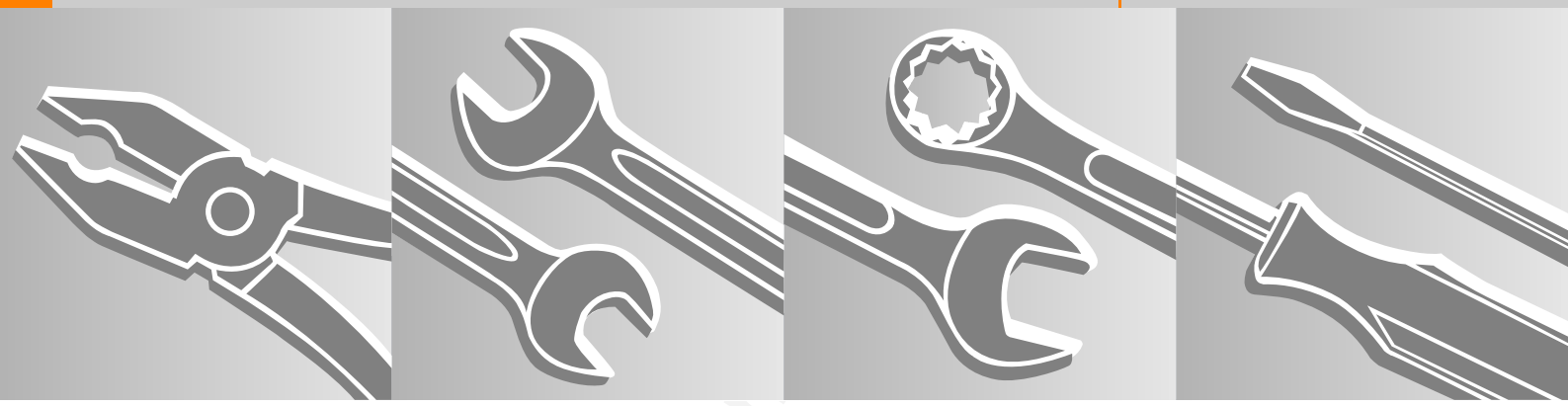
STIHL MS 341, 361

2004-05



Contents

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)

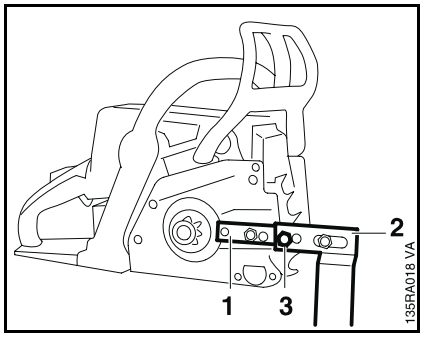
In the illustrations:

➔ 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.
This symbol may appear alone on small parts.

If the engine is started up in the course of repairs or maintenance work, observe all local and country-specific 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^3	59.0 cm^3
Bore:	47 mm	47 mm
Stroke:	34 mm	34 mm
Engine power to ISO 7293:	3.1 kW (4.1 bhp) at 9,500 rpm	3.4 kW (4.6 bhp) 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 linings	
Clutch engages at:	3,500 rpm	
Crankcase leakage test		
at gauge pressure:	0.5 bar	
under vacuum:	0.5 bar	

3.2 Fuel System

Carburetor leakage test at gauge pressure:	0.8 bar
Operation of tank vent at gauge pressure:	0.3 bar
Fuel:	as specified in instruction manual

3.3 Ignition System

Air gap between ignition module and fanwheel:	0.15 – 0.3 mm
Spark plug (suppressed):	Bosch WSR 6F NGK BPMR 7 A
Electrode gap:	0.5 mm

3.4 Chain Lubrication

Fully automatic, speed-controlled oil pump with rotary piston	
Oil delivery rate:	5.5 – 15 cm^3 at 10,000 rpm

3.5 Tightening Torques

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	7.0	3)
Screw	IS-P6x32.5	Front handle/tank housing, top right	5.0	4)
Screw	IS-P6x19	Front handle/tank housing, bottom	7.0	3)
Screw	IS-P6x21.5	Front handle/tank housing, bottom	5.0	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	10.0	2)
Screw	IS-M5x16	Muffler/cylinder	10.0	
Nut	M12x0.75	Switch/handle housing		5)
Nut	M8x1	Flywheel/crankshaft	33.0	
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. Troubleshooting Chart

4.1 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
Saw chain does not stop immediately when brake is activated	Brake spring stretched or broken	Fit new brake spring
	Brake band stretched. worn or broken	Fit new brake band
	Clutch drum worn	Fit new clutch drum
Saw chain does not stop immediately when coasting brake is activated (only versions with QuickStop Super)	Brake cable play incorrect	Readjust brake cable play (free travel)
	Brake cable stretched or broken	Fit new brake cable
	Parts of activating mechanism stiff	Clean or replace parts of activating mechanism
	Chain brake spring stretched or broken	Fit new brake spring
	Brake ban stretched, worn or broken	Fit new brake band

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 almost without resistance (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 becomes viscous at very low outside temperatures (spring windings stick together)	Coat rewind spring with a little standard solvent-based degreasant (containing no chlorinated or halogenated hydrocarbons), then pull rope carefully several times 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 short circuit wire. Use ohmmeter to check ignition lead for break. If break is detected or high resistance measured, fit a new ignition lead
	Check operation of spark plug. Inspect Master Control lever, ignition coil/lead for damage insulation and leakage current	Clean or replace spark plug, replace faulty parts of ignition system
	Crankcase damaged (cracks)	Replace crankcase

Condition	Cause	Remedy
Carburetor floods; engine stalls	Inlet needle not sealing. Foreign matter in valve seat or cone 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 (relative to correct installed position)	Set inlet control lever flush with top edge of housing
Poor acceleration	Idle jet too lean	Rotate low speed screw (**L**) counterclockwise (richer), no further than stop
	Main jet too lean	Rotate high speed screw (**H**) counterclockwise (richer), no further than stop
	Inlet control lever too low (relative to correct installed 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, idle speed too high	Throttle shutter opened too wide by idle speed screw (**LA**)	Reset idle speed screw (**LA**) correctly
	Oil seals/crankcase leaking	Seal or replace oil seals/ 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 (**LA**) incorrect – throttle shutter 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 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 (**H**) too rich	Rotate high speed screw (**H**) clockwise (leaner), no further than 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

4.6 Engine

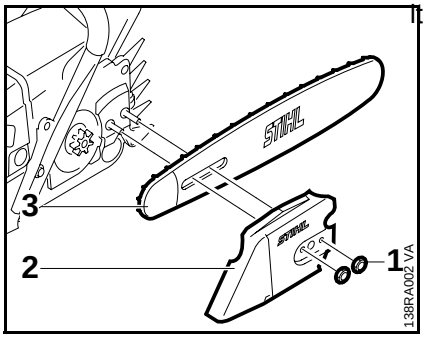
Always check and, if necessary, repair the following parts before looking for faults on the engine:

– Air filter
– Fuel system
– Carburetor
– Ignition system

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

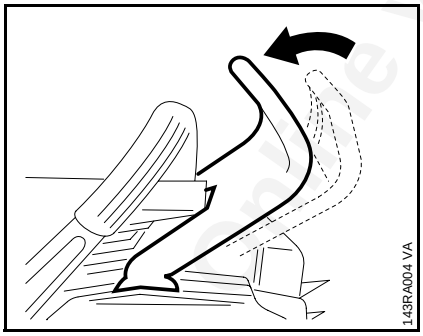
5. Clutch, Chain Drive, Chain Brake and Chain Tensioner

5.1 Clutch Drum / Chain Sprocket

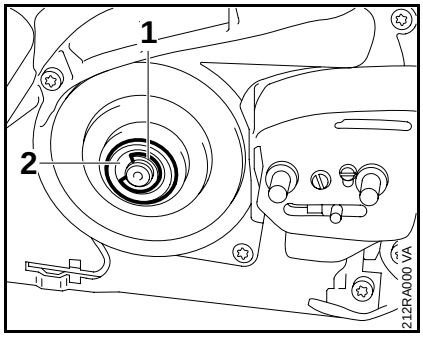


Wear work gloves to protect your hands from injury.

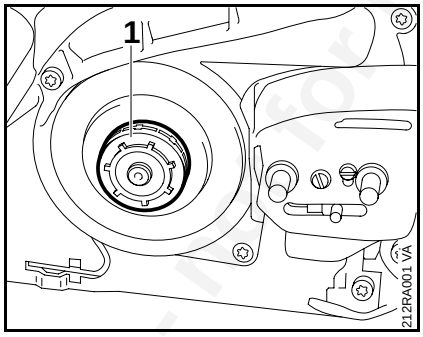
- Unscrew the hex nuts (1).
- Remove the chain sprocket cover (2).
- Remove the bar (3) and chain.



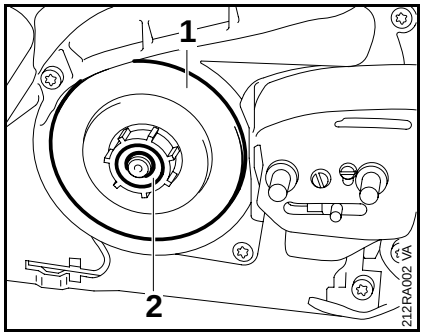
- Disengage the chain brake by pulling the hand guard towards the front handle.



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

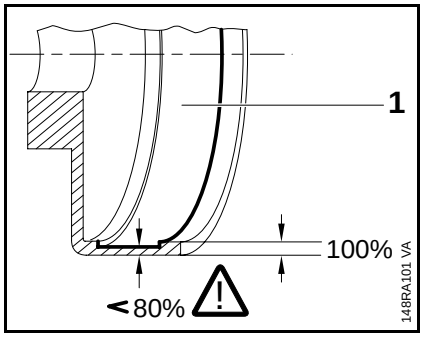


- Remove the rim sprocket (1).



- Remove the clutch drum (1) with needle cage (2).

– Examine the needle cage for signs of damage.

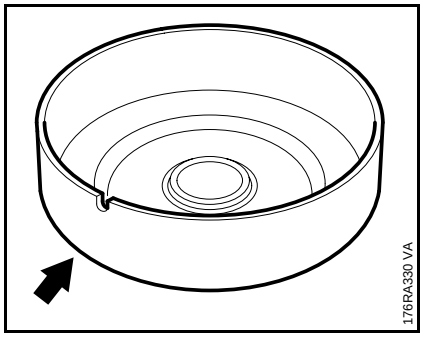


- Inspect the clutch drum (1).

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 – 🕮 5.5.1 or 5.5.2.

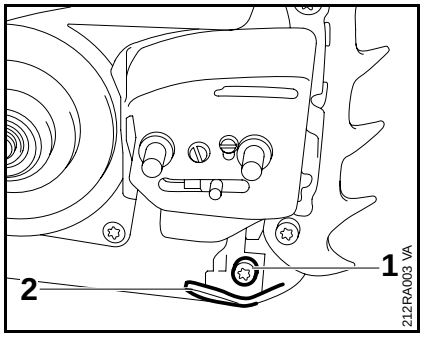
Reassemble in the reverse sequence.



Clean stub of crankshaft. Wash needle cage, examine it for damage and replace if necessary. Lubricate needle cage with STIHL multi-purpose grease – 🕮 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).

5.2 Replacing the Chain Catcher

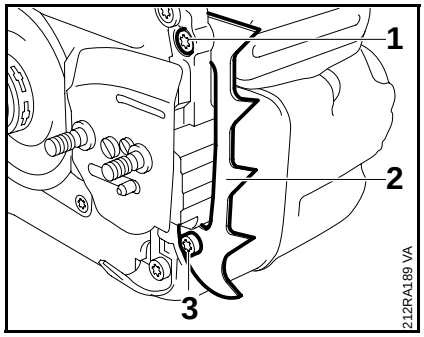


– Remove the chain sprocket cover – 🕮 5.1

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

Reassemble in the reverse sequence.

5.3 Spiked Bumper



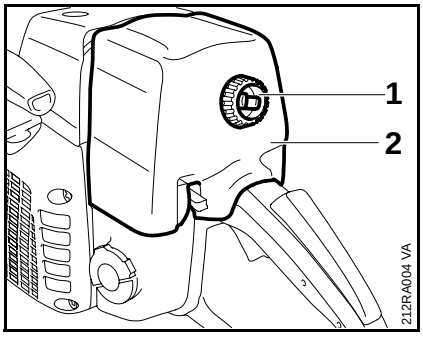
– Remove the chain sprocket cover, bar and chain – 🕮 5.1

- 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.

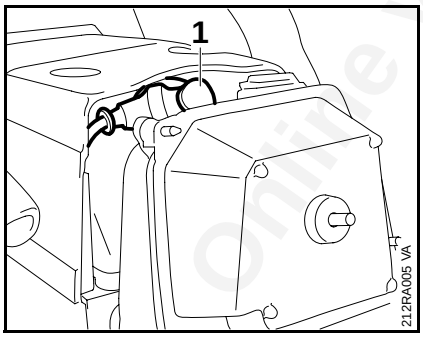
– Troubleshooting chart – 🕮 4.1

– Remove the clutch drum/chain sprocket – 🕮 5.1



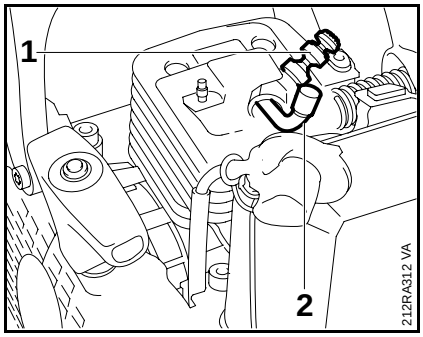
● Release twist lock (1).

● Remove carburetor box cover (2) to the rear.



● Pull the boot (1) off the spark plug.

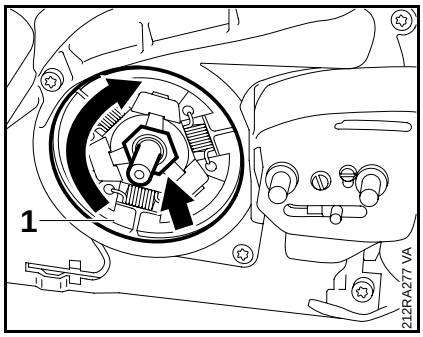
– Unscrew the spark plug.



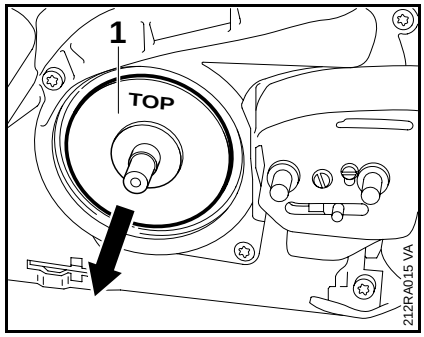
– Remove the shroud – 🕮 6.2

● Close the decompression valve (1), if fitted.

● Push the locking strip (1) 0000 893 5903 into the spark plug hole so that "OBEN-TOP" faces up.

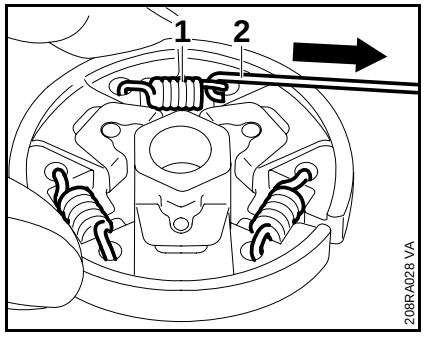


● Unscrew the clutch (1) from the crankshaft clockwise (left-hand thread).

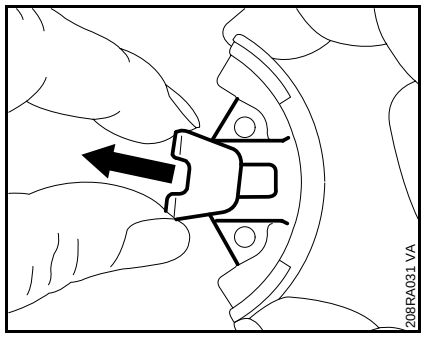


● Remove the cover washer (1) and clean it if necessary.

Disassembling the clutch

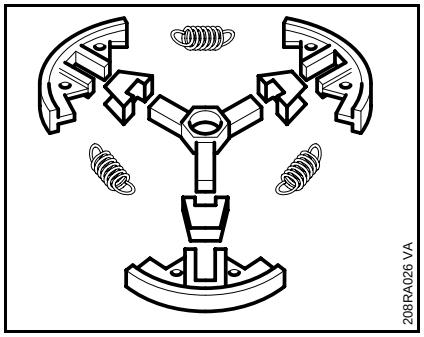


● Use hook (2) 5910 890 2800 to remove the clutch springs (1).



– Pull the clutch shoes off the carrier.

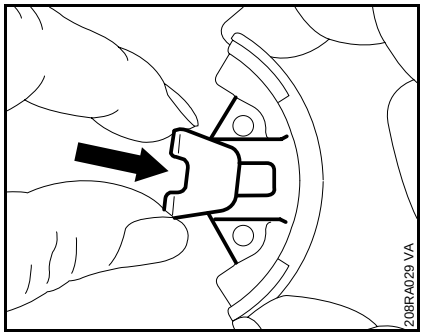
● Pull the retainers off the clutch shoes.



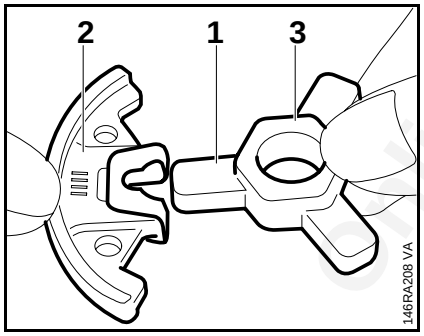
– Clean all parts – 🕮 16.

– Replace any damaged parts.

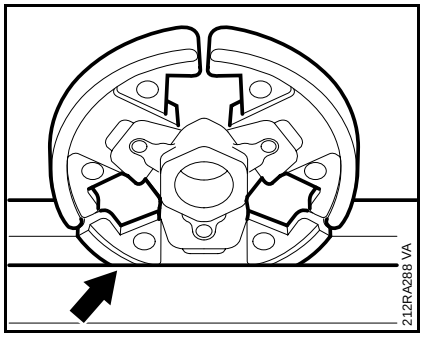
Assembling the clutch



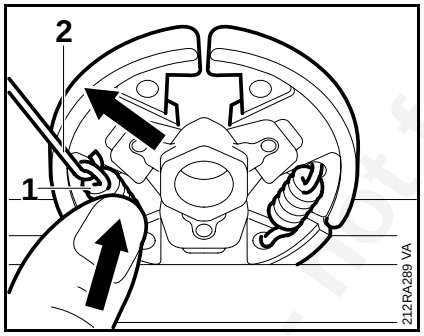
● Slip the retainers onto the clutch shoes.



● 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).

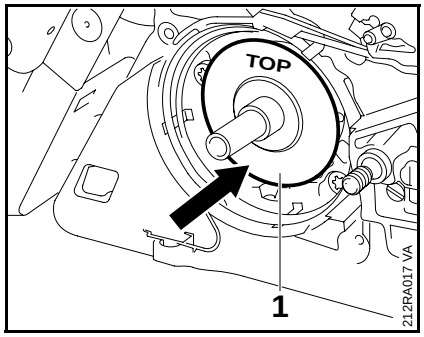


● Clamp the clutch in a vise.

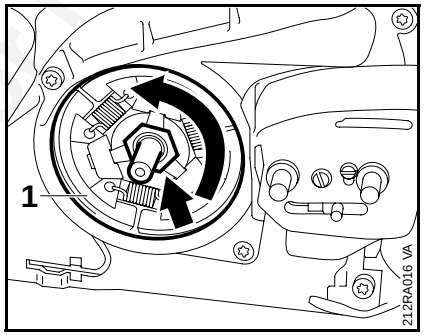


● Attach one end of each spring (1) to the clutch shoes.

● Use the hook (2) 5910 890 2800 to attach other end of the spring and press it firmly into the clutch shoe.



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



● Screw home the clutch (1), hexagon (arrow) facing outward, and tighten it down firmly – 🕮 3.5

– Remove locking strip from the cylinder.

Reassemble all other parts in the reverse sequence.

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.

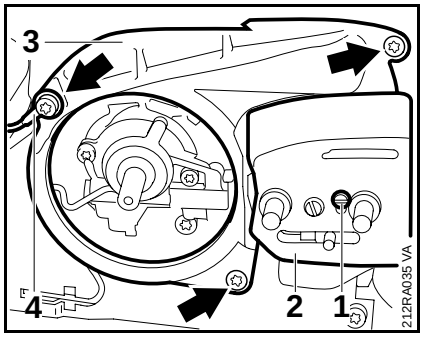
– With the chain brake activated (locked), open the throttle wide for a brief period (max. 3 seconds) – the chain must not rotate.

– 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 – 🕮 4.1.

5.5.1 Removing and Installing (without QuickStop Super)



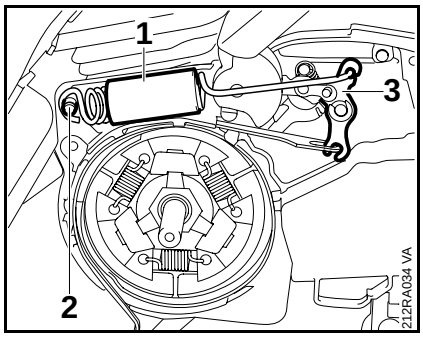
Removing

– Troubleshooting chart – 🕮 4.1

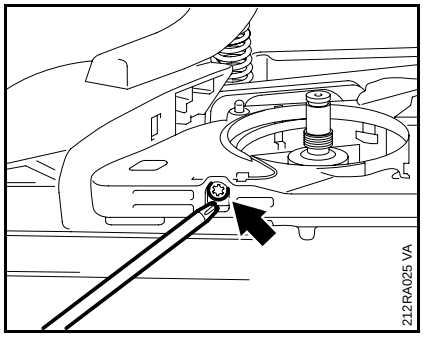
– Remove the clutch drum – 🕮 5.1

- 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).

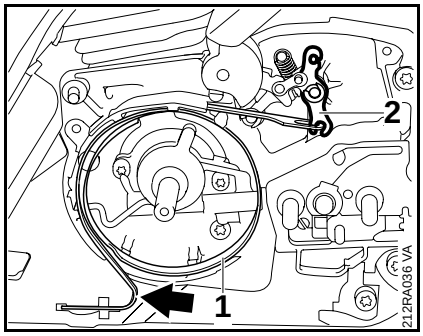
– Engage the chain brake by pushing the hand guard away from the front handle.



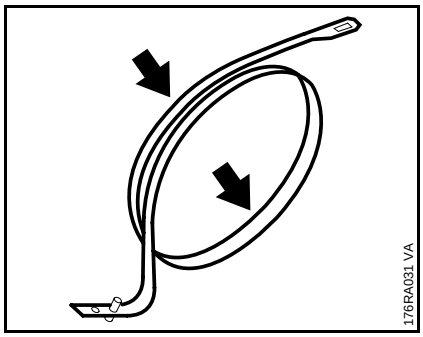
- Carefully ease the brake spring (1) off the anchor pin (2).
- Remove the brake spring (1) from the brake lever (3).



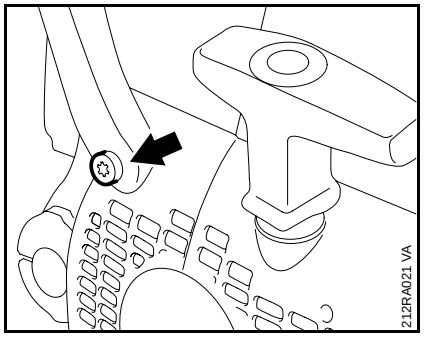
- Take out the screw (arrow).



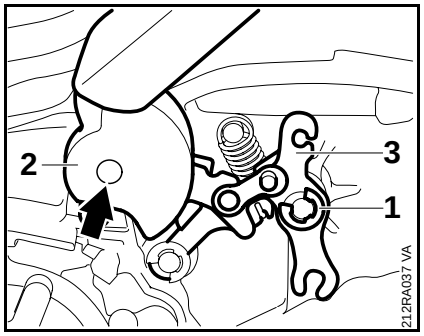
- Pry the brake band (1) out of the crankcase (arrow).
- Disconnect the brake band from the brake lever (2).



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.

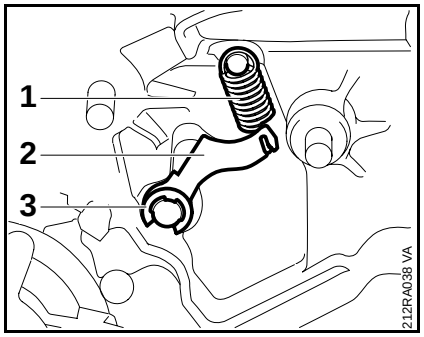


- Take out the screw (arrow).



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

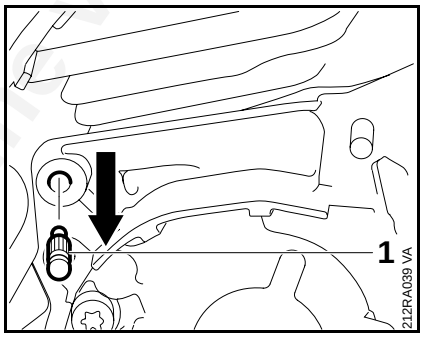
– Pull the lever out of the hand guard.



- 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.

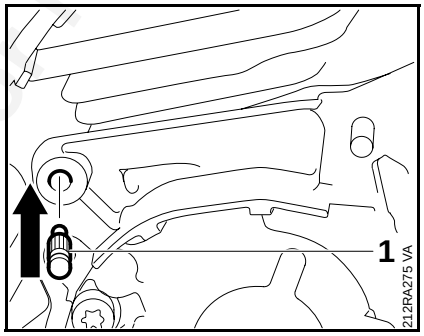
If the groove in the brake spring anchor pin is worn, follow the steps below to install a new pin:



– Remove the cylinder – 🕮 6.5.1

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

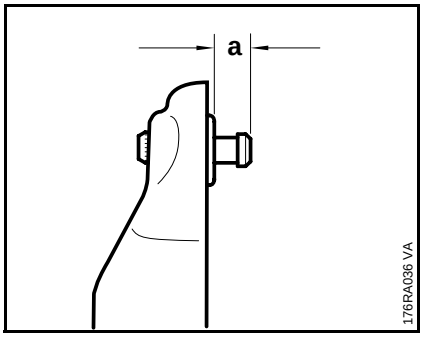
Do not drive out the pin in the other direction as this would damage the annular bead which was formed in the crankcase bore when the pin was originally installed. In such a case neither the new anchor pin nor the brake spring would locate properly. Furthermore, the crankcase could be damaged in this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



Installing

– Before installing the new pin, coat its knurled shank with Loctite – 🕮 16.

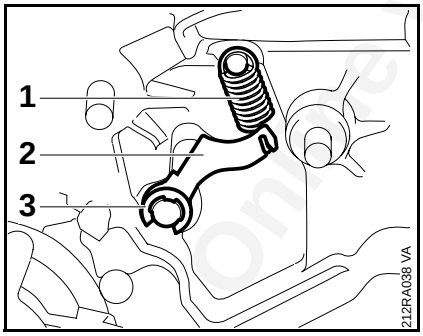
- Position the new pin (1) in the bore so that the knurling on the pin meshes with the existing knurling in the bore. Turn pin back and forth as necessary.



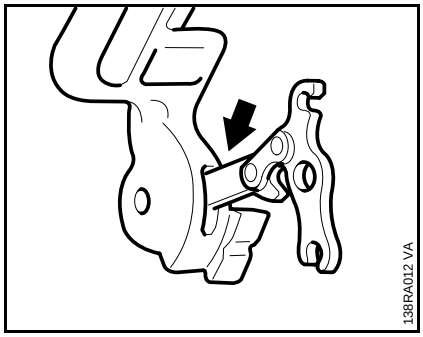
- Carefully tap home the pin squarely to obtain dimension "a" (about 4.3–4.7 mm).

– Install the cylinder – 🕮 6.5.2

Coat all sliding and bearing points with STIHL multipurpose grease – 🕮 16.

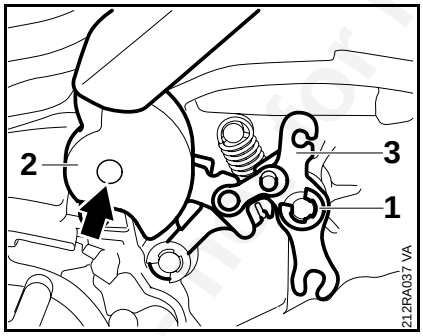


- Fit the lever (2).
- Fit the E-clip (3).
- Attach the spring (1).



- Insert the lever in the side of the hand guard bearing boss.

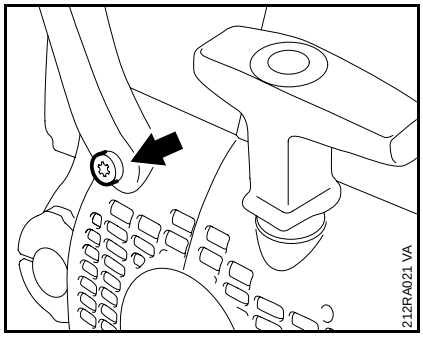
Check that lever is installed correctly.



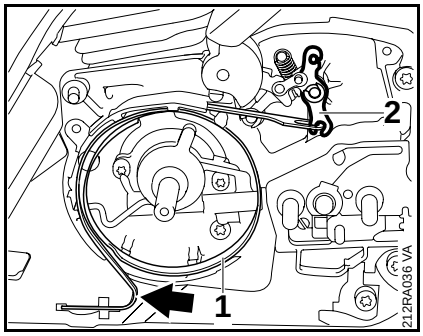
- Position bearing boss (arrow) of hand guard (2) against the pivot pin and fit the other side of the hand guard over the fan housing.
- Press the hand guard (2) carefully downward, and push the brake lever (3) onto its pivot pin at the same time.
- Fit the E-clip (1).

Coat all sliding and bearing points with STIHL multipurpose grease – 🕮 16.

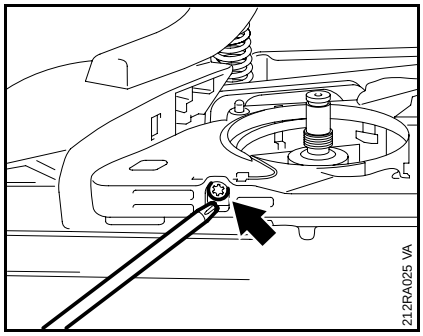
Do not lubricate the brake band.



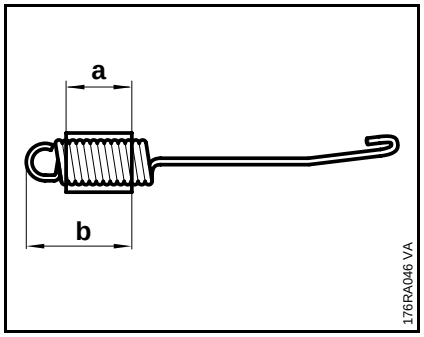
- Fit the screw (arrow) and tighten it down firmly – 🕮 3.5.



- Attach the brake band (1) to the brake lever (2) and then push it into the slot in the crankcase (arrow).



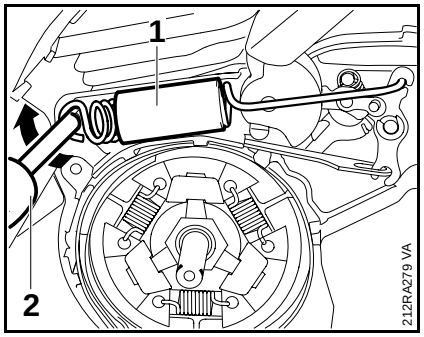
- Fit the screw (arrow) and tighten it down firmly – 🕮 3.5



- Turns of brake spring must be tightly against one another in the relaxed condition. If this is not the case, replace the brake spring.

  Check correct position of protective tube:

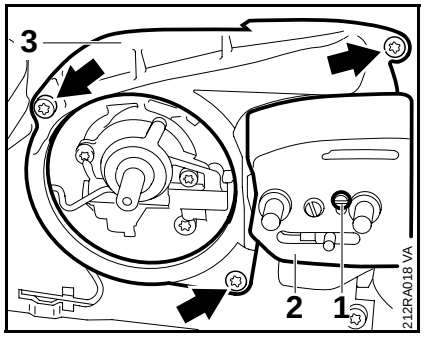
  a = 31 mm
  b = 44 mm



- Use the assembly tool 1117 890 0900 (2) to attach the brake spring (1) to the anchor pin (arrow).

Reassemble all other parts in the reverse sequence.

– Check operation of chain brake – 🕮 5.5



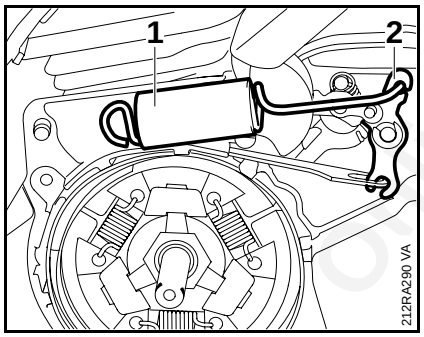
Removing

– Troubleshooting chart – 🕮 4.1

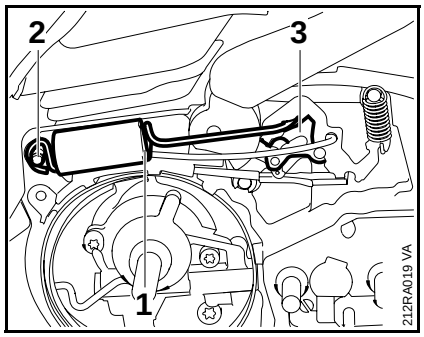
– Remove the clutch drum – 🕮 5.1

- Take out the screw (1).
- Remove the side plate (2).
- Take out the screws (arrows).
- Remove the cover (3).

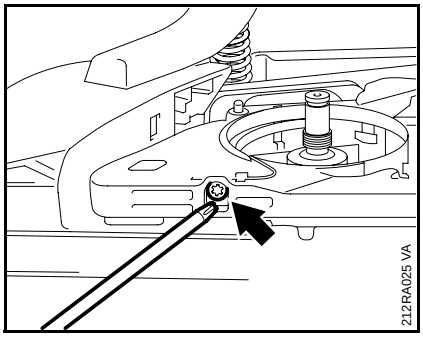
– Engage the chain brake by pushing the hand guard away from the front handle.



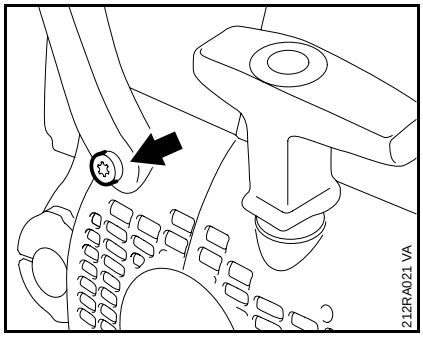
- Hook the brake spring (1) to the brake lever (2).



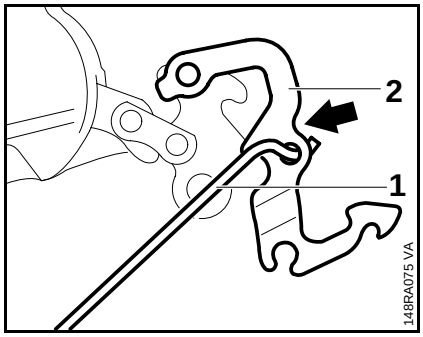
- Carefully ease the brake spring (1) off the anchor pin (2).
- Remove the brake spring (1) from the brake lever (3).



- Take out the screw (arrow).

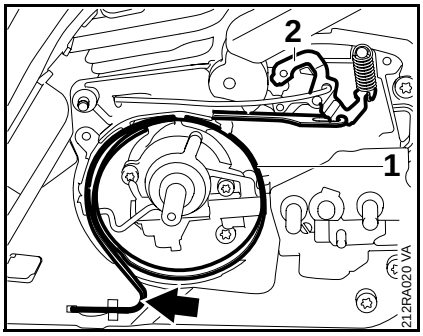


- Take out the screw (arrow).

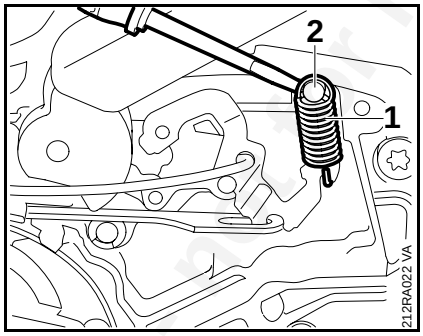


- Disconnect the brake cable (1) from the brake lever (2).

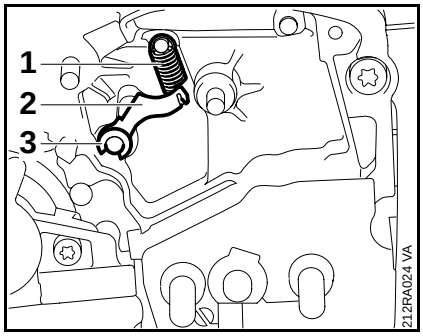
– Pull the brake lever out of the hand guard.



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

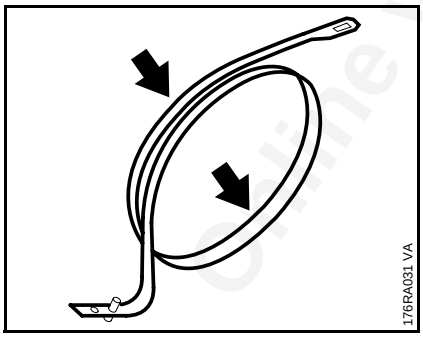


- Carefully pry the spring (1) off the pivot pin (2).

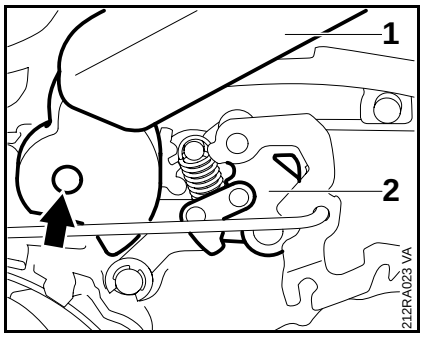


- Disconnect the spring (1).
- Remove the E-clip (3).
- Remove the lever (2) with spring (1).

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

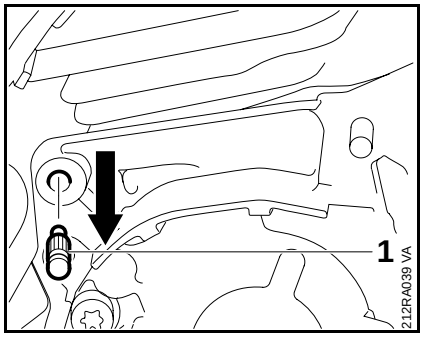


Install a new brake band if there are noticeable signs of wear (large areas on inside diameter and/or parts of outside diameter) and its remaining thickness is less than 0.6 mm.



