TECHNICAL INFORMATION

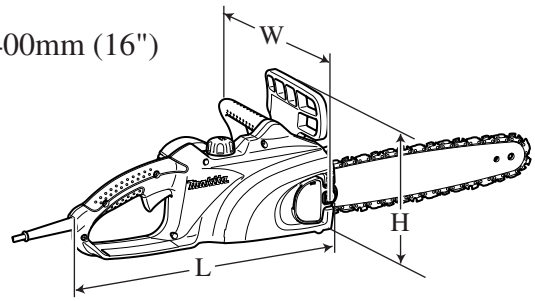
Model No. ► UC3020A/ UC3520A/ UC4020A

Description ► Chain Saws 300mm (12")/ 350mm (14")/ 400mm (16")

CONCEPT AND MAIN APPLICATIONS

These new electric chain saws have been developed as the up-graded successors to the current UC3010A series models. Designed with the concept of "Easy Operation and Maintenance", and feature the following main advantages;

•Toolless blade change and adjustment
•Front grip ergonomically designed for high maneuverability



*Dimensions: mm (")	
Length (L)	436
Width (W)	244
Height (H)	200

*Dimensions: excludes guide bar.

► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output (W)
			Input	Output	
110	15	50/ 60	1,570	700	1,900
120	15	50/ 60	1,710	850	1,950
220	8.6	50/ 60	1,800	1,000	2,400
230	8.2	50/ 60	1,800	1,000	2,400
240	7.9	50/ 60	1,800	1,000	2,400

Model No.		UC3020A	UC3520A	UC4020A
Chain speed per sec: m/s (m/min)		13.3 (800)		
Standard guide bar: mm (")		300 (12)	350 (14)	400 (16)
Chain blade	Type	90SG-46E	90SG-52E	90SG-56E
	Pitch	3/8"		
Chain brake		Mechanical brake		
Chain oil tank capacity: ml		200		
Automatic chain oiling		Yes		
Double insulation		Yes		
Power supply cord: m (ft)		0.3 (0.98)		
Net weight: kg (lbs)		3.8 (excluding guide bar and chain blade)		

► Standard equipment

Chain blade ..... 1 pc (UC3020A: 90SG-46E, UC3520A: 90SG-52E, UC4020A: 90SG-56E)
Guide bar ..... 1 pc (UC3020A: 90SG 12", UC3520A: 90SG 14", UC4020A: 90SG 16")
Ghain cover ..... 1 pc
Hook complete ..... 1 pc

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

► Optional accessories

Chain blade (90SG, 91VG) (300/ 350/ 400mm)
Guide bar (90SG, 91VG) (300/ 350/ 400mm)
Chain oil

Repair

CAUTION: Remove the chain blade, guide bar from the machine for safety before repair/ maintenance ! Take off chain oil from oil tank !

[1] NECESSARY REPAIRING TOOLS

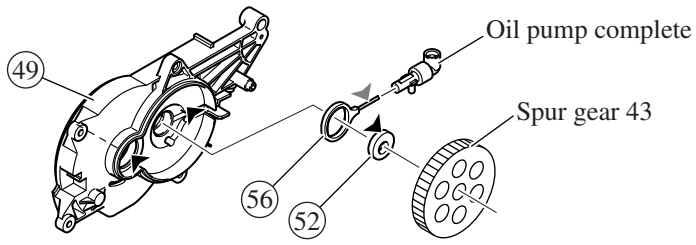
Code No.	Description	Use for
1R269	Bearing Extractor	Removing ball bearings

[2] LUBRICATION

As illustrated in **Fig. 1**, to protect parts and product from unusual abrasion;
1) Apply Makita grease N. No.2 to the portions designated with the black triangle.
2) When replacing Oil pump complete, apply a little amount of Chain oil to the portions designated with the gray triangle.

Item No.	Description	Portion to lubricate
(49)	Bearing Box	Gear room (Apply about 3g.)
(52)	Cam	The portion that contacts (56) Crank
(56)	Crank	Pin portion that reciprocates in Oil pump complete

