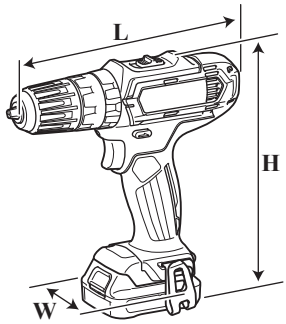
TECHNICAL INFORMATION

Model No. ► HP331D
Description ► Cordless Hammer Driver Drill



Dimensions: mm (")	
Length (L)	201 (7-7/8)
Width (W)	66 (2-5/8)
Height (H)	209 (8-1/4)*2
	228 (9)*3

*2 With BL1015/ BL1020B
*3 With BL1040B

CONCEPT AND MAIN APPLICATIONS

We are going to launch a new 10.8V (12V max*1) platform. The new platform has been developed based on the current one, and features newly developed slide Li-ion battery instead of stick one; use of the new battery provides stable contact between battery and tool and the same ergonomic handle as LXT series models to obtain more satisfaction from professional users.
Model HP331D is one of the first new 10.8V (12V max*1) platform models to launch.
The main features and benefits are:
• Increased motor power for higher application speed and max tightening torque
• Best possible ergonomic handle for drilling/driving applications

*1 For Asia, Central and South America, Australia and North America

► Specification

Specification \ Model		HP331D
Battery	Voltage: V	10.8
	Capacity: Ah	1.5, 2.0, 4.0
	Energy capacity: Wh	17, 22, 44
	Cell	Li-ion
	Type	Slide
	Charging time: min	50, 70, 130 with DC10WC 22, 30, 60 with DC10SA
Max output power: W		170
No load speed: min^{-1}= rpm	2nd (High)	0-1,700
	1st (Low)	0-450
Impacts per minute: min^{-1}= ipm	2nd (High)	0-25,500
	1st (Low)	0-6,750
Capacity of drill chuck: mm (")		0.8 (1/32) - 10 (3/8)
Capacity: mm (")	Steel	10 (3/8)
	Wood	21 (13/16)
	Masonry	8 (5/16)
Torque setting		18 stages + drill mode
Clutch torque setting: N·m (in·lbs)		0.5 (4) - 3.5 (30)
Max tightening torque: N·m (in·lbs)	Hard joint	30 (270)
	Soft joint	14 (130)
Max lock torque: N·m (in·lbs)		28 (250)
Electric brake		Yes
Mechanical speed control		Yes (2-speed)
Variable speed control		Yes (by trigger)
Reversing switch		Yes
LED job light		Yes
Weight according to EPTA-Procedure 01/2003: kg (lbs)		1.1 (2.5)*2 1.3 (2.9)*3

► Standard equipment

Battery*4	Battery cover*5	Phillips bit 2-45 (for N-type areas) or 2-50 (for M-type areas)
Charger*4	Belt clip	Plastic carrying case*4

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

► Optional accessories

Battery BL1015*6	Battery BL1016*1	Charger DC10SA*6	Charger DC10SB*1	Driver bits	Belt clip
Battery BL1020B*6	Battery BL1021B*1	Charger DC10WC*6	Charger DC10WD*1	Socket bits	Bit holder
Battery BL1040B*6	Battery BL1041B*1				Holster

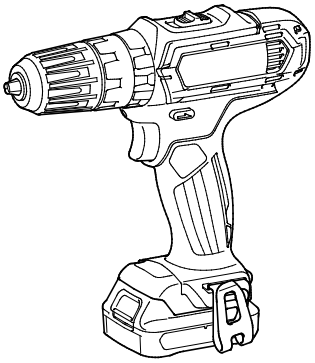
*6 For all countries except Asia, Central and South America, Australia and North America

