

# T ECHNICAL INFORMATION



PRODUCT

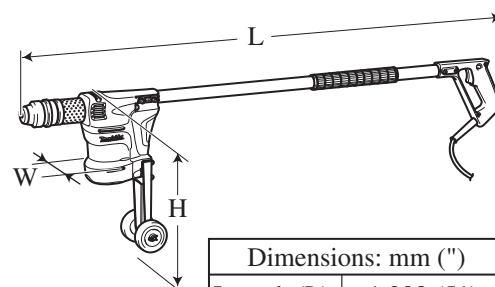
P 1/16

Models No. ▶ HK1820L

Description ▶ Power Scraper

## CONCEPT AND MAIN APPLICATIONS

Model HK1820L, Power Scraper with chuck adapted for SDS-PLUS bits has been developed from Model HK1820, featuring long handle for easy removal of flooring materials.



Dimensions: mm (")	
Length (L)	1,293 (51)
Width (W)	116 (4-9/16)
Height (H)	386 (15-1/4)

## ► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output (W)
			Input	Output	
110	4.9	50/60	510	250	350
120	4.2	50/60	---	250	350
220	2.4	50/60	510	250	350
230	2.4	50/60	510	250	350
240	2.3	50/60	510	250	350

Impacts per min: ipm=min <sup>-1</sup>	3,100
Shank type	Adapted for SDS-PLUS bits
Impact energy [catalog value]: J	3.7
Protection from electric shock	Double insulation
Power supply cord: m (ft)	Chile, Brazil: 2 (6.6) Other countries: 5 (16.4)
Net weight: kg (lbs)	5.2 (11.5)

## ► Standard equipment

Hex wrench 5 ..... 1

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

## ► Optional accessories

Bull points	Scraper assembly
Cold chisel	Grease vessel (containing Hammer grease)
Grooving chisels	Bit grease
Scaling chisel	Safety goggle
Scaling chisel (for Tile)	Hammer service kit set
Hook complete	

## ► Repair

**CAUTION: Remove the bits from the machine for safety before repair/maintenance in accordance with the instruction manual!**

### [1] NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R003	Retaining ring pliers ST-2N	Removing/mounting Ring spring
1R022	Bearing plate	Stabilizing Bearing box when removing Ball bearing 6002LLU
1R023	Pipe ring	Stabilizing Crank housing complete when removing Armature
1R029	Bearing setting pipe 23-15.2	Removing Oil seal 15 and Ball bearing 6002LLU from Bearing box
1R212	Tip for retaining ring pliers	Removing/mounting Ring spring (for modular use with 1R003)
1R225	Bearing extractor	Removing Armature and Ball bearing 6001DDW from Crank housing comp.
1R228	1/4" Hex shank bit for M4	Removing M4x25 Hex socket head bolt from Crank housing cover
1R229	1/4" Hex shank bit for M5	Removing M5x25 Hex socket head bolt from Barrel
1R230	1/4" Hex shank bit for M6	Removing Caster section from Handle base
1R258	V Block	Stabilizing Bearing box when removing Helical gear 36
1R288	Screwdriver magnetizer	Magnetizing Screwdriver when removing Steel balls and Pins

### [2] LUBRICATION

Apply the following lubricants to protect parts and product from unusual abrasion:

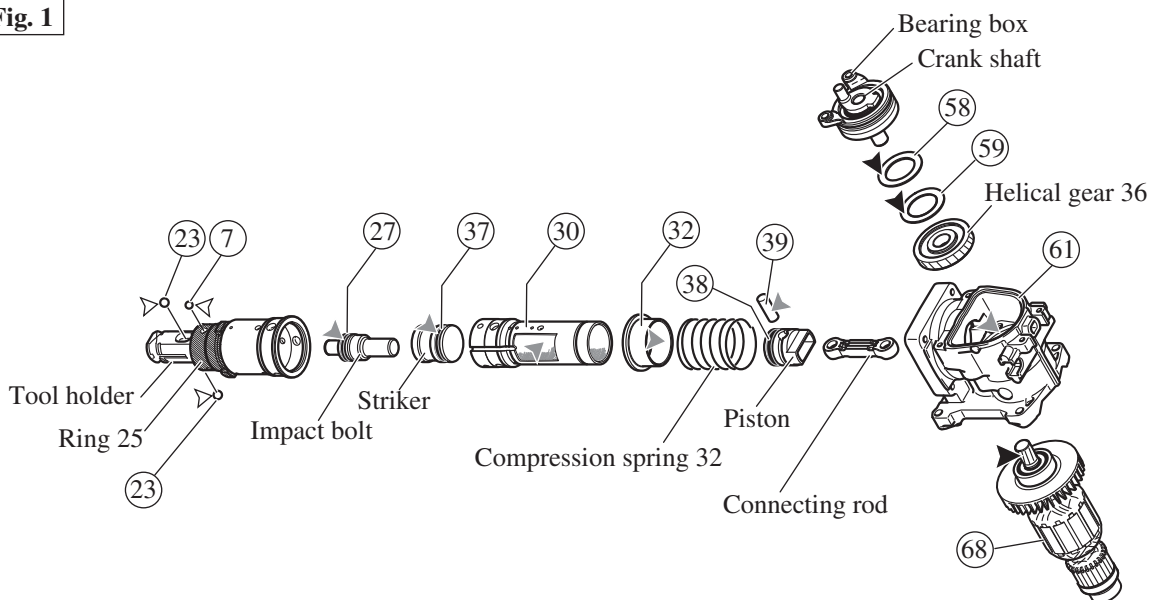
\*Makita grease N.No.1 to the portions designated with **black triangle**

\*Makita grease R.No.00 to the portions designated with **gray triangle**

\*Makita grease N.No.2 to the portions designated with **white triangle**

Item No.	Description	Portion to lubricate	Lubricant	Amount
⑦	Steel ball 4.8 (3 pcs)	Whole portion	Makita grease N.No.2	a little
⑳	Steel Ball 7.0 (2 pcs)	Whole portion		
⑳	O Ring 12	Whole portion	Makita grease R.No.00	a little
⑳	Cylinder	Inside surface that Piston and Striker contacts		3g
⑳	Ring 29	Inside periphery that contacts ⑳ Cylinder		a little
⑳	O Ring 18 on Striker	Whole portion		
⑳	O Ring 18 on Piston	Whole portion		
⑳	Pin 7	Cylindrical surface that contacts Connecting rod		
⑳	Crank housing complete	Crank room		17g
⑳⑳	Flat washer 22	Whole portion for smooth rotation of Helical gear 36	Makita grease N.No.1	a little
⑳	Armature	Gear portion for smooth rotation of Helical gear 36		4g

