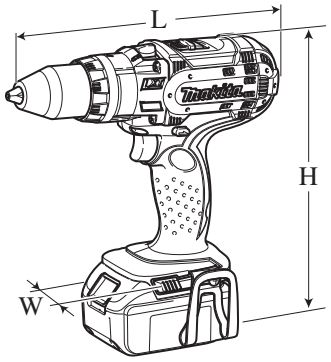
TECHNICAL INFORMATION

Models No. ► BDF454

Description ► 18V Cordless Driver Drill



Dimensions: mm (")	
Length (L)	231 (9-1/8)
Width (W)	79 (3-1/8)
Height (H)	253 (10)

CONCEPT AND MAIN APPLICATIONS

Model BDF454 has been developed as the 2-speed version of 3-speed Model BDF451. While having the same maximum fastening torque as BDF451, BDF454 features more powerful motor, ensuring higher operation efficiency in heavy duty applications. Also features the same compact and lightweight design as BDF451, providing easy control and high maneuverability.

Note:
18V/1.5Ah Lithium-ion battery BL1815 cannot be used as a power unit for BDF454.

14.4V model is also available as Model BDF444.
(See Technical Information of BDF444 for detailed information.)

Model BDF454 is available in the following variations.

Model No.	Battery type	Battery quantity	Battery cover	Charger	Plastic carrying case	Offered to
BDF454	BL1830 (Li-ion 3.0Ah)	2	1	DC18RA	Yes	USA, Canada, Mexico, Panama
BDF454RFE						All countries except the four listed above

The models also include the accessory listed below in "Standard equipment".

► Specification

Battery	Voltage: V	18
	Capacity: Ah	3.0
	Cell	Li-ion
Max output: W		375
No load speed: min-1=rpm	2nd (High)	0 - 1,700
	1st (Low)	0 - 400
Capacity of drill chuck: mm (")		1.5 - 13 (1/16 - 1/2)
Capacity: mm (")	Steel	13 (1/2)
	Wood	65 (2-9/16)
Torque setting		16 stage + drill mode
Clutch torque setting: N.m (kgf.cm) [in.lbs]		1.0 - 5.9 (10 - 60) [9 - 52]
Lock torque: N.m [in.lbs]		63 [560]
Max. fastening torque: N.m (kgf.cm) [in.lbs]	Hard joint	80 (815) [708]
	Soft joint	40 (408) [354]
Electric brake		Yes
Mechanical speed control		Yes (2 speed)
Variable speed control		Yes
Reverse switch		Yes
Net weight [with battery BL1830]: kg (lbs)		2.1 (4.6)

► Standard equipment

(+)(-) Bit 2-65 (double-end) 2
Bit holder..... 1
Belt clip..... 1
(+) Screw M4x12 2
Grip assembly..... 1

Note: The standard equipment for the tool shown above may differ by country.

► Optional accessories

Battery BL1830
Fast charger DC18RA
Charger DC18SD
Charger DC24SA (for North America only)
Charger DC24SC (for all countries except North America)
Drill bits for wood
Drill bits for steel
Driver bits

Repair

CAUTION: Remove the battery cartridge from the machine for safety before repair/maintenance !

[1] NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
---	Hex wrench 10	Removing /mounting Drill chuck
1R359	Chuck removing tool	Removing Drill chuck (See "Note" on the bottom of this page.)

[2] LUBRICATION

It is not required to lubricate the gear section because the portion is replaced as a factory-lubricated Gear assembly.

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Drill Chuck

DISASSEMBLING

Note: It is required to remove Drill chuck when replacing Gear assembly, but you need not when replacing only Housing.

1) Open the jaws of Drill chuck fully, and remove M6x22 Flat head screw (left-handed and threadlocker coated) by turning **clockwise** using impact driver in Forward rotation mode with slotted bit. (**Fig. 1**)
2) Set Action mode change lever in Drill mode, Speed change lever in Low speed. And push F/R change lever from the left side of Housing to set the direction of rotation to reverse. (**Fig. 2**)
3) Fix the short leg of a hex wrench 10 in Drill chuck, then clamp the long leg of the hex wrench securely in vise. (**Fig. 2**)
4) Install Battery and hold the machine securely with both hands, then remove Drill chuck from Gear assembly by pulling Switch trigger slowly to minimize the impact of kickback.

Important 1:

For safety, before pulling trigger, make sure that:

1. Action mode change lever is in Drill mode position.
2. Speed change lever is in Low speed position.
3. F/R change lever is in Reverse rotation position.

Important 2:

The machine rotates in the direction of the arrow with very strong force at the moment when Switch trigger is pulled. (**Fig. 3**) Therefore, be very careful not to pinch your hand or finger between the machine and the vise.

Note: Use Chuck removing tool (1R359) if Drill chuck cannot be removed in the way as described above.
See page 69 of "Repair Tool List" for how to use.