Fig. 1



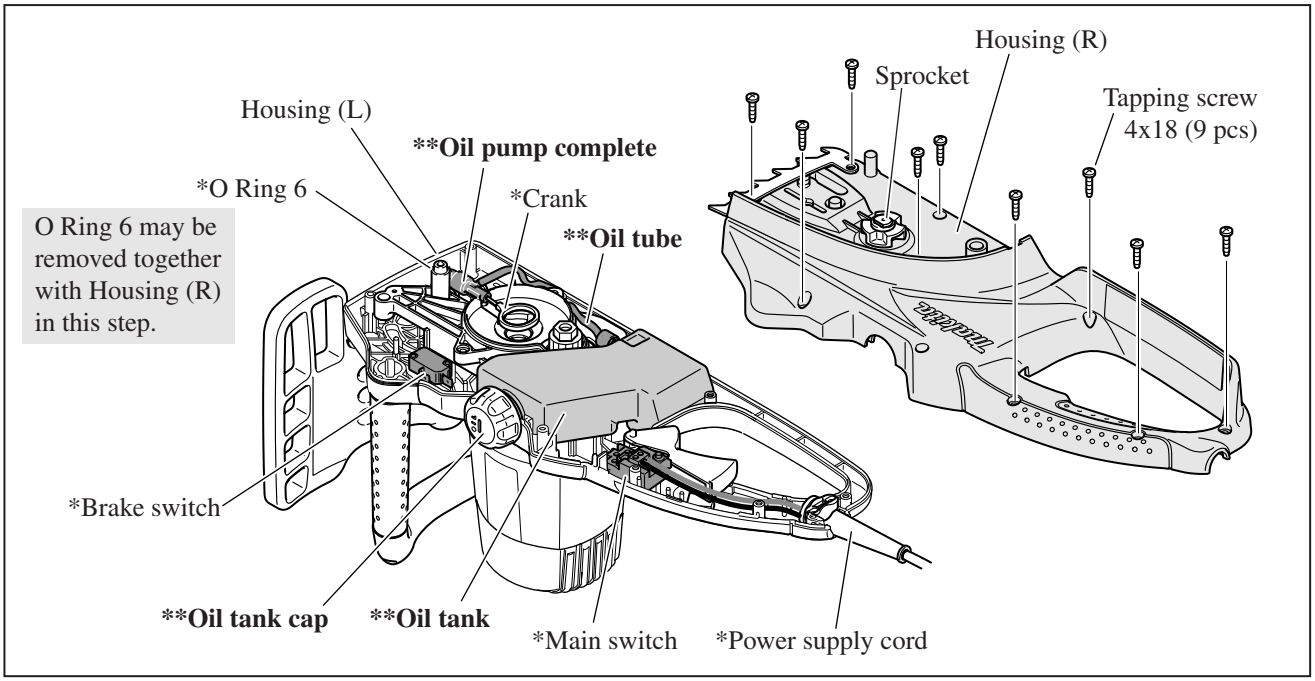
[3] DISASSEMBLY/ASSEMBLY

[3] -1. Lubricating Mechanism

DISASSEMBLING

1) Put the machine on a work bench as illustrated in **Fig. 2**, then separate Housing (R) from Housing (L) by removing nine 4x18 Tapping screws.
   Note: Housing (R) can be separated without removing Sprocket.
   Important: Do not remove Oil tank cap in this step.
2) The parts marked with * and ** can now be replaced. (**Fig. 2**)
   The parts marked with ** are components of lubricating mechanism.

Fig. 2



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Lubricating Mechanism (cont.)

ASSEMBLING

1) Mount O ring 6 to the boss of Bearing holder. (**Fig. 3**)
2) See **Fig. 4**.
   Before connecting Oil tube to Oil tank, make sure that:
   1. Packing is mounted between Oil tank cap and Oil tank.
   2. O ring 6 is mounted to Oil pump complete.
   3. Clamp is put through Oil tube.
   4. Cap and Spring are assembled to in Oil tube.
3) Push Oil tube into Oil tank deeply until it stops, and secure with Clamp.
   Note: Make sure that the tabs of Clamp is positioned on the Housing (R) installation side as illustrated in **Fig. 5**.
   Then connect the other end of Oil tube securely to Oil pump complete.
4) Assemble the lubricating mechanism to the machine. **(Fig. 6)**
5) See **Figs. 21 and 22** on page 10 for assembling of electrical parts.

