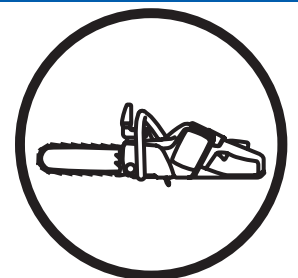


**Workshop Manual**  
**414EL, 418EL,**  
**420EL**



**English**



# Workshop Manual

## Husqvarna 414EL, 418EL, 420EL

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Husqvarna AB has a policy of continuous product development and therefore reserves the right to modify the design and appearance of products without prior notice.

# 1 Introduction and safety regulations

## 1.1 General

This Workshop Manual provides a comprehensive description of how to trouble shoot, repair and test the chain saw. A description of different safety steps that must be taken during repair work is also given.

## 1.2 Safety

**Note: The section dealing with safety must be read and understood by all those carrying out repair work or service on the chain saw.**

Warning symbols can be found in this Workshop Manual and on the chain saw. See "Symbols on the saw" and "Symbols in the Workshop Manual". A new warning symbol decal must be applied as soon as possible if a warning symbol on the chain saw has been damaged or is missing so that the greatest level of safety can be maintained when using the chain saw.

## 1.3 Target group

This Workshop Manual is written for personnel with general knowledge about the repair and service of chain saws.

The Workshop Manual must be read and understood by personnel who will carry out repair work and service on the chain saw. The Manual is also suitable for use when training new employees.

## 1.4 Changes

Any modifications to the chain saw will be gradually introduced into ongoing production. As these modifications affect service and/or spare parts, specific service information will be sent out on each occasion. This means that in time this Workshop Manual will become out of date. In order to prevent this, the Manual should be read together with all service information concerning the chain saw in question.

## 1.5 Tools

Special tools are required for some stages. All service tools are listed in the Workshop Manual. Usage is made apparent in each section.

**Always use original Husqvarna:**

- Spare parts
- Service tools
- Accessories

## 1.6 Structure

This Workshop Manual can be used in two different ways:

- For the repair of a particular system on the chain saw.
- Dismantling and assembly of the entire chain saw.

### Repair of a specific system

When a particular system on the chain saw is to be repaired, proceed as follows:

1. Look up the page for the system in question.
2. Carry out the following steps:

- Dismantling
- Assembling

## 1.7 General instructions

The workshop where the chain saw is to be repaired must be equipped with safety devices in accordance with local regulations.

No one may repair the chain saw unless they have read and understood the content of this Workshop Manual.

This Workshop Manual contains the following warning boxes in relevant places.



### WARNING!

**The warning box warns of the risk of personal injury if the instructions are not followed.**

### NOTE!

**This box warns of material damage if the instructions are not followed.**

## 1.8 Special instructions

When using compressed air, do not direct the jet towards your body. Air can penetrate into the blood circulation, which means mortal danger.

Use hearing protection when test running.

Bar, chain and drive wheel cover must be assembled before the saw is started.

Insufficient chain lubrication can result in chain breakage, which can cause serious or even fatal injury.

Check that the brake is applied when removing the compression spring on the chain brake. Otherwise the pressure spring can fly out and cause personal injury.

Check the chain brake after repair work, see "Assembling chain brake/Function check".

Check the chain catcher and replace it if it is damaged.

## 1.9 Symbols on the saw

The symbols below are embedded on the chain saw.



Filling with chain oil



Indication of chain direction

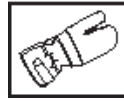


Chain brake

## 1.10 Symbols in the Workshop Manual



This symbol warns of personal injury when the instructions are not followed.



Use protective gloves.



Use protective goggles.

## 2 Service tools

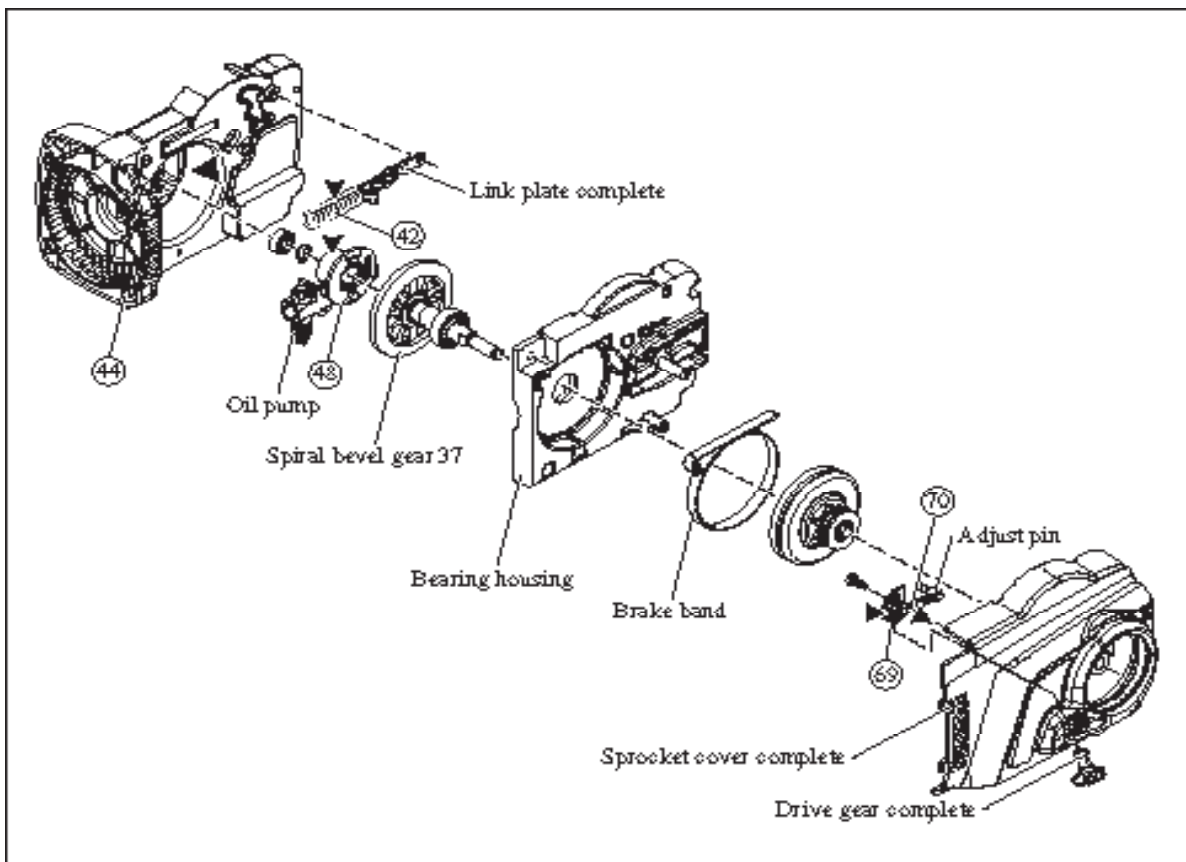
### 2.1 Necessary Repairing Tools

Art. No.	Description	Use for
5310048-67	Puller for crankshaft bearing	Puller dismatling the crankshaft

### 2.2 Lubrication

Apply **Husqvarna Multi Advanced Grease, 588 81 48-01**, to the following portions designated with the black triangle to protect parts and product from unusual abrasion.

Item No.	Description	Portion to lubricate	Amount
42	Compression spring 9	Coil portion	A little
44	Gear housing	Gear room where Spiral bevel gear 37 engages with spiral bevel gear 12 of Armature	5g approx.
48	Worm gear	Gear teeth which engages with Oil pump	A little
69	Straight bevel gear 14	Gear teeth which engages with Drive gear completet	A little
70	Adjust screw	Thread portions	A little



## 3 Disassembly/ Assembly

### 3.1 Oil pump complete, Front hand guard complete

#### DISASSEMBLING



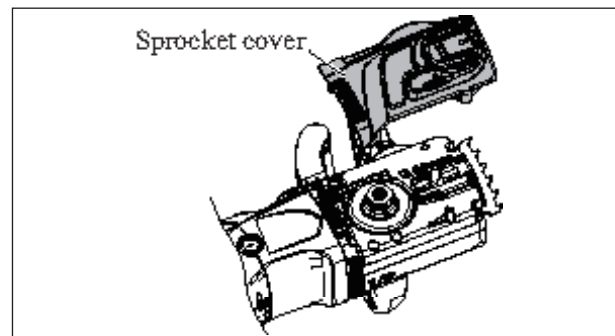
**Warning!**

Unplugg the machine from the power source.  
Remove Saw chain and Guide bar from the machine for safety before repair/ maintenance.

(1) Disassemble Gear housing cover side after removing Sprocket cover, Front handle and Spike bumper.

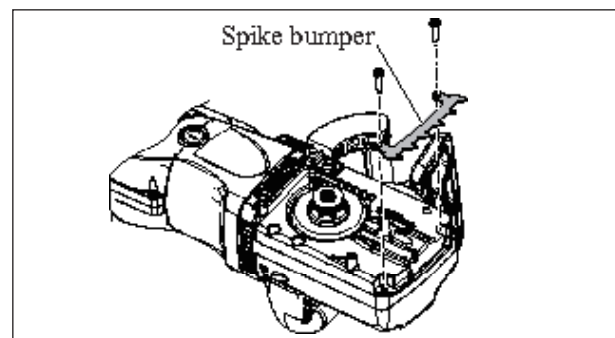
**1**

Remove Sprocket cover.



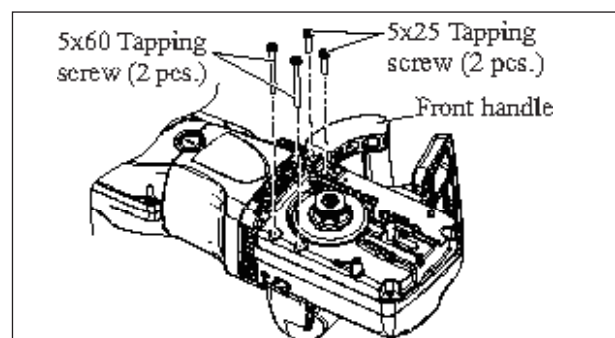
**2**

Loosen two Tapping screws 5x25 to remove Spike bumper.



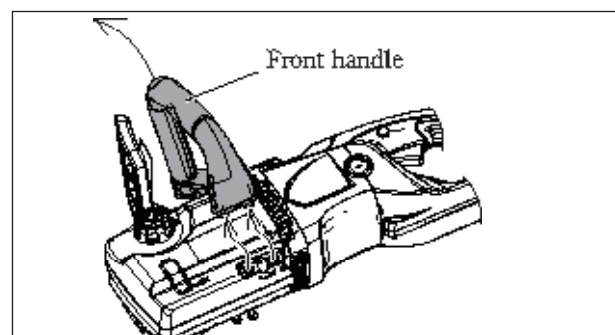
**3**

Loosen two Tapping screws 5x25 and two Tapping screws 5x60 to remove Front handle from the machine.

