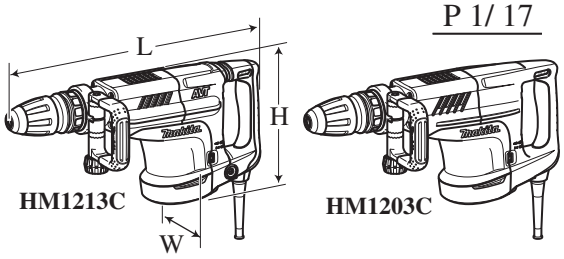
TECHNICAL INFORMATION

PRODUCT

Model No. ► HM1213C, HM1203C

Description ► Demolition Hammers



CONCEPT AND MAIN APPLICATIONS

Models HM1213C and HM1203C have been developed from HM1202C series models as SDS-Max demolition hammers, featuring high work efficiency and durability.

Listed below are specification differences between the two models.

Model No.	HM1213C	HM1203C
AVT (Active dynamic vibration absorber)	Yes	No
Vibration absorbing handle		

Dimensions: mm (")		
Model No.	HM1213C	HM1203C
Length (L)	576 (22-3/4)	
Width (W)	149 (5-7/8)	128 (5)
Height (H)	265 (10-3/8)	

► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output (W)
			Input	Output	
110	15	50/60	1,510	700	1,600
120	14	50/60	---	700	1,600
220	7.8	50/60	1,510	750	1,800
230	7.8	50/60	1,510	750	1,800
240	7.8	50/60	1,510	750	1,800

Model No.		HM1213C	HM1203C
Impacts per min: min-1=ipm		950 - 1,900	
Shank type		SDS-Max	
Shank diameter: mm (")		18 (11/16)	
Vibration absorption	AVT (Active dynamic vibration absorber)	Yes	No
	Vibration absorbing handle	Yes	No
Electronic control	Variable speed control by dial	Yes	
	Soft start	Yes	
	Constant speed control	Yes	
	Suppression of motor speed during no-load	Yes	No
Double insulation		Yes	
Power supply cord: m (ft)		Europe, Commonwealth of Dominica, Cyprus: 4.0 (13.1) Chile, Brazil: 2.0 (6.6) Other countries: 5.0 (16.4)	
Net weight: kg (lbs)		10.3 (22.7)	9.2 (20.3)
Weight according to EPTA-Procedure 01/2003*: kg (lbs)		10.8 (23.6)	9.7 (21.4)

* includes Side handle.

► Standard equipment

Side handle (D-shaped) 1
Bit grease 1
Bull point 1
Plastic carrying 1
Cleaning cloth 1

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

► Optional accessories

Bull points
Cold chisels
Scaling chisels
Scaling chisel (for Tile)
Grooving chisel
Clay spade
Bushing tool
Rammer
Grease vessel (containing 30g hammer grease)
Plastic carrying case
Safety goggles
Hammer service kit

► Repair

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

[1] NECESSARY REPAIRING TOOLS

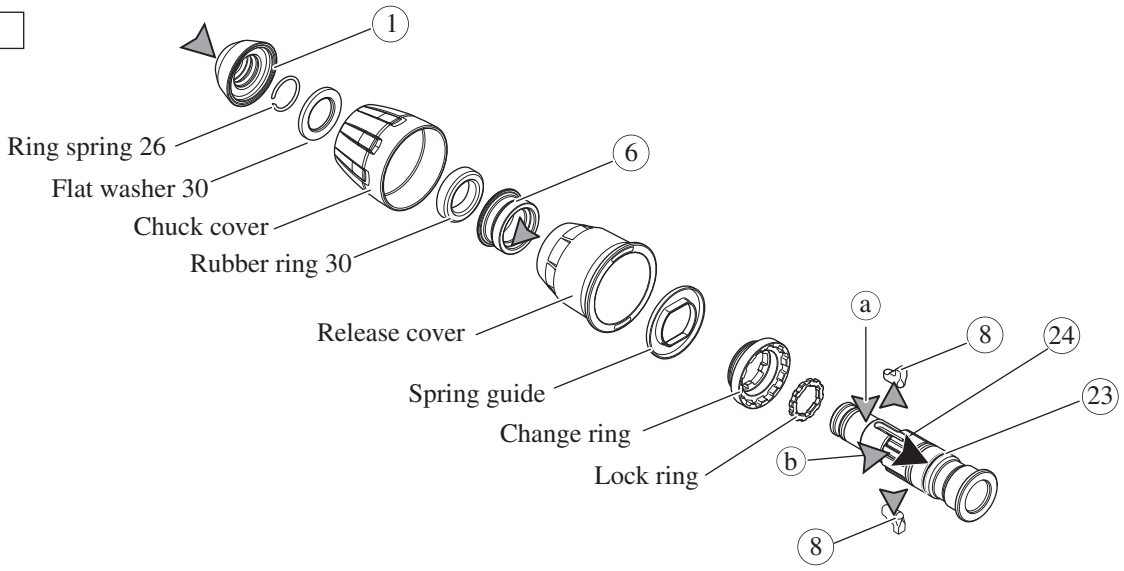
Code No.	Description	Use for
1R003	Retaining ring pliers ST-2N	Removing / Assembling Ring spring
1R029	Bearing setting Pipe 23-15.2	Removing Crank shaft from Helical gear 57
1R045	Gear extractor	Removing Armature from Gear housing
1R212	Tip for Retaining ring pliers	Attaching to 1R003 when removing / assembling Ring spring
1R214	Taper sleeve	Fitting Fluoride ring to Impact bolt
1R229	1/4" Hex shank for M5	Unscrewing M5 Hex bolts and M6 H.S. Button head screw
1R231	1/4" Hex shank for M8	Unscrewing M8 Hex bolts when disassembling Barrel
1R232	Pipe 32	Assembling Helical gear 57
1R258	V block	Accepting Helical gear 57 when removing Crank shaft
1R263	Bearing extractor	Separating Motor section from Crank housing
1R269	Bearing extractor	Removing Ball bearing 6000DDW from Commutator end of Armature
1R346	Center attachment	Attaching to 1R045 when removing Armature from Gear housing
1R363	Ring spring removing tool	Removing Ring spring 26 from Tool holder

[2] LUBRICATIONS

Apply **lubricants** to the portions designated by triangles to protect parts and product from unusual abrasion.

Item No.	Description	Portion to lubricate for Tool holder section	Lubricant	Amount
①	Tool holder cap	Lip portion	Makita grease N No.2 ▽	a little
⑥	Chuck ring	Inner wall where ⑧ Tool retainer contacts		
⑧	Tool retainer	Belly side where shank of Hammer bit contacts		
㉔	Tool holder	ⓐ Portion where Rubber ring 30 contacts		
		ⓑ Portion where Lock ring contacts		
㉓	O ring 35.5	Whole portion for smooth action of ㉔ Tool holder in Barrel complete	Makita grease R No.00 ▼	

Fig. 1

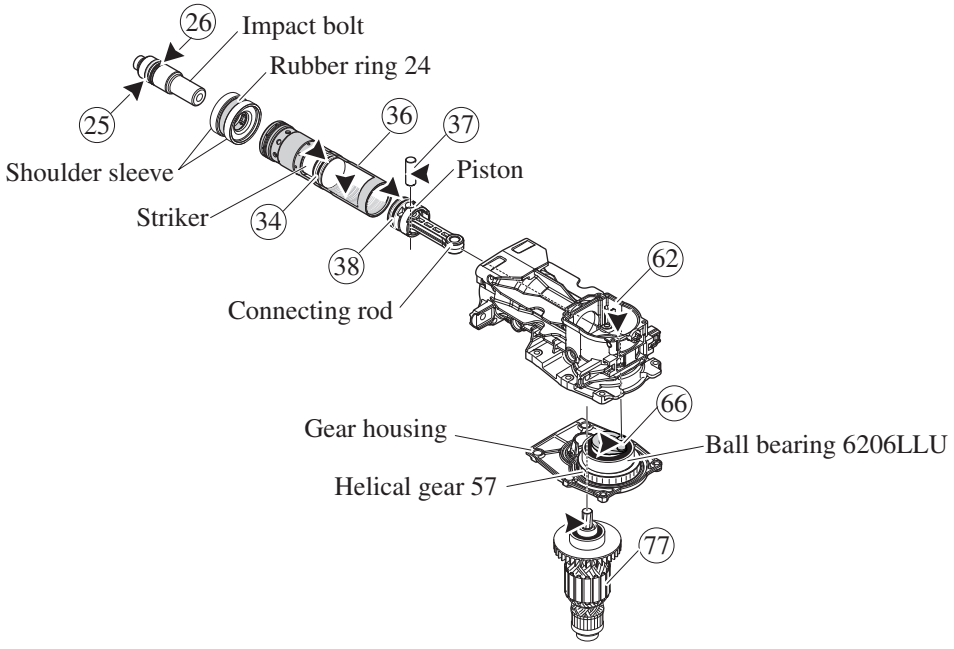


► Repair

[2] LUBRICATIONS (cont.)

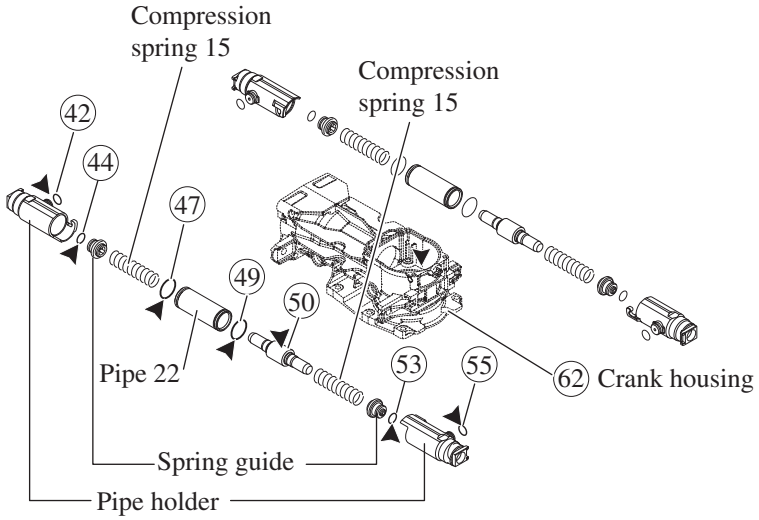
Item No.	Description	Portion to lubricate for Impact bolt section and Crank section		Amount
(25)	X ring 21	Whole portion for smooth action of Impact bolt in (24) Tool holder	Makita grease R No. 00 ▼	a little
(26)	Fluoride ring 28			
(34)	O ring 44	Whole portion for smooth action of Striker in (36) Cylinder 40		
(36)	Cylinder 40	Space between Piston and Striker		10g
		Space between Impact bolt and Striker		10g
(37)	Pin 12	Whole portion		a little
(38)	O ring 31.5	Whole portion for smooth action of Piston in (36) Cylinder 40		
(62)	Crank housing	Space where Helical gear 57 and Crank shaft rotate		40g
(66)	Crank shaft	Pin portion where Connecting rod accepts		a little
(77)	Armature	Drive end (Gear portion)		10g

Fig. 2



Item No.	Description	Portion to lubricate for AVT mechanism (HM1213C only)	Lubricant	Amount
(42) (55)	O ring 12	Whole portion	Makita grease R No. 00 ▼	a little
(44) (53)	O ring 12	Whole portion		
(47) (49)	O ring 24	Whole portion		
(50)	Counter weight	Drum portion where Pipe 22 contacts		