- Pry the hand guard (1) with brake lever (2) off the pivot pin (arrow).

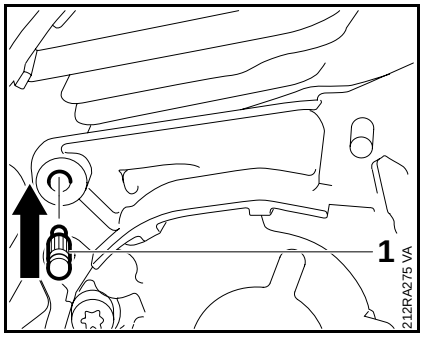
If the groove in the brake spring anchor pin is worn, follow the steps below to install a new pin:



– Remove the cylinder – 🕮 6.5.1

● Use a suitable punch to drive the anchor pin (1) out of the crankcase, from the inside outwards.

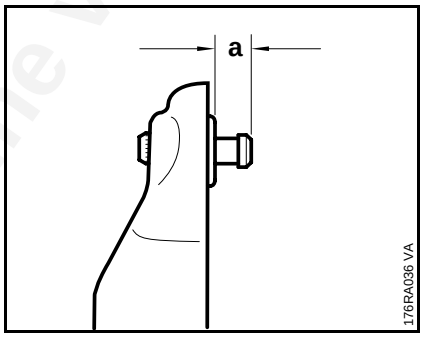
Do not drive out the pin in the other direction as this would damage the annular bead which was formed in the crankcase bore when the pin was originally installed. In such a case neither the new anchor pin nor the brake spring would locate properly. Furthermore, the crankcase could be damaged in this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



Installing

– Before installing the new pin, coat its knurled shank with Loctite – 🕮 16.

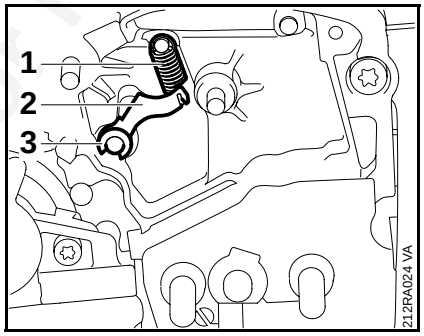
● Position the new pin (1) in the bore so that the knurling on the pin meshes with the existing knurling in the bore. Turn pin back and forth as necessary.



● Carefully tap home the pin squarely to obtain dimension "a" (about 4.3–4.7 mm).

– Install the cylinder – 🕮 6.5.2

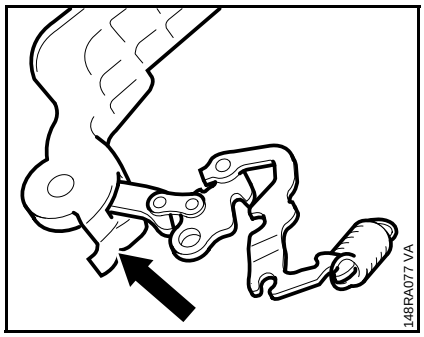
Coat all sliding and bearing points with STIHL multipurpose grease – 🕮 16.



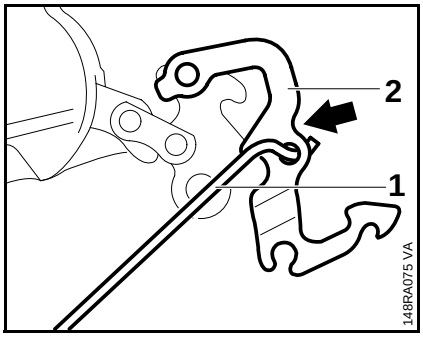
● Fit the lever (2).

● Fit the E-clip (3).

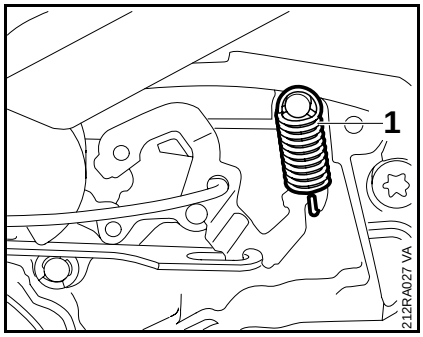
● Fit the spring (1).



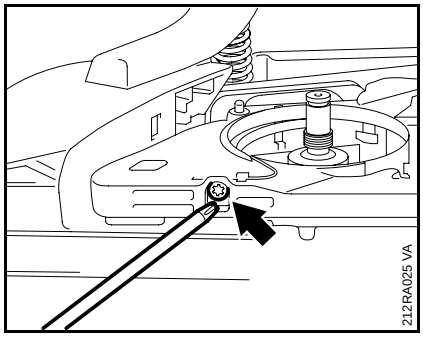
● Insert the lever in the side (arrow) of the hand guard bearing boss.



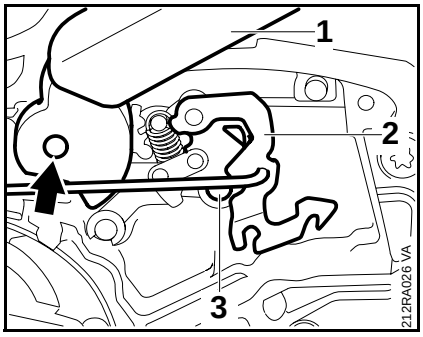
- Attach the coasting brake cable (1) to the hole (arrow) in the brake lever (2).



- Attach the spring (1) to the pivot pin.



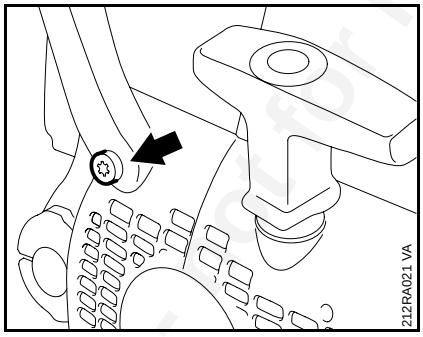
- Fit the screw (arrow) and tighten it down firmly – 🕮 3.5



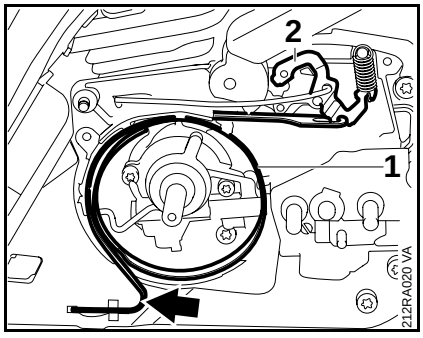
- Position bearing boss of the hand guard (1) against the pivot pin and fit the other side of the hand guard over the fan housing.
- Press the hand guard (1) carefully downward, and push the brake lever (2) onto its pivot pin (3) at the same time.

Coat all sliding and bearing points with STIHL multipurpose grease – 🕮 16.

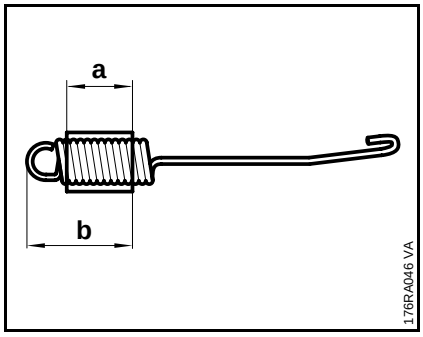
– Lubricate the new brake band with a few drops of chain oil.



- Fit the screw (arrow) and tighten it down firmly – 🕮 3.5



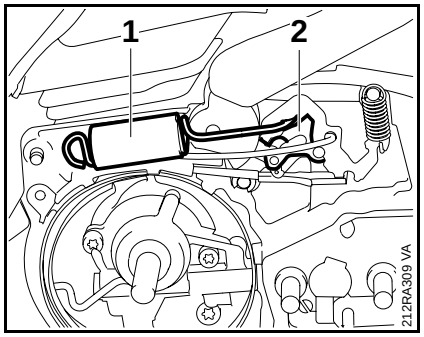
- Attach the brake band (1) to the brake lever (2) and then push it into the slot in the crankcase (arrow).



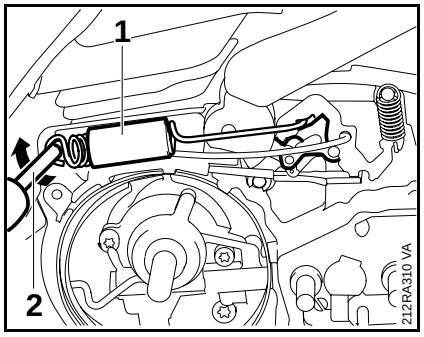
- Turns of brake spring must be tightly against one another in the relaxed condition. If this is not the case, replace the brake spring.
- Check correct position of protective tube:

  a = 31 mm
  b = 44 mm

5.5.3 Brake Cable



- Hook the brake spring (1) to the brake lever (2).



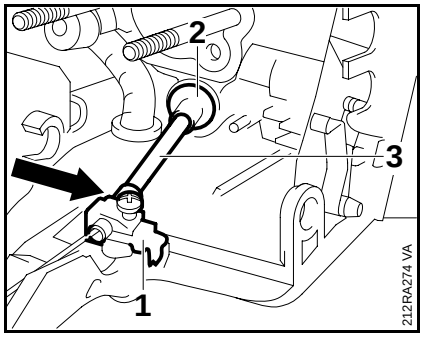
- Use the assembly tool 1117 890 0900 to attach the brake spring (1) to the anchor pin (arrow).

Reassemble all other parts in the reverse sequence.

– Lubricate sliding points with grease – 🕮 5.5.6

– Check play – 🕮 5.5.4

5.5.4 Checking Play



– Separate crankcase and tank housing – 🕮 12.9

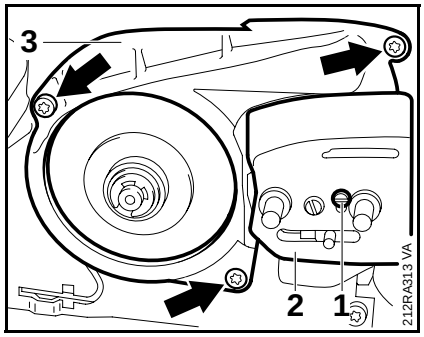
– Remove the brake cable from the switch lever – 🕮 10.2.2

- Push the support (1) sideways and out of its mount.
- Use a suitable tool to pry the grommet (2) out of the tank housing.
- Pull the brake cable (3) out of the tank housing.

Reassemble in the reverse sequence.

– Adjust play – 🕮 5.5.4

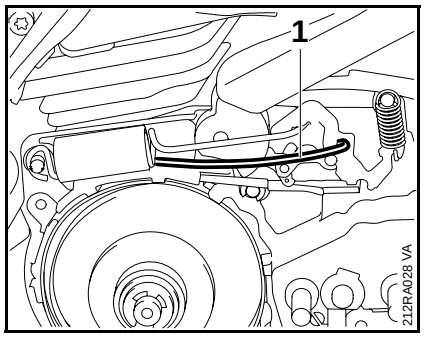
– Check operation of the coasting brake – 🕮 5.5.6



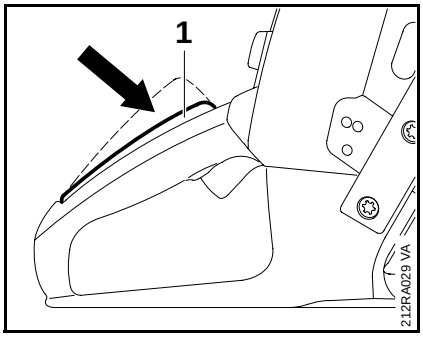
– Remove the cutting attachment – 🕮 5.1

– Pull the hand guard toward the front handle.

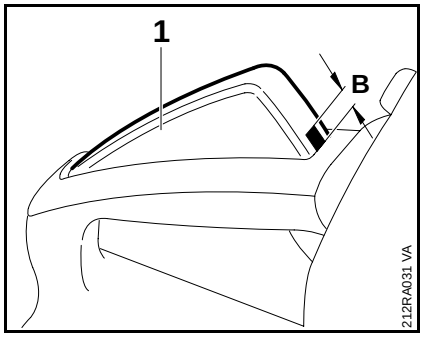
- Take out the screw (1).
- Remove the side plate (2).
- Take out the screws (arrows).
- Remove the cover (3).



- The brake cable (1) must hang loosely in the crankcase when the brake is disengaged.

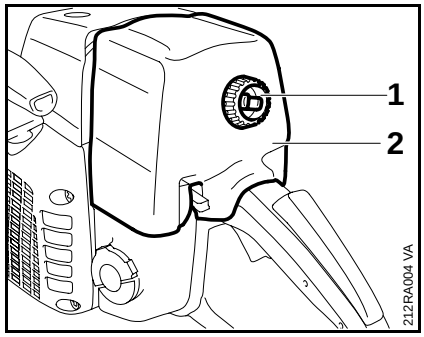


- Press down interlock lever (1) all the way and hold it in that position.

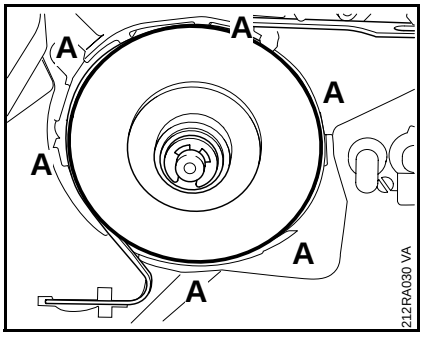


- Let go of the interlock lever (1).
- Check free travel by slowly squeezing the interlock lever (1). Play must be within the mark (B) at the front end of the interlock lever.
  The brake lever must not move. If it does, adjust play – 📖 5.5.5

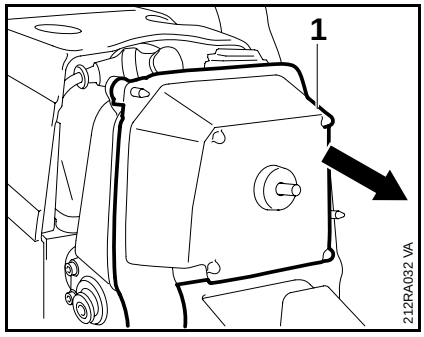
Reassemble in the reverse sequence.



- Release twist lock (1).
- Remove the carburetor box cover (2).

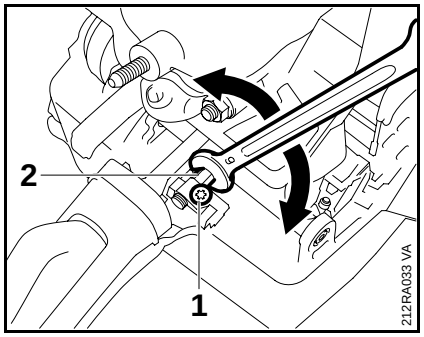


- The brake band (1) must locate without any play against the points (A) in the crankcase.



- Lift away the air filter (1) to the rear.

5.5.6 Checking Operation of Coasting Brake



- Loosen the screw (1).
- Use a 6mm open-end wrench to adjust play with the adjusting nut (2) on the brake cable.

  Turn wrench to right (clockwise) to reduce play.

  Turn wrench to left (counter-clockwise) to increase play.
- Tighten down the screw (1) firmly.

Reassemble in the reverse sequence.

Check operation of the chain brake with the bar and chain mounted. When starting the machine observe local safety regulations and the safety precautions in the instruction manual.

– With the engine running, open the throttle wide.

– Release the rear handle.

The chain must come to a standstill in less than one second.

If the coasting brake does not operate properly, troubleshooting chart – 🕮 4.1.

In either case the sliding and bearing points shown in the illustrations should be serviced as follows:

If lightly contaminated:

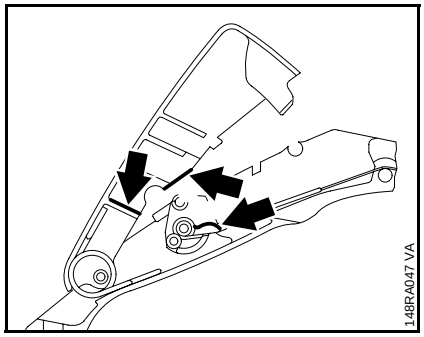
– Clean all parts with a standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons.

If heavily contaminated or clogged with resin:

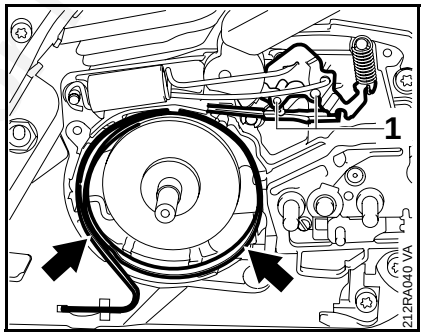
– Remove the parts concerned and clean in a standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons.

– Replace worn or damaged parts.

– Before re-installing parts, the machine recesses and seats.

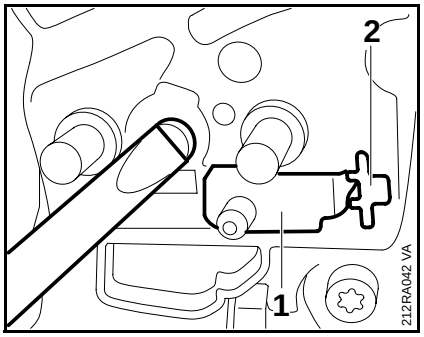


- Lubricate the bearing points (arrows) with grease – 🕮 16.



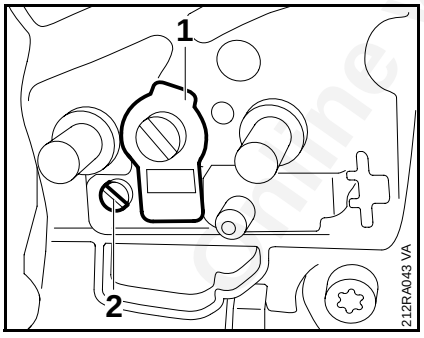
- Lubricate bearing points (1) and sliding points (arrows) with grease – 🕮 16.

– Coat outside diameter of clutch drum with chain oil to reduce "snatching" during the first few brake applications.

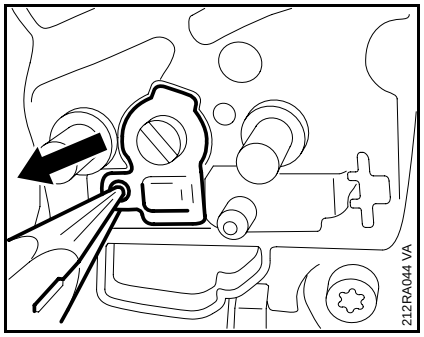


– Remove the inner side plate – 🕮 5.5.1 or 5.5.2.

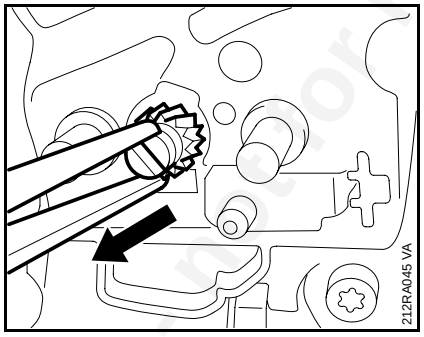
- Use a screwdriver to turn the spur gear clockwise until tensioner slide (1) butts against the thrust pad (2).



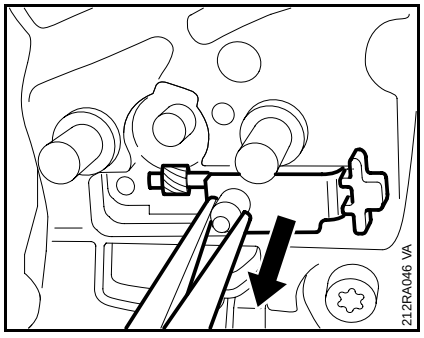
- Take out the screw (2).
- Remove the retainer (1).



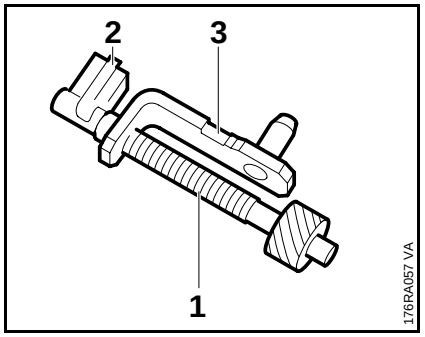
- Remove the cover plate.



- Pull out the spur gear.



- Pull out the tensioner slide with adjusting screw and thrust pad.

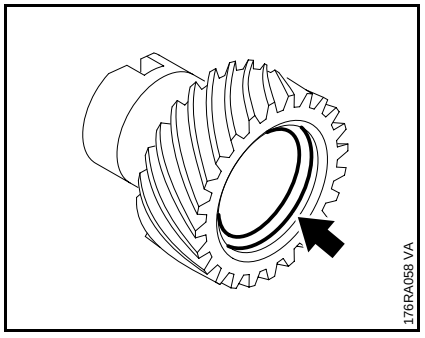


- Inspect the teeth on the spur gear and adjusting screw (1), and replace both parts if necessary. To do this, pull off the thrust pad (2) and unwind the adjusting screw from the tensioner slide (3).

Reassemble in the reverse sequence.

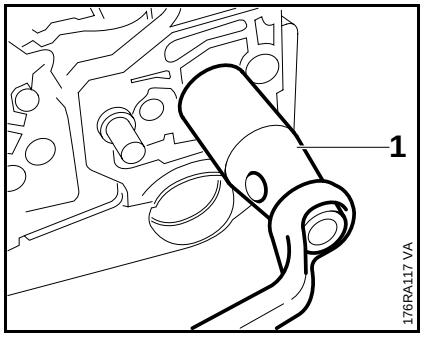
Always replace the adjusting screw and spur gear as a matching pair.

Before installing, lubricate teeth on adjusting screw and spur gear with grease – 🕮 16.



- Check that the O-ring (arrow) is fitted in the spur gear and lubricate it with oil before installing the spur gear.

5.7 Bar Mounting Studs



– Remove chain sprocket cover and cutting attachment – 🕮 5.1

● Push stud puller 5910 893 0501 (1) over the collar stud as far as it will go. Use a 15 mm wrench to unscrew the collar stud counter-clockwise.

Reassemble in the reverse sequence.

– Before installing, coat thread of collar stud with LOCTITE – 🕮 16.

– Fit the collar stud and tighten it down firmly – 🕮 3.5

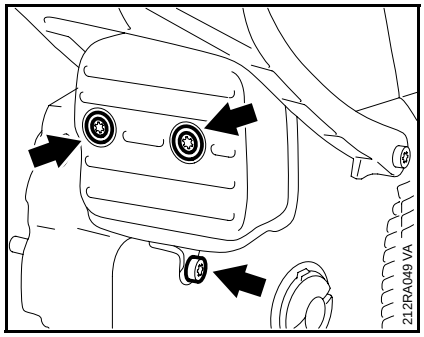
Reassemble all other parts in the reverse sequence.

6. Engine

6.1 Muffler/Spark Arresting Screen

Always check and, if necessary, repair the fuel system, carburetor, air filter and ignition system before looking for faults on the engine.

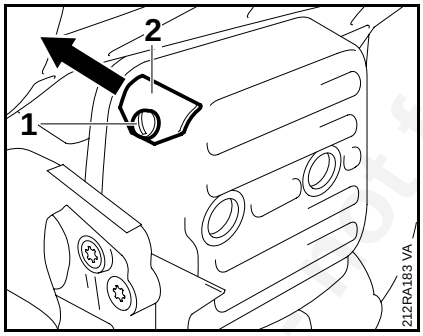
– Troubleshooting chart – 🕮 4.6



● Take out the screws (arrows).

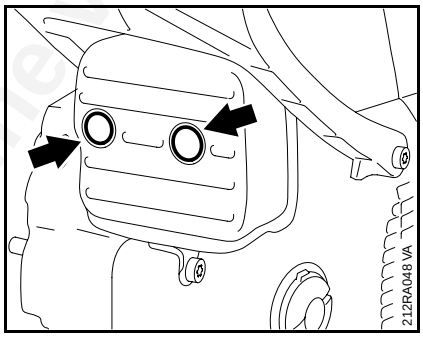
– Remove the muffler.

Only machines with spark arresting screen



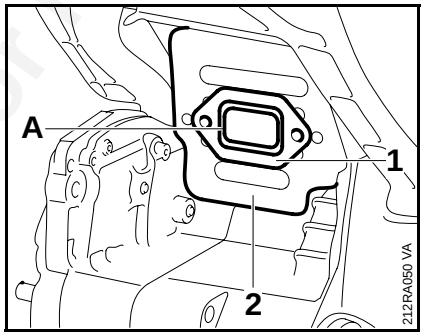
● Take out the screw (1).

● Remove the spark arresting screen (2) and clean or replace it if necessary.



All machines

● Pry out the plugs (arrows).



● Remove the gasket (1) and heat shield (2).

– Clean the sealing faces.

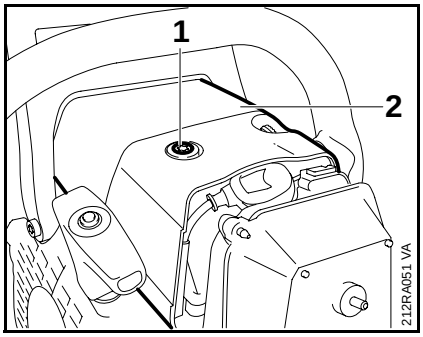
Reassemble in the reverse sequence.

● Fit the heat shield (2) in position.

● Install the new gasket (1) so that its bead (A) faces outwards.

– Fit the muffler.

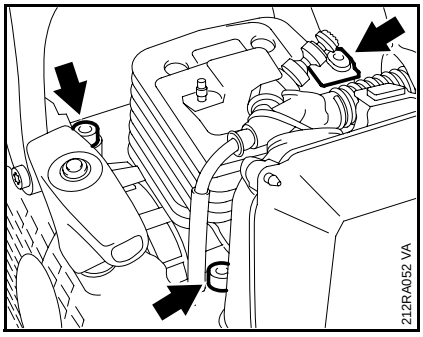
– Tighten down the screws firmly – 🕮 3.5



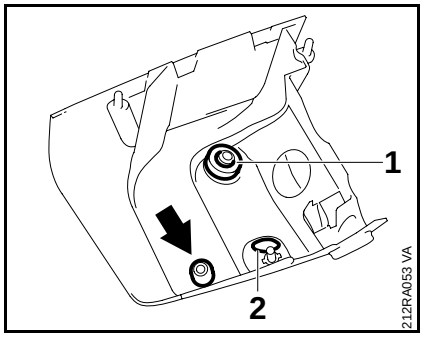
– Unscrew the spark plug – 🕮 5.4

● Loosen the slotted nut (1).

● Lift the shroud (2) away vertically.



– Before fitting the shroud, check that the grommets (arrows) are properly seated.



– Before fitting the shroud, check that cap (arrow) and grommet (1) are properly seated.

– On machines without decompression valve, check that cap (2) is properly seated.

Always replace damaged caps and grommets in sets.

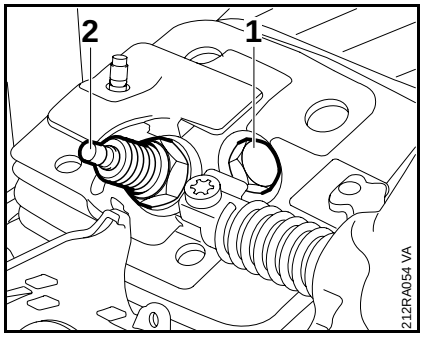
– Fit the shroud and tighten down the slotted nut firmly – 🕮 3.5

Defective oil seals and gaskets or cracks in castings are the usual causes of leaks. Such faults allow supplementary air to enter the engine and upset the fuel-air mixture.

This makes adjustment of the prescribed idle speed difficult, if not impossible.

Moreover, the transition from idle speed to part or full throttle is not smooth.

The crankcase can be checked thoroughly for leaks with the carburetor and crankcase tester and the vacuum pump.



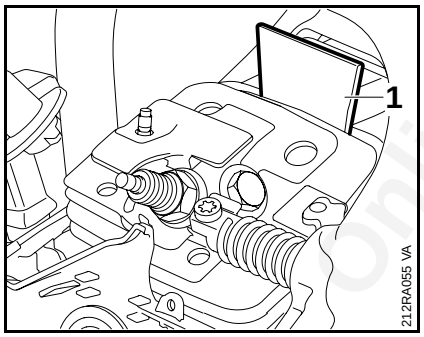
– Remove the shroud – 🕮 6.2

– Remove the decompression valve, if fitted – 🕮 6.8

● Install plug (1) 1122 025 2200 and tighten down to 25 Nm.

● Fit spark plug (2) and tighten it down firmly – 🕮 3.5

– Loosen the muffler screws lightly – 🕮 6.1



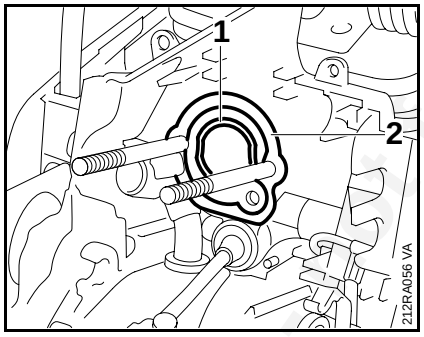
● Fit sealing plate (1) 0000 855 8106 between the heat shield and cylinder exhaust port and tighten down the screws moderately.

The sealing plate must completely fill the space between the two screws.

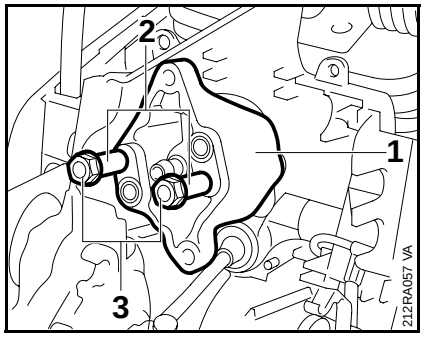
– Remove the switch shaft – 🕮 10.1

– Remove the carburetor – 🕮 12.2.1

– Set the piston to top dead center. This can be checked through the inlet port.



● Check that the sleeve (1) and washer (2) are in place.

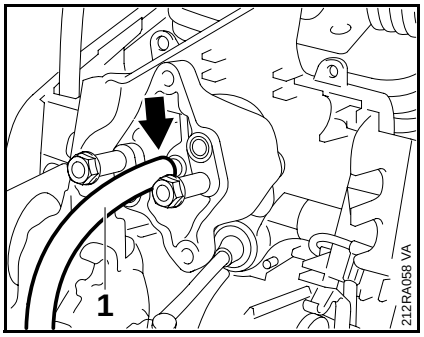


● Fit the test flange 1128 850 4200 (1).

● Fit the sleeves (2) 0000 963 1001.

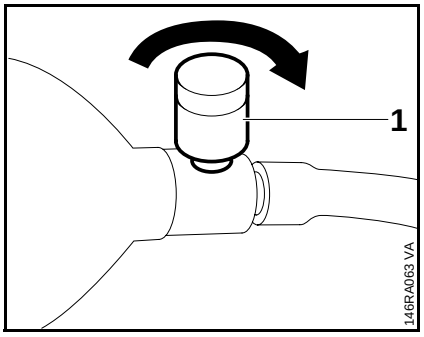
● Fit nuts (3) and tighten them down firmly.

6.3.2 Pressure Test

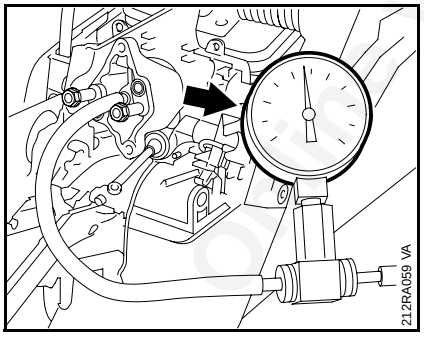


– Preparations – 🕮 6.3.1

● Connect pressure hose (1) of tester 1106 850 2905 to nipple (arrow) on test flange.



● Close vent screw (1) on the rubber bulb.



● Pump air into the crankcase with rubber bulb until the gauge (arrow) indicates a pressure of 0.5 bar. If this pressure remains constant for at least 20 seconds, the crankcase is airtight.

– However, if the pressure drops, the leak must be located and the faulty part replaced.

To find the leak, coat the suspect area with oil and pressurize the crankcase. Bubbles will appear if a leak exists.

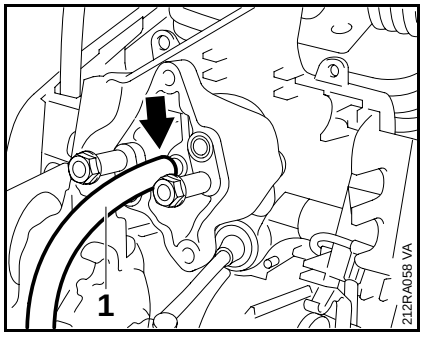
– After finishing the test, open the vent screw and disconnect the hose of tester 1106 850 2905.

– Continue with vacuum test – 🕮 6.3.3

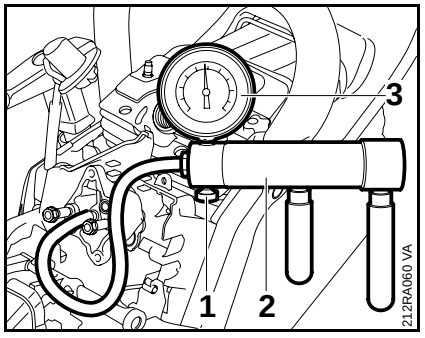
6.3.3 Vacuum Test

Oil seals tend to fail when subjected to a vacuum, i.e. the sealing lip lifts away from the crankshaft during the piston's induction stroke because there is no internal counterpressure.

An additional test can be carried out with the vacuum pump to detect this kind of fault. Carry out the same preparations as for the pressure test – 🕮 6.3.2



● Connect suction hose (arrow) of vacuum pump 0000 850 3501 to nipple (arrow) of the test flange.



● Close the vent screw (1) on the pump.

● Operate lever (2) until pressure gauge (3) indicates a vacuum of 0.5 bar.

If the vacuum reading remains constant, or rises to no more than 0.3 bar within 20 seconds, it can be assumed that the oil seals are in good condition. However, if the pressure continues to rise (reduced vacuum in the crankcase), the oil seals must be replaced, even if no leaks were detected in the pressure test.

– After finishing the test, open the vent screw and disconnect the hose.

– Remove the test flange.

– Install the carburetor – 🕮 12.2.1

– Loosen the muffler screws and remove the sealing plate.

– Tighten down the muffler screws firmly – 🕮 3.5

– Install the decompression valve, if fitted – 🕮 6.8

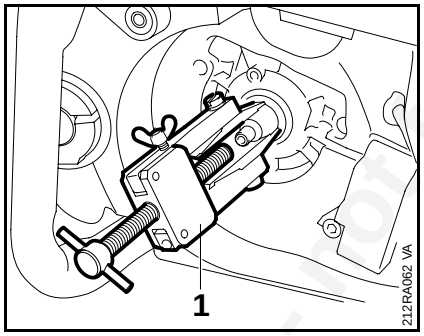
Reassemble all other parts in the reverse sequence.

It is not necessary to disassemble the complete crankcase to replace the oil seals.

Flywheel side

– Remove the flywheel – 🕮 7.1.5

– On machines with handle/ carburetor heating, remove the generator – 🕮 14.7



– Free off the oil seal in its seat by tapping it with a suitable tube or a punch.

● Apply puller (1) 5910 890 4400 with No. 6 jaws 0000 893 3711.

– Clamp the puller arms.

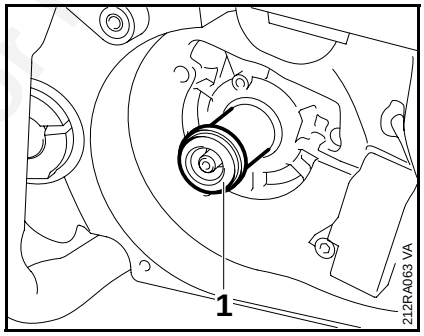
– Pull out the oil seal.

Take care not to damage the crankshaft stub.

– The crankshaft sealing face and taper must be free from grease. Clean with standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons – 🕮 16.

– Lubricate sealing lip of oil seal with grease – 🕮 16.

– Slip the oil seal, open side facing the crankcase, over the crankshaft stub.



● Use the press sleeve (1) 1108 893 2405 to install the oil seal.

The seating face must be flat and free from burrs.

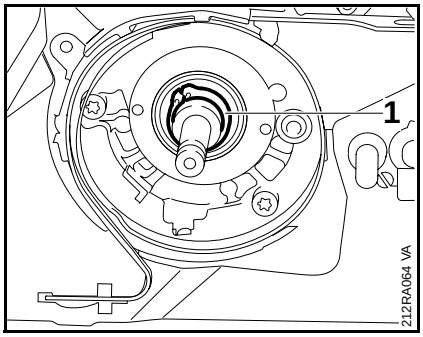
– Wait about one minute, then rotate the crankshaft several times.

– Install the generator (if fitted) and tighten down the screws firmly – 🕮 3.5

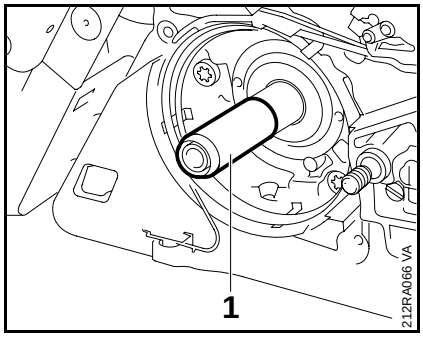
Reassemble all other parts in the reverse sequence.

Clutch side

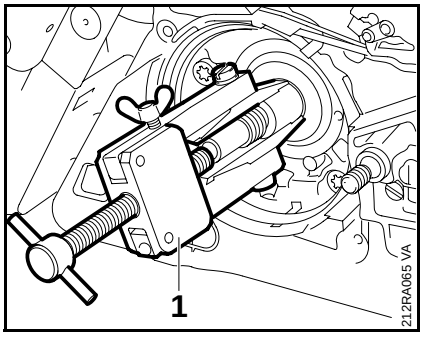
– Remove the oil pump – 🕮 11.3.1



● Use pliers 0811 611 8380 to remove the retaining ring (1).



● Push the installing sleeve (1) 1118 893 2401 on to the crankshaft stub.



– Free off the oil seal in its seat by tapping it with a suitable tube or a punch.

● Apply puller (1) 5910 890 4400 with No. 3.1 jaws 0000 893 3706.