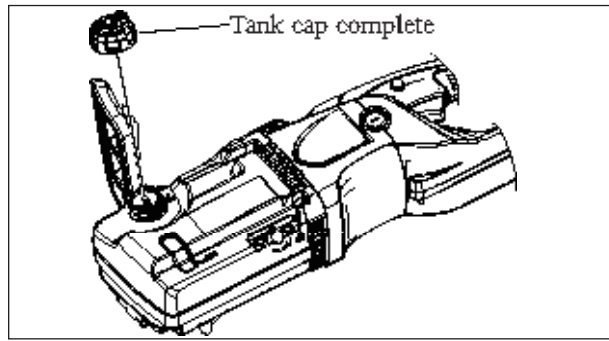


**4**

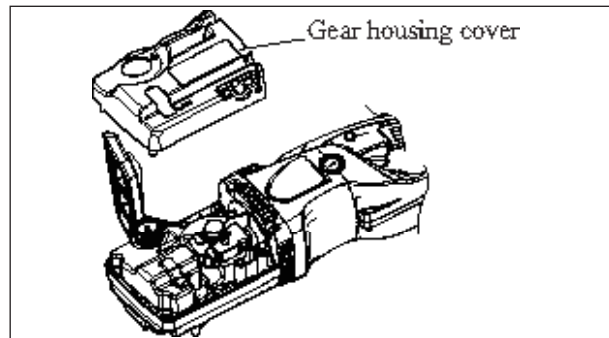
Turn over the machine and remove the Front handle.



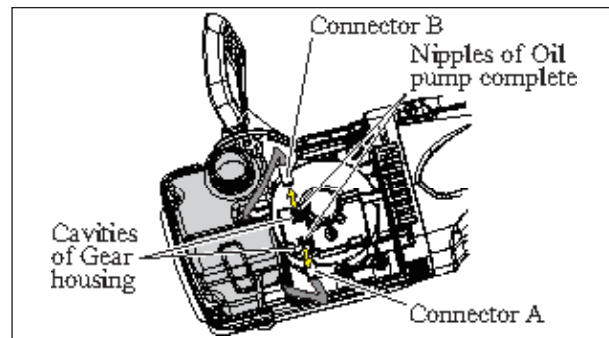
5  
Remove Tank cap complete.



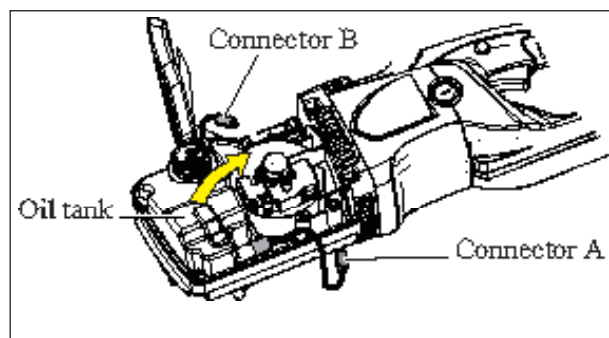
6  
Remove Gear housing cover.



7  
Pull out Connector A straight from the nipple of Oil pump complete through Gear housing.

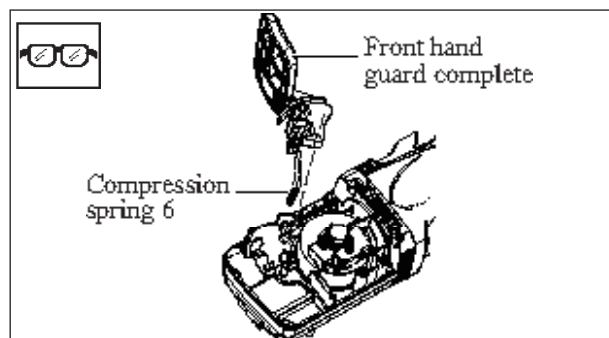


8  
Remove Connector B when removing Oil tank complete.



9  
Remove Front hand guard complete.

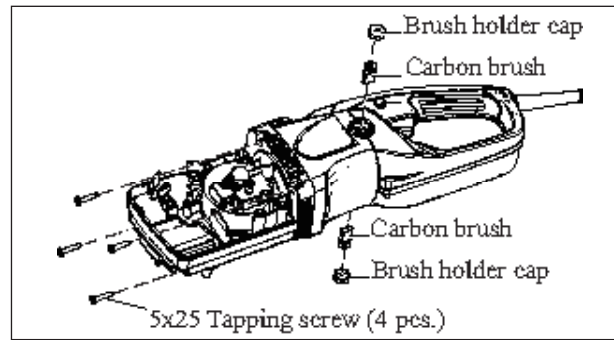
**Note:** Be careful not to pop out Compression spring 6.





10

Remove Brush holder caps and Carbon brushes from the machine.

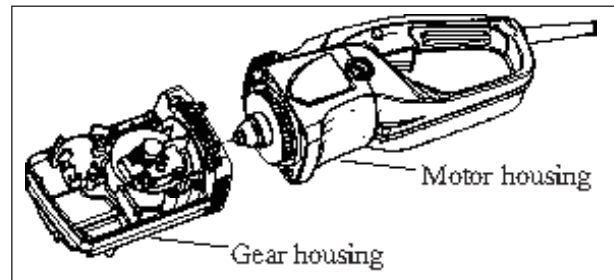


11

Remove four Tapping screws 5x25.

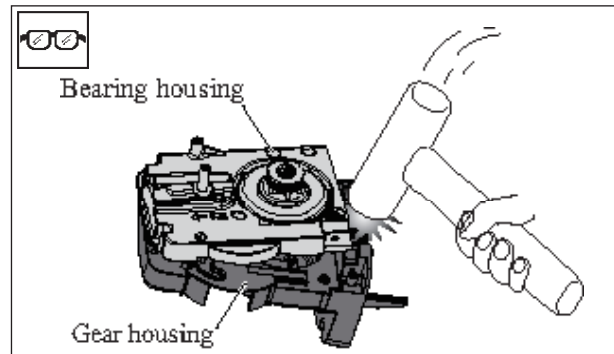
12

Separate Motor housing from Gear housing.



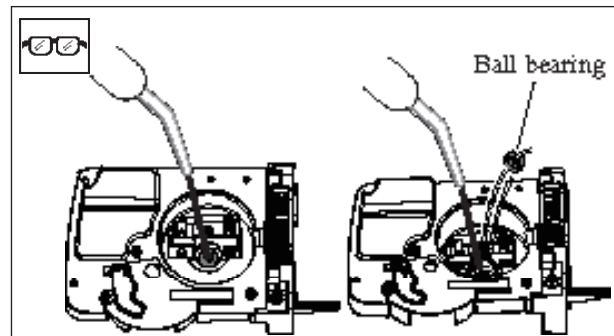
13

Remove Bearing housing from Gear housing by tapping the edge of Gear housing with a plastic hammer.



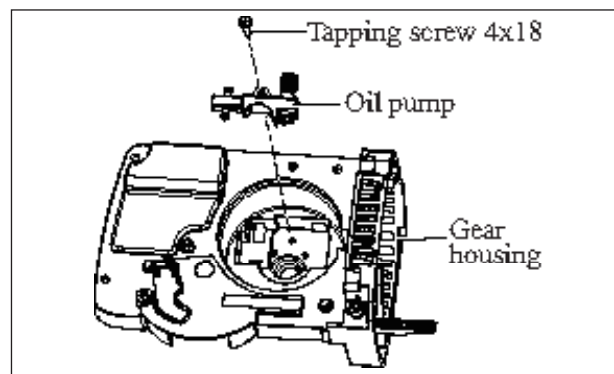
**Note:**

If Ball bearing is left in Gear housing. Send compressed air to the hole with an air duster.



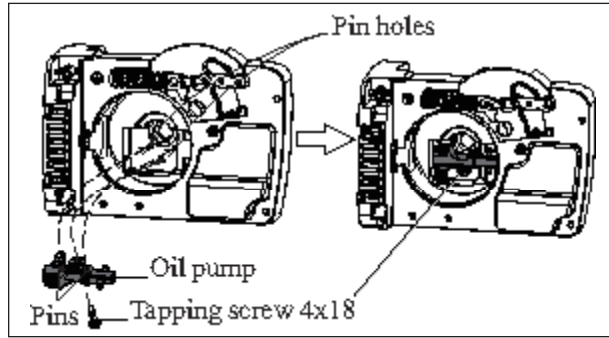
14

Disassemble Oil pump complete from Gear housing by loosening Tapping screws 4x18.

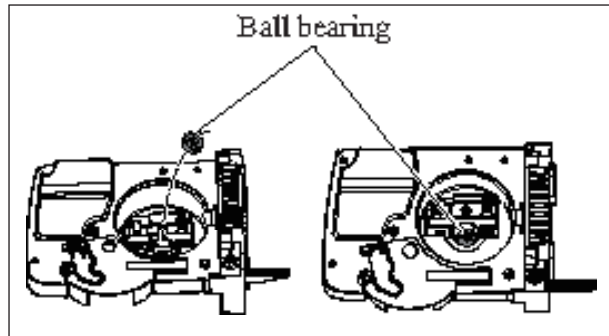


ASSEMBLING

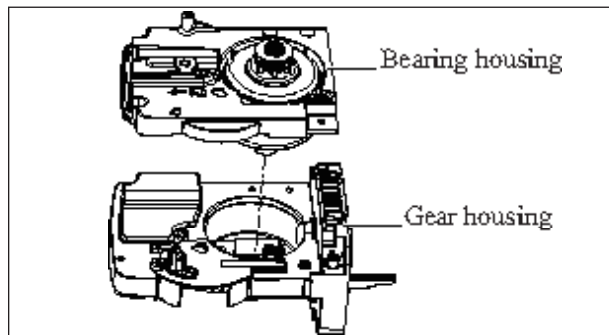
1  
Fit two pins of Oil pump complete into the cavities of Gear housing.



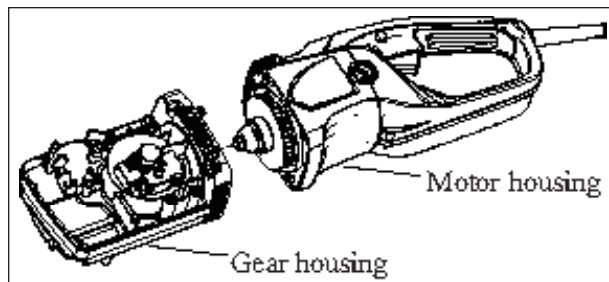
**Note:**  
If the Ball bearing was blown out, assemble the Ball bearing in the Gear housing.