Fig. 3



Repair

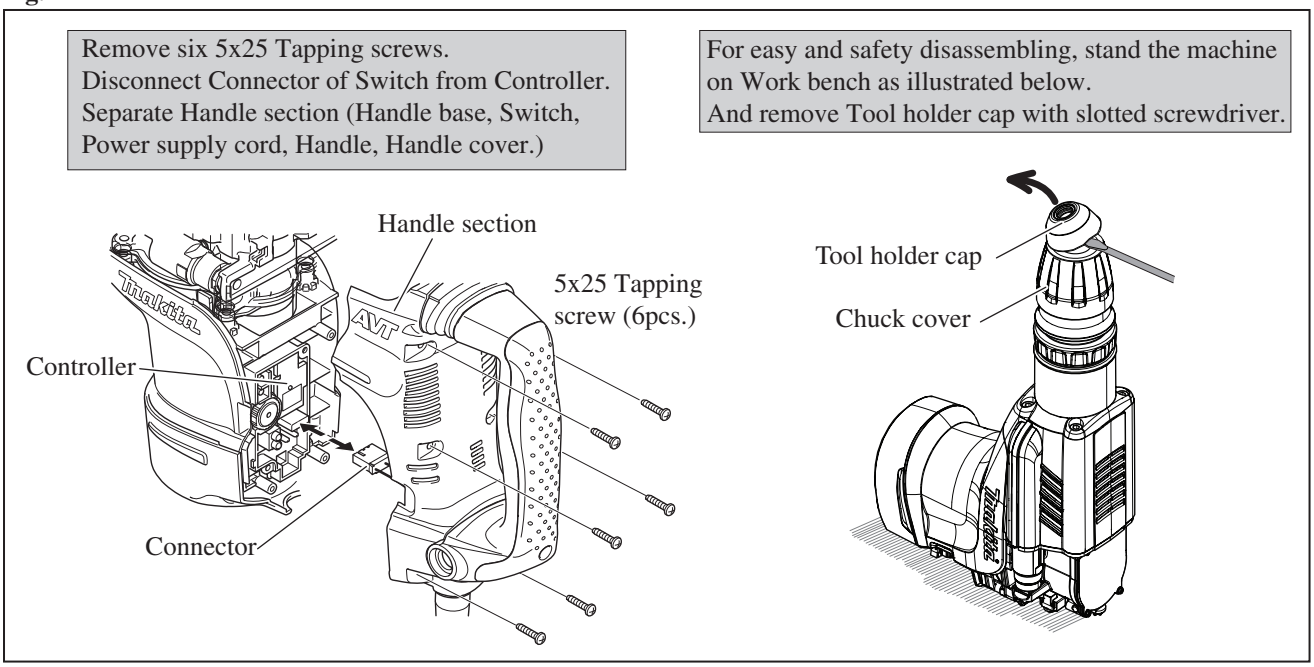
[3] ASSEMBLY/ DISASSEMBLY

[3]-1. Chuck

DISASSEMBLING

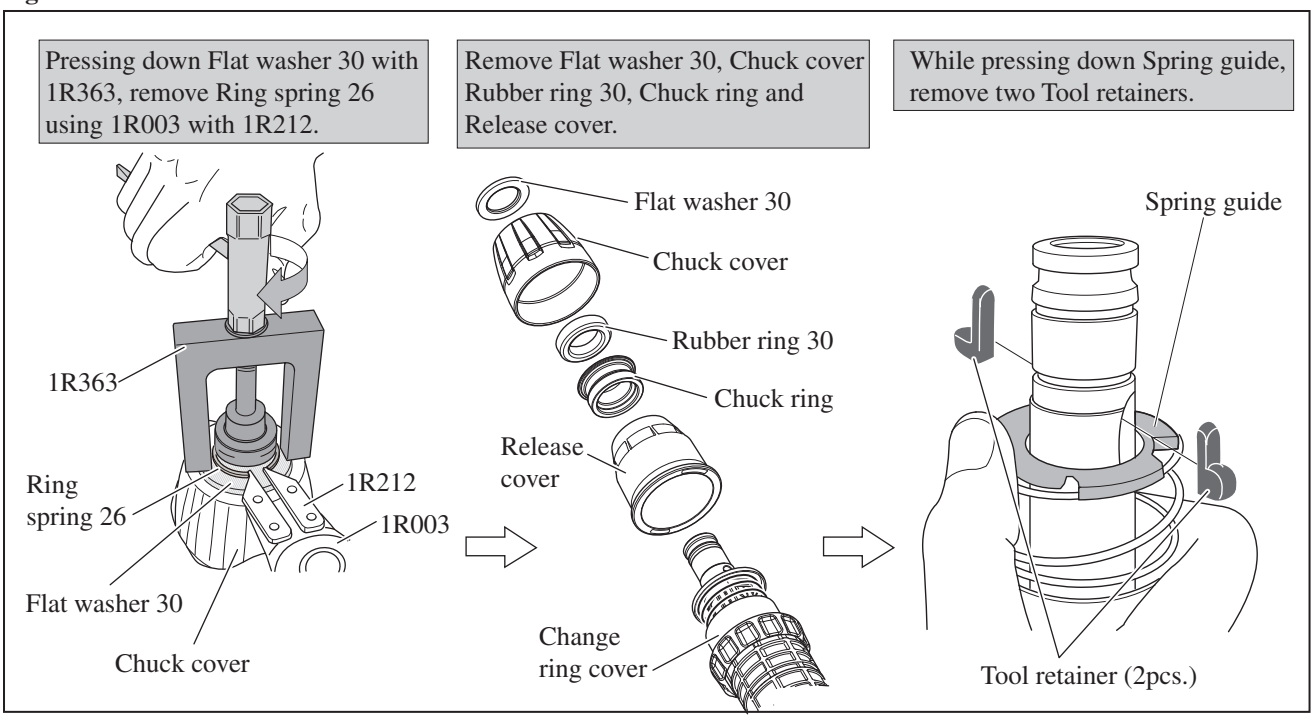
(1) Remove Handle section as illustrated in **Fig. 4**.

Fig. 4



(2) After removing ring spring 26, disassemble the components of Chuck mechanism.
Tool retainers can be removed from Tool holders as illustrated in **Fig**. **5**.

Fig. 5



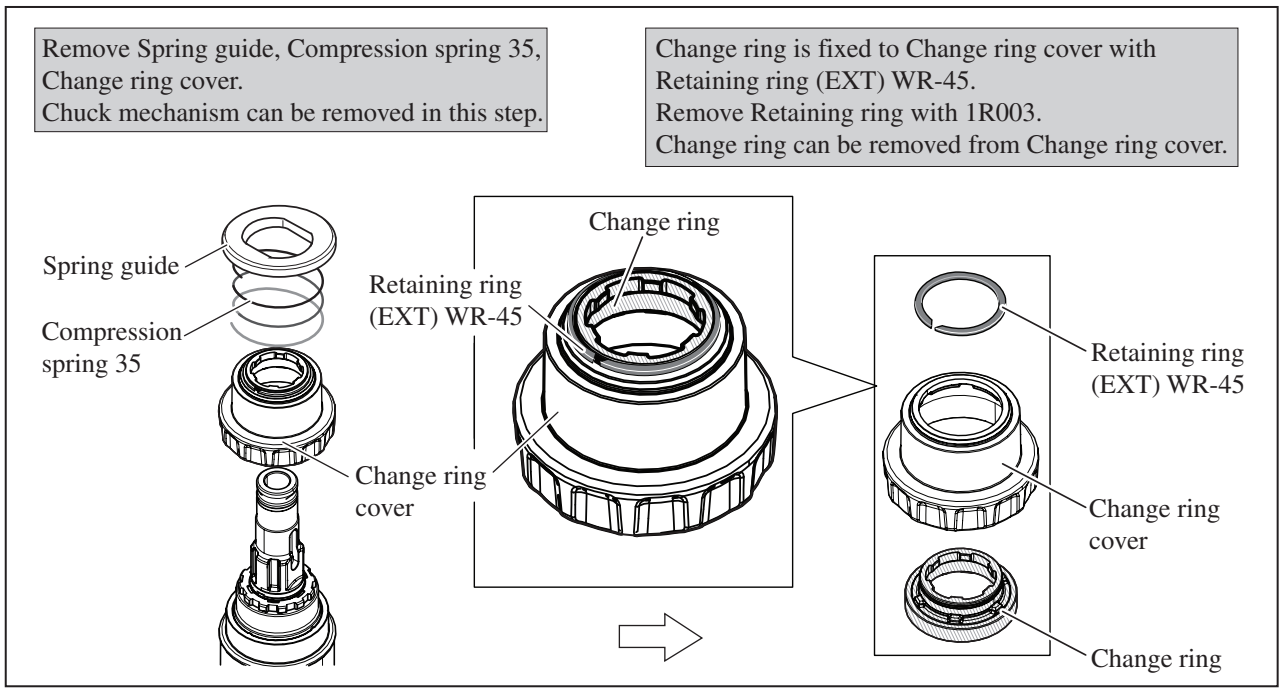
► Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-1. Chuck (cont.)

(3) The components of Chuck mechanism can be removed form Tool holder as illustrated in **Fig**. 6.

Fig. 6



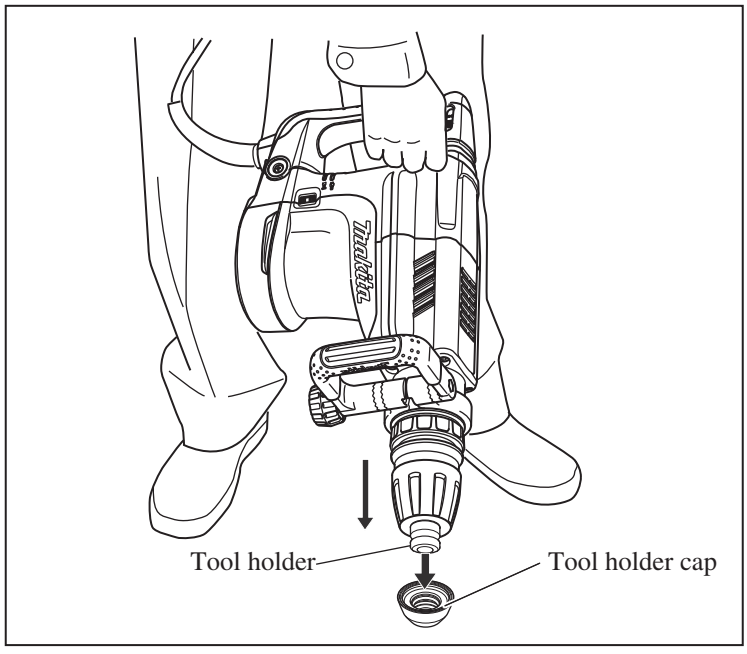
ASSEMBLING

Take the disassembling step in reverse. Refer to **Figs. 6, 5 and 3**.

Note: It is difficult to set Tool holder cap in place by hand.

