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### 1. Introduction

This service manual contains detailed descriptions of all the typical repair and servicing procedures for this power tool.

As the design concept of models MS 341 and MS 361 is almost identical, the descriptions and servicing procedures in this manual generally apply to both models. Differences are described in detail.

You should make use of the illustrated parts lists while carrying out repair work. They show the installed positions of the individual components and assemblies.

Refer to the latest edition of the relevant parts list to check the part numbers of any replacement parts.

A fault on the machine may have several causes. To help locate the fault, consult the chapter on "Troubleshooting" and the "STIHL Service Training System".

Refer to the "Technical Information" bulletins for engineering changes which have been introduced since publication of this service manual. Technical information bulletins also supplement the parts list until an updated edition is issued. The special tools mentioned in the descriptions are listed in chapter "Special Servicing Tools" of this manual. Use the part numbers to identify the tools in the "STIHL Special Tools" manual which lists all the special servicing tools currently available from STIHL.

Symbols are included in the text and pictures for greater clarity. The meanings are as follows:

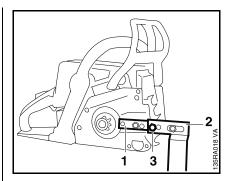
In the descriptions:

- Action to be taken as shown in the illustration (above the text)
- = Action to be taken that is not shown in the illustration (above the text)

In the illustrations:

- ➡ Pointer
- Direction of movement
- 🛄 4.2
  - Reference to another chapter, i.e. chapter 4.2 in this example.

Service manuals and technical information bulletins are intended exclusively for the use of properly equipped repair shops. They must not be passed to third parties.



Servicing and repairs are made considerably easier if the clamp (1) 5910 890 2000 is used to mount the machine on assembly stand (2) 5910 890 3100 so that one clamp screw engages the outer 10 mm hole (3) in the assembly stand.

To service the underside of the machine (e.g. remove the front handle), turn it upside down and mount it so that one clamp screw engages the inner 10 mm hole in the assembly stand.

Pull the hand guard back against the front handle for this purpose.

## Always use original STIHL replacement parts.

They can be identified by the STIHL part number, the **STIHL** logo and the STIHL parts symbol **S**. This symbol may appear alone on small parts.

### 2. Safety Precautions

If the engine is started up in the course of repairs or maintenance work, observe all local and countryspecific safety regulations as well as the safety precautions and warnings in the instruction manual.

Gasoline is an extremely flammable fuel and can be explosive in certain conditions.

Improper handling may result in burns or other serious injuries.

### Warning!

Do not bring any fire, flame, spark or other source of heat near the fuel. All work with fuel must be performed outdoors only. Spilled fuel must be wiped away immediately.

### 3. Specifications

### 3.1 Engine

|                               | MS 341                            | MS 361                           |
|-------------------------------|-----------------------------------|----------------------------------|
| Displacement:                 | 59.0 cm <sup>3</sup>              | 59.0 cm <sup>3</sup>             |
| Bore:                         | 47 mm                             | 47 mm                            |
| Stroke:                       | 34 mm                             | 34 mm                            |
| Engine power to ISO 7293:     | 3.1 kW (4.1 bhp)<br>at 9,500 rpm  | 3.4 kW (4.6 bhp)<br>at 9,500 rpm |
| Max. permissible engine speed |                                   |                                  |
| with bar and chain:           | 13,500 rpm                        | 14,000 rpm                       |
| Idle speed:                   | 2,800 rpm                         |                                  |
| Clutch:                       | Centrifugal clutch without lining | gs                               |
| Clutch engages at:            | 3,500 rpm                         |                                  |
| Crankcase leakage test        |                                   |                                  |
| at gauge pressure:            | 0.5 bar                           |                                  |
| under vacuum:                 | 0.5 bar                           |                                  |

### 3.2 Fuel System

|   | arburetor leakage test<br>t gauge pressure: | 0.8 bar                            |
|---|---|------------------------------------|
|   | peration of tank vent at<br>auge pressure:  | 0.3 bar                            |
| F | uel:  | as specified in instruction manual |

