1] to Housing L/R by facing the convex [2] of Leaf spring as shown left.

5-4 Assembling of Cushion

Fig. 19

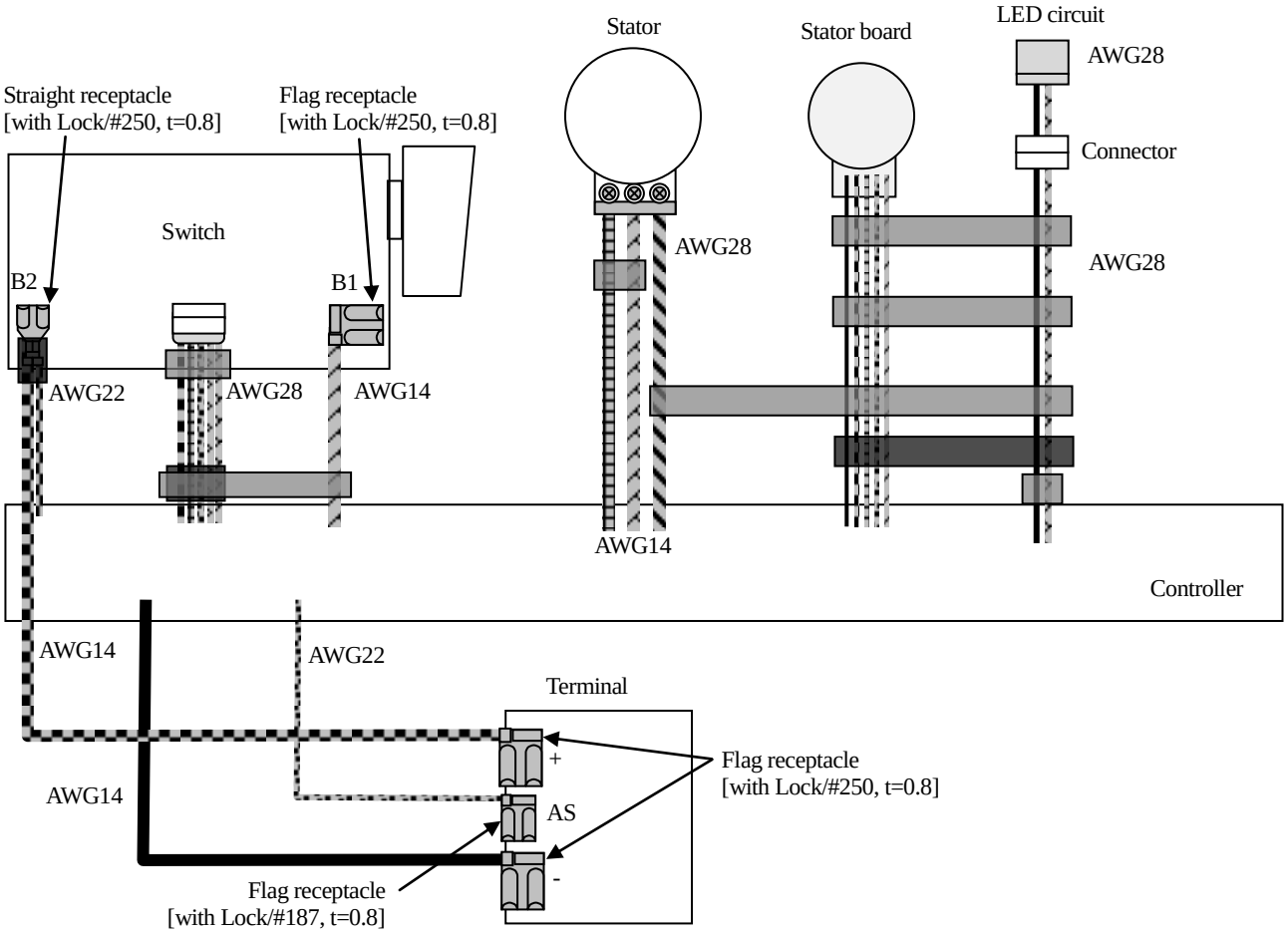


1 When you use Cushion [1] again, assemble Cushion as shown left.

6 CIRCUIT DIAGRAM

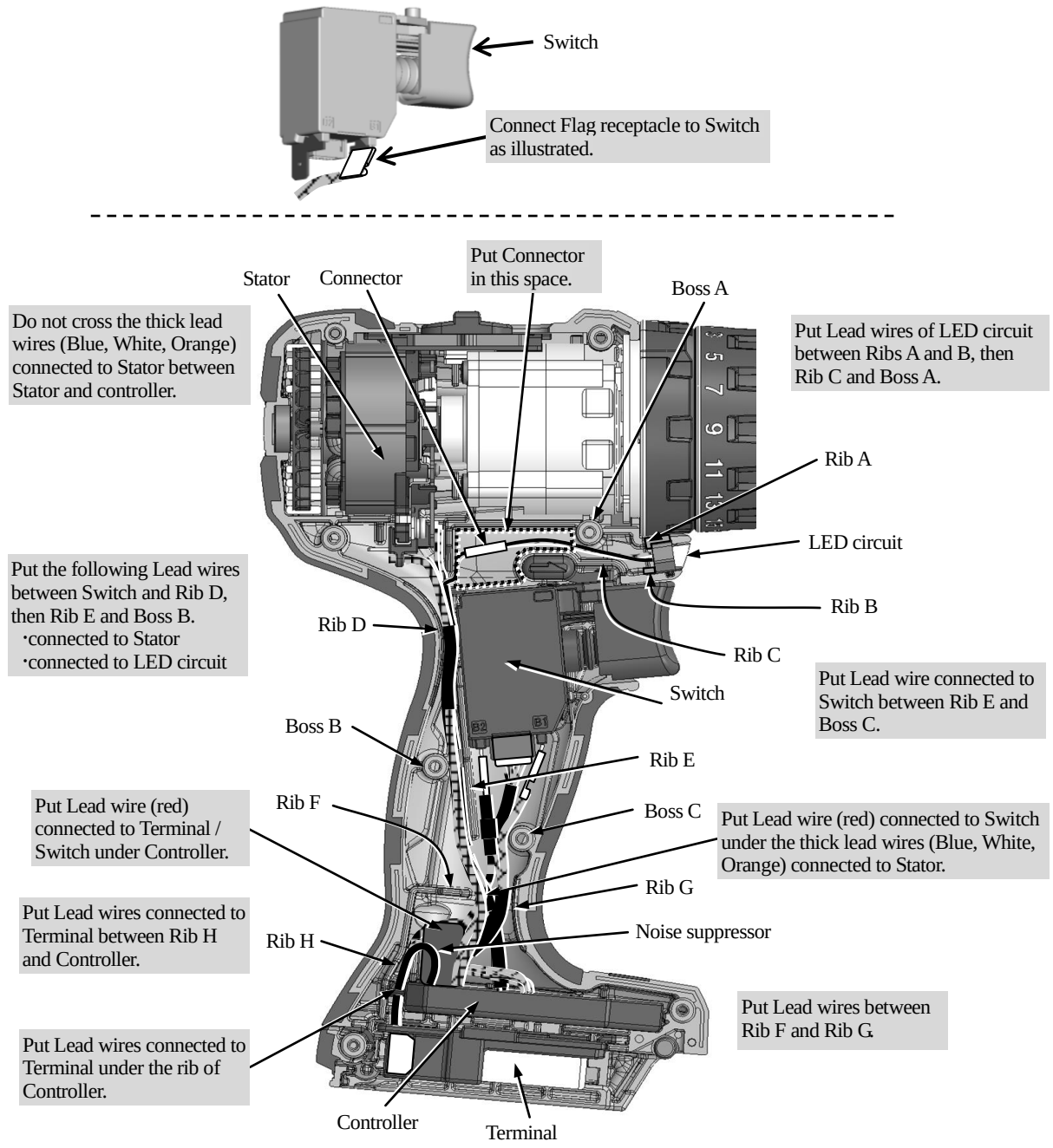
Fig. 20

Color index of lead wires' sheath			
White		Gray	
Blue		Black	
Yellow		Orange	
Red			



7 WIRING DIAGRAM

Fig. 21



8 TROUBLESHOOTING

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

8-1 Note for Repairing

1 Use a full charged battery which has a star mark.

2 When Housing is disassembled, check the conditions of the electrical parts (Connectors, Lead wires, Switches, etc.), Rotor, Stator, Gear section, etc.

3 Be sure to test the following parts 10 times to correctly diagnose their functions:

・ F/R change lever
・ Variable speed control trigger

4 In order to make it easier to reproduce symptoms, run the motor at the lowest speed. (The speed can be changed using the dedicated app.)

5 Use the following Repairing tools for diagnosing LED and Switch.

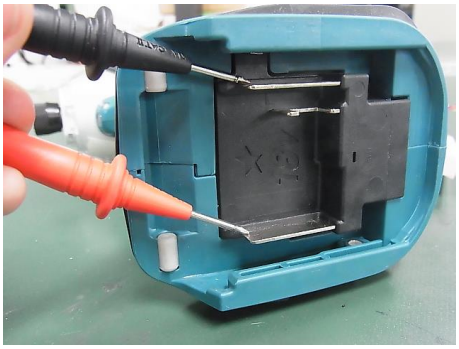
Repairing tools	Purpose
