

# TECHNICAL INFORMATION

**Models No.** ▶ BTD123F

**Description** ▶ Cordless Impact Driver

## CONCEPT AND MAIN APPLICATIONS

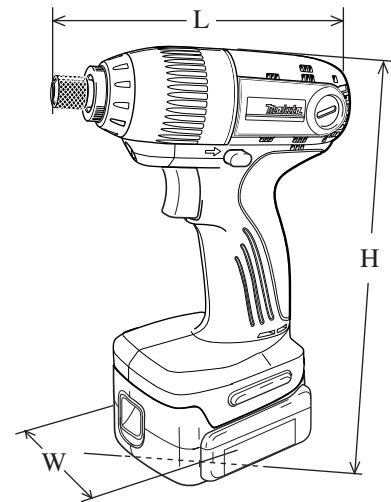
Model BTD123F has been added to the MAKSTAR series models.

The brief features of the new 12V impact driver are;

- \*Compact design with an overall length of only 163mm (6-3/8")
- \*Extra-lightweight with the newly designed, compact and light 12V batteries, BH1220C or BH1233C
- \*Screw hole protrusions have been eliminated from hammer case for increased maneuverability, allowing operator not to worry about making scratches on workpiece with the tool.

This new product is available in the following variations.

Model No.	Battery	Charger	Plastic carrying case
<b>BTD123FZ</b>	No	No	No
<b>BTD123FSAE</b>	Ni-MH BH1220C (2.0Ah)/ 2pcs	DC14SC	Yes
<b>BTD123FSJE</b>	Ni-MH BH1233C (3.3Ah)/ 2pcs	DC14SC	Yes



Dimensions: mm ( " )		
	w/ BH1220C	w/ BH1233C
Length ( L )	163 (6-3/8)	
Width ( W )	82 (3-1/4)	
Height ( H )	226 (8-7/8)	234 (9-1/4)

## ► Specification

Battery	Voltage: V		12V
	Capacity: Ah		2.0 (battery BH1220C) / 3.3 (battery BH1233C)
	Cell		Ni-MH
Charging time: min.	2.0Ah battery		approx. 30 with DC14SC
	3.3Ah battery		approx. 50 with DC14SC
Capacities	Machine screw		M4 - M8 (5/32 - 5/16")
	Standard bolt		M5 - M12 (3/16 - 15/32")
	High tensile bolt		M5 - M10 (3/16 - 3/8")
	Coarse thread screw		22 - 120mm (7/8 - 3-3/4")
Impacts per min.: min.-1=bpm.			0 - 3,200
No load speed: min.-1=rpm.			0 - 2,600
Max. fastening torque: N.m (kgf.cm/in.lbs)			125 (1,270/1,110)
Electric Brake			Yes
Variable speed (electric)			Yes
Reversing switch			Yes
Net weight: kg (lbs)	w/ 2.0 Ah battery		1.4 (3.1)
	w/ 3.3 Ah battery		1.6 (3.5)

## ► Standard equipment

- \*Plastic carrying case ..... 1 pc.
- \*Phillips bit 2-65..... 1 pc.

< Note > The standard equipment for the tool shown may differ from country to country.

## ► Optional accessories

- \*Assorted Phillips bit, Socket bits and Drill chucks
- \*Bit piece
- \*Stopper assembly
- \*Batteries BH1220C, BH1233C, BH1220, BH1233
- \*Charger DC14SA, DC14SC, DC24SA