3  
Assemble Bearing housing to Gear housing.

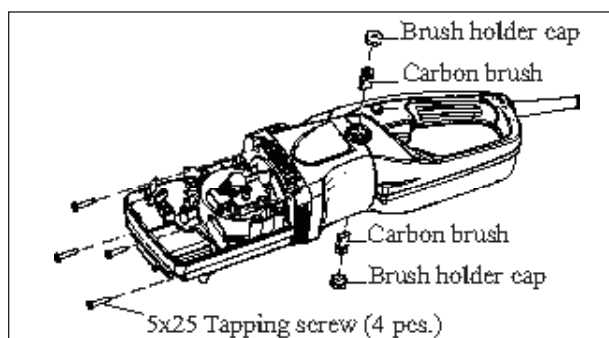


4  
Assemble Motor housing to Gear housing.



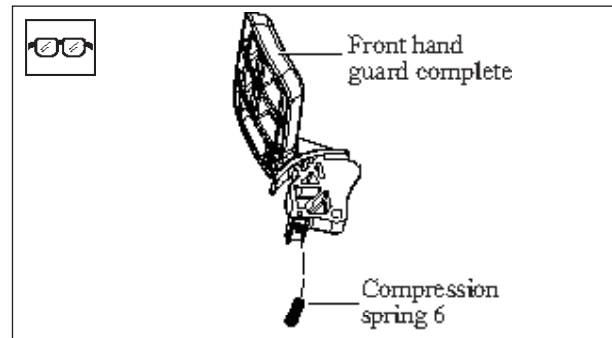
5  
Fit and tighten the four Tapping screws 5X25.

6  
Assemble the Carbon brushes and Brush holder caps on the machine.



**Note:**

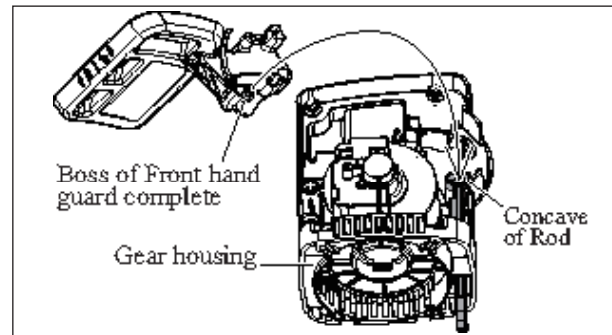
Fit the compression spring 6 on the Front hand guard.

**7**

Fit the Boss of Front hand guard complete into the concave of Rod.

**8**

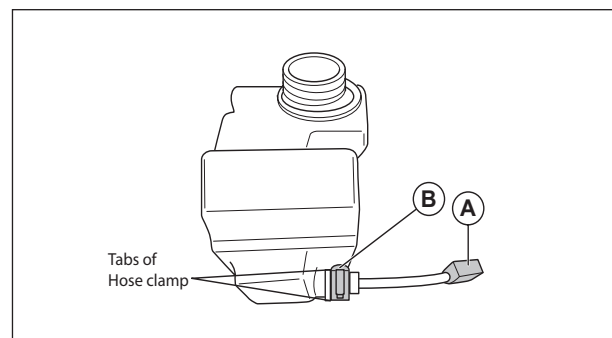
Assemble the Front hand guard complete to Gear housing.

**9**

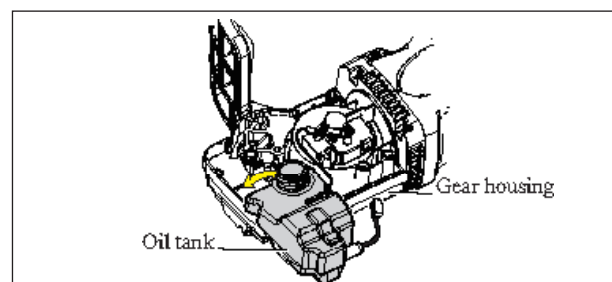
Fit the Connector A to Oil tank.  
Oil tank view from Gear housing cover side.

Hose of Connector A has to be connected to Oil tank so that the flat portion of Connector A faces toward Gear housing cover side.

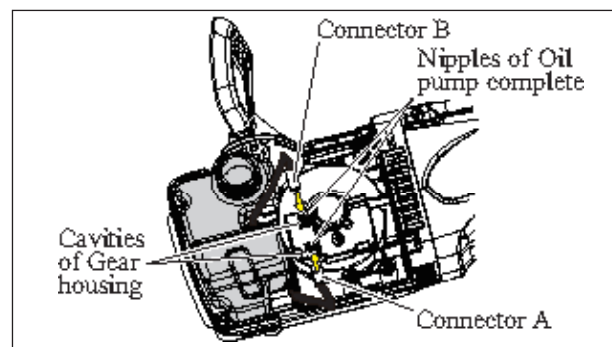
Clamp the hose of Connector A with Hose clamp B while facing the tap of Hose clamp toward Gear housing cover side.

**10**

Assemble the Oil tank in the Gear housing.

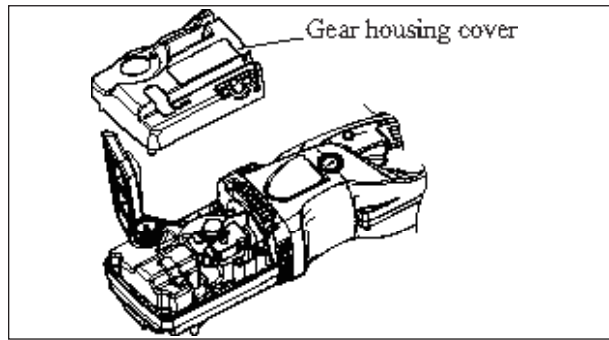
**11**

Fit the Connectors A and B to the nipples of Oil pump complete.



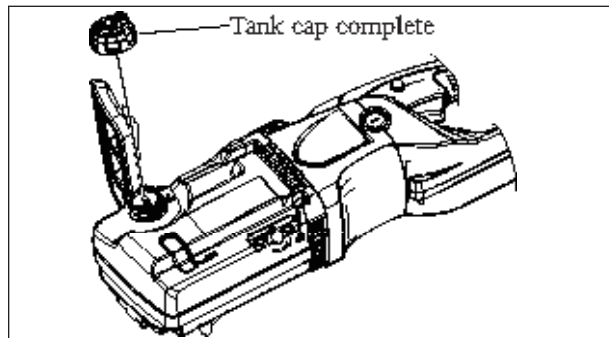
**12**

Mount Gear housing cover.



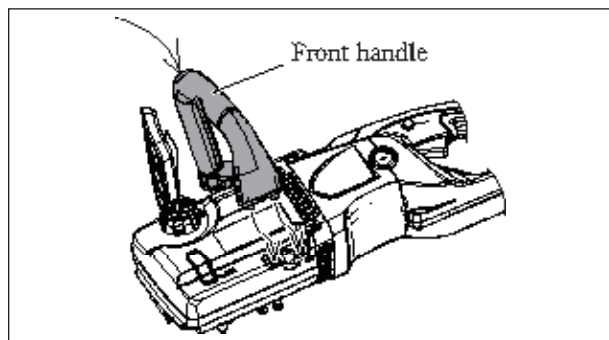
**13**

Mount Tank cap complete.



**14**

Mount the Front handle on the machine.

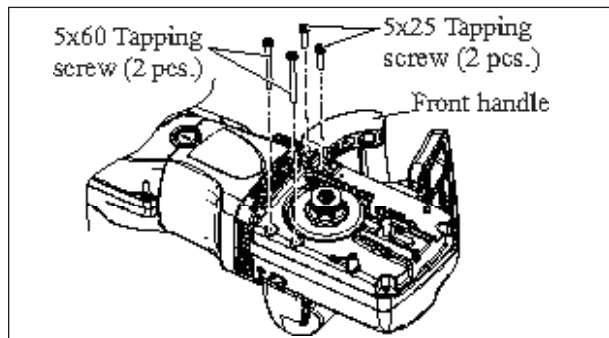


**15**

Turn over the machine.

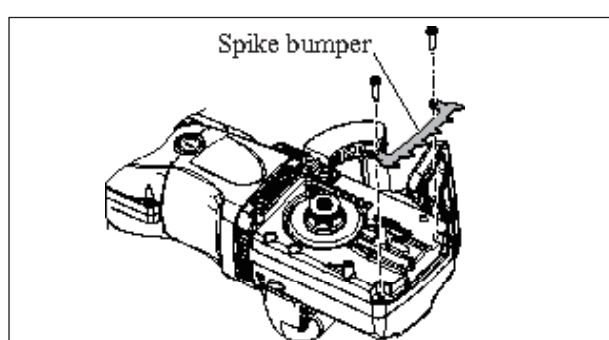
**16**

Fit and tighten the two Tapping screws 5x25 and two Tapping screws 5x60 to fit Front handle to the machine.



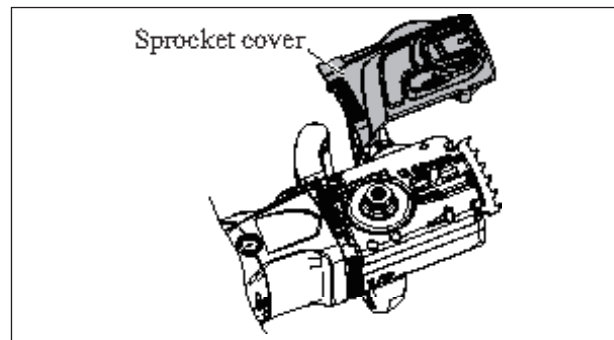
**17**

Mount the Spike bumper with the two Tapping screws 5x25. Tighten the screws.



18

Mount Sprocket cover.



### 3.2 Armature, Spiral bevel gear 12 and 37

#### DISASSEMBLING



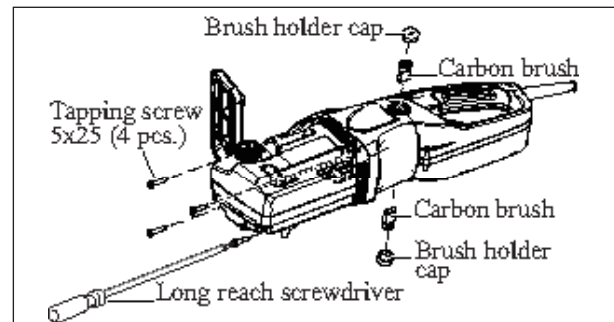
#### Warning!

Unplug the machine from the power source.  
Remove Saw chain and Guide bar from the machine for safety before repair/ maintenance.