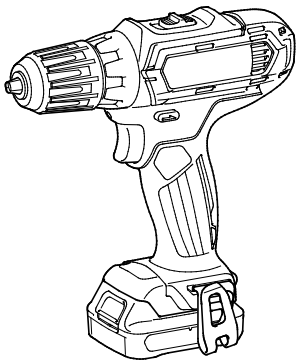
CORDLESS HAMMER DRIVER DRILL
HP331D

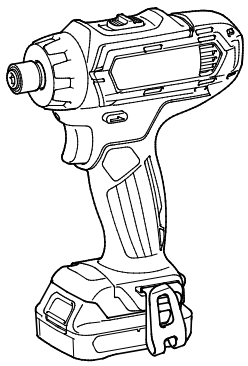
CORDLESS DRIVER DRILL
DF331D

CORDLESS DRIVER DRILL
DF031D

REPAIR MANUAL







CONTENTS

1. EXPLODED DIAGRAM

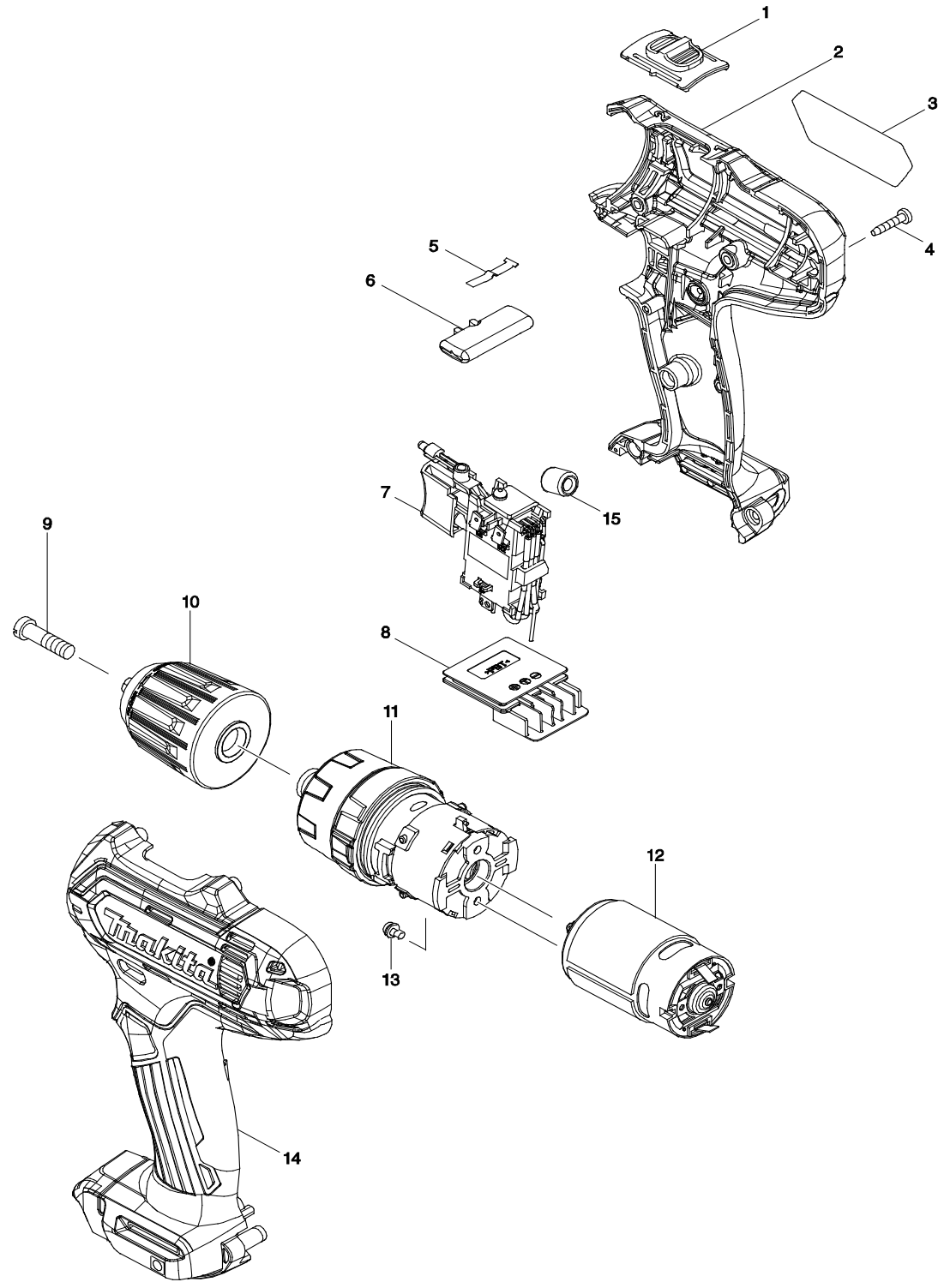
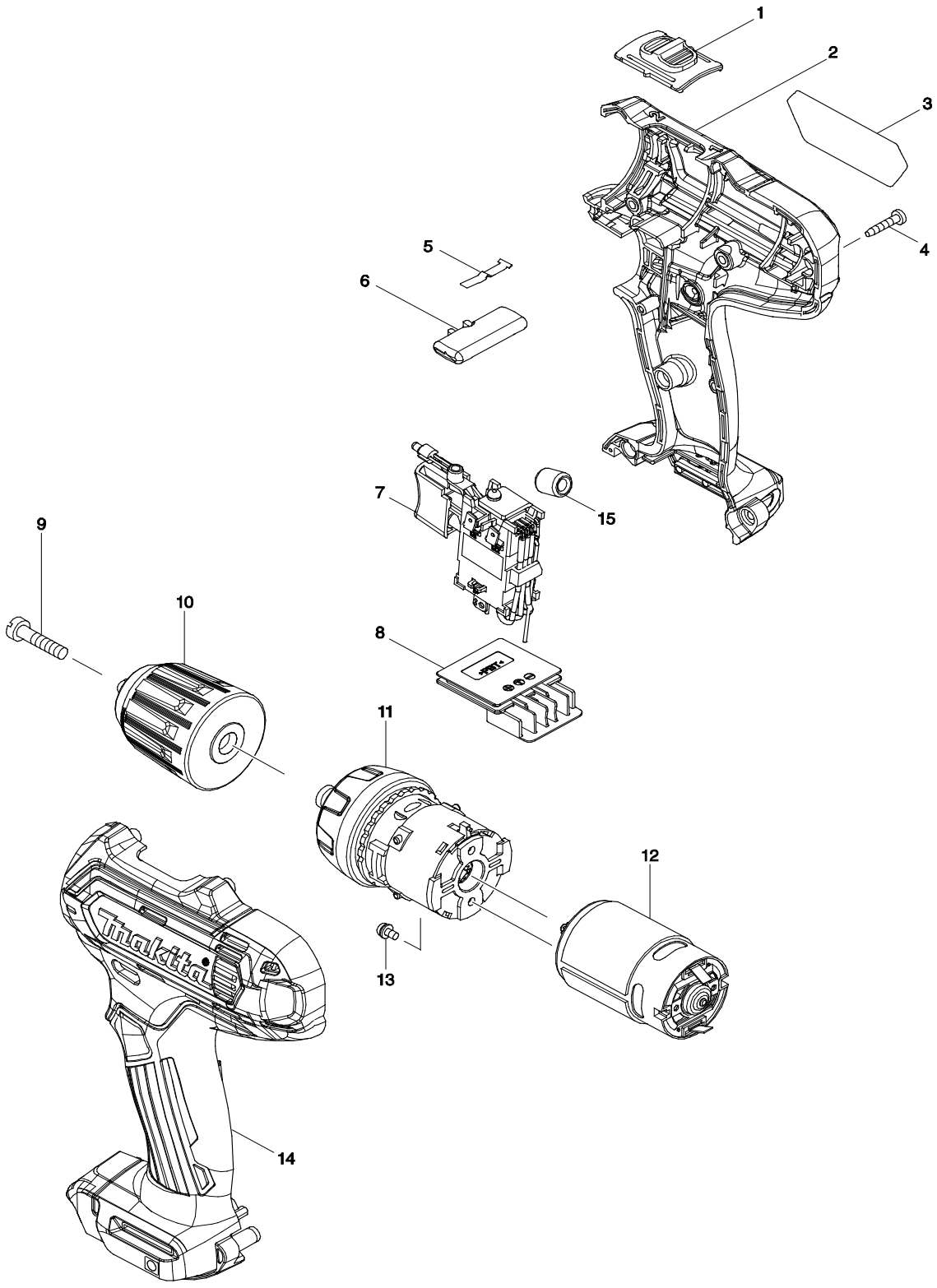
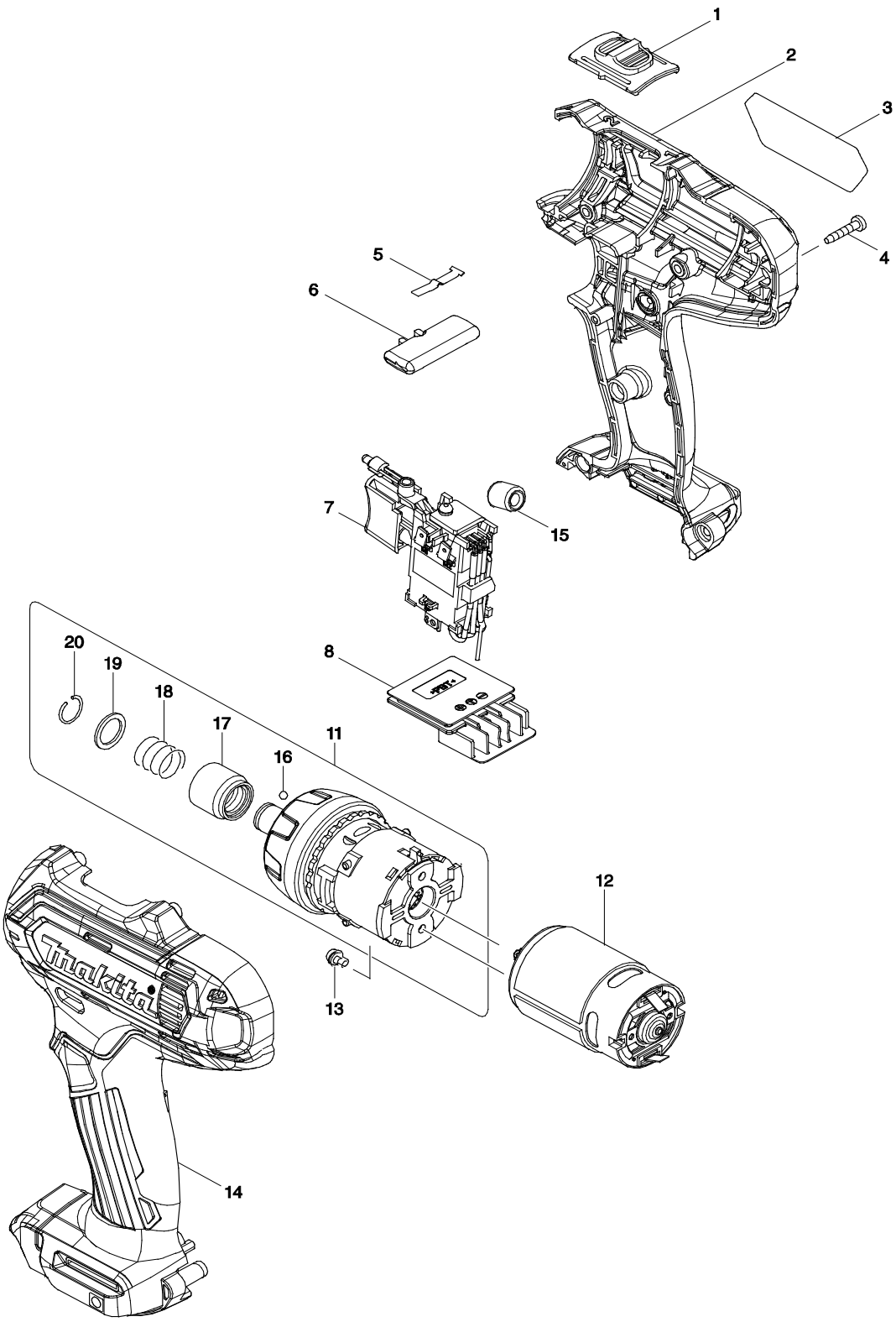