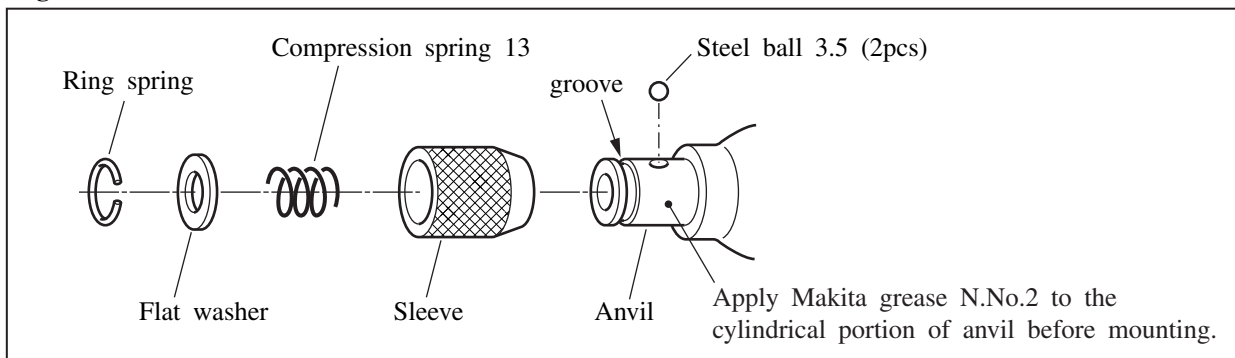
## ▶ Repair

### DISASSEMBLING

#### [1] Disassembling Sleeve Section (Fig. 1)

- (1) Remove Ring spring from the groove on Anvil with retaining pliers or the like.
- (2) Now Flat washer, Compression spring 13, Sleeve and Steel ball 3.5 (2pcs) can be removed from Anvil.
- (3) Remove Anvil from Hammer case.

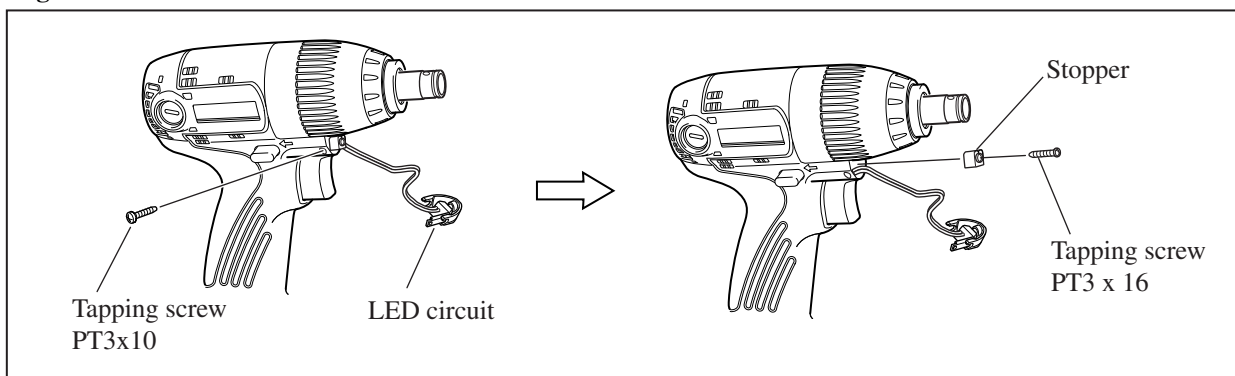
Fig. 1



#### [2] Removing Hammer Case Complete

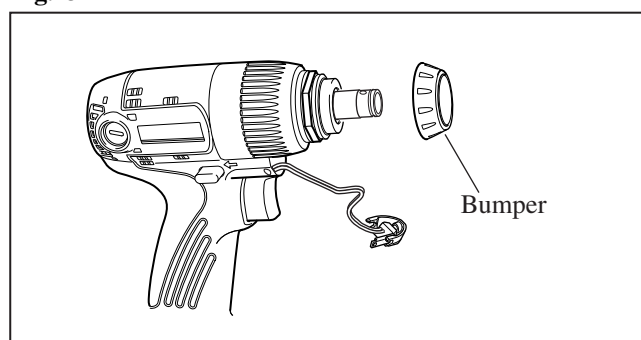
- (1) Pull LED circuit out of housing by removing PT3x10 Tapping screw. ( Fig. 2)
- (2) Remove stopper by removing PT3x16 Tapping screw. (Fig. 2)