Put Tool holder cap on floor, and push Tool holder to Tool holder cap while making use of the machine weight. (**Fig. 7**)

Fig. 7



Repair

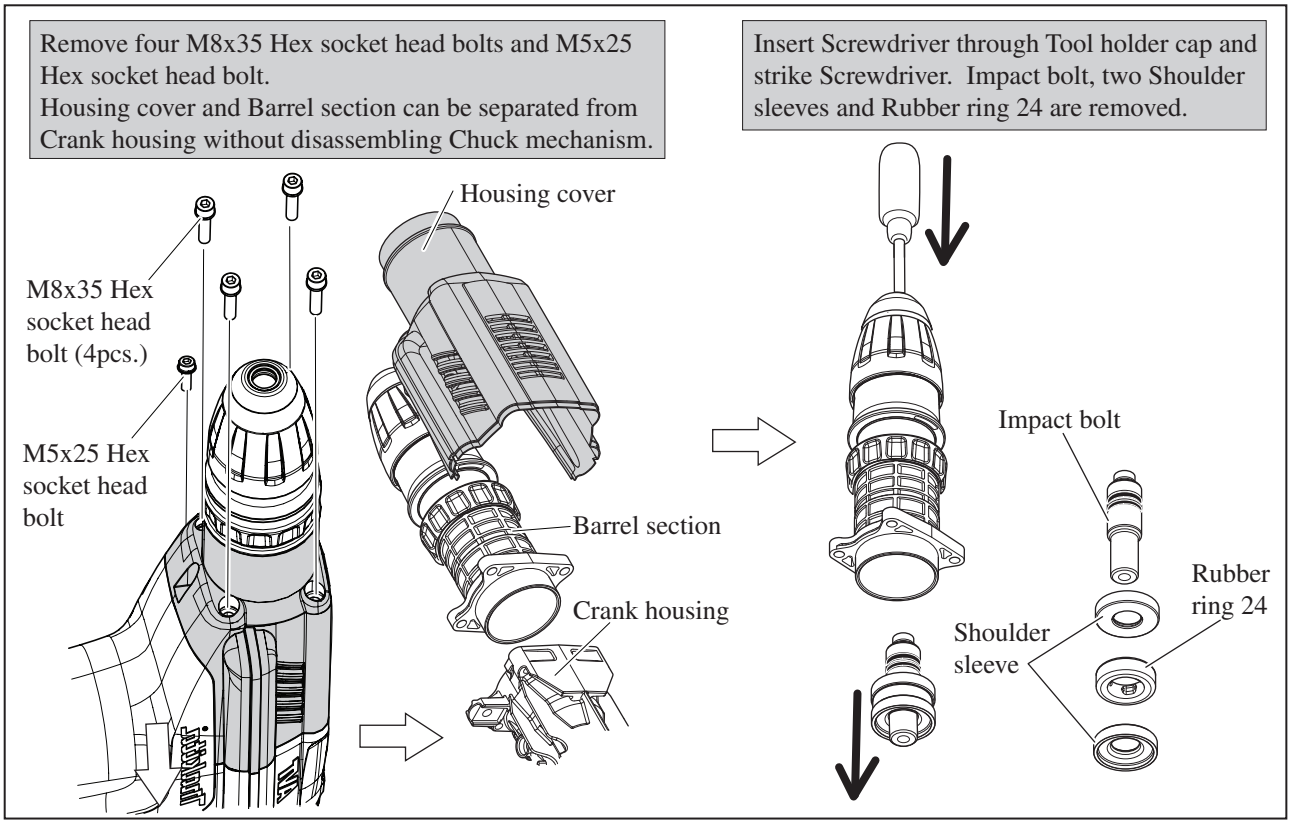
[3] ASSEMBLY/ DISASSEMBLY

[3]-2. Impact bolt, Cylinder, Striker

DISASSEMBLING

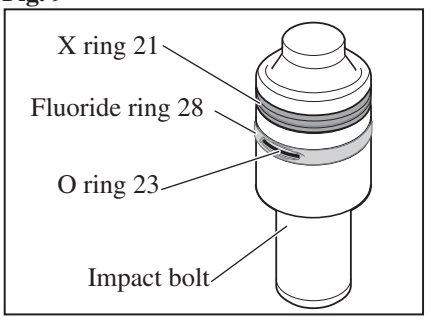
(1) Impact bolt can be disassembled as illustrated in **Fig. 8**.

Fig. 8



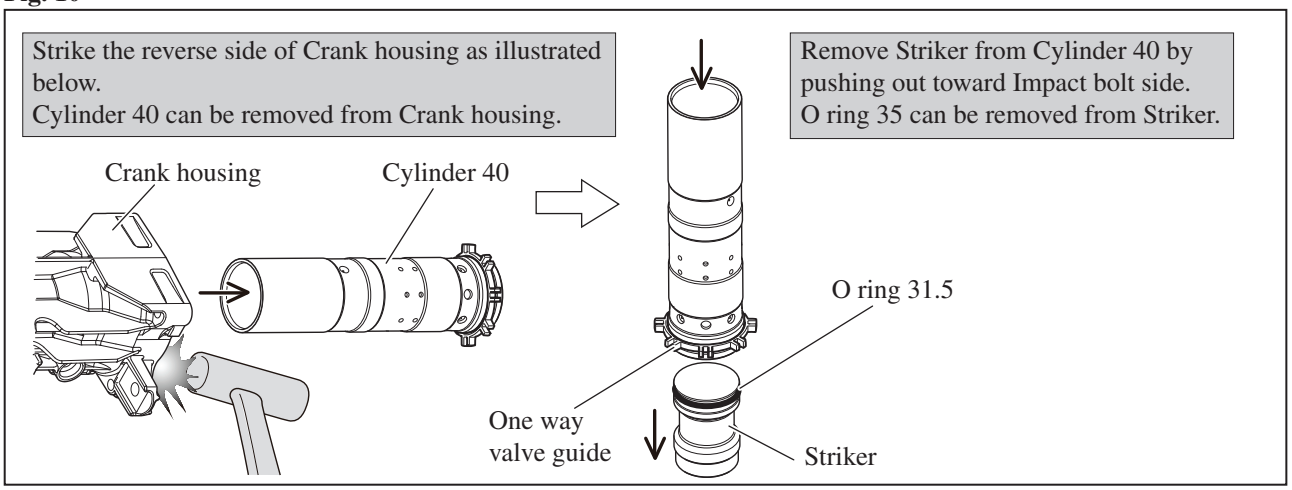
(2) When O ring 23 (orange) shows through the worn Fluoride ring 28 as illustrated in **Fig. 9**, all the rings on Impact bolt have to be replaced.

Fig. 9



(3) Disassemble Cylinder 40 from Crank housing, and take out Striker from Cylinder 40 as illustrated in **Fig. 10**.

Fig. 10



Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-2. Impact bolt, Cylinder, Striker (cont.)

ASSEMBLING

(1) Insert Striker with O ring 31.5 into Cylinder 40 so that O ring 31.5 faces Crank housing side as illustrated in **Fig. 11R**.

Fig. 11R

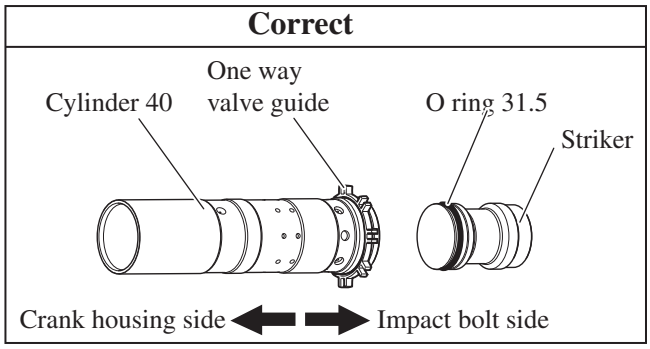
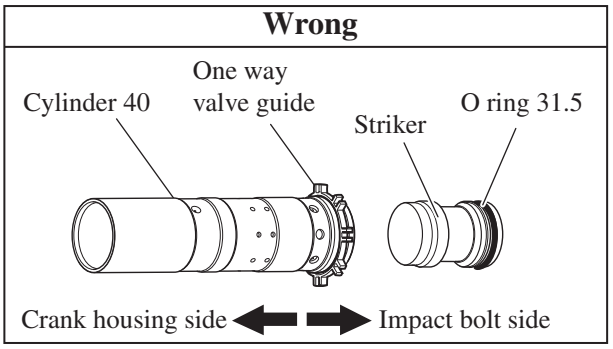
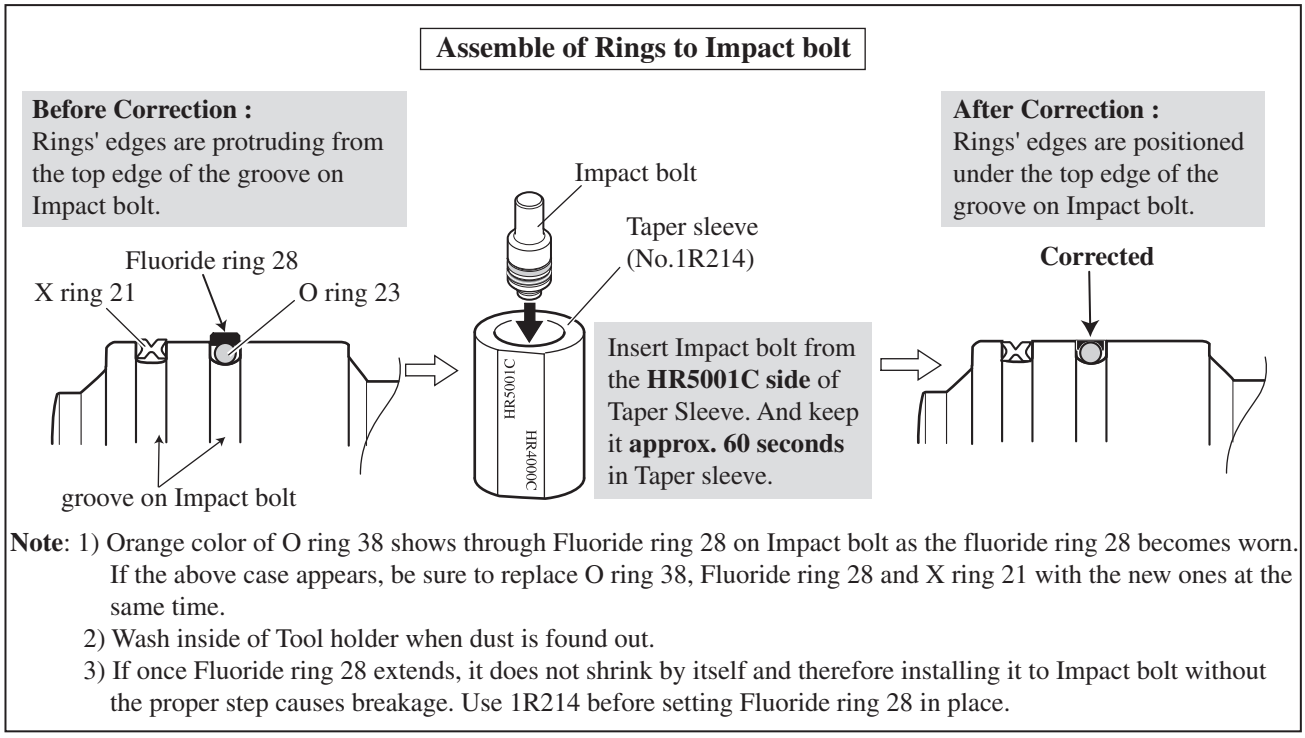


Fig. 11F



(2) Assemble X ring 21, O ring 23 and Fluoride ring 28 to Impact bolt as illustrated in **Fig. 12**.

Fig. 12

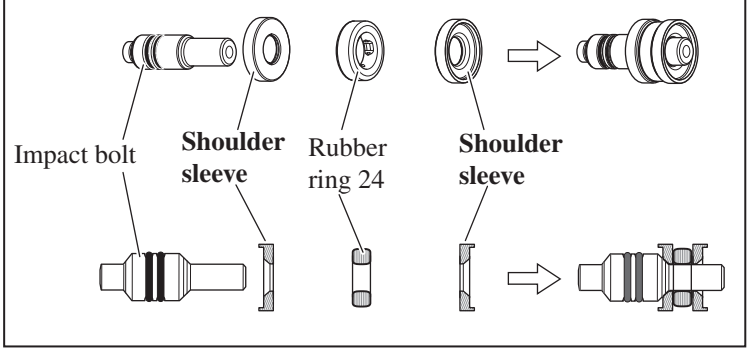


Note: 1) Orange color of O ring 38 shows through Fluoride ring 28 on Impact bolt as the fluoride ring 28 becomes worn. If the above case appears, be sure to replace O ring 38, Fluoride ring 28 and X ring 21 with the new ones at the same time.
2) Wash inside of Tool holder when dust is found out.
3) If once Fluoride ring 28 extends, it does not shrink by itself and therefore installing it to Impact bolt without the proper step causes breakage. Use 1R214 before setting Fluoride ring 28 in place.

(3) Mount Shoulder sleeves and Rubber ring 24 to Impact bolt as illustrated in **Fig. 13**.

Fig. 13

Note: Pay attention to the directions of Shoulder sleeves. See illustration below.



(4) Take the disassembling step in reverse. Refer to **Figs 10 and 8**.

Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-3. Active dynamic vibration absorber (only for HM1213C)

DISASSEMBLING

Disassemble Active dynamic vibration absorber as illustrated in **Figs. 12, 13 and 14**.