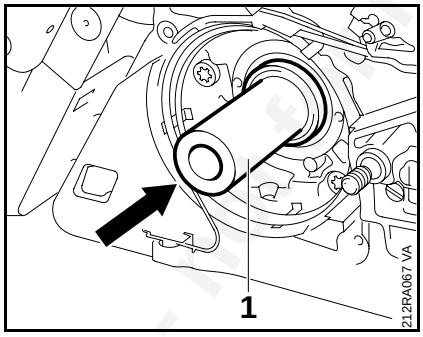
– Clamp the puller arms.

– Pull out the oil seal.

Take care not to damage the crankshaft stub.

– Cleaning sealing face with standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons – 🕮 16.

– Lubricate sealing lip of oil seal with grease – 🕮 16.



– Slip the oil seal, open side facing the crankcase, over the crankshaft stub.

● Use press sleeve (1) 1118 893 2400 to install the oil seal.

– Remove the installing sleeve.

– Wait about one minute, then rotate the crankshaft several times.

Reassemble all other parts in the reverse sequence.

Before removing the piston, decide whether or not the crankshaft has to be removed as well. The crankshaft has to blocked to remove the flywheel and clutch by resting the piston on the wooden assembly block with the cylinder removed or loosened.

– Remove the muffler – 🕮 6.1

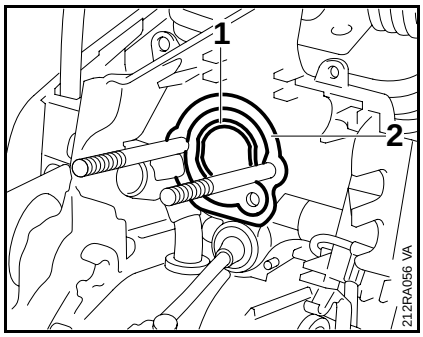
– Remove the shroud – 🕮 6.2

– Remove the fan housing with rewind starter – 🕮 8.2

– Remove the carburetor – 🕮 12.2.1

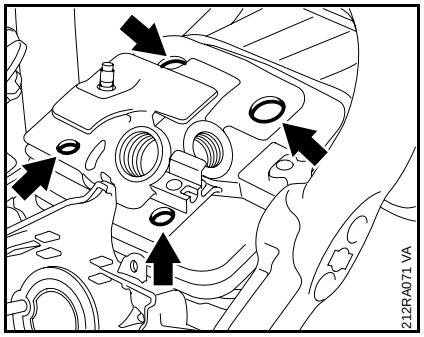
– Remove the decompression valve, if fitted – 🕮 6.8

– Remove the spring – 🕮 9.1

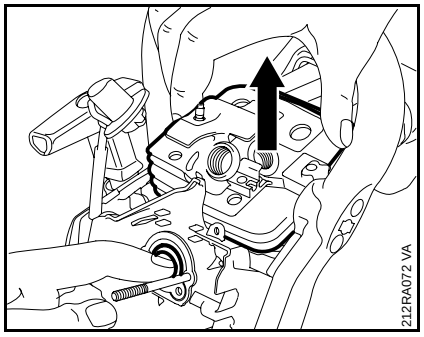


● Take the sleeve (1) out of the manifold.

● Remove the washer (2).



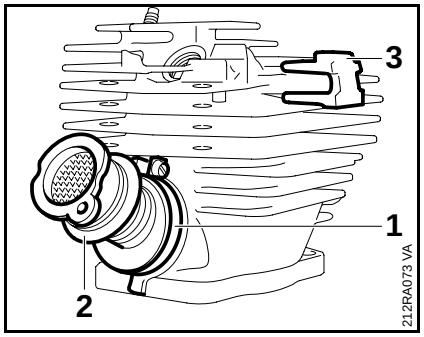
- Take out the four cylinder base screws through the holes (arrows) in the cylinder.



- Carefully lift the cylinder and, at the same time, push the manifold through the tank housing opening.

Do not use pointed or sharp-edged tools for this job.

– Pull the cylinder off the piston.



- Loosen the clamp (1).
- Pull the manifold (2) off the intake stub.
- Pull off the grommet (3).

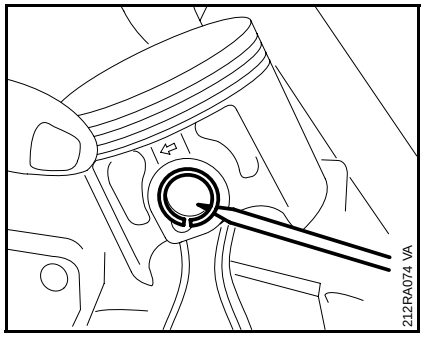
– Inspect the cylinder for damage and scores and replace if necessary.

– If a new cylinder has to be installed, **always** fit a new matching piston.

– Before removing the piston, decide whether or not the crankshaft has to be removed as well. The crankshaft has to blocked to remove the flywheel and clutch by resting the piston on the wooden assembly block with the cylinder removed or loosened.

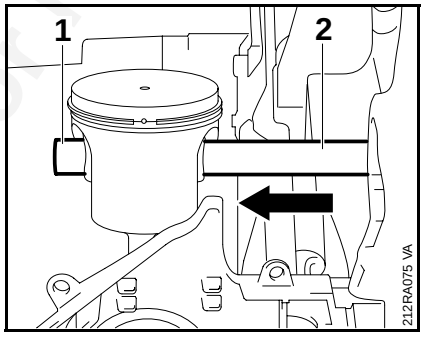
– Remove the clutch – 🕮 5.4

– Remove the flywheel – 🕮 7.1.5



- Remove the hookless snap rings from the piston.

Wear safety glasses to protect your eyes when working with snap rings.

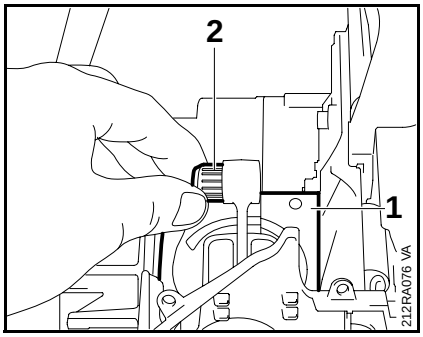


- Use the assembly drift (2) 0000 893 4700 to push the piston pin (1) out of the piston.

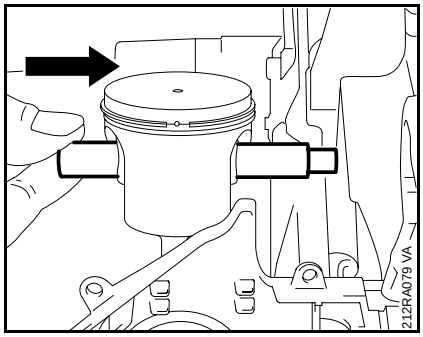
If the piston pin is stuck, tap the end of the drift **lightly** with a hammer if necessary.
Hold the piston steady during this process to ensure that no jolts are transmitted to the connecting rod.

– Remove the piston from the connecting rod and take the needle cage out of the small end.

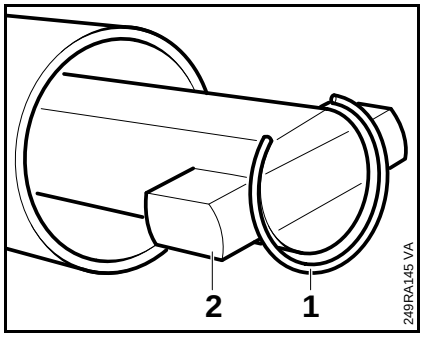
– Inspect the piston rings and replace if necessary – 🕮 6.6



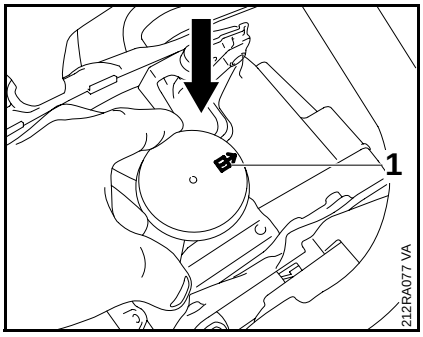
- Thoroughly clean the gasket seating surface (1).
- Lubricate the needle cage (2) with oil and fit it in the small end.



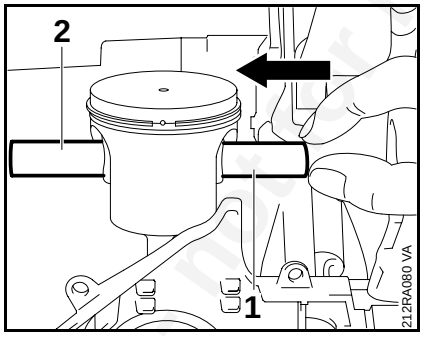
- Push the assembly drift 0000 893 4700, small diameter first, through the piston and small end (needle cage) and line up the piston.



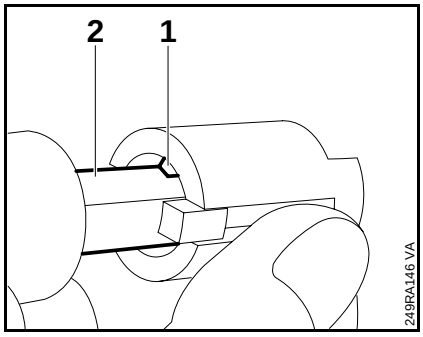
- Attach the snap ring (1) to the magnet (2) so that the snap ring gap is on the flat side of the tool's shank.



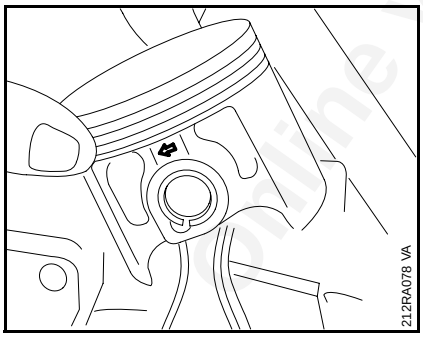
- Position the piston so that the mark (1) points towards the muffler.



- Fit the piston pin (1) on the assembly drift (2) and slide it into the piston.

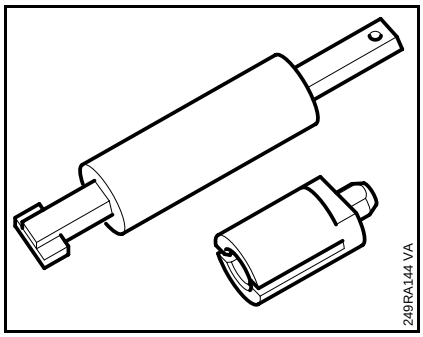


- Push the large slotted diameter of the sleeve over the magnet and snap ring. Position the sleeve so that the inner pin (1) points toward the flat face (2) of tool's shank.

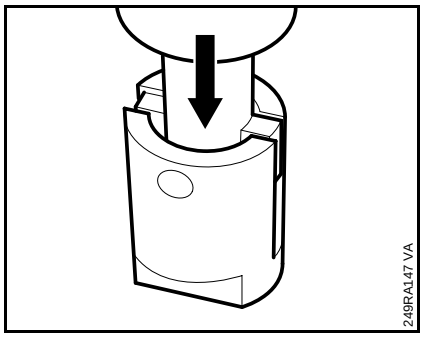


If the mark on the piston crown is no longer visible, make sure arrow on the side of the piston points towards the muffler.

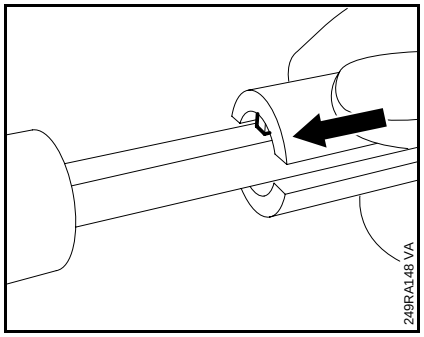
– Push the piston over the connecting rod.



- Remove the sleeve from installing tool 5910 890 2211.

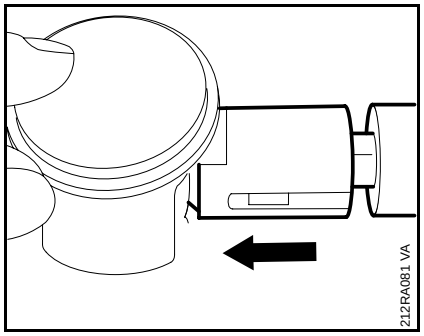


- Stand the installing tool, sleeve downward, on a flat surface (wooden board) and press vertically downwards until the sleeve butts against the tool's shoulder.

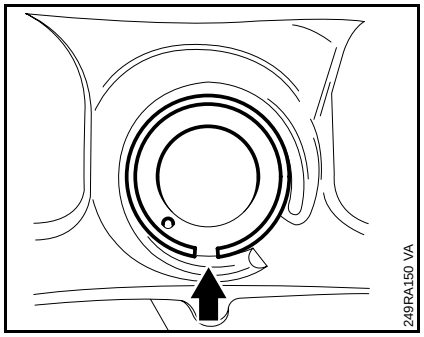


- Remove the sleeve and slip it onto the other end of the shank.

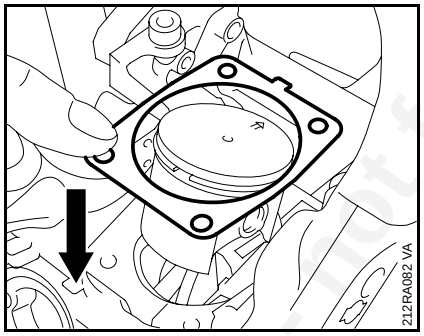
Inner pin must again point toward flat face.



- Apply the installing tool (5910 890 2211) to the piston boss, hold the piston steady, center the tool shank exactly and press home until the snap ring slips into the groove.

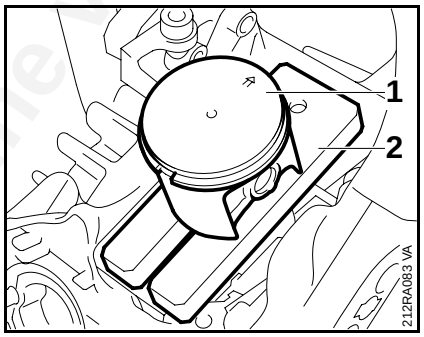


Fit the snap rings so that their gaps are on the piston's vertical axis (they must point either up or down – see arrow).



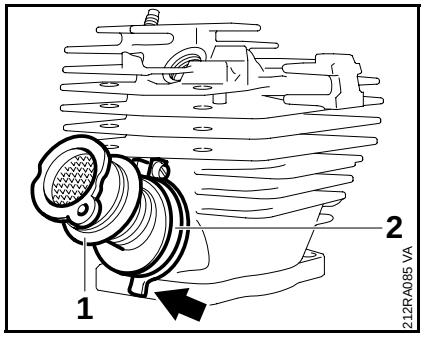
- Fit new cylinder gasket, curvature facing down, on the crankcase.

– Line up the piston rings – 🕮 6.6



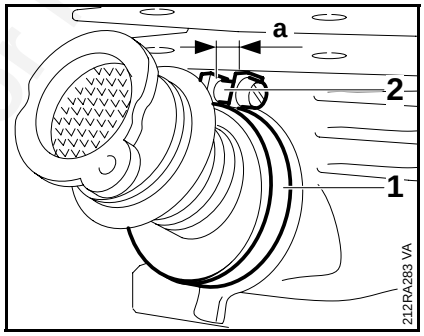
– Lubricate piston and piston rings with oil.

- Rest the piston (1) on the wooden assembly block (2) 1108 893 4800.



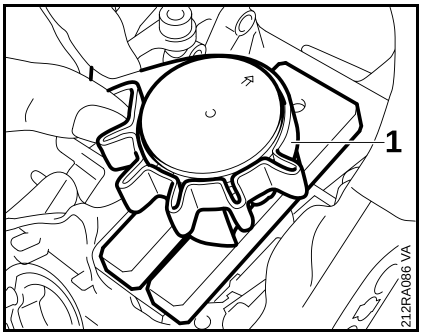
- Push the manifold (1) on to the intake port, paying attention to the correct installed position (see arrow).

- Note installed position of the clamp (2).



- Tighten down the clamp (1) so that it closes against the spacer sleeve (2).

On clamps with spacer sleeve, tighten the screw until the gap “a” between the two ends of the clamp is 5 to 6 mm.

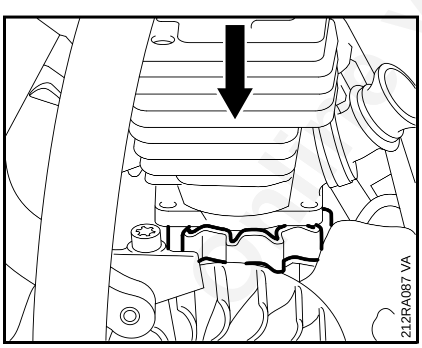


- Use the clamping strap (1) 0000 893 2600 to compress the rings around the piston.

– Check correct installed position of rings once again.

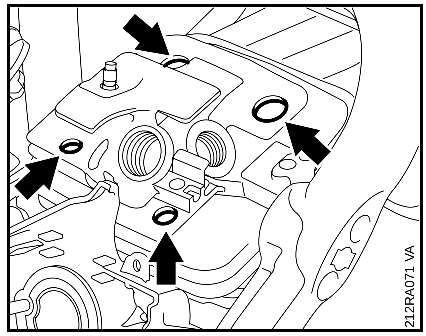
– Lubricate the inside of the cylinder with oil.

– Position the cylinder above the piston as it will be in the installed condition.



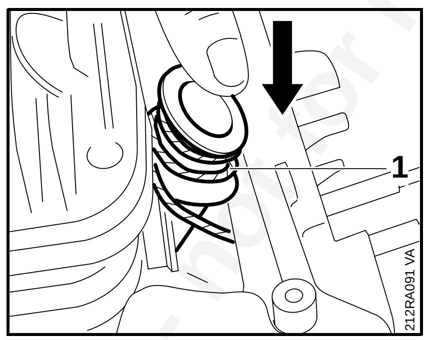
- Carefully slide the cylinder over the piston, the clamping strap moves downwards at the same time.

– Remove the clamping strap and wooden assembly block.



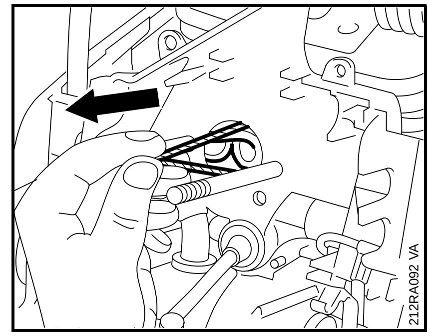
– Line up the cylinder and cylinder gasket.

- Insert the cylinder base screws (do not tighten down yet).



- To pull the manifold flange through the intake opening in the tank housing, wind a piece of string (1) (about 15 cm long) around the back of the flange and pass the ends of the string through the intake opening.

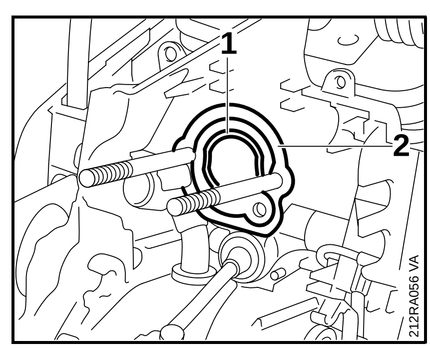
– Press the manifold down.



- Pull the ends of the string outward.

The manifold flange is pulled through the tank housing intake opening without damaging the manifold.

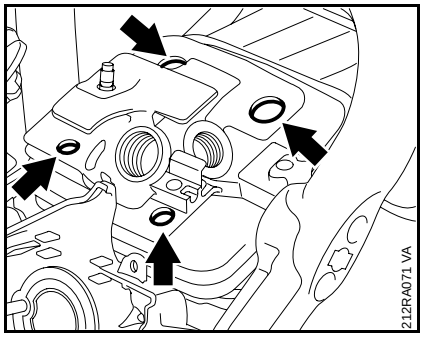
– Check that flange is properly seated in the tank housing.



- Fit sleeve (1) in manifold.

- Fit the washer (2).

Reassemble all other parts in the reverse sequence.

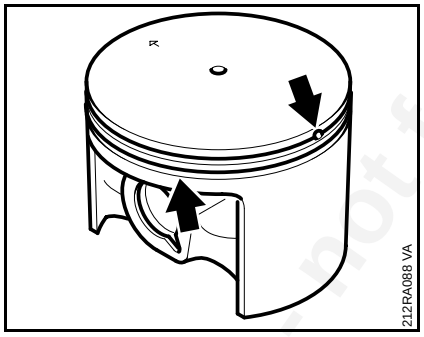


- Tighten down the cylinder base screws in an alternate pattern – 🕮 3.5
- Screw home the decompression valve, if fitted, and tighten it down firmly – 🕮 6.8

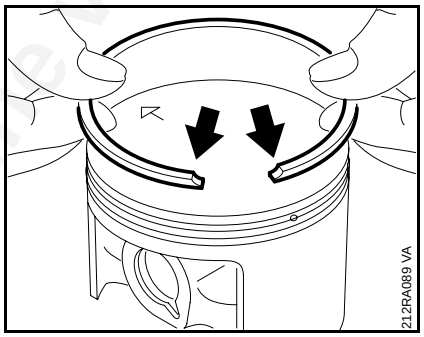
Reassemble all other parts in the reverse sequence.

– Remove the piston – 🕮 6.5.1

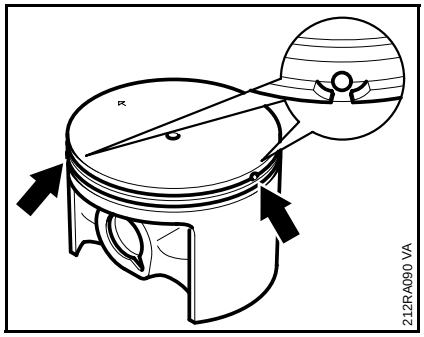
– Remove rings from piston.



- Use a piece of old piston ring to scrape the grooves clean.



- Install the new piston rings in the grooves so that the radii at the ends of the rings face upward.



- Position the piston rings so that the radii at the ring gaps meet at the fixing pins (arrows) in the piston groove.
- Check correct installed position of piston rings (arrows) again.

– Install the piston – 🕮 6.5.2

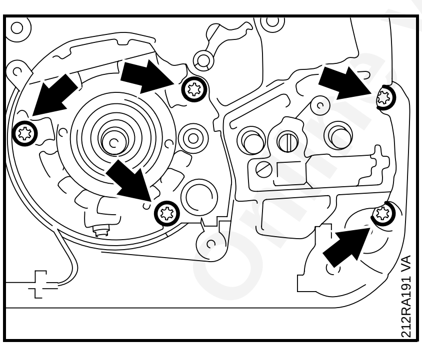
6.7 Crankcase/ Crankshaft

6.7.1 Removing

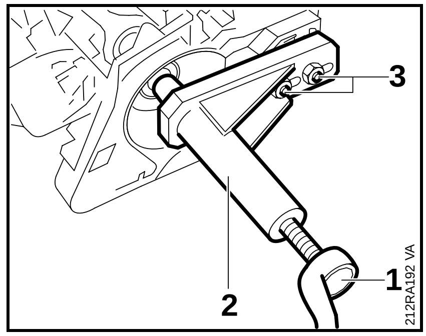
- Remove the spiked bumper – 🕮 5.3
- Remove the brake band – 🕮 5.5.1 or 5.5.2
- Remove the ignition module – 🕮 7.1.2
- Remove the flywheel – 🕮 7.1.5
- On machines with handle and/or carburetor heating, remove the generator – 🕮 14.7
- Drain the oil tank.
- Drain the fuel tank.

Dispose of fuels and lubricants properly in accordance with environmental requirements.

- Remove the oil suction hose – 🕮 11.1
- Remove the oil seals – 🕮 6.4
- Remove the piston – 🕮 6.5.1
- Separate the crankcase and tank housing – 🕮 12.9



● Remove the screws (arrows) from the two halves of the crankcase.



– Back off the spindle (1) in service tool AS 5910 007 2205 all the way.

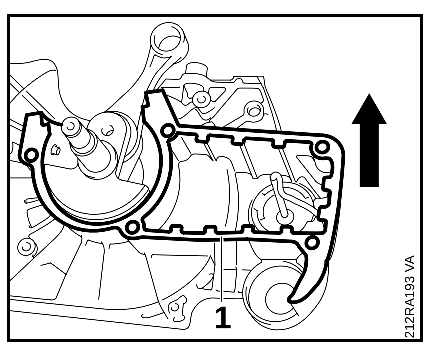
● Slip service tool AS (2) over the two collar studs.

● Fit the hex nuts (3) (for sprocket cover) and tighten them down by hand.

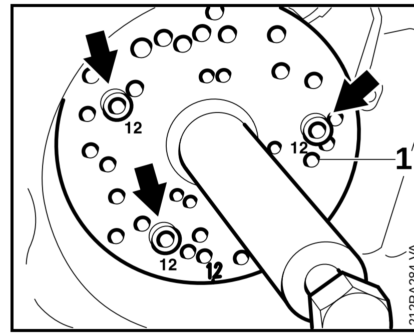
● Turn the spindle (1) of the service tool clockwise until the crankshaft is pressed out of the ball bearing.

The two halves of the crankcase separate during this process.

– Remove the service tool AS.



● Remove the gasket (1) from the crankcase.



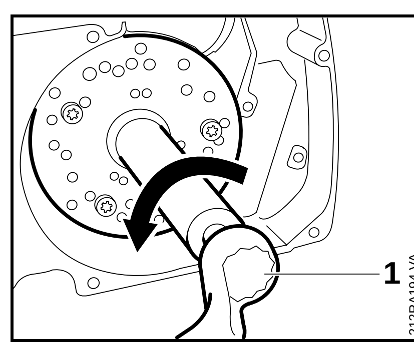
– Unscrew the spindle of service tool ZS (1) 5910 007 2220 a little (left-hand thread)

Make sure the retaining ring at the clutch side has been removed – 🕮 5.4

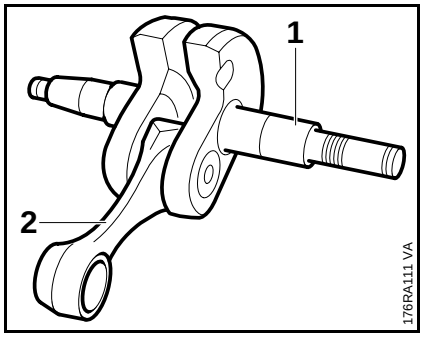
● Position the service tool ZS (1) 5910 007 2220 against the starter side so that the number 12 on the plate is at the bottom.

The cylinder flange faces up.

● Fit three M5x72 screws (arrows) in the holes marked “12“ and tighten them down against the drilled plate.

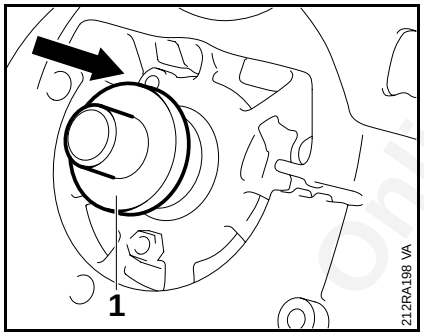


● Turn spindle (1) counter-clockwise until the crankshaft. is pushed out of the ball bearing.

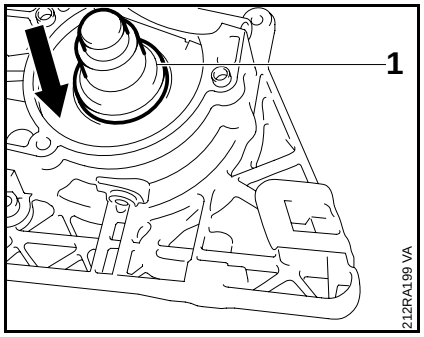


- The crankshaft (1), connecting rod (2) and needle bearing form an inseparable unit. It must always be replaced as a complete unit.

When fitting a replacement crankshaft, always install new oil seals and ball bearings.



- Use press arbor (1) 1120 893 7200 to press the ball bearing at the flywheel side out of the crankcase, from the outside inwards.



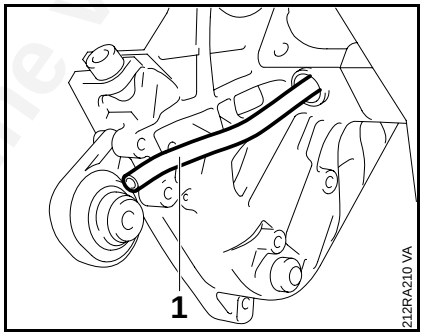
- Use press arbor (1) 1118 893 7200 to press the ball bearing at the clutch side out of the crankcase, from the inside outwards.

– Inspect both halves of the crankcase for cracks and replace if necessary.

Check the condition of all other parts, replace if necessary and transfer to the new crankcase.

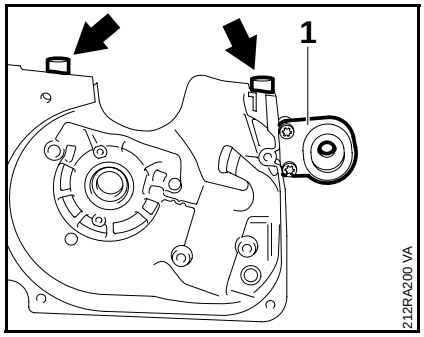
If only the ball bearings are replaced, all rubber and polymer components, such as oil suction hose, stop buffers and annular buffers may be left in position.

If the flywheel side of the crankcase has to be replaced, all the components still fitted must be removed and checked for damage. This involves the following operations:



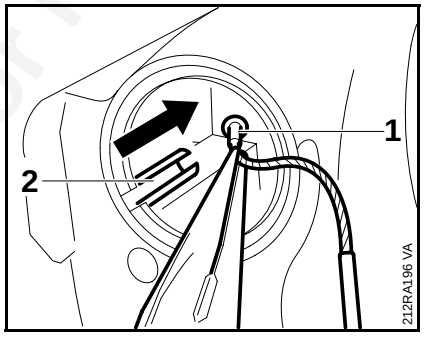
- Pull off the hose (1).

– Pry out the stop buffer – 🕮 9.1.4



- Pry out the grommets (arrows).

- Remove the annular buffer (1) – 🕮 9.1.2



- Disconnect the tank cap cord (1) from the slot (2).

– Remove the tank cap.

If the clutch side of the crankcase has to be replaced, all the components still fitted must be removed and checked for damage. This involves the following operations:

– Remove the chain tensioner – 🕮 5.6

– Unscrew the bar mounting studs – 🕮 5.7

– Remove the chain brake – 🕮 5.5.1 or 5.5.2

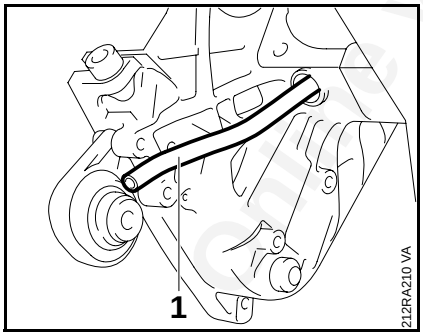
– Pry out the stop buffer – 🕮 9.1.4

New crankcases are supplied with preassembled ball bearings and oil seals. It is necessary to stamp the machine's serial number on the crankcase with 2.5 mm figure stamps.

If only the ball bearings have to be replaced, make sure all AV elements, the suction hose and oil tank cap are removed before the crankcase is heated.

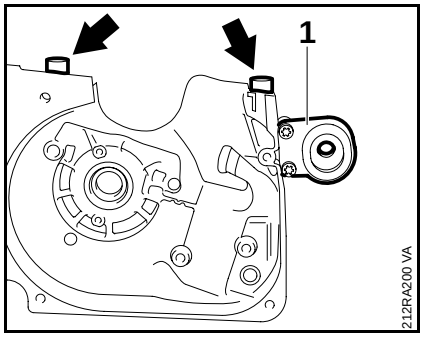
If the original crankcase is used again, remove all gasket residue and clean the mating surfaces thoroughly to guarantee a perfect seal.

If the flywheel side of the crankcase is new, all the components still fitted to the original crankcase must be transferred and checked for damage at the same time. This involves the following operations:



- Fit the hose (1).

– Install the stop buffer – 🕮 9.1.4



- Coat the grommets with STIHL Press Fluid OH 723 – 🕮 16.

- Fit the grommets (arrows).

- Install the annular buffer (1) – 🕮 9.1.2

If the clutch side of the crankcase is new, all the components still fitted to the original crankcase must be transferred and checked for damage at the same time. This involves the following operations:

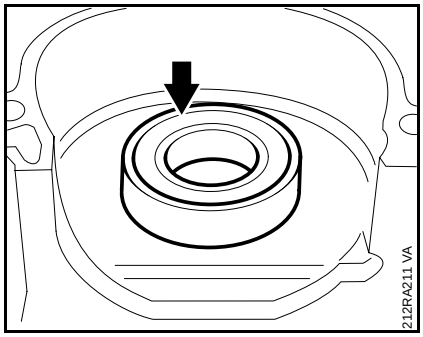
– Install the chain tensioner – 🕮 5.6

– Fit the bar mounting studs – 🕮 5.7

– Install the chain brake – 🕮 5.5.1 or 5.5.2

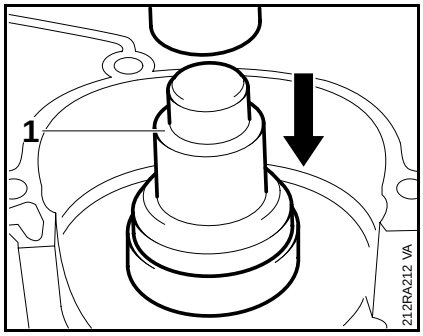
– Install the stop buffer – 🕮 9.1.4

– Heat the area of the ball bearing seat on the flywheel side of the crankcase to about 150 °C (302 °F).

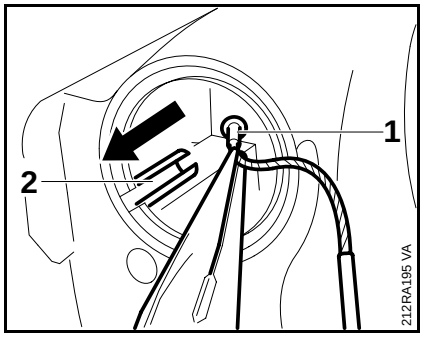


- Place the ball bearing, open side facing up, on the inside of the crankcase and push it home by hand as far as stop.

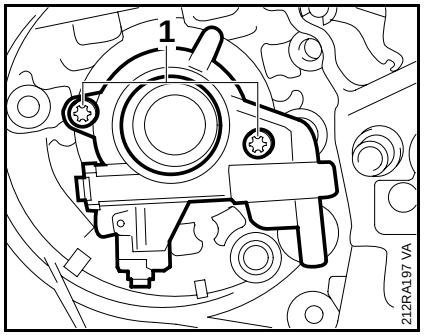
This operation must be carried out very quickly because the bearing absorbs heat immediately and begins to expand.



- If it is not possible to heat the flywheel side of the crankcase, use press arbor (1) 1118 893 7200 to press home the ball bearing as far as stop.



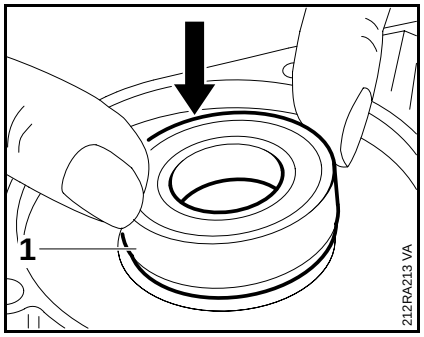
● Fit nipple of tank cap cord (1) in the slot (2) and pull it forwards.



● Place the oil pump in position.

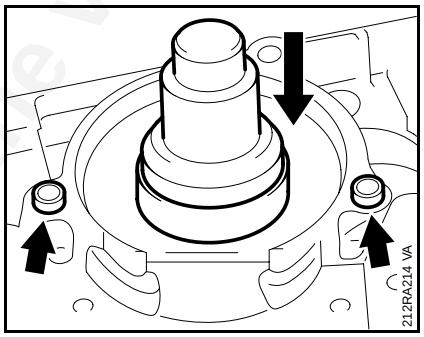
● Fit the screws (1) and tighten them down firmly – 🕮 3.5

– Heat the area of the ball bearing on the clutch side of the crankcase to about 150 °C (302 °F).



● Place the ball bearing, with shoulder (1), on the inside of the crankcase and push it home by hand against the oil pump.

This operation must be carried out very quickly because the bearing absorbs heat immediately and begins to expand.

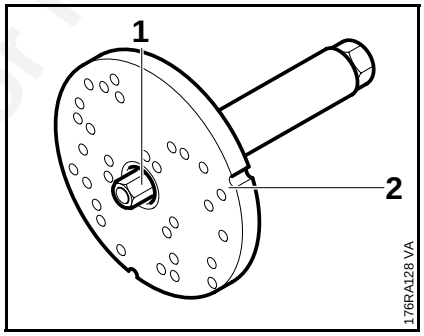


● If it is not possible to heat the clutch side of the crankcase, use press arbor (1) 1118 893 7200 to press home the ball bearing as far as stop.

– Remove the oil pump.

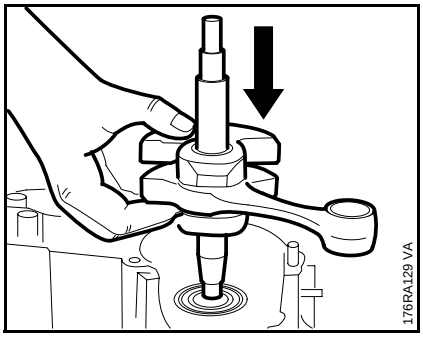
– Wait for crankcase to cool down.

– Install the suction hose – 🕮 11.1

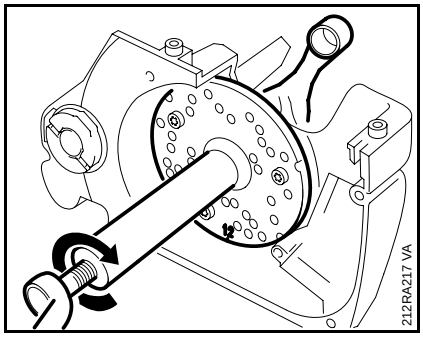


● Screw spindle of service tool ZS (2) 5910 007 2200 fully home and then screw the threaded sleeve (1) 5910 893 2421 onto the spindle.

– Lubricate tapered stub of crankshaft with oil.

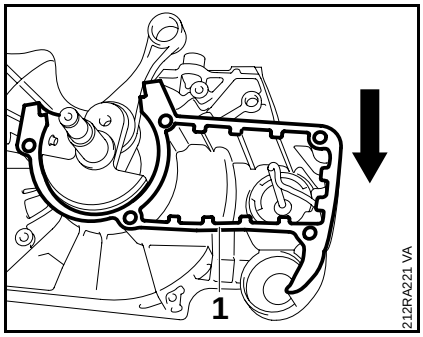


- Place tapered stub of crankshaft in the flywheel side (ball bearing) of the crankcase.