Fig. 2



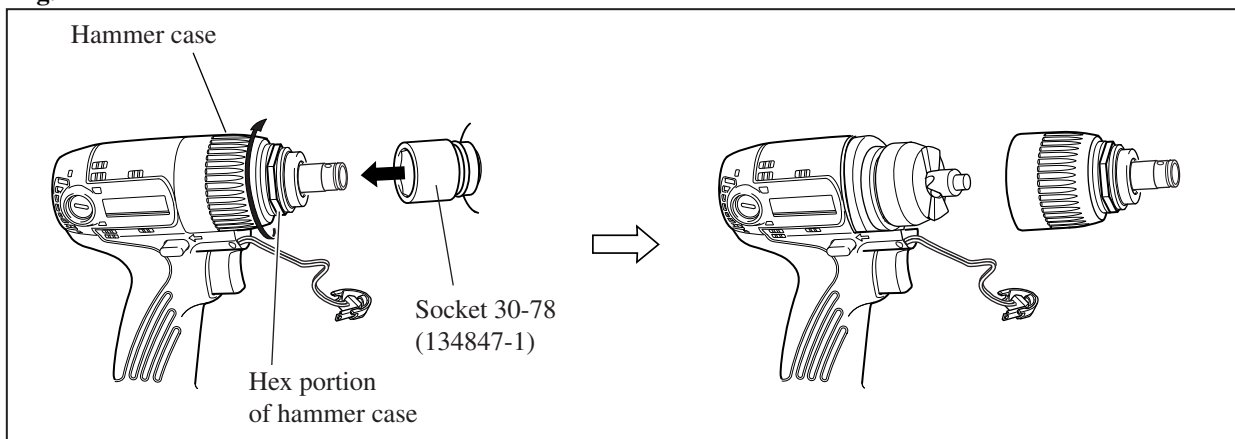
- (3) Remove bumper from hammer case. (Fig.3)

Fig. 3



- (4) Fit socket 30-78 (Part No.134847-1) over the hex portion of hammer case. And then remove hammer case from housing by turning the socket clockwise as illustrated in Fig. 4.

Fig. 4

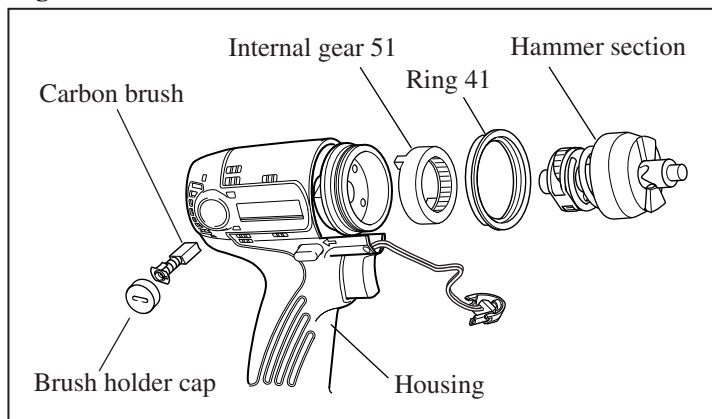


## ► Repair

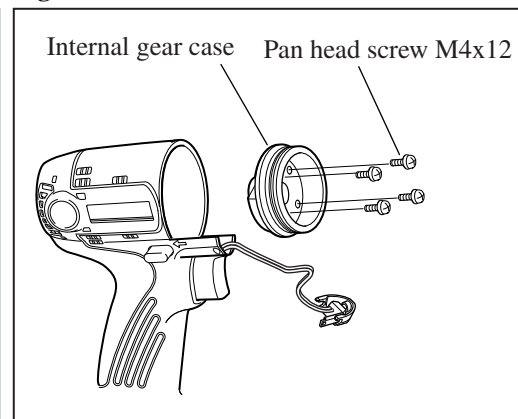
### [3] Disassembling Housing

- (1) After removing Brush holder caps and Carbon brushes, remove Hammer section, Ring 41 and Internal gear 51 from Housing. (**Fig. 5**)
- (2) Separate Internal gear case from Housing by removing four M4x12 Pan head screws. (**Fig. 6**)
- (3) Remove eight PT3x16 Tapping screws. Now Housing (R) can be separated from Housing (L).

**Fig. 5**



**Fig. 6**



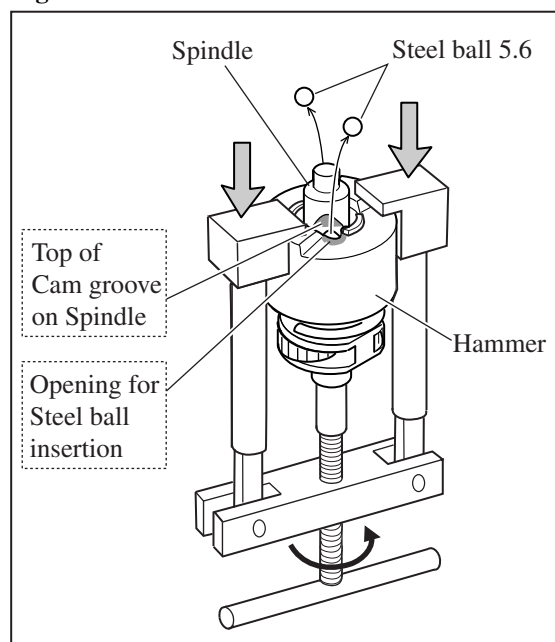
### [4] Disassembling Hammer and Spindle Section