Figure 1



2015/06
DF331D

Figure 2



2015/06
DF031D

Figure 3

ABOUT THIS MANUAL

The number in the parenthesis () is the item number on the exploded diagram (Figure 1, Figure 2, Figure 3).

2. REPAIR

Repair the machine in accordance with “Instruction manual” or “Safety instructions”.

2.1. NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R003	Retaining ring pliers ST-2N	removing Ring spring 10
1R212-A	Tip for retaining ring pliers	use with 1R003 in order to remove/ assemble Ring spring 10
1R212-B	Plate set (with screws)	
1R231	1/4" Hex. shank bit for M8	disassembling Drill chuck (10)
1R359	Chuck removing tool	disassembling Drill chuck (10) If it is impossible to remove as per the illustration in 3-2-1, refer to Repair Tool List.
-	Hex wrench 8	disassembling Drill chuck (10)
-	Bit adapter	disassembling Drill chuck (10)

2.2. DISASSEMBLY/ASSEMBLY

2.2.1. DRILL CHUCK (ONLY FOR HP331D, DF331D)

2.2.1.1. DISASSEMBLING

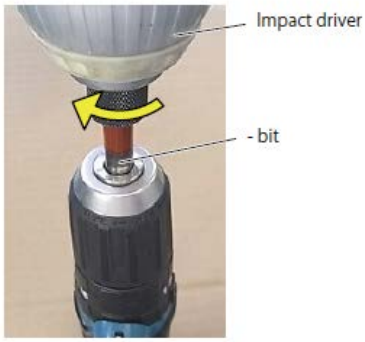


Figure 4

1. Remove M6x22(-) Flat head screw by turning it clockwise with Impact driver.

   Note:

   M6x22(-) Flat head screw: HP331D

   M5x22(-) Pan head screw: DF331D

   Stable operation is available if you tighten claws of Drill chuck with a Round -bit in advance.

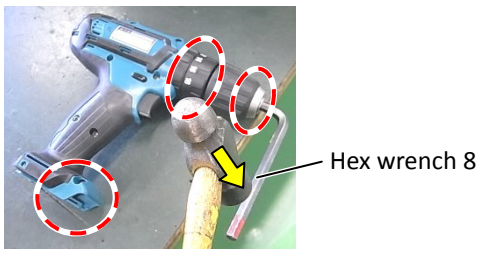


Figure 5

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

   Fix the shorter leg of Hex wrench 8 in the jaws of Drill chuck.

   In order not to break Spindle, be sure to put the three circled portions of the tool on a workbench.

   Hit the other end of Hex wrench 8 with Plastic hammer to remove Drill chuck.