Fig. 14

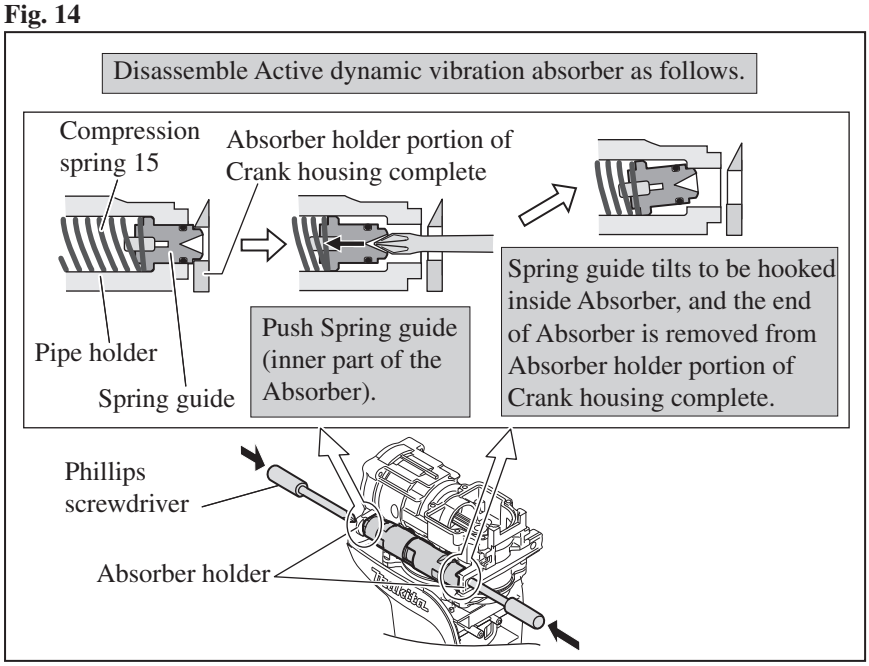


Fig. 15

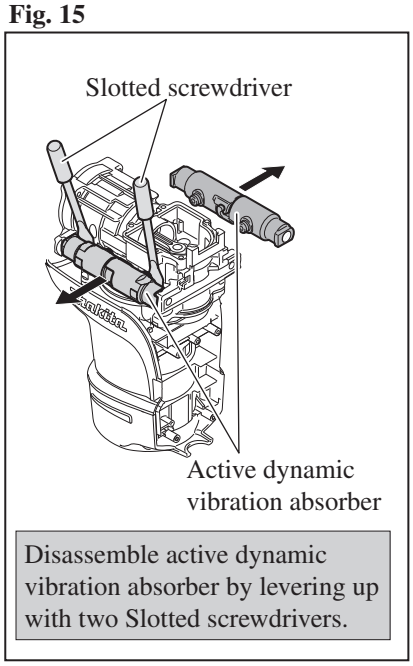
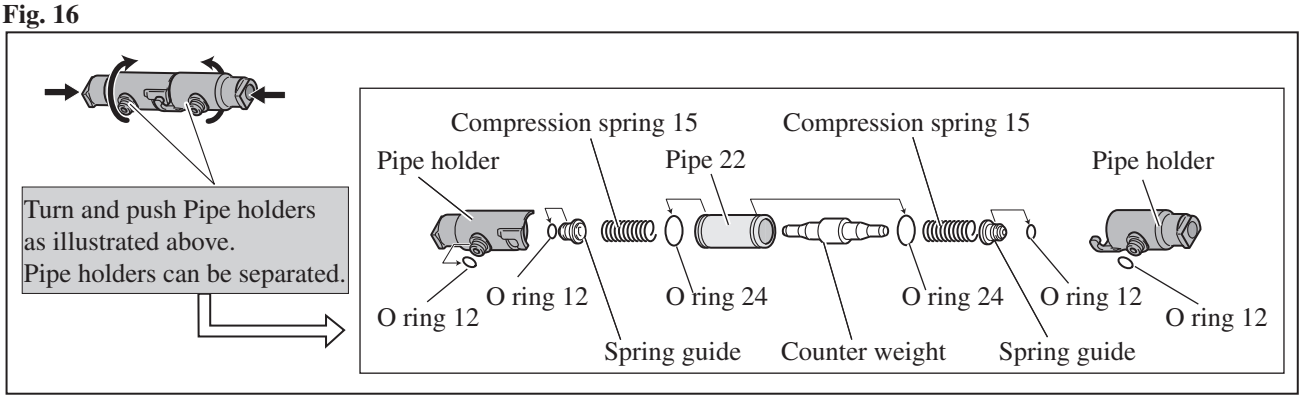


Fig. 16



ASSEMBLING

Assemble Active dynamic vibration absorber as illustrated in **Figs. 17 and 18**.

Fig. 17

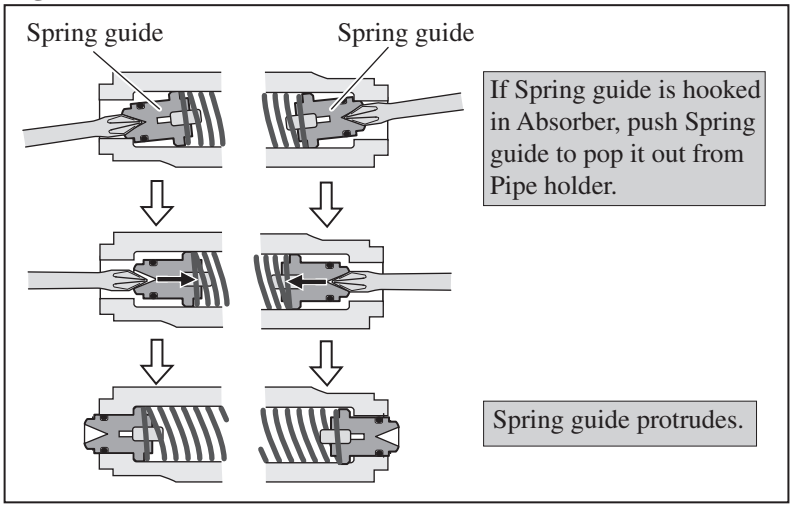
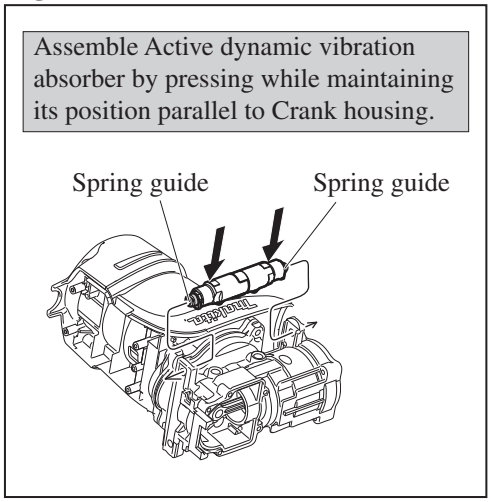


Fig. 18



Repair

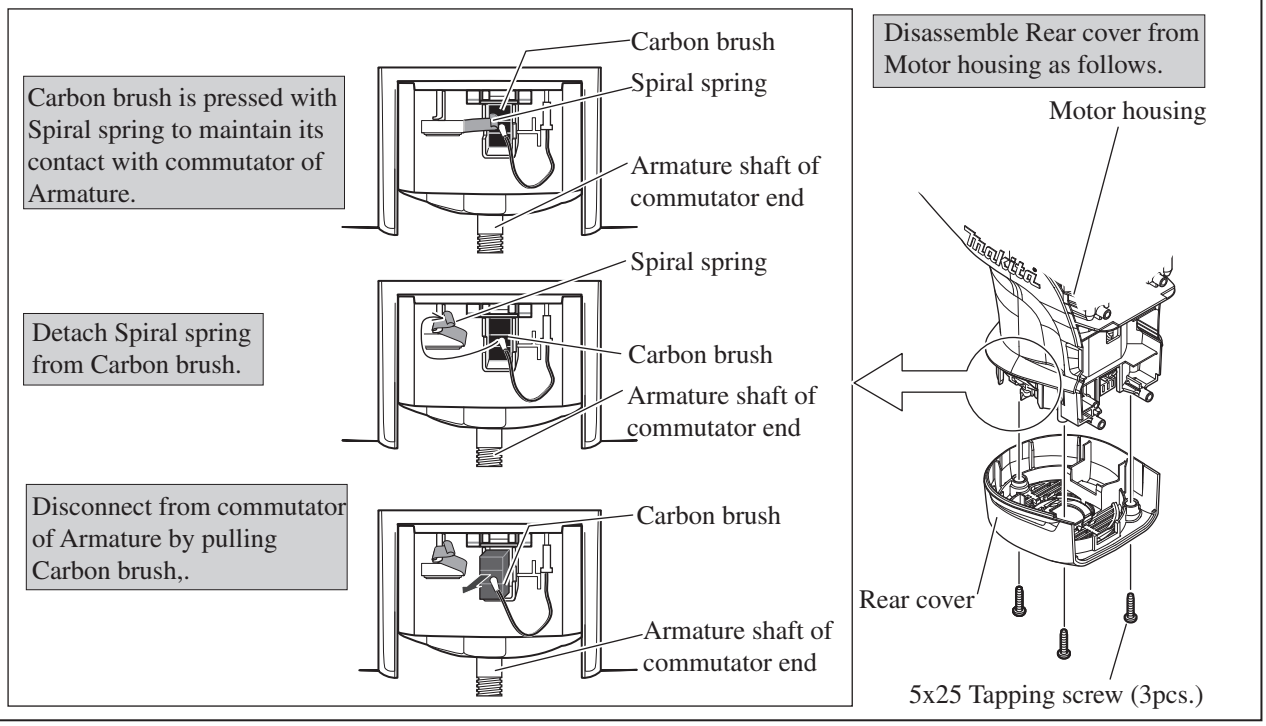
[3] ASSEMBLY/ DISASSEMBLY

[3]-4. Crank section

DISASSEMBLING

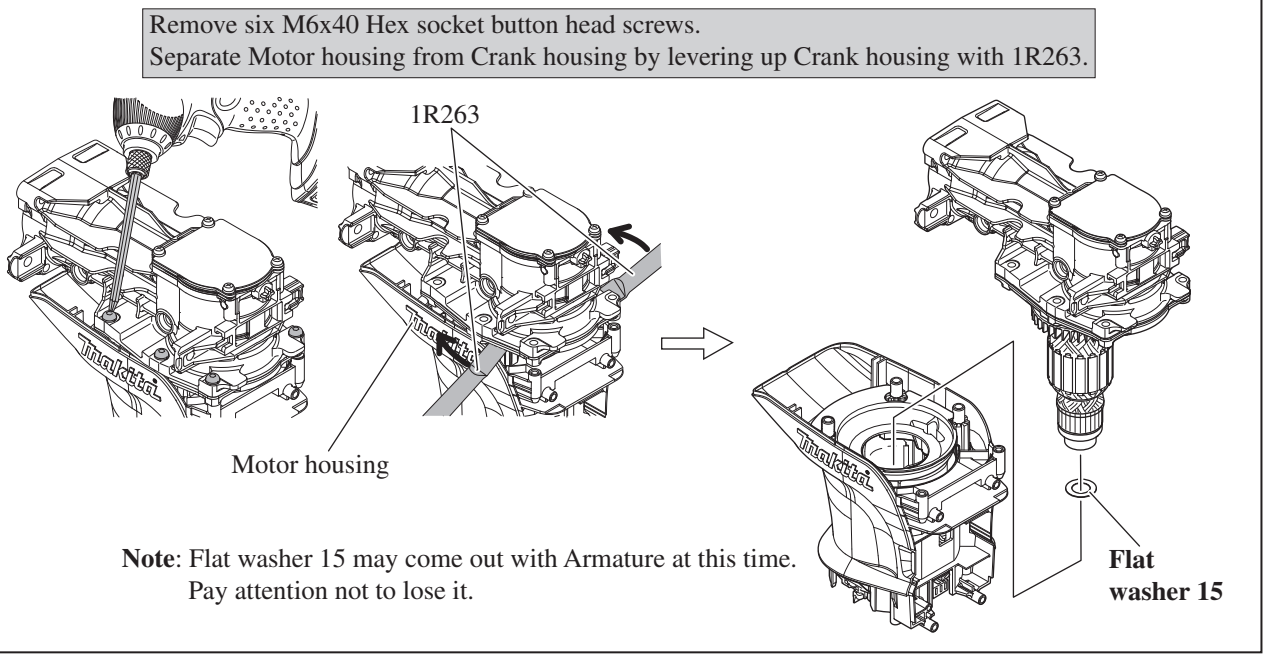
(1) Remove Handle section. (**Fig. 2**)
(2) Remove Housing cover and Barrel section. (**Fig.** 8) No need to disassemble Chuck section.
(3) Remove Active dynamic vibration absorber from Crank housing exclusively for HM1213C. (**Figs. 14 and 15)**
(4) Remove Rear cover and disconnect Carbon brushes from the commutator of Armature as illustrated in **Fig. 19**.
Note: This is a necessary step to remove Armature from machine.