### 3.3 Ignition System

| 0.15 – 0.3 mm                |
|------------------------------|
| Bosch WSR 6F<br>NGK BPMR 7 A |
| 0.5 mm                       |
|                              |

### 3.4 Chain Lubrication

Fully automatic, speed-controlled oil pump with rotary piston

Oil delivery rate:

5.5 – 15 cm<sup>3</sup> at 10,000 rpm

DG screws are used in polymer and light metal components. These screws form a permanent thread when they are installed for the first time. They can be removed and installed as often as necessary without impairing the strength of the screwed assembly, providing the specified tightening torque is observed. For this reason it is **essential to use a torque wrench**.

| Fastener     | Thread size | For component                         | Torque | Remarks |
|--------------|-------------|---------------------------------------|--------|---------|
|              |             |                                       | Nm     |         |
| Screw        | IS-M4x8     | Chain tensioner cover plate/crankcase | 3.0    |         |
| Screw        | IS-M4x12    | Brake band/crankcase                  | 3.0    | 1)      |
| Screw        | IS-P4x10    | Brake cable retainer/tank housing     | 1.5    | 6)      |
| Collar screw | IS-M8x21.5  | Collar screw for guide bar            | 23.0   | 1)      |
| Screw        | IS-M4x12    | Cover, chain brake/crankcase          | 3.0    |         |
|              | IS-M10x1    | Decompression valve                   | 14.0   |         |
| Screw        | IS-B4.2x9.5 | Spark arresting screen/muffler        | 2.0    |         |
| Screw        | IS-M4x12    | Generator                             | 3.0    | 1)5)    |
| Screw        | IS-P5x16    | Front handle/plug, AV spring          | 4.0    |         |
| Screw        | IS-P6x19    | Front handle/plug, AV spring          | 7.0    | 5)      |
| Screw        | IS-P6x21.5  | Front handle/tank housing, top right  | 8.0    | 3)      |
| Screw        | IS-P6x32.5  | Front handle/tank housing, top right  | 6.0    | 4)      |
| Screw        | IS-P6x19    | Front handle/tank housing, bottom     | 8.0    | 3)      |
| Screw        | IS-P6x21.5  | Front handle/tank housing, bottom     | 6.0    | 4)      |
| Screw        | IS-M5x35    | Handschutz/fan housing/crankcase      | 6.0    |         |
| Nut          | M5          | Shroud/stud, cylinder                 | 3.0    |         |
| Screw        | IS-P6x21.5  | Chain catcher/crankcase/bearing plug  | 6.0    |         |
| Screw        | IS-M5x16    | Spiked bumper/crankcase               | 8.0    |         |
| Screw        | IS-M5x12    | Spiked bumper/crankcase/lock nut      | 8.0    |         |
| Screw        | IS-M5x25    | Crankcase, sprocket side/fan side     | 10.0   |         |
| Screw        | IS-M5x16    | Bearing plug/cylinder                 | 10.0   | 2)      |
| Screw        | IS-M5x20    | Fan housing/crankcase                 | 6.0    | -       |
| Carrier      | M12x1L      | Carrier/crankshaft                    | 50.0   |         |

### Remarks:

- 1) Loctite 243, medium strength
- 2) Loctite 270, high strength
- 3) aluminium
- 4) polymer
- 5) only version with handle heating
- 6) only version with QuickStop Super

| Fastener     | Thread size | For component               | Torque | Remarks |
|--------------|-------------|-----------------------------|--------|---------|
|              |             |                             | Nm     |         |
| Screw        | IS-M4x16    | Annular buffer/crankcase    | 3.5    | 1)      |
| Collar screw | IS-P6x27    | Annular buffer/tank housing | 6.0    |         |
| Screw        | IS-M5x16    | Muffler/crankcase           | 9.0    | 2)      |
| Screw        | IS-M5x16    | Muffler/cylinder            | 10.0   |         |
| Nut          | M12x0.75    | Switch/handle housing       |        | 5)      |
| Nut          | M8x1        | Flywheel/crankshaft         | 28.0   |         |
| Screw        | IS-M4x8     | Side plate/crankcase        | 3.0    |         |
| Screw        | IS-M5x8.5   | Stud/cylinder               | 1.4    | 2)      |
| Collar nut   | M5          | Carburetor/collar screw     | 3.5    |         |
| Screw        | IS-M5x25    | Cylinder/crankcase          | 10.0   |         |
|              | M14x1.25    | Spark plug                  | 25.0   |         |
| Screw        | IS-M5x20    | Ignition module/crankcase   | 8.0    |         |
| Screw        | IS-M4x12    | Oil pump/crankcase          | 3.0    |         |