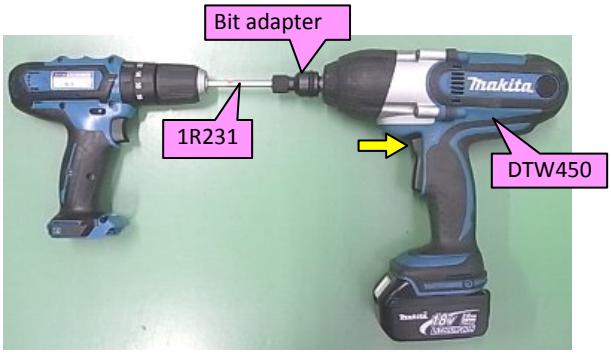


Figure 6

3. If it is difficult to remove, follow the steps below.

   Set 1R231 to Bit adapter and fix it in Drill chuck.

   Insert DTW450 into Bit adapter.

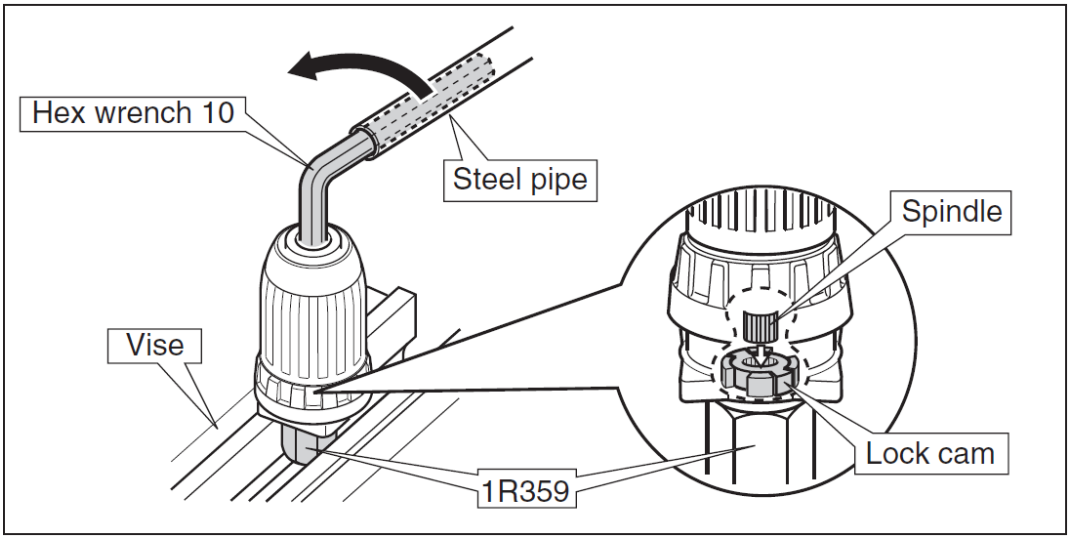
   Hold the body tightly.

   Push the upside of Switch to turn 1R231 counterclockwise.

   or

   Push the upside of Switch to remove Drill chuck.

4. Use 1R359 to remove Keyless drill chuck if it cannot be removed in the previous step.



5. The component of Gear assembly is as follows.

6. Apply a small amount of Makita grease FA No. 2 if needed.

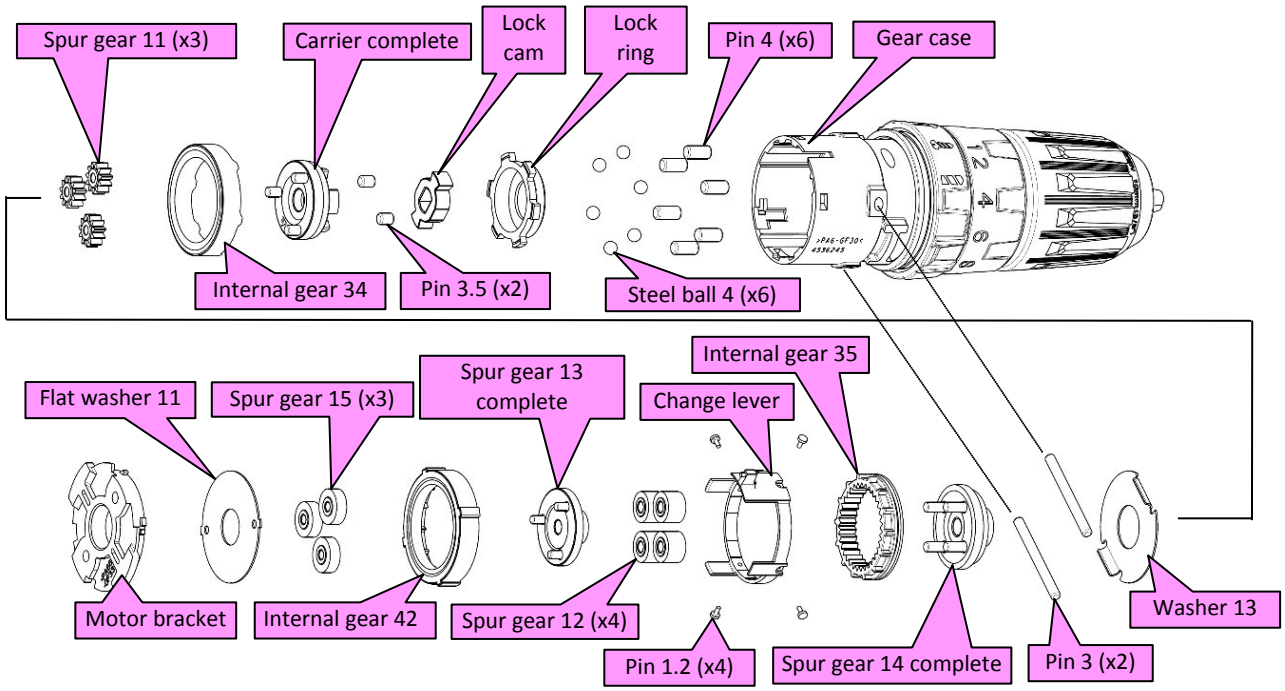


Figure 7

2.2.1.2. ASSEMBLING

Figure 8

1. Turn Drill chuck clockwise until it seats on the end of the threaded portion of spindle.
2. Fix Hex wrench 8 as shown.