- (1) Press down Hammer using Large gear extractor (1R045) to align the opening for Steel ball insertion with the top of cam groove on Spindle. And then remove Steel ball 5.6 (2pcs) from Spindle. (**Fig. 7**)
- (2) Hold Hammer section as illustrated in **Fig. 8**, and release it from the gear extractor.
 

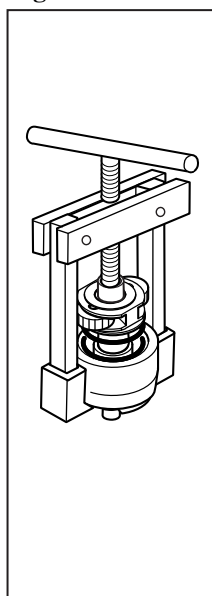
**Caution:** Do not hold gear extractor as illustrated in **Fig. 7** when releasing Hammer section from the gear extractor. Failure to follow this instruction could cause Steel balls 3.5 to get out of hammer.
- (3) Now Hammer section can be disassembled as illustrated in **Fig. 9**
- (4) After removal of Flat washer 24, Steel balls 3.5 can be removed from Hammer. (**Fig. 10**)

\*See next page for lubrication of Spindle section.

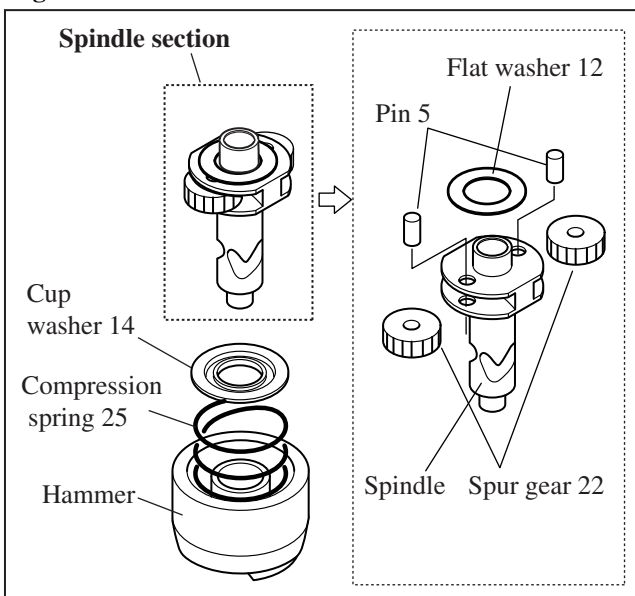
**Fig. 7**



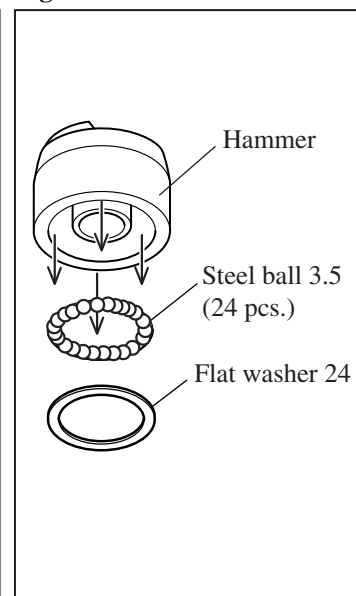
**Fig. 8**



**Fig. 9**



**Fig. 10**



## ▶ Repair

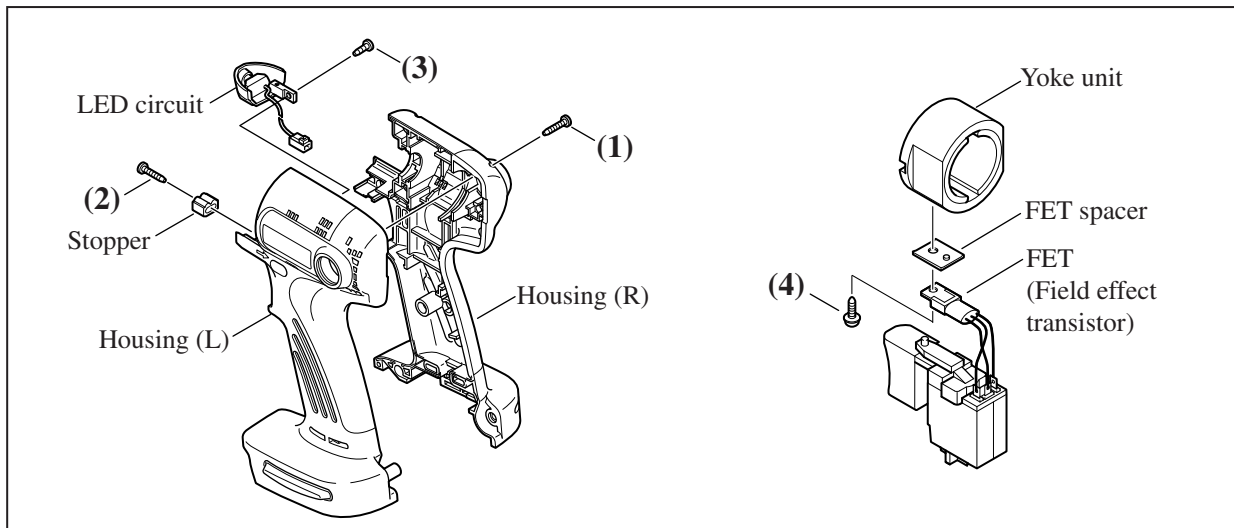
