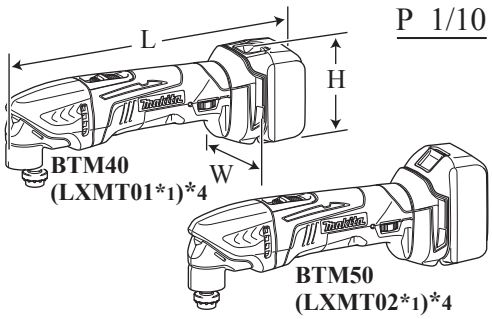
TECHNICAL INFORMATION

PRODUCT

Model No. ► BTM40 (LXMT01*1), BTM50 (LXMT02*1)

Description ► DC Multi tools

*1: Model number for North and Central American countries



Dimensions: mm (")		
	BTM40 (LXMT01*1)	**BTM50 (LXMT02*1)**
Length (L)	307 (12-1/4)*3/ 324 (12-3/4)*4	
Width (W)	80 (3-1/8)	
Height (H)	104 (4-1/8)	122 (4-13/16)

*3 with 1.3Ah Li-ion battery of BL1415 or BL1815
*4 with 3.0Ah Li-ion battery of BL1430 or BL1830

CONCEPT AND MAIN APPLICATIONS

Models BTM40 (LXMT01*1), BTM50 (LXMT02*1) are DC multi tools to compete with the Competitor F's Models F1-AC/ F2-AC.
These models have been developed for commercial use, and their high performance will satisfy professional users accustomed to AC multi tools.
These products are powered by the following Li-ion batteries:
BTM40 (LXMT01*1) by BL1415/ BL1430 (14.4V-1.3/ 3.0Ah)
BTM50 (LXMT02*1) by BL1815/ BL1830 (18V-1.3*2/ 3.0Ah)

*2 1.5Ah for some countries

These new products are available in several variations with various accessories by country.

► Specification

Specification \ Model		BTM40 (LXMT01*1)	BTM50 (LXMT02*1)
Battery	Cell	Li-ion	
	Voltage: V	14.4	18
	Capacity: Ah	1.3/ 3.0	1.3 (1.5*5)/ 3.0
	Energy capacity: Ah	19/ 44	24 (27*5)/ 54
	Charging time (approx.): min.	15/ 22 with DC18RC (DC18RA*6)	
Max output: W		280	300
Oscillation angle, left/right: degree [°]		1.6 (3.2 total)	
Oscillations per minute: opm=min^{-1}		6,000 - 20,000	
Oscillating multi tool accessories		Makita oscillating multi tool accessories equivalent to the Competitor B's B-system	
Electronic control	Variable speed control by dial	Yes	
	Soft start	Yes	
	Anti-restart function	Yes	
LED Job light		Yes	
Weight according to EPTA-Procedure 01/2003: kg (lbs)		1.7 (3.8)*7, 1.8 (4.0)*8/ 1.9 (4.2)*7, 2.0 (4.4)*8	1.8 (3.9)*7, 1.9 (4.1)*8/ 2.0 (4.4)*7, 2.1 (4.6)*8

*5: for some countries only
*6: for North and Central American countries
*7: with Battery and Vacuum attachment, without Sanding pad
*8: with Battery, Sanding pad, and Vacuum attachment

► Standard equipment

Oscillating multi tool accessories
[equivalent to the Competitor B's B-system] 1
Adapter A ..... 1 (for some countries only)
Adapter C ..... 1 (for some countries only)
Tool box (for storing oscillating multi tool accessories) ..... 1 (for some countries only)
Hex wrench 1
Dust attachment set ..... 1 (for some countries only)
Plastic carrying case or Tool bag ..... 1 (for some countries only)

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

► Optional accessories

Oscillating multi tool accessories
[equivalent to the Competitor B's B-system]
Tool box (for storing oscillating multi tool accessories)
Dust attachment set
Triangular abrasive papers (Hook & loop type)
Adapter A
Adapter C
Li-ion battery BL1415 (for BTM040, LXMT01*1)
Li-ion battery BL1430 (for BTM040, LXMT01*1)
Li-ion battery BL1815 (for BTM050, LXMT02*1)
Li-ion battery BL1830 (for BTM050, LXMT02*1)
Fast charger DC18RA
(for USA, Canada, Guam, Panama, Colombia, Mexico)
Fast charger DC18RC
(for all countries except the countries above)
Charger DC18SD
Charger DC24SC
Automotive charger DC18SE