   Note: L-shaped portion of Hex wrench 8 must be fixed securely.
3. Housing R must be touched on the side surface of workbench.

   Note: Battery portion must not be touched.
4. Pull Switch trigger slowly with Drill mode/Speed change1/ Forward (clockwise) rotation until spindle is locked.

   Note: Release the trigger of Switch just after Spindle is locked. Do not keep on pulling the trigger for longer than one second.
5. If you reuse the Screw removed from Drill chuck, apply ThreeBond 1342 or Loctite 243 to the thread of the Screws.

   Note: M6x22(-) Flat head screw: HP331D
   M5x22(-) Pan head screw: DF331D

2.2.2. GEAR ASS'Y AND MOTOR SECTION

2.2.2.1. DISASSEMBLING

It is required to remove Drill chuck when replacing Gear assembly.

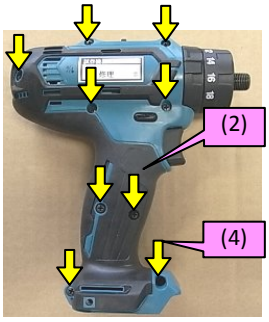


Figure 9

1. Remove Housing R (2) by loosening 3x16 Tapping screw (4) (x9).

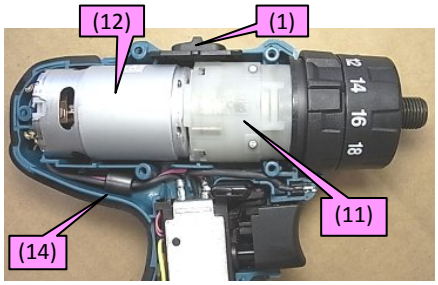


Figure 10

2. Remove Gear ass'y (11), Motor (12) and Speed change lever (1) from Housing L (14) at a time.

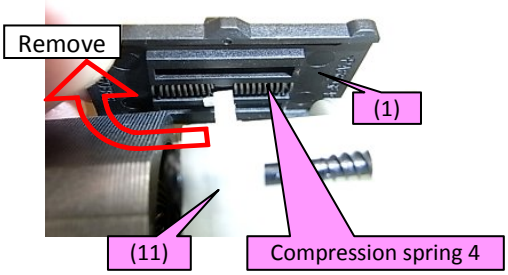


Figure 11

3. Remove Speed change lever ass'y (1) from Gear ass'y (11).
Note: Be careful not to lose Compression springs 4.

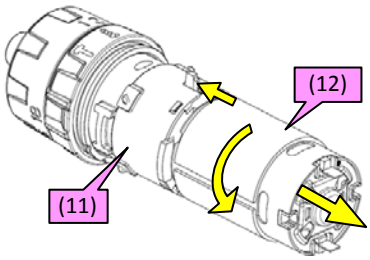


Figure 12

4. Set the speed change lever of Gear ass'y (11) to High speed mode.
Turn DC Motor (12) counterclockwise to pull it out.

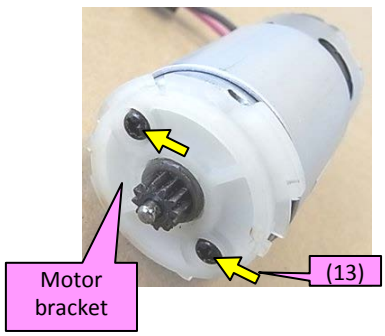


Figure 13

5. Remove Motor bracket by unscrewing two M3x6 Pan head screws (13) when you replace DC Motor.

2.2.2.2. ASSEMBLING

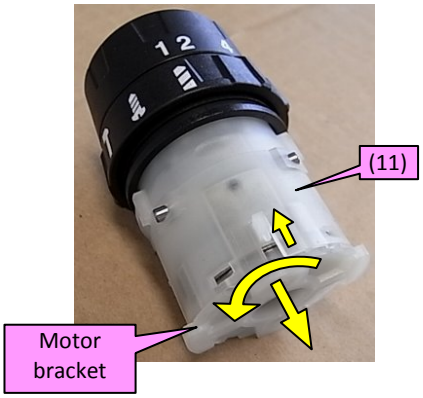


Figure 14

1. Set the Speed change lever ass'y of Gear ass'y (11) to High speed mode.
2. Remove Motor bracket by turning Gear ass'y (11) counterclockwise when you replace it.

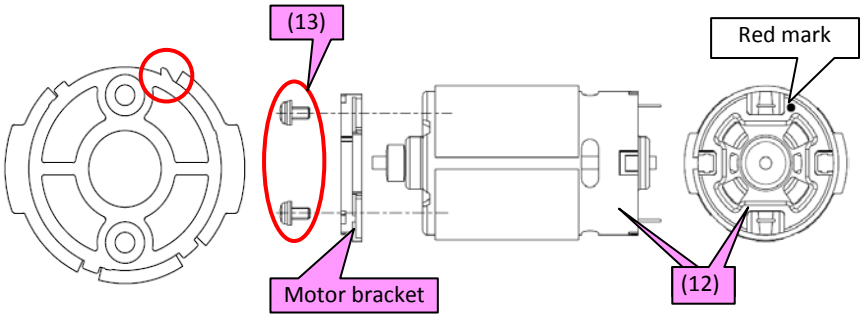


Figure 15

3. Fix with two M3x6 Pan head screws (13) while facing Motor bracket's protrusion side to the Red mark side of + terminal when replacing motors (12).

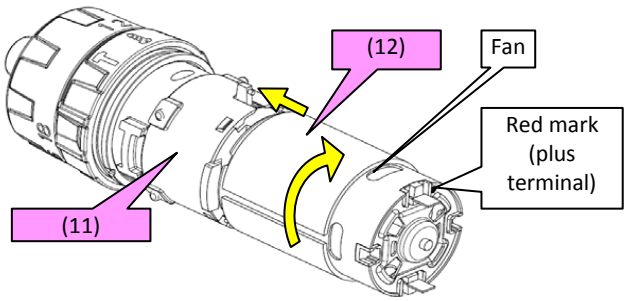


Figure 16

4. Set the Speed change lever of Gear ass'y (11) to High speed mode.
5. Aligning the Speed change lever of Gear ass'y (11) with Red mark (plus terminal) of DC motor (12), turn DC motor (12) clockwise to assemble it.