Fig. 3

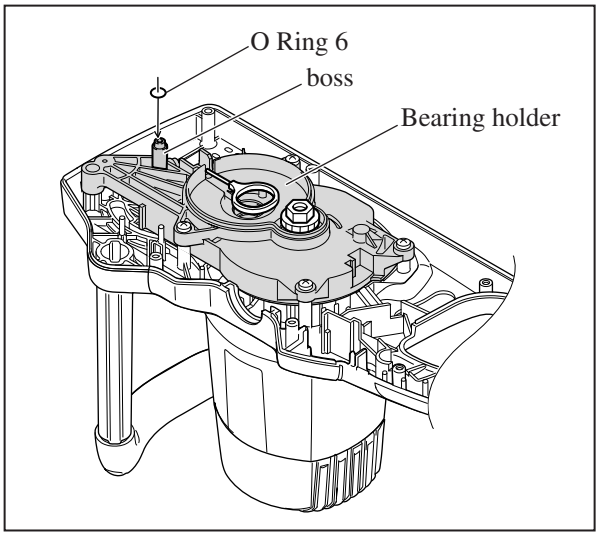


Fig. 4

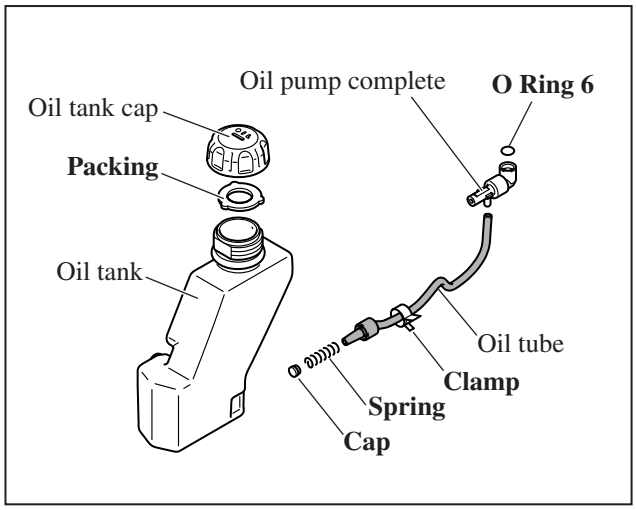


Fig. 5

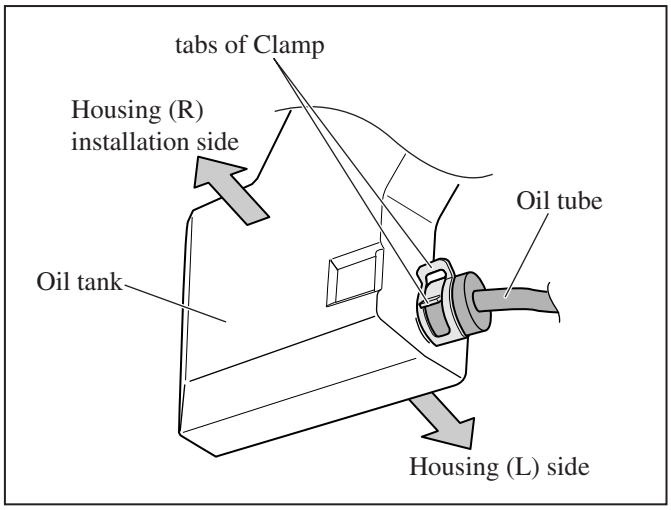
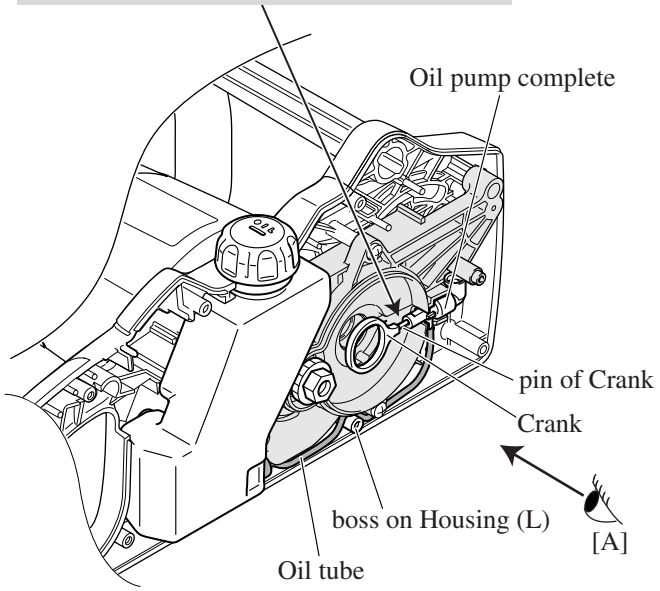
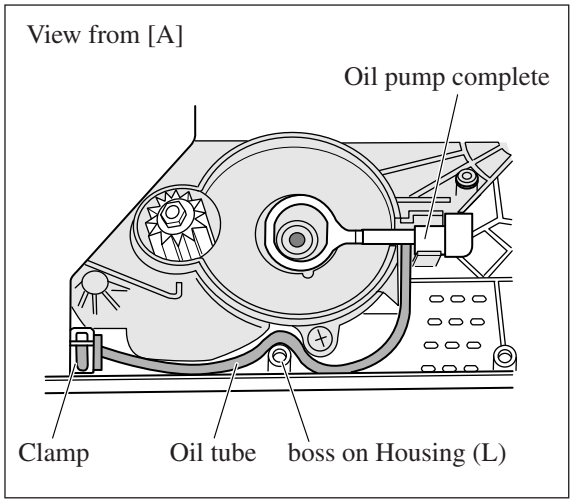


Fig. 6

Insert pin of Crank into Oil pump complete.



Route Oil tube as illustrated below.



Repair

[3] DISASSEMBLY/ASSEMBLY

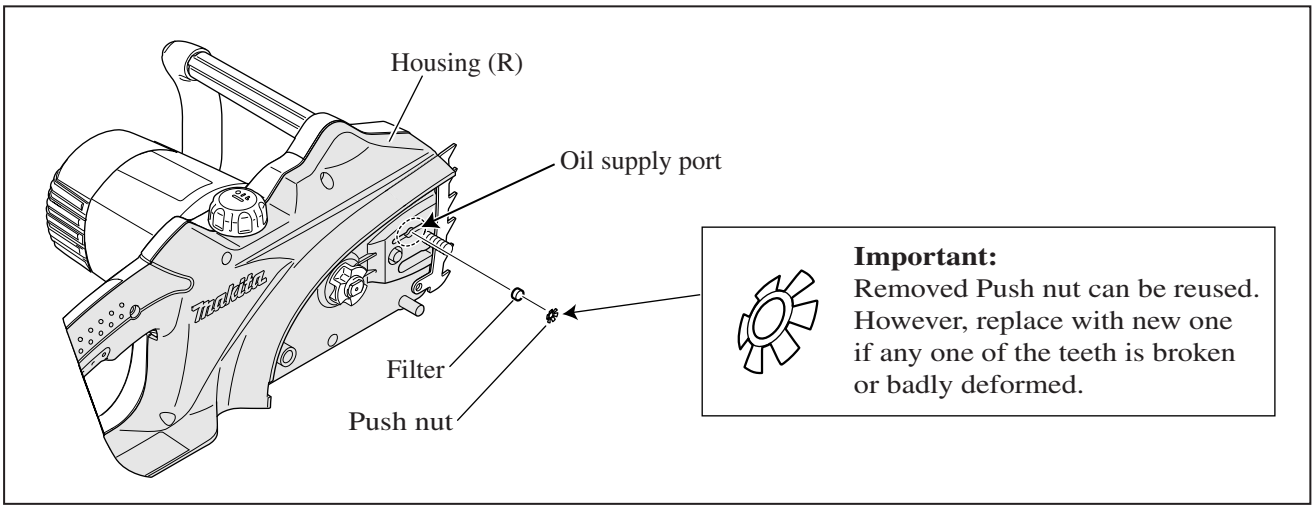
[3] -1. Lubricating Mechanism (cont.)

TROUBLE SHOOTING

If the oil is not supplied to chain or delivered very little;

1) Remove Guide bar, then Push nut and Filter. (**Fig. 7**) Run the machine without Filter.
   If the oil flows out from Oil supply port, there is not trouble with Oil pump complete.
   The malfunction is caused by clogged Filter in this case. Clean up Filter with kerosene.
2) If the oil does not flow out, remove Housing (R) (**Fig. 2** on page 2) and disassemble Lubricating mechanism (**Fig. 3** on page 3), and check whether the following parts are clogged with foreign matter:
   Filter in Oil tank, Oil tube, Oil pump complete
   If clogged, remove foreign matter and clean up the part(s) with kerosene.
   Reassemble Lubricating mechanism and Housing (R) to Housing (L), then Filter and Push nut to Housing (R).
   Run the machine, then check whether the oil flows out.
3) If the oil does not flow out, the malfunction is caused by broken Oil pump complete.
   Replace Oil pump complete with new one.

Fig. 7



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -2. Brake Mechanism and Armature

Principle of Brake Mechanism

Refer to the explanation below when repairing Brake mechanism.

These models are equipped with the following two brake systems.