Repair

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

[1] NECESSARY REPAIRING TOOLS

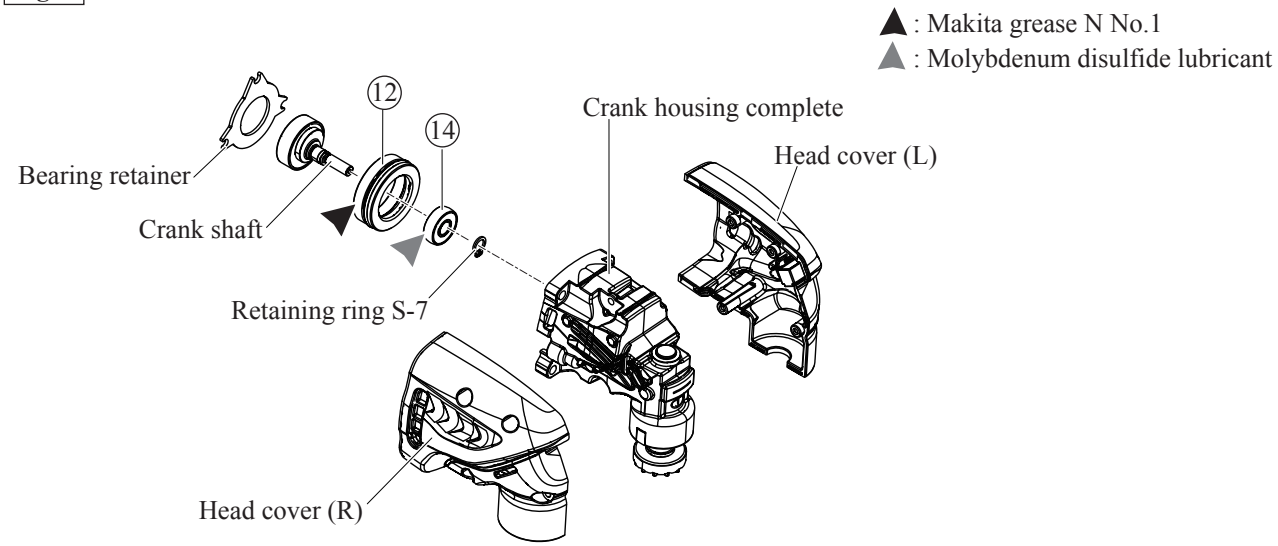
Code No.	Description	Use for
1R003	Retaining ring S pliers ST-2N	Removing Bearing box
1R232	Pipe 30	Supporting Bearing box when removing Crank shaft section
1R269	Bearing extractor	Removing Ball bearing 6000DDW and Sphere bearing 706
1R291	Retaining ring S and R pliers	Removing Retaining ring S-7 from Crank shaft

[2] LUBRICATION

Apply Makita grease N. No.1 to the following portions designated with the black triangle to protect parts and product from unusual abrasion.

Item No.	Description	Grease	Portion to lubricate	Amount
⑫	Bearing box	Makita grease N No.1	Outer surface	a little
⑭	Sphere bearing 706	Molybdenum disulfide lubricant	Outer race	a little

Fig. 1



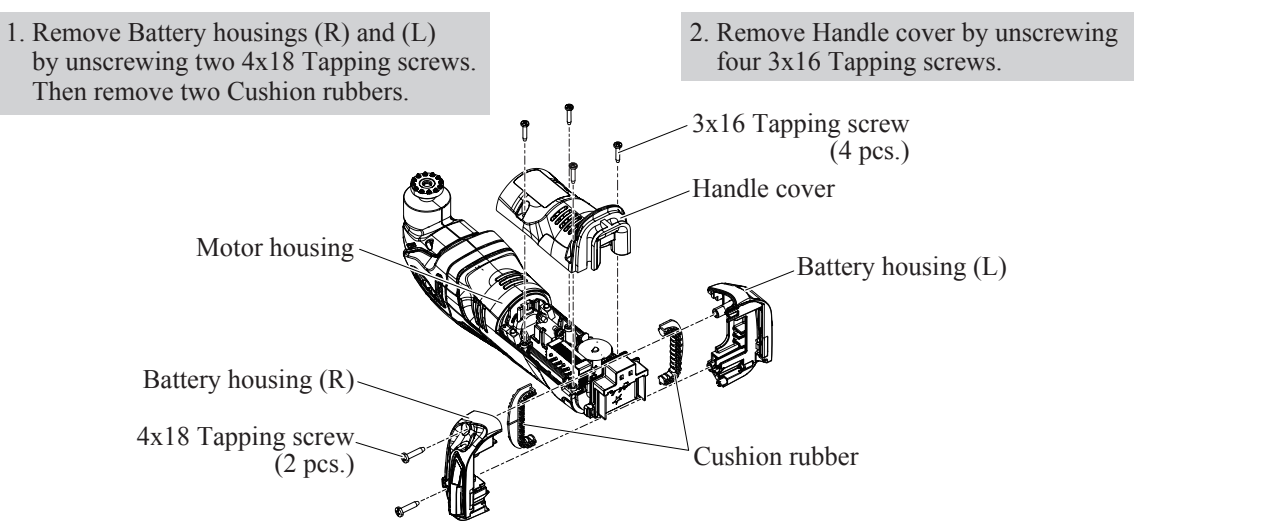
[3] DISASSEMBLY/ASSEMBLY

[3] -1. DC Motor

DISASSEMBLING

(1) Remove Battery housing and Handle cover from Motor housing. (**Fig. 2**)