Note:

If Gear ass'y (11) and DC Motor (12) cannot be assembled, assemble them by turning Fan by hand.

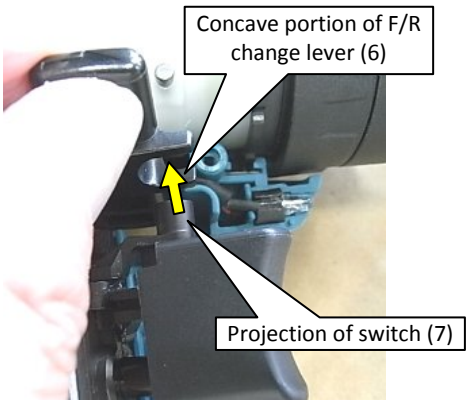


Figure 17

6. Fit the concave portion of F/R change lever (6) to the projection of Switch (7).

2.2.3. BIT INSTALLATION PORTION OF GEAR ASS'Y

2.2.3.1. DISASSEMBLING

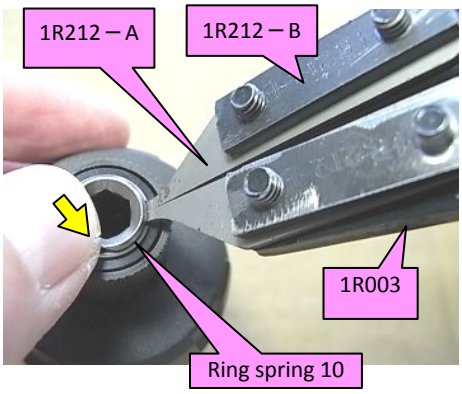


Figure 18

1. Remove Ring spring 10 while checking the following points.
   A) Press the top of Bit sleeve with thumb so as not to pop out Compression spring 13.
   B) Expand the end gap of Ring spring 10 with 1R003, 1R212-B and 1R212-A.

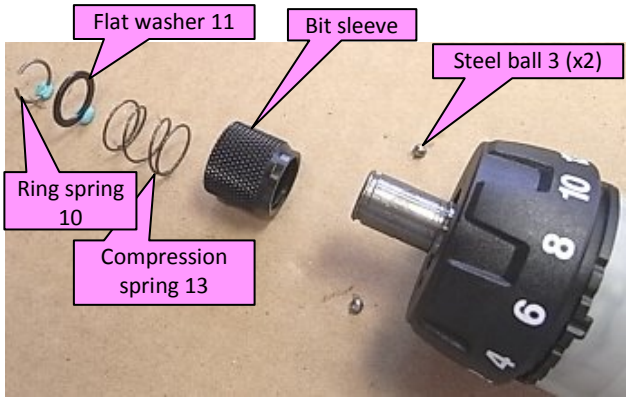


Figure 19

2. Bit holder section can be disassembled as shown in the figure on the left:
   - Ring spring 10
   - Flat washer 11
   - Compression spring 13
   - Bit sleeve
   - Steel ball 3 (x2)

2.2.3.2. ASSEMBLING

Assemble by reversing the disassembly procedure.

2.2.4. SPEED CHANGE LEVER ASS'Y

2.2.4.1. ASSEMBLING

Assemble by reversing the disassembly procedure.

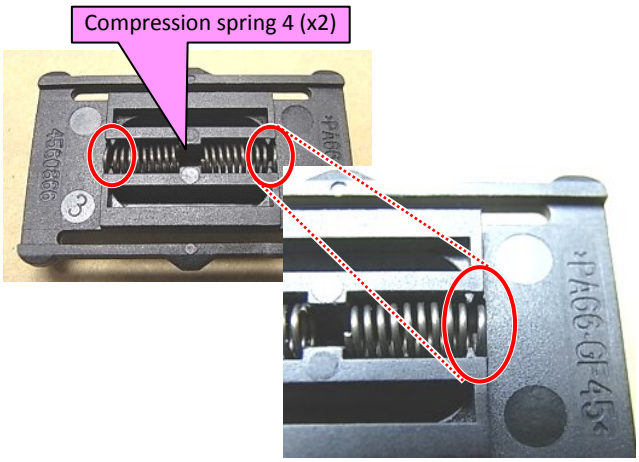


Figure 20

1. Assemble Compression spring 4 (x2) as drawn.

Note:

Hook one roll of the spring to the notches of Speed change lever.

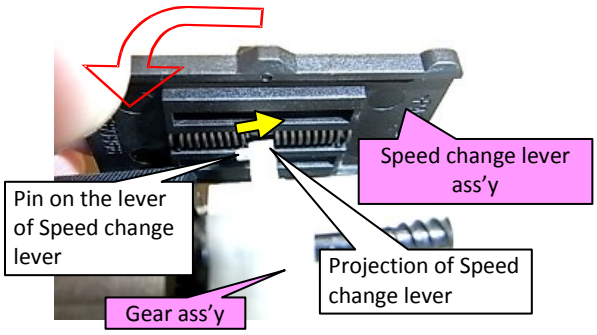


Figure 21

2. Fit Pin on the lever of Speed change lever into Compression spring 4 while pushing Speed change lever ass'y in the direction of the arrow.

Push Compression spring 4 with projection of Speed

Note:

Hook one roll of the spring to the notches of Speed change lever.