Fig. 19



(5) Separate Motor housing from Crank section as illustrated in **Fig. 20**.

Fig. 20



Note: Flat washer 15 may come out with Armature at this time.
Pay attention not to lose it.

Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-4. Crank section

DISASSEMBLING

(6) Disassemble Crank section as illustrated in **Figs. 21, 22 and 23.**

Fig. 21

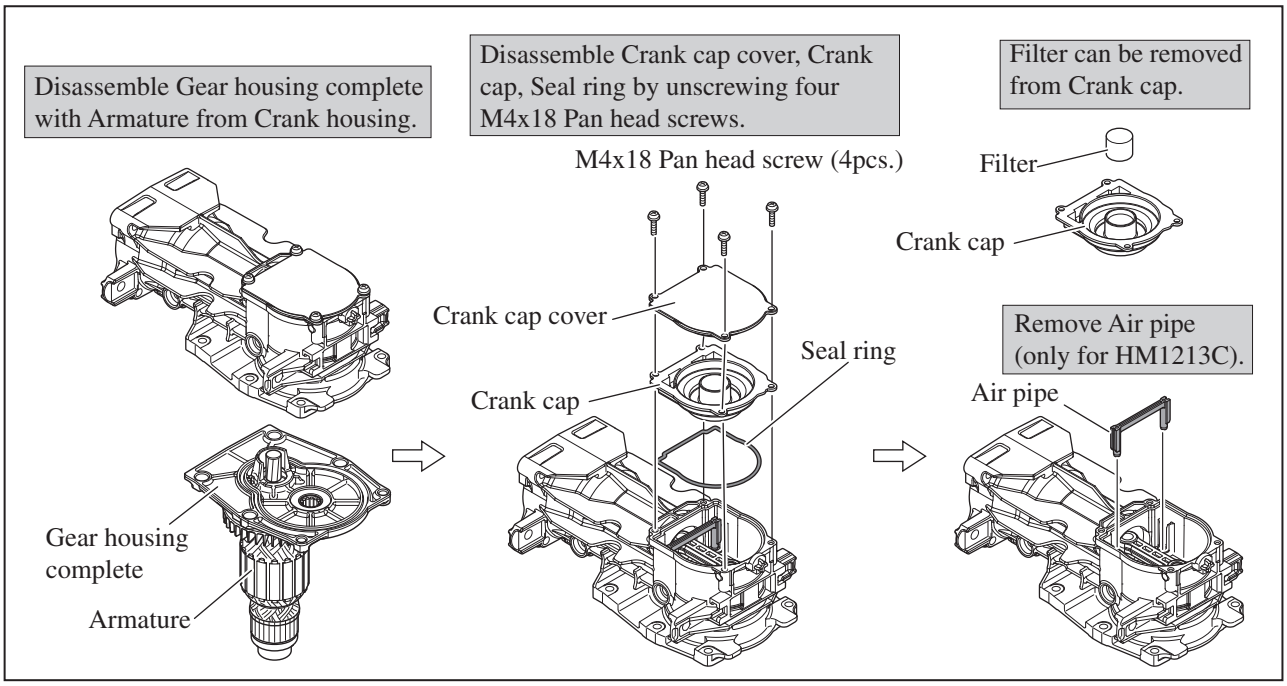


Fig. 22

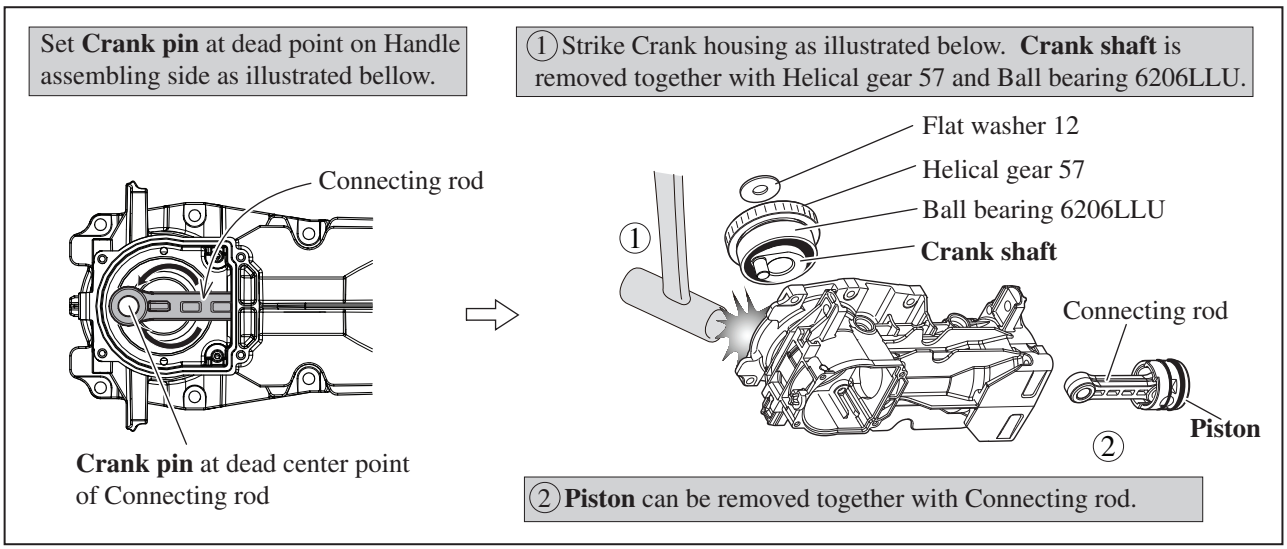
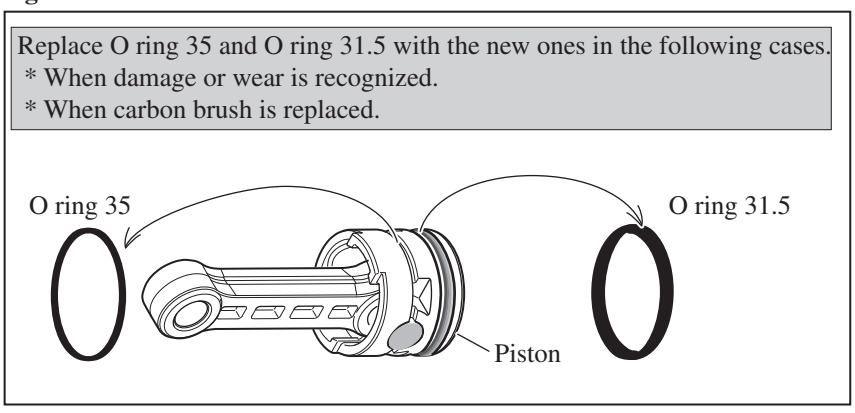


Fig. 23



Repair

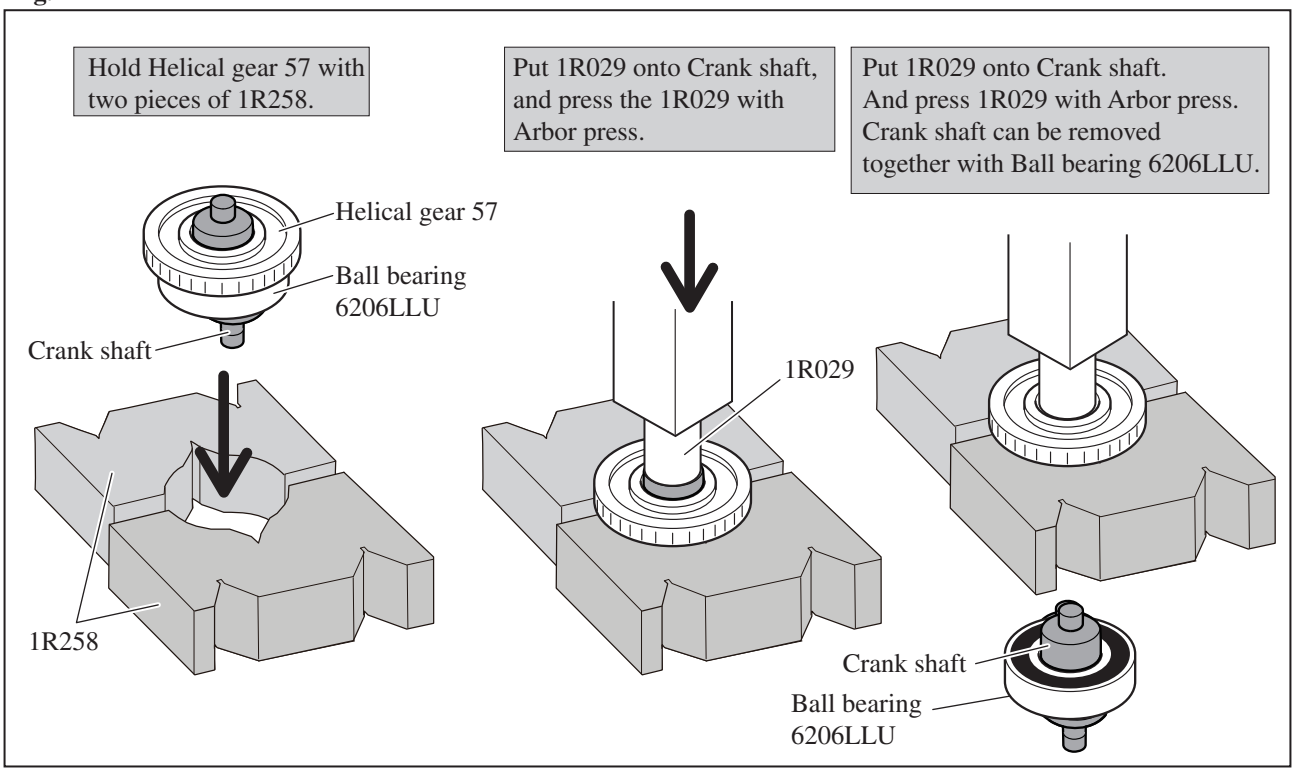
[3] ASSEMBLY/ DISASSEMBLY

[3]-4. Crank section

DISASSEMBLING

(7) Disassemble Crank shaft from Helical gear 57 as illustrated in **Fig. 24**.