Fig. 2



Repair

[3] DISASSEMBLY/ASSEMBLY

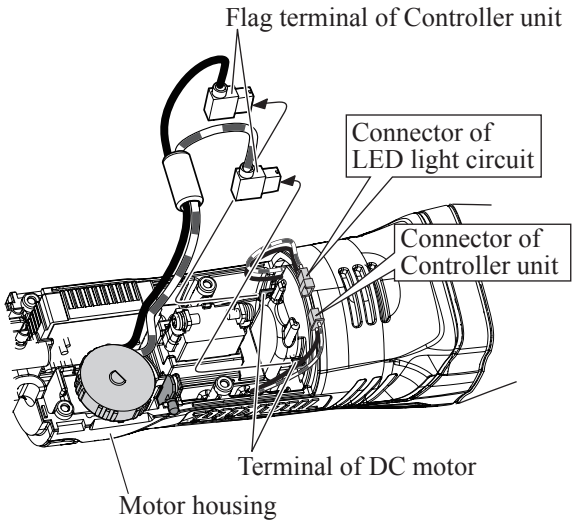
[3] -1. DC Motor

DISASSEMBLING

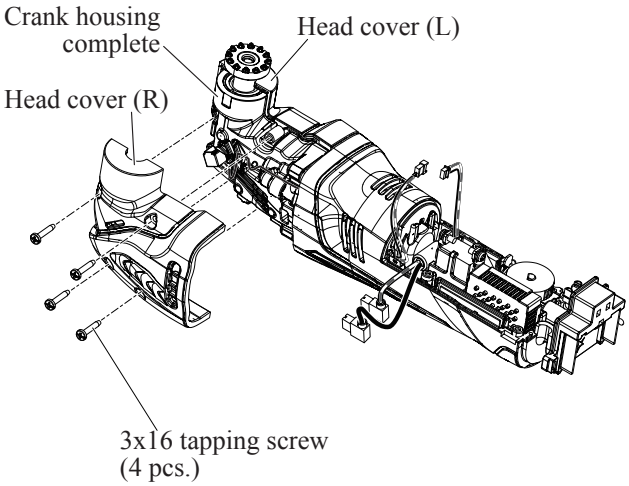
(2) Remove Crank housing complete from Motor housing. (**Fig. 3**)

Fig. 3

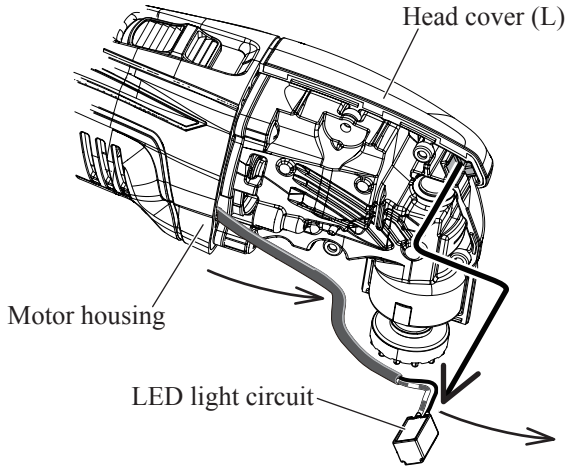
1. Disconnect Connector of LED light circuit from that of Controller unit, then disconnect Flag terminals of Controller unit from Terminal of DC motor.



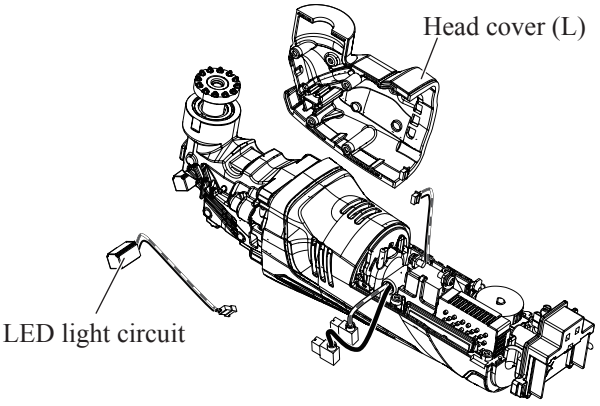
2. Remove Head cover (R) from Crank housing complete by unscrewing four 3x16 Tapping screws.



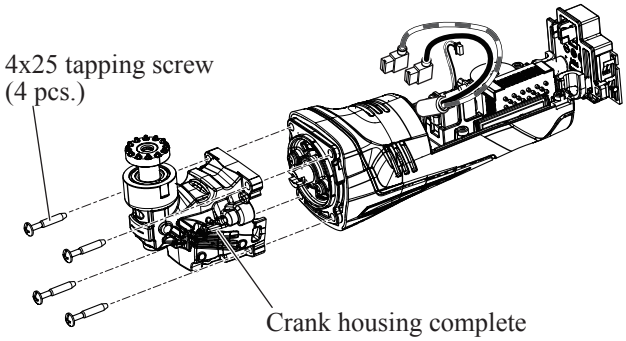
3. Pull out the lead wires of LED light circuit from Motor housing, then remove LED light circuit from Head cover (L).



4. Head cover (L) can now be removed from Crank housing complete.



5. Remove Crank housing complete by unscrewing four 4x25 Tapping screws.



Repair

[3] DISASSEMBLY/ASSEMBLY

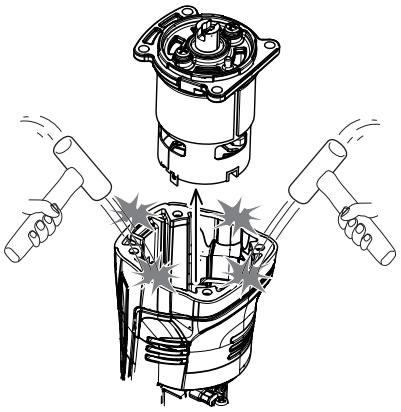
[3] -1. DC Motor

DISASSEMBLING

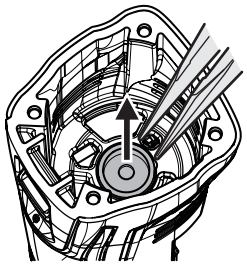
(3) Disassemble DC Motor as described in **Fig. 4**.