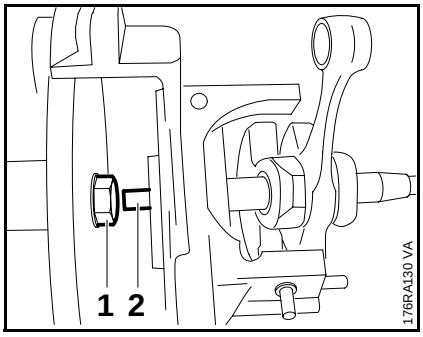


- Turn the spindle clockwise until the crankshaft locates against the ball bearing.

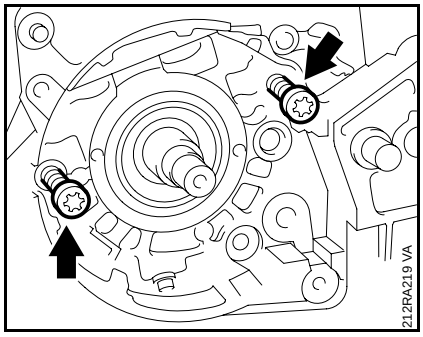
The connecting rod must point toward the cylinder flange while the crankshaft is being installed.



- Place new gasket on clutch side of crankcase.



- Screw threaded sleeve (1) to thread (2) on crankshaft stub.

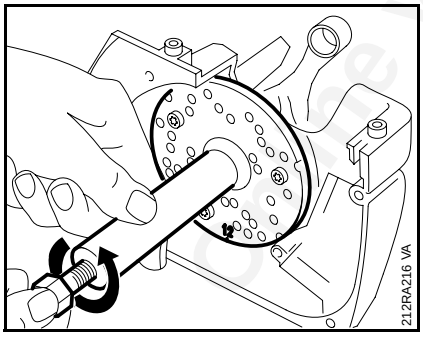


– Lubricate straight stub of crankshaft with oil.

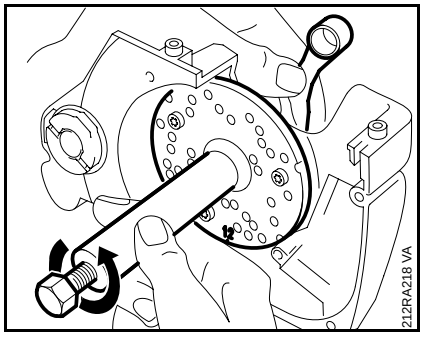
– Fit crankshaft stub in the ball bearing.

- To prevent the crankcase and gasket twisting, fit M5x72 screws (arrows) in two crankcase holes and tighten them down as far as stop.

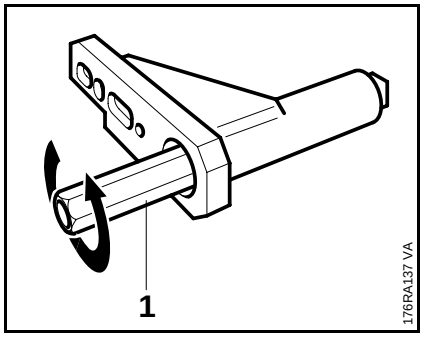
– Screw the spindle (counter-clockwise, left-hand thread) fully into the service tool AS 5910 890 2205.



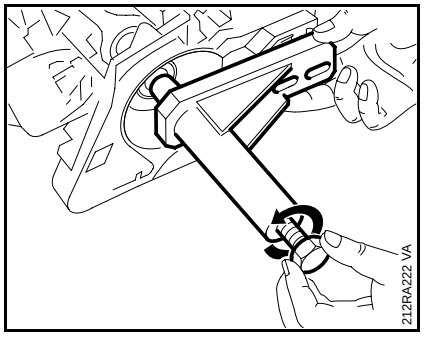
- Hold the spindle steady and rotate the service tool counter-clockwise until the drilled plate butts against the crankcase.



- Hold the crankshaft steady, release the spindle counter-clockwise and then unscrew the service tool, also counter-clockwise.



- Screw threaded sleeve (1) 5910 893 2409 of service tool AS 5910 890 2205 onto the spindle as far as stop (left-hand thread).

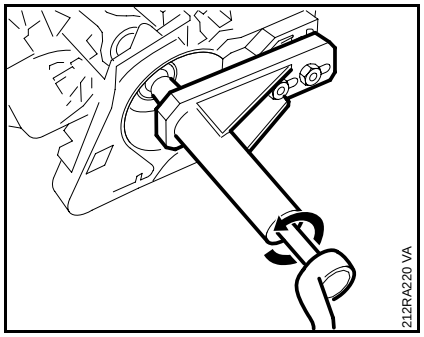


– Push the threaded sleeve over the crankshaft stub.

- Hold the crankshaft steady and rotate the spindle counter-clockwise to screw the threaded sleeve onto the crankshaft.

– Release the crankshaft. Hold the service tool steady and continue turning the spindle until the tool locates against the guide bar mounting face.

– Fit the hex nuts (for sprocket cover) on the bar mounting studs and screw them down finger-tight.

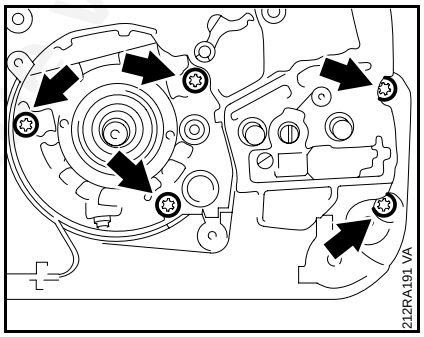


- Turn the spindle counterclock-wise until the crankshaft locates against the ball bearing.

– Unscrew the hex nuts.

– Unscrew the spindle clockwise and take away the service tool.

– Take out the two M5x72 screws.

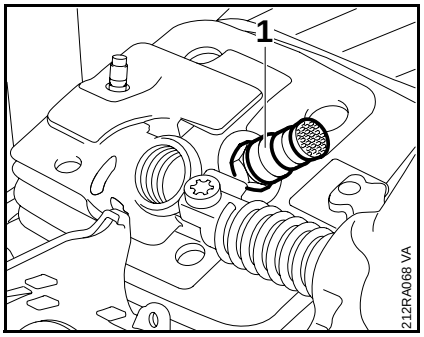


- Fit the screws (arrows) and tighten them down firmly in an alternate pattern – 🕮 3.5

Trim away any excess gasket material in the area of the cylinder mounting face.

– Install the oil seals – 🕮 6.4

Reassemble all other parts in the reverse sequence.



– Remove the shroud – 🕮 6.2

– Unscrew the decompression valve (1).

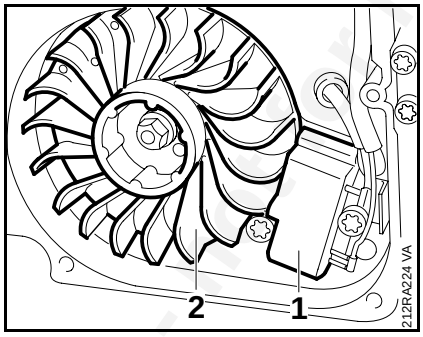
Install in the reverse sequence.

– Fit the decompression valve and tighten it down firmly – 🕮 3.5

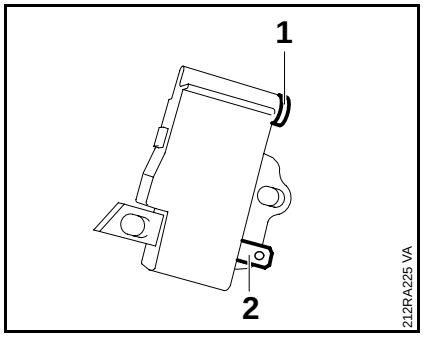
Reassemble all other parts in the reverse sequence.

Exercise extreme caution when troubleshooting or carrying out maintenance and repair work on the ignition system. The high voltages that occur can cause serious or even fatal accidents.

Troubleshooting on the ignition system should always begin at the spark plug – 🕮 4.4



The electronic ignition system basically consists of an ignition module (1) and flywheel (2).



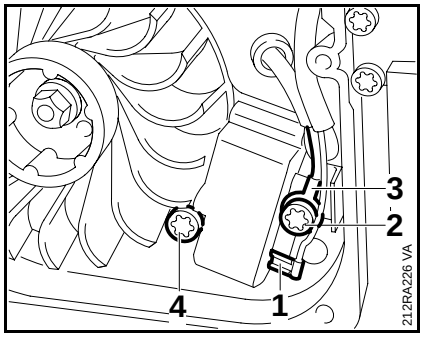
The ignition module accommodates all the components required to control ignition timing. There are two electrical connections on the coil body:

- High voltage output (1) for ignition lead
- Connector tag (2) for short circuit wire

Testing in the workshop is limited to a spark test.
A new ignition module must be installed if no ignition spark is obtained (after checking that wiring and stop switch are in good condition).

Ignition timing is fixed and cannot be adjusted during repair work.

Since there is no mechanical wear in these systems, ignition timing cannot get out of adjustment.



– Remove the shroud – 🕮 6.2

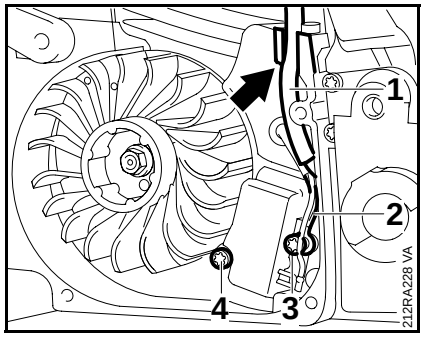
– Remove the fan housing with rewind starter – 🕮 8.2

- Pull off the short circuit wire (1).
- Take out the screw (2).
- Remove the ground wire (3).
- Take out the screw (4).

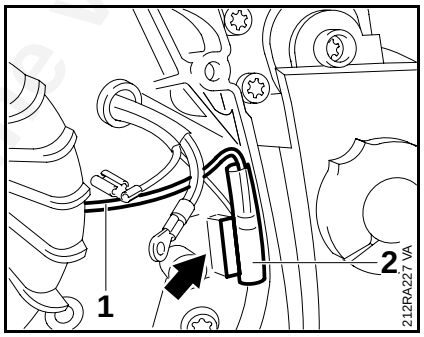
– Remove the ignition module.

If the ignition lead or spark plug boot is damage, install new parts – 🕮 7.1.4

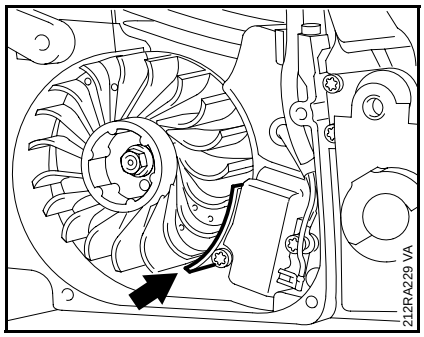
Reassemble in the reverse sequence.



- Secure ground wire (2) with screw (3).
- Tighten down screws (3 + 4) moderately.
- Place the ignition lead (1) in the guide (arrow).

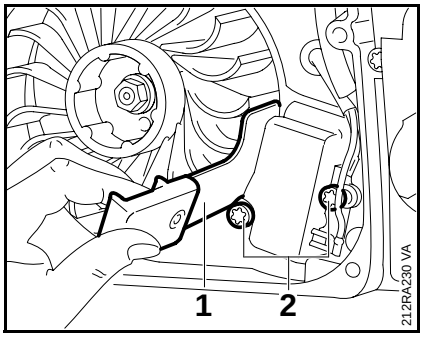


- On machines with handle and/or carburetor heating, position the wire (1) under the ignition module.
- Push connector (2) into retainer (arrow).



- Rotate the flywheel until its raised edge (arrow) is in line with the ignition module.

7.1.3 Testing the Ignition Module



- Slide the setting gauge (1) 1111 890 6400 between the arms of the ignition module and the raised edge of the flywheel.

– Press the ignition module against the setting gauge.

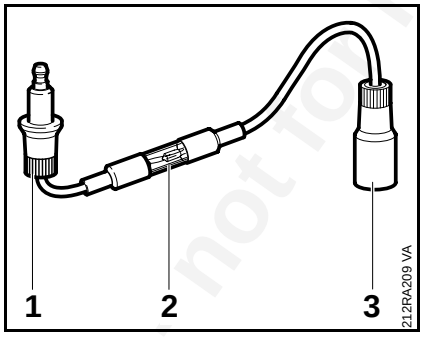
- Tighten down the screws (2) firmly – 🕮 3.5

– Remove the setting gauge and use a feeler gauge to check the air gap. It should be 0.2 mm.

Reassemble all other parts in the reverse sequence.

To test the ignition module, use either the ZAT 4 ignition system tester 5910 850 4503 or the ZAT 3 ignition system tester 5910 850 4520.

The ignition test refers only to a spark test, not to ignition timing.



Using the ZAT 4 ignition tester 5910 850 4503

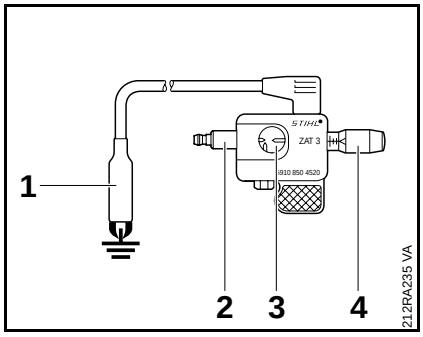
– Before starting the test, install a new spark plug in the cylinder and tighten it down firmly – 🕮 3.5

- Connect spark plug boot to the input terminal (1). Push the tester's output terminal (3) onto the spark plug.

- Crank the engine quickly with the rewind starter (min. 1,000 rpm) and check spark in the tester's window (2).

Warning!
The engine may start and accelerate during the test.

If a spark is visible, the ignition system is in order. If no spark is visible in the window (2), check the ignition system with the aid of the troubleshooting chart – 🕮 7.4



Using ZAT 3 ignition tester 5910 850 4520

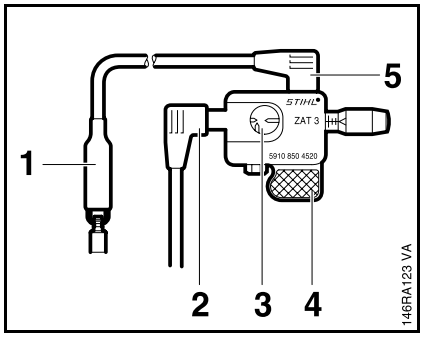
– Before starting the test, install a new spark plug in the cylinder and tighten it down firmly – 🕮 3.5

- Connect spark plug boot to the terminal (2).

- Attach ground terminal (1) to the spark plug.

- Use adjusting knob (3) to set spark gap to about 2 mm.

7.1.4 Ignition Lead / Spark Plug Boot



While using the ZAT 3, hold it only by the handle (4) or position it in a safe place. Keep fingers or other parts of your body at least 1 cm away from the spark window (3), high voltage connection (2), ground connection (5) and the ground terminal (1).

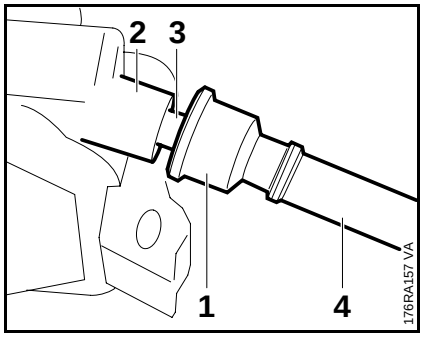
Warning!
High voltage – risk of electrocution.

– Crank the engine quickly with the rewind starter (min. 1,000 rpm) and check sparkover in the tester's window (3).

Warning!
The engine may start and accelerate during the test.

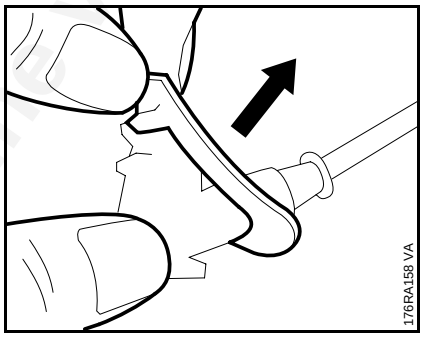
If a spark is visible, the ignition system is in order.

If no spark is visible in the window (3), check the ignition system with the aid of the troubleshooting chart – 🕮 7.4

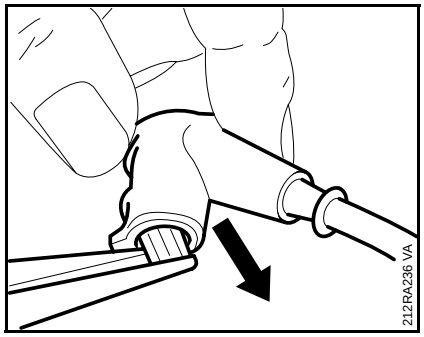


– Remove the ignition module – 🕮 7.1.2

- Pull the grommet (1) off the high voltage output (2).
- Unscrew the ignition lead (3) from the contact pin and pull it out of the high voltage output.
- Remove the grommet and insulating tube (4) from the ignition lead.



- Pull the cover off the spark plug boot.



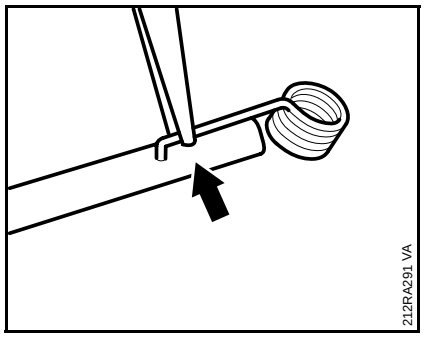
- Use suitable pliers to pull the leg spring out of the spark plug boot.

– Unhook the leg spring from the ignition lead.

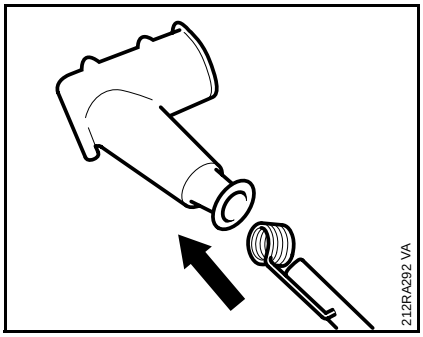
– Pull the boot off the ignition lead.

– Cut new ignition lead to a length of 195 mm.

– Use a pointed tool to pierce the center of the ignition lead's insulation, about 15 mm from the end of the lead.

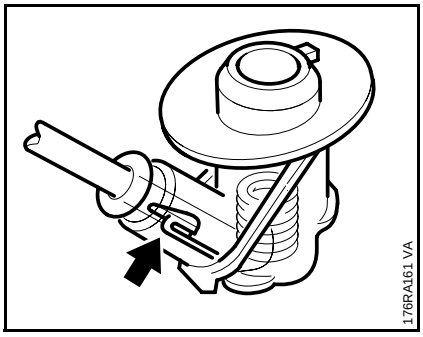


- Pinch the hook of the leg spring into the center of the lead (arrow).



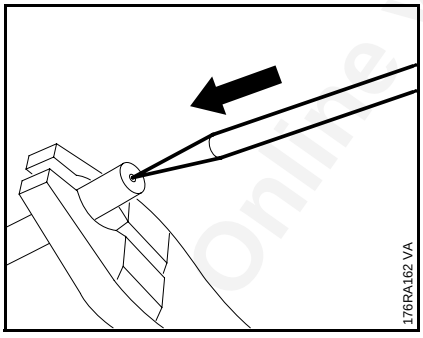
– Coat inside of spark plug boot with PressFluid OH 723.

● Push the ignition lead and leg spring into the spark plug boot.



● Make sure the leg spring locates properly inside the spark plug boot.

– Fit the cover over the spark plug boot.



● Use a pointed tool to pierce the center of the other end of the ignition lead.

– Slip the insulating tube and grommet over the ignition lead.

– Pack the high voltage output with STIHL multipurpose grease – 🕮 16.

Do not use either graphite grease or silicone insulating paste.

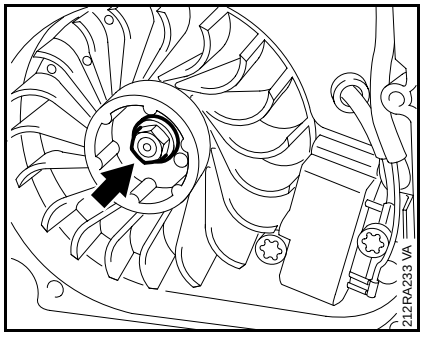
– Screw the ignition lead into the ignition module.

– Push the grommet over the high voltage output.

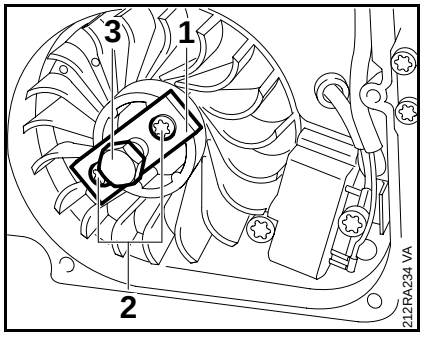
– Install the ignition module – 🕮 7.1.2

– Remove the fan housing with rewind starter – 🕮 8.2

– Block the piston with the locking strip – 🕮 5.4

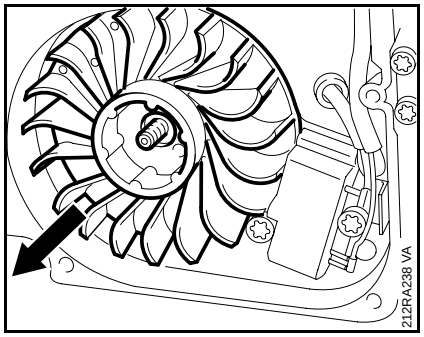


● Unscrew the flywheel nut (arrow).



● Mount the puller (1) 1135 890 4500 to the flywheel with screws (2).

● Screw home thrust bolt (3) until the flywheel is released.



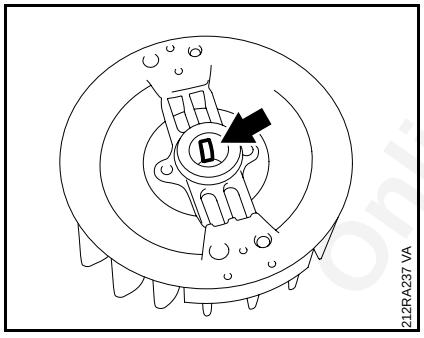
– Remove the puller from the flywheel.

● Pull off the flywheel.

Inspect flywheel and magnet poles for cracks or other damage. If you find any damage, install a new flywheel.

Degrease crankshaft stub and bore in flywheel hub with standard solvent-based degreasant containing no chlorinated or halogenated hydrocarbons – 🕮 16.

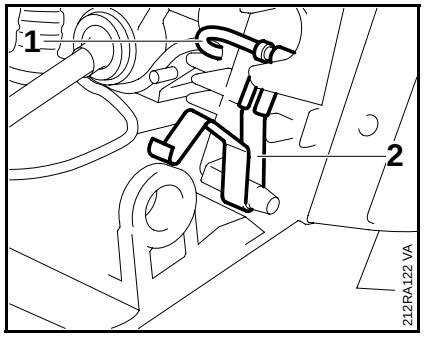
Reassemble in the reverse sequence.



● Make sure that machined key (arrow) engages the slot in the crankshaft.

– Adjust air gap between ignition module and flywheel – 🕮 7.1.2

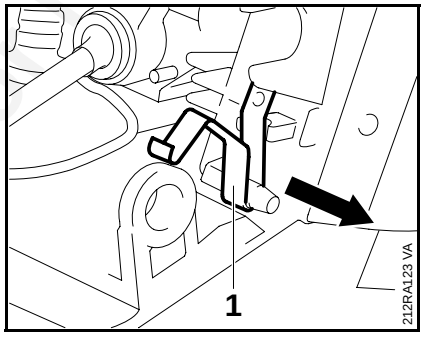
Assemble all other parts in the reverse sequence.



– Remove carburetor – 🕮 12.2.1

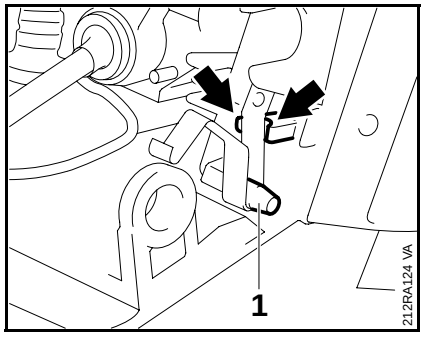
– Remove the switch shaft – 🕮 10.1

● Pull the ground wire (1) off the contact spring (2).

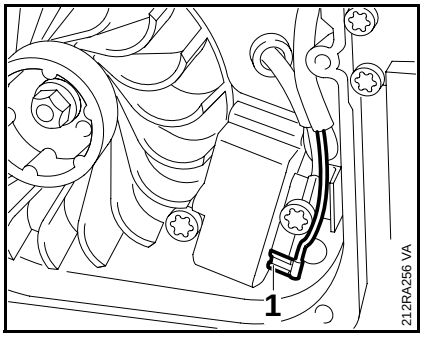


● Carefully pry the contact spring (1) sideways and out of the housing.

Reassemble in the reverse sequence.



● When installing, make sure the contact spring is under the pin (1) and between the stop lugs (arrows).



If the spark plug and ignition lead with spark plug boot are in order, check the resistance of the short circuit wire, ground wire and contact spring.

– Remove the fan housing with rewind starter – 🕮 8.2

● Pull the short circuit wire (1) off the tag on the ignition module.

– Connect the ohmmeter to ground and the short circuit wire.

– Set Master Control lever to "0"

The resistance measured must be about 0 Ω. If it is much higher, the reason is a break in the wire. The wire or contact spring has to be replaced.

– Set Master Control lever to "I"

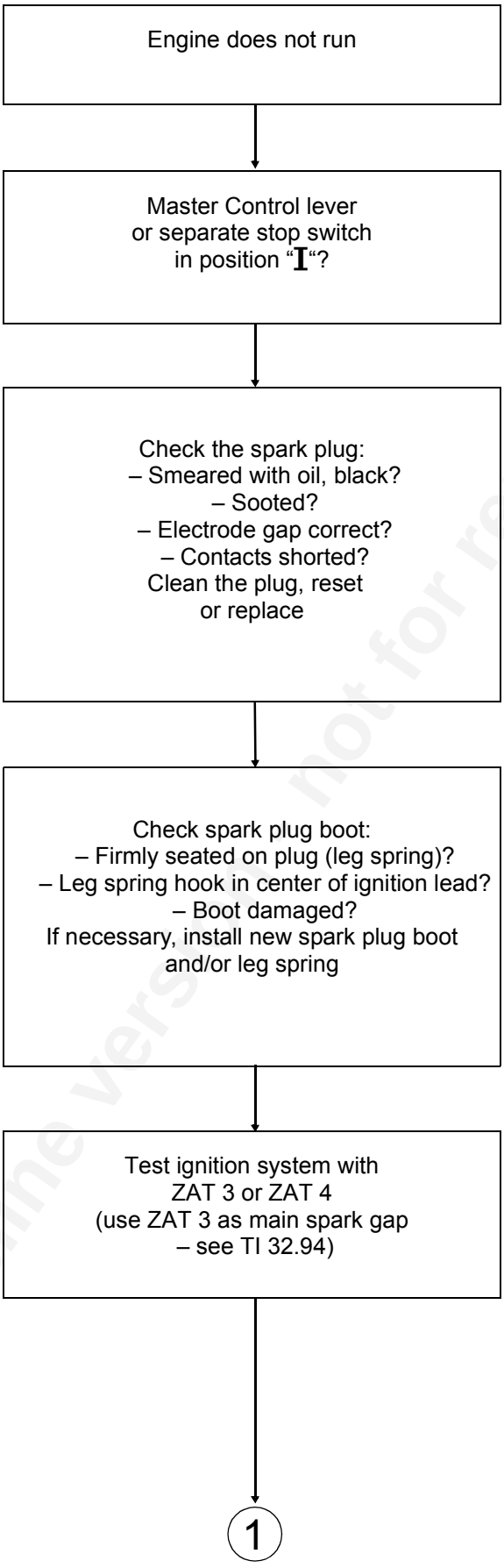
The resistance measured must be infinitely high. If not, fit a new short circuit wire.
If no fault can be found, carry out further checks:

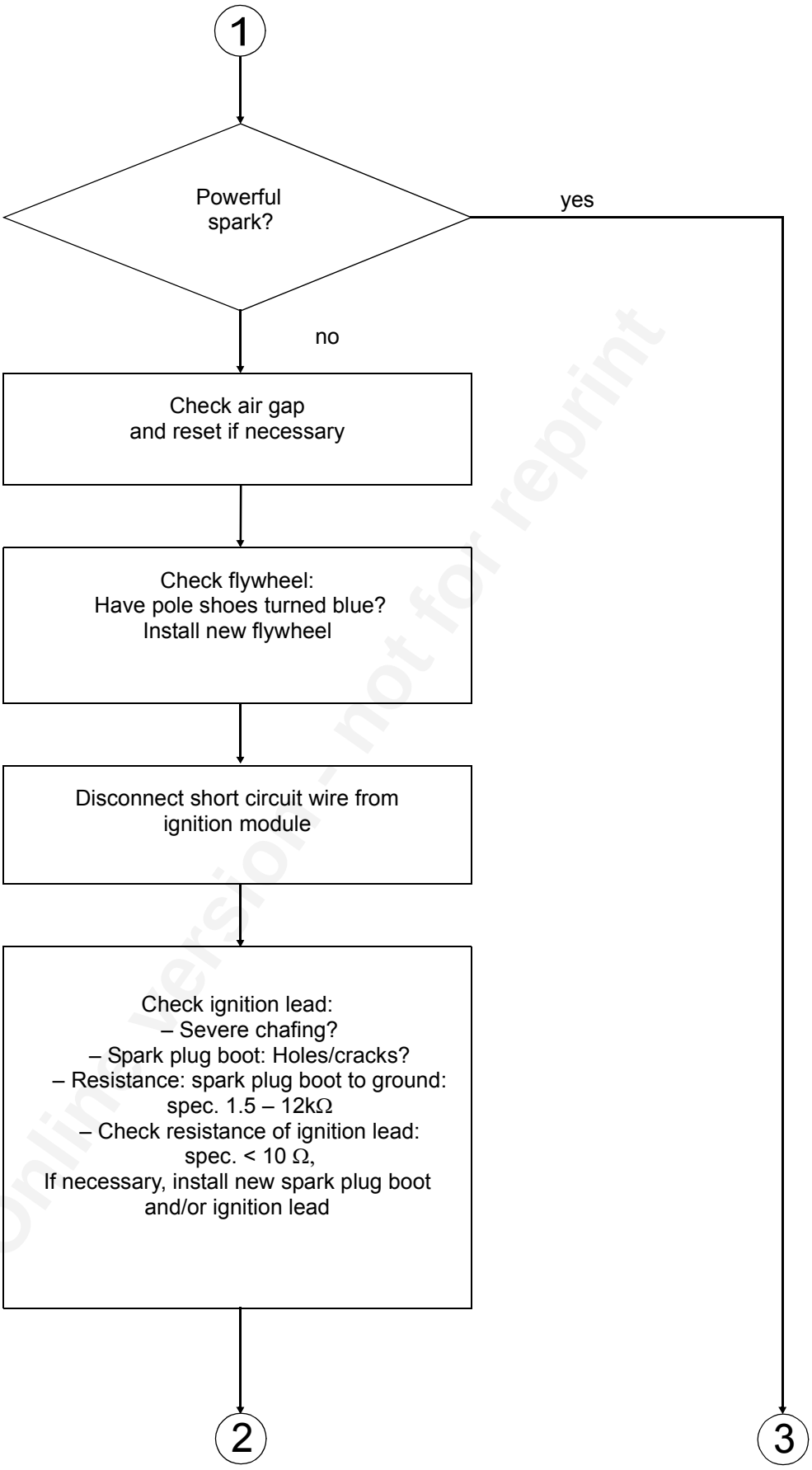
– Examine flywheel for damage – 🕮 7.1.5

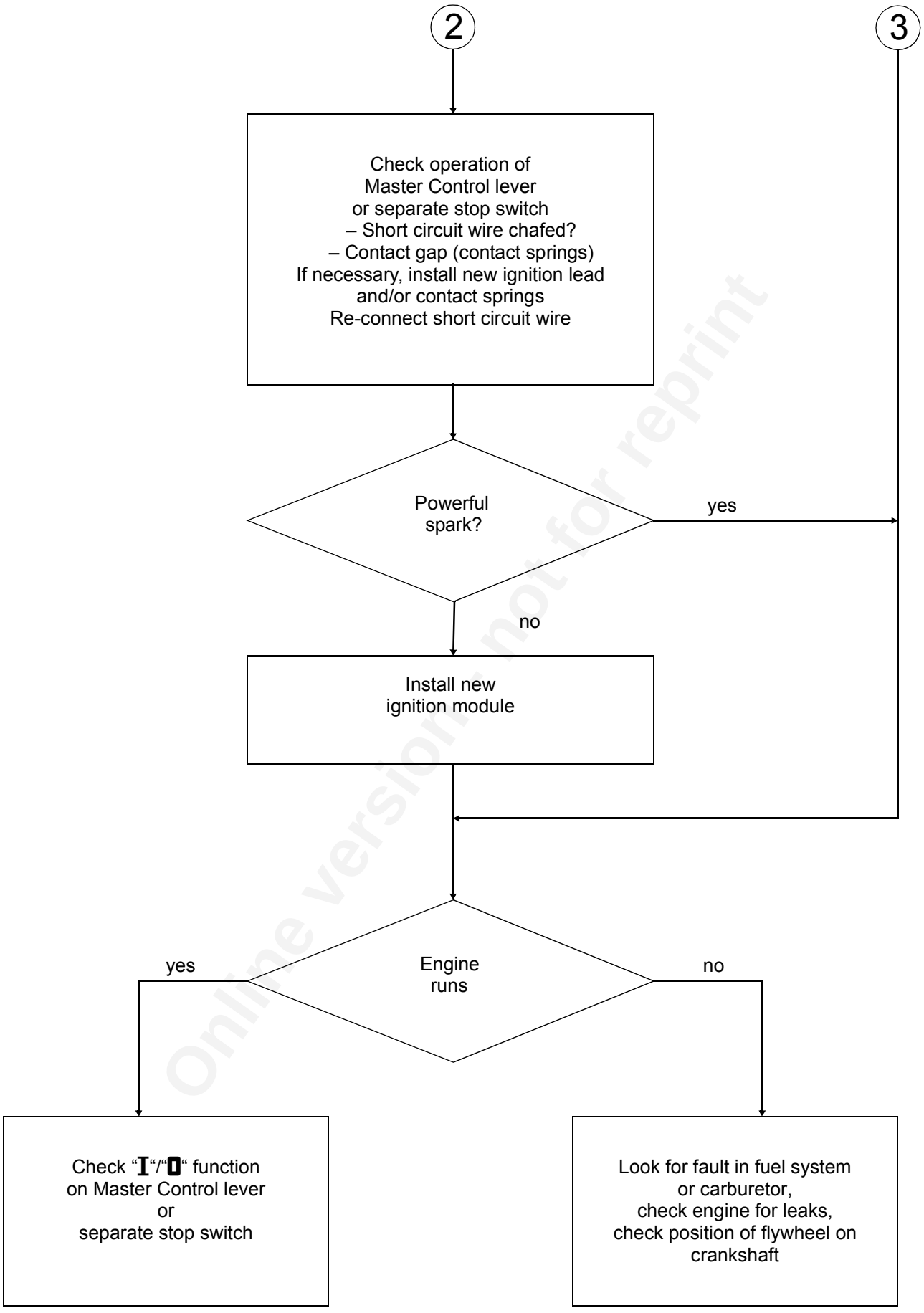
– Check air gap between flywheel and ignition module – 🕮 7.1.2

It neither of these checks reveals a fault, install a new ignition module – 🕮 7.1.2

Reassemble in the reverse sequence.







8.1 General

If the action of the starter rope becomes very stiff and the rope rewinds very slowly or not completely, it can be assumed that the starter mechanism is in order but plugged with dirt. At very low outside temperatures the lubricating oil on the rewind spring may thicken and cause the spring windings to stick together. This has a detrimental effect on the function of the starter mechanism. In such a case it is sufficient to apply a few drops of a standard solvent-based degreasant (containing no chlorinated or halogenated hydrocarbons) to the rewind spring.

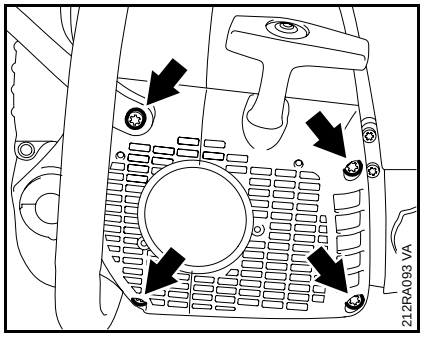
Carefully pull out the starter rope several times and allow it to rewind until its normal smooth action is restored.

If clogged with dirt or pitch, the entire starter mechanism, including the rewind spring, must be removed and disassembled. Take particular care when removing the spring.

Clean all components – 🕮 16.

Before installing, lubricate the rewind spring and starter post with STIHL special lubricant – 🕮 16.

8.2 Removing and Installing



- Take out the screws (arrows).

– Carefully push the hand guard upwards.

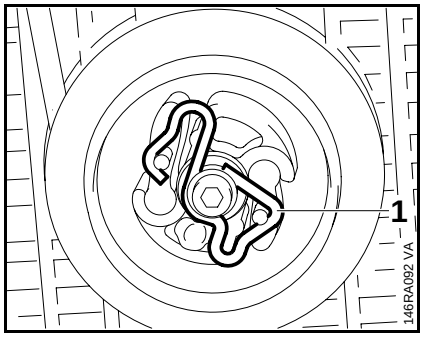
– Pull the lower edge of fan housing away from the crankcase and remove it downwards.

Reassemble in the reverse sequence.

The hand guard is secured to the fan housing and crankcase with the IS-M5x35 screw.

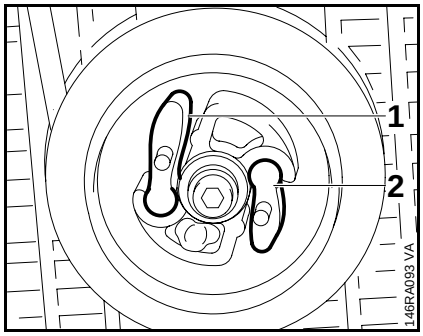
– Tighten down the screws – 🕮 3.5

8.3 Pawls



– Remove the fan housing with rewind starter – 🕮 8.2

- Carefully ease the spring (1) off the starter post.



- Pull the pawls (1 + 2) out of the rope rotor.