**Fig. 1**



## ► Repair

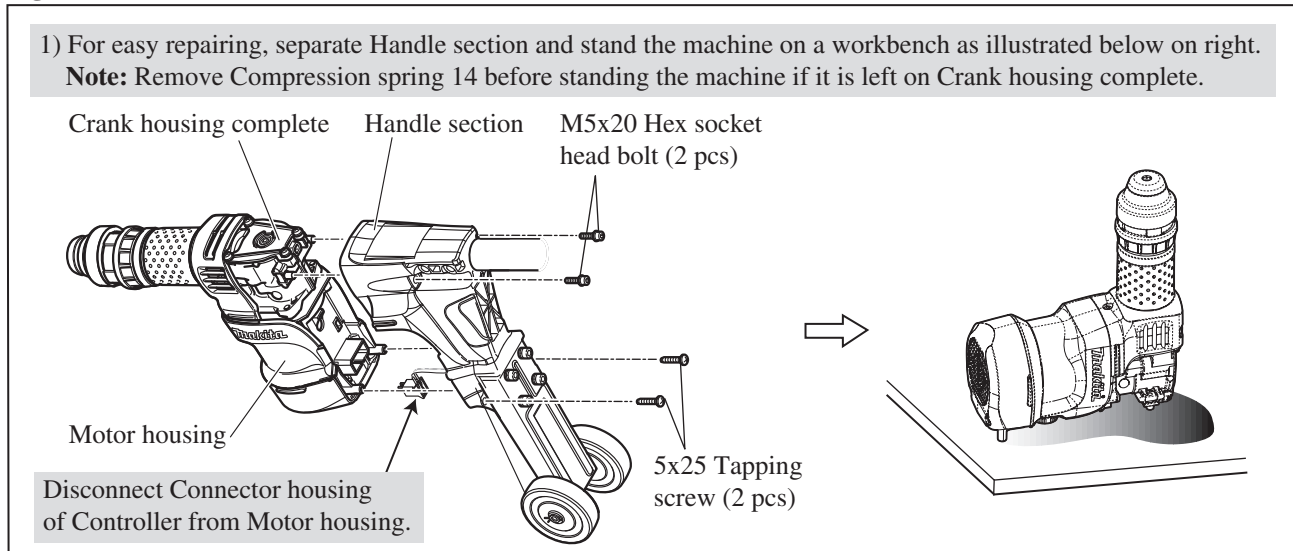
### [3] DISASSEMBLY/ASSEMBLY

#### [3] -1. Chuck Section

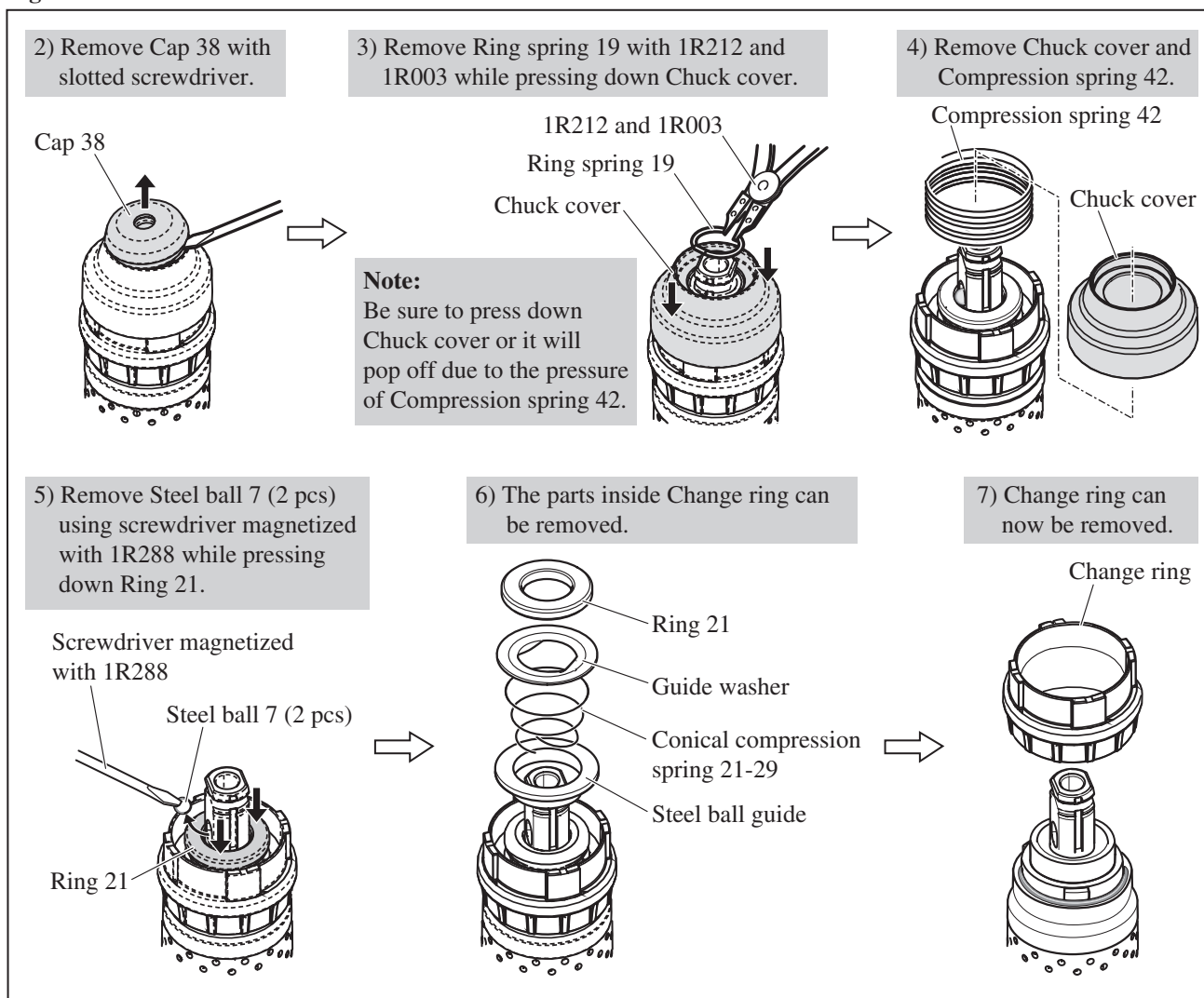
##### DISASSEMBLY

Disassemble the Chuck section as described in **Figs. 2 and 3.**

**Fig. 2**



**Fig. 3**



##### DISASSEMBLY

Do the reverse of the disassembling steps.

► **Repair**

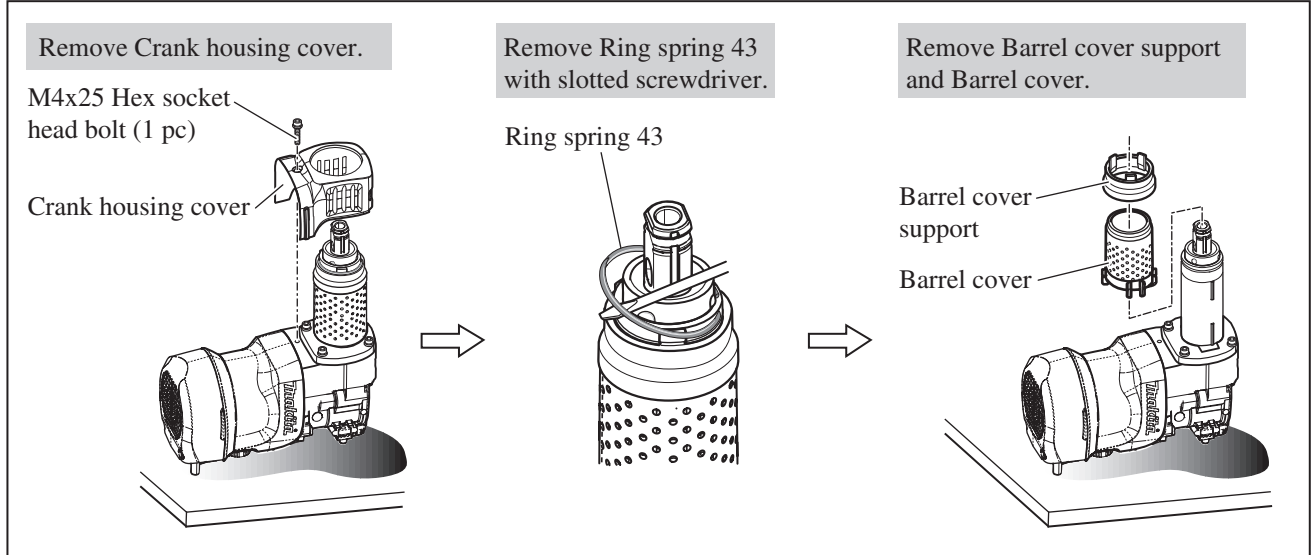
**[3] DISASSEMBLY/ASSEMBLY**

**[3] -2. Barrel, Tool Holder, Cylinder Section**

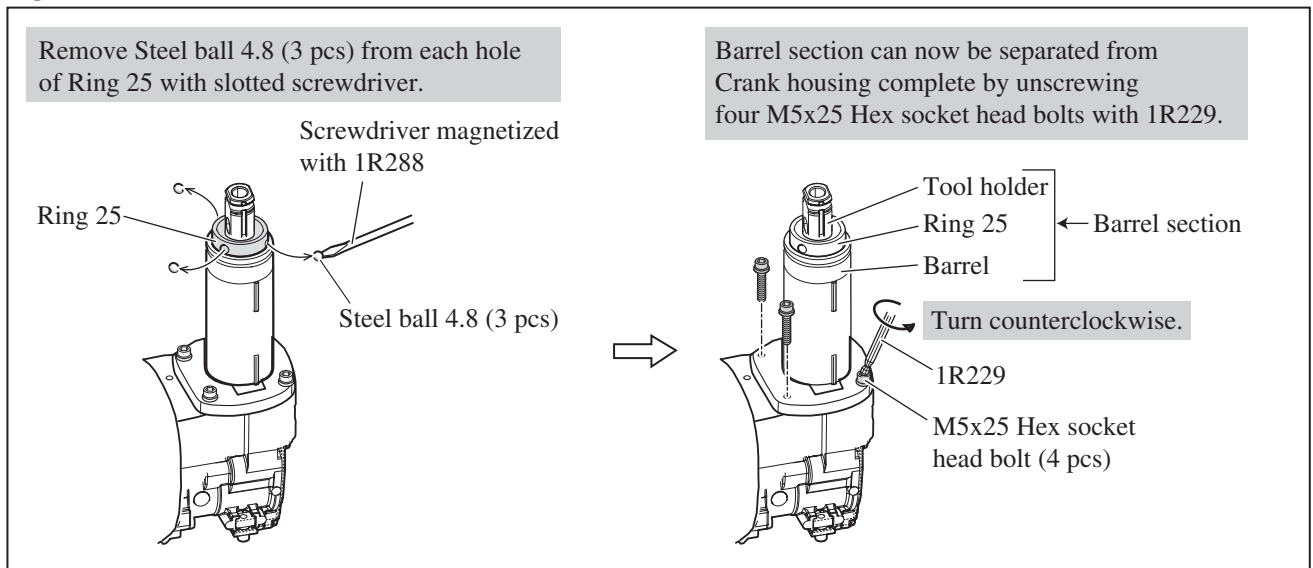
**DISASSEMBLY**

- 1) Disassemble the Chuck section as described in **Figs. 2, 3.**
- 2) Disassemble Tool holder, Ring 25 and Cylinder section from Barrel as described in **Figs. 4, 5, 6.**