Fig. 4

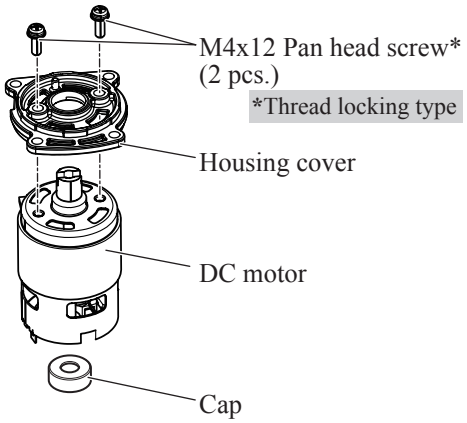
1. Remove DC motor section from Motor housing by gently tapping the end surface of Motor housing.



Note: If Cap remains in Motor housing, pull it out with pliers.



2. Remove Housing cover from DC motor by removing two M4x12 Pan head screws.



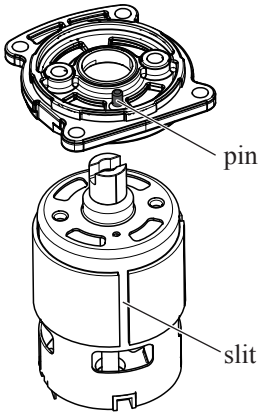
ASSEMBLING

Assemble DC motor section by reversing the disassembly procedure.
See **Fig. 5** for **Noets in Assembly**.

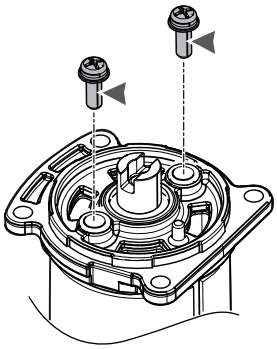
Fig. 5

Noets in Assembly

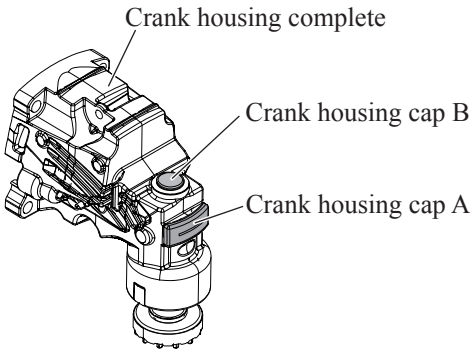
When mounting Housing cover on DC motor, align the pin of Housing cover with the slit of DC motor.



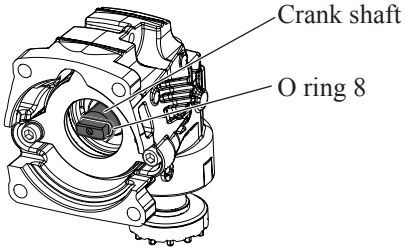
If you reuse the removed M4x12 Pan head screws, apply either of the following two thread lockers to the threads of the screws:
- ThreeBond 1342
- Loctite 242



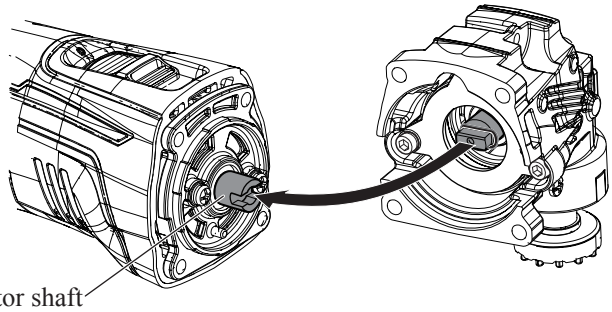
Before mounting Crank housing complete on Motor housing, make sure that Crank housing caps A and B are mounted in place on Crank housing complete.



Before assembling Crank housing complete and Motor housing together, make sure that O ring 8 is mounted in place on Crank shaft.



When assembling Crank housing complete and Motor housing together, engage Crank shaft with the coupling portion of Motor shaft.



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -2. Bearing Box Section and Crank Housing Section

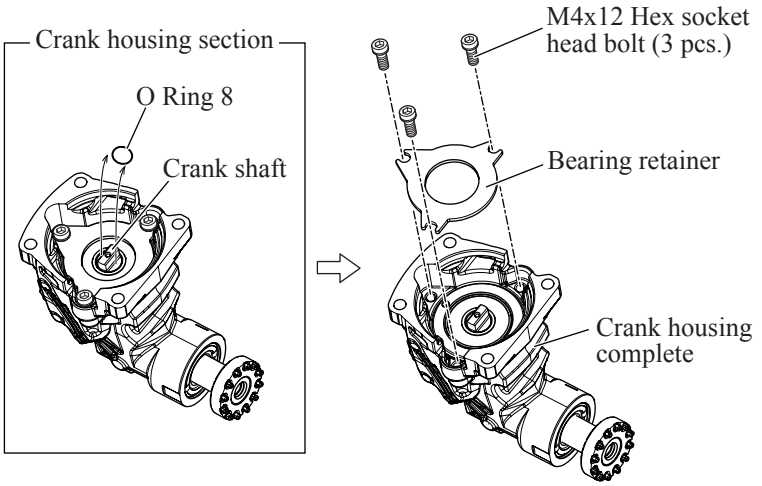
DISASSEMBLING

(1) Disassemble Crank housing complete from Motor housing. (**Fig. 3**)
(2) Remove Bearing box section from Crank housing complete, then remove Crank shaft from Bearing box. (**Fig. 6**)

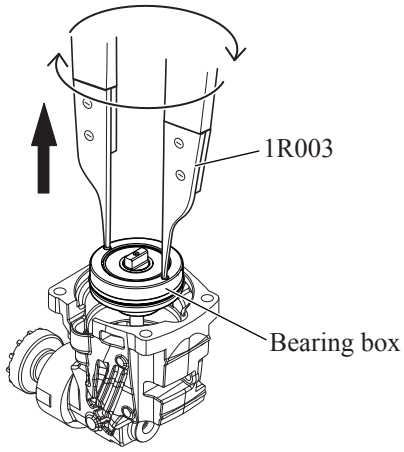
Note:
1. No need to remove Battery housings (R) and (L) and Handle cover.
2. You must replace Crank housing complete as a unit, because it is a factory-assembled part and cannot be disassembled.