A. Brake Synchronized with Switch Lever

This brake works when Switch lever is released to stop operation. (**Figs. M-1**, **M-2**, **M-3**)

B. Kick Back Brake

This brake works when Front hand guard is pushed towards Chain bar. The machine stops even if Switch lever stays in ON position. (**Fig. M-4**)

Fig. M-1

Before Pulling Switch Lever

Brake mechanism viewed from the Housing (R) side

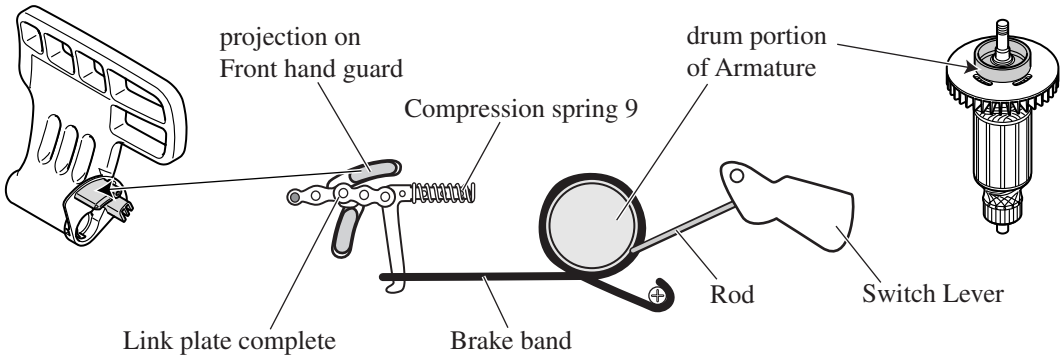
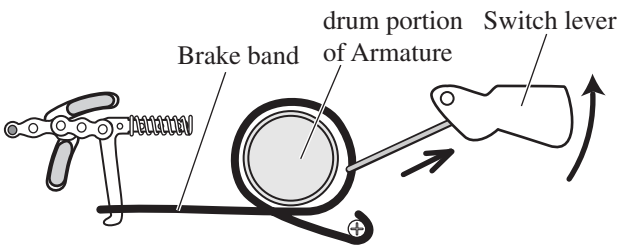


Fig. M-2

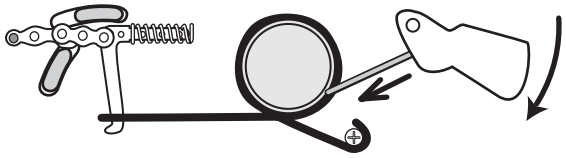
When Switch Lever is Pulled



Brake band is also pulled to unlock the drum portion of Armature, and Armature starts rotating.

Fig. M-3

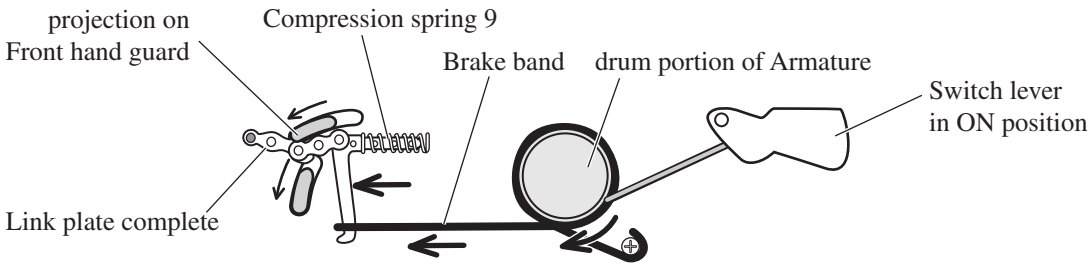
When Switch Lever is Released



Brake band returns to the initial position to lock the drum portion of Armature, and Armature immediately stops rotating.

Fig. M-4

Kick Back Brake



1) When Front hand guard is pushed towards Chain bar, Link plate complete is bent by the projection on the guard.
2) Brake band is pulled by the bent Link plate complete. (The tension force of Compression spring 9 keeps Link plate complete bent.)
3) The drum portion of Armature is locked by Brake band to stop the rotation of Armature.

Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -2. Brake Mechanism and Armature

DISASSEMBLING

1) Remove Housing (R). (**Fig. 2** on page 2)
2) Push Front hand guard towards the Guide bar installation side to lock Armature with kick back brake.
   If Front hand guard is damaged, remove it and lock Armature by bending Link plate complete with a slotted screwdriver. (**Fig. 8**)
3) Remove entire Lubricating mechanism (Oil pump complete, Oil tube, Oil tank). While swiveling Switch lever, disconnect from Rod. Unscrew four 4x18 Tapping screws. (**Fig. 9**)

Fig. 8

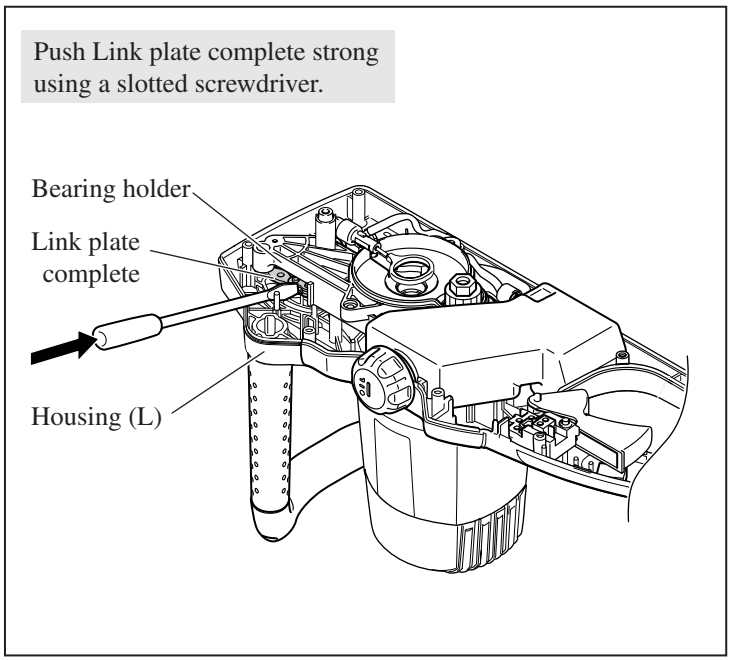
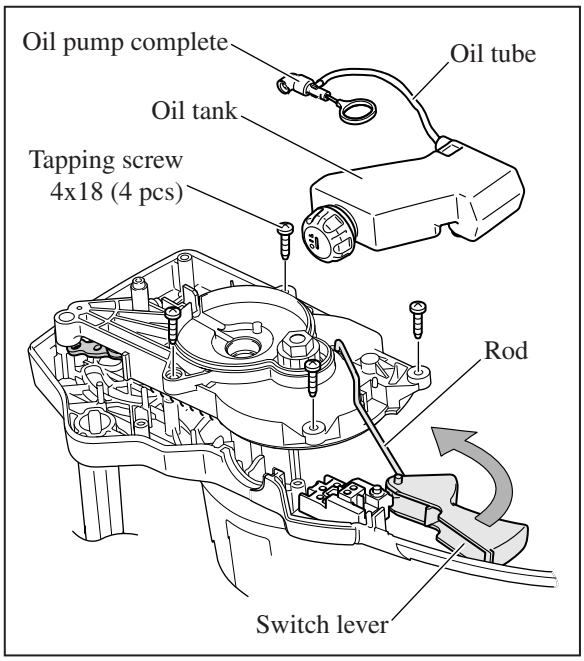