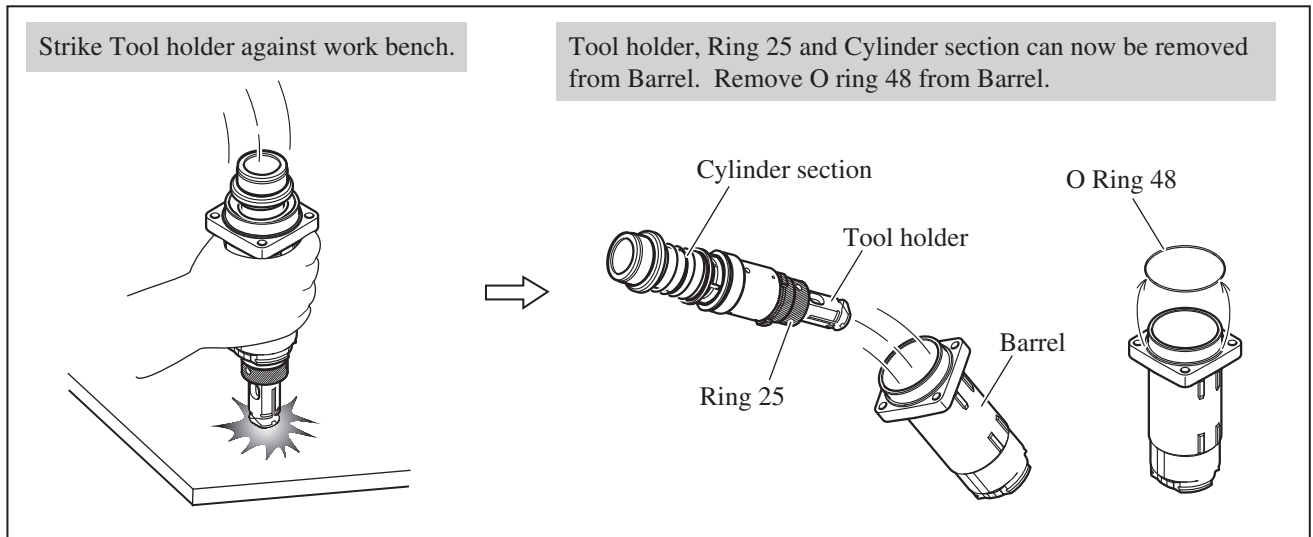
**Fig. 4**



**Fig. 5**



**Fig. 6**



► **Repair**

**[3] DISASSEMBLY/ASSEMBLY**

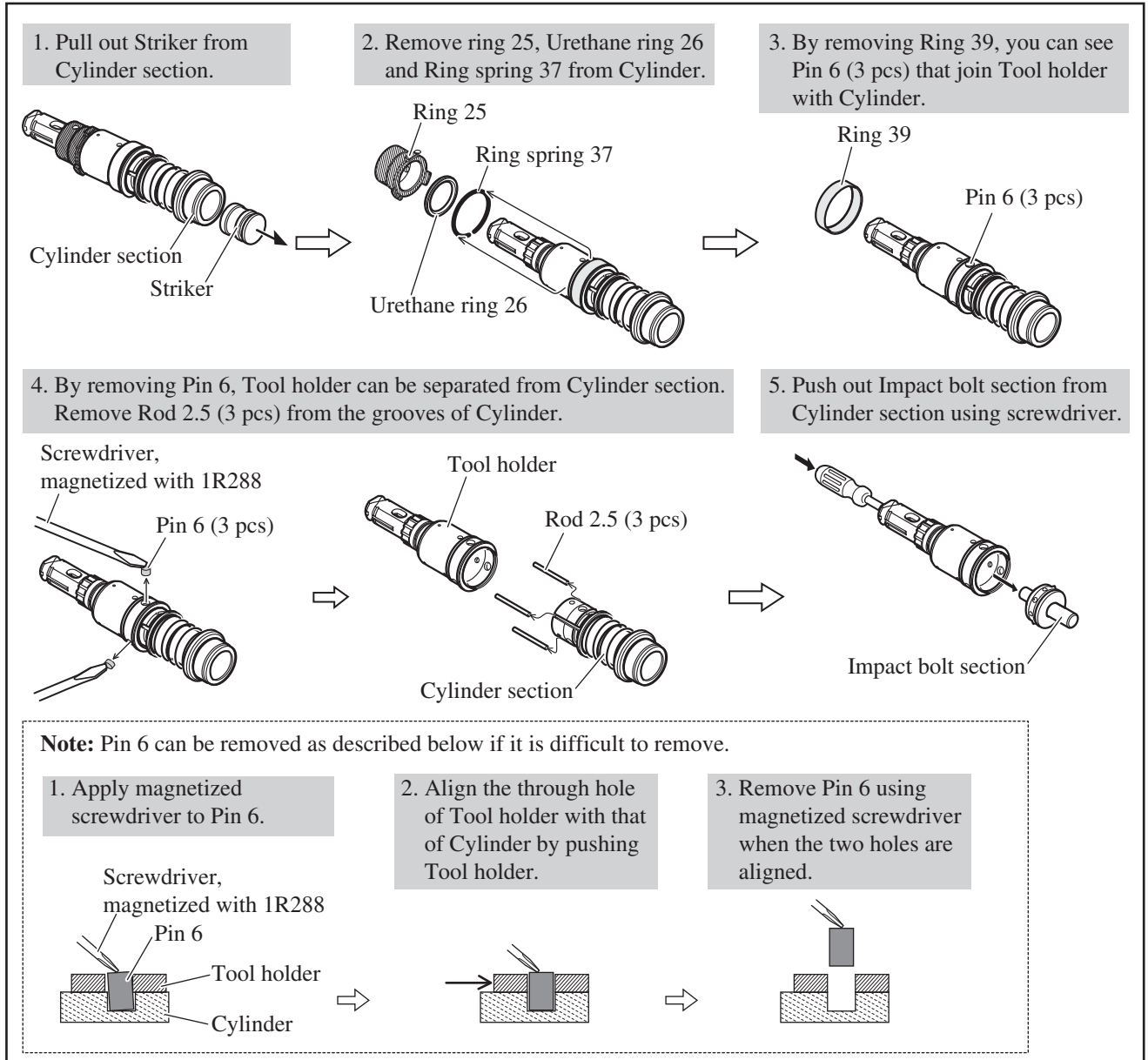
**[3] -2. Barrel, Tool Holder, Cylinder Section**

**DISASSEMBLY**

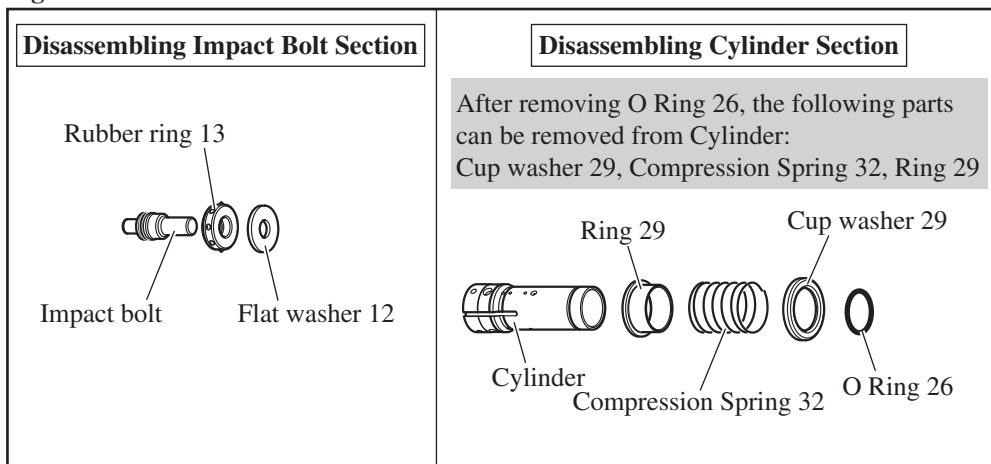
3) Separate Tool holder from Cylinder section as described in **Fig. 7**.

4) Disassemble Impact bolt and Cylinder section as described in **Fig. 8**.

**Fig. 7**



**Fig. 8**



► **Repair**

**[3] DISASSEMBLY/ASSEMBLY**

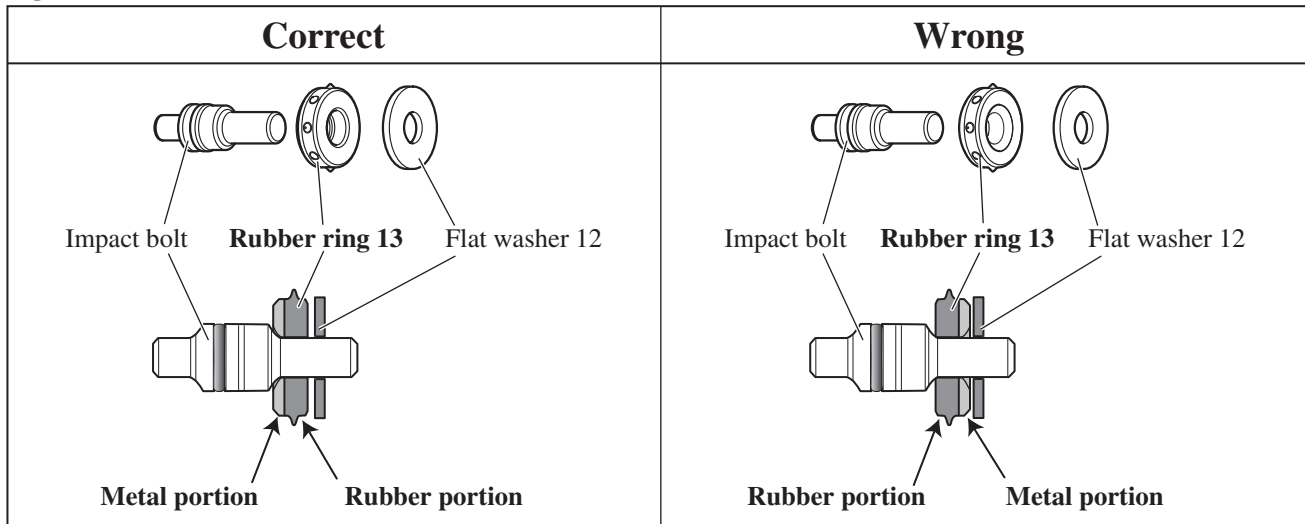
**[3] -2. Barrel, Tool Holder, Cylinder Section**

**ASSEMBLY**

Do the reverse of the disassembling steps.

**Note:** Rubber ring 13 is directional when assembled to Impact bolt. Be sure to assemble as illustrated to left in **Fig. 9**.