(1) Disassemble Sprocket cover, Front handle and Spike bumper, see Chapter 3.1.

1

Remove Brush holder caps and Carbon brushes from the machine.

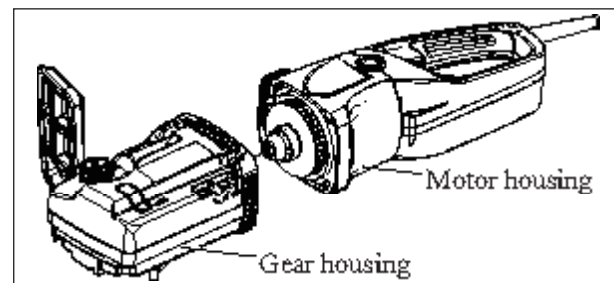


2

Unscrew the four Tapping screws 5x25. Use a longer reach screwdriver.

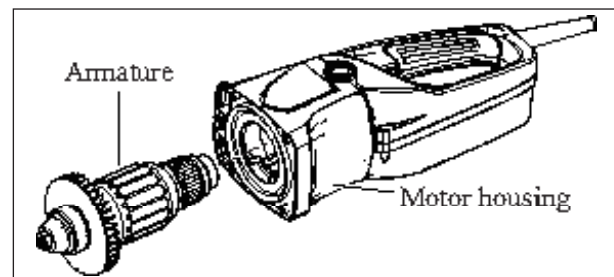
3

Separate Motor housing from Gear housing.



4

Pull out the Armature from Motor housing.

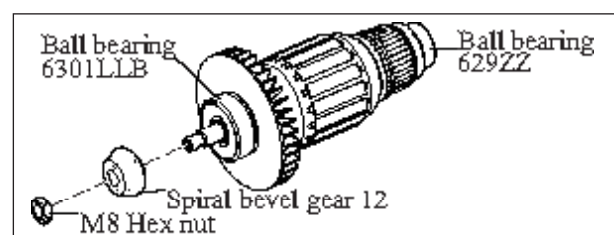


5

Remove Spiral bevel gear 12 by unscrewing M8 Hex nut.

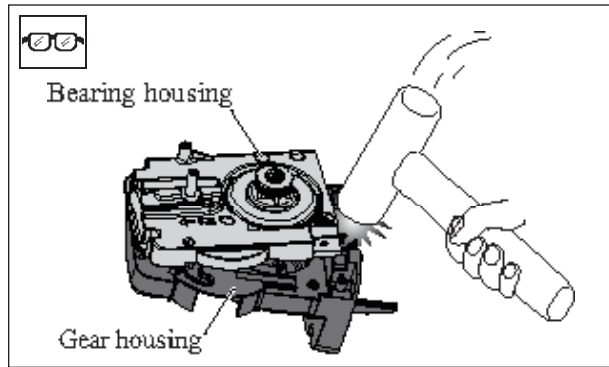
6

Remove Ball bearings from Armature with bearing extractor.



7

Remove Bearing housing from Gear housing by tapping the edge of Gear housing with a plastic hammer.

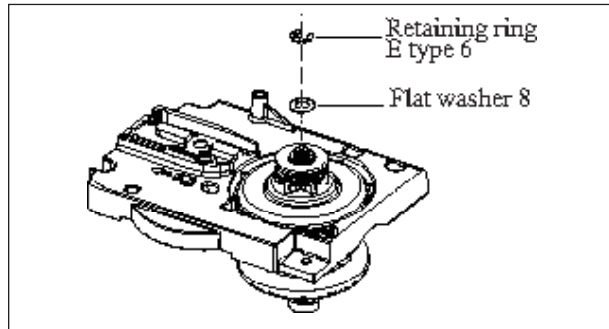


**Note:**

Spiral bevel gear 37 on Bearing housing cannot be disassembled without removing Armature.

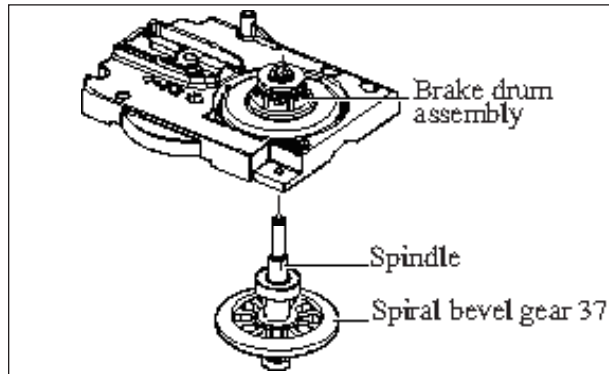
8

Remove the Retaining ring E type 6 and Flat washer 8.



9

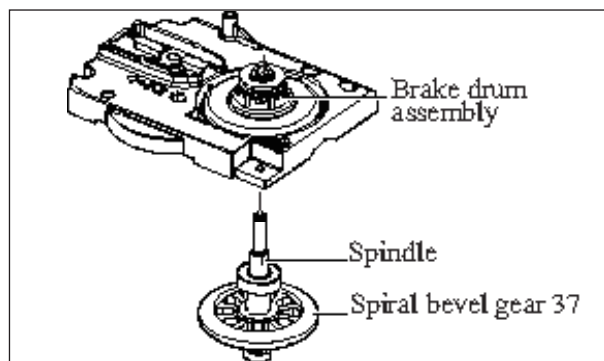
Disassemble the entirely Spindle and Spiral bevel gear 37 from Brake drum assembly on Bearing housing.



## ASSEMBLING

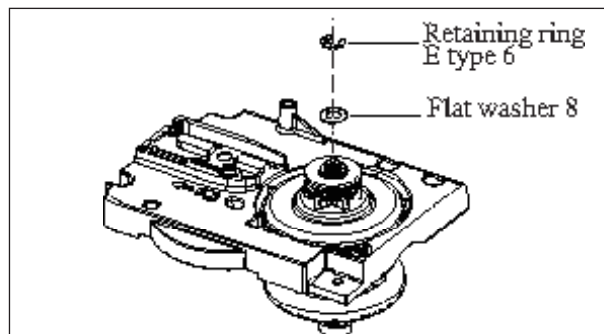
1

Fit the Brake drum assembly on Spindle and Spiral bevel gear 37.



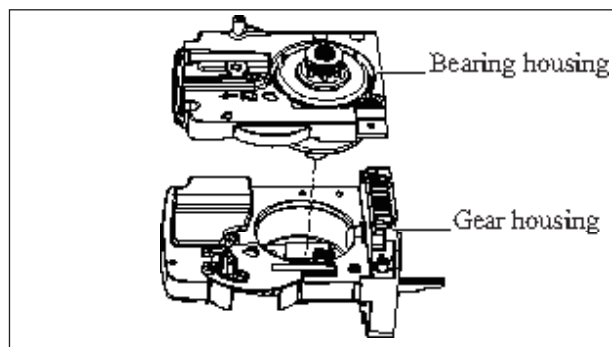
2

Fit the Flat washer 8 and Retaining ring E type 6 on the Spindle.



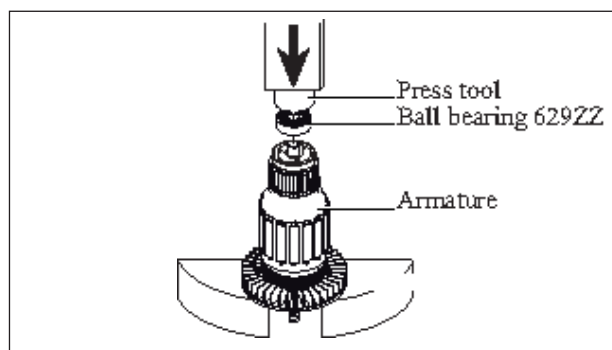
3

Assemble Bearing housing to Gear housing.



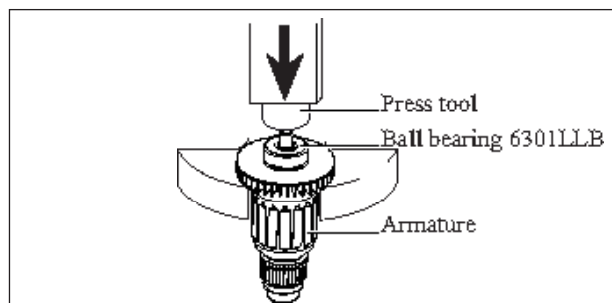
4

Press Ball bearing 629ZZ on the Armature with an arbor press and a press tool for ball bearings

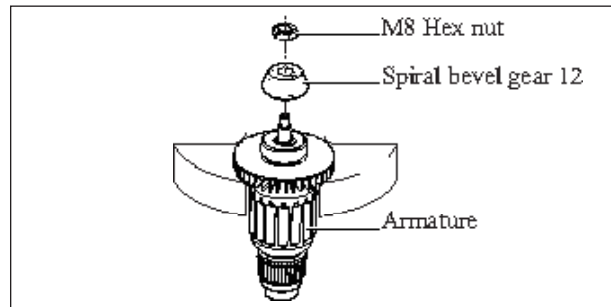


5

Press Ball bearing 6301LLB on the Armature with an arbor press and a press tool for ball bearings.