### ASSEMBLING

#### [1] Tightening Tapping Screws

Tighten the following Tapping screws to each recommended torque (**Fig. 11**);

- (1) PT3x16 (8 pcs) for fastening Housing halves together ..... 1.1 - 1.3 N.m (11 - 13 kgf.cm)
- (2) PT3x16 for fastening Stopper to Housing ..... 0.7 - 0.9 N.m (7.1 - 9.2 kgf.cm)
- (3) PT3x10 for fastening LED circuit to Housing ..... 0.7 - 0.9 N.m (7.1 - 9.2 kgf.cm)
- (4) ST3x8 for fastening FET spacer to Yoke unit ..... 1.1 - 1.5 N.m (11 - 15 kgf.cm)

**Fig. 11**



#### [2] Fastening Internal Gear Case to Housing (Fig. 12)

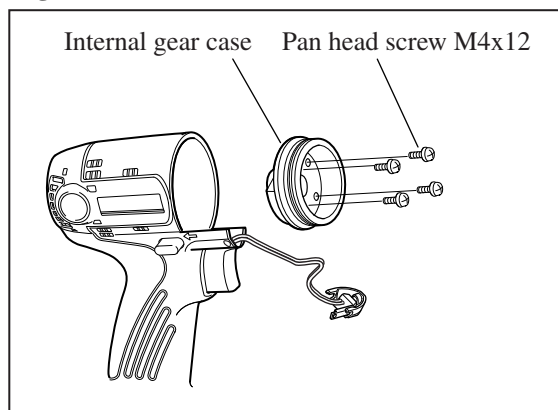
When fastening Internal gear case to Housing, be sure to follow the instructions below.

\*Do not reinstall M4x12 Pan head screws removed from Internal gear case because they are adhesive-coated screws. Always use brand-new M4x12 pan head screws.

\*Tighten four M4x12 pan head screws to the recommended torque of 0.88 - 1.8 N.m (9.0 - 18 kgf.cm).