**Fig. 9**

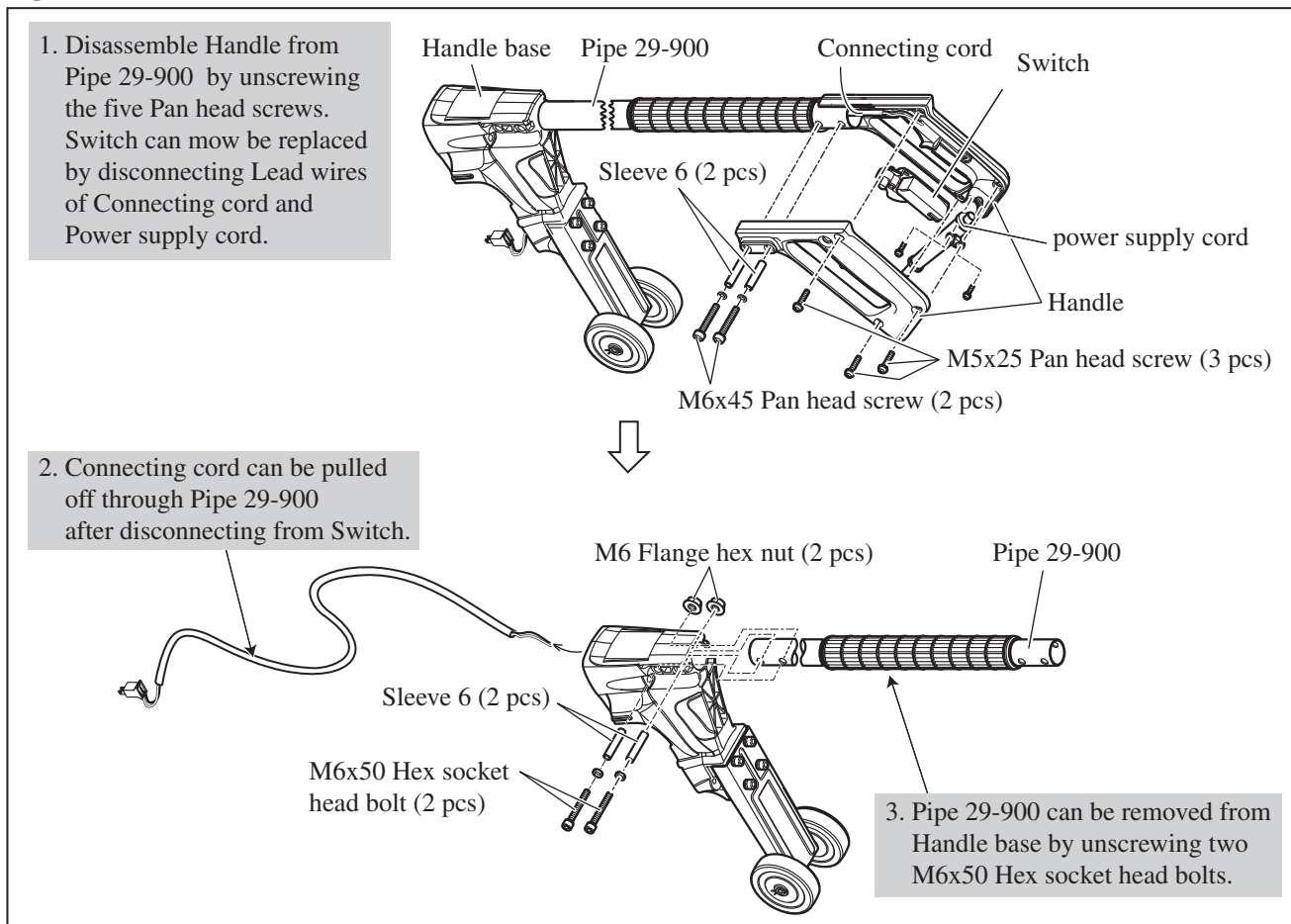


**[3] -3. Electrical Parts in Handle Section**

**DISASSEMBLY**

- 1) Disassemble Handle section as described in **Fig. 2**
- 2) The electrical Parts can be replaced as described in **Fig. 10**.

**Fig. 10**



**ASSEMBLY**

Do the reverse of the disassembling steps.

► **Repair**

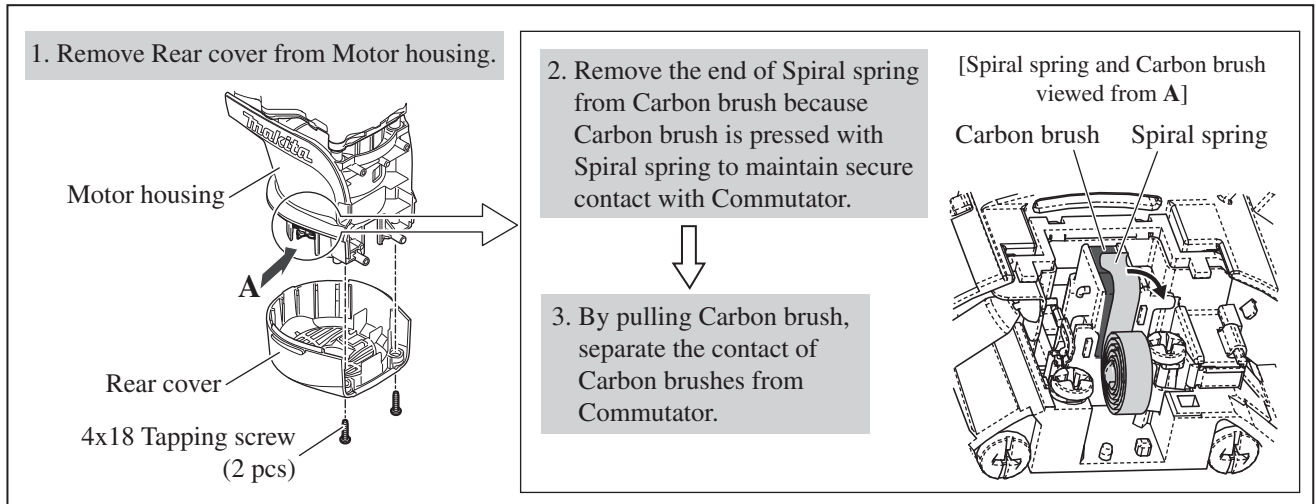
**[3] DISASSEMBLY/ASSEMBLY**

**[3] -4. Motor Section**

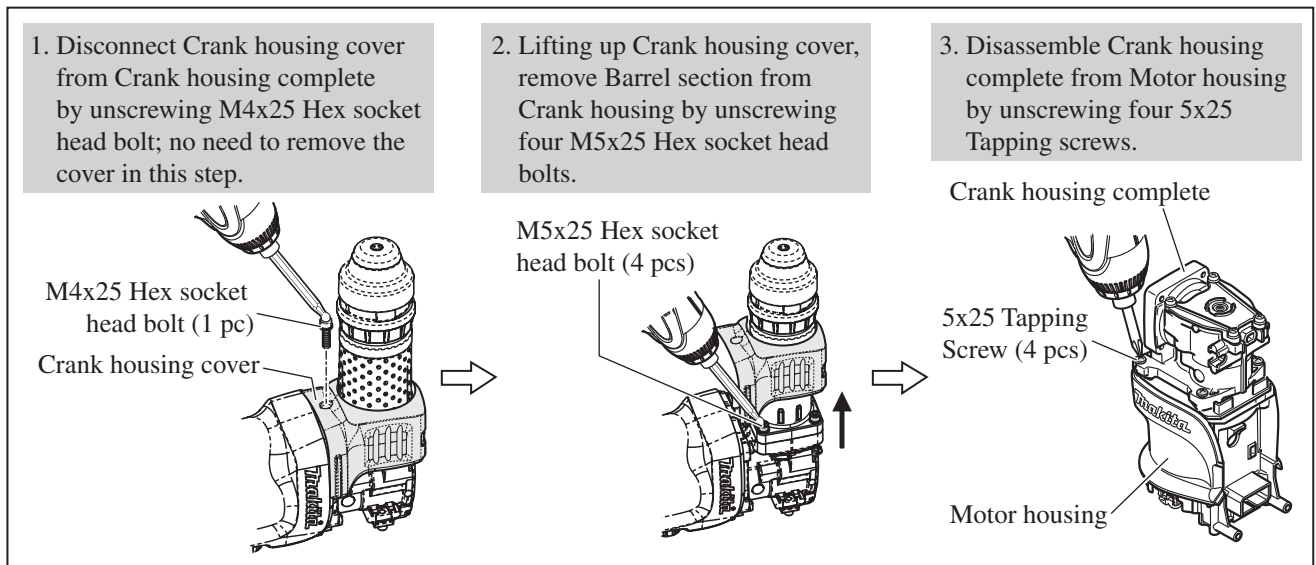
**DISASSEMBLY**

- 1) Disassemble Handle section as illustrated in **Fig. 2**
- 2) Separate the contact of Carbon brushes from Commutator as described in **Fig. 11**.
- 3) Disassemble Crank housing complete from Motor housing as illustrated in **Fig. 12**.
- 4) Remove Piston from Crank shaft as illustrated in **Fig. 13**.