### Remarks:

1) Loctite 243, medium strength

2) Loctite 270, high strength

5) Version with handle heating only

Use the following procedure when refitting a DG screw in an existing thread:

Place the screw in the hole and rotate it counterclockwise until it drops down slightly. Tighten the screw clockwise to the specified torque.

This procedure ensures that the screw engages properly in the existing thread and does not form a new thread and weaken the assembly.

Note:

Power screwdriver setting for polymer: DG screws max. 500 rpm

## 4. 4.1

# Troubleshooting Chart Clutch, Chain Drive, Chain Brake, Chain Tensioner

| Condition                                   | Cause                                | Remedy   |
|---|--------------------------------------|--|
| Saw chain stops under load at full throttle | Clutch shoes badly worn              | Install new clutch                                     |
|   | Clutch drum badly worn               | Install new clutch drum                                |
|   | Brake band stuck                     | Check freedom of movement and function of brake band.  |
| Saw chain rotates at idle speed             | Engine idle speed too high           | Readjust with idle speed screw (LA) (counterclockwise) |
|   | Clutch springs stretched or fatigued | Replace the clutch springs or install new clutch       |
|   | Clutch spring hooks broken           | Replace the clutch springs                             |
| Loud noises                                 | Clutch springs stretched or fatigued | Replace all clutch springs                             |
|   | Needle cage damaged                  | Fit new needle cage                                    |
|   | Clutch shoe retainer broken          | Fit new retainer                                       |
|   | Clutch shoes and carrier worn        | Install new clutch                                     |
| Chain sprocket wears rapidly                | Chain not properly tensioned         | Tension chain as specified                             |
|   | Wrong chain pitch                    | Fit chain of correct pitch                             |
|   | Insufficient chain lubrication       | Check chain lubrication                                |
|   | Chain sprocket worn                  | Fit new chain sprocket                                 |

| Condition   | Cause   | Remedy  |
|---|---|---|
| Starter rope broken   | Rope pulled out too vigorously as far as stop or over edge, i.e. not vertically   | Fit new starter rope  |
|   | Normal wear   | Fit new starter rope  |
| Starter rope does not rewind  | Rewind spring broken  | Fit new rewind spring   |
|   | Spring overtensioned – no reserve when rope is fully extended   | Fit new rewind spring   |
|   | Very dirty or corroded  | Clean or replace rewind spring  |
| Starter rope can be pulled out<br>almost without resistance<br>(crankshaft does not turn) | Guide peg on pawls or pawls themselves are worn   | Fit new pawls   |
|   | Spring clip fatigued  | Fit new spring clip   |
| Starter rope is difficult to pull and rewinds very slowly                                 | Starter mechanism is very dirty   | Thoroughly clean complete starter mechanism   |
|   | Lubricating oil on rewind spring<br>becomes viscous at very low<br>outside temperatures (spring<br>windings stick together) | Coat rewind spring with a little<br>standard solvent-based degreasant<br>(containing no chlorinated or<br>halogenated hydrocarbons), then<br>pull rope carefully several times<br>until normal action is restored |

### 4.3 Chain Lubrication

In the event of trouble with the chain lubrication system, check and rectify other sources of faults before disassembling the oil pump.