1R412	For checking whether LED lights up
1R413	For checking variable resistance value or electrical continuity at contact points

8-2 Test for checking the short-circuit in FET (Field Effect Transistor) of controller

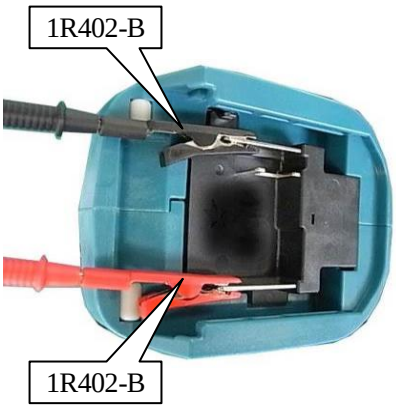
Fig. 22

1 Set Digital tester (1R402) to Diode mode.

Fig. 23



2 Connect Black probe to the plus pole of Terminal, and Red probe to the minus pole.



Tips
By attaching 1R402-B to each probe of 1R402, you can make your hands free for easier check.

Note
Be careful not to reverse them. The reversed contacts could spoil the test.

3 Wait until the voltage value shown on the tester is stable, and then check the value. There is no problem with FET of Controller if the value is within the range of 0.7V -0.9V. If the value is 0V or 0.4V approx., Controller is broken. Replace it with a new one.

8-3 Flowchart for Troubleshooting

Check the items from the top of the following list.

Note: Description of the item is referred to Circuit diagram. (6 CIRCUIT DIAGRAM)

After corrective action, return to the start of Troubleshooting and re-check again.