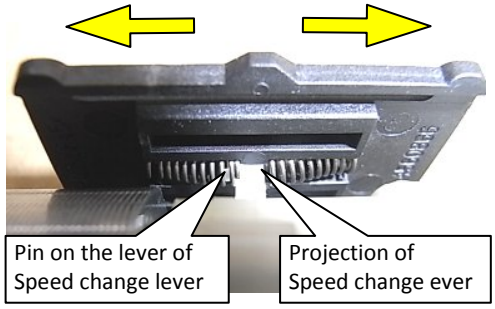


Figure 22

3. Shift Speed change lever in the either direction.

2.2.5. LEAF SPRING

2.2.5.1. ASSEMBLING

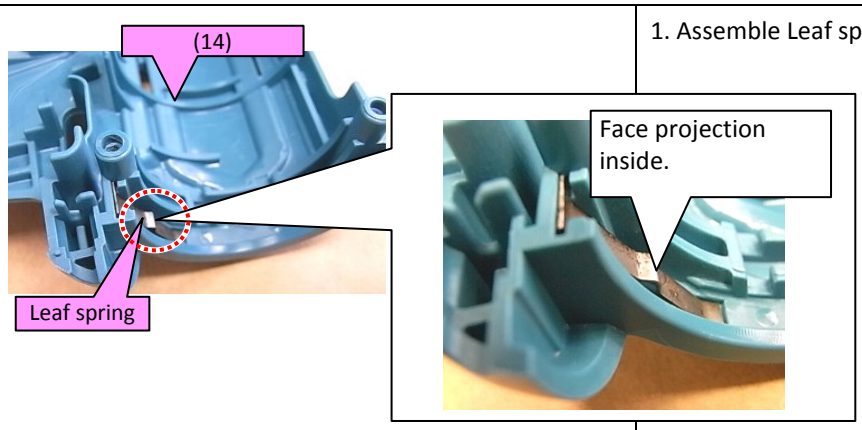
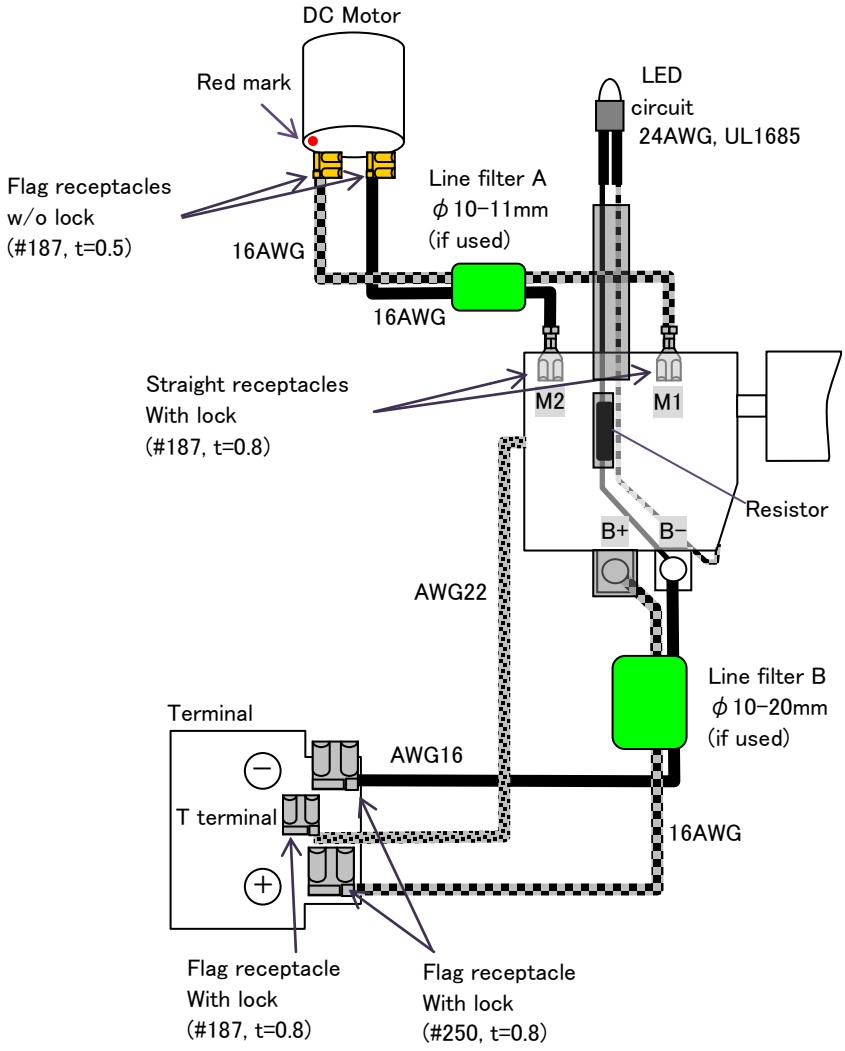


Figure 23

1. Assemble Leaf spring as shown.

3. CIRCUIT DIAGRAM



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

AWG: American wire gauge

Figure 22

3.1. REPAIR OF LED CIRCUIT

・Use Non-insulated connector and Polyolefin tube (inner diameter: ø4.0mm) as shown below.

・When repairing, put terminals in the designated position shown in *Figure 24*. (Cut lead wires if necessary.)