Fig. 9



4) Put the machine as illustrated in **Fig. 10**. Remove Rear cover, then Carbon brush. The assembly of Armature and Bearing holder can now be removed.
5) By hooking Rod on the notch of Bearing holder as illustrated in **Fig. 11**, place Rod in the same position as it would be when Switch lever is pulled. Brake synchronized with Switch lever is now unlocked.

Fig. 10

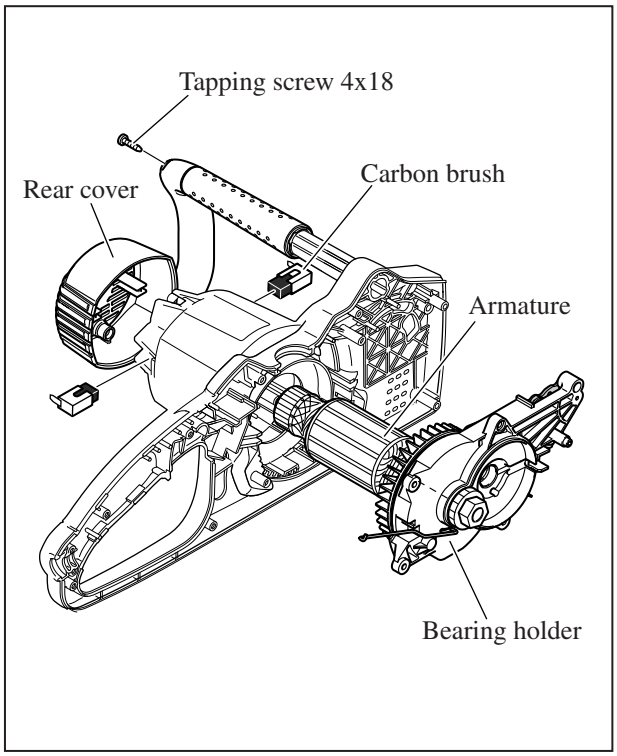
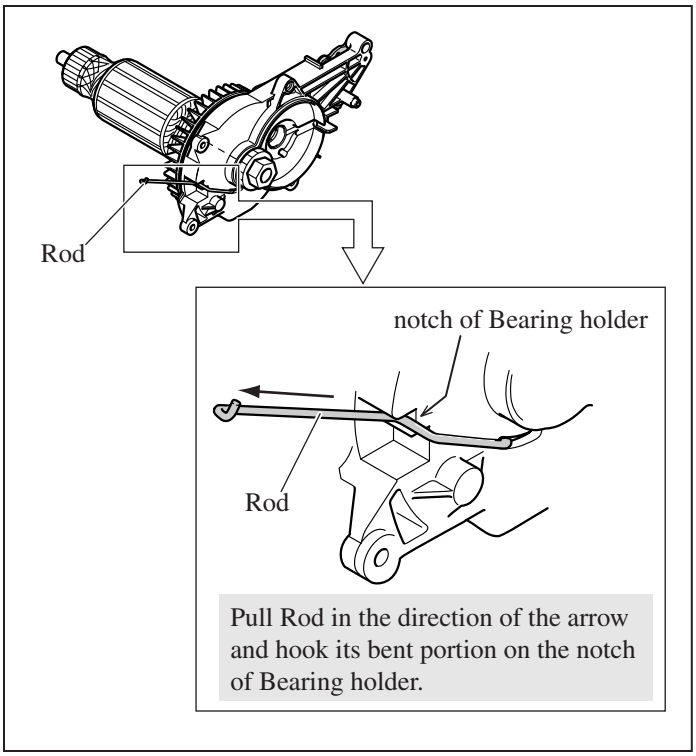


Fig. 11



Repair

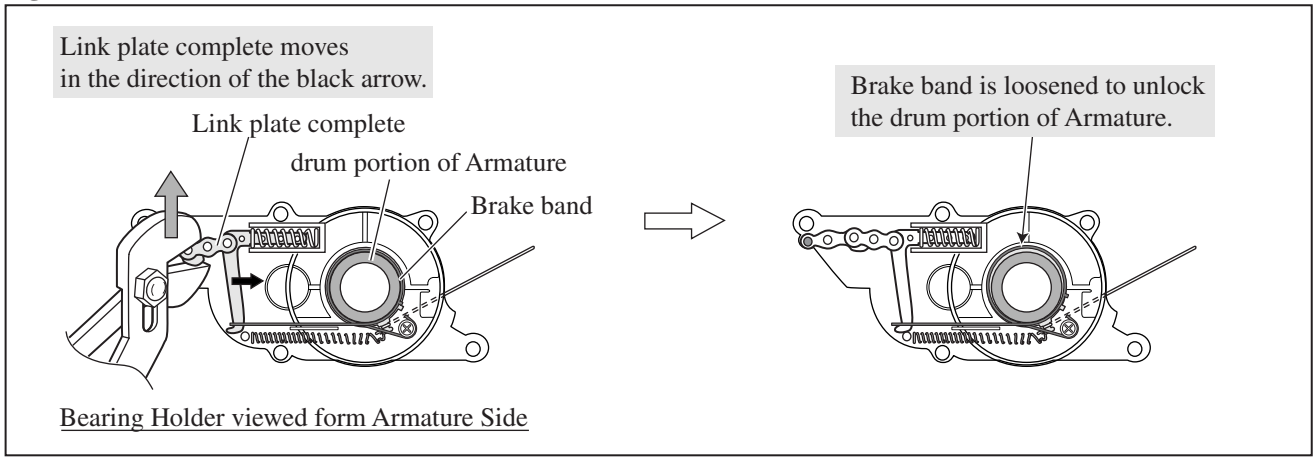
[3] DISASSEMBLY/ASSEMBLY

[3] -2. Brake Mechanism and Armature (cont.)