Fig. 6

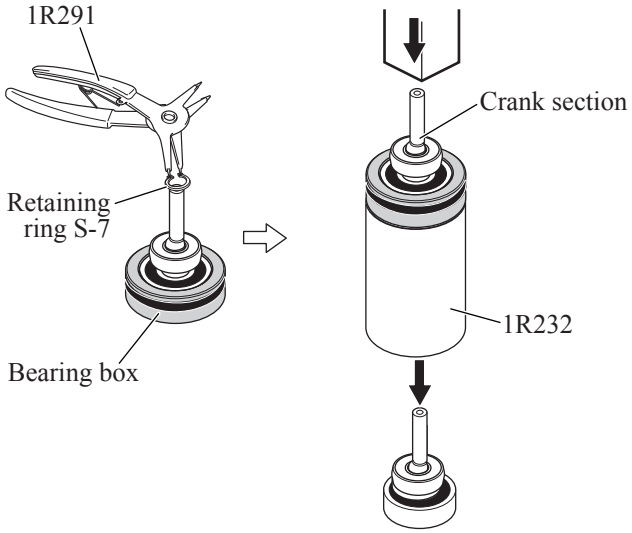
1. Remove O ring 8 from Crank shaft, then remove Bearing retainer by unscrewing three M4x12 Hex socket head bolts.



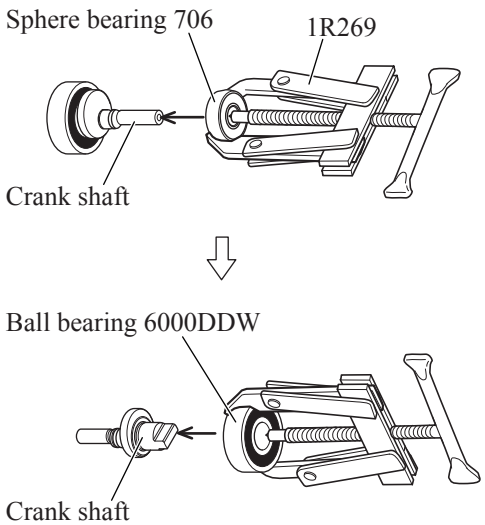
2. Insert the tips of 1R003 into the pin holes of Bearing box, then pull out Bearing box from Crank housing complete while turning it with 1R003.



3. Remove Retaining ring S-7 from Crank shaft with 1R291, then remove Crank section from Bearing box using arbor press and 1R232.



4. From Crank shaft, remove Sphere bearing 706, then remove Ball bearing 6000DDW with 1R269.

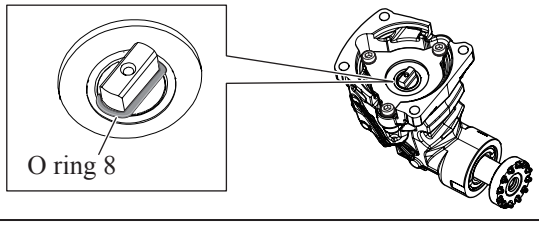


ASSEMBLING

Bearing box section can be assembled by reversing the disassembly procedure. (**Fig. 6**)

Note in Assembling:
Do not forget to mount O ring 8 onto Crank shaft. (**Fig. 7**)

Fig. 7



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -3. Switch Lever

DISASSEMBLING

(1) Remove Crank housing complete from Motor housing. (**Figs. 2**, **3**)
Then remove Motor section from Motor housing. (**Fig. 4)**

(2) Remove electrical parts (**Fig. 8**), then remove Switch lever and Switch knob. (**Fig. 9**)

Fig. 8

Switch lever can be seen by removing from Motor housing the following five electrical parts:
Controller, Switch, Battery capacity warning lamp, Dial 28, Terminal.

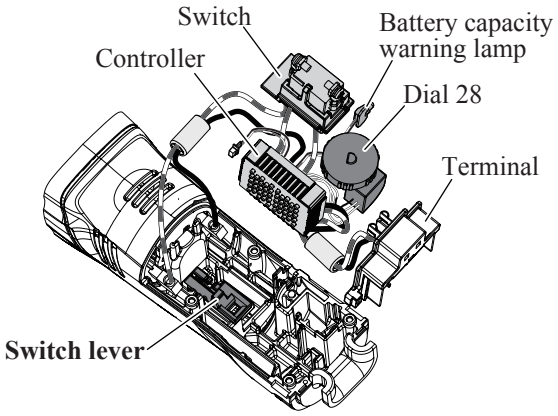
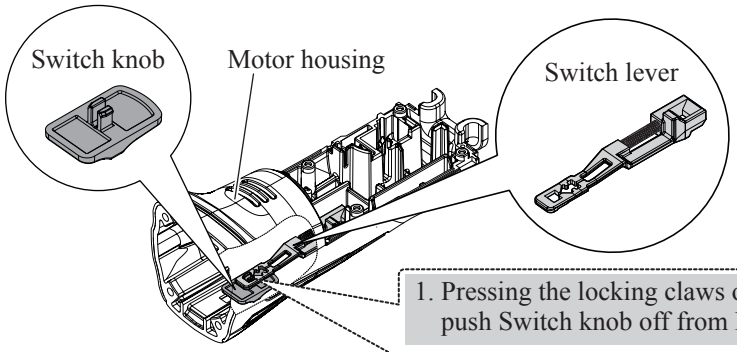
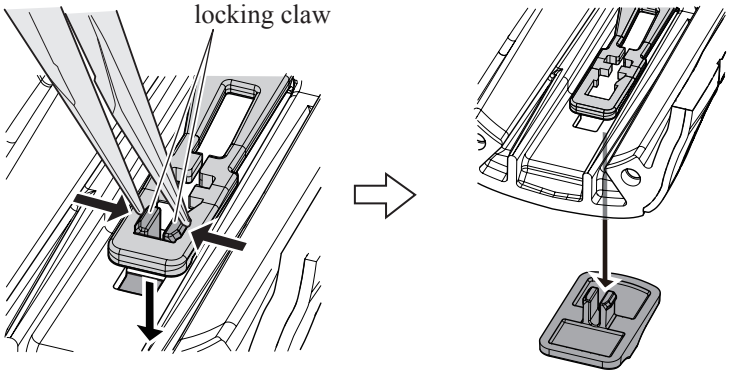