Fig. 1

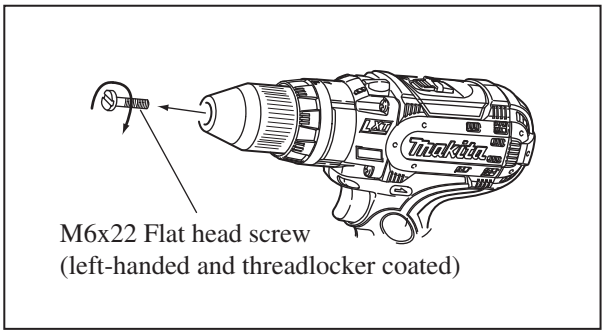


Fig. 2

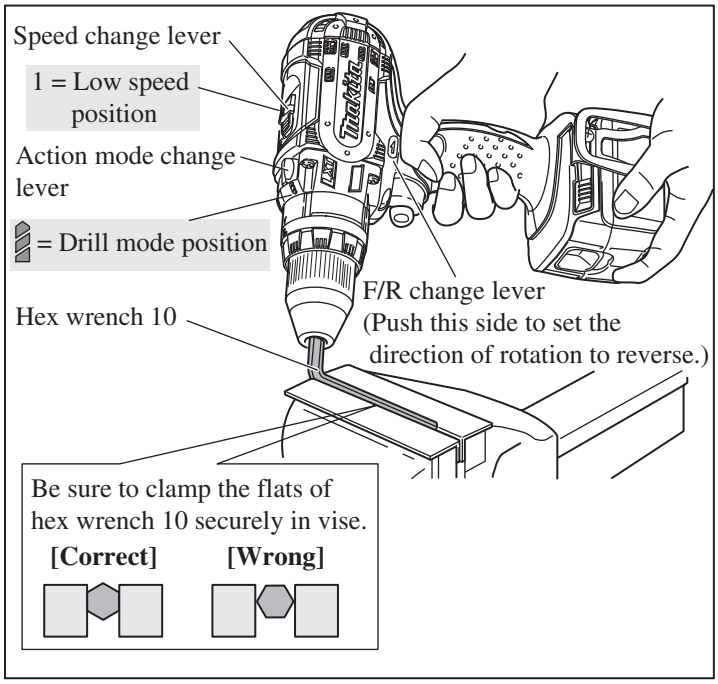
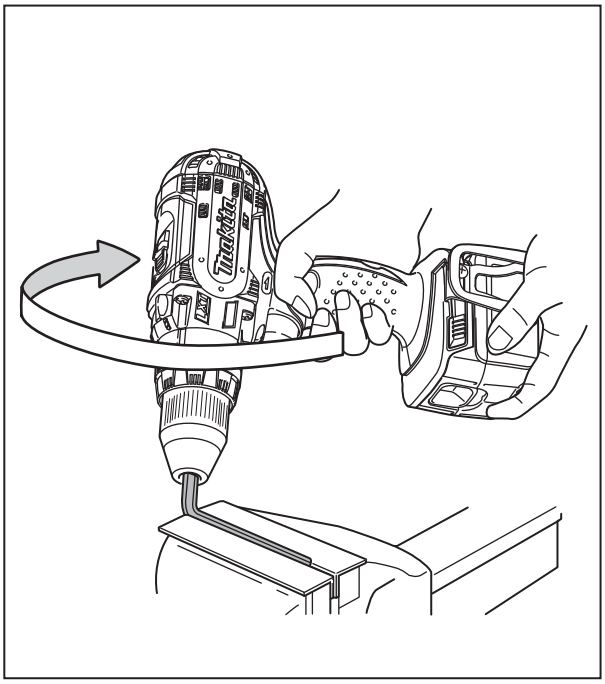


Fig. 3



Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -1. Drill Chuck (cont.)

ASSEMBLING

1) Make sure that Flat washer 13 is set in place before installing Drill chuck. (**Fig. 4**)
2) Turn Drill chuck clockwise until it sits on the end of the threaded portion of Spindle. (**Fig. 4**)
3) Insert a hex wrench into drill chuck, and fix the other end of hex wrench in vise. Install battery. Then set Action mode change lever in Drill mode, Speed change lever in Low speed, and F/R change lever in Forward rotation mode. (**Fig. 5**)
4) Slowly pull the switch trigger to rotate Spindle until the motor is locked.
   Important: Be sure to release the switch trigger just after Spindle is locked.
5) Secure Drill chuck with M6x22 Flat head screw by turning **counterclockwise** using impact driver with slotted bit.
   Note: If you reuse the removed M6x22 Flat head screw, apply threadlocker (ThreeBond 1321B/ 1342 or Loctite 242) to the threaded portion.