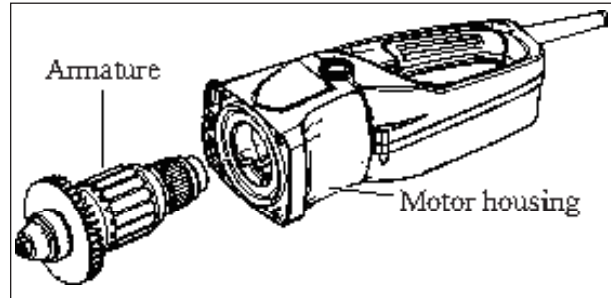


**6**  
Fit the Spiral bevel gear on the Armature.

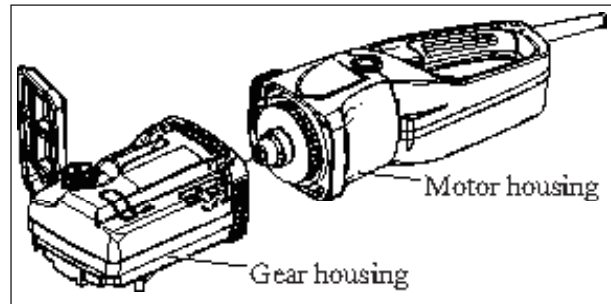


**7**  
Mount the M8 Hex nut and tighten with tightening Torque 7.4-15 Nm.

**8**  
Mount the Armature in the Motor housing.

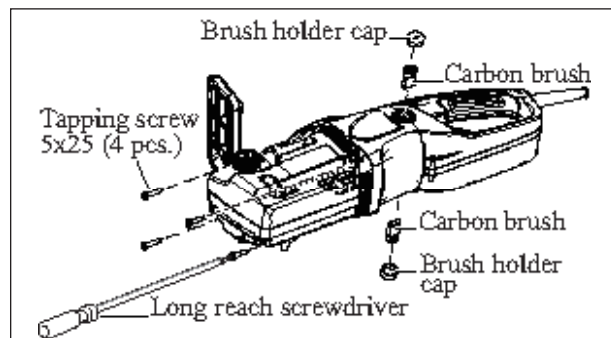


**9**  
Assemble Motor housing to Gear housing.



**10**  
Fit and tighten the four Tapping screws 5x25.  
Use a longer reach screwdriver.

**11**  
Assemble the Carbon brushes and Brush holder caps on the machine.





### 3.3 Brake mechanism

#### DISASSEMBLING



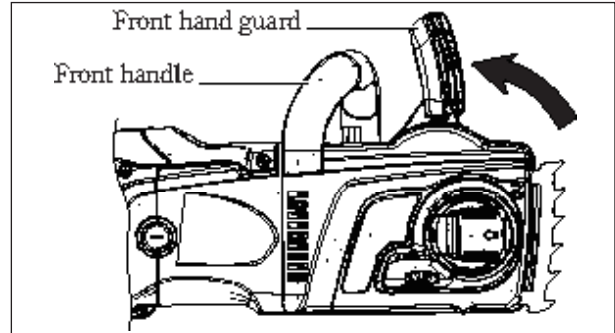
**Warning!**

Unplug the machine from the power source.  
Remove Saw chain and Guide bar from the machine for safety before repair/ maintenance.

(1) If Front hand guard is damaged, replace it with a new one. See Chapter 3.1.

**1**

Release brake by turning Front hand guard to Front handle side.

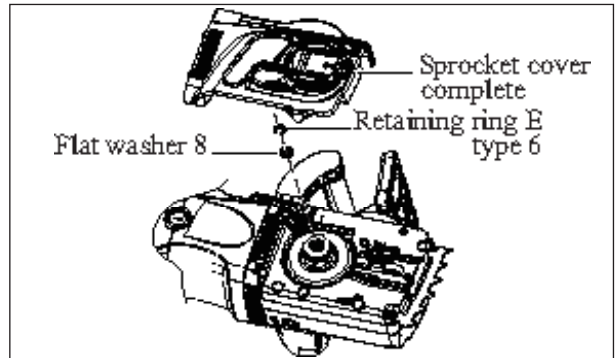


**2**

Remove Sprocket cover.

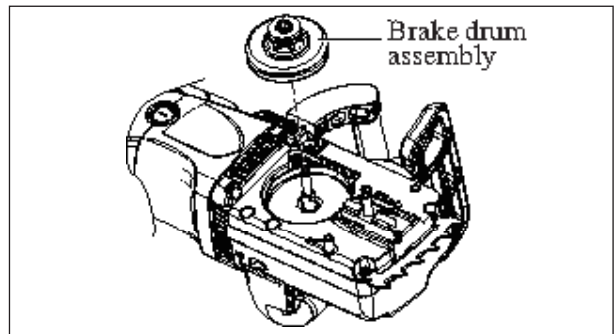
**3**

Remove the Retaining ring E type 6 and Flat washer 8.



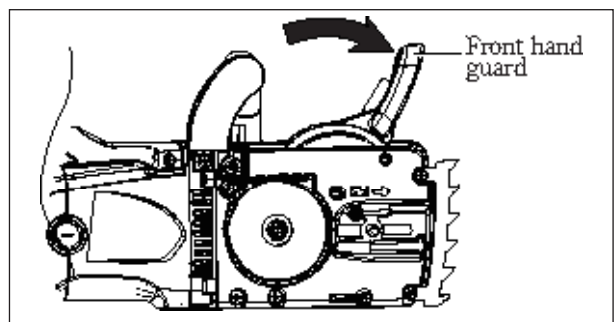
**4**

Remove Brake drum assembly (Sprocket) from the machine.

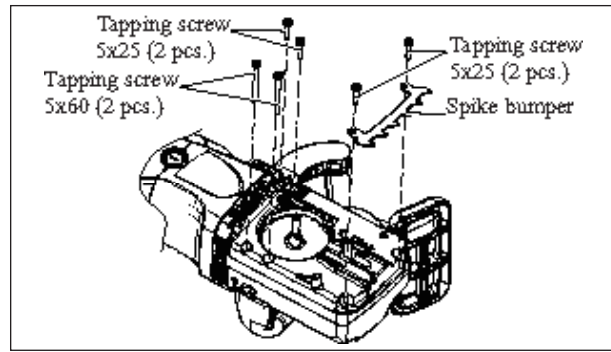


**5**

Push Front hand guard to activate the saw chain brake.

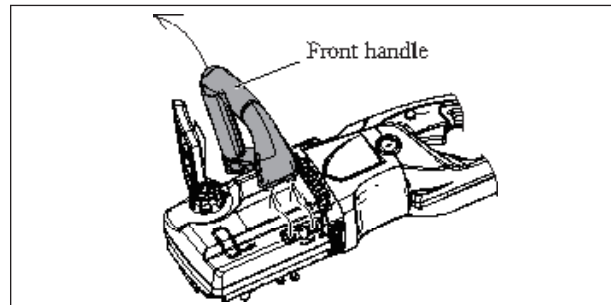


**6**  
Remove the Spike bumper by unscrewing the two Tapping screws 5x25.

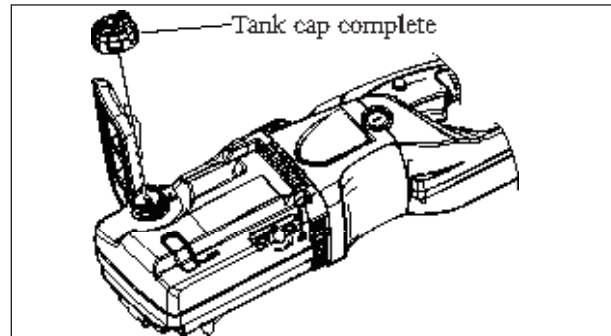


**7**  
Loosen two Tapping screws 5x25 and two Tapping screws 5x60.

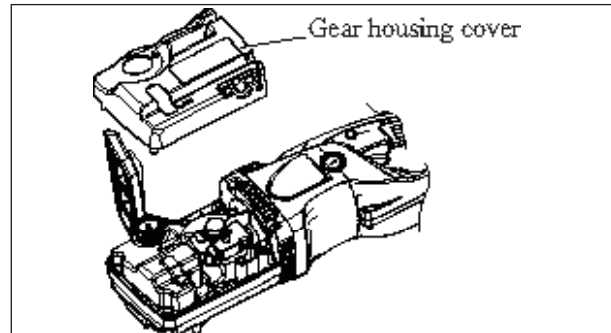
**8**  
Turn over the machine and remove Front handle.



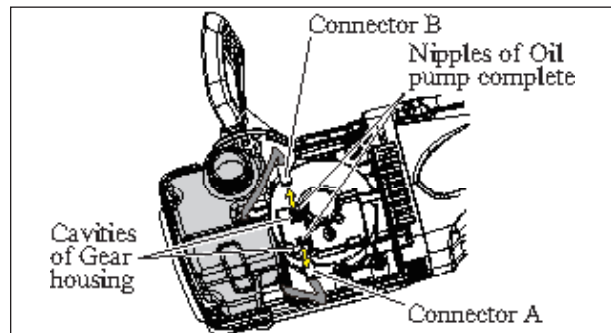
**9**  
Remove Tank cap complete.



**10**  
Remove Gear housing cover.

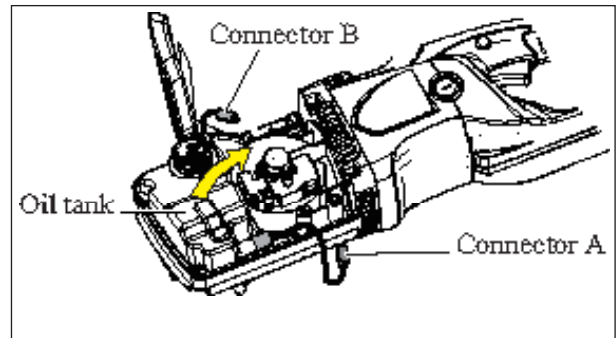


**11**  
Pull out Connector A straight from the nipple of Oil pump complete through Gear housing.



12

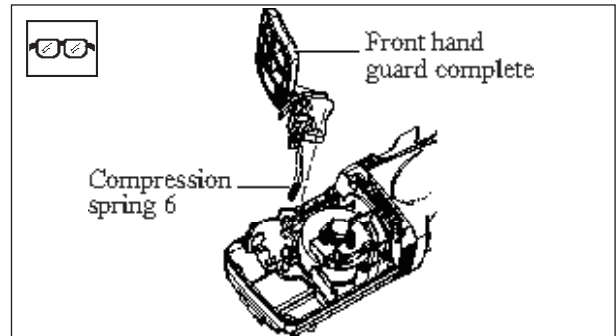
Remove Connector B when removing Oil tank complete.



13

Remove Front hand guard complete.

**Note:** Be careful not to pop out Compression spring 6.

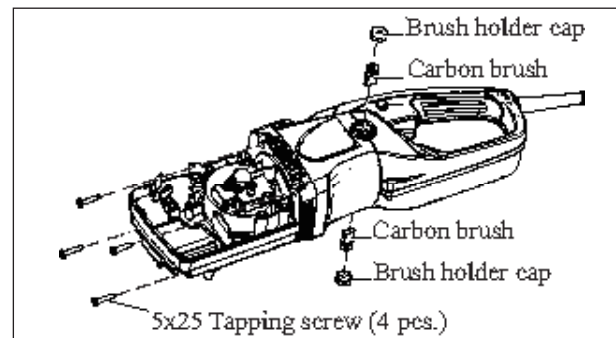


14

Remove Brush holder caps and Carbon brushes from the machine.

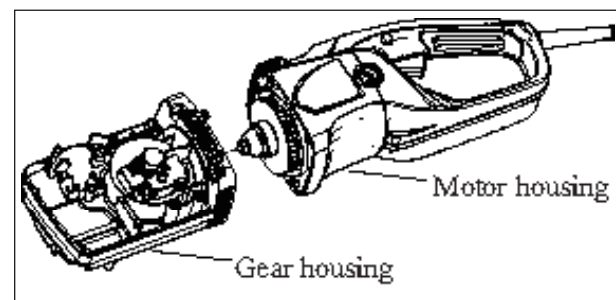
15

Remove four Tapping screws 5x25.