DISASSEMBLING

6) Unlock the Kick back brake by pulling Link plate complete in the direction of the gray arrow with adjustable pliers. (**Fig. 12**)

Fig. 12



7) Armature can now be separated from Bearing holder as illustrated in **Fig. 13**.

8) Remove the tension force of Compression spring 9 from Link plate complete by pulling Link plate complete with pliers in the direction of the gray arrow with adjustable pliers. (**Fig. 14**)

Fig. 13

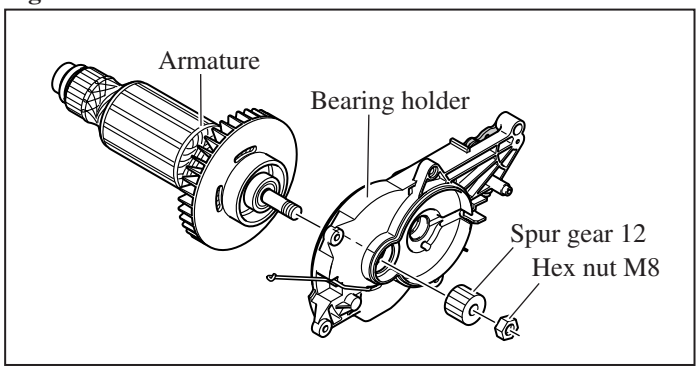
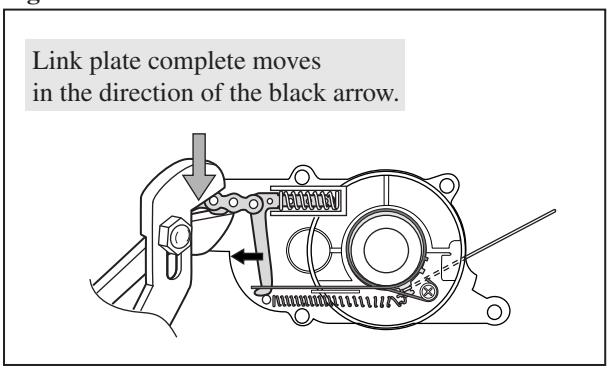
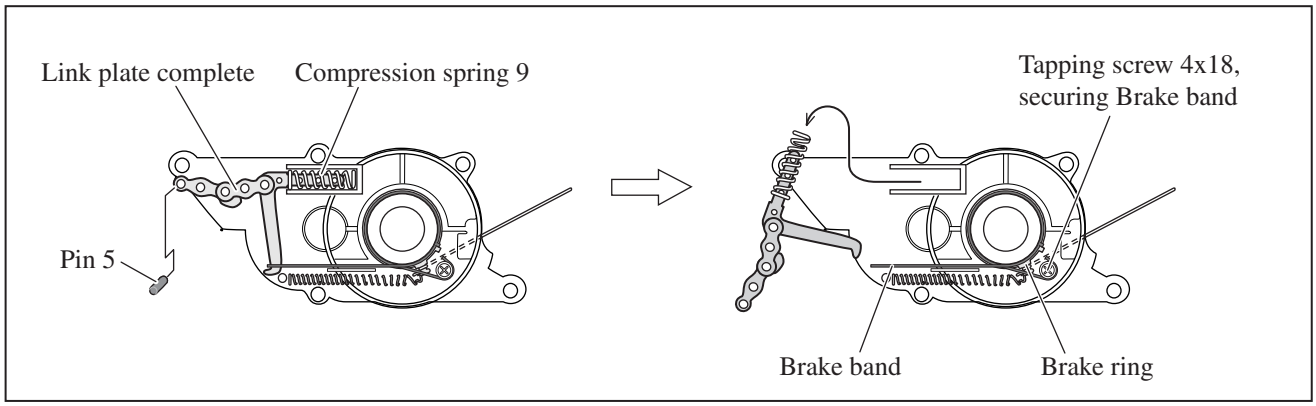


Fig. 14



9) By removing Pin 5, Link plate complete and Compression spring 9 can be separated from Bearing holder. (**Fig. 15**)

Fig. 15



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -2. Brake Mechanism and Armature (cont.)

DISASSEMBLING

10) Remove Brake band by unscrewing Tapping screw 4x18, then disconnect Brake ring from Rod. (**Fig. 16**)
11) Remove Rod from Bearing holder. (**Fig. 17**)

Fig. 16

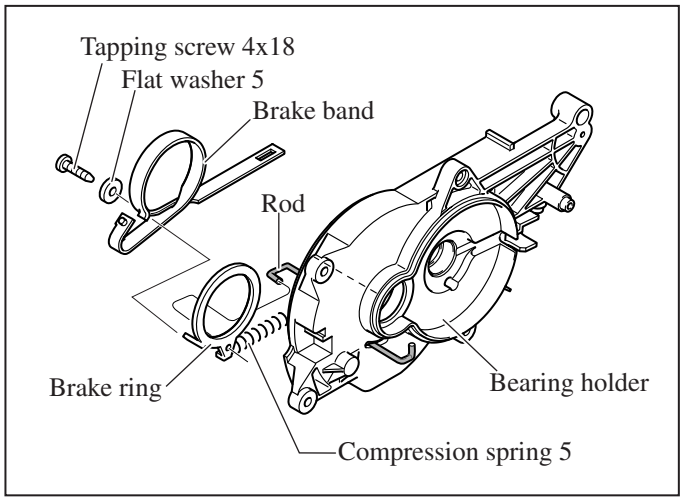
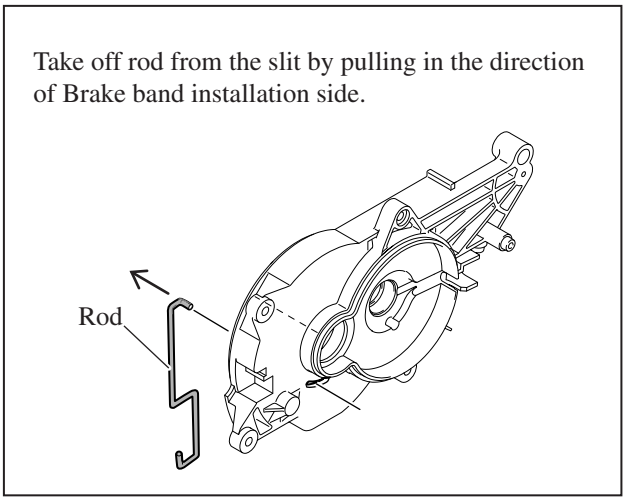