Fig. 4

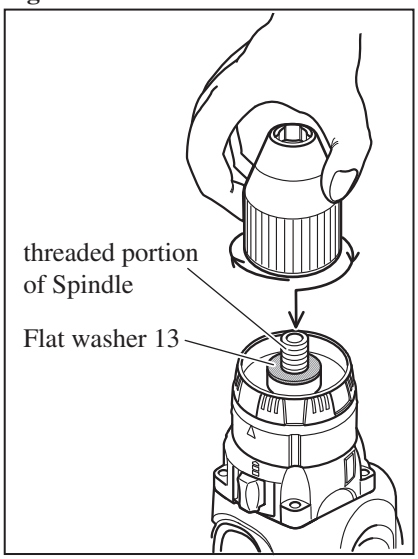
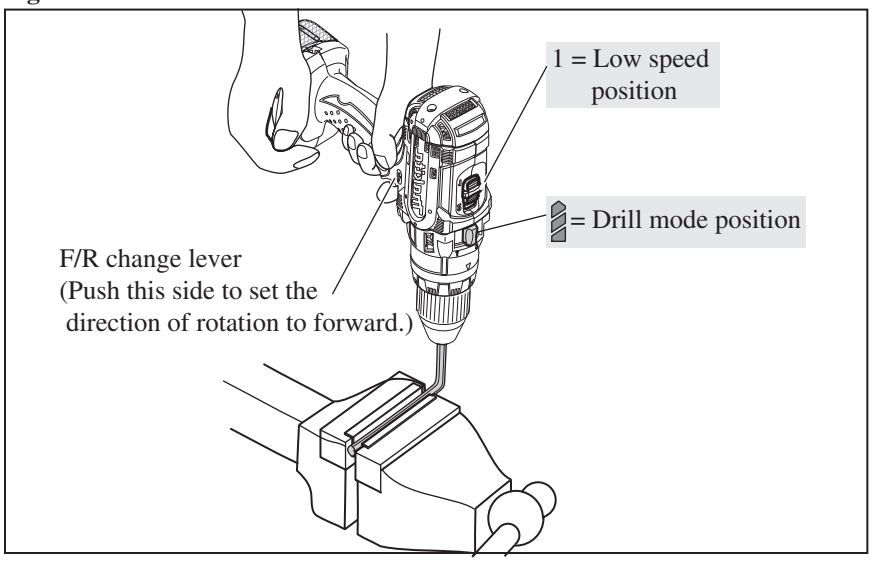


Fig. 5



[3] DISASSEMBLY/ASSEMBLY
[3]-2. Gear Ass'y, Motor Section

DISASSEMBLING

(1) Remove Drill chuck. (Refer to the previous page.)
(2) Remove Housing R and Rear cover by removing 4x20 Tapping screws (4 pcs.) and Bind PT 3x16 Tapping screws (10 pcs.).
(3) Pull out Heat sink with FET and the same time remove Gear ass'y, Speed change lever ass'y, Motor section and Brush holder complete from Housing L. (**Fig. 6**)
(4) Separate Speed change lever ass'y from Gear ass'y. Remove Motor section from Gear ass'y. (**Fig. 7**)

Fig. 6

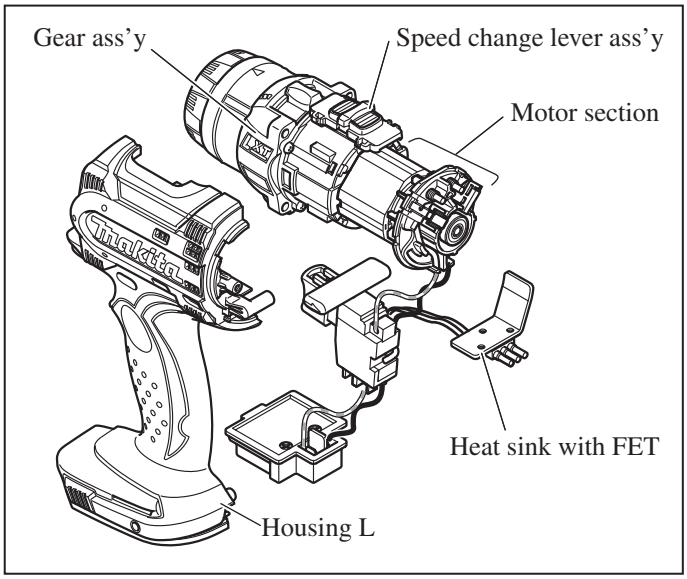
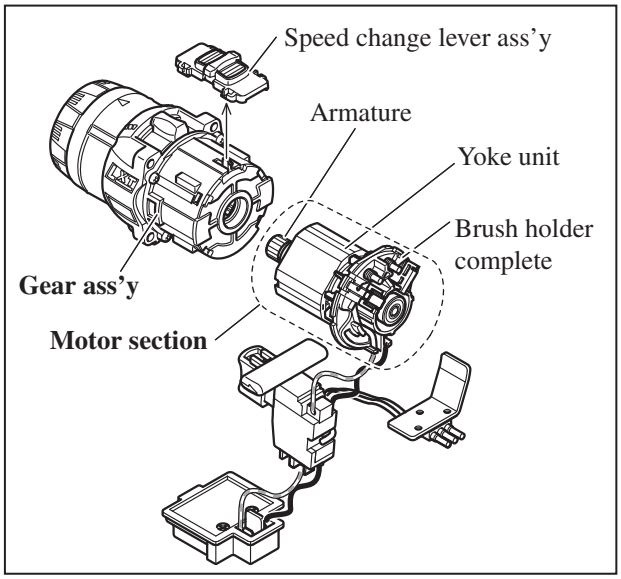


Fig. 7



Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -2. Gear ass'y, Motor Section (cont.)

DISASSEMBLING

(5) Shift Torsion springs from the tops of carbon brushes to the notches of Brush holder. Then disconnect Carbon brushes from commutator. (**Fig. 8**)
(6) Pull off Armature together with Yoke unit from Brush holder. Then pull off Armature from Yoke unit. (**Fig. 9**) complete.