| Condition                          | Cause  | Remedy   |
|------------------------------------|--|--|
| Chain receives no oil              | Oil tank empty   | Fill up with oil   |
|                                    | Oil inlet hole in guide bar is blocked                     | Clean oil inlet hole                                     |
|                                    | Intake hose or pickup body clogged or intake hose ruptured | Fit new intake hose and pickup body                      |
|                                    | Sealing ring between oil pump and crankcase faulty         | Remove oil pump, fit new sealing ring and reinstall pump |
|                                    | Valve in oil tank blocked                                  | Clean or replace valve                                   |
|                                    | Teeth on pump piston and/or worm worn                      | Install new oil pump                                     |
| Machine losing chain oil           | Sealing ring between oil pump and crankcase faulty         | Remove oil pump, fit new sealing ring and reinstall pump |
|                                    | Oil pump damaged or worn                                   | Install new oil pump                                     |
| Oil pump delivers insufficient oil | Adjusting screw and/or control edge on pump piston worn    | Fit new adjusting screw and/or oil pump                  |
|                                    | Oil pump worn  | Install new oil pump                                     |

Warning! Exercise extreme caution while carrying out maintenance and repair work on the ignition system. The high voltages which occur can cause serious or fatal accidents!

| Condition  | Cause  | Remedy   |
|--|--|--|
| Engine runs roughly, misfires, temporary loss of power | Spark plug boot is loose   | Press boot firmly onto spark plug and fit new spring if necessary  |
|  | Spark plug sooted, smeared with oil  | Clean the spark plug or replace if necessary   |
|  | Incorrect air gap between ignition module and flywheel   | Set air gap correctly  |
|  | Flywheel cracked or has other damage or pole shoes have turned blue  | Install new flywheel   |
|  | Ignition timing wrong, flywheel out of adjustment, key in flywheel has sheared off   | Install new flywheel   |
|  | Weak magnetization in flywheel – pole shoes have turned blue   | Install new flywheel   |
|  | No spark   | Check operation of Master Control lever and ignition module  |
|  | No spark   | Faulty insulation on ignition lead or<br>short circuit wire. Use ohmmeter to<br>check ignition lead for break. If<br>break is detected or high resistance<br>measured, fit a new ignition lead |
|  | Check operation of spark plug.<br>Inspect Master Control lever,<br>ignition coil/lead for damage<br>insulation and leakage current | Clean or replace spark plug,<br>replace faulty parts of ignition<br>system   |
|  | Crankcase damaged (cracks)   | Replace crankcase  |

| Condition                           | Cause   | Remedy  |
|-------------------------------------|---|---|
| Carburetor floods;<br>engine stalls | Inlet needle not sealing. Foreign<br>matter in valve seat or cone<br>damaged                    | Remove and clean or replace the inlet needle, clean the fuel tank, pickup body and fuel line if necessary |
|                                     | Inlet control lever sticking on spindle   | Free off inlet control lever  |
|                                     | Helical spring not located on nipple of inlet control lever                                     | Remove the inlet control lever and refit it correctly   |
|                                     | Perforated disc on diaphragm is deformed and presses constantly against the inlet control lever | Fit a new metering diaphragm  |
|                                     | Inlet control lever too high<br>(relative to correct installed<br>position)                     | Set inlet control lever flush with top edge of housing  |
| Poor acceleration                   | Idle jet too lean   | Rotate low speed screw (L)<br>counterclockwise (richer), no<br>further than stop                          |
|                                     | Main jet too lean   | Rotate high speed screw ( <b>H</b> )<br>counterclockwise (richer), no<br>further than stop                |
|                                     | Inlet control lever too low<br>(relative to correct installed<br>position)                      | Set inlet control lever flush with top edge of housing  |
|                                     | Inlet needle sticking to valve seat   | Remove inlet needle, clean and refit  |
|                                     | Diaphragm gasket leaking  | Fit new diaphragm gasket  |
|                                     | Metering diaphragm damaged or shrunk  | Fit new metering diaphragm  |
|                                     | Impulse hose damaged or kinked  | Fit new impulse hose  |