16

Separate Motor housing from Gear housing.

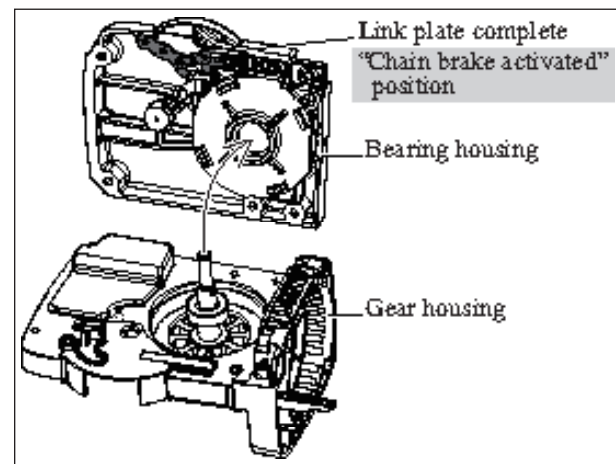


17

Remove Bearing housing from Gear housing.

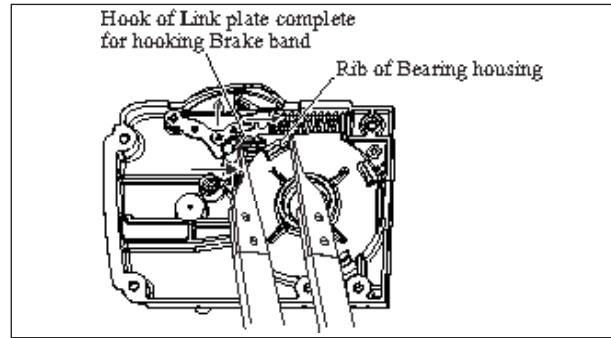
**Note:**

Be sure that Link plate complete is in "Saw chain brake activated" position, see step 5. If not, set the Link plate to that position by gripping it with a water pump pliers.



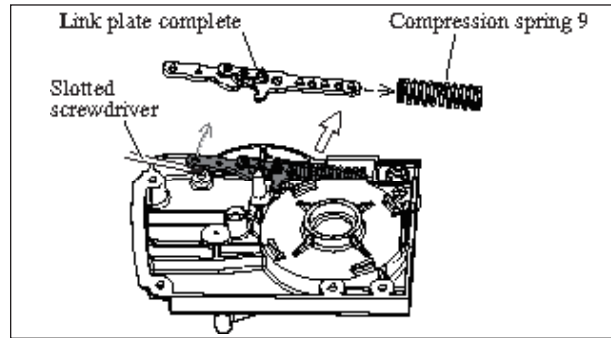
**18**

Pinch the hook of Link plate complete and the rib of bearing to free Link plate from Bearing housing.



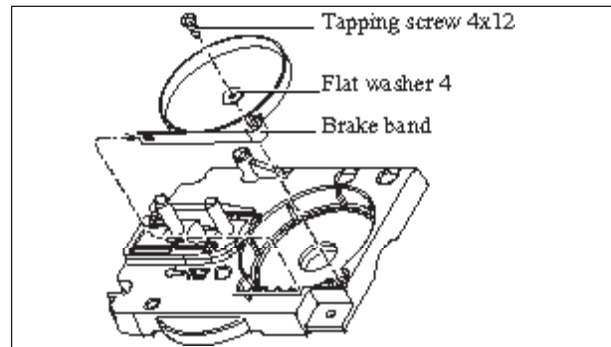
**19**

Link plate complete can now be disassembled by prying it up with a slotted screwdriver.



**20**

Remove Brake band from the opposite side of Bearing housing by unscrewing Tapping screw 4x12 with Flat washer 4.



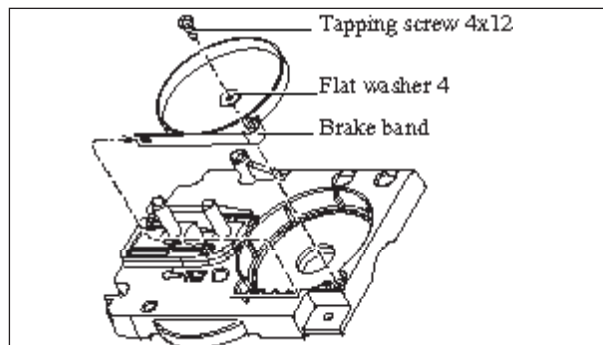
## ASSEMBLING

**1**

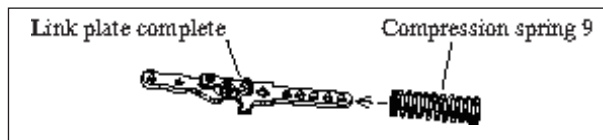
Fit the Brake band on the Bearing housing.

**2**

Fit and tighten the Tapping screw 4x12 with Washer 4.

**3**

Pass the Compression spring 9 through Link plate complete.

**4**

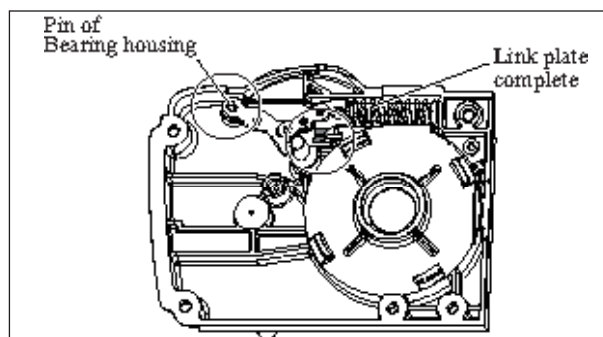
Mount the Link plate complete to Bearing housing.

**5**

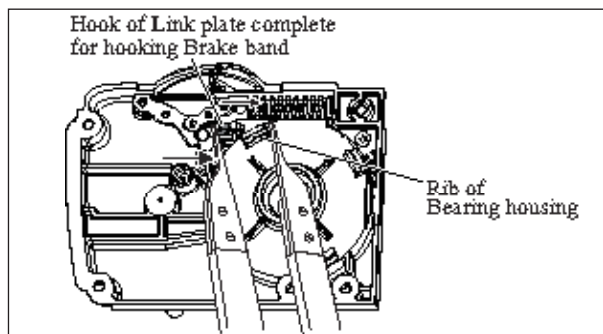
Hook the end of Brake band to the hook of Link plate complete.

**6**

Mount the round hole of Link plate complete to the pin portion of Bearing housing. Push the plate deeply until it stops.

**7**

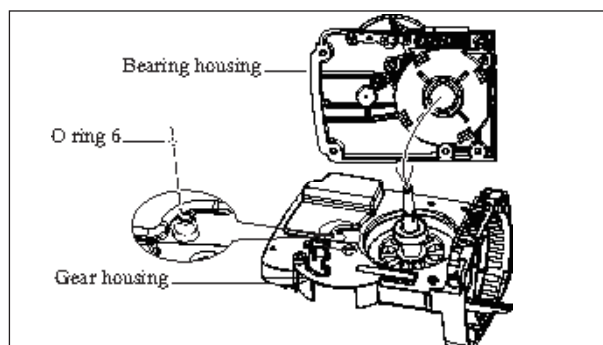
Pinch the hook of Link plate complete and the rib of Bearing housing to free Link plate from Bearing housing so that Link plate complete is in "Saw chain brake released" position.

**8**

Fit the O ring 6 on the Gear housing.

**9**

Assemble Bearing housing to Gear housing.

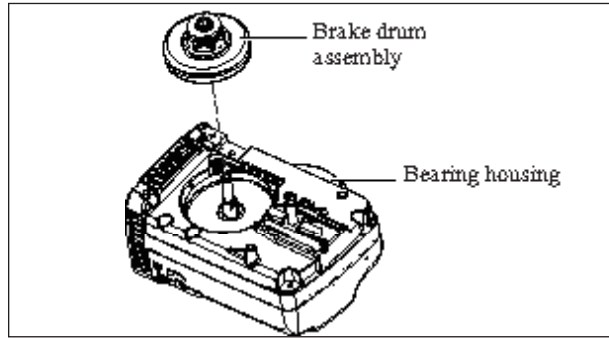


**Note:**

Be sure that Brake band is in "Saw chain brake release" condition before assembling Brake drum assembly. If not, set the Link late to that position by gripping it with a water pump pliers.

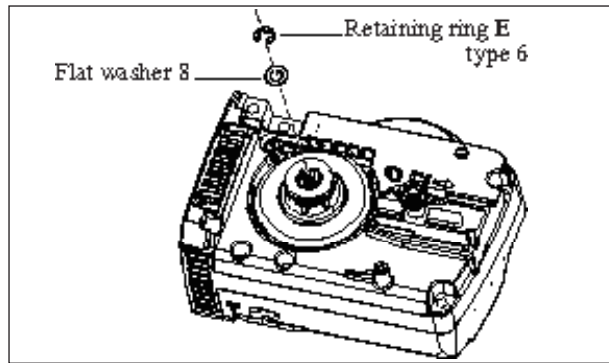
**10**

Fit the Brake drum assembly to Bearing housing.



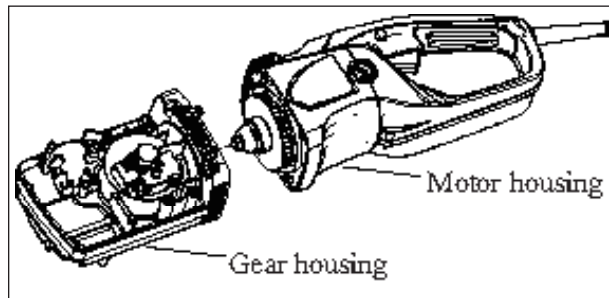
**11**

Fit the Retaining ring E type 6 and Flat washer 8.



**12**

Assemble Motor housing to Gear housing.

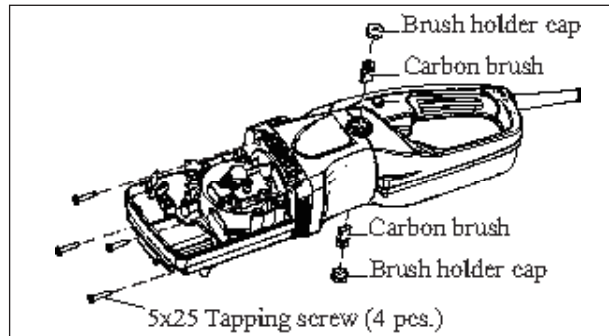


**13**

Fit and tighten the four Tapping screws 5x25. Use a longer reach screwdriver.