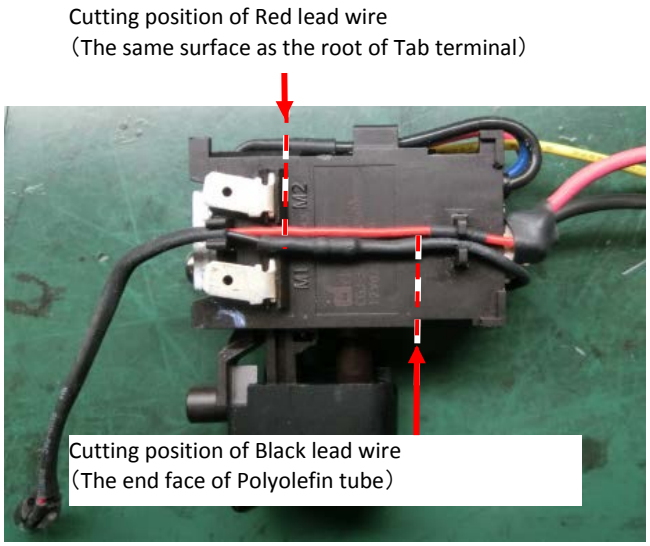
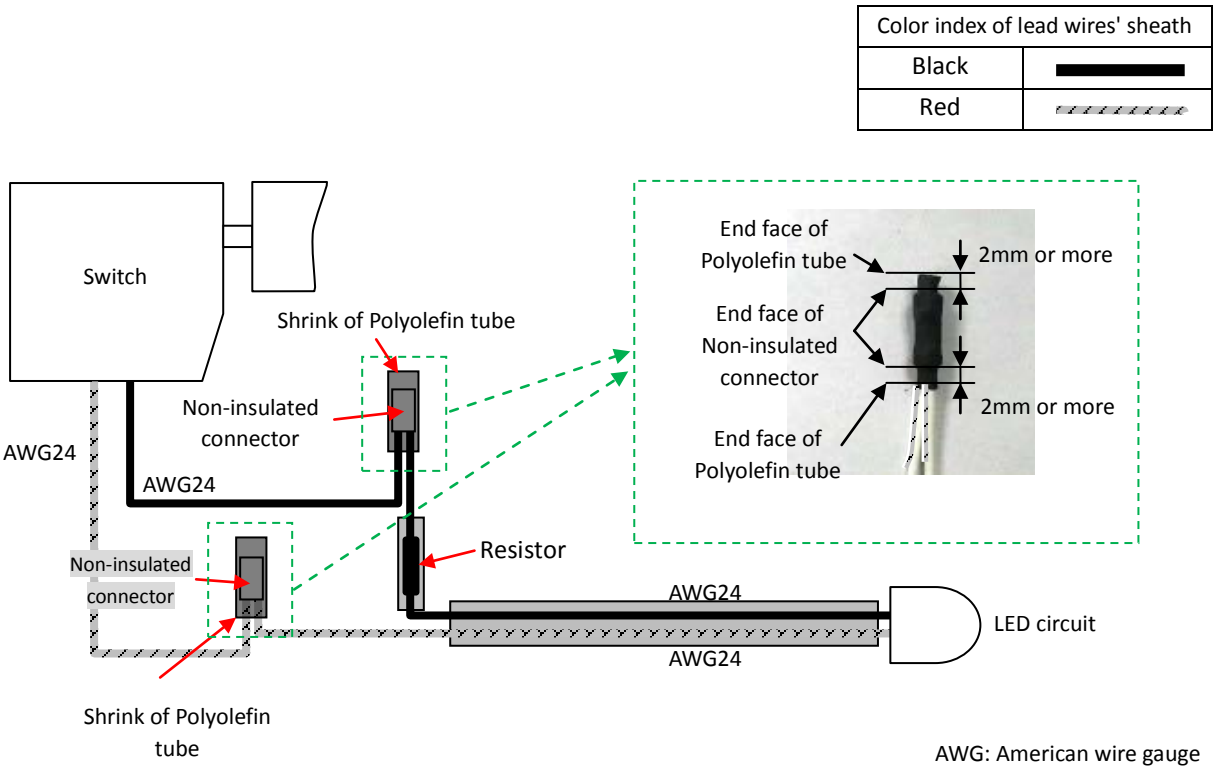


Figure 24

Cut Lead wire in the position shown on the left.



AWG: American wire gauge

Figure 25

4. WIRING DIAGRAM

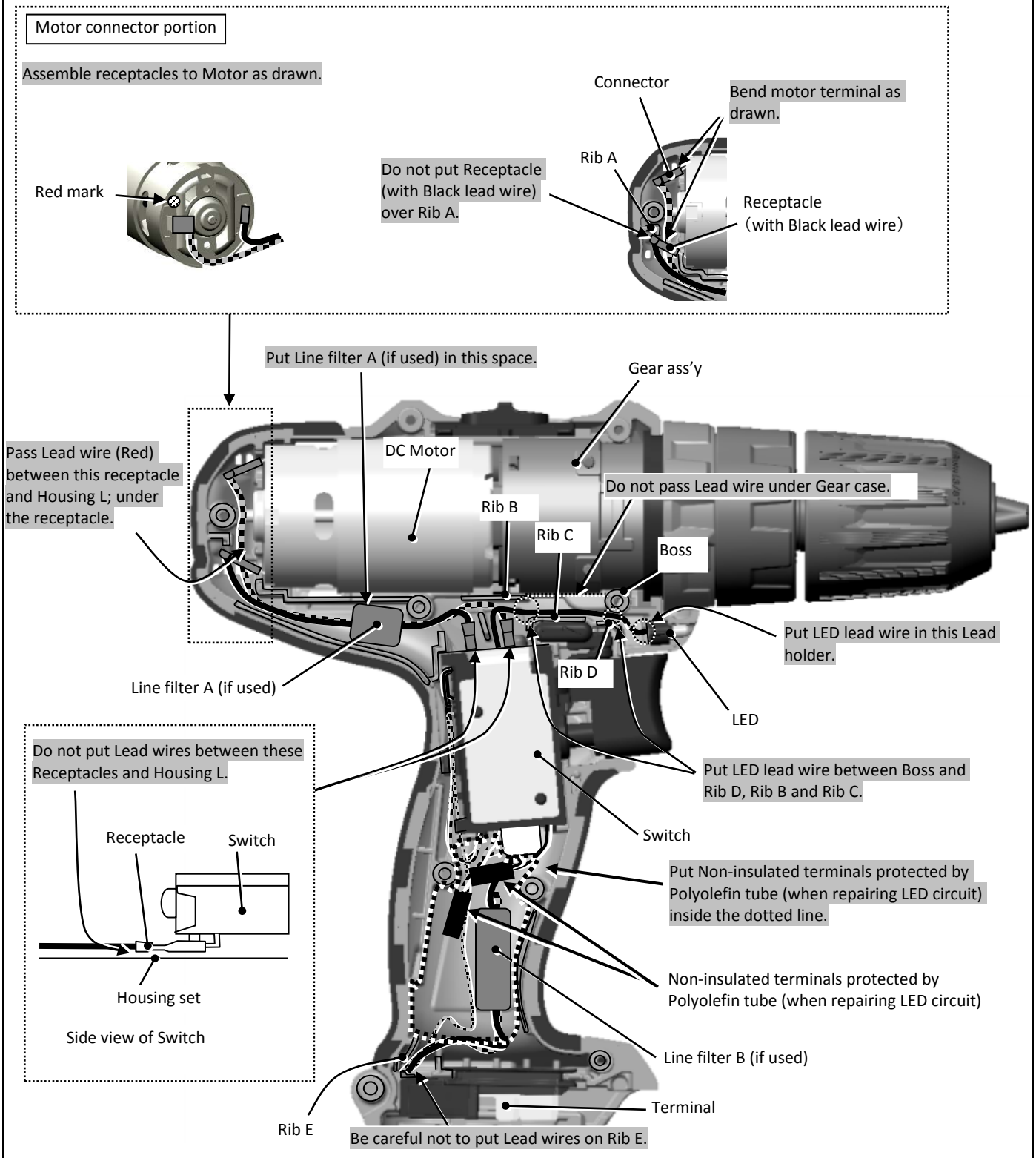


Figure 26