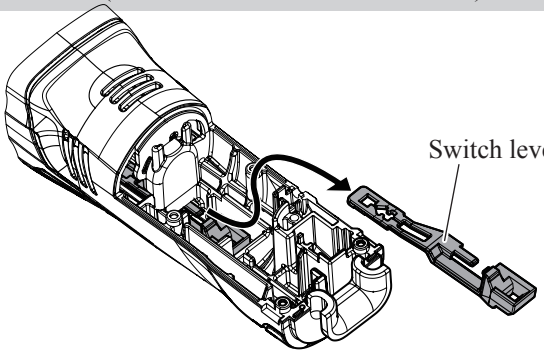
Fig. 9



1. Pressing the locking claws of Switch knob inward with small nose pliers, push Switch knob off from Motor housing.



2. Switch lever can now be removed from Motor housing by bending Switch lever to release its rear end from the ribs on Motor housing then pulling it toward Battery cover side (in the direction of the black arrow).



Repair

[3] DISASSEMBLY/ASSEMBLY

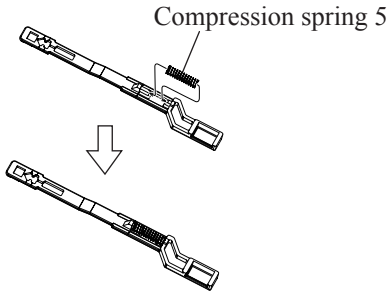
[3] -3. Switch Lever

ASSEMBLING

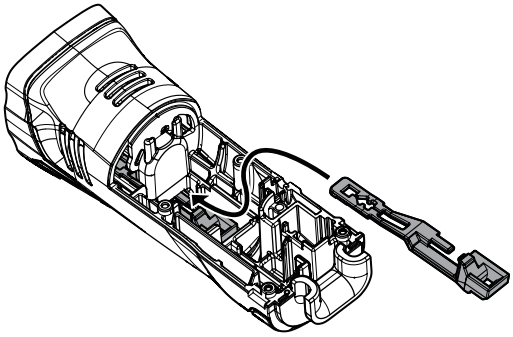
Mount Switch lever and Switch knob on Motor housing. (**Fig. 10**)

Fig. 10

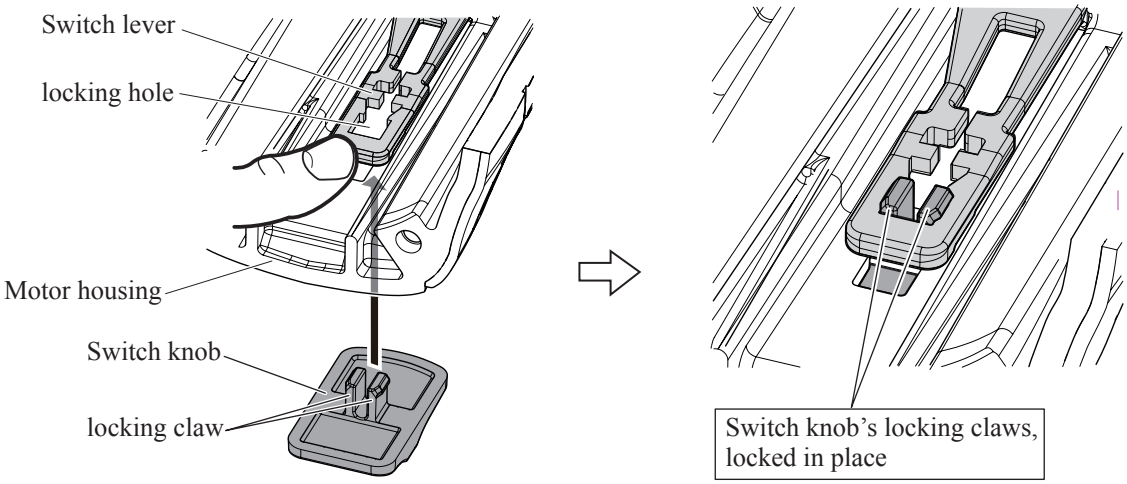
1. Make sure Compression spring 5 is mounted on the back of Switch lever.