**Note:** Remember to use a criss-cross tightening pattern.

**Fig. 12**

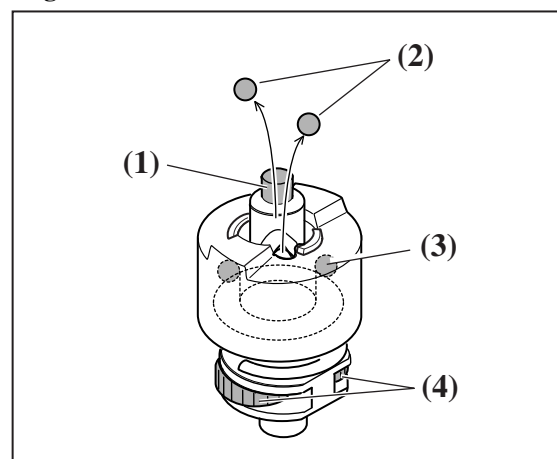


#### [3] Lubrication of Hammer Section

Before assembling, apply Makita grease N. No.2 to the following parts (**Fig. 13**);

- (1) Top of the Spindle where Anvil contacts ..... 0.5 g
- (2) Steel ball 5.6 (2 pcs) ..... 0.5 g
- (3) Steel ball 3.5 (24 pcs) ..... 0.5 g
- (4) Spur gear 22 (2 pcs) ..... 2.0 g

**Fig. 13**



## ► Repair

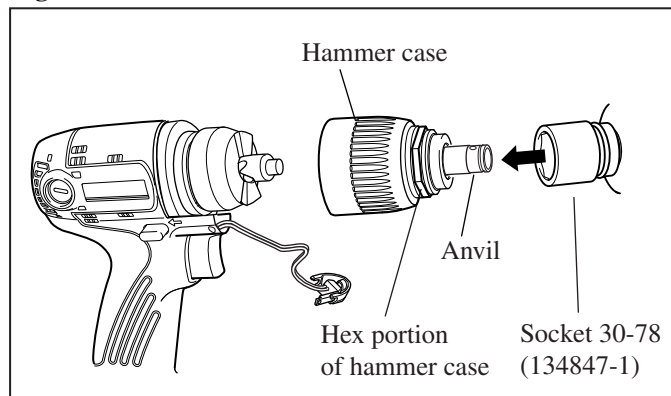
### [4] Fastening Hammer Case to Internal Gear Case

Fit socket 30-78 (Part No.134847-1) over the hex portion of Hammer case, and then tighten the socket to the recommended torque of 25 - 30 N.m (260 - 310 kgf.cm). (Fig.14)

**Caution:**

Remember to install Anvil on Hammer case before fastening Hammer case to Housing.