| Condition                                    | Cause  | Remedy   |
|--|--|--|
| Engine will not idle,<br>idle speed too high | Throttle shutter opened too wide by idle speed screw ( <b>LA</b> )                       | Reset idle speed screw ( <b>LA</b> ) correctly |
|  | Oil seals/crankcase leaking  | Seal or replace oil seals/<br>crankcase        |
| Engine stalls at idle speed                  | Idle jet bores or ports blocked  | Clean the carburetor                           |
|  | Idle jet too rich or too lean  | Set low speed screw (L) correctly              |
|  | Setting of idle speed ( <b>LA</b> )<br>incorrect – throttle shutter<br>completely closed | Set idle speed screw (LA) correctly            |
|  | Small plastic plate in valve jet does not close  | Clean or renew valve jet                       |

| Condition  | Cause   | Remedy  |
|--|---|---|
| Engine speed drops quickly under<br>load – low power | Air filter dirty                                  | Clean the air filter  |
|  | Throttle shutter not opened fully                 | Check linkage   |
|  | Tank vent faulty                                  | Clean tank vent or replace if necessary   |
|  | Fuel pickup body dirty                            | Clean the pickup body, fit a new filter   |
|  | Fuel strainers dirty                              | Replace the fuel strainers  |
|  | Leak in fuel line between tank and fuel pump      | Seal connections or install a new fuel line   |
|  | Setting of high speed screw ( <b>H</b> ) too rich | Rotate high speed screw ( <b>H</b> )<br>clockwise (leaner), no further than<br>stop |
|  | Main jet bores or ports blocked                   | Clean the carburetor  |
|  | Pump diaphragm damaged or fatigued                | Fit new pump diaphragm  |
|  | Impulse hose damaged or kinked                    | Fit new impulse hose  |

### Engine 4.6

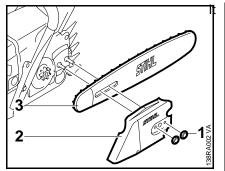
Always check and, if necessary, repair the following parts before looking for faults on the engine:

- Air filter
- Fuel systemCarburetor
- Ignition system

| Condition  | Cause   | Remedy  |
|--|---|---|
| Engine does not start easily, stalls<br>at idle speed, but operates normally<br>at full throttle | Oil seals in crankcase damaged  | Replace the oil seals   |
|  | Crankcase leaking or damaged (cracks)   | Seat or replace the crankcase   |
| Engine does not deliver full power<br>or runs erratically  | Piston rings worn or broken   | Replace piston rings  |
|  | Muffler / spark arresting screen<br>carbonized  | Clean the muffler (inlet and<br>exhaust), replace spark arresting<br>screen, replace muffler if necessary |
|  | Air filter element dirty  | Replace air filter element  |
|  | Fuel / impulse hose severely kinked<br>or damaged   | Fit new hoses or position them free from kinks  |
|  | Decompression valve sticking  | Replace the decompression valve   |
| Engine overheating   | Insufficient cylinder cooling. Air<br>inlets in fan housing blocked or<br>cooling fins on cylinder very dirty | Thoroughly clean all cooling air openings and the cylinder fins   |

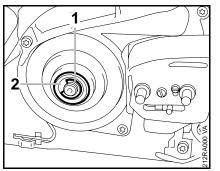
### 5. Clutch, Chain Drive, Chain Brake and Chain Tensioner

5.1 Clutch Drum / Chain Sprocket

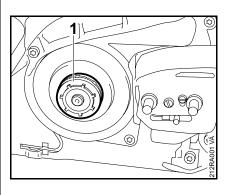


Wear work gloves to protect your hands from injury.

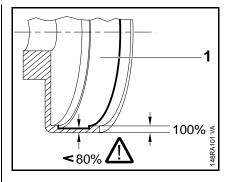
- Unscrew the hex nuts (1).
- Remove the chain sprocket cover (2).
- Remove the bar (3) and chain.



- Remove the E-clip (1).
- Remove the washer (2).



• Remove the rim sprocket (1).

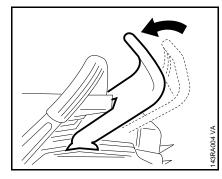


• Inspect the clutch drum (1).

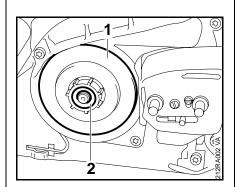
If there are signs of serious wear on the inside diameter of the clutch drum (1), check the remaining wall thickness. If it is less than about 80% of the original thickness, fit a new clutch drum.