2. Bending the rear end of Switch lever, slide Switch lever into Motor housing as drawn below.

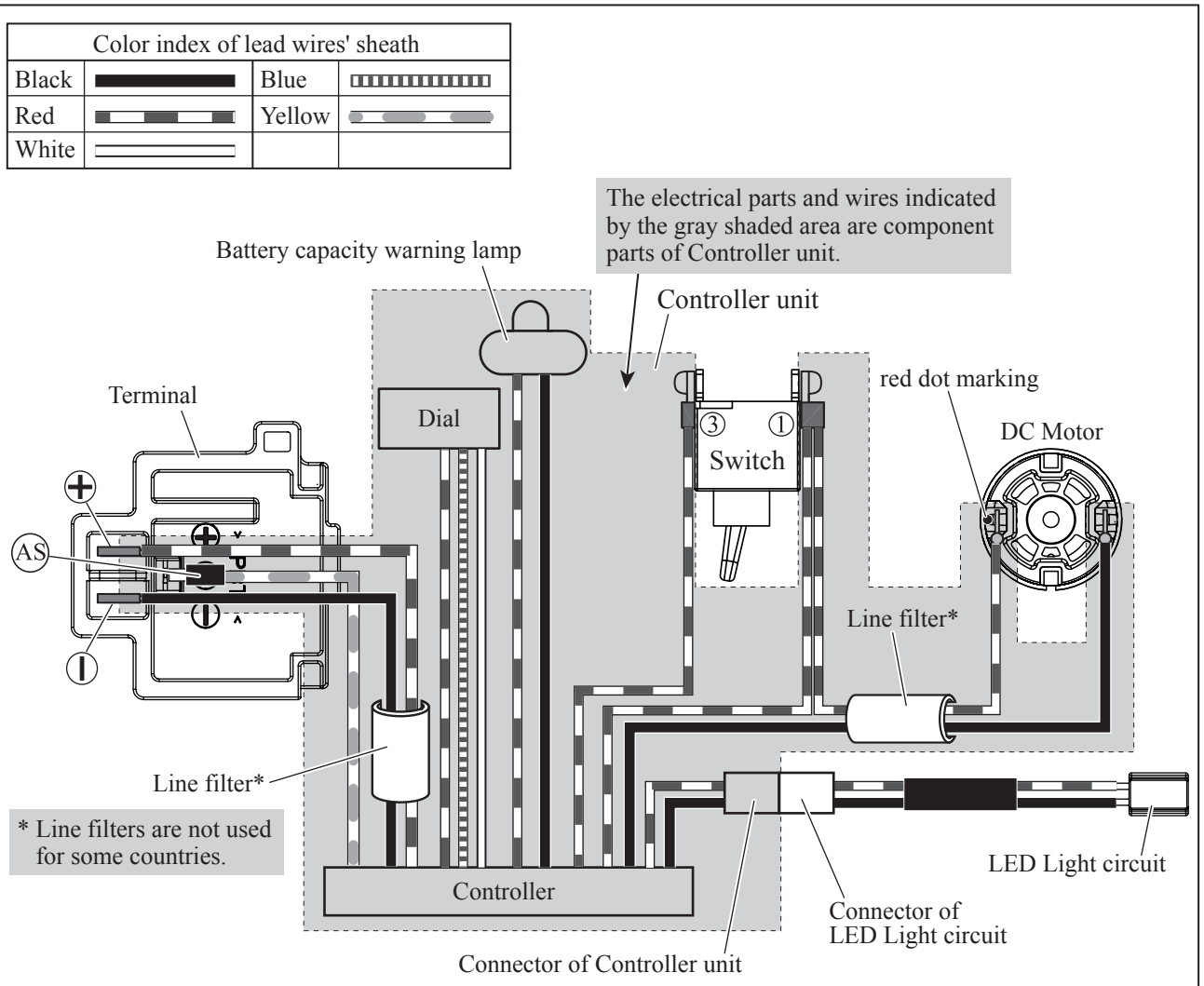


3. Pressing Switch lever against Motor housing, insert the locking claws of Switch knob into the locking hole of Switch lever.



Circuit diagram

Fig. D-1



Wiring diagram

Fig. D-2

Connecting Controller with Terminal

Each Flag terminal must be so connected with Terminal that its wire connecting portion is located over the pole marking of Terminal.

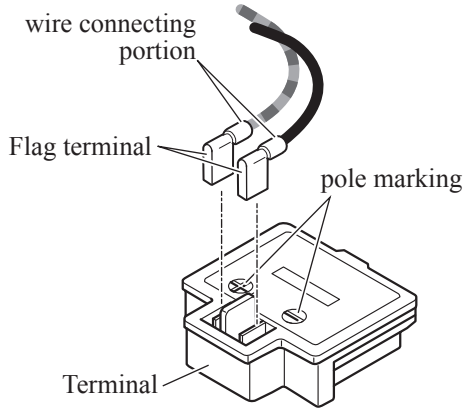
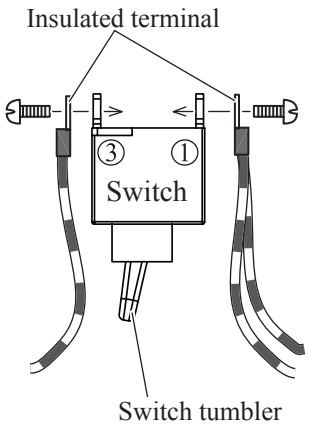


Fig. D-3

Connecting Controller with Switch

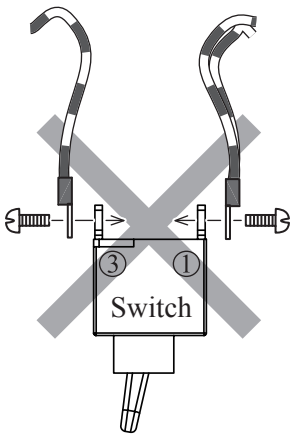
[Correct]

Insulated terminals must be so connected with Switch that the Lead wires are placed on Switch tumbler side.