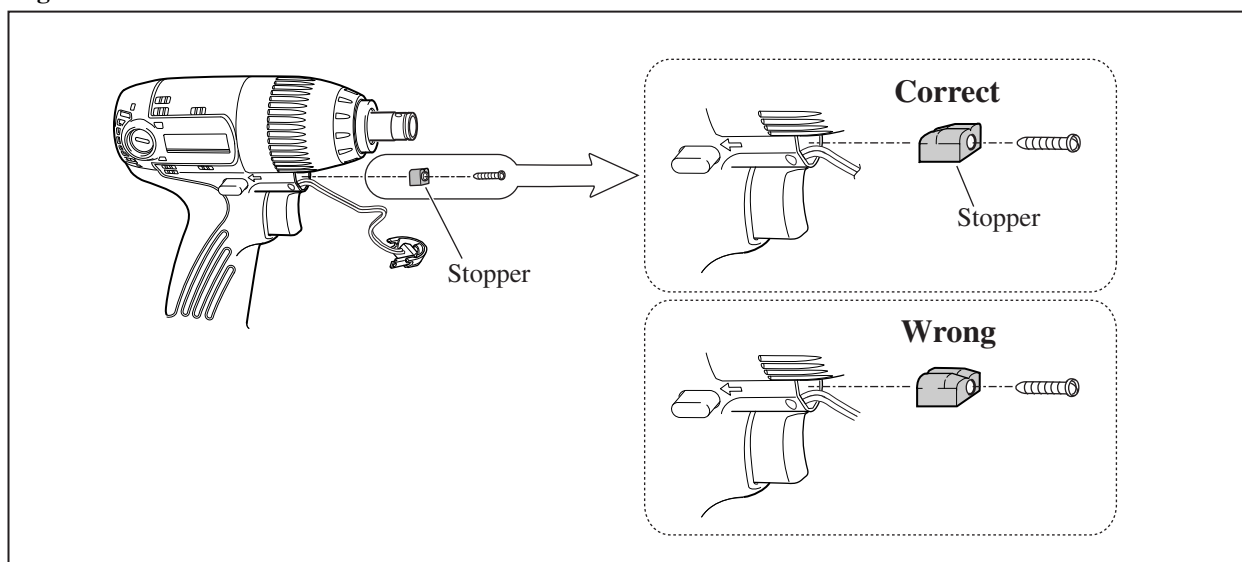
**Fig. 14**



### [5] Installing Stopper on Housing

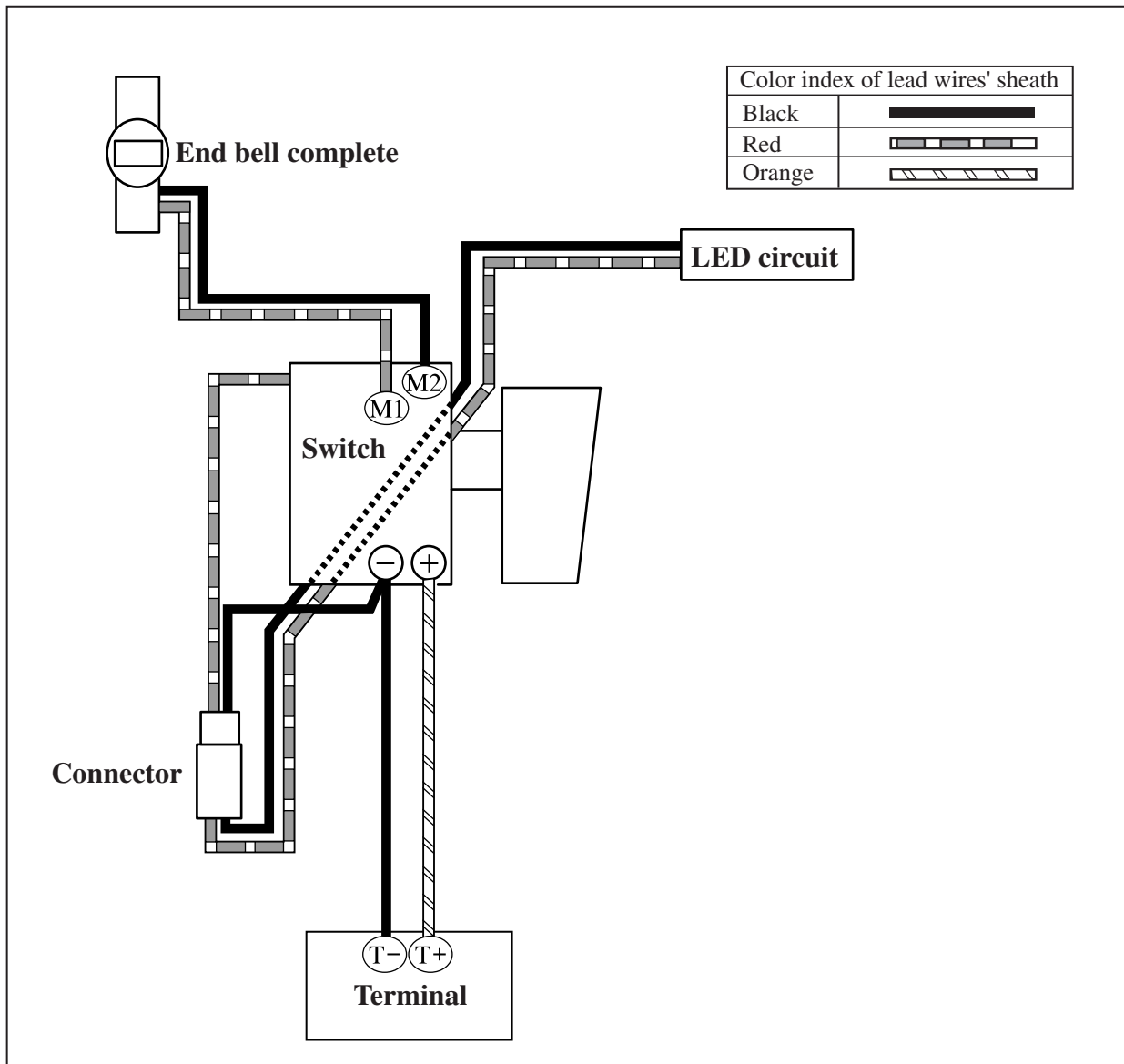
Because Stopper is not reversible when installed on Housing, be sure to place it as illustrated in **Fig. 15**.