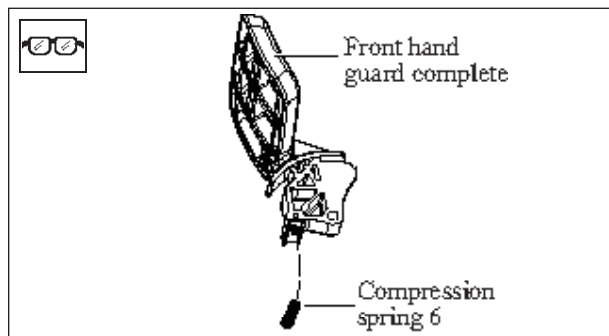
**14**

Assemble the Carbon brushes and Brush holder caps on the machine.



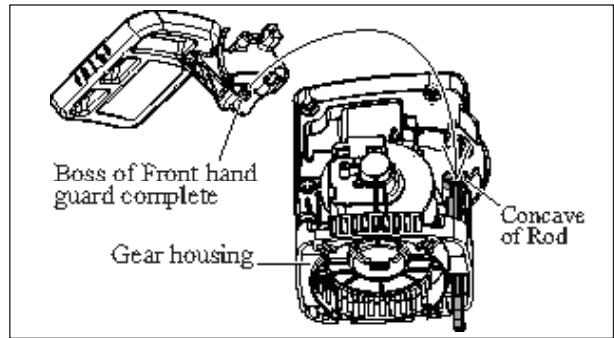
**Note:**

Fit the compression spring 6 on the Front hand guard.



**15**

Fit the Boss of Front hand guard complete into the concave of Rod.



**16**

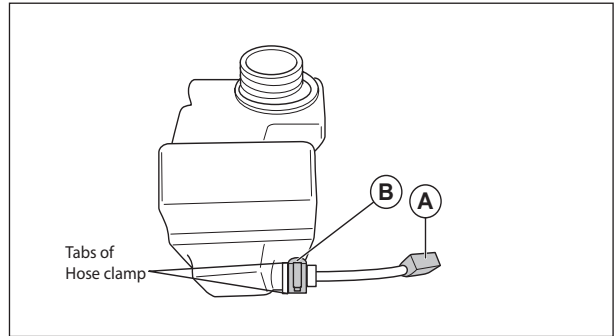
Assemble the Front hand guard complete to Gear housing.

**17**

Fit the Connector A to Oil tank.  
Oil tank view fom Gear housing cover side.

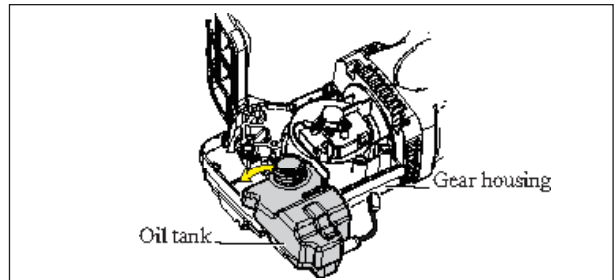
Hose of Connector A has to be connected to Oil tank so that the flat portion of Connector A faces toward Gear housing cover side.

Clamp the hose of Connector A with Hose clamp B while facing the tap of Hose clamp toward Gear housing cover side.



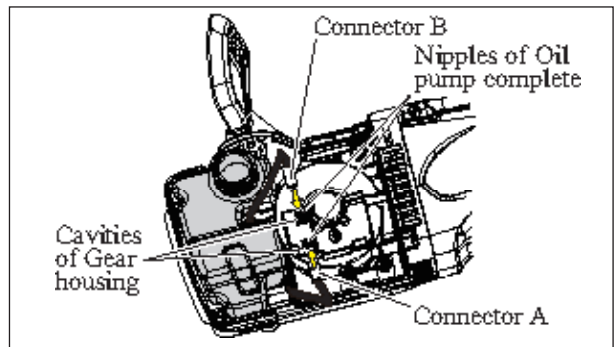
**18**

Assemble the Oil tank in the Gear housing.



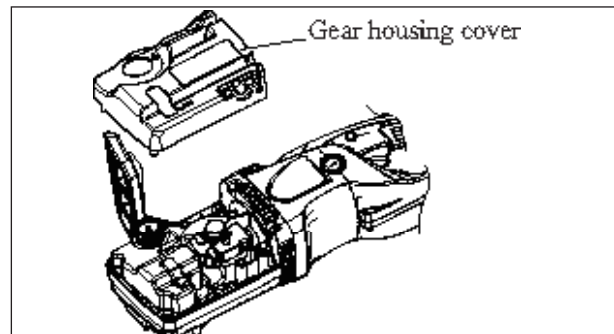
**19**

Fit the Connectors A and B to the nipples of Oil pump complete.

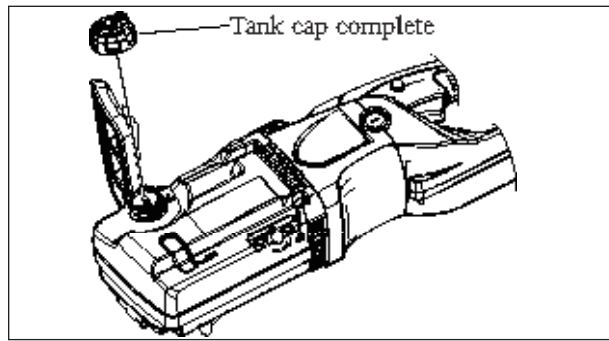


**20**

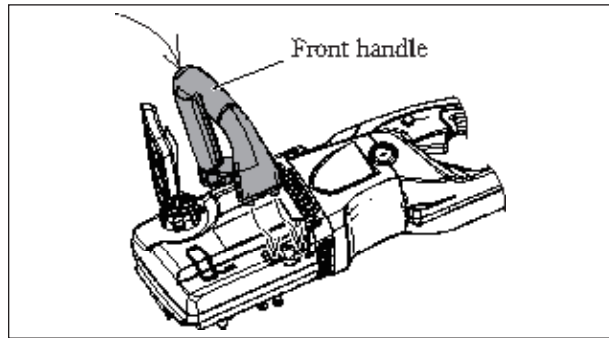
Mount Gear housing cover.



**21**  
Mount Tank cap complete.

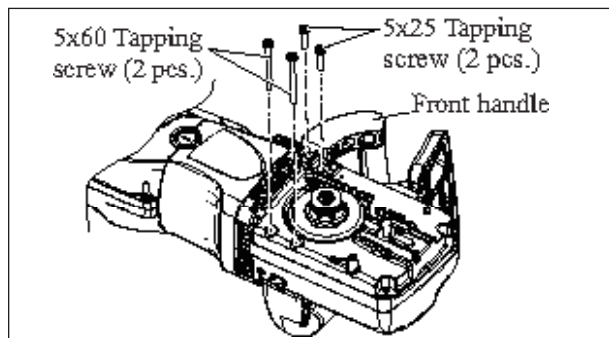


**22**  
Mount the Front handle on the machine.

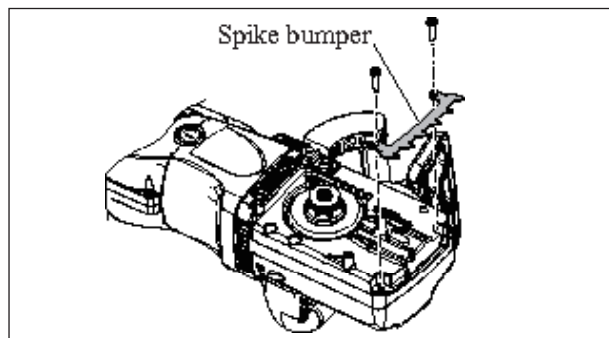


**23**  
Turn over the machine.

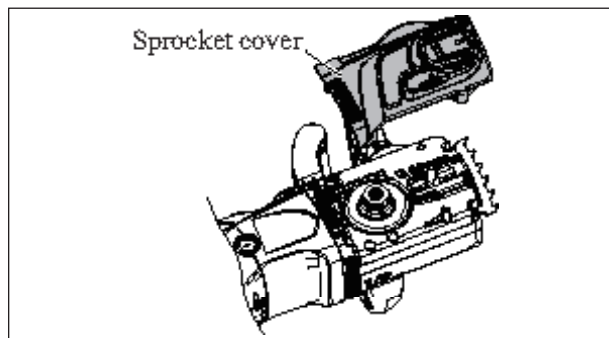
**23**  
Fit and tighten the two Tapping screws 5x25 and two Tapping screws 5x60 to fit Front handle to the machine.