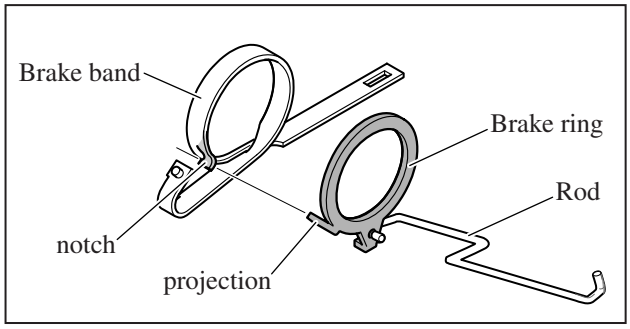
Fig. 17



ASSEMBLING

1) Assemble the components of Brake mechanism to Bearing holder. (**Figs. 17, 16, 15**)
Note:
*Engage the notch on Brake band with the projection on Brake ring when assembling Brake band to Bearing holder. Otherwise Armature cannot be unlocked when Switch lever is pulled for starting operation. (**Fig. 18**)
*Compression spring 9 of link plate complete has to be set in the rib of bearing holder exactly. (**Fig. 15** on page 7)

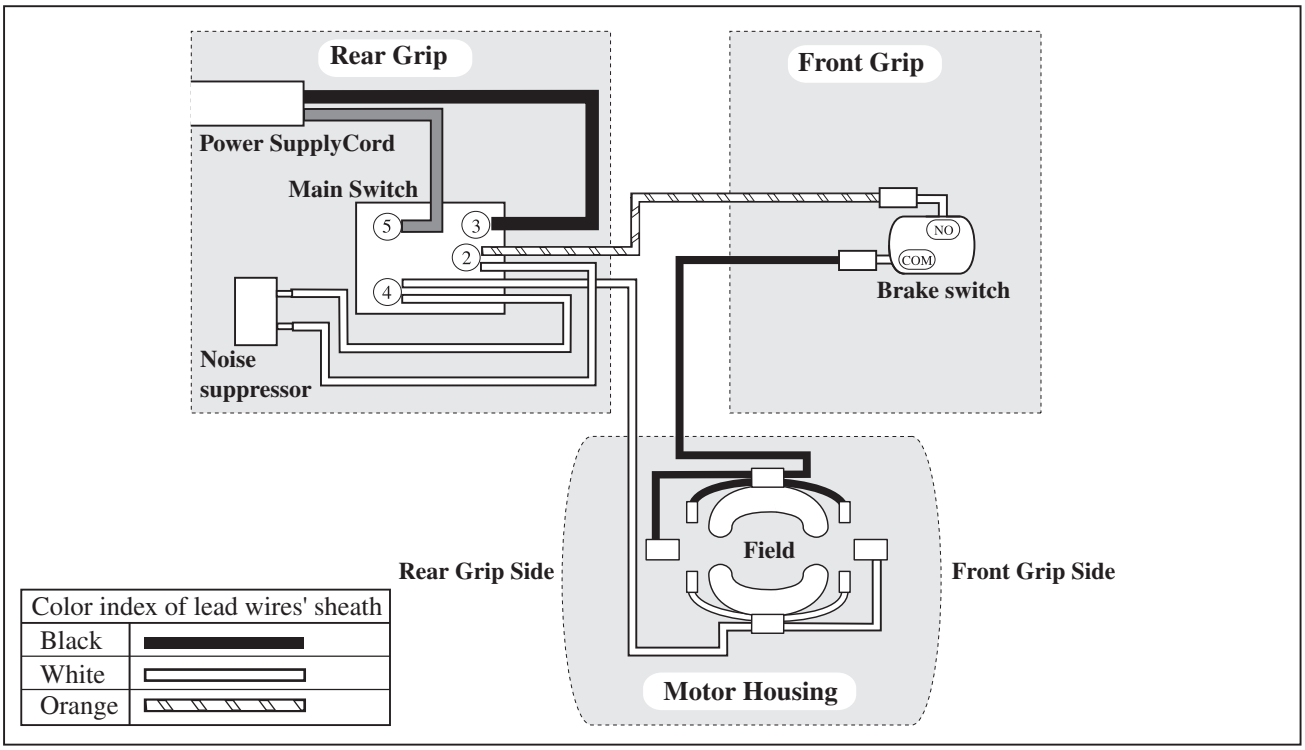
Fig. 18



2) Unlock Kick back brake with pliers. (**Fig. 12** on page 7)
3) Assemble Rod to Bearing holder as illustrated in **Fig. 11** on page 6.
Kick back brake and brake synchronized with Switch lever are both unlocked in this step.
4) Assemble Armature to Bearing holder. (**Fig. 13** on page 7)
5) Assemble Lubricating mechanism to Bearing holder. (**Figs. 6**, **5**, **4**, **3** on page 3)
6) Pull Switch lever to loosen Brake band.
7) Engage Spur gear 43 mounted to Housing (R) with Spur gear 12 mounted to Armature.
Then turn Sprocket until Cam of Spindle fits in the loop portion of Crank.
8) Secure Housing (R) to Housing (L) with nine 4x18 Tapping screws. (**Fig. 2** on page 3)