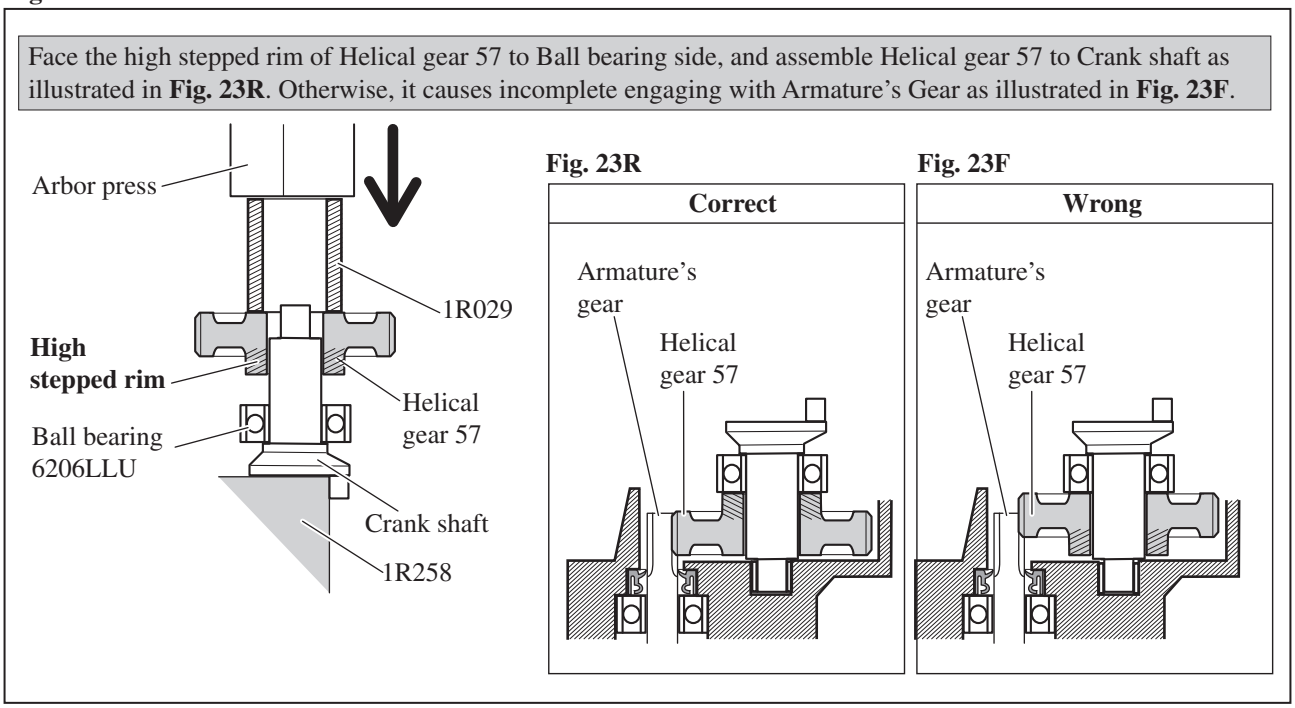
Fig. 24



ASSEMBLING

(1) Assemble Ball bearing 6206LLU and Helical gear 57 to Crank shaft as illustrated in **Fig. 25.**

Fig. 25



Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-4. Crank section

ASSEMBLING

(2) Assemble Crank shaft section to Crank housing as illustrated in **Figs. 26 and 27**.

Fig. 26

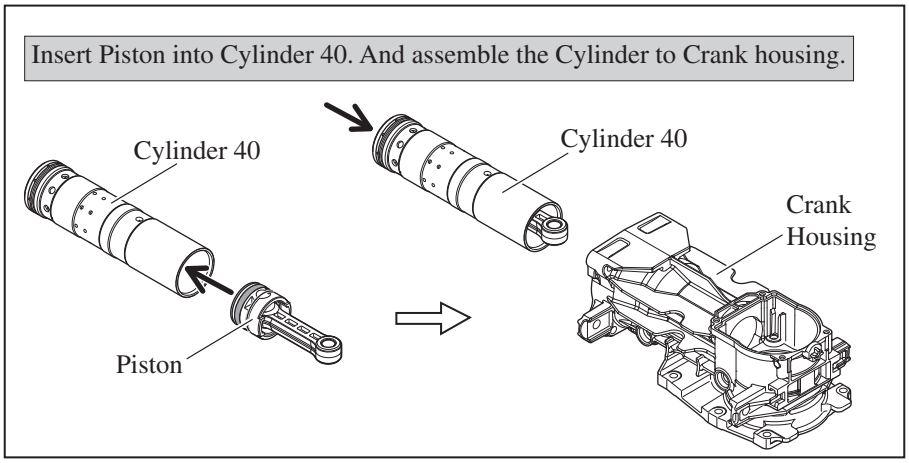
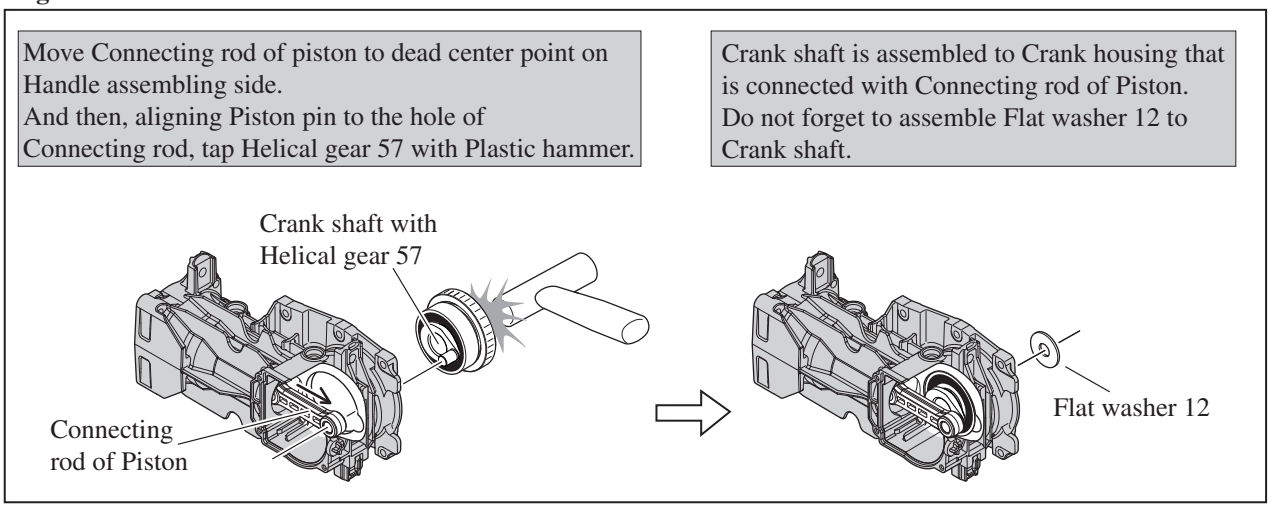


Fig. 27



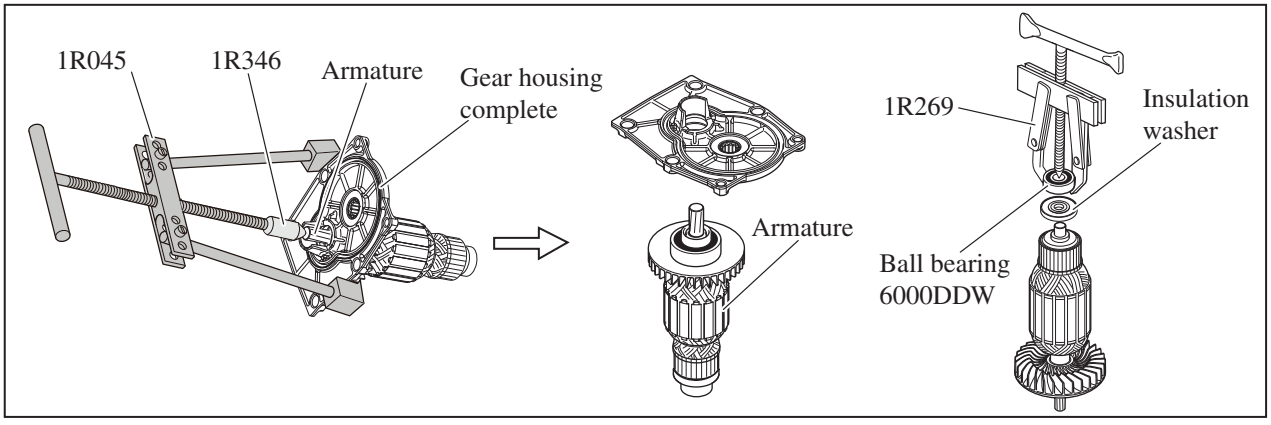
(3) By taking the disassembling step in reverse, assemble the components.

[3]-5. Armature

DISASSEMBLING

(1) Separate Motor housing from Crank section. (**Fig. 19 and 20**)
(2) Separate Gear housing complete from Crank section. (**Fig. 21**)
(3) Armature can be disassembled as illustrated in **Fig. 28**.

Fig. 28



Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-5. Armature

ASSEMBLING

Take the disassembling step in reverse.

Note: Make sure that Flat washer 15 is set in place. (**Fig. 20**)

[3]-6. Electrical parts in Handle section

DISASSEMBLING

(1) Disassemble Handle section. (**Fig. 4**)
(2) The electrical Parts can be disassembled as illustrated in **Figs. 29 and 30.**

Fig. 29

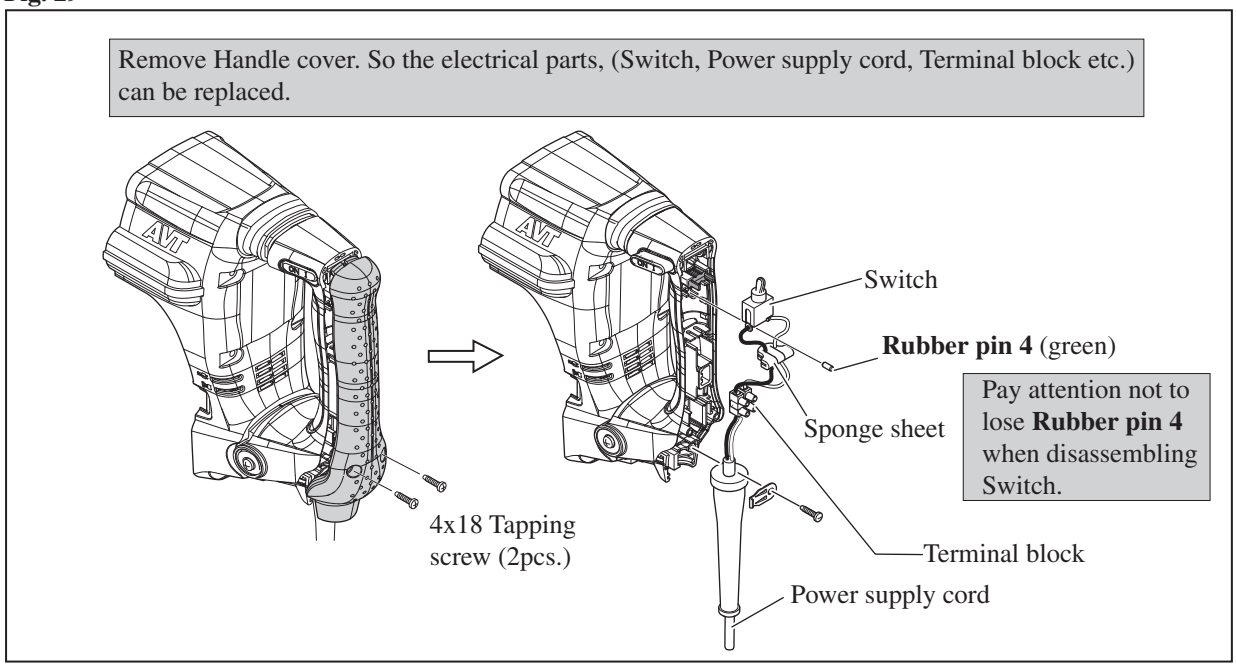
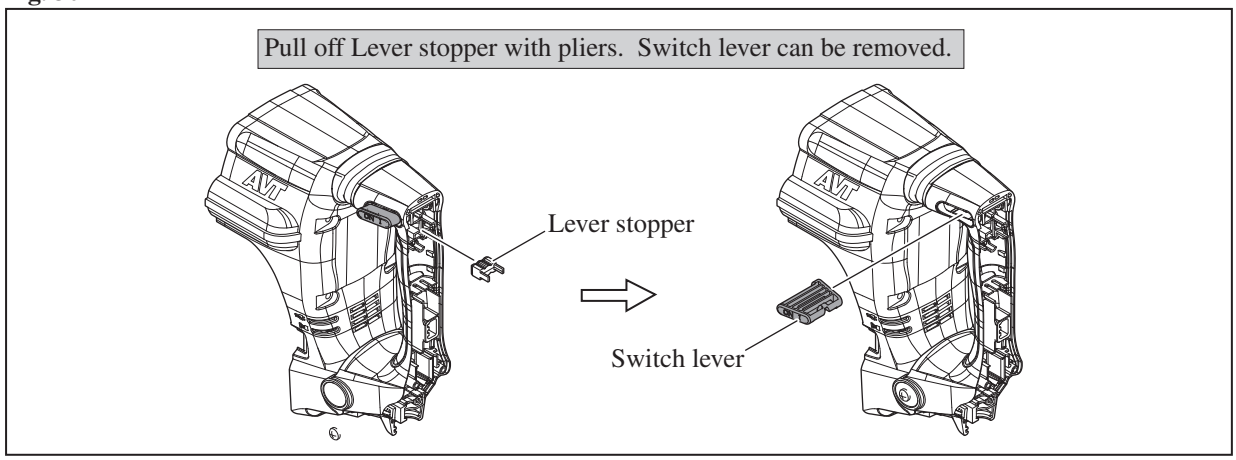


Fig. 30



Repair

[3] ASSEMBLY/ DISASSEMBLY

[3]-7. Vibration Absorbing Handle (only for HM1213C)

DISASSEMBLING

(1) Disassemble Handle section. (**the left illustration in Fig. 2**)
(2) Vibration absorbing handle can be disassembled as illustrated in **Figs. 31 and 32**.