Fig. 8

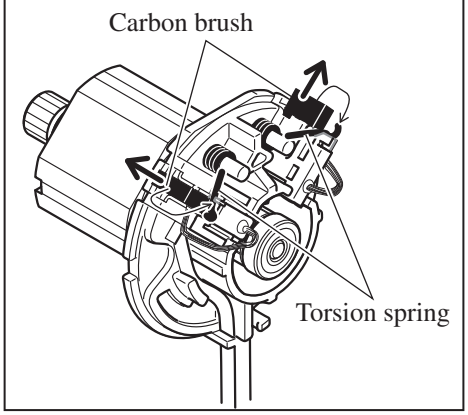
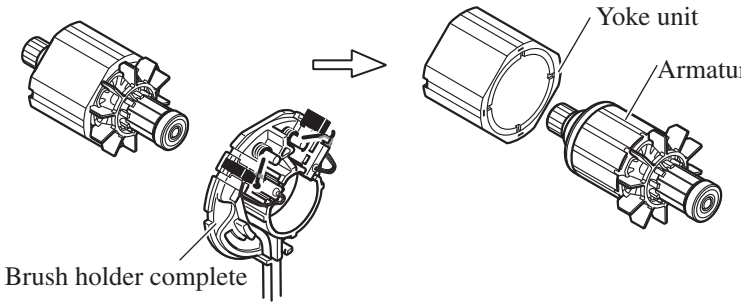


Fig. 9



Note: Pay attention not to pinch your finger between Yoke unit and Armature when removing. Do not scratch the copper wires of Armature. Yoke unit draws Armature by its considerable strong magnet force.

ASSEMBLING

1) Assemble the motor section.
Note 1. Yoke unit is not reversible when assembled to Armature. Be sure to assemble so that the notch in Yoke unit is positioned on the drive-end of Armature as illustrated in **Fig. 10R**. If assembled wrong as illustrated in **Fig. 10F**, Motor section cannot be assembled to Housing L.
Note 2. Pay attention not to pinch your finger between Yoke unit and Armature when assembling. Yoke unit draws Armature by its considerable strong magnet force.

Fig. 10R

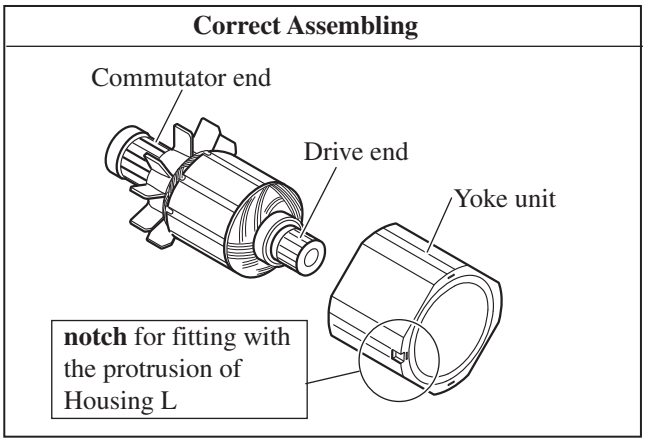
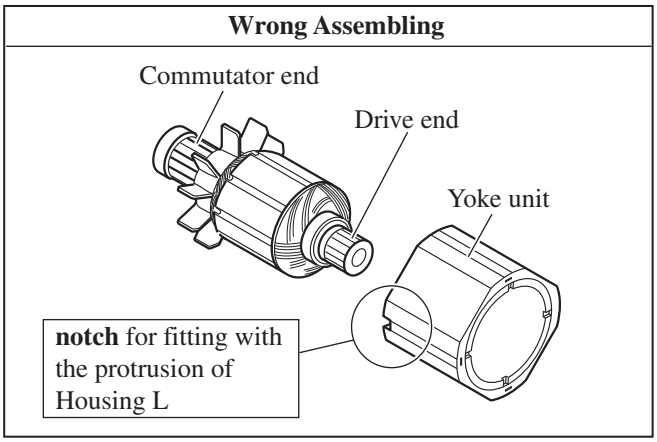
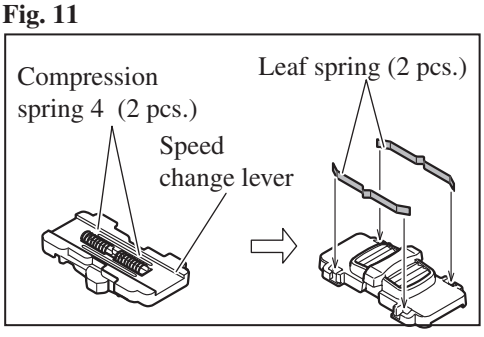


Fig. 10F



2) Insert the pinion gear on Armature shaft into Gear ass'y, and engage it with the plant gears in Gear ass'y.
Making sure that the pinion gear is engaged in Gear ass'y, push Armature into Gear ass'y. (**Fig. 7**)
3) Assemble Speed change lever ass'y to the protrusion on Gear ass'y. (**Fig. 7**)
Note: Before installing Gear ass'y, make sure that Leaf spring (2 pcs.) and Compression spring (2 pcs.) are set in place on Speed change lever as illustrated in **Fig. 11**.