**24**  
Mount the Spike bumper with the two Tapping screws 5x25. Tighten the screws.

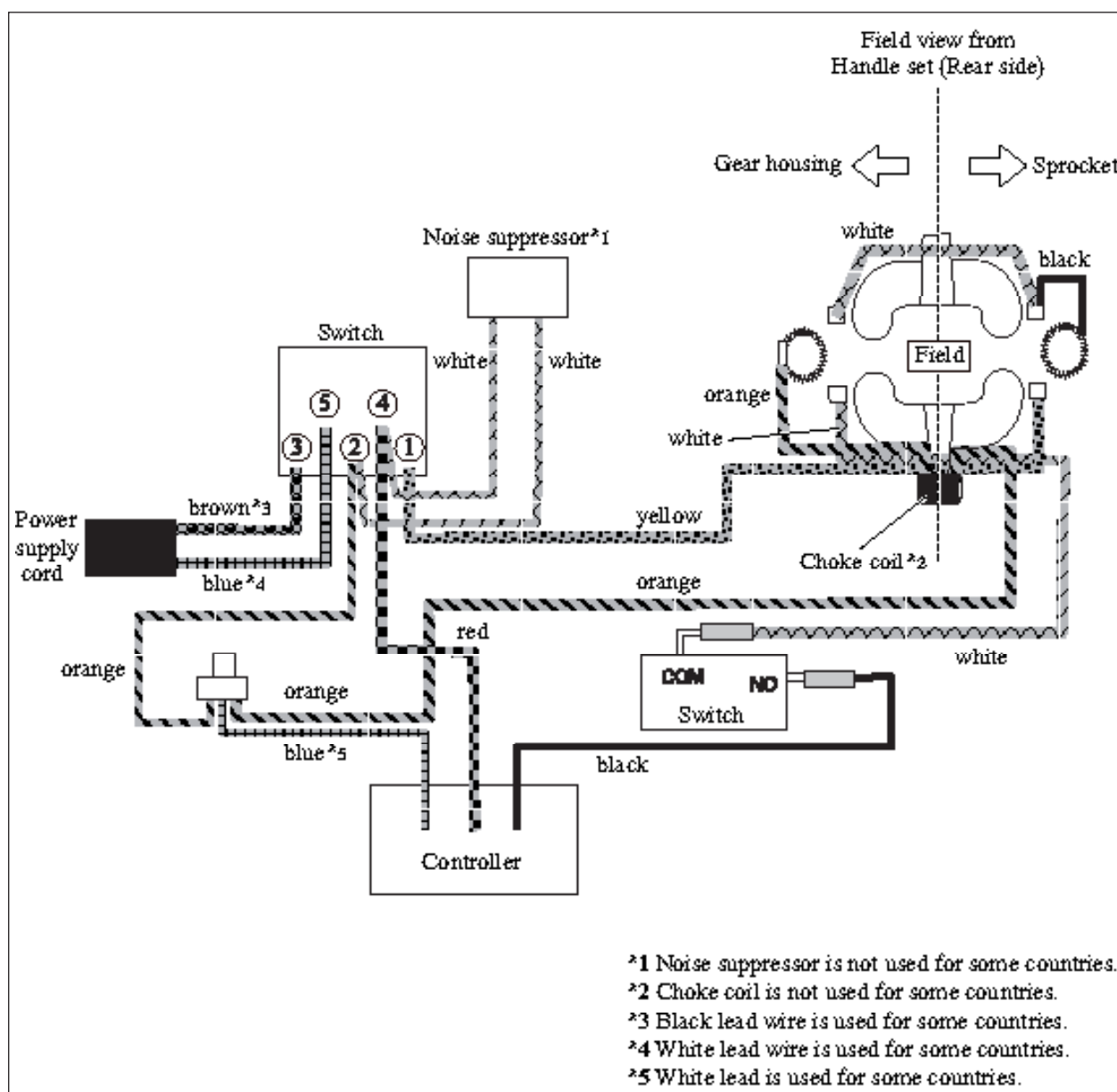


**25**  
Mount Sprocket cover.





## 4 Circuit diagram



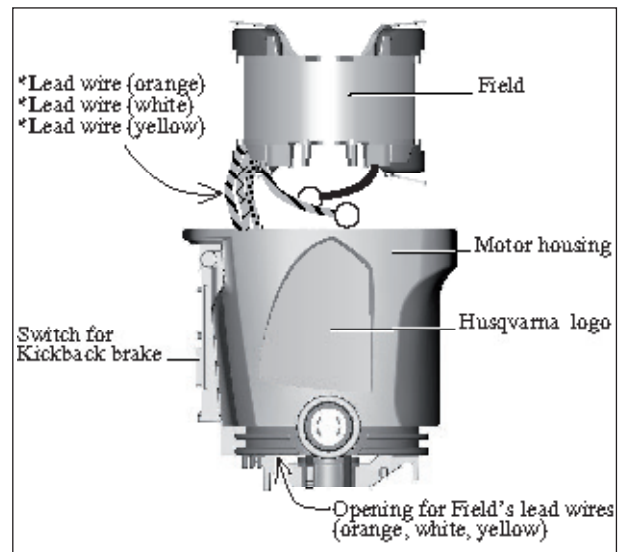
## 5 Wiring diagram

### 5.1 Wiring of Field's lead wires in Motor housing

1

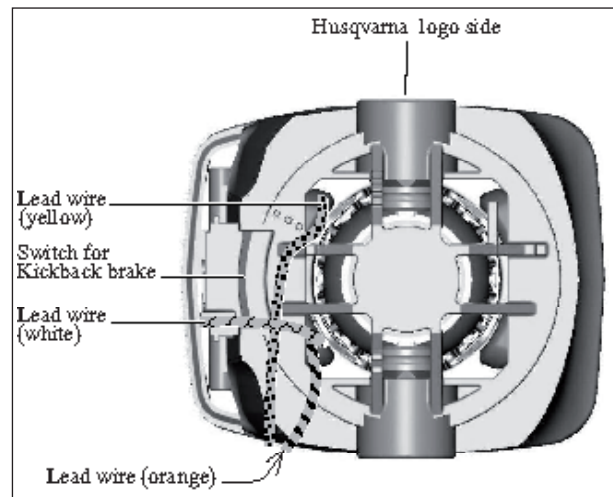
Assemble Field to motor housing while facing the following lead wires to Switch for Kickback brake side.

- \*Lead wire (orange)
- \*Lead wire (white)
- \*Lead wire (yellow)

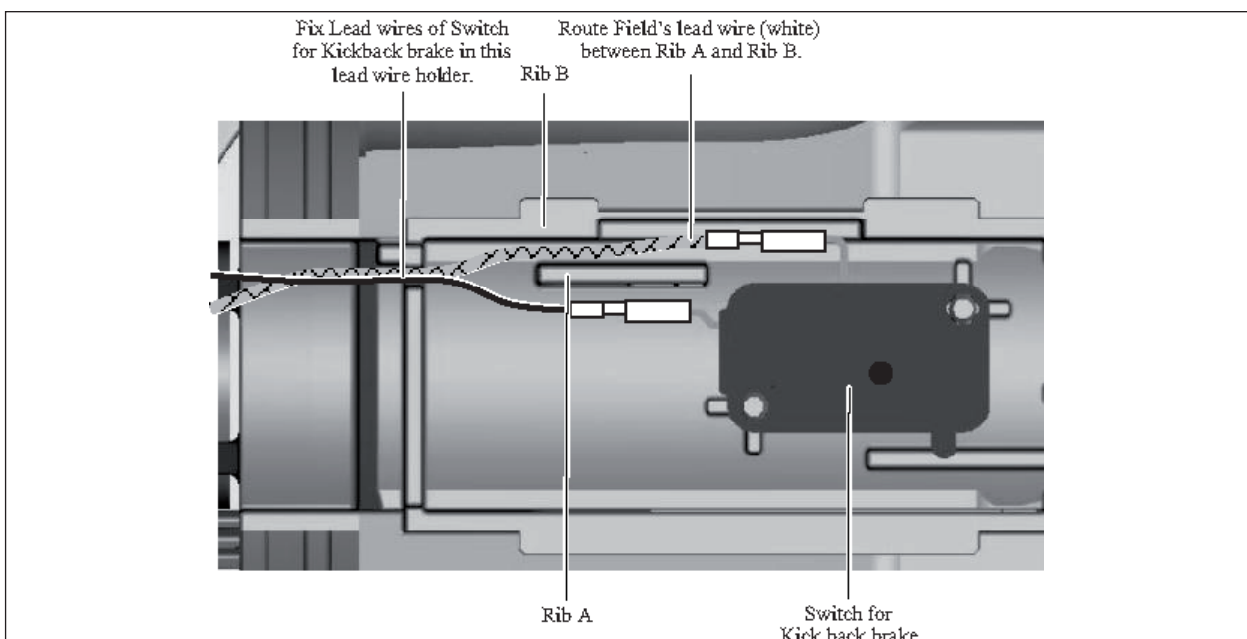


2

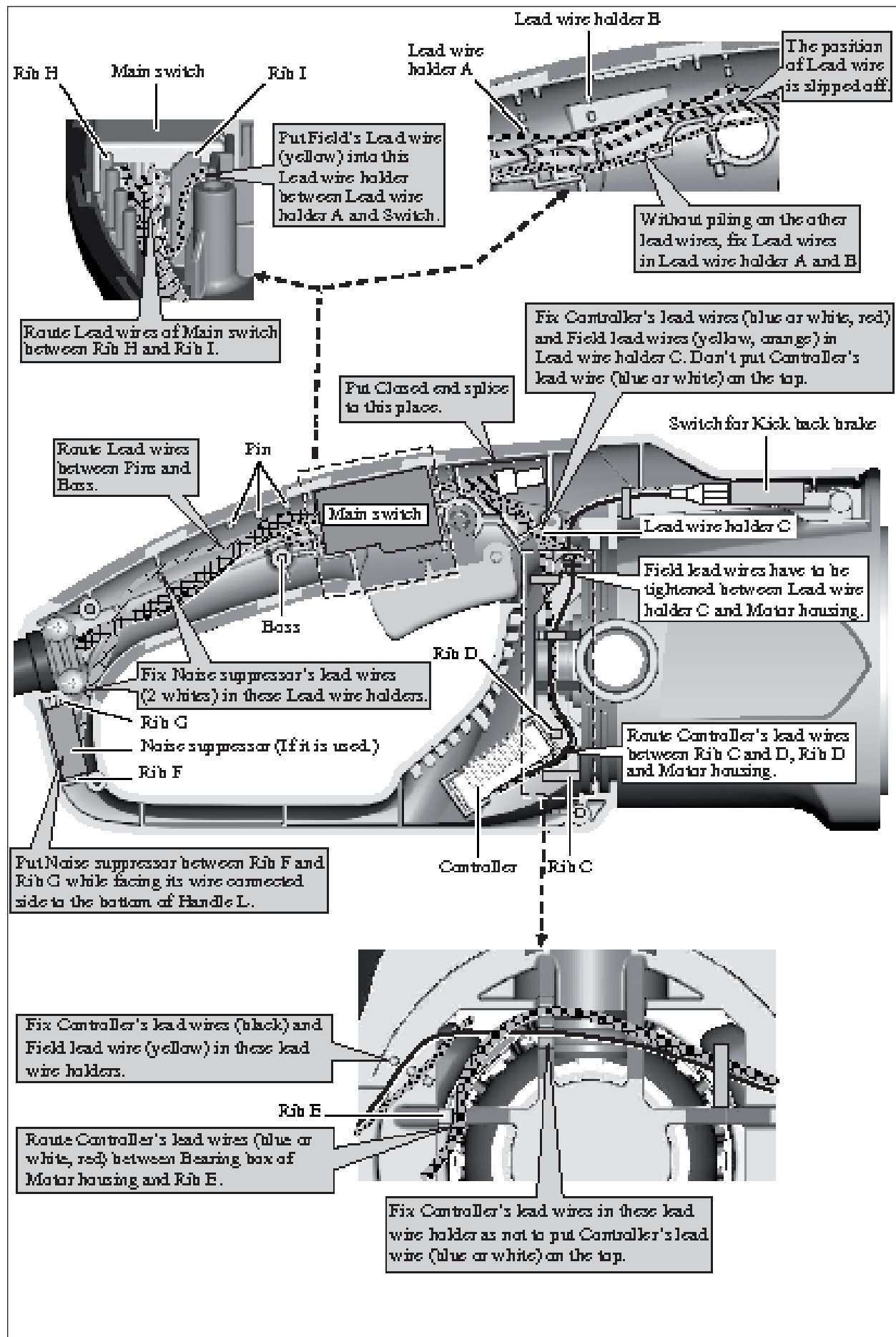
Pull out Field's lead wires (yellow, white, orange) through the holes of Motor housing.



### 5.2 Wiring of Switch for Kickback brake



### 5.3 Wiring in Handle set





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