– Lubricate pegs of new pawls with grease – 🕮 16.

Reassemble in the reverse sequence.

– Remove the fan housing with rewind starter – 🕮 8.2

Relieving tension of rewind spring

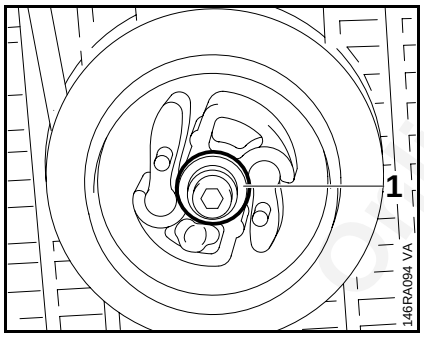
– Pull out the starter rope about 5 cm and hold the rope rotor steady.

– While still holding the rope rotor steady, take three full turns off the rope rotor.

– Pull out the rope with the starter grip and slowly release the rope rotor.

The system will not be under tension if either the starter rope or rewind spring is broken.

– Remove the pawls – 🕮 8.3



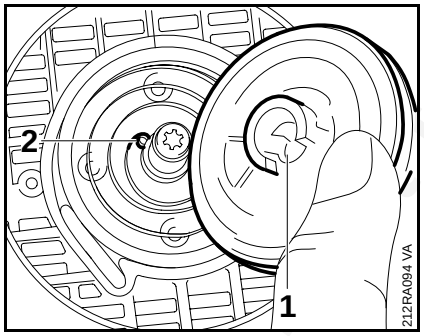
● Remove the washer (1) from the starter post.

– Carefully pull the rope rotor off the starter post.

– Remove the starter rope or remaining rope from the rotor.

– Remain remaining rope from the fan housing, if necessary.

– Install a new starter rope – 🕮 8.5



● Fit the rotor on the starter post so that its lug (1) slips behind the inner spring loop (2).

Reassemble all other parts in the reverse sequence.

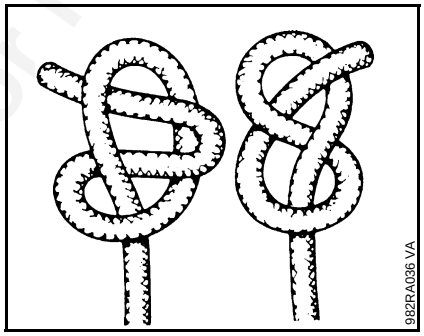
– Tension the rewind spring – 🕮 8.6

– Remove the fan housing with rewind starter – 🕮 8.2

– Remove the segment – 🕮 8.7

– Relieve tension of rewind spring – 🕮 8.4

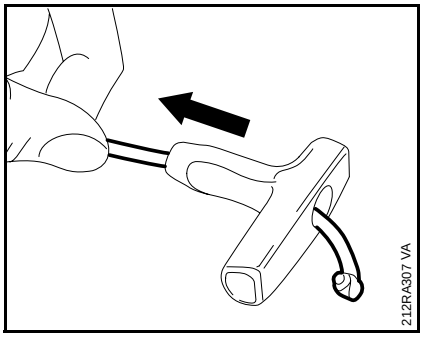
The rewind spring will not be under tension if the starter rope is broken.



Machines with standard starter grip

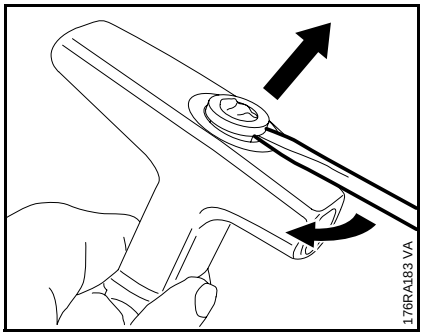
– Remove remaining rope from the starter grip.

● Tie one of the special knots shown in the end of the new rope.



- Thread the new rope through the top of the starter grip.

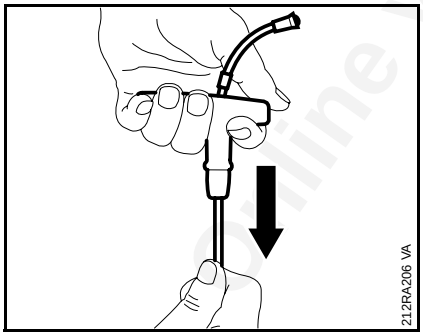
– Pull the rope with knot into the starter grip.



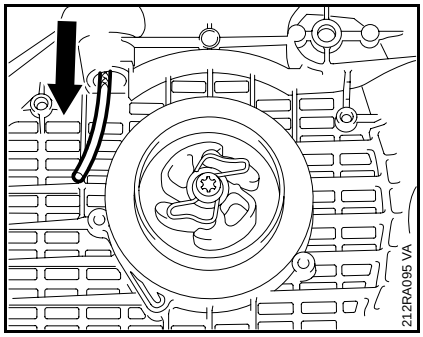
Machines with ElastoStart grip

- Pry the cap out of the grip.

– Remove remaining rope from starter grip.

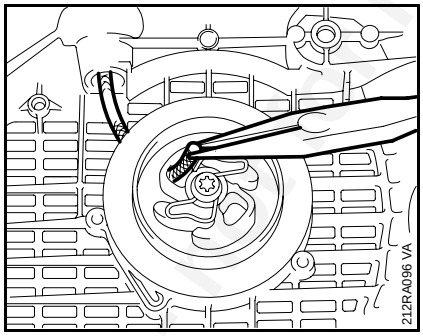


- Thread the new starter rope through the top of the starter grip.

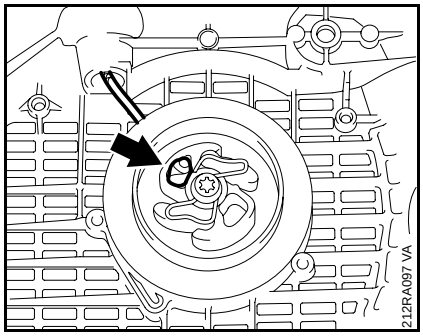


All machines

- Thread the other end of the rope, from outside, through the guide bushing in the fan housing.



- Thread the end of the rope through the hole in the side of the rotor, pull it out.



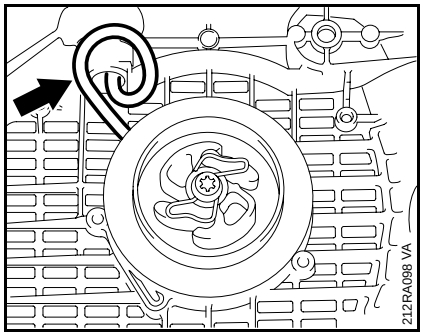
– Secure the rope with a simple overhand knot.

- Pull rope back until knot locates in recess (arrow) in rope rotor.

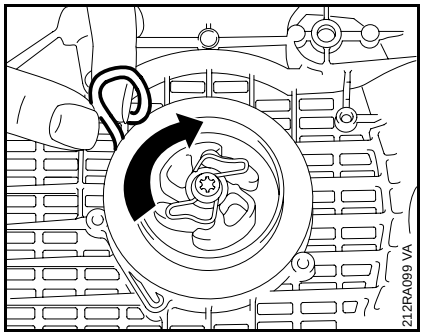
– Tension the rewind spring – 🕮 8.6

– Remove the fan housing with rewind starter – 🕮 8.2

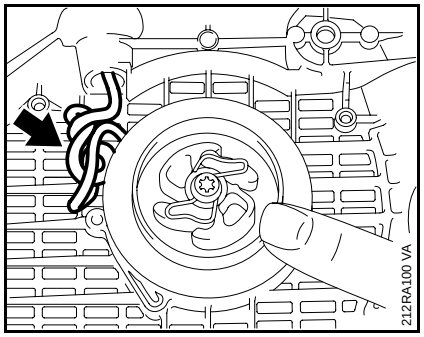
– Relieve tension of rewind spring – 🕮 8.4



- Make a loop in the starter rope.



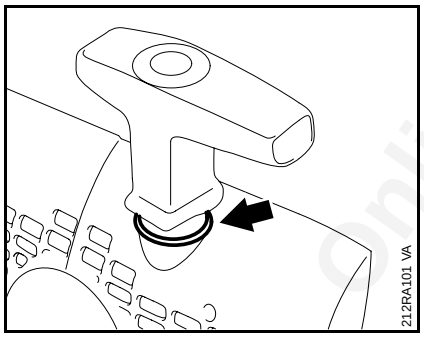
- Grip the rope next to the rotor and use it to turn the rope rotor six times clockwise.



- Hold the rope rotor steady.
- Pull out the rope with the starter grip and straighten it out.

– Hold the starter grip firmly to keep the rope tensioned.

– Let go of the rope rotor and slowly release the starter rope so that it can rewind properly.

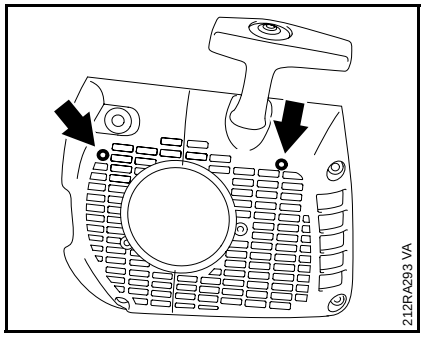


The rewind spring is correctly tensioned when the starter grip sits firmly in the rope guide bushing (arrow) without drooping to one side. If this is not the case, tension the spring by one additional turn.

When the starter rope is fully extended, it must still be possible to rotate the rope rotor at least another half turn before maximum spring tension is reached. If this is not the case, pull the rope out, hold the rope rotor steady and take off one turn of the rope.

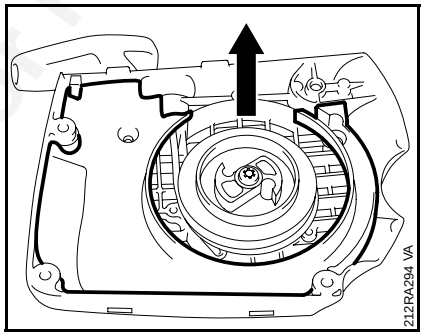
Do not overtension the rewind spring as this will cause it to break.

– Fit the fan housing with rewind starter – 🕮 8.2



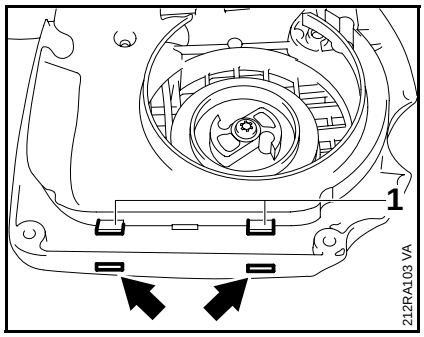
– Remove the fan housing with rewind starter – 🕮 8.2

- Use a 3 mm drift to carefully push out the pins (arrows).



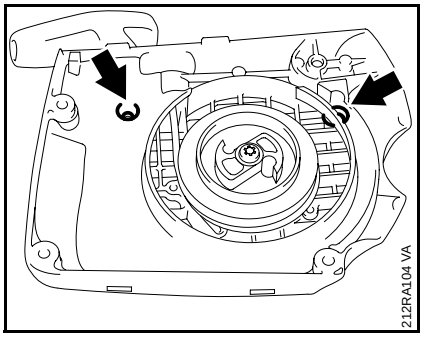
- Pull out the segment (1) upwards.

Reassemble in the reverse sequence.



- Engage tabs (1) in the slots (arrows).

8.8 Starter Rope Guide Bushing



- Carefully press home the fixing pins (arrows).

Reassemble all other parts in the reverse sequence.

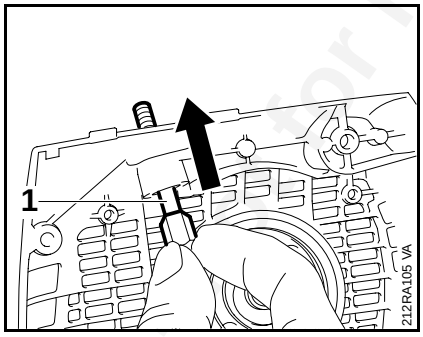
Wear on the guide bushing is accelerated by the starter rope being pulled sideways. The wall of the bushing eventually wears through and the bushing becomes loose.

– Remove the fan housing with rewind starter – 🕮 8.2

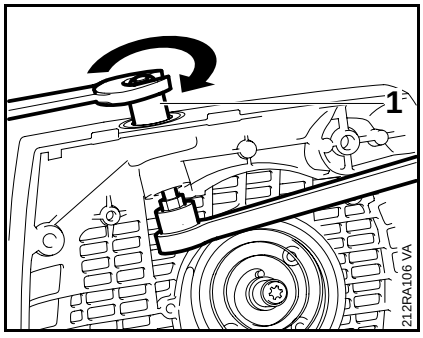
– Remove the rope rotor – 🕮 8.4

– Use a suitable tool to pry the damaged bushing out of the fan housing.

– Place the new bushing in the fan housing.



- Insert the screw spindle (1) of the installing tool 0000 890 2201 through the bushing from inside the fan housing.



– Fit the thrust sleeve (1), tapered end first, and the hex nut.

- Tighten down the hex nut until the bushing is firmly seated.

The installing tool flares the lower end of the rope bushing.

– Remove the installing tool.

Reassemble all other parts in the reverse sequence.

8.9 Replacing the Rewind Spring

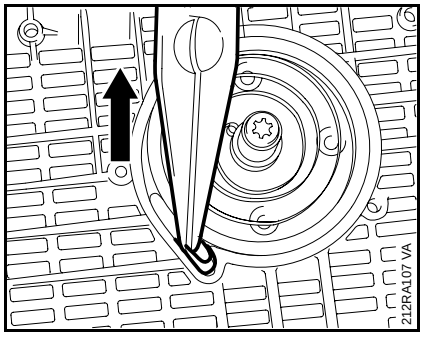
– Troubleshooting chart – 🕮 4.2

The replacement spring comes ready for installation and is secured in a frame.

Removing

Wear a face shield and work gloves.

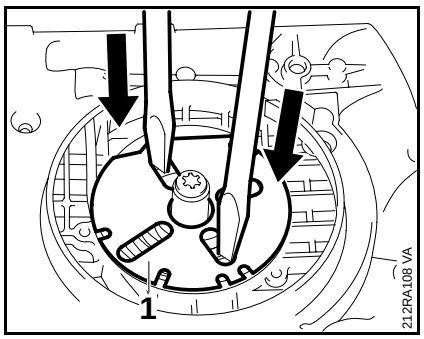
– Remove the rope rotor – 🕮 8.4



- Use suitable pliers to grip the outer spring loop and lift it up.

– Take the rewind spring out of the fan housing.

– Remove any remaining pieces of spring from the fan housing.



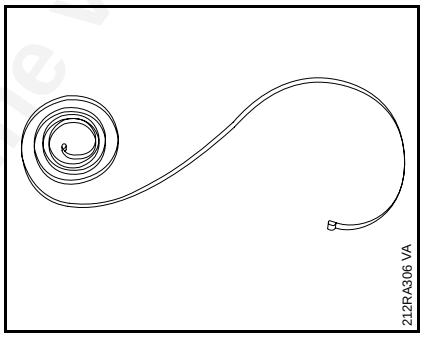
Installing

– Lubricate the spring with a few drops of STIHL special lubricant before installation – 🕮 16.

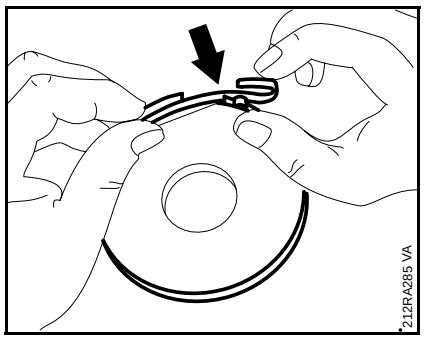
- Position replacement spring with frame (1) in the fan housing.

- Position suitable tools on the recesses (arrows) and push the spring into its seat in the fan housing.

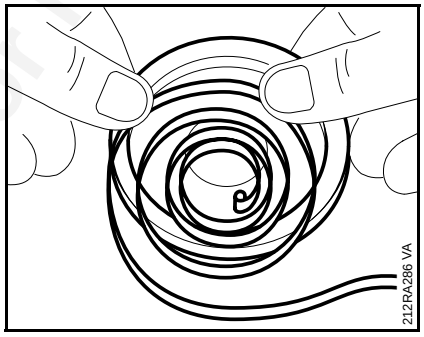
If the rewind spring pops out during installation, fit it in the installing tool 1116 893 4800 as follows:



- Arrange the rewind spring as shown in the illustration.



- Position the anchor loop about 25 mm from the edge of the spring housing.



- Fit the rewind spring in the spring housing in the counterclockwise direction, starting from outside and working inwards.

– Place the spring housing in the fan housing.

– Press the spring loop into the recess in the fan housing at the same time.

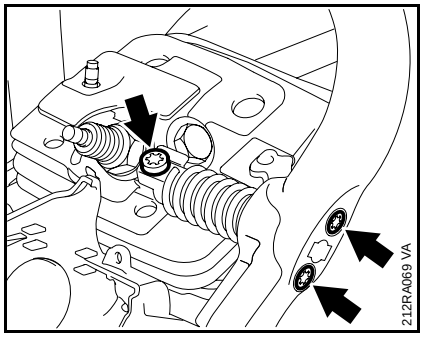
– Install the rope rotor – 🕮 8.4

Reassemble all other parts in the reverse sequence.

9. AV System
9.1 Repair

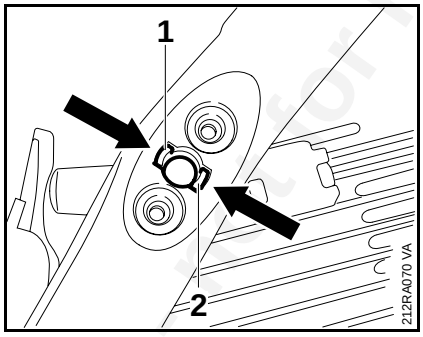
The crankcase and tank housing are connected by vibration damping rubber buffers and springs. Damaged rubber buffers (annular buffers) and springs must always be replaced in sets.

9.1.1 Spring between Front Handle and Cylinder



– Remove the shroud – 🕮 6.2

● Take out the screws (arrows).

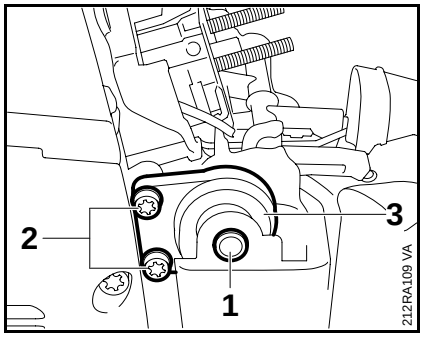


● Squeeze retaining lugs (1 + 2) carefully together and pull the spring out of the front handle.

The spring itself, with its integral retainer and mounts, cannot be disassembled.

Reassemble in the reverse sequence.

9.1.2 Annular Buffer between Tank Housing and Crankcase



– Remove the air filter – 🕮 12.1

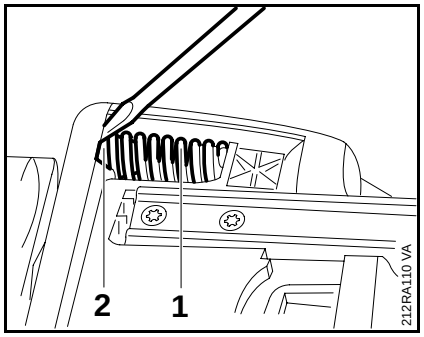
● Remove the collar screw (1).

● Take out the screws (2).

● Remove the annular buffer (3).

Reassemble in the reverse sequence.

9.1.3 Spring, Annular Buffer between Crankcase and Tank Housing

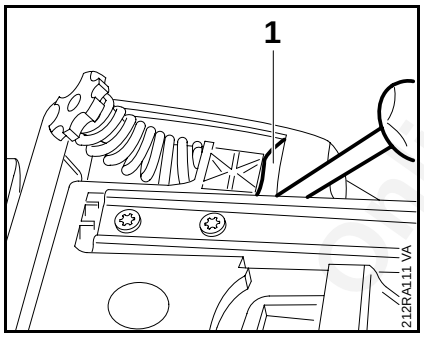


– Remove the spring between the front handle and cylinder – 🕮 9.1.1

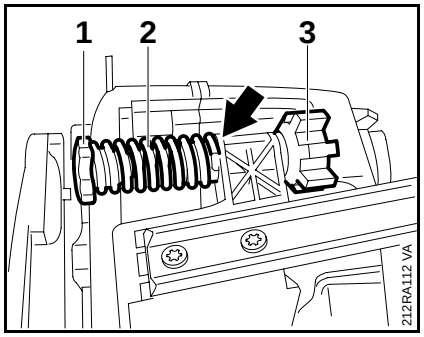
– Remove the annular buffer between the tank housing and crankcase – 🕮 9.1.2

– Remove the chain catcher – 🕮 5.2

● Carefully pry out the spring (1) with bearing plug (2).



● Pry out the annular buffer (1).

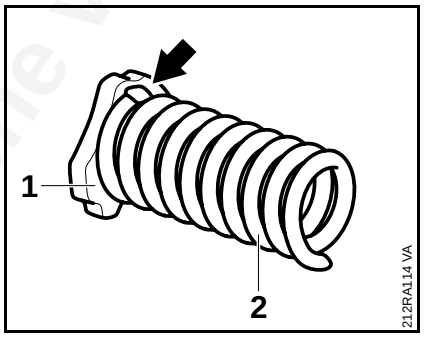


● Use a suitable tool to unscrew the spring (2) from the tank housing.

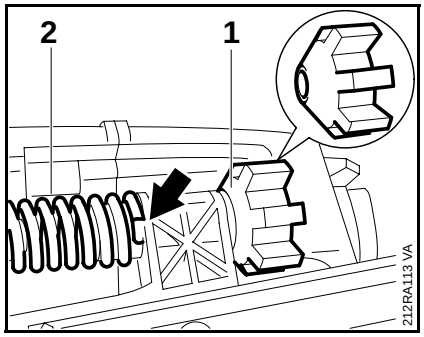
● Use a suitable tool to unscrew the bearing plug (1) from the spring (2).

● Pull off the annular buffer (3).

Reassemble in the reverse sequence.

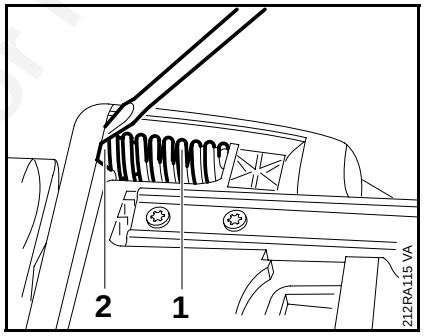


● Use a suitable tool to screw the bearing plug (1) on to the spring (2) as far as stop (arrow).



● Push the annular buffer (1) into position (tapered end must face the spring).

● Use a suitable tool to screw home the spring (2) as far as stop (arrow).



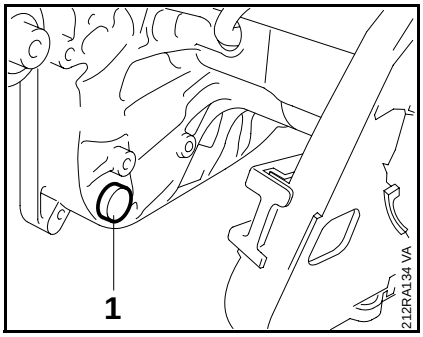
● Carefully fit the spring (1) with bearing plug (2).

The bearing plug must be fully recessed in the crankcase.

– Install the chain catcher – 🕮 5.2

Reassemble all other parts in the reverse sequence.

9.1.4 Stop Buffer between Crankcase and Tank Housing



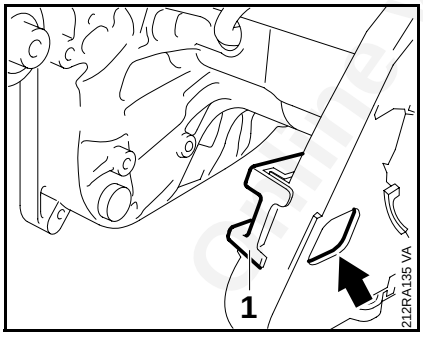
– Remove the crankcase from the tank housing – 🕮 12.9

● Use a suitable tool to pry the stop buffer (1) out of the crankcase.

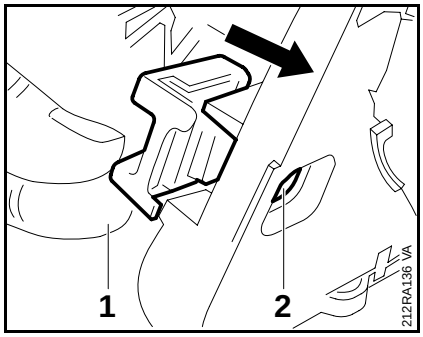
– Lubricate the new stop buffer with STIHL Press Fluid OH 723 – 🕮 16.

– Push the stop buffer (1) into the crankcase as far as stop.

Reassemble all other parts in the reverse sequence.



● Use a suitable tool to pry the stop buffer (1) out of the crankcase.



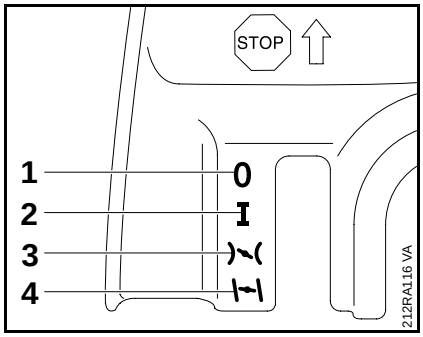
– Lubricate the new stop buffer with Press Fluid OH 723 – 🕮 16.

● Push the stop buffer into the housing until its groove (1) engages over the inner housing rib (2).

Reassemble all other parts in the reverse sequence.

10. Master Control / Handle System

10.1 Switch Shaft



The Master Control lever moves the switch shaft to select the required function.

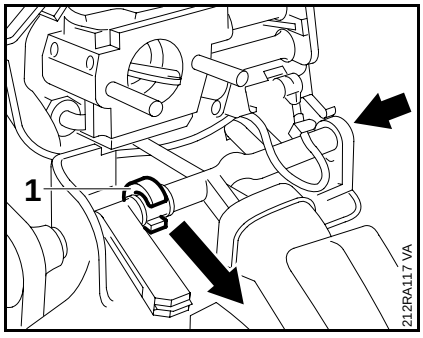
The following positions can be selected with the Master Control lever:

"STOP" (1) closes short circuit contact, interrupts ignition

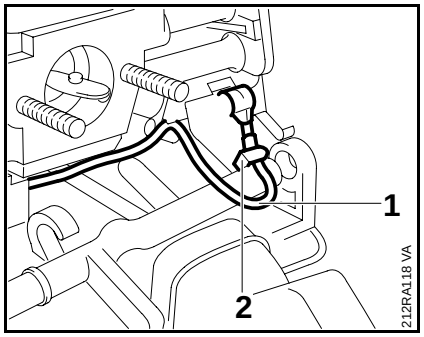
"RUN" (2) is the normal operating position

"START" (3) is the starting throttle position / choke shutter open (warm start)

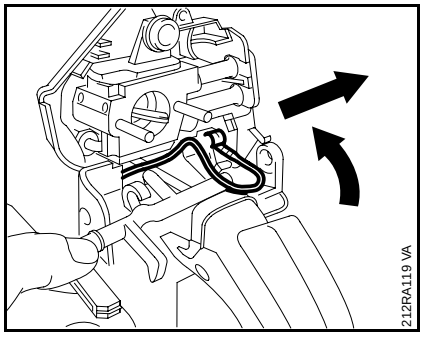
"CHOKE" (4) is the starting throttle position / choke shutter closed (cold start)



● Carefully ease the switch shaft out of its left-hand mount (1) and then pull it out of the right-hand mount (arrow).

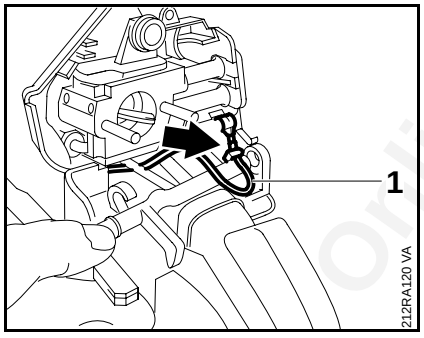


- Pull the short circuit wire (1) sideways from under the retainer (2).

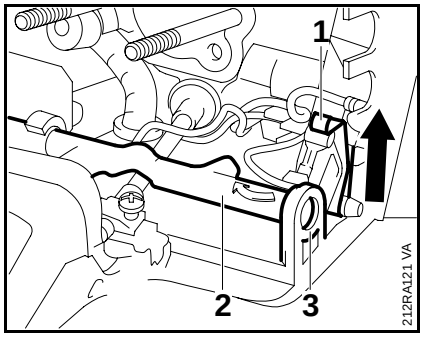


- Swing the short circuit wire up and remove it sideways.

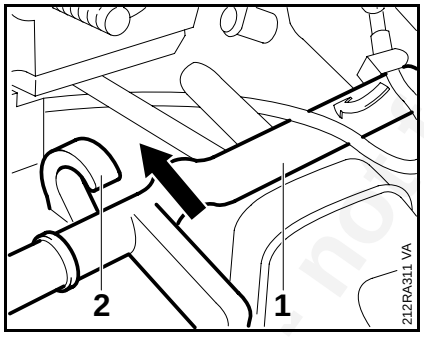
Installing



- Fit the short circuit wire (1) under the retaining lug (arrow).
- Position the short circuit wire (1) above the switch shaft.

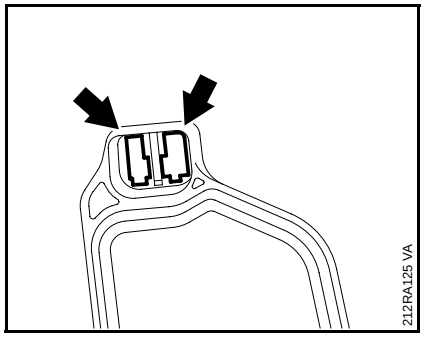


- Lift contact spring (1) up and fit the switch shaft (2) in the right-hand mount (3).



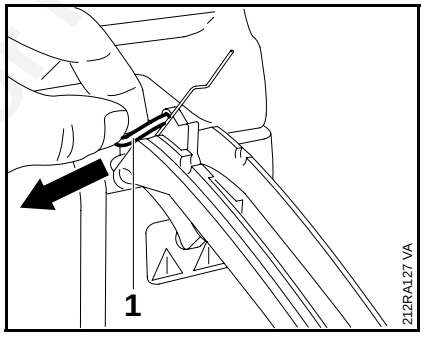
- Push the switch shaft (1) into the left-hand mount (2).

Reassemble all other parts in the reverse sequence.

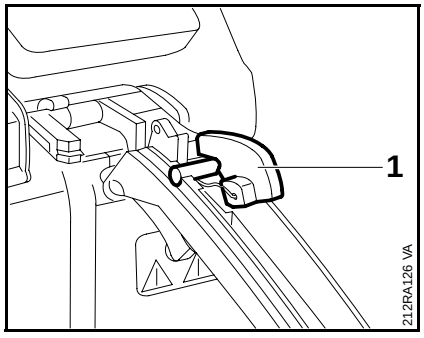


- Push the retainers (arrows) apart (on the underside of the rear handle).

– Remove the handle molding upwards.

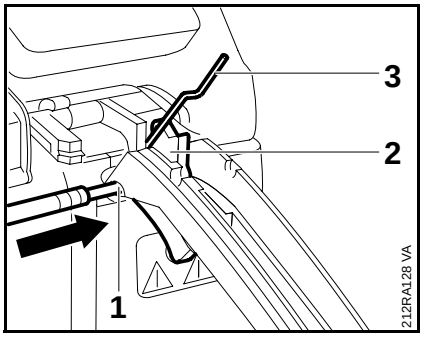


– Pull the throttle rod (1) sideways out of the trigger.

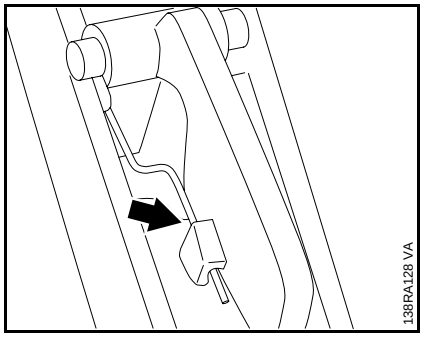


– Move the Master Control to the “RUN“ position.

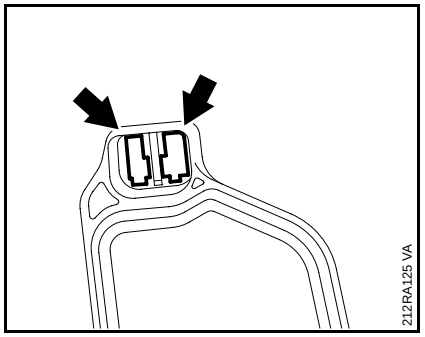
- Remove the interlock lever (1).



- Use a 5 mm drift to drive out the pin (1).
- Remove the throttle trigger (2) with torsion spring (3).

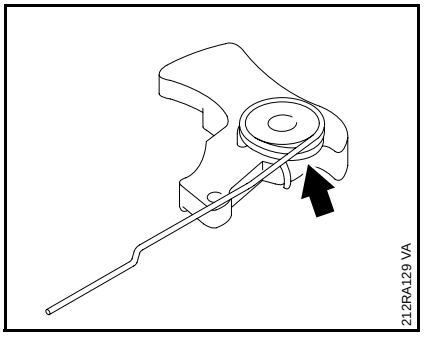


When installing, make sure the torsion spring be under the interlock lever and engage the notch (arrow).



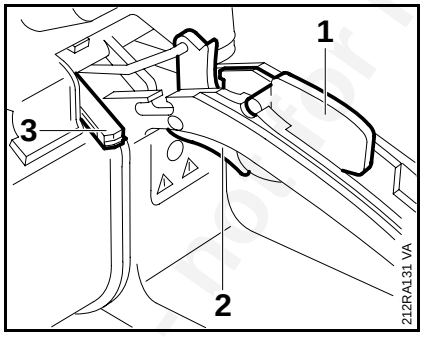
- Push the retainers (arrows) apart (on the underside of the rear handle).

– Remove the handle molding upwards.

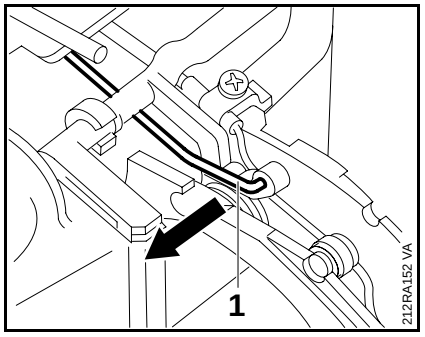


- Remove the torsion spring from the throttle trigger.

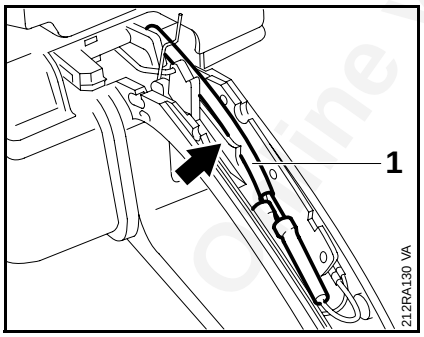
Reassemble in the reverse sequence.



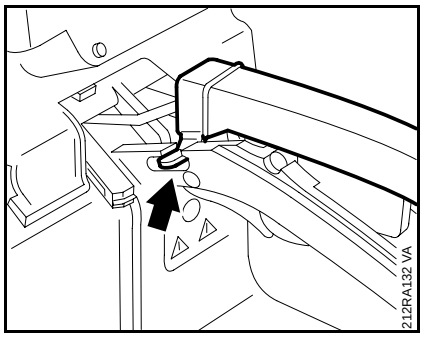
- Press down the interlock lever (1).
- Push the throttle trigger (2) upwards and move the switch lever (3) to “Choke“ position.



– Pull the throttle rod (1) sideways out of the trigger.

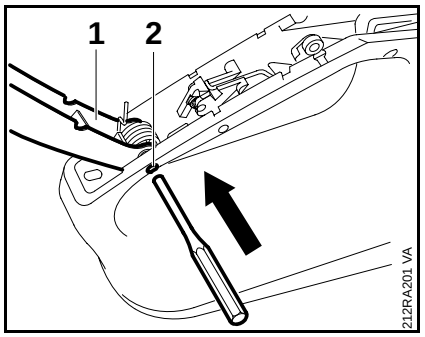


- On machines with handle heating the wires (1) from the heating element must be in the guide (arrow) under the interlock lever.

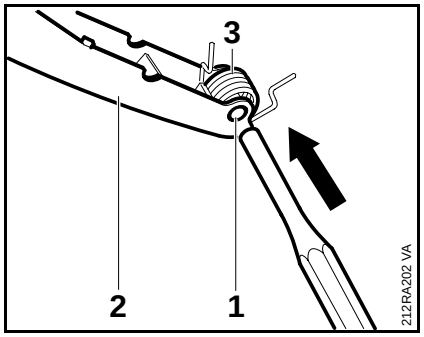


- Position the handle molding so that the lugs engage the recesses (arrow).

Reassemble all other parts in the reverse sequence.

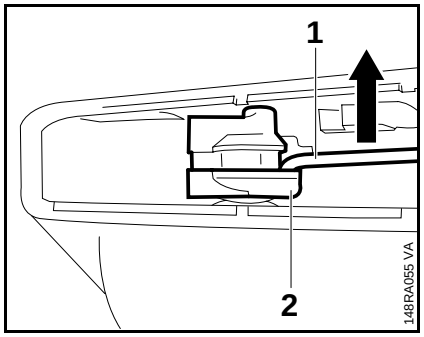


- To remove the interlock lever (1), use a 3 mm drift to drive out the needle roller (2).



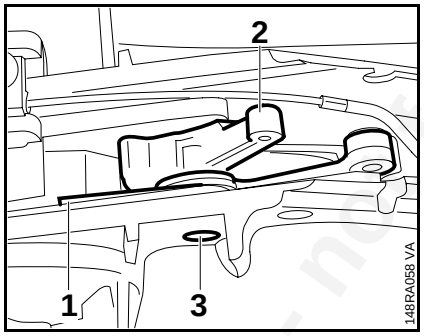
- Use a 4.5 mm drift to drive the bushing (1) out of the interlock lever (2).
- Remove the torsion spring (3).

Reassemble in the reverse sequence.