Fig. 11



Repair

[3] DISASSEMBLY/ASSEMBLY
[3]-2. Gear Ass'y, Motor Section

ASSEMBLING

(4) Push rear Compression spring 4 with the protrusion A of Gear ass'y and compress Speed change lever ass'y to insert the protrusion B of Gear ass'y into the front Compression spring 4. (**Fig. 12**)
(5) After inserting the protrusion B of Gear ass'y into the front Compression spring 4, slide Speed change lever to the either position 2 (High speed mode) or 1 (Low speed mode). (**Fig. 13**)

Fig. 12

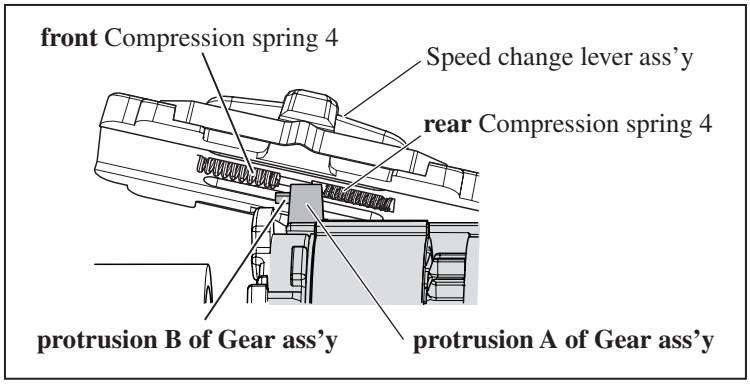
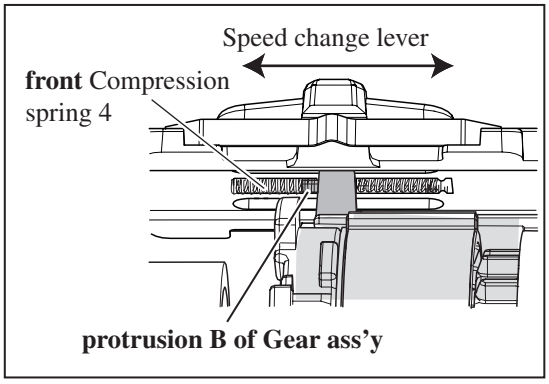


Fig. 13



(6) Mount the inner parts to Housing L as illustrated in **Figs. 14 and 15**.

Fig. 14

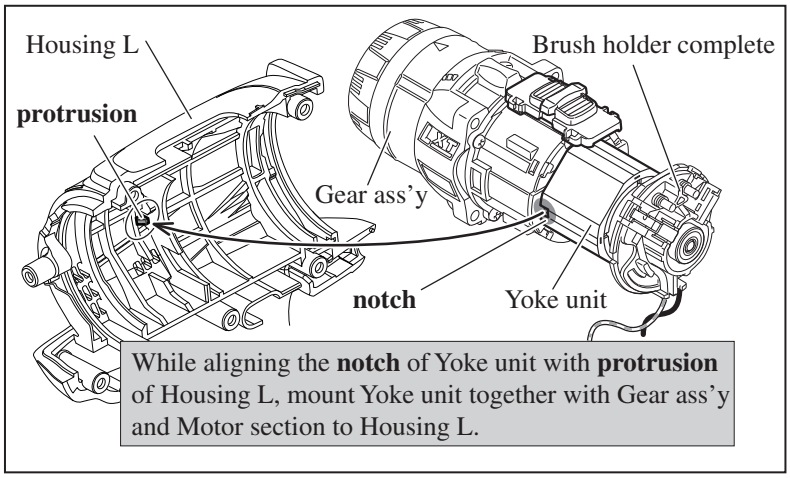
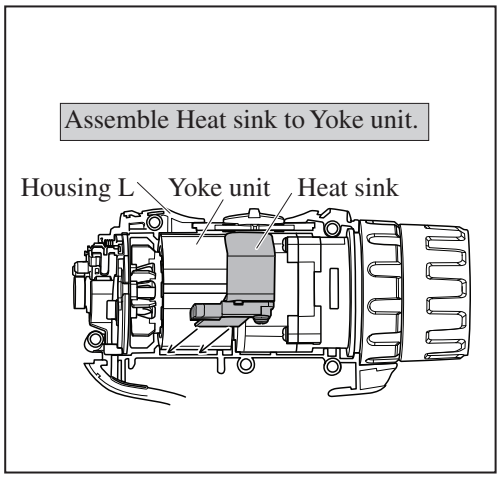
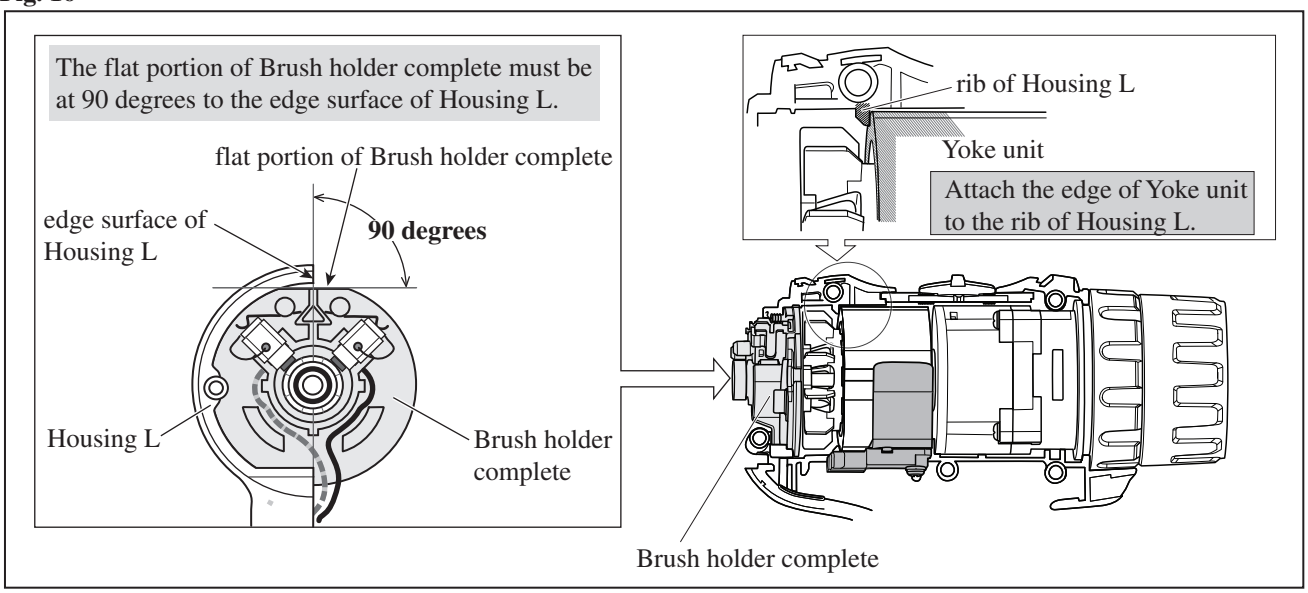