**Fig. 15**



► **Circuit diagram**

**Fig. 16**



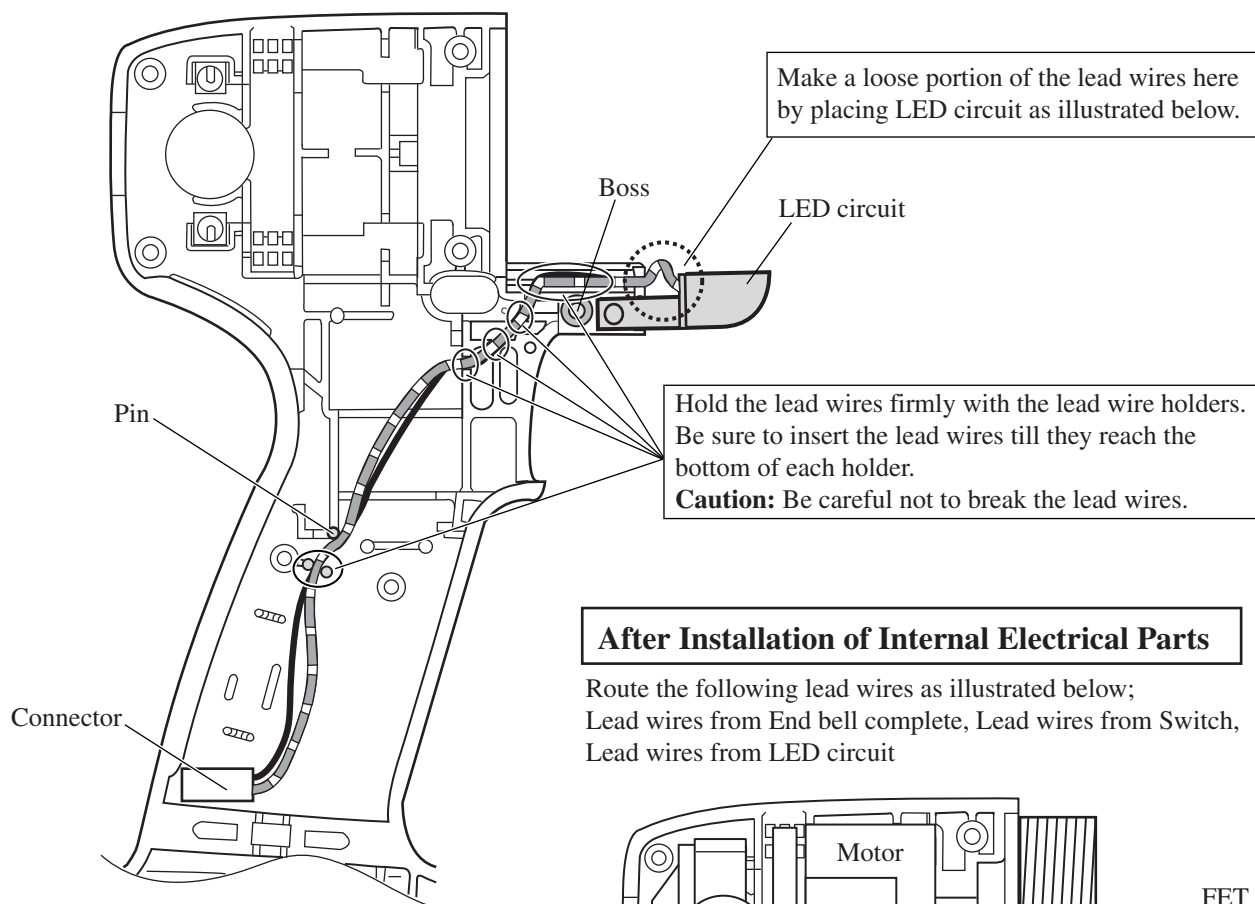
(See next page for Wiring diagram.)

# ▶ Wiring diagram

Fig. 17

## Before Installation of Internal Electrical Parts

Route the two lead wires (black and red) from LED circuit as illustrated below.



## After Installation of Internal Electrical Parts

Route the following lead wires as illustrated below;  
Lead wires from End bell complete, Lead wires from Switch, Lead wires from LED circuit