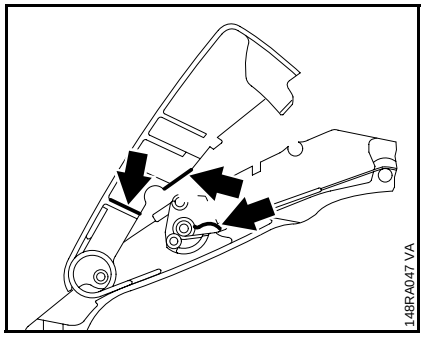


- Disconnect the brake cable (1) from the switch lever (2).

– Use a 3 mm drift to drive out the needle roller and then remove the switch lever.

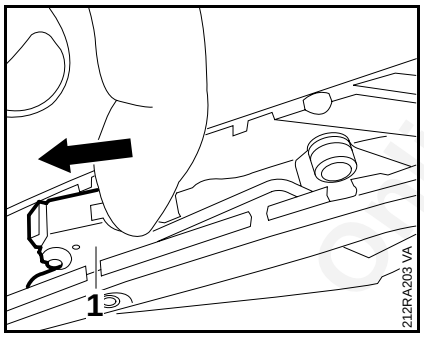


- Drive out the straight pin (3) with a 5 mm drift.
- Remove the throttle trigger (2) with torsion spring (1).

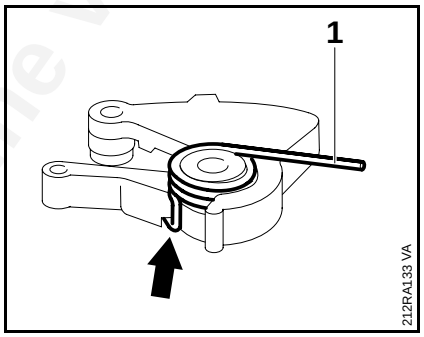


- Lubricate bearing points (arrows) with grease – 🕮 16.

– When installing, make sure the short leg (arrow) of the torsion spring locates in the throttle trigger. The long leg points towards the carburetor.

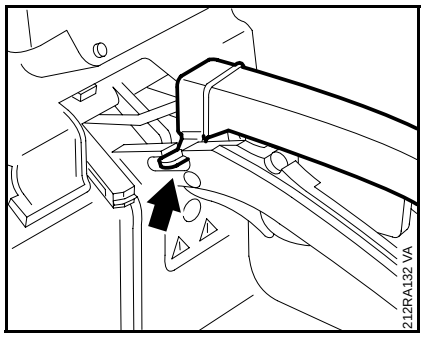


- To remove the switch lever (1), tilt it back.



- Take the torsion spring (1) off the throttle trigger.

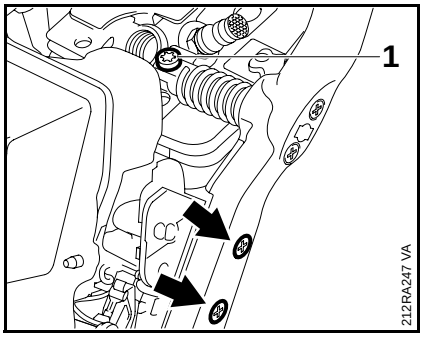
Reassemble in the reverse sequence.



- Position the handle molding so that the lugs engage the recesses (arrow).

Reassemble all other parts in the reverse sequence.

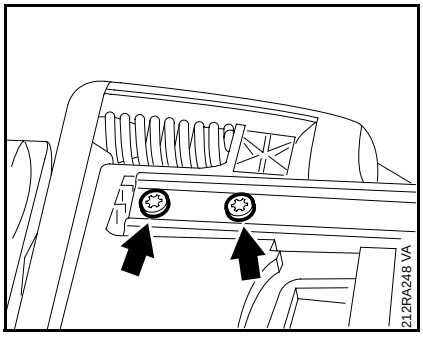
10.3 Front Handle



– Remove the shroud – 🕮 6.2

● Take out the screw (1).

● Take out the screws (arrows).



● Take out the screws (arrows).

– Remove the front handle.

Reassemble in the reverse sequence.

Machines with handle heating

– Check the heating element – 🕮 14.4

– Remove the front handle with heating element – 🕮 14.5

11. Chain Lubrication

11.1 Pickup Body / Suction Hose

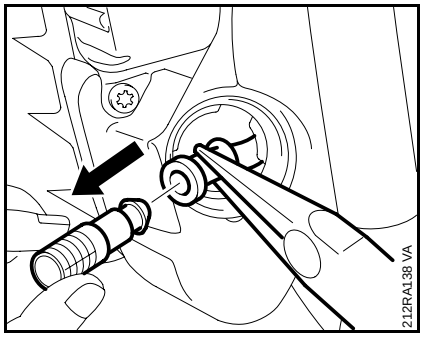
Impurities gradually clog the fine pores of the filter with minute particles of dirt. This prevents the oil pump from supplying sufficient oil to the bar and chain. In the event of problems with the oil supply system, first check the oil tank and the pickup body. Clean the oil tank if necessary.

– Troubleshooting chart – 🕮 4.3

Suction hose

– Unscrew the oil tank cap and drain the oil tank.

Collect chain oil in a clean container or dispose of it properly at an approved disposal site.



● Pull the pickup body out of the suction hose.

– Fit a new pickup body.

– Flush out the oil tank.

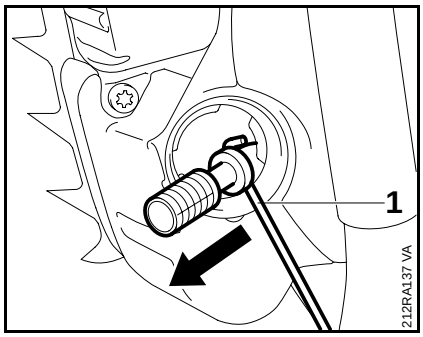
Reassemble in the reverse sequence.

Suction hose

– On machines without QuickStop Super, remove the brake band – 🕮 5.5.1

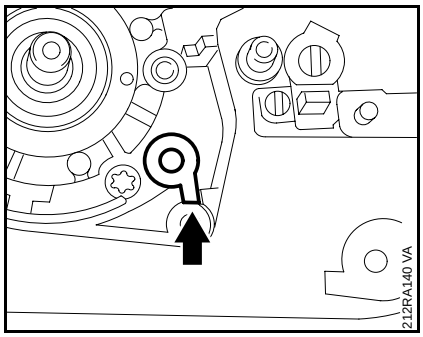
– On machines with QuickStop Super, remove the brake band – 🕮 5.5.2

– Remove the oil pump – 🕮 11.3.1

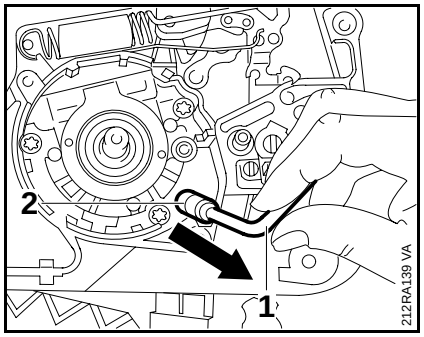


● Use hook (1) 5910 893 8800 to pull the pickup body out of the oil tank.

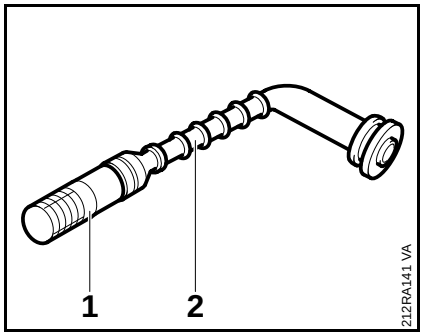
Do not stretch the oil hose too much during this operation.



● Grip the tab (arrow) of the suction hose with pliers and pull the grommet out of the bore.

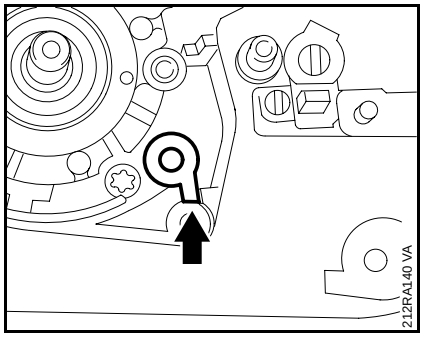


- Pull the suction hose (1) with pickup body (2) out of the crankcase.



- Pull the pickup body (1) off the suction hose (2).

Reassemble in the reverse sequence.



– Insert the suction hose in the crankcase.

– Lubricate grommet with a little oil.

- Use a blunt tool to push the suction hose into the crankcase so that the tab locates in its seat at the bottom right (arrow).

Reassemble all other parts in the reverse sequence.

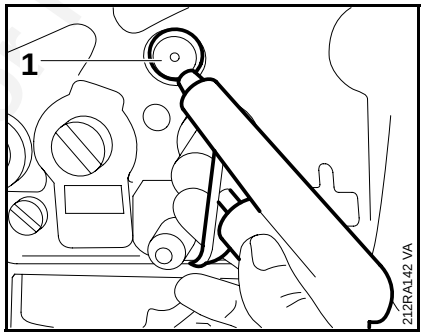
A valve is installed in the tank wall to keep internal tank pressure equal to atmospheric pressure.

– Remove the oil tank cap.

– Drain the oil tank.

Collect chain oil in a clean container or dispose of it properly at an approved disposal site.

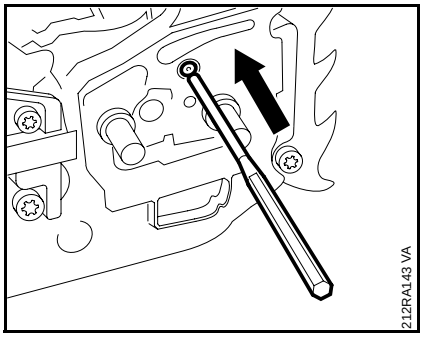
– Remove the inner side plate – 🕮 5.5.1 or 5.5.2.



- Blow the valve (1) clear with compressed air (from outside to inside of tank).

– Flush out the oil tank.

Reassemble in the reverse sequence.



– Remove the oil tank cap.

– Drain the oil tank.

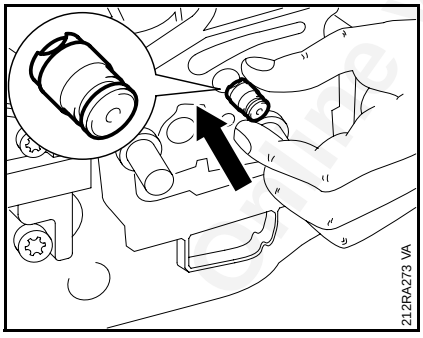
Collect chain oil in a clean container or dispose of it properly at an approved disposal site.

– Remove the inner side plate – 🕮 5.5.1 or 5.5.2.

● Use a 6 mm drift to carefully drive the valve out of its seat and into the oil tank.

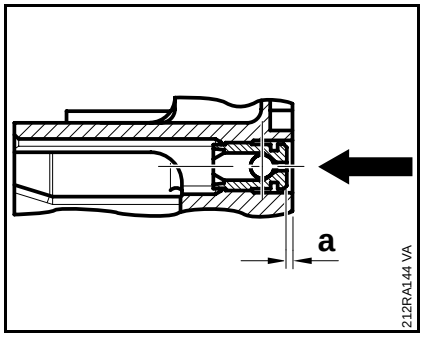
– Remove the old valve from the oil tank.

Reassemble in the reverse sequence.



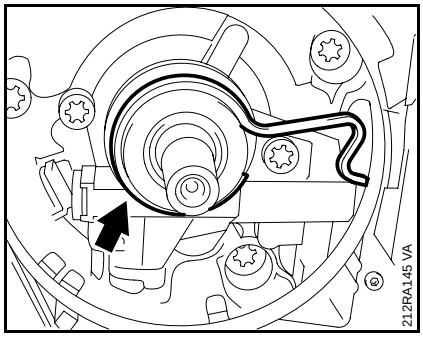
● Carefully insert the new valve in the housing bore.

Check the correct installed position.



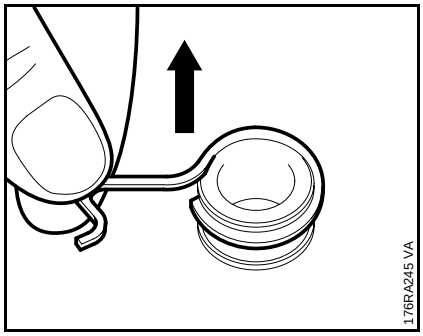
● Use a 6 mm drift to carefully press home the new valve from outside until it is about 0.8 – 1.2 mm below the housing face ('a' in illustration).

Reassemble all other parts in the reverse sequence.

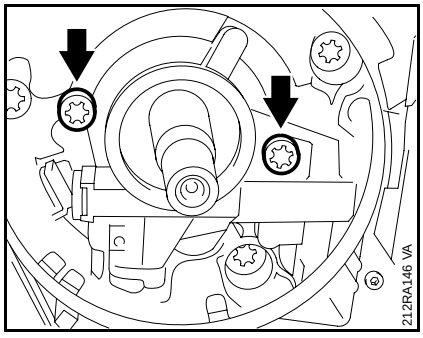


– Remove the clutch – 🕮 5.4

● Pull the worm with drive spring (arrow) out of the oil pump and off the crankshaft stub.

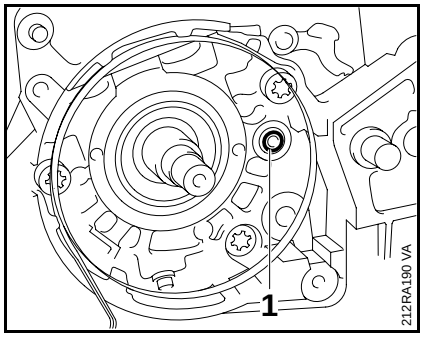


● Take the drive spring off the worm.



● Take out the screws (arrows).

– Pull the oil pump out of its seat.

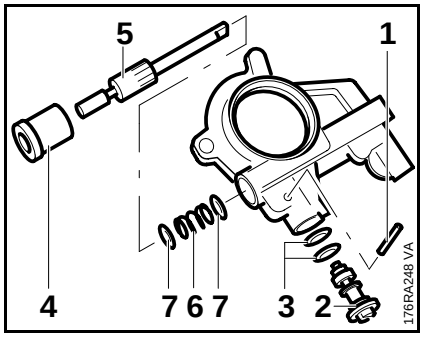


- Replace the sealing ring (1).

Always use a new sealing ring.

– Lubricate the worm with grease before installing – 🕮 16.

Reassemble in the reverse sequence.



Always check the suction hose and pickup body before disassembling the oil pump.

– Remove the oil pump – 🕮 11.3.1

- Use a 2 mm drift to drive out the spring pin (1).
- Pull out the control bolt (2).
- Remove the O-rings (3).
- Pry out the plug (4).
- Remove the pump piston (5) with spring (6) and washers (7).

– Clean all parts and examine for serviceability – 🕮 16.

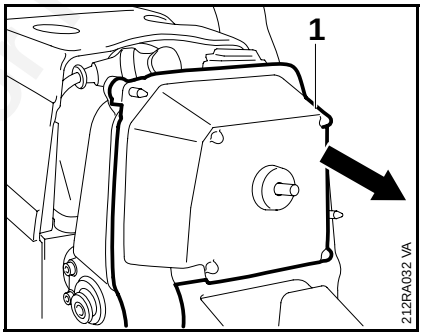
Always install new O-rings.

– Lubricate the pump piston and worm with grease before installing – 🕮 16.

Reassemble in the reverse sequence.

Dirty air filters reduce engine power, increase fuel consumption and make starting more difficult.

The air filter should be cleaned when there is a noticeable loss of engine power.



– Remove the carburetor box cover.

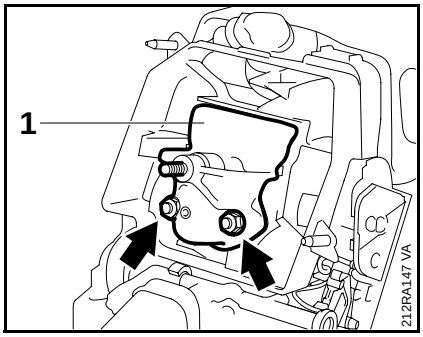
– Remove all loose dirt from around the filter.

- Remove the air filter (1).

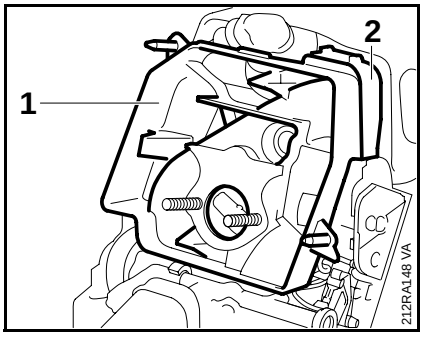
– Knock out the filter or blow it clear with compressed air from the inside outwards.

– In case of stubborn dirt, wash all parts of the filter in STIHL universal cleaner or a fresh, non-flammable cleaning solution (e.g. warm soapy water) and allow to dry.

Do not clean fleece (non-woven) filters with a brush. Replace damaged filters.

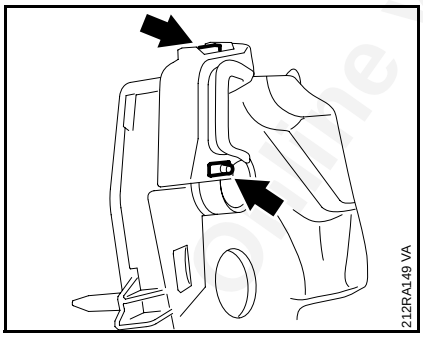


- Unscrew the nuts (arrows).
- Pull off the baffle (1).

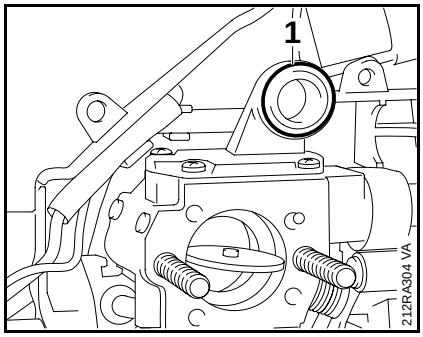


- Remove the filter base (1).
- Remove the baffle plate (2).

Reassemble in the reverse sequence.

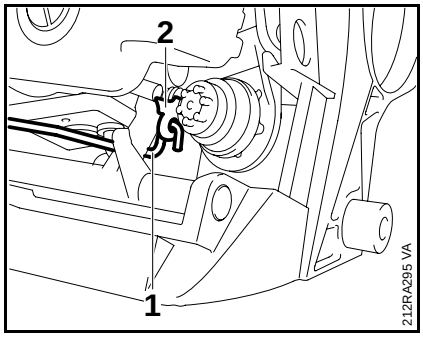


- Check that baffle plate is correctly fitted (arrows).



– Before installing the air filter, check that O-ring (1) is properly seated and not damaged.

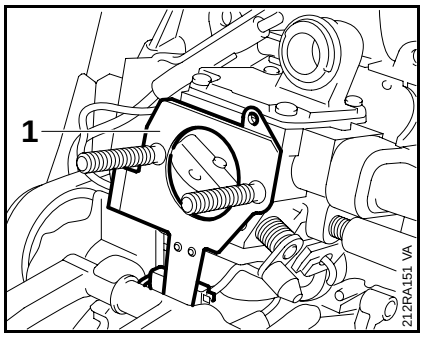
Reassemble all other parts in the reverse sequence.



– On machines without Quick-Stop Super, remove the throttle rod from the trigger – 🕮 10.2.1

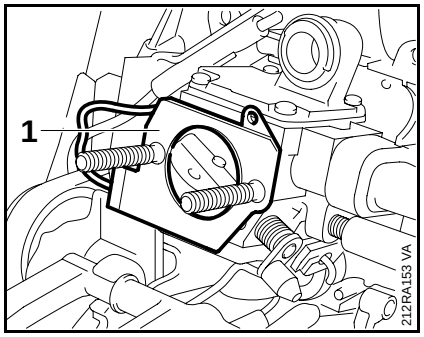
– On machines with QuickStop Super, remove the throttle rod from the trigger – 🕮 10.2.2

- Disconnect the throttle rod (1) from the throttle shaft (2).

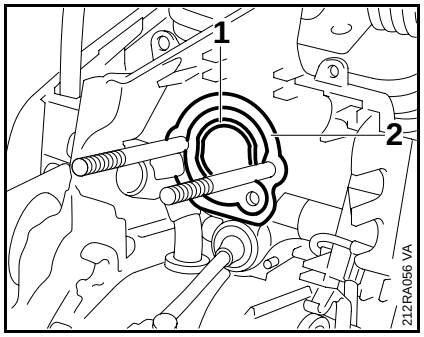


On machines with carburetor heating

- Remove the heating plate (1).



- Remove the heating element (1).

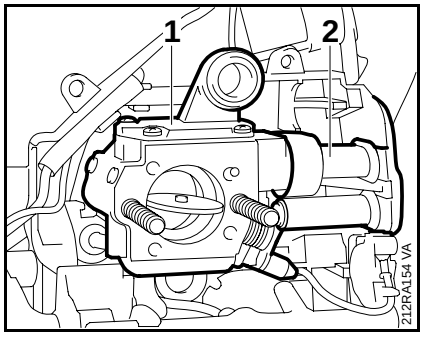


- Before fitting the carburetor, check that the sleeve (1) and washer (2) are properly seated.

In the case of problems with the carburetor or fuel supply system, also check and clean or replace the tank vent – 🕮 12.6

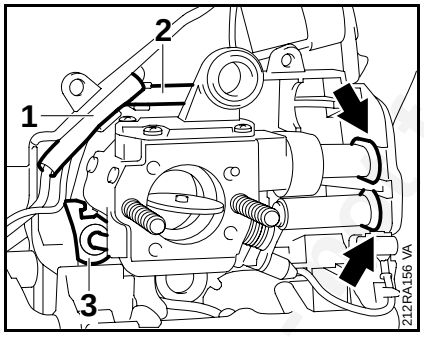
The carburetor can be tested for leaks with the carburetor and crankcase tester 1106 850 2905.

– Remove the carburetor – 🕮 12.2.1



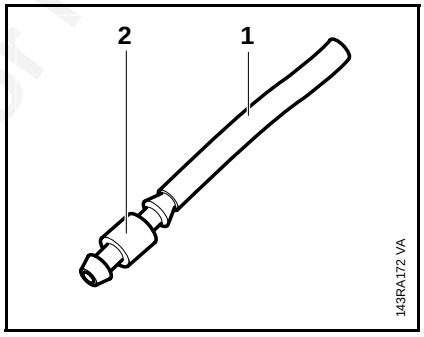
All machines

- Pull off the carburetor (1) with grommet (2).

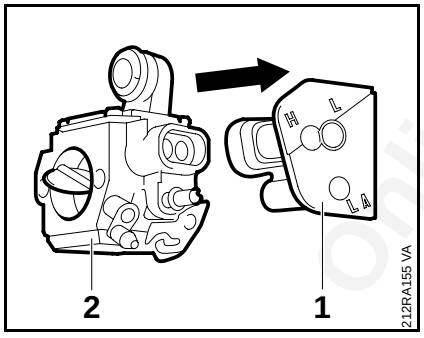


– Push the grommet on to the carburetor.

- When pushing the carburetor into position, check that fuel hose (3) is correctly seated.
- When pushing the carburetor into position, make sure the edges (arrows) of the grommet are inside the tank housing.
- On machines with carburetor heating, check that wires (1 + 2) are properly positioned.

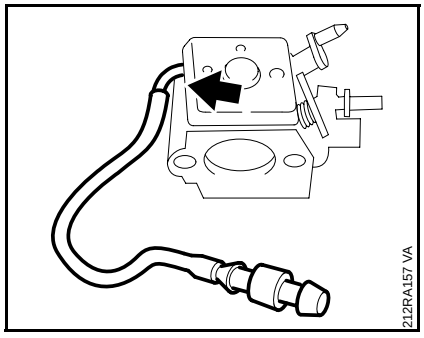


- Push the fuel line (1) 1110 141 8600 onto the nipple (2) 0000 855 9200.

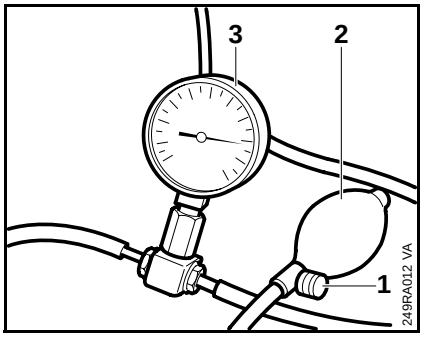


- Pull the grommet (1) off the carburetor (2).

Reassemble in the reverse sequence.



- Push the fuel line with nipple onto the carburetor's elbow connector.



– Push the fuel line with nipple onto the carburetor's elbow connector.

● Close the vent screw (1) on the rubber bulb (2) and pump air into the carburetor until the pressure gauge (3) shows a reading of approx. 0.8 bar (80 kPa).

If this pressure remains constant, the carburetor is airtight. However, if it drops, there are two possible causes:

1. The inlet needle is not sealing (foreign matter in valve seat or sealing cone of inlet needle is damaged or inlet control lever sticking). Remove to clean – 🕮 12.3.2

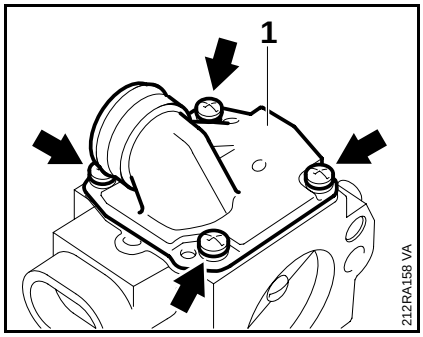
2. Metering diaphragm damaged, replace if necessary – 🕮 12.3.1

– After completing the test, open the vent screw (1) and pull the fuel line off the carburetor.

– Push the fuel hose onto the elbow connector.

– Install the carburetor – 🕮 12.2.1

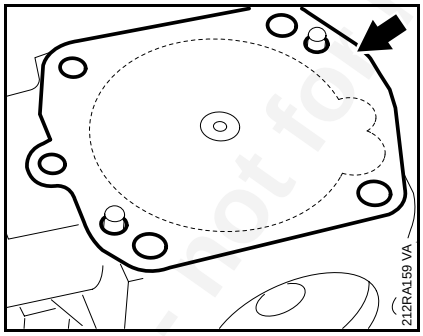
Reassemble all other parts in the reverse sequence.



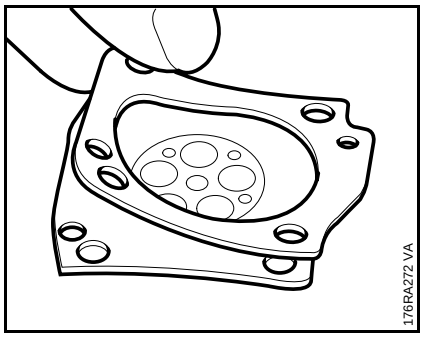
– Remove the carburetor – 🕮 12.2.1

● Take out the screws (arrows).

● Remove the end cover (1).



● Remove the metering diaphragm and gasket (arrow) from the carburetor body or end cover.

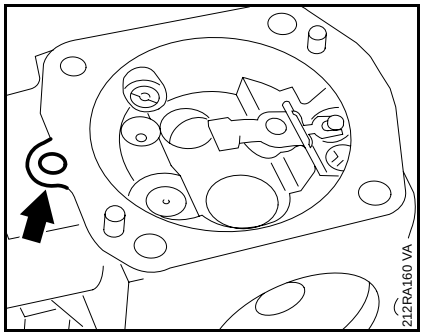


● Carefully separate the diaphragm and gasket.

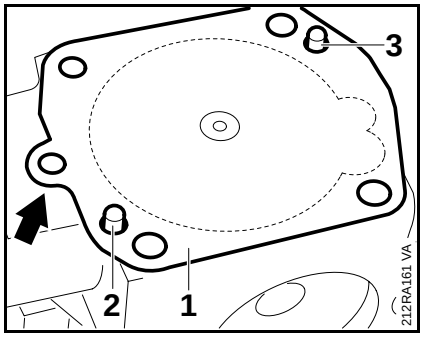
If the gasket and diaphragm are stuck to the carburetor, remove them very carefully.

The diaphragm material is subjected to continuous alternating stresses and eventually shows signs of fatigue, i.e. the diaphragm distorts and swells and has to be replaced.

Reassemble in the reverse sequence.



● Place the gasket on the carburetor body so that the tab (arrow) points towards the adjusting screws.



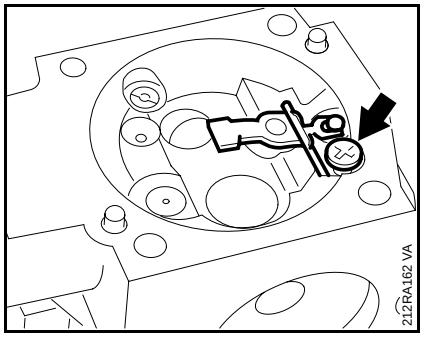
- Fit the metering diaphragm (1) on the carburetor body so that the perforated plate faces the inlet control lever and the tab (arrow) points towards the adjusting screws.

The gasket and metering diaphragm are held in position by integrally cast pegs (2+3).

– Fit the end cover.

– Insert the screws and tighten them down firmly – 🕮 3.5

Reassemble all other parts in the reverse sequence.



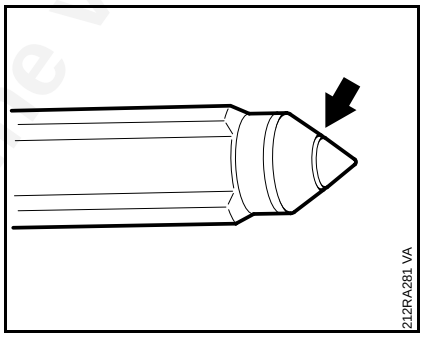
– Remove the metering diaphragm – 🕮 12.3.1

- Take out the screw (arrow).

– Remove the inlet control lever with spindle.

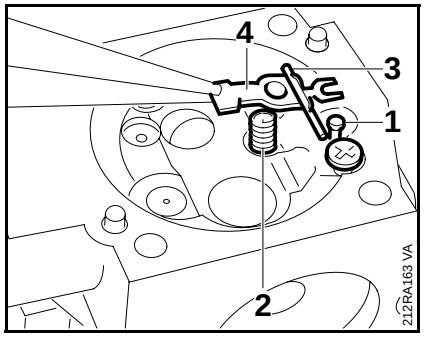
There is a small spring under the inlet control lever which may pop out during disassembly.

– Take out the inlet needle.



- If there is an annular indentation (arrow) on the sealing cone of the inlet needle, fit a new inlet needle.

Reassemble in the reverse sequence.



- Fit the inlet needle (1).

- Fit spring (2) in bore.

- Insert spindle (3) in the inlet control lever (4).

– Engage clevis in annular groove on head of the inlet needle.

– Press the inlet control lever down and secure it with the screw.

Make sure the helical spring locates on the control lever's nipple.

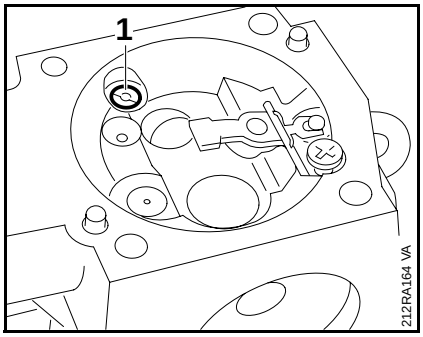
– Check that inlet control lever moves freely.

The upper face of the inlet control lever must be flush with the top of the carburetor body.

– Install the metering diaphragm – 🕮 12.3.1

Reassemble all other parts in the reverse sequence.

12.3.3 Fixed Jet



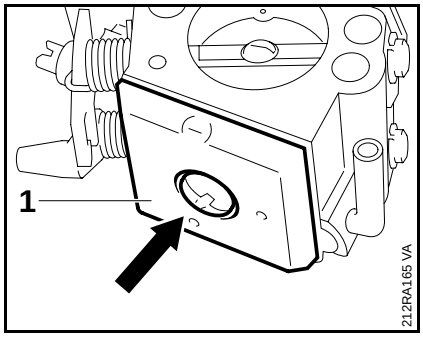
– Remove the metering diaphragm – 🕮 12.3.1

● Use a suitable screwdriver to unscrew the fixed jet (1).

Take care not to damage the jet.

Reassemble in the reverse sequence.

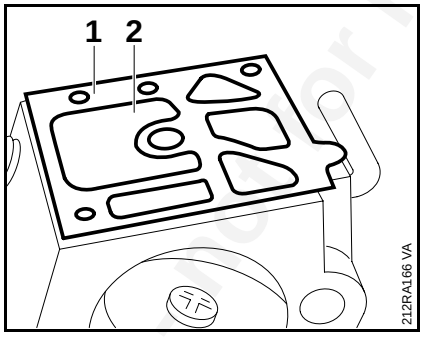
12.3.4 Pump Diaphragm



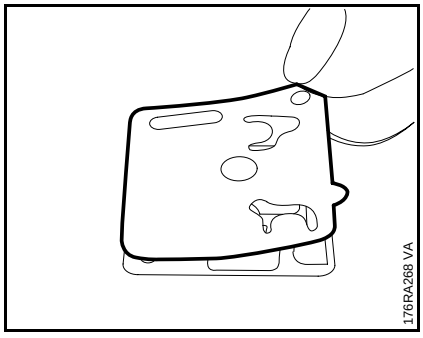
– Remove the carburetor – 🕮 12.2.1

● Take out the screw (arrow).

● Remove the end cover (1).



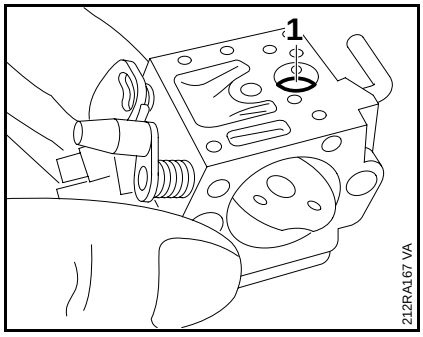
● Carefully remove the gasket (1) and pump diaphragm (2) from the end cover or carburetor body.



● Carefully separate the diaphragm and gasket.

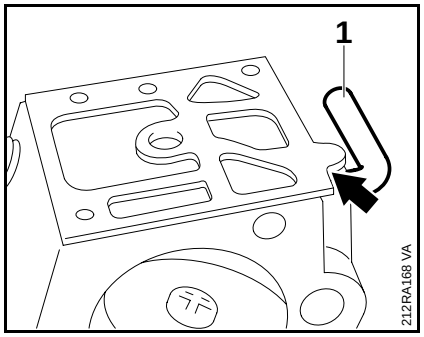
– Inspect diaphragm for damage and wear, install a new gasket.

The diaphragm material, inlet and outlet valves are subjected to continuous alternating stresses and eventually shows signs of fatigue, i.e. the diaphragm distorts and swells and has to be replaced.



● Inspect the fuel strainer (1) for contamination and damage. If necessary, use a needle to remove it from the carburetor body and clean or replace.

Reassemble in the reverse sequence.



– Place the diaphragm on the carburetor body.

– Place the gasket on the carburetor body.

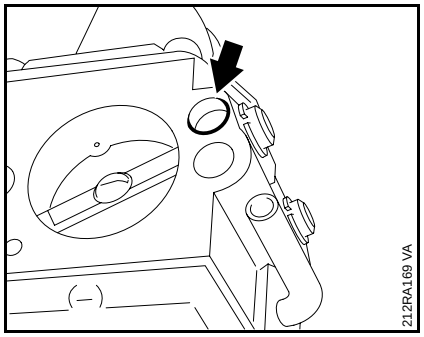
● Place the diaphragm and gasket on the carburetor body so that their tabs (arrow) point towards the elbow connector (1).

– Fit the end cover on the carburetor body.

The pump diaphragm, gasket and end cover are held in position by pegs on the end cover.

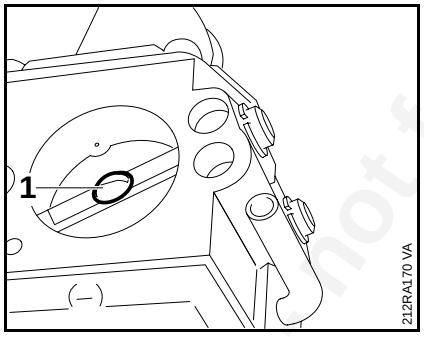
– Fit screw and tighten it down firmly – 🕮 3.5

Reassemble all other parts in the reverse sequence.

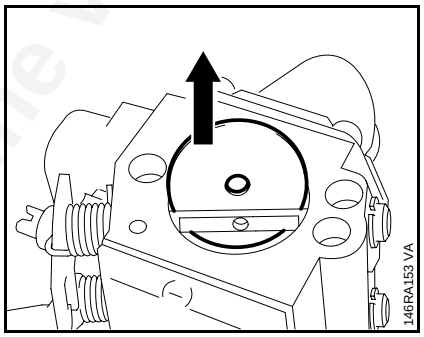


– Remove the carburetor – 🕮 12.2.1

● Use a suitable pointed tool to remove the sealing plug (arrow).

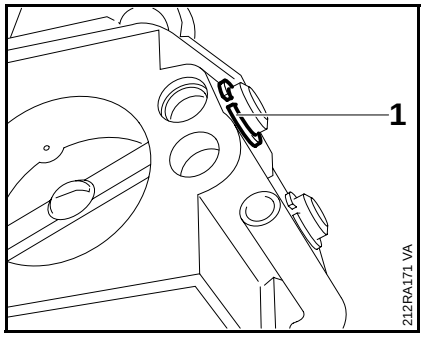


● Take out the screw (1).



– Set the throttle shaft to the full throttle position.

● Carefully pull the throttle shutter out of the shaft.

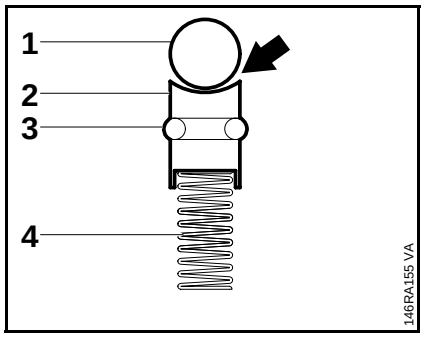


● Remove the retaining ring (1) from the throttle shaft.

Hold accelerator pump bore closed with one finger so that the parts of the accelerator pump do not pop out of the carburetor when the throttle shaft is removed.

Wear safety glasses.

– Pull the throttle shaft out of the carburetor body.



● Remove ball (1), pump piston (2) with sealing ring (3) and spring (4) from the carburetor body.

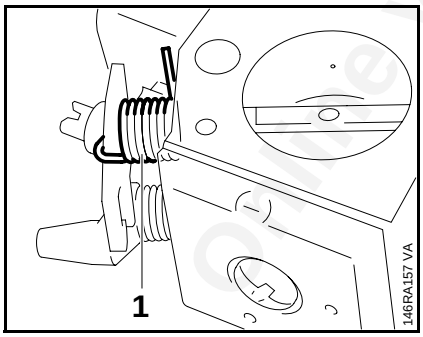
– Inspect parts for damage and wear and replace if necessary.