Fig. 15



(7) To mount Housing R exactly to Housing L, make sure that Yoke unit and Brush holder complete are assembled as illustrated in **Fig. 16**.

Fig. 16



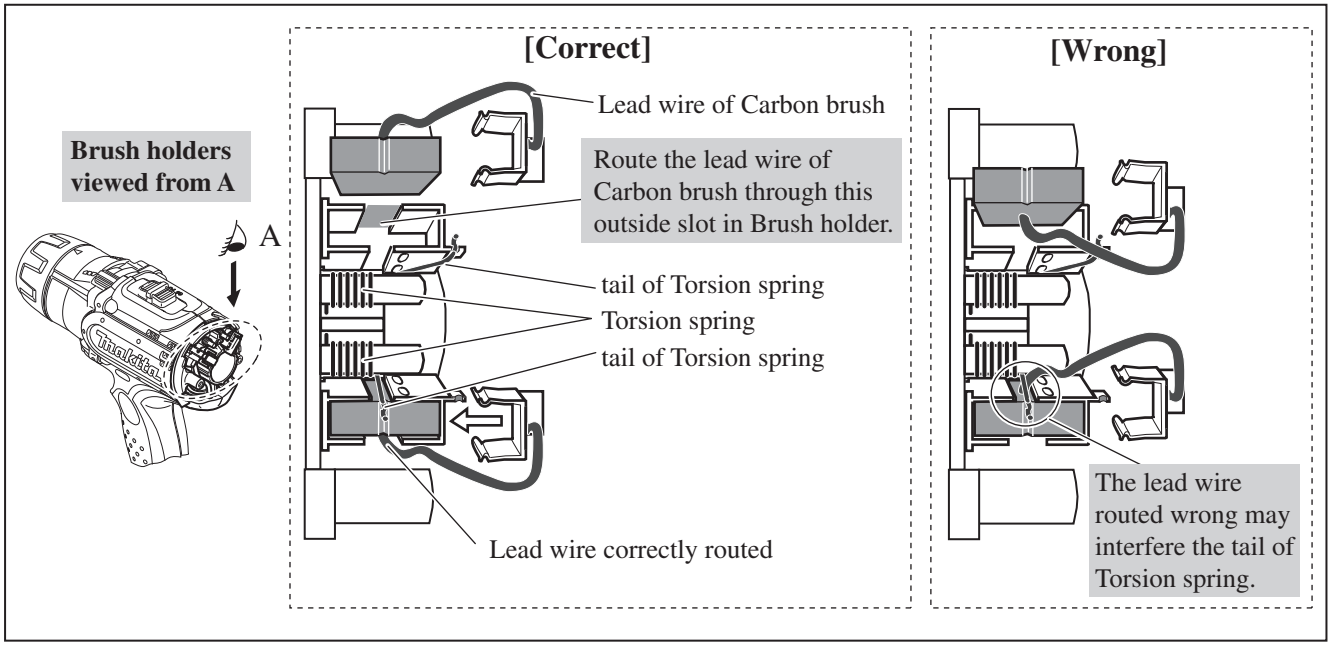
Repair

[3] -2. Gear Ass'y and Motor Section (cont.)

ASSEMBLING

8) Install Carbon brush. (**Fig. 15**)
9) Assemble Rear cover and Housing R to Housing L by tightening Bind PT3x16 Tapping screw (10 pcs) and 4x20 Tapping screw (4 pcs.)