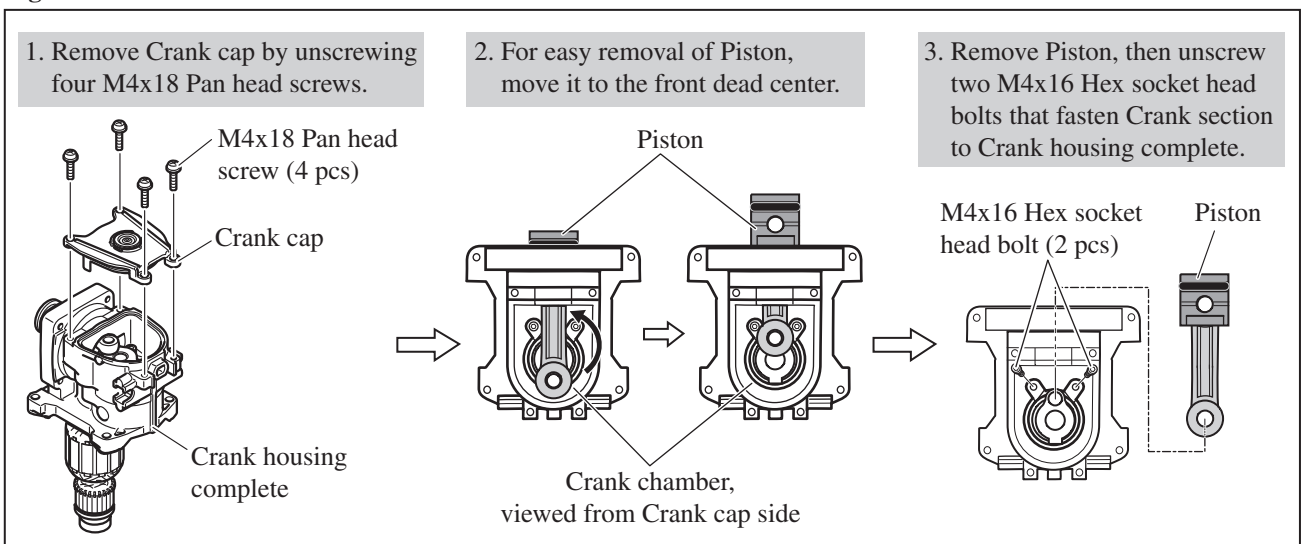
**Fig. 11**



**Fig. 12**



**Fig. 13**



► **Repair**

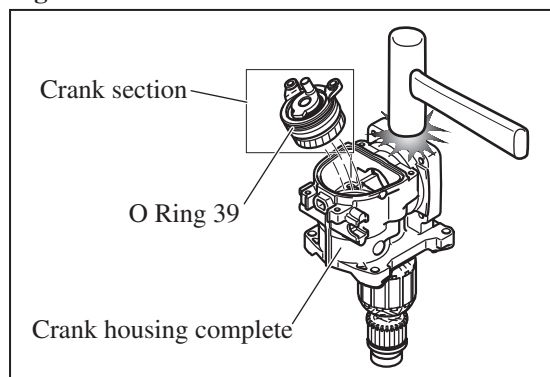
**[3] DISASSEMBLY/ASSEMBLY**

**[3] -4. Motor Section**

**DISASSEMBLY**

- 5) Remove Crank section from Crank housing complete by tapping Crank housing complete with plastic hammer. (Fig. 14)
- 6) Remove Armature from crank housing complete using 1R023, 1R225 and arbor press as described in Fig. 15.

**Fig. 14**



**Fig. 15**

1. Set Crank housing complete on 1R023, and apply the thin end of 1R225 to Armature shaft. Then press down 1R225 using arbor press until it stops.

2. Turn over 1R225, and fit the pin on the thick end of 1R225 in the inner race of Ball bearing 6001DDW. Armature can now be removed by pressing down 1R225 using arbor press.

[Cross-sectional view]

[Cross-sectional view]

**Note:**  
1R225 of old specification cannot be set in place due to the height A of 20mm. If your 1R225 is old one, grind down the height A to 15mm or less using power grinder.

**ASSEMBLY**

Do the reverse of the disassembling steps.

**Note:** Make sure that O Ring 39 is mounted to Bearing box of Crank section before assembling Crank section to Crank housing complete. (Fig. 14)



## ► Repair

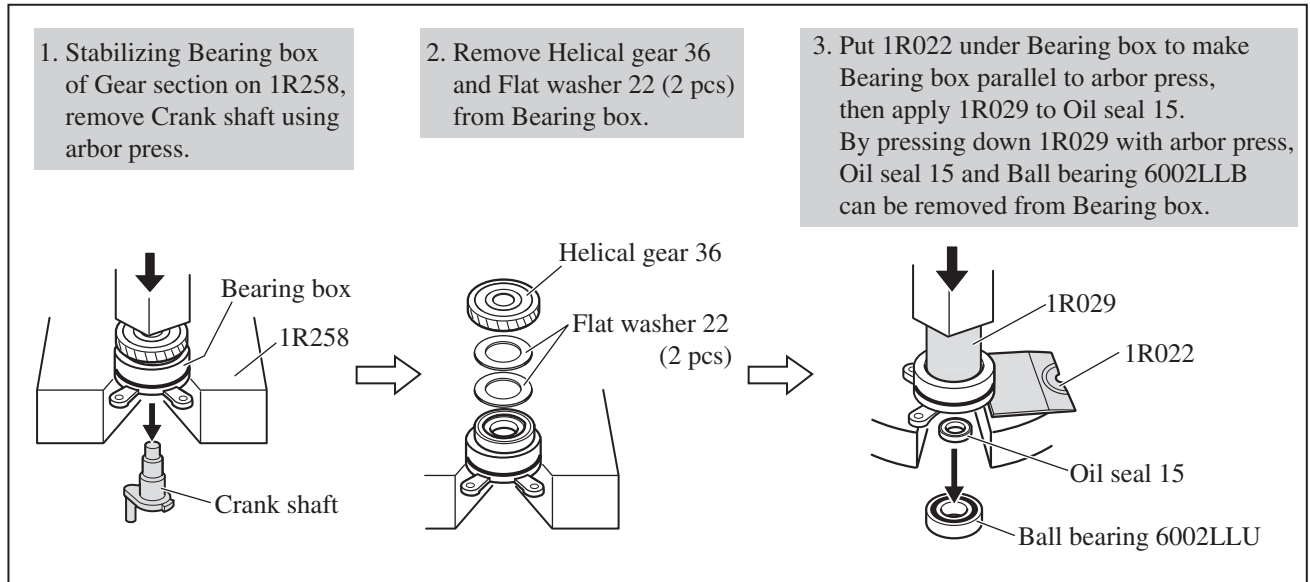
### [3] DISASSEMBLY/ASSEMBLY

#### [3] -5. Gear (Crank) Section

##### DISASSEMBLY

- 1) Disassemble Gear (Crank) section from Crank housing complete as described in **Figs. 11 - 14**.
- 2) Gear (Crank) section can now be disassembled as described in **Fig. 16**.

**Fig. 16**



##### ASSEMBLY

Do the reverse of the disassembling steps.

**Note:** Make sure that O Ring 39 is mounted to Bearing box of Crank section before assembling Crank section to Crank housing complete. (**Fig. 14**)

► **Repair**

**[3] DISASSEMBLY/ASSEMBLY**

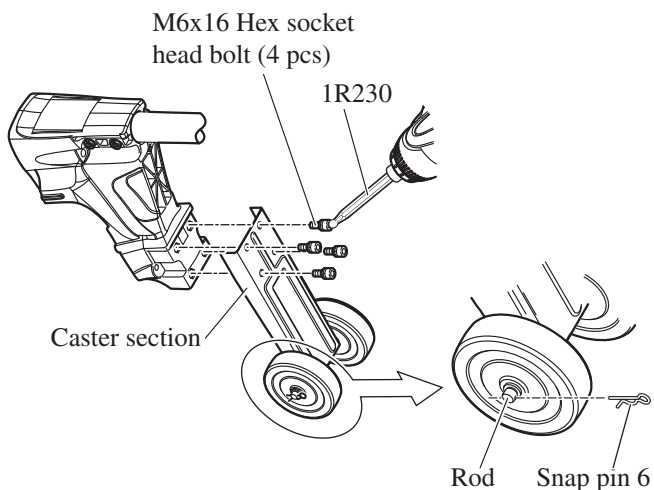
**[3] -6. Caster Section**

**DISASSEMBLY**

Caster section can be disassembled as described in **Figs. 17, 18.**

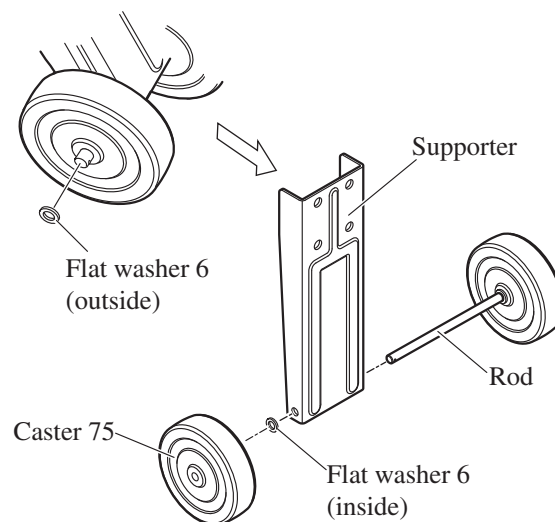
**Fig. 17**

1. Separate Caster section from Handle base by unscrewing four M6x16 Hex socket head bolts using 1R230 and Impact driver.
2. Pull off Snap pin 6 from Rod (Caster shaft).



**Fig. 18**

3. Remove outside Flat washer 6 from Rod.
4. Caster 75 and Rod can now be disassembled from Supporter as illustrated below.