If the clutch drum has to be replaced, also check the brake band -  $\square$  5.5.1 or 5.5.2.

Reassemble in the reverse sequence.



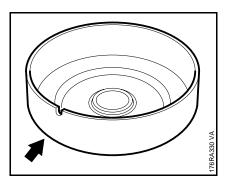
• Disengage the chain brake by pulling the hand guard towards the front handle.



- Remove the clutch drum (1) with needle cage (2).
- Examine the needle cage for signs of damage.

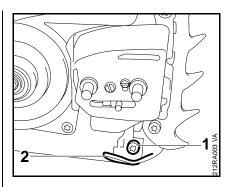
5.2 Replacing the Chain Catcher

### 5.3 Spiked Bumper



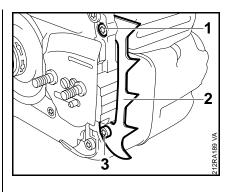
Clean stub of crankshaft. Wash needle cage, examine it for damage and replace if necessary. Lubricate needle cage with STIHL multipurpose grease –  $\square$  16.

 Rotate clutch drum/chain sprocket and apply slight pressure at the same time until the oil pump drive spring engages the notch (see arrow).



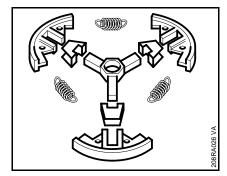
- Remove the chain sprocket cover
   1 5.1
- Take out the screw (1).
- Remove the chain catcher (2).

Reassemble in the reverse sequence.



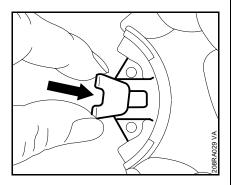
- Hold the self-locking nut steady and take out the screw (1).
- Take out the screw (3).
- Remove the spiked bumper (2).

Reassemble in the reverse sequence.

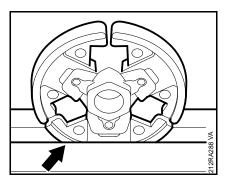


- Clean all parts 🛄 16.
- Replace any damaged parts.

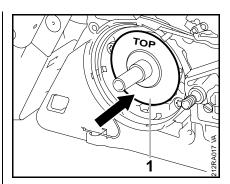
### Assembling the clutch



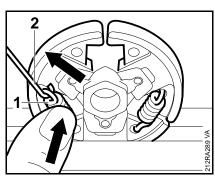
• Slip the retainers onto the clutch shoes.



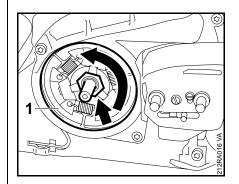
• Clamp the clutch in a vise.



• Fit the cover washer (1) on the crankshaft so that "TOP" faces outward.

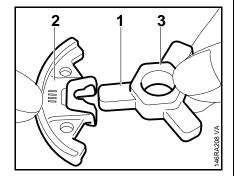


- Attach one end of each spring (1) to the clutch shoes.
- Use the hook (2) 5910 890 2800 to attach other end of the spring and press it firmly into the clutch shoe.



- Screw home the clutch (1), hexagon (arrow) facing outward, and tighten it down firmly – 1 3.5
- Remove locking strip from the cylinder.

Reassemble all other parts in the reverse sequence.



• Fit the clutch shoes over the arms (1) of the clutch carrier so that the series number (2) is on the same side as the longer hexagon (3).

### 5.5 Checking Operation of Chain Brake

The chain brake is one of the most important safety devices on the chainsaw. Its efficiency is measured in terms of the chain braking time, i.e. the time that elapses between activating the brake and the saw chain coming to a complete standstill. The shorter the braking time, the better the efficiency and protection offered against being injured by the rotating chain.