Fig. 15

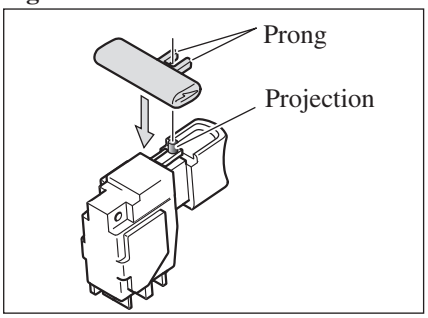


[3] -3. F/R change lever

ASSEMBLING

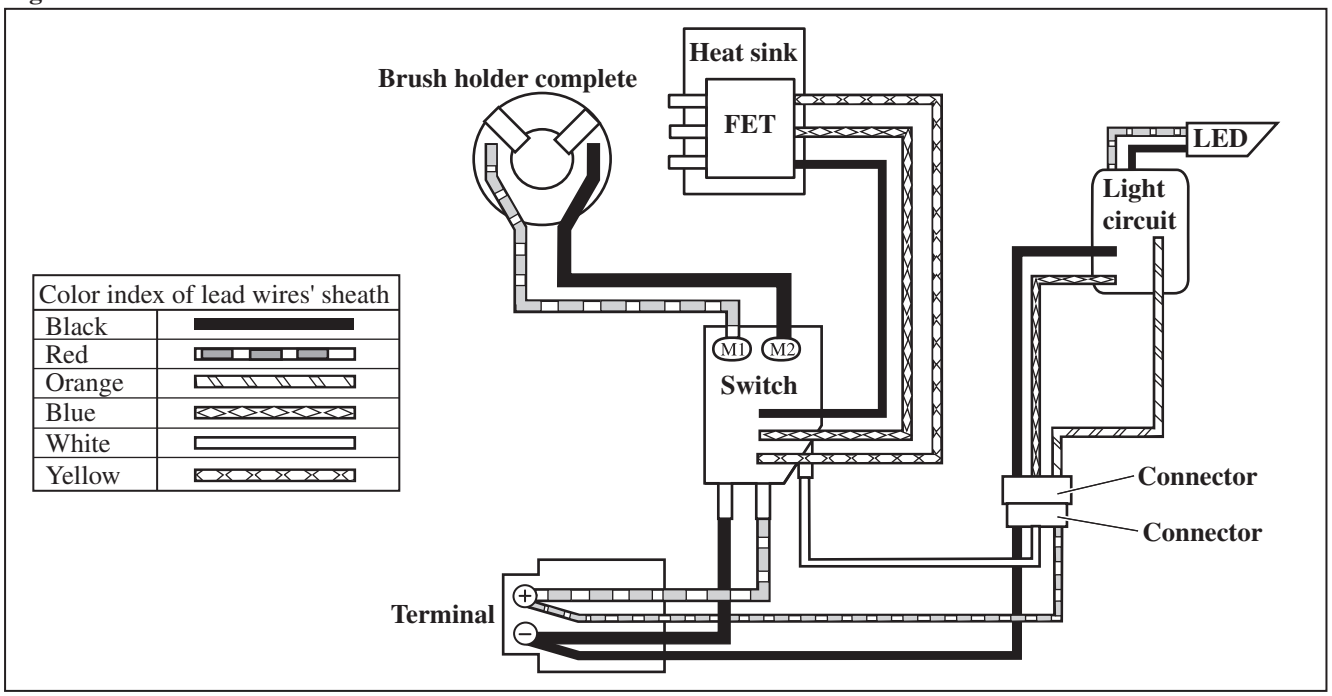
Put the projection on Switch between the prongs of F/R change lever. (**Fig. 16**)