Fig. 31

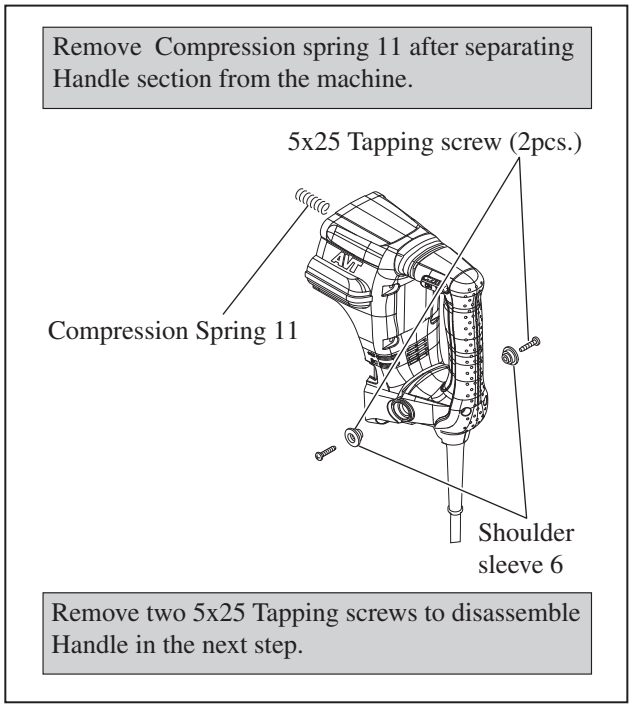
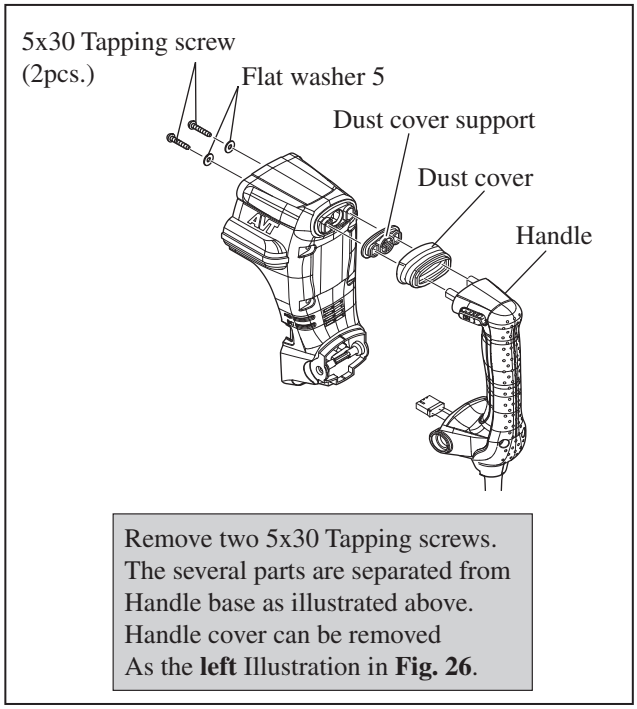


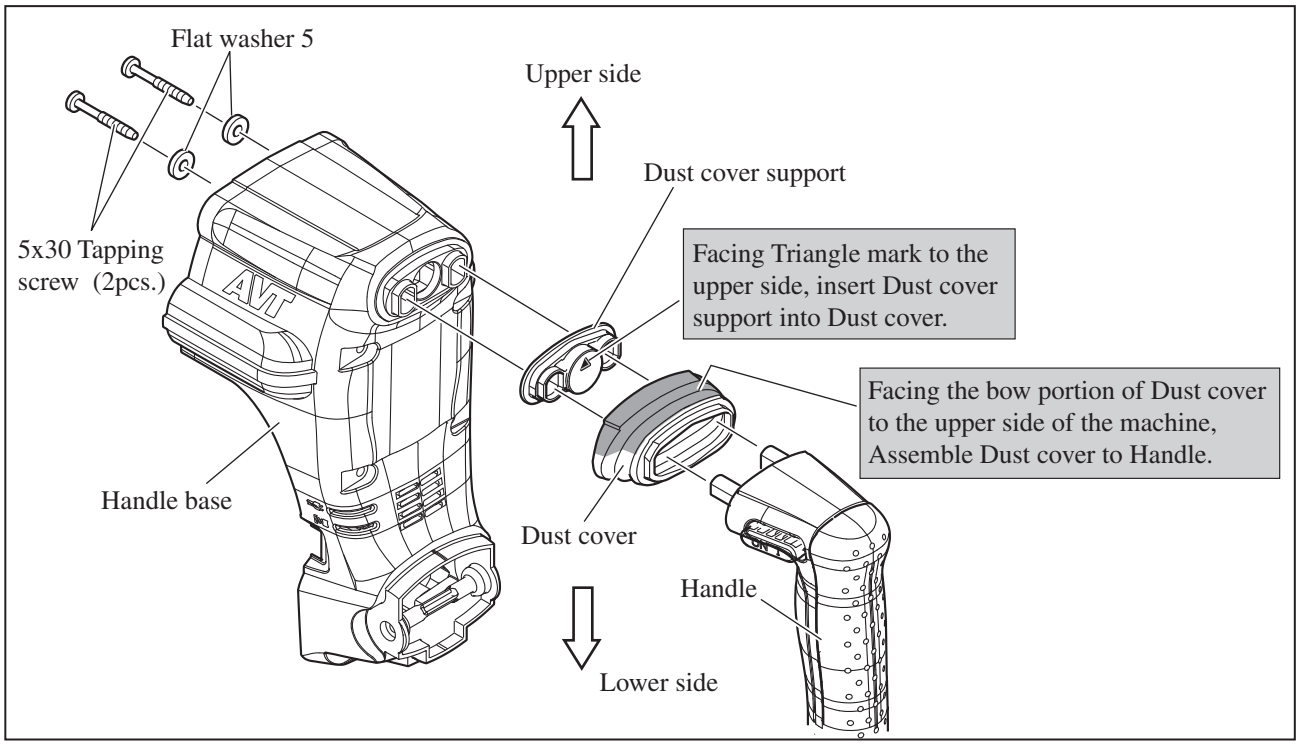
Fig. 32



ASSEMBLING

Assemble the Vibration absorbing handle, paying attention to the directions of Dust cover and Dust cover support. (**Fig. 33**)

Fig. 33



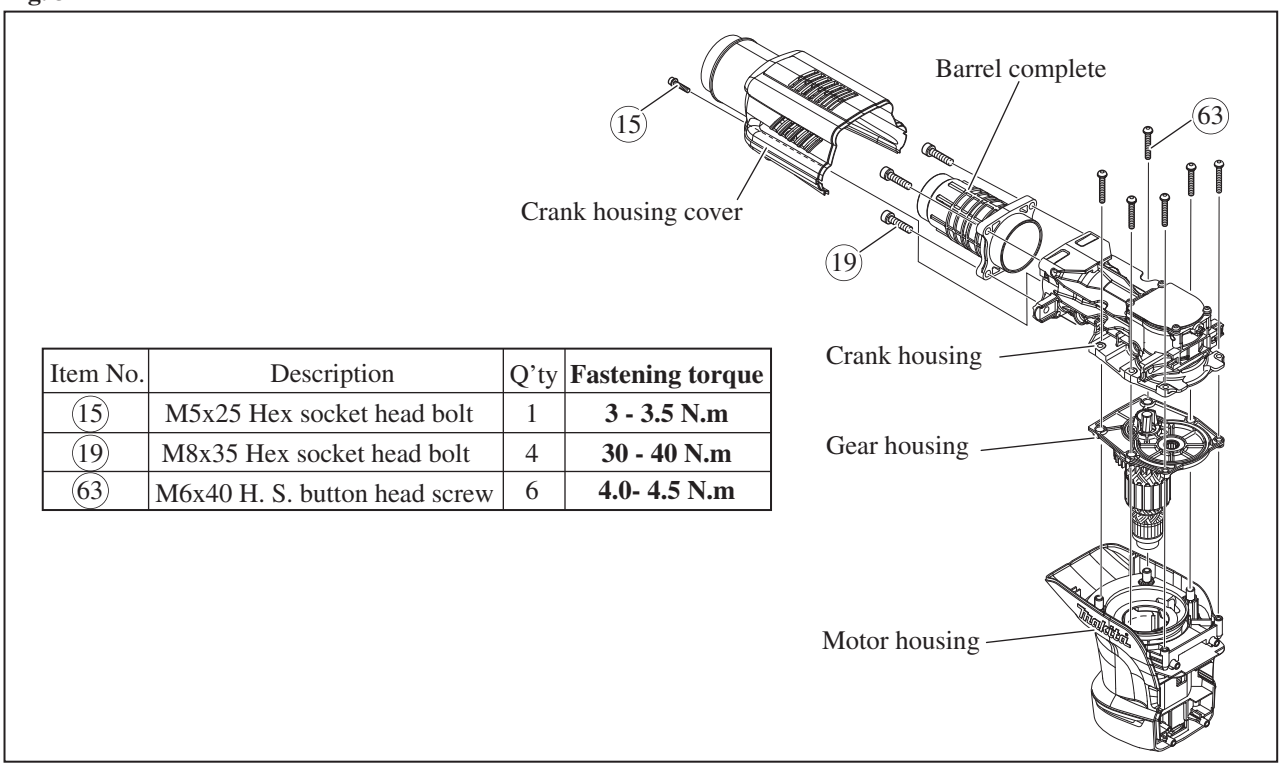
Repair

[3] DISASSEMBLY/ASSEMBLY

[3]-8 Fastening torque

Fasten the specific bolts and screws to the appropriated torques. (**Fig.34**)

Fig. 34



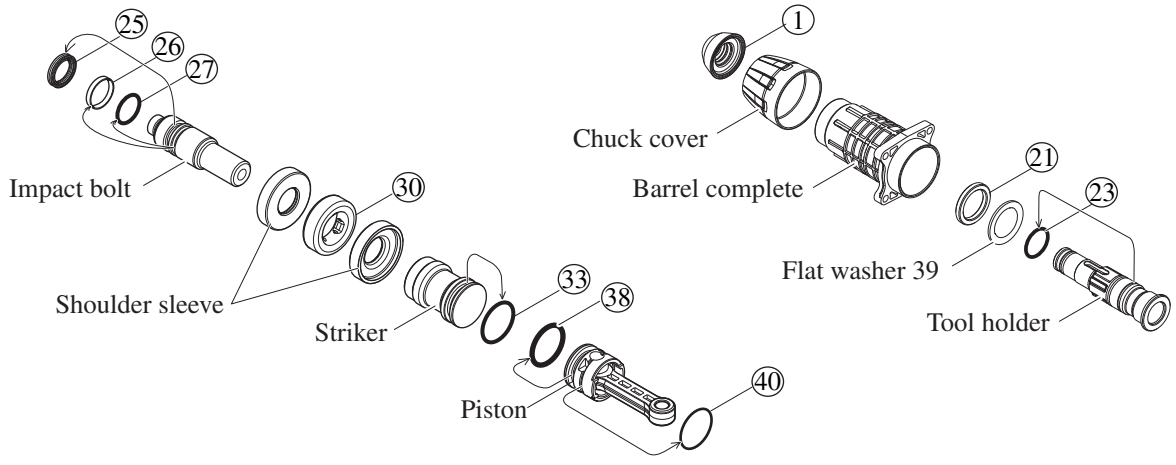
Item No.	Description	Q'ty	**Fastening torque**
15	M5x25 Hex socket head bolt	1	**3 - 3.5 N.m**
19	M8x35 Hex socket head bolt	4	**30 - 40 N.m**
63	M6x40 H. S. button head screw	6	**4.0- 4.5 N.m**

[4] MAINTENANCE PROGRAM

When replacing carbon brush, it is recommended to replace the following parts at the same time for longer service life of the machine. (**Fig. 35**)
Be sure to apply the appropriate greases to the specific portions. Refer to **Figs. 4, 5 and 6**.