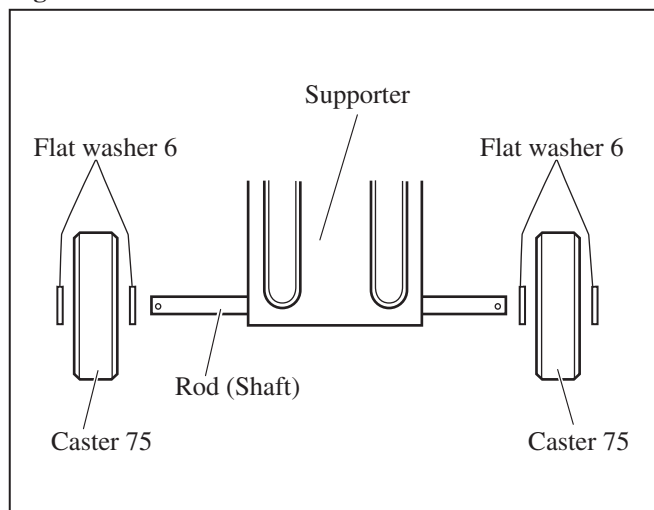


**ASSEMBLY**

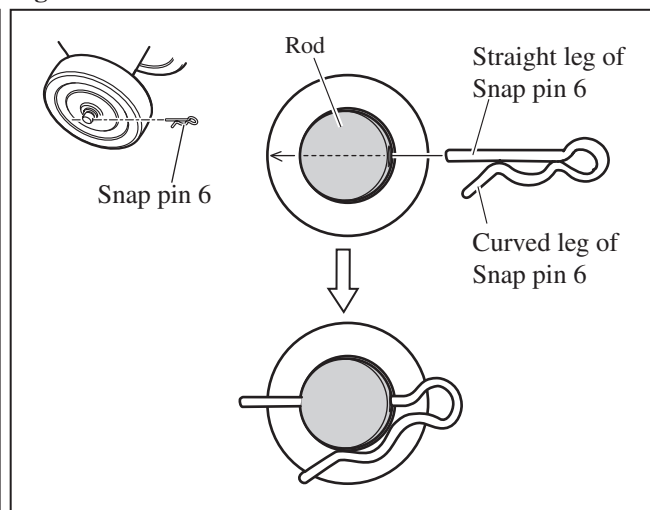
Do the reverse of the disassembling steps.

- Note:** 1. Do not forget to assemble Flat washer 6 to the both sides of Caster 75. (**Fig. 19**)  
 2. When fixing Caster 75 to Rod, insert the straight leg of Snap pin 6 into Rod. (**Fig. 20**)

**Fig. 19**



**Fig. 20**



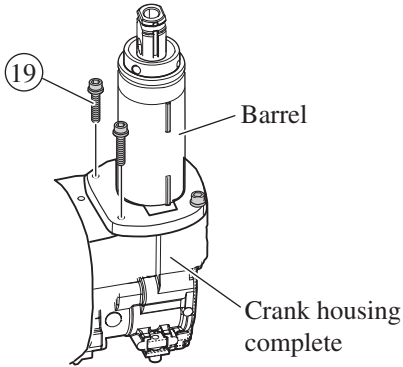
► **Repair**

**[3] DISASSEMBLY/ASSEMBLY**

**[3] -7. Recommended Fastening Torque of Screws and Bolts**

Tighten the bolt to the recommended torque described in **Fig. 21**.

**Fig. 21**



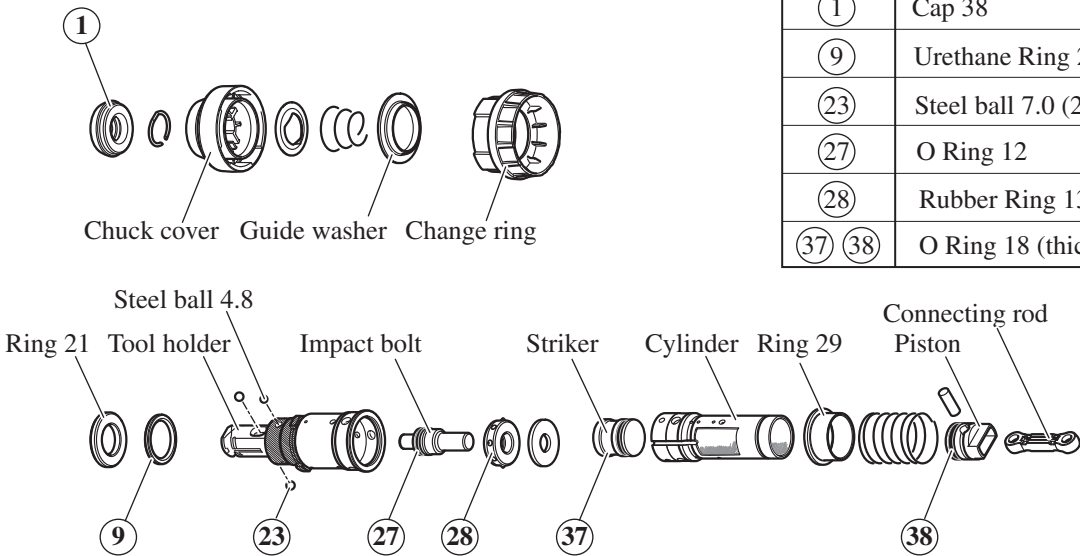
Item No.	Description	Q'ty	Fastening Torque
①⑨	M5 x 25 Hex socket head bolt	4	<b>7.8 - 11.8 N.m</b>

**[4] MAINTENANCE PROGRAM**

When replacing carbon brush, it is recommended to do the following maintenance at the same time for longer service life of the machine.





- 1) Replace the parts described in **Fig. 22** with new ones.
- 2) Wash out or wipe off old grease in Crank housing complete, and lubricate the parts in accordance with the instructions in [2] LUBRICATION. (Refer to **Fig. 1**.)

**Fig. 22**

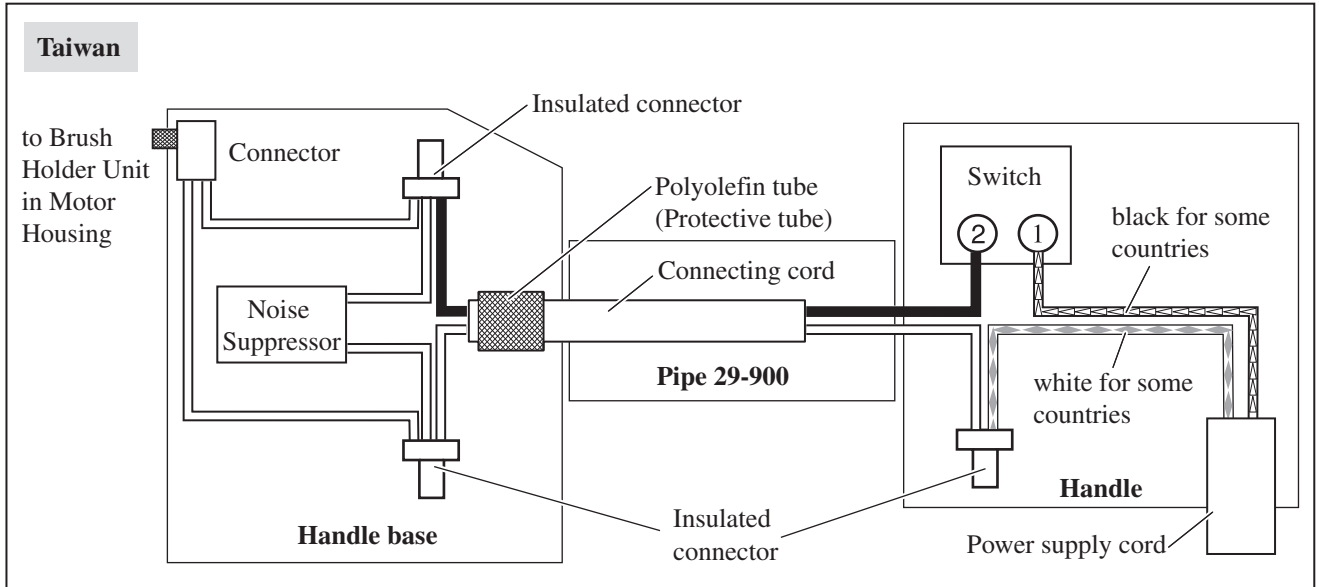


Item No.	Description
①	Cap 38
⑨	Urethane Ring 26
②③	Steel ball 7.0 (2 pcs)
②⑦	O Ring 12
②⑧	Rubber Ring 13
③⑦ ③⑧	O Ring 18 (thick one)