When installing, always use a new pump piston.

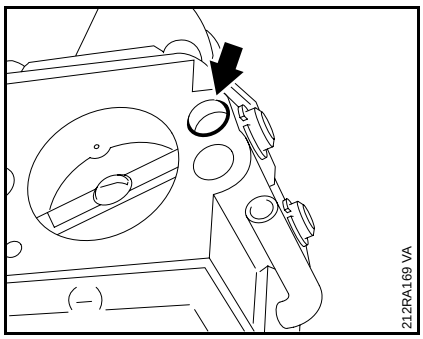
Reassemble in the reverse sequence.

Wear safety glasses while installing the accelerator pump/ throttle shaft.

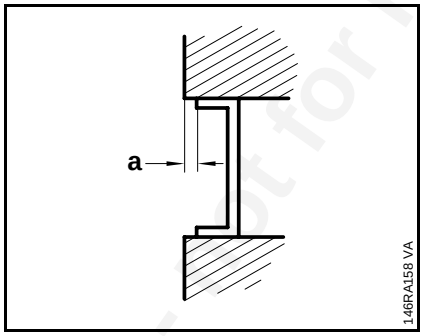
Note correct installed sequence of the individual parts of the accelerator pump: First fit the spring (4), then the pump piston (2), with the ball seat (arrow) facing you, and the ball (1).
Use a suitable tool to press the ball (1) down and fit the throttle shaft.



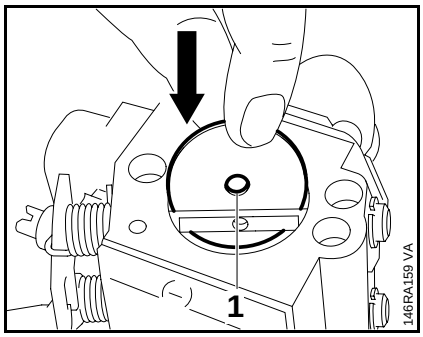
● Note correct installed position of spring (1).



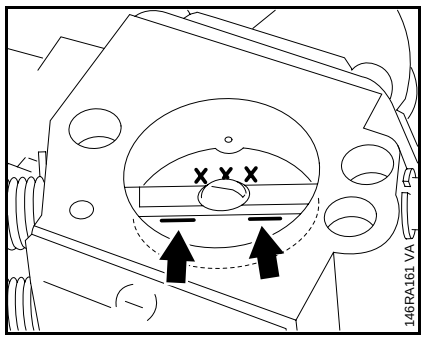
● Use a suitable tool to carefully install a new sealing plug (arrow) in the accelerator pump's bore.



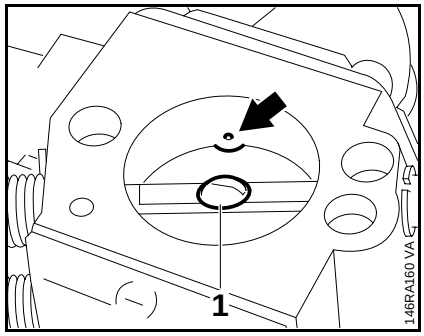
● Press home sealing plug so that it is recessed 1 mm (dimension 'a') in the accelerator pump's bore.



● Fit the throttle shutter (1) in the shaft.



Check that the stamped digits face you.
The two marks (see arrows) must be parallel to the throttle shaft.



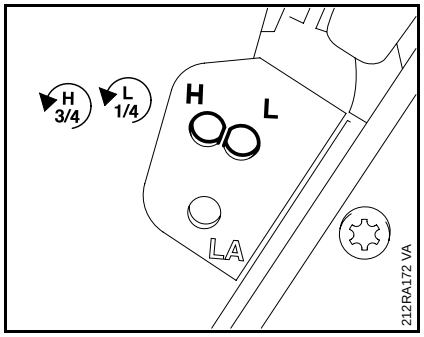
Check that the center of the notch in the throttle shutter is in line with the hole (arrow) in the carburetor body.

● Tighten the screw (1) moderately.

– Center the throttle shutter so that it moves freely.

– Tighten down the screw (1) firmly.

– Check freedom of movement again.



Standard setting

The limiter caps must not be removed for the standard setting.

– With this carburetor it is only possible to correct the settings of the high speed screw (**H**) and low speed screw (**L**) within fine limits.

– Open the high speed screw (**H**) counterclockwise as far as stop.

– Close the low speed screw (**L**) clockwise as far as stop, then open it one quarter turn counter-clockwise.

Adjusting engine idle speed

Engine stops while idling

– Set the low speed screw (**L**) so it is one quarter turn open.

– Turn the idle speed screw (**LA**) clockwise until the saw chain begins to move. Then turn it back one quarter turn.

Chain runs while engine is idling

– Set the low speed screw (**L**) so it is one quarter turn open.

– Turn the idle speed screw (**LA**) counterclockwise until the chain stops running. Then turn the screw another one quarter turn in the same direction.

Erratic idling behavior, poor acceleration

Erratic engine running behavior even though low speed screw is set on quarter turn open.

– Idle setting too lean. Turn the low speed screw (**L**) counter-clockwise, but no further than stop, until the engine runs and accelerates smoothly.

– It is usually necessary to change the setting of the idle speed screw (**LA**) after every correction to the low speed screw (**L**).

Adjustments for operation at high altitude

A minor correction may be necessary if engine power is not satisfactory when operating at high altitude.

– Check standard setting.

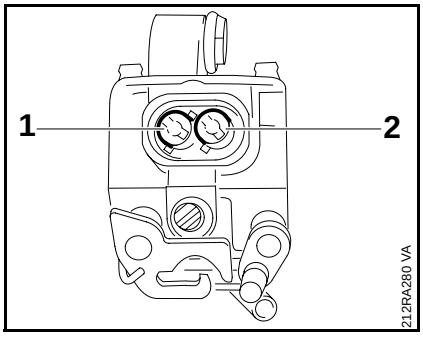
– Warm up the engine.

– Turn high speed screw (**H**) clockwise (leaner) no further than stop.

If the setting is made too lean there is a risk of engine damage as a result of insufficient lubrication and overheating.

The limiter caps have to be removed from the adjusting screws only if it is necessary to replace the high speed screw (**H**) or low speed screw (**L**), clean the carburetor or carry out the basic setting.
Perform the two following operations:

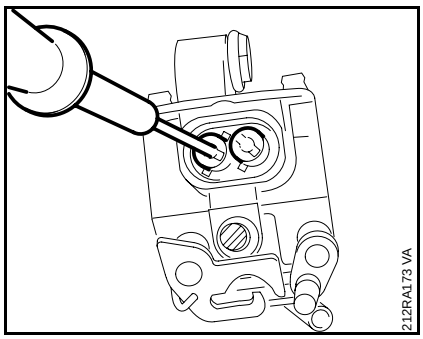
After removing the limiter cap it is **necessary** to carry out the basic setting.



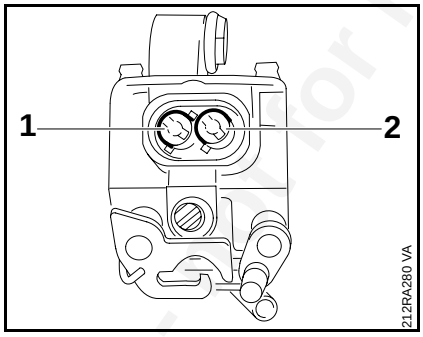
- Turn the limiter cap (1) of high speed screw (**H**) counter-clockwise as far as stop until the limiter cap lugs are in line with the carburetor openings.

- Turn the limiter cap (2) of low speed screw (**L**) clockwise as far as stop. Turn the limiter cap back one quarter turn until its lugs are in line with the carburetor openings.

Note:
The lugs of the limiter caps are at a right angle to the screwdriver slot.



- Insert puller 5910 890 4500 in center of limiter caps, apply slight pressure and screw home counterclockwise until the limiter caps come out of the carburetor body.



– Screw down both adjusting screws until they are against their seats.

On MS 341

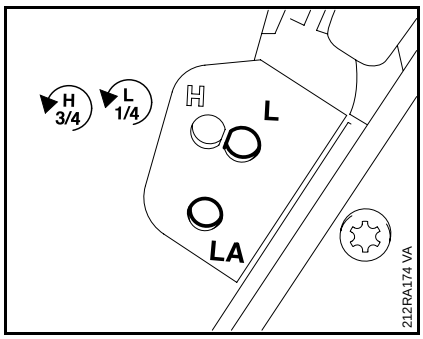
– Open the high speed screw (**H**) (1) one full turn.

– Open the low speed screw (**L**) (2) one full turn.

On MS 361

– Open the high speed screw (**H**) (1) one full turn.

– Open the low speed screw (**L**) (2) one full turn.



Adjusting engine idle speed

– Check the air filter and clean or replace as necessary.

– Check chain tension.

– Warm up the engine.

Adjust idle speed with a tachometer. Adjust specified engine speeds within tolerance of +/- 200 rpm.

1. Adjust engine speed with idle speed screw (**LA**) to 3,300 rpm.

2. Turn low speed screw (**L**) clockwise or counterclockwise to obtain maximum engine speed.

If this speed is higher than 3,700 rpm, abort the procedure and start again with step 1.

3. Use the idle speed screw (**LA**) to set engine speed again to 3,300 rpm.

4. Set the engine speed to 2,800 rpm with the low speed screw (**L**).

5. **On MS 341**: Set engine's maximum speed to 13,500 rpm with the high speed screw (**H**).

   On MS 361: Set engine's maximum speed to 14,000 rpm with the high speed screw (**H**).

6. Install new limiter caps, noting that the stop lugs on the limiter caps must line up with the openings in the carburetor.

Limiter caps that have been removed once are damaged and must not be re-used.

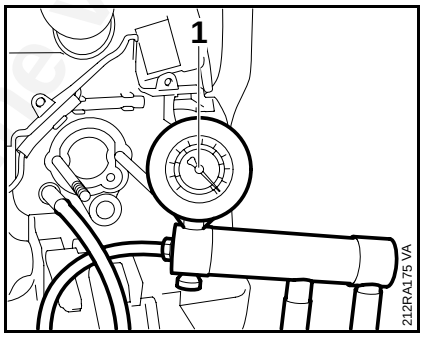
Correct operation of the carburetor is only possible if atmospheric pressure and internal fuel tank pressure are equal at all times. This is ensured by the tank vent.

In the event of trouble with the carburetor or the fuel supply system, always check and clean the tank vent.
Check function by performing vacuum test on the tank via the fuel hose.

– Remove the carburetor – 🕮 12.2.1

– Drain the fuel tank.

Dispose of fuel properly in accordance with environmental requirements.

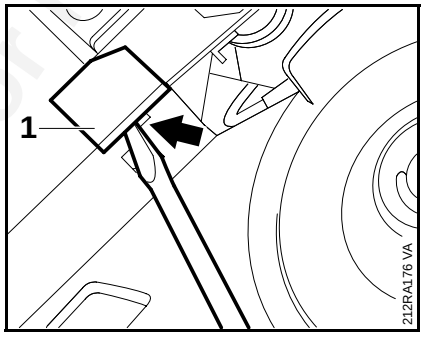


- Connect vacuum pump (1) 0000 850 3501 to fuel hose (2) and create vacuum in fuel tank.

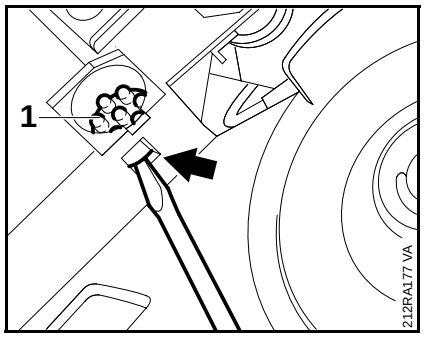
Equalization of pressure takes place via the tank vent. There must be no build-up of vacuum in the tank. In the event of a malfunction, install a new tank vent.

– Remove the chain sprocket cover – 🕮 5.1

– Clean area around the tank vent.



- Insert a suitable tool in the slot (arrow) and pry off the cover (1) upwards.



- Insert a suitable tool in the slot (arrow) and carefully pry out the tank vent (1).

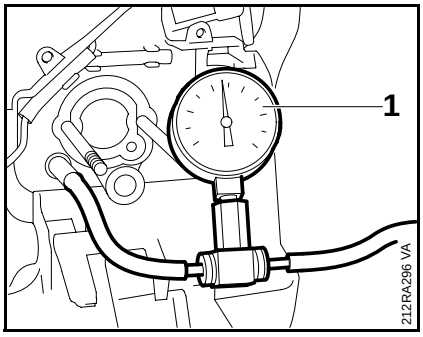
Hold the tank vent during this operation to prevent it flying out.

The valve seat must not be damaged.

Use a new tank vent.

Before installing, lubricate O-ring and bead with oil.

Push home the tank vent. **It must snap audibly into position**.



- Connect the carburetor and crankcase tester 1106 850 2905 (1) to the fuel hose.

– Squeeze the rubber bulb until the the pressure gauge shows a reading of 0.5 bar. If this pressure remains constant for at least 20 seconds, the tank, including the tank vent, is airtight. If it drops, the leak must be found and the defective part replaced.

Reassemble in the reverse sequence.

Any impurities mixed with the fuel are retained by the pickup body (filter). The fine pores of the filter eventually become clogged with minute particles of dirt. This restricts the passage of fuel and results in fuel starvation.
In the event of trouble with the fuel supply system, always check the fuel tank and the pickup body first. Clean the fuel tank if necessary.

Cleaning the fuel tank

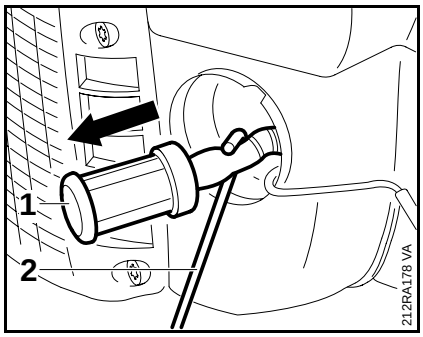
– Remove the fuel tank cap and drain the tank.

– Pour a small amount of clean gasoline into the tank. Close the tank and shake the saw vigorously.

– Open the tank again and drain it.

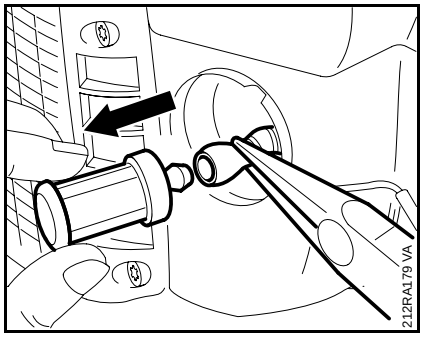
Dispose of fuel properly in accordance with environmental requirements.

Pickup body



- Use hook (2) 5910 893 8800 to pull the pickup body (1) out of the fuel tank.

Do not stretch the fuel hose too much during this operation.

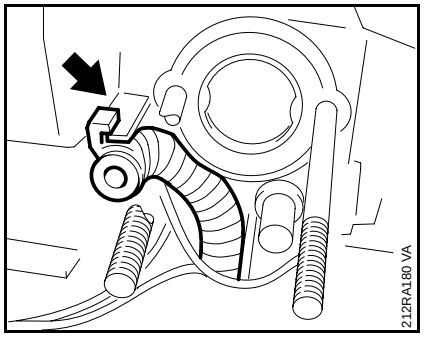


- Pull the pickup body off the fuel hose.

– Fit a new pickup body.

Install in the reverse sequence.

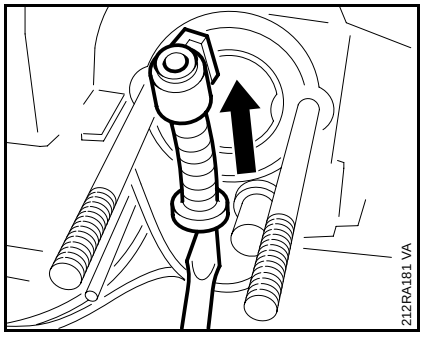
12.8 Fuel Hose



– Remove carburetor – 🕮 12.2.1

– Remove pickup body – 🕮 12.7

● Pull the fuel hose out of the retainer (arrow).



● Pry the flange of the fuel hose out of the fuel tank.

– Pull out the fuel hose.

Install in the reverse sequence.

When installing, make sure the flat side of the fuel hose points towards the cylinder.

12.9 Separating Crankcase and Tank Housing

– Drain the fuel tank.

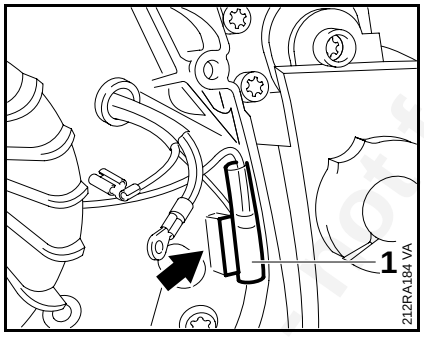
– Drain the oil tank.

Collect fuels and lubricants in clean containers or dispose of properly in accordances with regulations.

– Remove the shroud – 🕮 6.2

– Remove the carburetor – 🕮 12.2.1

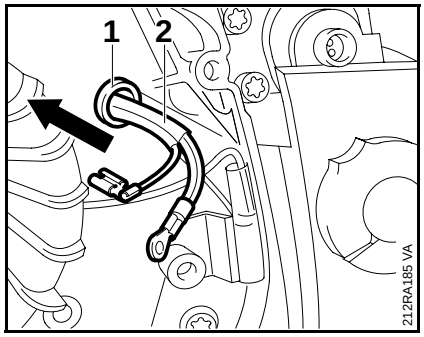
– Disconnect the short circuit wire and ground wire from the ignition module – 🕮 7.1.2



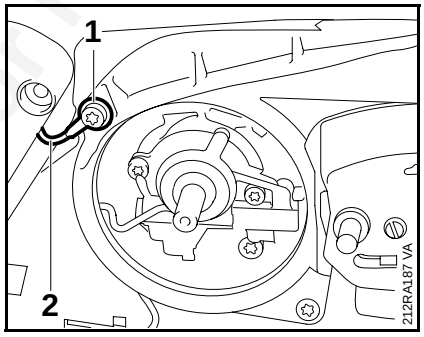
On machines with handle heating and/or carburetor heating

– Remove the ignition module – 🕮 7.1.2

● Pull connector (1) out of guide (arrow) and disconnect.



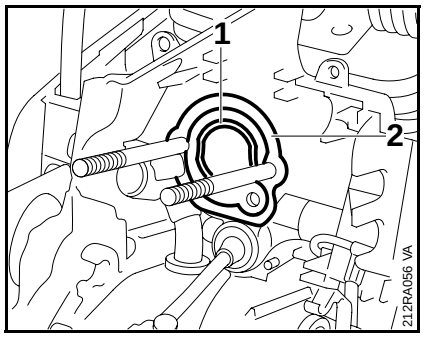
● Pry the grommet (1) out of its seat and push the wires (2) inwards.



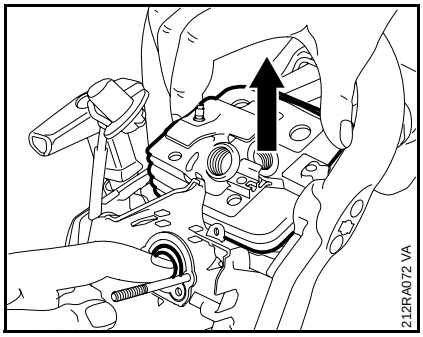
On machines with handle heating and/or carburetor heating

● Take out the screw (1).

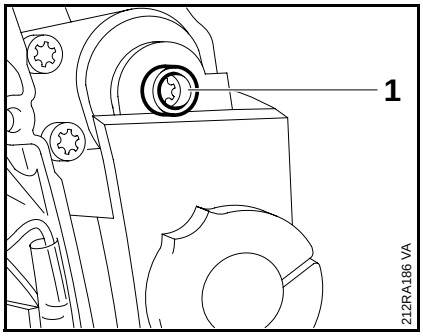
● Remove the wire (2).



● Take the sleeve (1) out of the manifold and pull off the washer (2).



● Push the manifold flange through the tank housing intake opening.

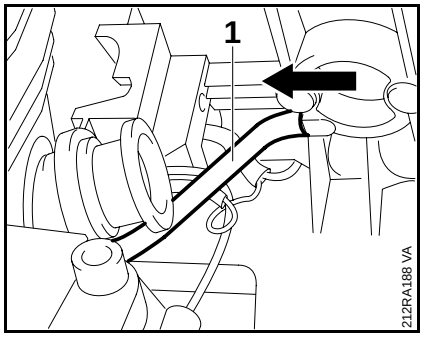


● Take out the collar screw (1).

– Remove the spring between front handle and cylinder – 🕮 9.1.1

– Pry the spring and annular buffer between crankcase and tank housing out of the crankcase – 🕮 9.1.3

– On machines with QuickStop Super, disconnect the coasting brake cable from the brake lever – 🕮 5.5.2



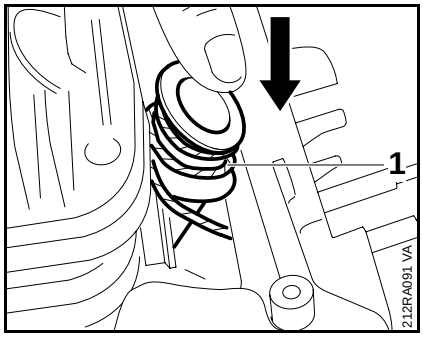
– Carefully separate the crankcase from the tank housing and swing it to one side.

● Pull off the hose (1).

– Replace the tank housing – 🕮 12.10

– Replace the crankcase – 🕮 6.7

Reassemble in the reverse sequence.



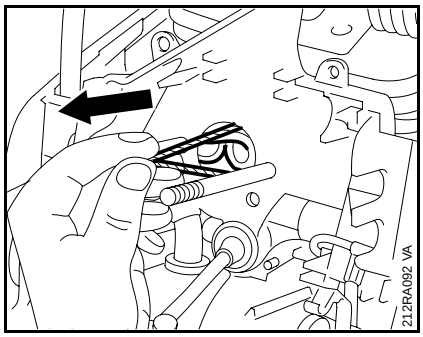
– Connect impulse hose to tank housing.

– Impulse hose must not be twisted or kinked.

● To pull the manifold flange through the intake opening in the tank housing, wind a piece of string (1) (about 15 cm long) around the back of the flange. and pass the ends of the string through the intake opening.

– Pass the ends of the string through the intake opening.

– Press the manifold down.



● Pull the ends of string outwards.

Check that flange is properly seated in the tank housing.

Reassemble all other parts in the reverse sequence.

12.10 Replacing the Tank Housing

– Separate the crankcase and tank housing – 🕮 12.9

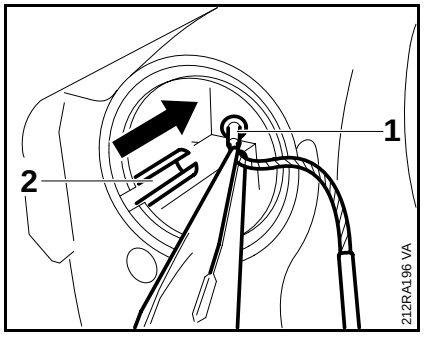
– Remove the front handle – 🕮 10.3

– On machines with handle heating and/or carburetor heating, remove the stop switch – 🕮 14.6

– Remove the throttle trigger – 🕮 10.2

– On machines with QuickStop Super, remove the brake cable – 🕮 5.5.2

– Remove the contact spring – 🕮 7.2



● Pull tank cap cord (1) out of slot (2).

– Remove the tank cap.

– Remove the fuel hose – 🕮 12.8

– Remove the tank vent – 🕮 12.6

– Remove the spring and annular buffer between the crankcase and tank housing – 🕮 9.1.3

Reassemble in the reverse sequence.

Make sure the impulse hose and wires are correctly positioned without kinks.

– Carry out leakage test – 🕮 12.6

13. Carburetor Heating

Current is supplied via wires to the heating element installed between the heating plate and carburetor.

Carburetor heating is controlled by a thermostatic switch on the heating plate.

The carburetor heating system should be checked if running problems occur when the cold engine is idling or running at part load, particularly at temperatures below freezing.

Idling problems with a hot engine are also an indication of a fault in the carburetor heating system.

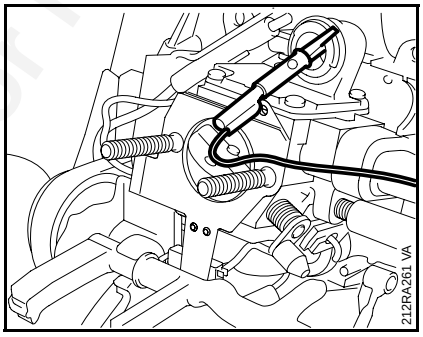
13.1 Testing

Complete system

The generator and heating element are checked in the following test which should be performed at an ambient temperature of at least + 20 °C (68 °F).

If the temperature is lower than + 13 °C (55 °F), the thermostatic switch may close and produce false readings.

Test the thermostatic switch separately.



– Remove the filter base – 🕮 12.1

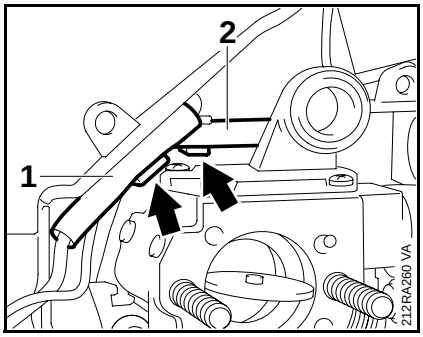
– Set the ohmmeter to measuring range “Ω“.

● Clip one of the two test leads to the carburetor body and the other to a cylinder fin (ground).

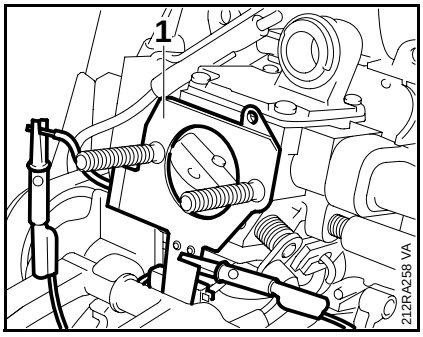
– If the system is in good condition the ohmmeter will indicate about 8 Ω in measuring range "Ω".

To ensure good electrical contact, press the heating plate and the heating element against the carburetor during the measurement.

If the reading obtained is outside this tolerance, test each component separately.



- Remove the wires from the retainers (arrows).
- Push back the insulating tubes (1 + 2) and disconnect the pin and socket connectors.

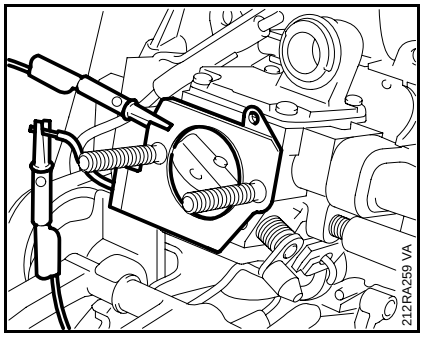


Thermostatic switch

- Clip one test lead to the heating plate (1), and the other test lead to the wire that goes to the thermostatic switch.

At temperatures above + 20 °C (68 °F), the ohmmeter must indicate an infinitely high value in measuring range "Ω".

Cool the switch down to below + 6 °C (42 °F). The ohmmeter must indicate a value of about 0.5 Ω in measuring range "Ω". If a higher value is indicated, install a new heating plate.



Heating element

– Remove the heating plate.

- Clip one test lead to the heating plate (1), and the other test lead to the wire that goes to the heating element.

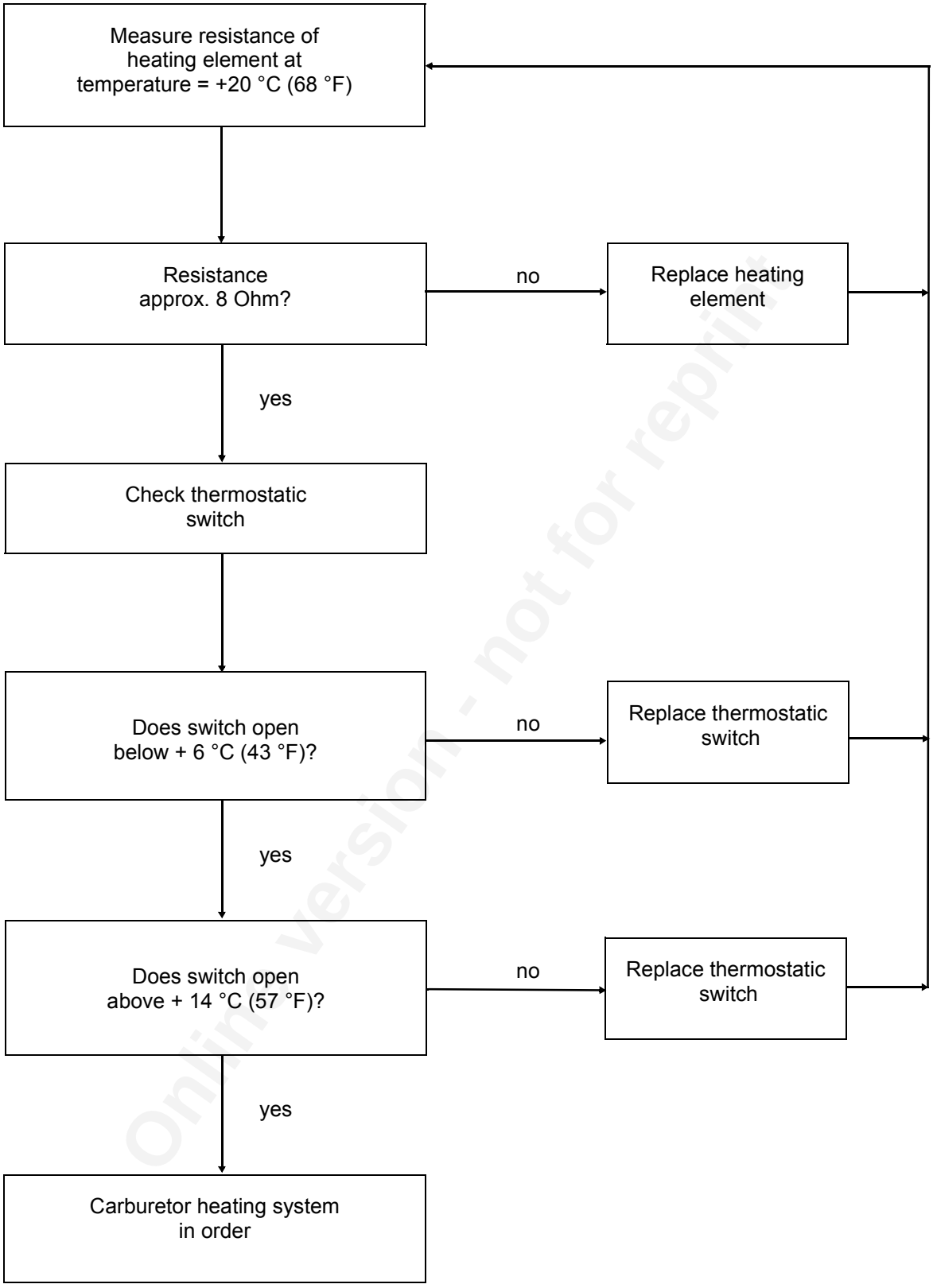
If the heating element is in good condition the ohmmeter will show a reading of about 8 Ω in measuring range "Ω".

If the reading obtained is outside this tolerance, install a new heating element.

Reassemble in the reverse sequence.

Make sure the pin and socket connector is straight.

13.2 Troubleshooting Chart



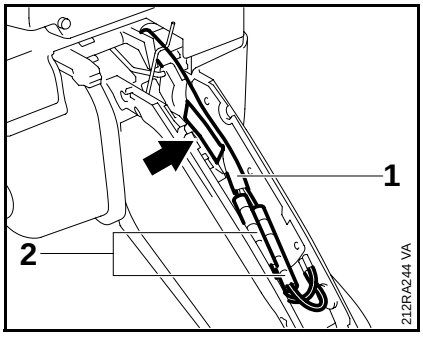
14. Handle Heating System
14.1 Troubleshooting

The entire handle heating system is maintenance-free and subject to practically no wear. Faults in the generator, heating elements and wiring are generally caused by mechanical damage.

There are two reasons for failures in the heating system:

1. A break in the circuit due to a faulty wire or component.

2. A short circuit resulting from damage to the insulation.



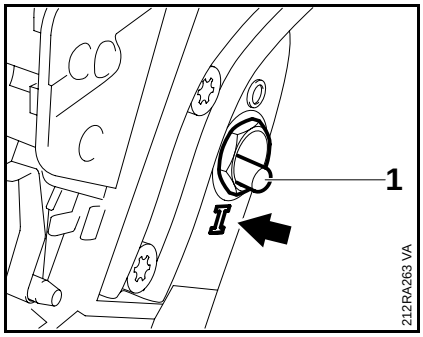
Tracing the cause of a fault

– Remove the interlock lever – 🕮 10.2.1 or 10.2.2

● Ease the wire (1) out of the guide (arrow).

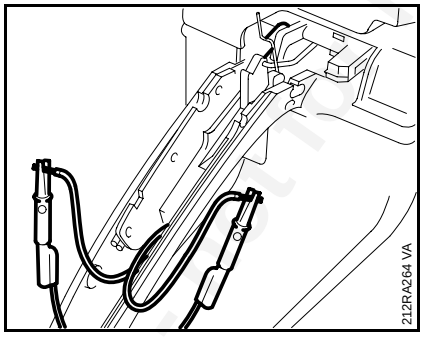
● Push back the insulating tubes (2).

– Separate the wire with the larger cross section.



● Move the heater switch (1) to "I".

– Set ohmmeter to "Ω".



● Connect the ohmmeter test leads to the two wires.

All electrical components of the heating system are connected in series with the ohmmeter.

Carry out the measurement at an ambient temperature of + 25 °C (77 °F).

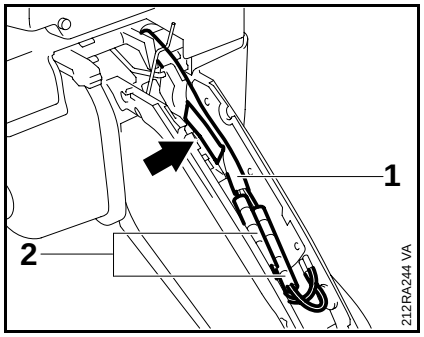
If the system is in order, the ohmmeter will show a reading of about 5 Ω in measuring range "Ω".

If no reading is obtained or an infinitely high value is shown, there is a break in the circuit.

If the ohmmeter shows a very low value, there is a short circuit in one of the components.

In either case it is necessary to check each component separately – 🕮 14.2 and 14.4.

The generator wire remains disconnected from the heating element during this check.

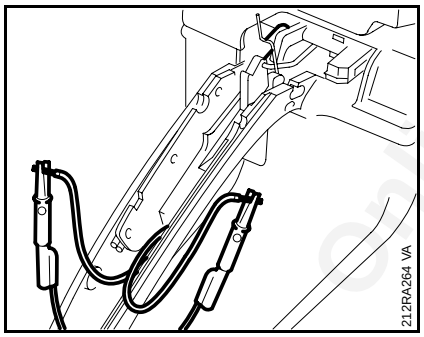


– Remove the interlock lever – 🕮 10.2.1 or 10.2.2

● Take the wire (1) out of the guide (arrow).

● Slide the insulating tubes (2) off the connectors.

– Separate the pin and socket connectors.



● Connect the ohmmeter test leads to the heating element wires.

– Set ohmmeter to "Ω".

Carry out the measurement at an ambient temperature of + 25 °C (77 °F).

If the system is in order, the ohmmeter will show a reading of about 1 Ω in measuring range "Ω".

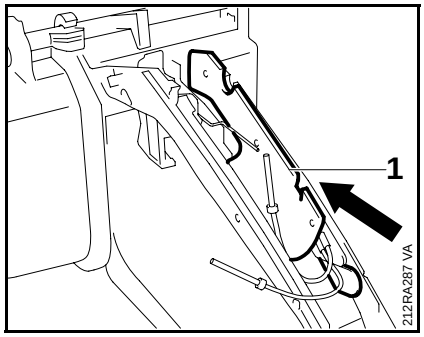
If no reading is obtained or an infinitely high value is shown, there is a break in the circuit. Install a new heating element.

– Remove the test leads.

– Further operations – 🕮 14.3

Checking operation of heating element

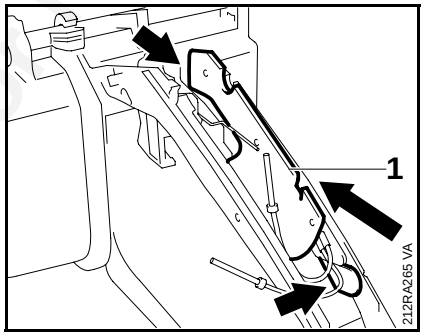
Run the saw at maximum revs for no more than 30 seconds with the heating switched on. The rear handle must warm up noticeably.



– Before removing, check operation of heating element – 🕮 14.2

– Pull out the heating element (1).

Install in the reverse sequence.

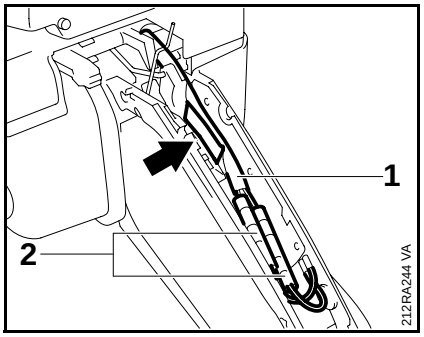


● Fit the new heating element (1) in the direction of the switch shaft.

When fitting the heating element, pay attention to the guides (arrows) in the handle molding.

Assemble all other parts in the reverse sequence.

14.4 Testing Heating Element in Front Handle



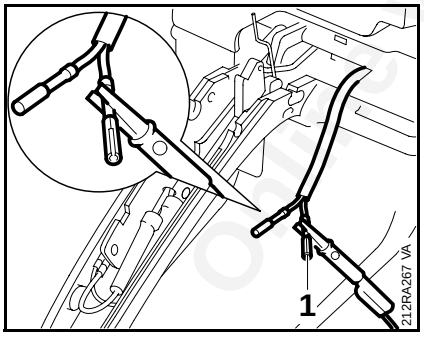
– Remove the interlock lever – 🕮 10.2.1 or 10.2.2

● Take the wire (1) out of the guide (arrow).