Fig. 16



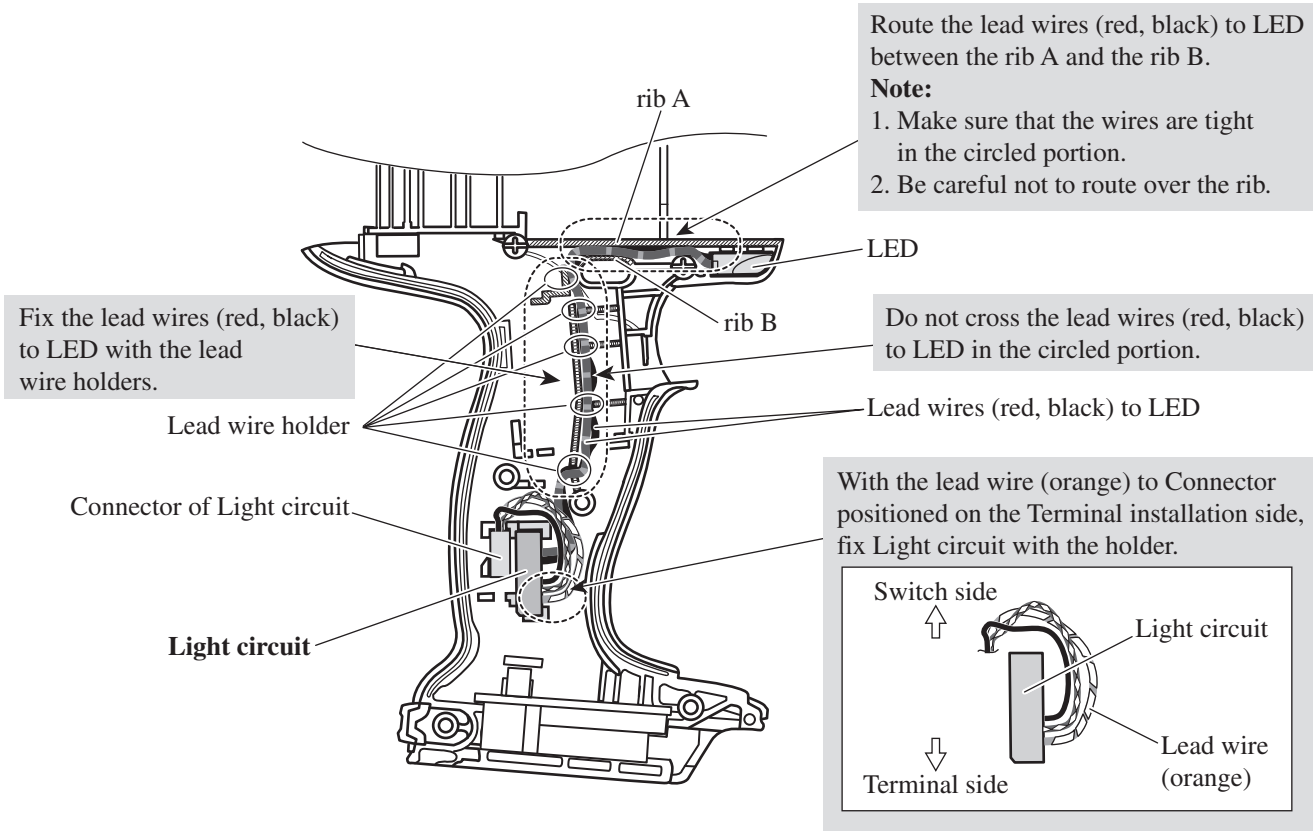
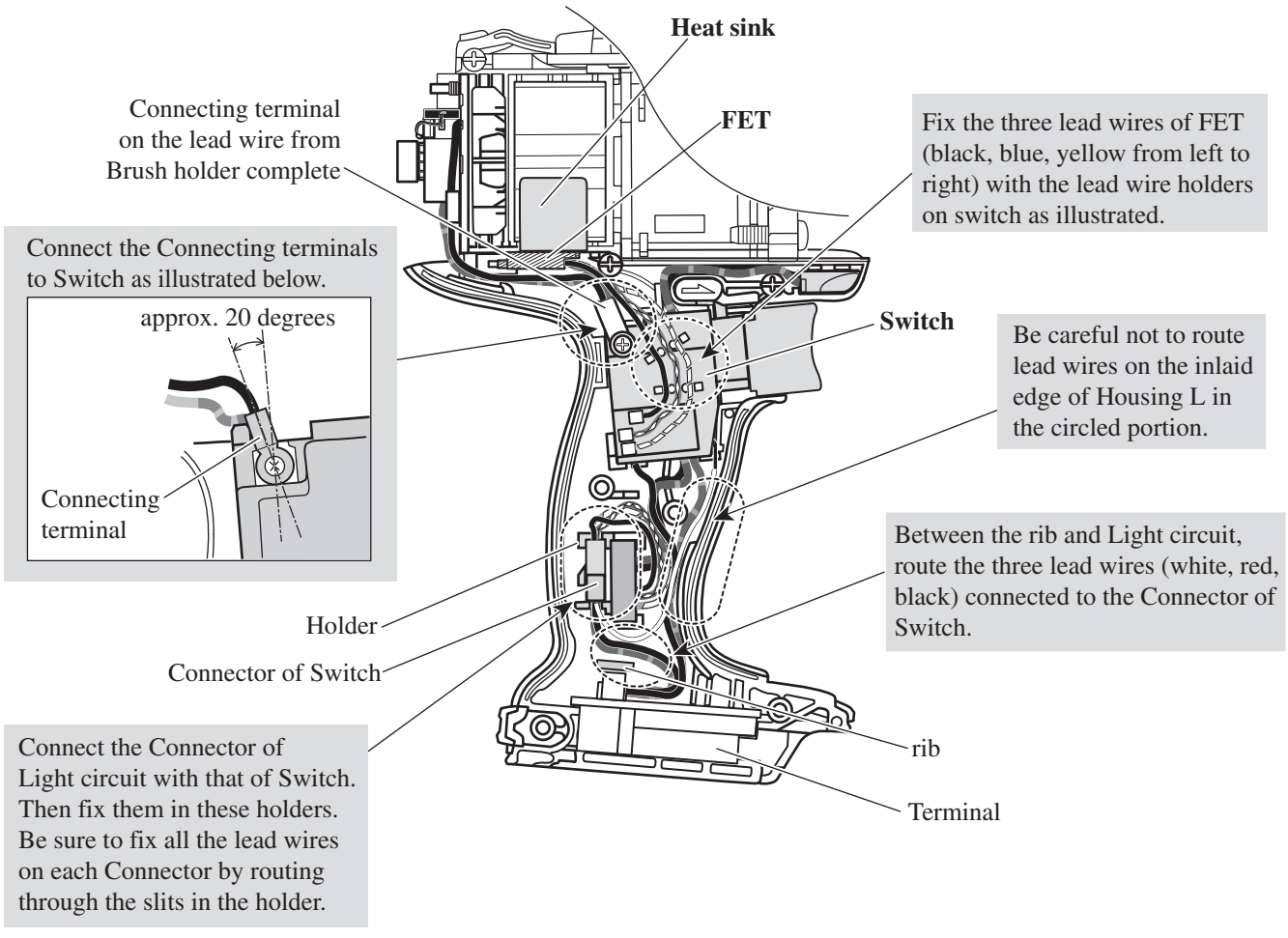
Circuit diagram

Fig. D-1



Wiring diagram

[1] Lead Wires of Light Circuit



[2] Lead Wires of Switch, Brush Holder Complete and FET