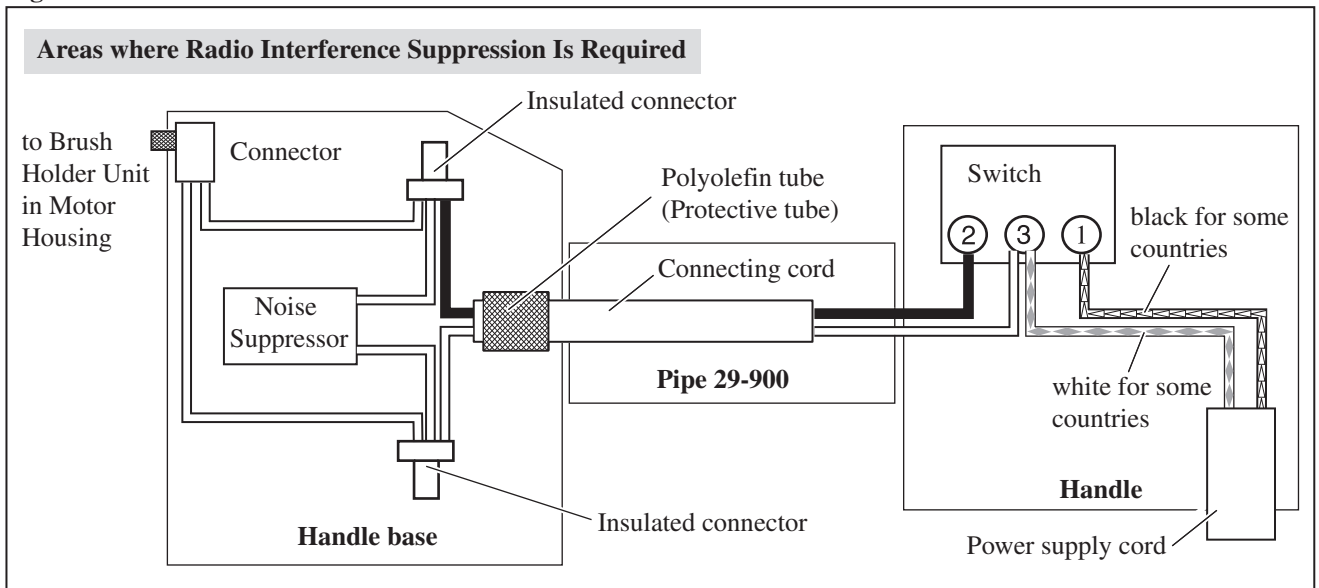
► **Circuit diagram**

Color index of lead wires' sheath			
Black		Blue	
White		Brown	

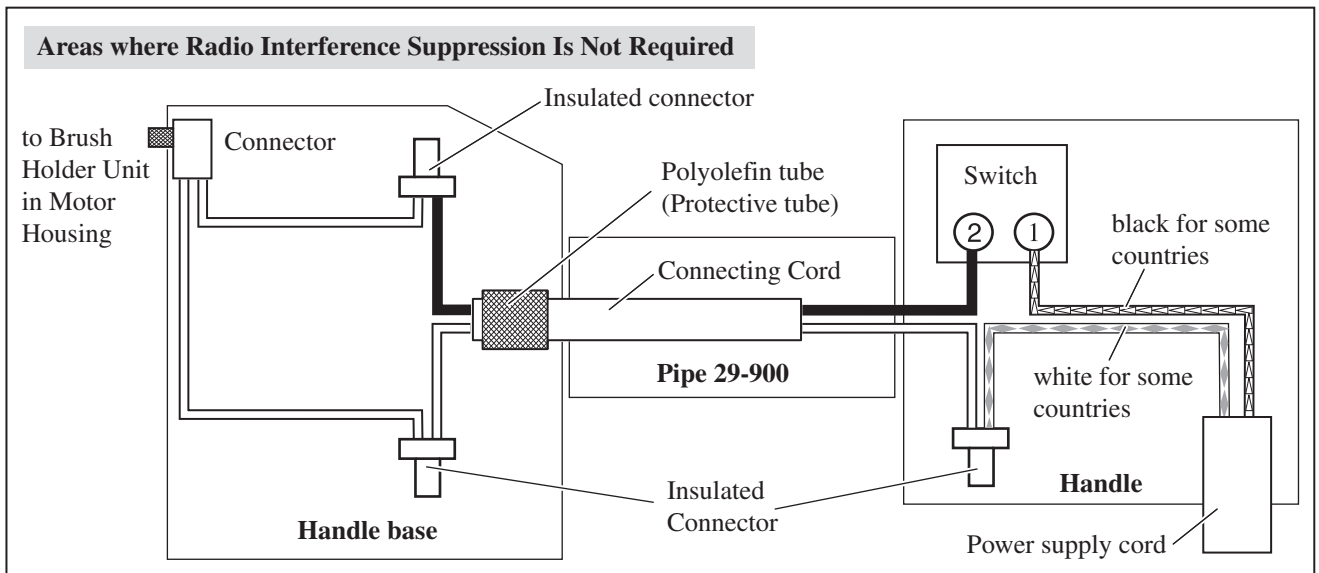
**Fig. D-1A**



**Fig. D-1B**



**Fig. D-1C**

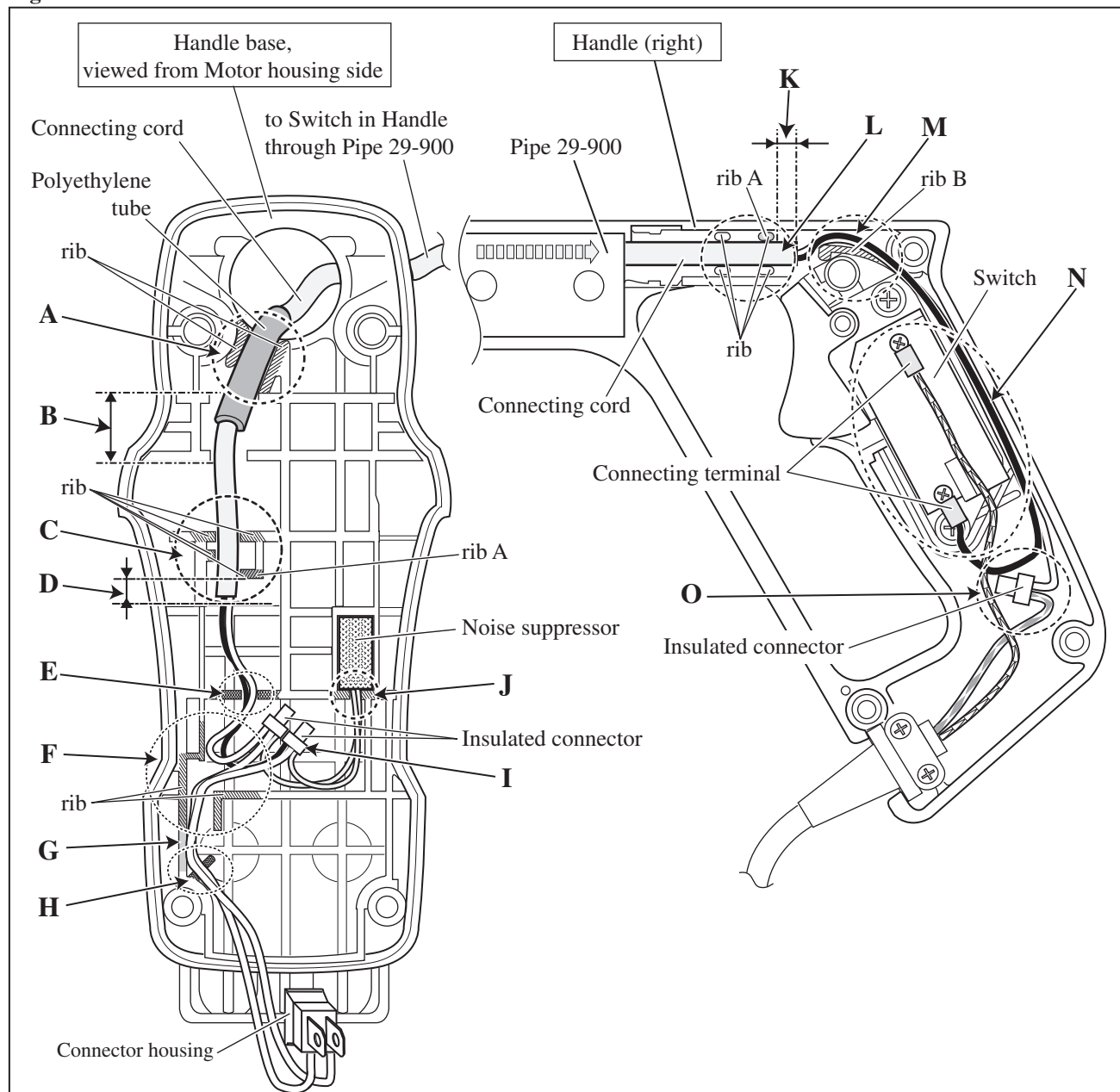


## ▶ Wiring diagram

### [2] Wiring in Handle Base and Handle

Taiwan

Fig. D-2A



#### Handle Base

- A. Polyethylene tube that covers Connecting cord must be passed between the ribs.
- B. The end of Polyethylene tube must be placed within this area.
- C. Route Connecting cord between these ribs, and pass through Polyethylene tube.
- D. The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
- E. Fix Lead wires (black, white) of Connecting cord with this Lead wire holder.
- F. Route Connecting lead wires (white) of Connector housing between these ribs.
- G. Be careful not to pinch the Lead wires between Motor housing and this rib.
- H. Fix Lead wires (white) of Connector housing with this Lead wire holder.

#### Handle Base

- I. Put Insulated connectors in this space.
- J. Route Noise suppressor's Lead wires (white) between these ribs.