[Wrong]

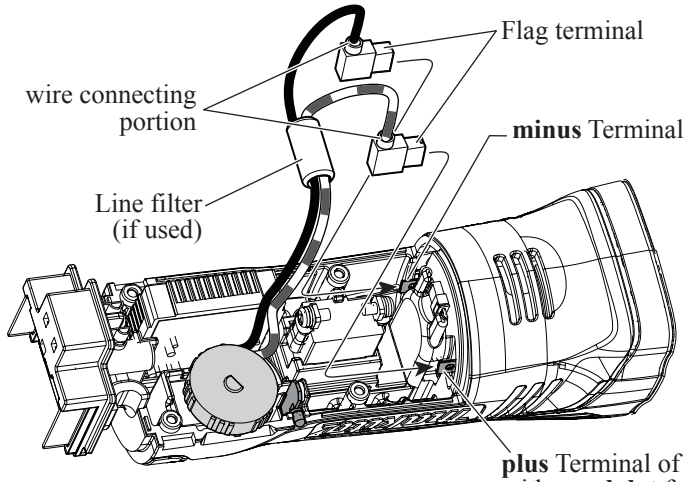
If connected as shown below, Lead wires interfere with Handle cover.



Wiring diagram

Fig. D-4

Connecting Controller with DC Motor



Connect each Flag terminal of Controller with the corresponding Terminal of DC Motor.

Important:

- The wire connecting portion of each Flag terminal must be placed on Handle cover side.
- Connect the Flag terminal on **red** lead wire with **plus terminal** of DC Motor.

Fig. D-5

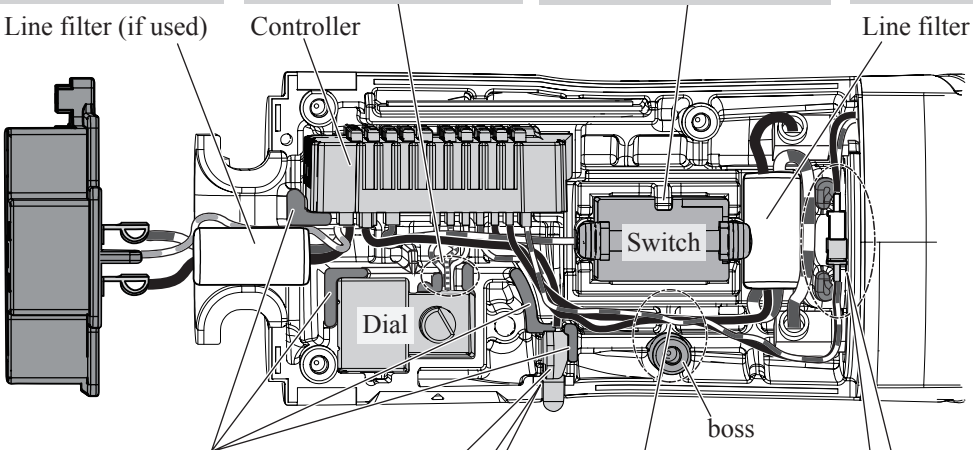
Wiring in Motor Housing

Put Line filter in this place if it is used.

Route three Lead wires (1 red, 1 blue, 1 white) connecting Controller and Dial in this groove.

Fix Switch with this hook.

Put Line filter in this place if it is used.

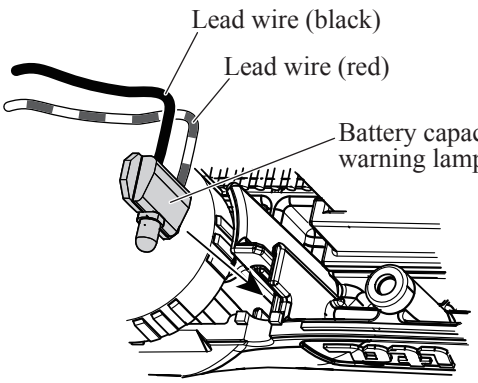


Do not route any Lead wire over these ribs.

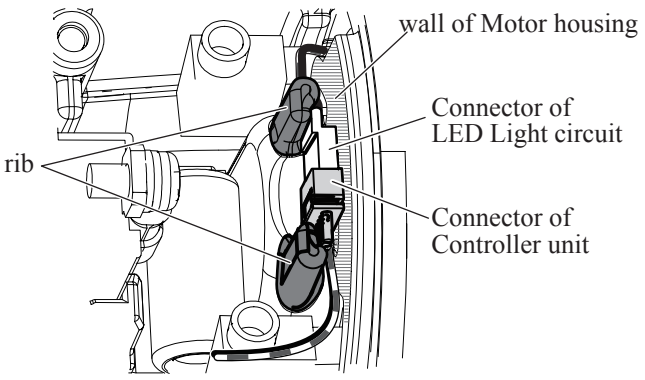
Battery capacity warning lamp

Route the Lead wires of Controller unit between the boss and Switch box.

Put Battery capacity warning lamp in this groove with the black Lead wire on the top.



After connecting the Connector of LED light circuit with that of Controller unit, put the Connectors and the Lead wires between the two ribs and the wall of Motor housing.



Wiring diagram

Fig. D-6