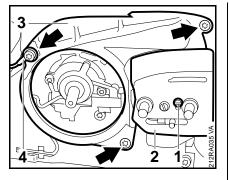
Contamination (with chain oil, chips, fine particles of abrasion, etc.) and smoothing of the friction surfaces of the brake band and clutch drum impair the coefficient of friction. This, in turn, reduces the frictional forces and thus prolongs the braking time. A fatigued or stretched brake spring has the same negative effect.

- Start the engine.
- With the chain brake activated (locked), open the throttle wide for a brief period (max. 3 seconds) – the chain must not rotate.
- With the chain brake released, open the throttle wide and activate the brake manually – the chain must come to an abrupt stop.

The braking time is in order if deceleration of the saw chain is imperceptible to the eye.

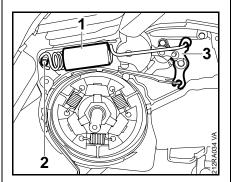
If the chain brake does not operate properly, see troubleshooting chart -  $\square$  4.1.

### 5.5.1 Removing and Installing (without QuickStop Super)

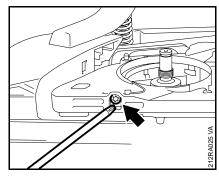


### Removing

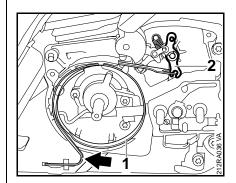
- Troubleshooting chart 🛄 4.1
- Remove the clutch drum –
   Image: 5.1
- Take out the screw (1).
- Remove the side plate (2).
- Take out the screws (arrows).
- On machines with carburetor or carburetor/handle heating, remove the ground wire (4).
- Remove the cover (3).
- Engage the chain brake by pushing the hand guard away from the front handle.



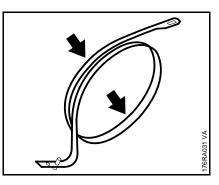
- Carefully ease the brake spring (1) off the anchor pin (2).
- Remove the brake spring (1) from the brake lever (3).



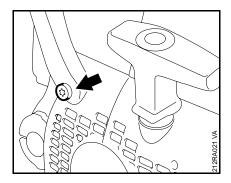
• Take out the screw (arrow).



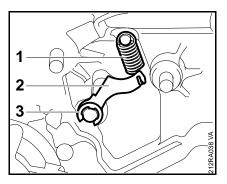
- Pry the brake band (1) out of the crankcase (arrow).
- Disconnect the brake band from the brake lever (2).



Install a new brake band if there are noticeable signs of wear (large areas on inside diameter and/or parts of outside diameter) and its remaining thickness is less than 0.6 mm.



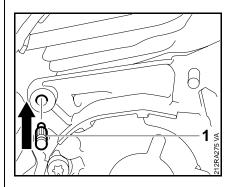
• Take out the screw (arrow).



- Disconnect the spring (1).
- Remove the E-clip (3).
- Remove the lever (2) with spring (1).

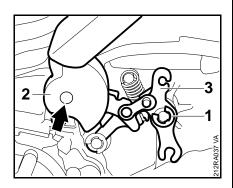
Clean all disassembled parts in standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons. Inspect parts and replace if damaged.

If the groove in the brake spring anchor pin is worn, follow the steps below to install a new pin: Do not drive out the pin in the other direction as this would damage the annular bead which was formed in the crankcase bore when the pin was originally installed. In such a case neither the new anchor pin nor the brake spring would locate properly. Furthermore, the crankcase could be damaged in this way and possibly impair correct operation of the chain brake.

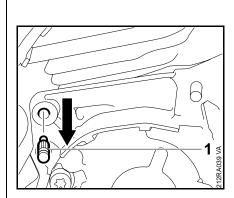


### Installing

- Before installing the new pin, coat its knurled shank with Loctite –
   16.
- Position the new pin (1) in the bore so that the knurling on the pin meshes with the existing knurling in the bore. Turn pin back and forth as necessary.



- Remove the E-clip (1).
- Pry the hand guard (2) together with the brake lever (3) off the pivot pin (arrow).
- Pull the lever out of the hand guard.



- Remove the cylinder 🖽 6.5.1
- Use a suitable punch to drive the anchor pin (1) out of the crankcase, from the inside outwards.



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