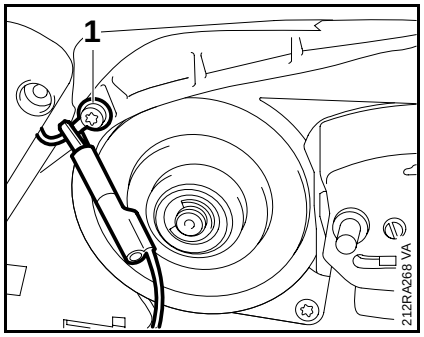
● Pull the insulating tubes (2) off the connectors.

– Separate the pin and socket connectors.

– Remove the chain sprocket cover – 🕮 5.1

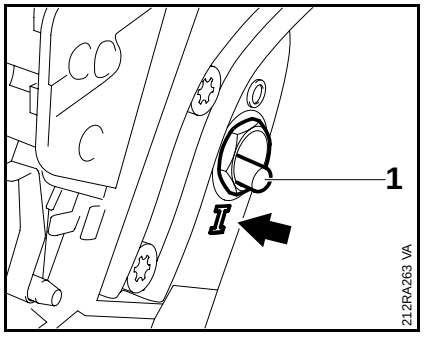


● Connect one ohmmeter test lead to the wire with socket (1).



● Connect the other ohmmeter test lead to the ground wire.

● If it is difficult to obtain good contact, take out the screw (1) and connect the test lead to the terminal.



● Move heater switch (1) to "I".

– Set ohmmeter to "Ω".

Carry out the measurement at an ambient temperature of + 25 °C (77 °F).

If the system is in order, the ohmmeter will show a reading of about 4 Ω in measuring range "Ω".

If no reading is obtained or an infinitely high value is shown, there is a break in the circuit. Install a new front handle.

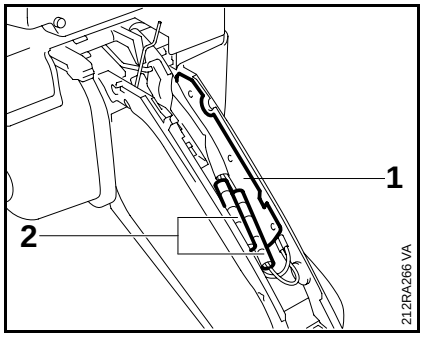
– Remove the test leads.

– Further operations – 🕮 14.5

Install in the reverse sequence.

Checking operation of heating element

Run the saw at maximum revs for no more than 30 seconds with the heating switched on. The front handle must warm up noticeably.



The heating element in the front handle is not replaceable. A new handle must be fitted if the heating element is faulty.

– Before removing, check operation of heating element – 🕮 14.4

– Remove spring between front handle and cylinder – 🕮 9.1.1

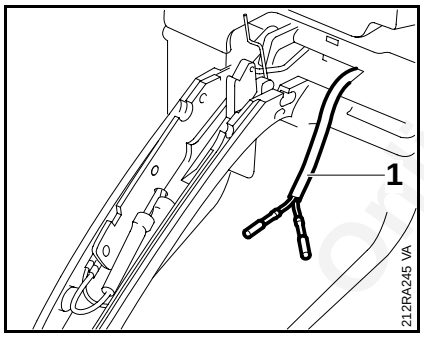
– Remove the heater switch – 🕮 14.6

– Remove the interlock lever – 🕮 10.2.1 or 10.2.2

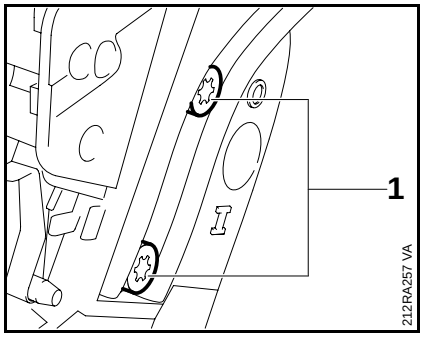
● Take the wire (1) out of the guide (arrow).

● Pull the insulating tubes (2) off the connectors.

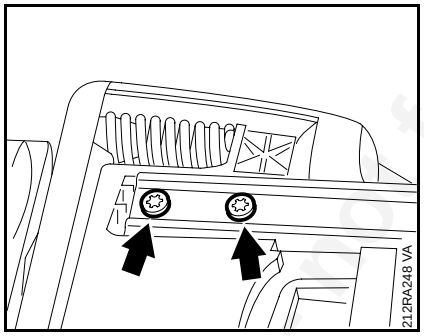
– Separate the pin and socket connectors.



● Pull the wires out of the insulating tube (1).



● Take out the screws (1).



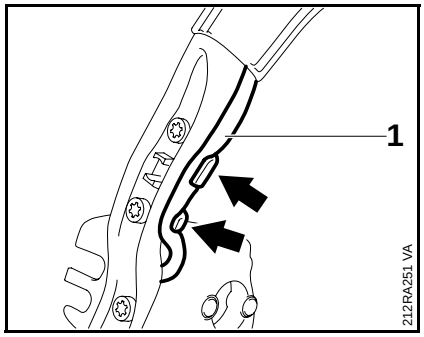
● Take out the screws (arrows).

– Lift the front handle away and carefully leave it to one side.

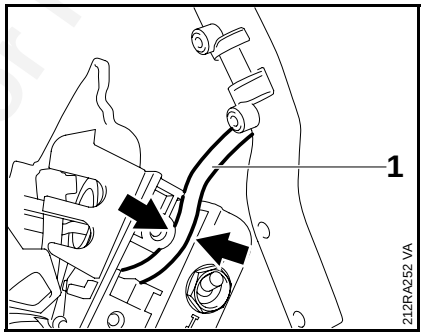
● Carefully pull the handle heating wire out through the opening in the handle housing.

– Remove the front handle.

Install in the reverse sequence.

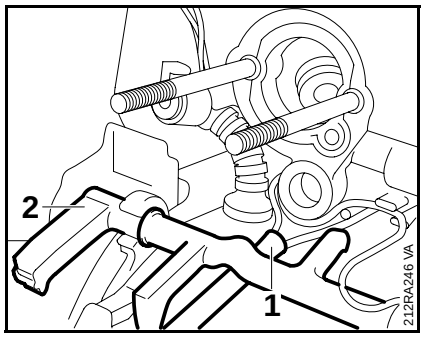


● Push the wire (1) into the retainers (arrows).



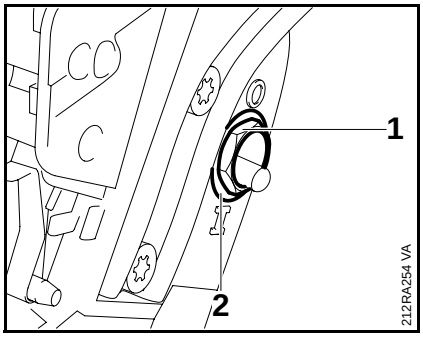
● Make sure the wire (1) is correctly positioned in the handle housing (arrows).

– Mount the front handle.



● Route the wires (1) under the switch shaft (2).

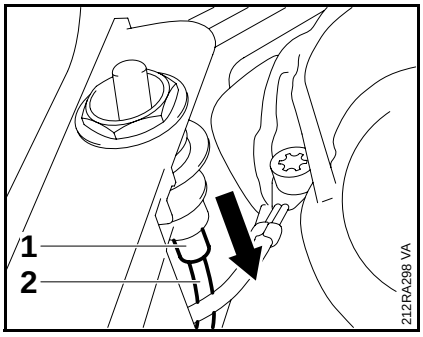
Install all other parts in the reverse sequence.



– Remove spring between front handle and cylinder – 📖 9.1.1

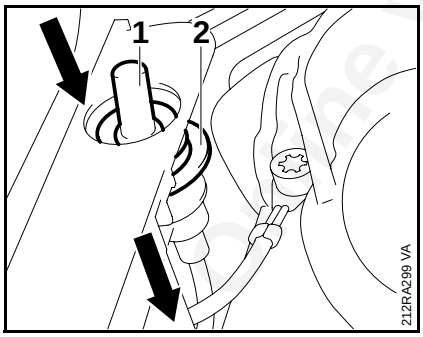
● Unscrew the hex nut (1).

● Remove the washer (2).

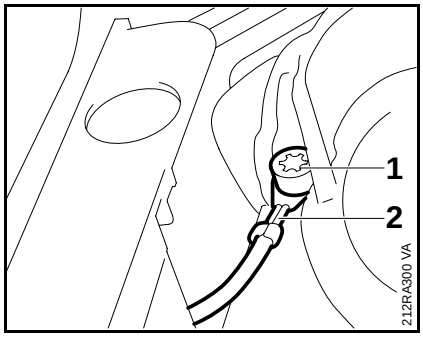


● Push back the grommet (1).

● Disconnect the wire (2) from the heater switch.



● Push the heater switch (1) with the ground wire ring terminal (2) inwards and pull it out forwards.



● Take out the screw (1).

● Remove the ground wire (2).

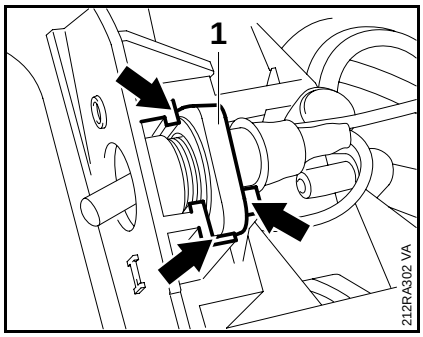
Terminals and ground wire must not be damaged or corroded. Replace if necessary.

Install in the reverse sequence.

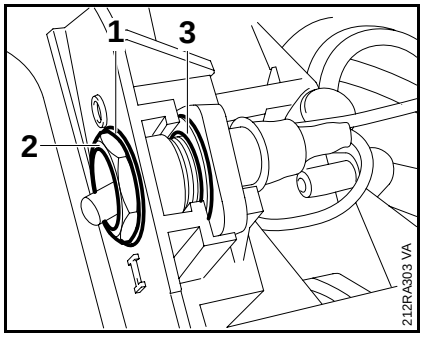
– Push ground wire ring terminal over the thread of the heater switch.

– Place the heater switch in the tank housing.

The crimping of the ring terminal must be positioned between the tank housing and heater switch.

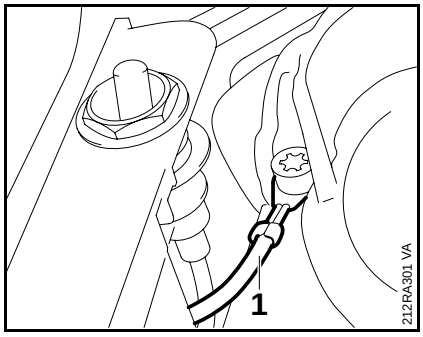


When fitting the heater switch (1), pay attention to correct installed position (arrows). The switch seat is not symmetrical.



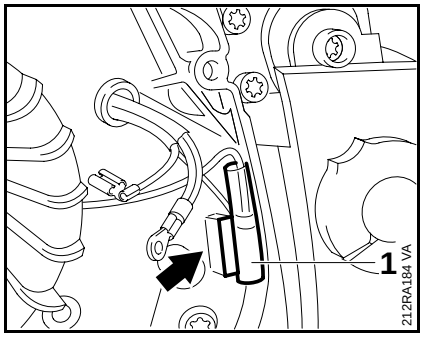
– Fit the washer (1) and hex nut (2).

– Check that the ground wire ring terminal (3) locates fully against the heater switch's contact face.



Fit the ground wire (1) so that the ring terminal's crimping faces up.

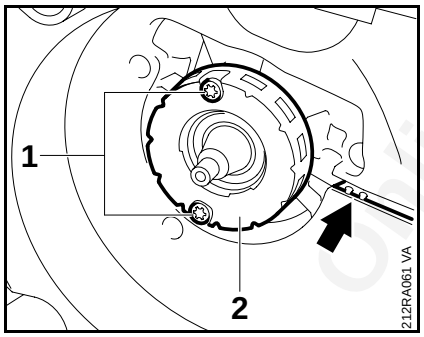
Terminals and ground wire must not be damaged or corroded. Replace if necessary.



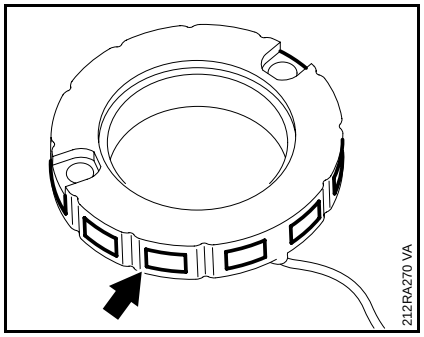
– Remove the ignition module – 🕮 7.1.2

– Remove the flywheel – 🕮 7.1.5

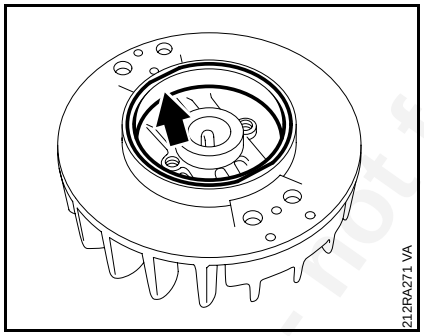
- Remove the wire from the guide (arrow).
- Push back the insulating tube (1) and separate the pin and socket connector.



- Take the wire out of the guide (arrow).
- Take out the screws (1).
- Remove the generator (2).

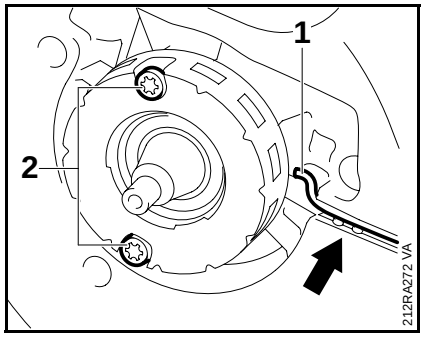


- Check generator and poles (arrow) for cracks or other damage. If damage is found, replace the generator.



- Check magnet ring (arrow) in flywheel for cracks or other damage. If damage is found, replace the flywheel.

Install in the reverse sequence.



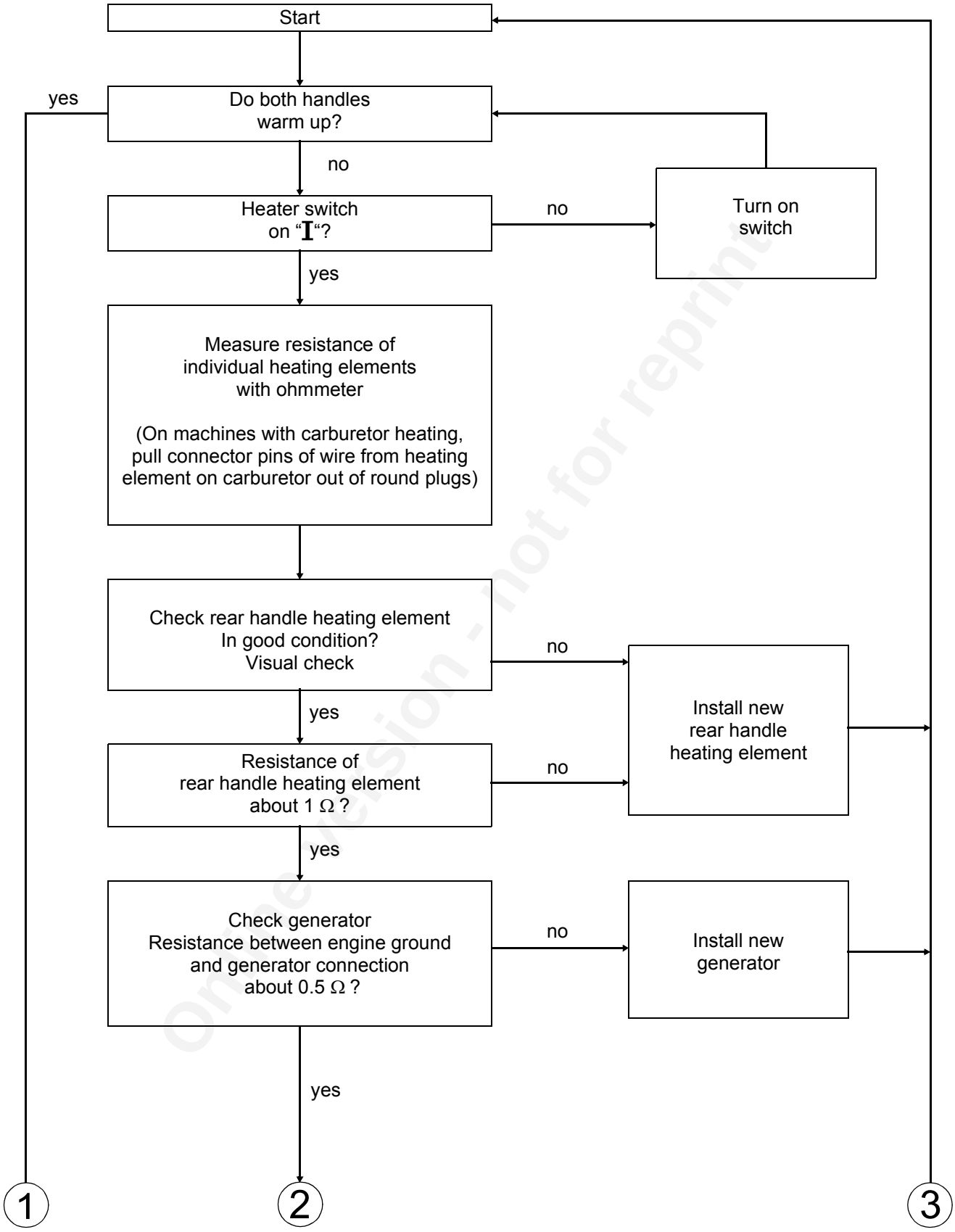
- Place generator in position with connecting wire (1) facing the crankcase.
- Position the generator wire at the bottom of the recess (arrow).

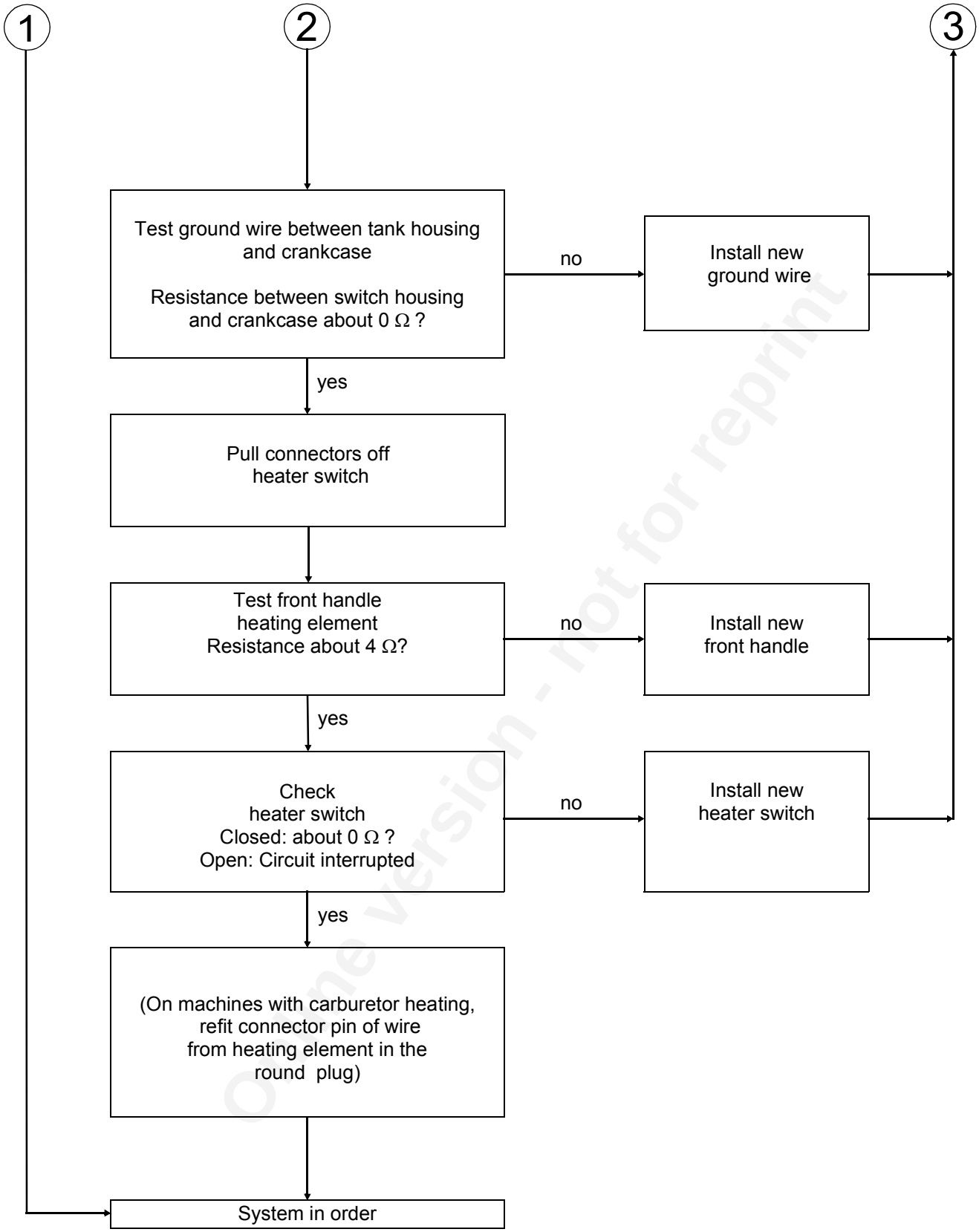
– Install screws (2) with Loctite 242 – 🕮 16.

- Tighten down the screws (2) firmly – 🕮 3.5

Assemble all other parts in the reverse sequence.

14.7.1 Troubleshooting Chart





14.7.2 Test Connections and Test Values

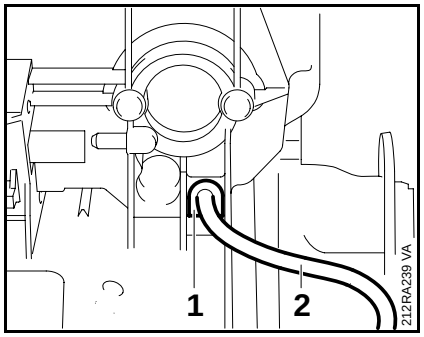
The pin and socket connections of the wires in the rear handle must be disconnected to test the individual components separately.

Component	Ohmmeter connection (use either test lead)		Resistance Ω		If faulty	
	Lead 1	Lead 2	Spec.l	Actual	Cause	Remedy
Switch	Switch terminal[1)]	Ground	< 0.5	-	Switch faulty	Replace switch
Heating element in rear handle	Terminal socket from rear handle heating element	Terminal pin from rear handle heating element	1.0	0.8...1.2	Heating element OK	
				-	Break in wire, heating element damaged	Install new heating element
				0	Short circuit – damaged insulation	
Heating element in front handle	Connector on wire from front handle heating element	Ground	4.0	3.0...5.0	Heating element OK	
				-	Break in wire, heating element damaged	Install new front handle
				0	Short circuit – damaged insulation	Repair insulation
Generator	Connector on wire	Ground	0.5	0.4...0.7	Generator OK	
				-	Break in wire, generator damaged	Install new generator
				0	Short circuit – damaged insulation	Repair insulation

[1)] Pull out the wire for this purpose

14.8 Wiring Harness

14.8.1 Without Handle and Carburetor Heating



– Separate the crankcase from the tank housing – 🕮 12.9

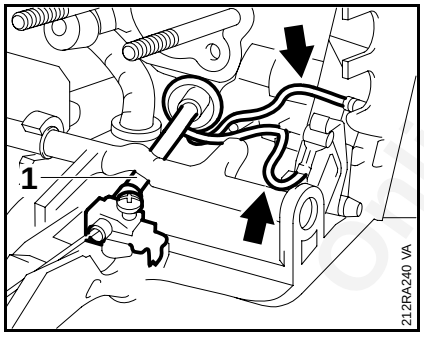
– Remove the short circuit wire – 🕮 10.1

– Remove the ground wire – 🕮 7.2

● Pry out the grommet (1).

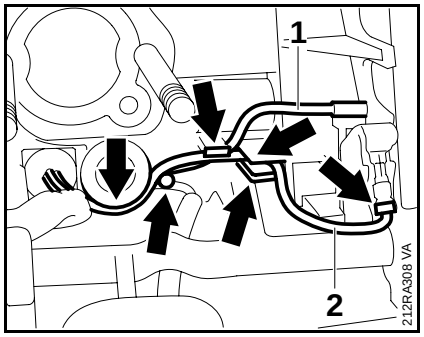
● Pull out the wires (1).

Install in the reverse sequence.

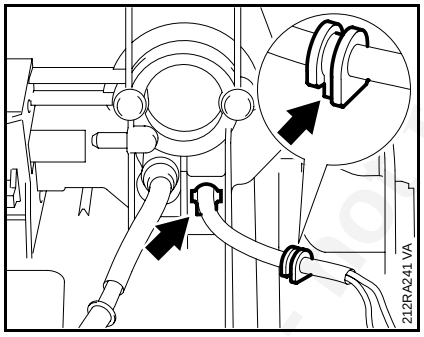


On machines with QuickStop Super

● Position the wires (arrows) under the brake cable (1).



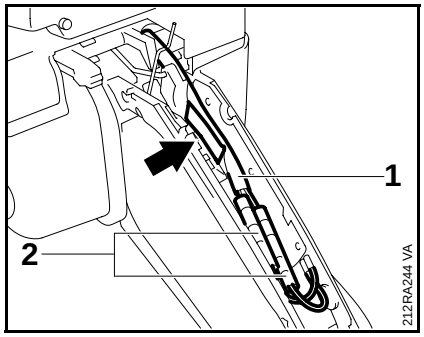
● Make sure the ground wire (1) and short circuit wire (2) are correctly positioned (see arrows).



Check correct installed position of the grommet (arrows).

Install all other parts in the reverse sequence.

14.8.2 With Handle Heating System



– Separate the crankcase from the tank housing – 🕮 12.9

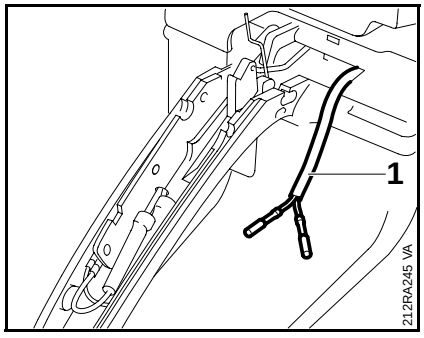
– Remove the short circuit wire – 🕮 10.1

– Remove the ground wire – 🕮 7.2

– Remove the interlock lever –🕮 10.2.1 or 10.2.2

● Remove the wire (1) from the guide (arrow).

● Push back the insulating tubes (2) and separate the connectors.



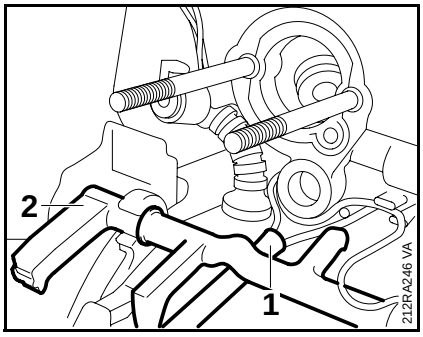
● Pull the wires out of the insulating tube (1).

– Pull the wire out of the opening in the tank in direction of front handle.

– If necessary, remove the front handle with handle heating – 🕮 14.5

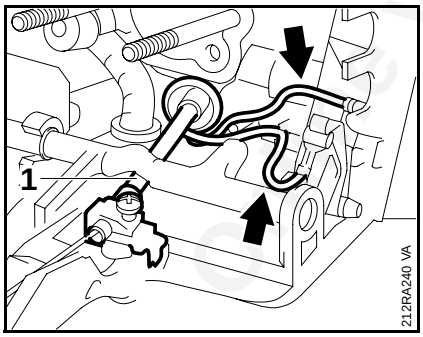
– If necessary, remove the heater switch – 🕮 14.6

Install in the reverse sequence.



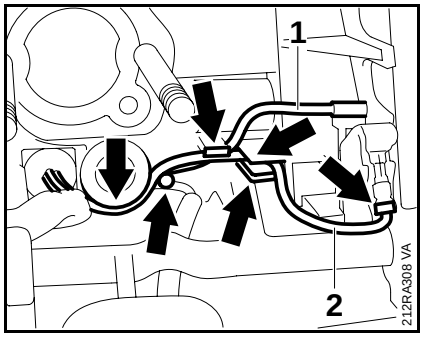
● Position the wires (1) under the switch shaft (2).

On machines with QuickStop Super



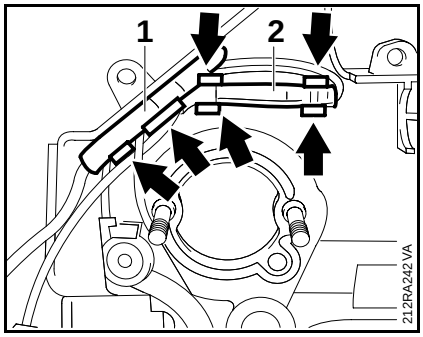
● Position the wires (arrows) under the brake cable (1).

14.8.3 With Handle and Carburetor Heating System



● Make sure the ground wire (1) and short circuit wire (2) are correctly positioned (see arrows).

Install all other parts in the reverse sequence.



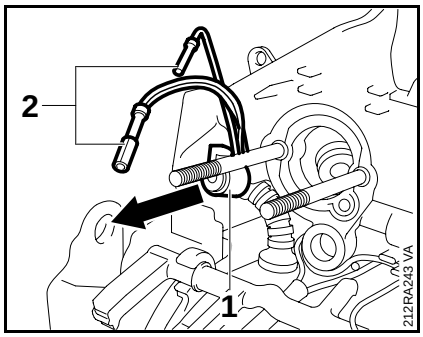
– Separate the crankcase from the tank housing – 🕮 12.9

– Remove the short circuit wire – 🕮 10.1

– Remove the ground wire – 🕮 7.2

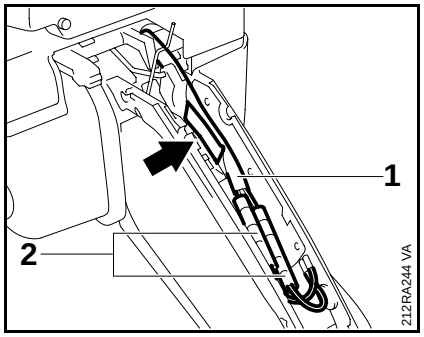
● Pull wires with connectors (1 + 2) out of the retainers (arrows).

– Separate the connectors and remove the heating elements.



● Take the suction hose (1) out of the guide.

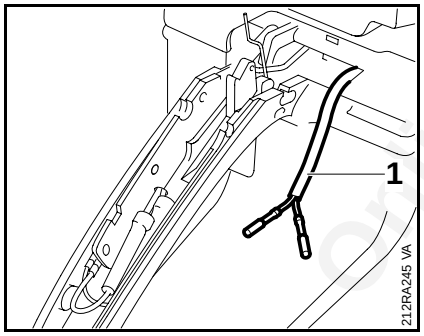
● Pull the wires (2) forwards and out of the guide.



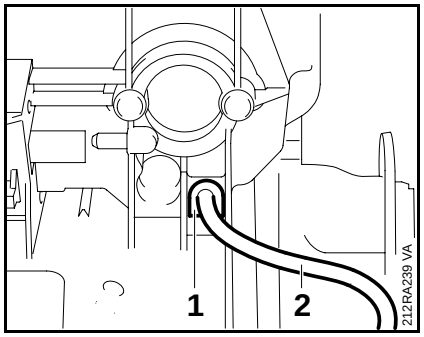
– Remove the interlock lever – 🕮 10.2.1 or 10.2.2

● Remove the wire (1) from the guide (arrow).

● Push back the insulating tubes (2) and separate the connectors.



● Pull the wires out of the insulating tube (1).



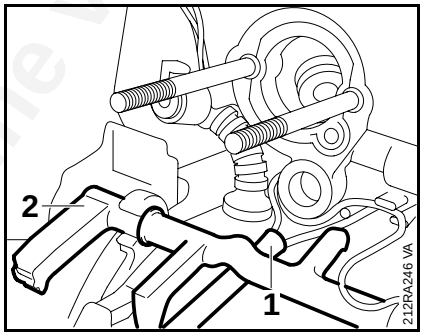
● Pry out the grommet (1).

● Pull out the wires (1).

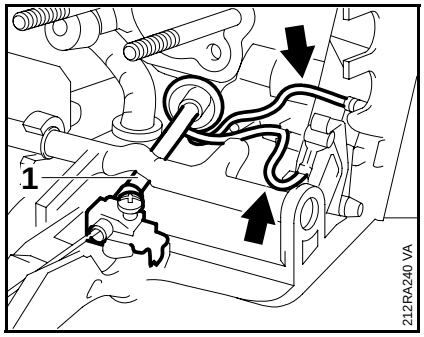
– If necessary, remove the front handle with handle heating – 🕮 14.5

– If necessary, remove the heater switch – 🕮 14.6

Install in the reverse sequence.

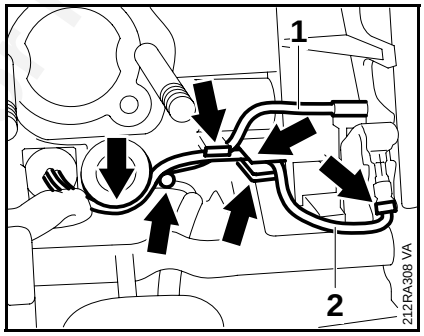


● Position wires (1) under the switch shaft (2).

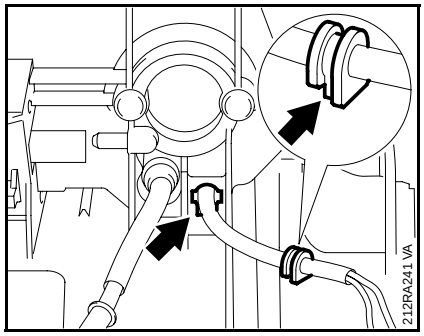


On machines with QuickStop Super

● Position the wires (arrows) under the brake cable (1).



● Make sure the ground wire (1) and short circuit wire (2) are correctly positioned (see arrows).



Check correct installed position of the grommet (arrows).

Install all other parts in the reverse sequence.

No.	Part Name	Part No.	Application	Rem.
1	Locking strip	0000 893 5903	Blocking the crankshaft	
2	Sealing plate	0000 855 8106	Sealing exhaust port	
3	Wooden assembly block	1108 893 4800	Fitting piston	
4	Clamping strap	0000 893 2600	Compressing piston rings	
5	Flange	1128 850 4200	Leakage test	
6	Installing tool	0000 890 2201	Flaring rope guide bush	
7	Carburetor and crankcase tester	1106 850 2905	Testing crankcase and carburetor for leaks	
8	Vacuum pump	0000 850 3501	Testing crankcase for leaks, checking tank vent	
9	- Nipple	0000 855 9200	Testing carburetor for leaks	
10	- Fuel line	1110 141 8600	Testing carburetor for leaks	
11	- Plug	1122 025 2200	Testing crankcase for leaks	
12	Puller	5910 890 4400	Removing oil seals	
13	- Jaws (No. 3.1 + 4)	0000 893 3706	Removing oil seal(s)	
14	- Jaws (No. 6)	0000 893 3711	Removing oil seal(s)	
15	Press sleeve	1122 893 2405	Installing oil seal	
16	Press sleeve	1118 893 2401	Installing oil seal (clutch side)	
17	Hook	5910 890 2800	Detaching springs from clutch shoes	
18	Service tool ZS (set)	5910 007 2200	Removing crankshaft (flywheel side)	
19	Installing tool 11	5910 890 2211	Fitting hookless snap rings in piston	
20	Stud puller M8	5910 893 0501	Removing bar mounting studs	
21	Installing tool	1116 893 4800	Rewinding the rewind spring	
22	Setting gauge	1111 890 6400	Setting air gap between ignition module and flywheel	
23	Hook	5910 893 8800	Removing pickup body	
24	Assembly stand	5910 890 3100	Holding saw for servicing/repairs	
25	Puller	5910 890 4500	Removing limiter caps	
26	Assembly tube	1117 890 0900	Detaching and attaching clutch springs	
27	Service tool AS (set)	5910 007 2205	Removing crankshaft (clutch side)	
28	Puller	1135 890 4500	Removing flywheel	
29	Service tool ZS (set)	5910 007 2220	Removing crankshaft (flywheel side)	
30	Screw sleeve	5910 893 2409	Pulling crankcase halves together	
31	Ignition system tester ZAT 4	5910 850 4503	Testing ignition system	
32	Ignition system tester ZAT 3	5910 850 4520	Testing ignition system	

No.	Part Name	Part No.	Application	Rem.
33	Torque wrench	5910 890 0301	0.5 to 18 Nm Alternative: Torque wrench 5910 890 0302 with optical/acoustic signal	
34	Torque wrench	5910 890 0311	6 to 80 Nm Alternative: Torque wrench 5910 890 0312 with optical/acoustic signal	
35	Crimping tool	5910 890 8210	Attaching connectors to electrical wires	
36	Socket, 13 mm, DIN 3124	5910 893 5608	Flywheel nut	
37	Socket, DIN 3124-S19x12.5L	5910 893 5613	Clutch	
38	Screwdriver bit T 27 x 125	0812 542 2104	Removing and installing spline socket head screws with electric or pneumatic screwdrivers; tighten down screws with torque wrench	
39	T-handle screwdriver, T 27 x 150	5910 890 2400	IS-P screws (4 mm)	1)
40	Press arbor	1118 893 7200	Removing and installing ball bearing (clutch side)	
41	Press arbor	1122 893 7200	Removing and installing ball bearing (flywheel side)	
42	Pliers, DIN 5254-A 19	0811 611 8380	Removing and installing external retaining rings	
43	Assembly drift	0000 893 4700	Removing and installing the piston pin	
44	Press sleeve	1118 893 2400	Installing oil seal(s)	
45	Press sleeve	1124 893 2400	Pulling crankcase halves together	

Remarks:

1) Use only for releasing P screws.

No.	Part Name	Part No.	Application
1	Lubricating grease (225g tube)	0781 120 1111	Oil seals, oil pump drive, chain sprocket bearing, sliding and bearing points of brake band, pawl pegs
2	Ignition lead HTR (10 m)	0000 930 2251	
3	STIHL special lubricant	0781 417 1315	Bearing bore in rope rotor, rewind spring in fan housing
4	Press Fluid OH 723	0781 957 9000	
5	STIHL multipurpose grease	0781 120 1109	High voltage output on ignition module
6	Medium-strength threadlocking adhesive (Loctite 242) (250 ml bottle)	0786 110 0116	
7	High-strength threadlocking adhesive (Loctite 270) (50 ml bottle)	0786 111 1109	
8	High-strength threadlocking adhesive (Loctite 649) (50 ml bottle)	0786 110 0126	
9	Standard commercial solvent-based degreasant containing no chlorinated or halogenated hydrocarbons		Cleaning sealing faces

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