► Circuit diagram

Fig. 19



Wiring diagram

Fig. 20

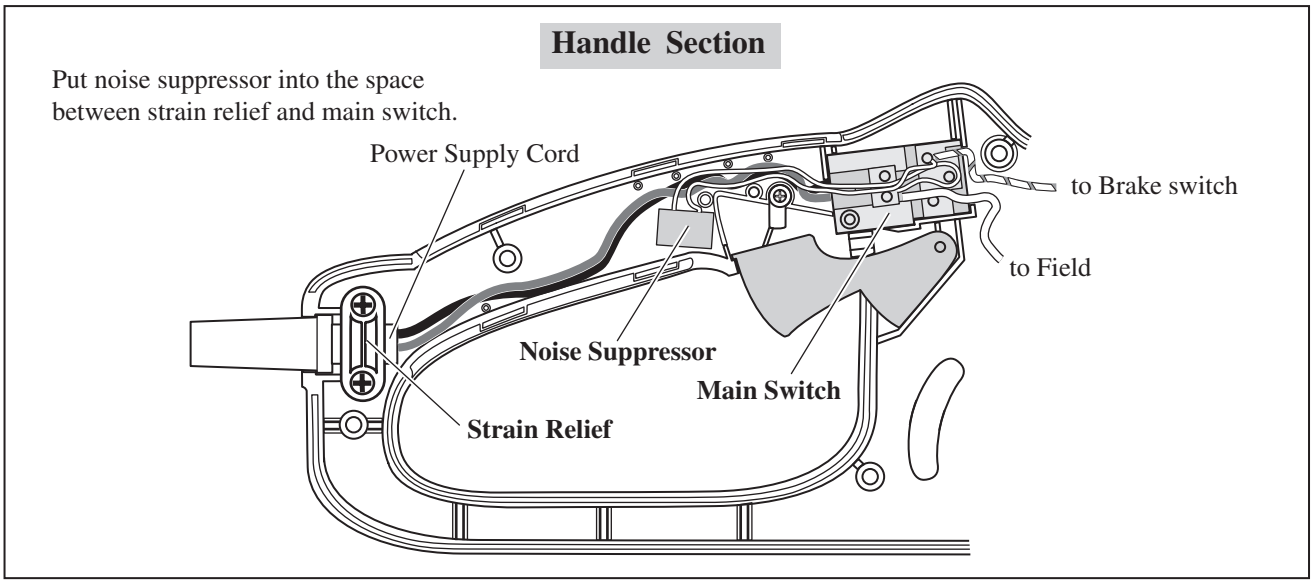
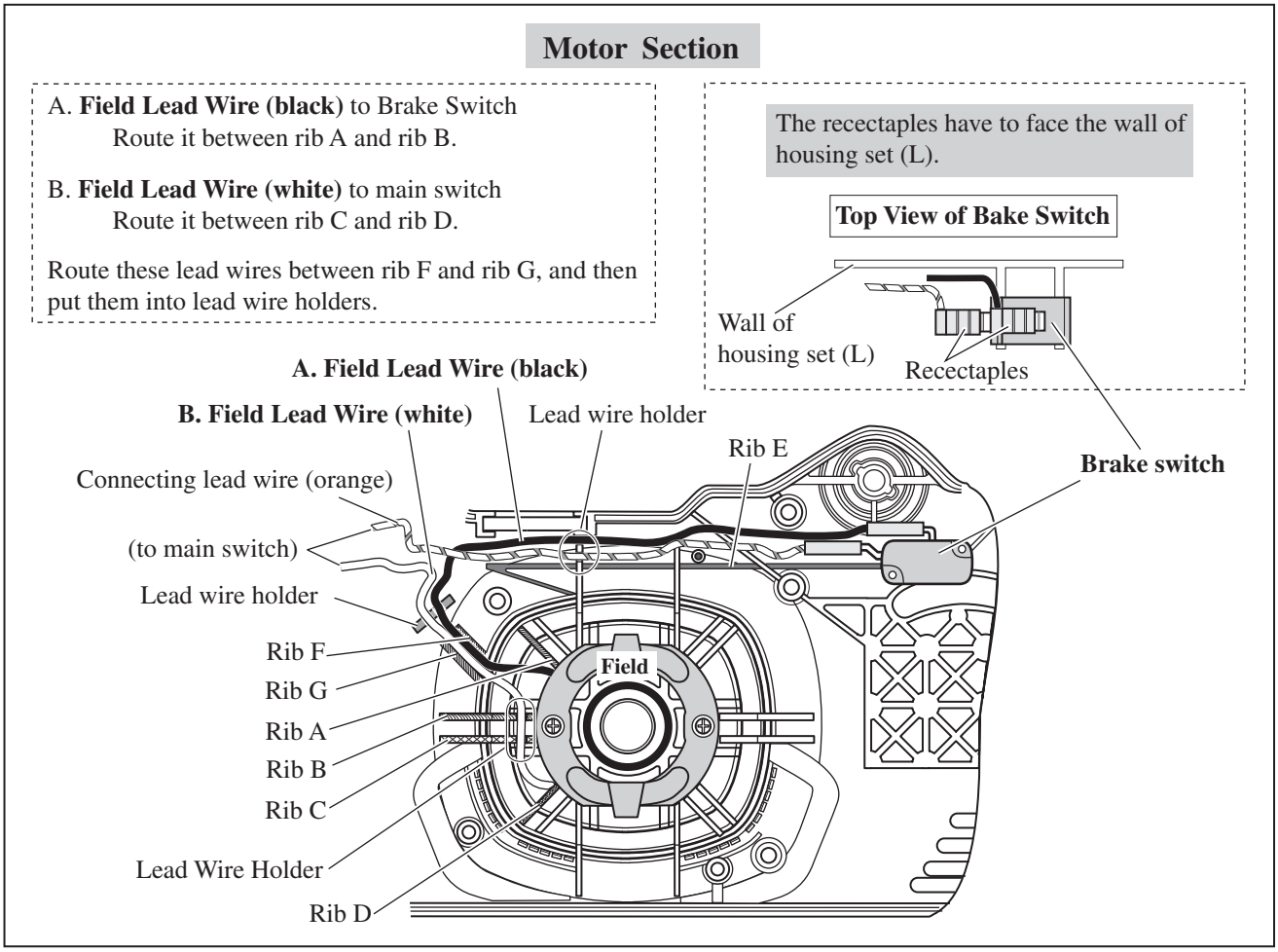



Fig. 21