#### Handle (right)

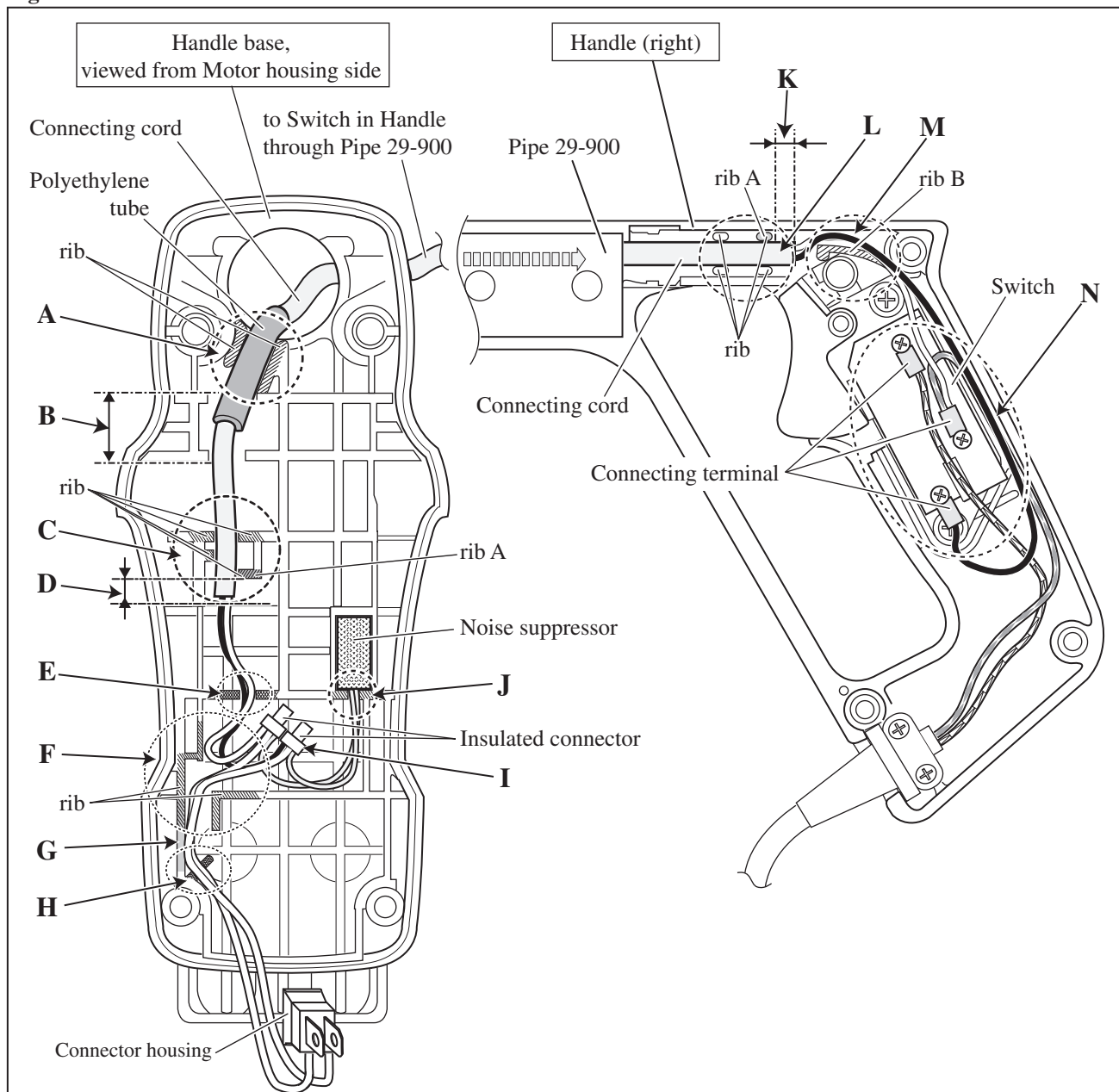
- K. The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
- L. Route Connecting cord between these ribs.
- M. Route the Lead wires (black, white) of Connecting cord between rib B and the inside wall of Handle.
- N. Connect the Connecting terminals to Switch as illustrated above.
- O. Put Insulated connector in this space.

► **Wiring diagram**

**[2] Wiring in Handle Base and Handle**

**Areas where Radio Interference Suppression Is Required**

**Fig. D-2B**



Handle Base
<b>A.</b> Polyethylene tube that covers Connecting cord must be passed between the ribs.
<b>B.</b> The end of Polyethylene tube must be placed within this area.
<b>C.</b> Route Connecting cord between these ribs, and pass through Polyethylene tube.
<b>D.</b> The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
<b>E.</b> Fix Lead wires (black, white) of Connecting cord with this Lead wire holder.
<b>F.</b> Route Connecting lead wires (white) of Connector housing between these ribs.
<b>G.</b> Be careful not to pinch the Lead wires between Motor housing and this rib.
<b>H.</b> Fix Lead wires (white) of Connector housing with this Lead wire holder.

Handle Base
<b>I.</b> Put Insulated connectors in this space.
<b>J.</b> Route Noise suppressor's Lead wires (white) between these ribs.

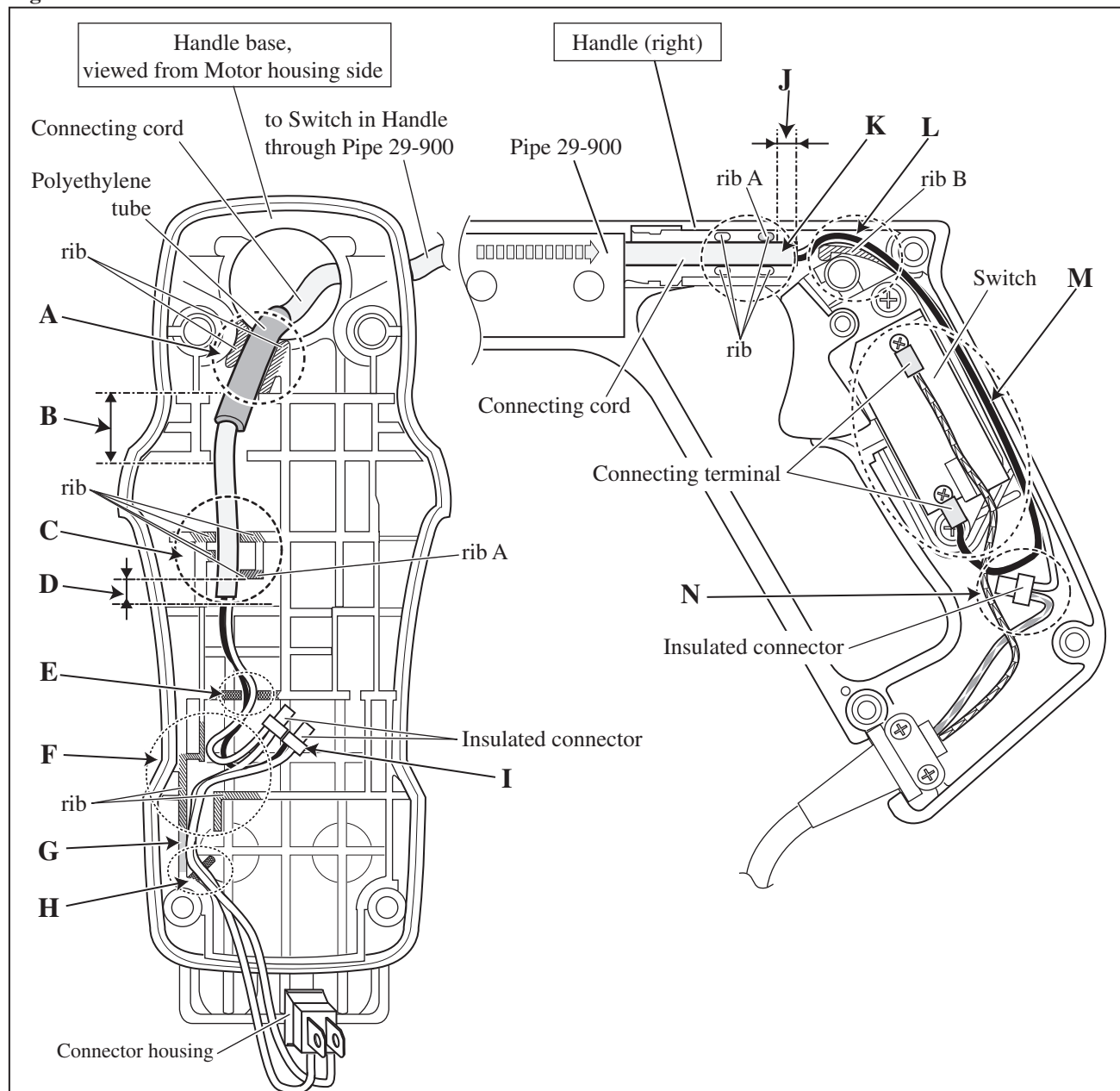
Handle (right)
<b>K.</b> The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
<b>L.</b> Route Connecting cord between these ribs.
<b>M.</b> Route the Lead wires (black, white) of Connecting cord between rib B and the inside wall of Handle.
<b>N.</b> Connect the Connecting terminals to Switch as illustrated above.

## ▶ Wiring diagram

### [2] Wiring in Handle Base and Handle

Areas where Radio Interference Suppression Is Not Required

Fig. D-2C



#### Handle Base

- A.** Polyethylene tube that covers Connecting cord must be passed between the ribs.
- B.** The end of Polyethylene tube must be placed within this area.
- C.** Route Connecting cord between these ribs, and pass through Polyethylene tube.
- D.** The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
- E.** Fix Lead wires (black, white) of Connecting cord with this Lead wire holder.
- F.** Route Connecting lead wires (white) of Connector housing between these ribs.
- G.** Be careful not to pinch the Lead wires between Motor housing and this rib.
- H.** Fix Lead wires (white) of Connector housing with this Lead wire holder.
- I.** Put Insulated connectors in this space.

#### Handle (right)

- J.** The distance from rib A to the Sheath end of Connecting cord must be at least 5mm.
- K.** Route Connecting cord between these ribs.
- L.** Route the Lead wires (black, white) of Connecting cord between rib B and the inside wall of Handle.
- M.** Connect the Connecting terminals to Switch as illustrated above.
- N.** Put Insulated connector in this space.

► **Wiring diagram**

**[3] Connecting Connector Housing with Brush Holder Unit**

Connector housing is directional when connected with Brush holder complete in Motor housing.  
Be sure to connect as described in **Fig. D-3**.

**Fig. D-3**