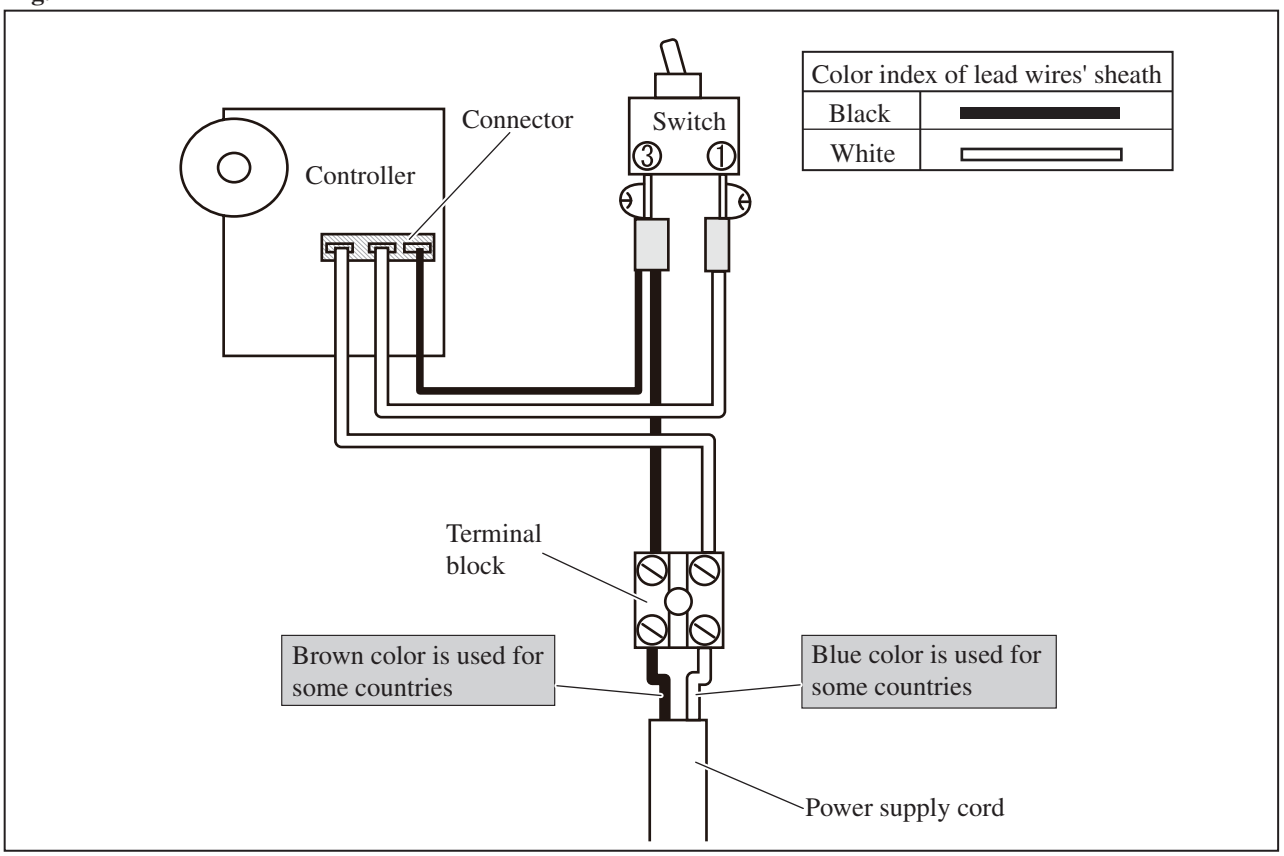
Fig. 35

Item No.	Descriptions	Item No.	Descriptions
1	Tool holder cap	27	O ring 23 on Impact bolt
21	Rubber ring 39	30	Rubber ring 24
23	O ring 35.5 on Tool holder	33	O ring 31.5 on Striker
25	X ring 21 on Impact bolt	38	O ring 31.5 on Piston
26	Fluoride ring 28 on Impact bolt	40	O ring 35 on Piston



Circuit diagram

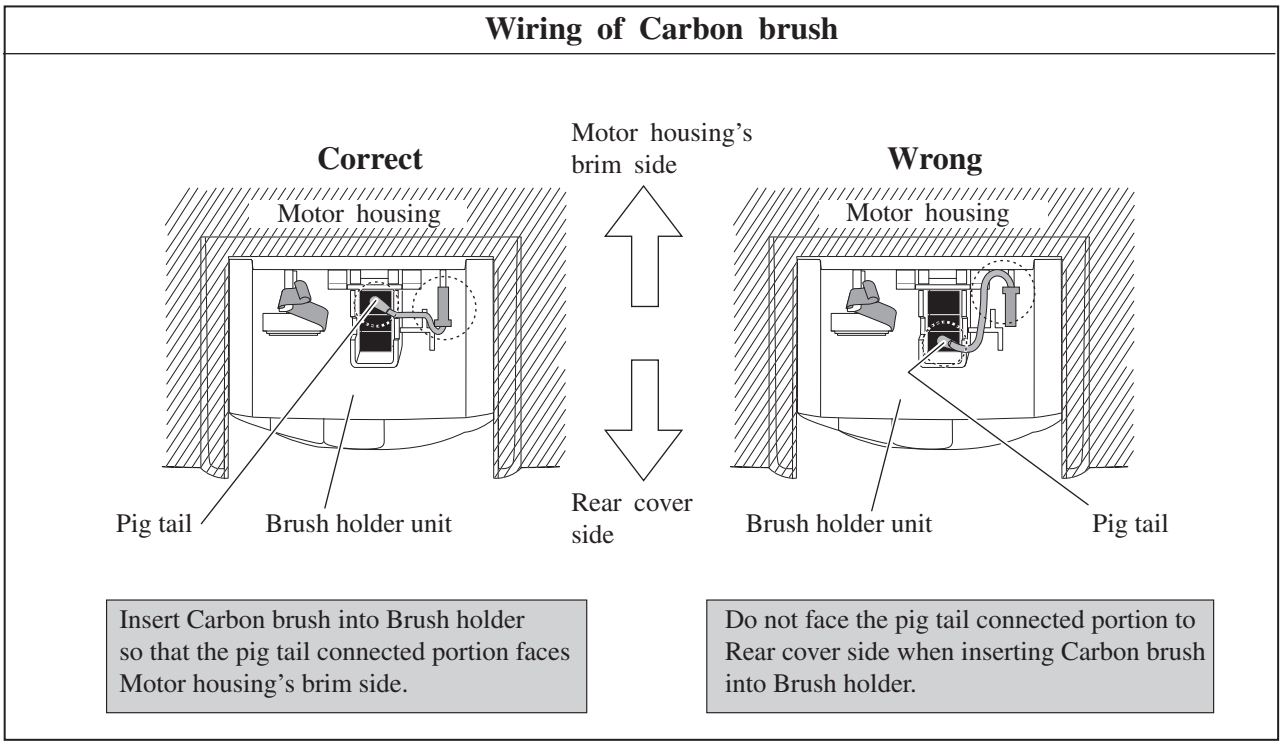
Fig. D-1



Wiring diagram

Insert Carbon brush into Brush holder as illustrated in **Fig. D-2**.

Fig. D-2



Wiring diagram

Fig. D-3

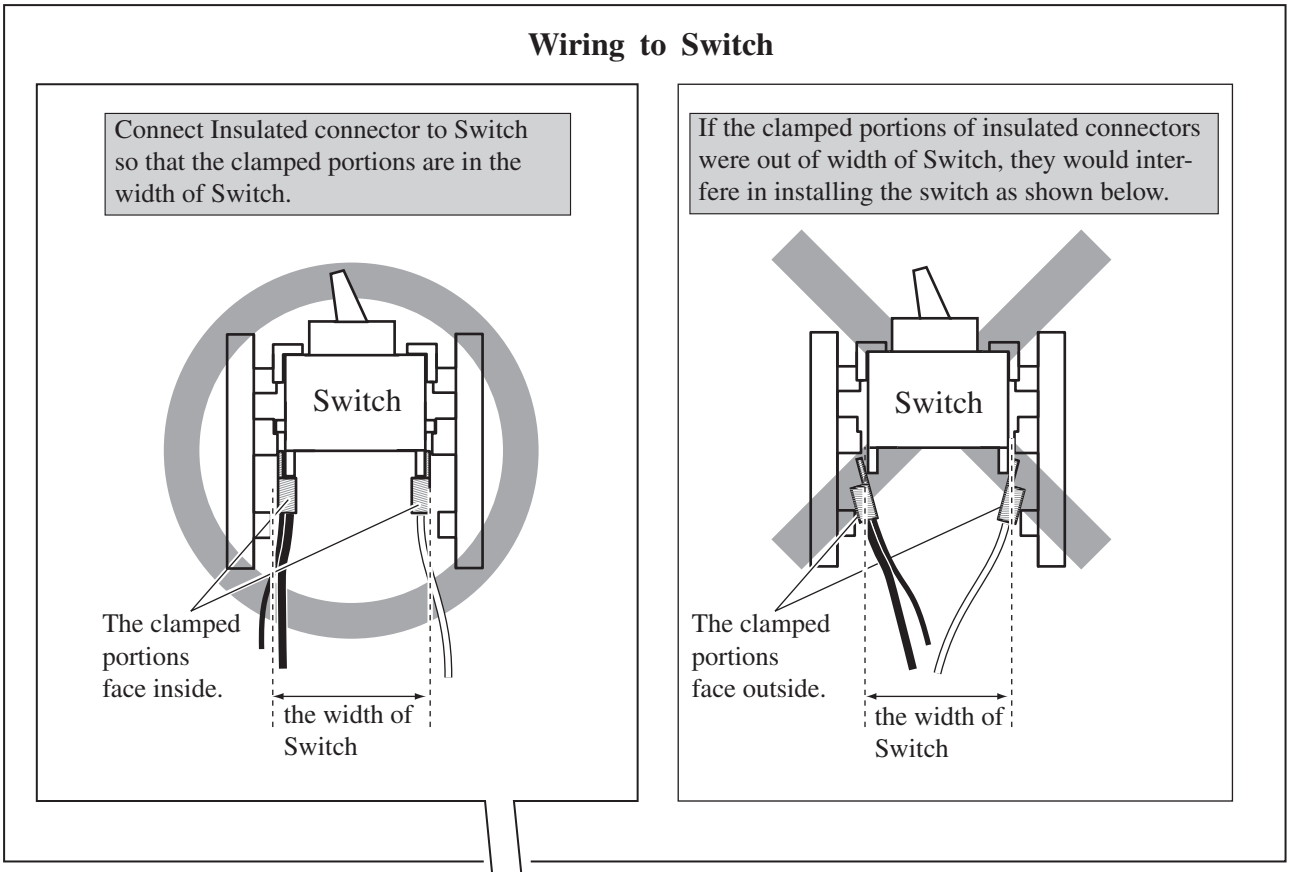


Fig. D-4