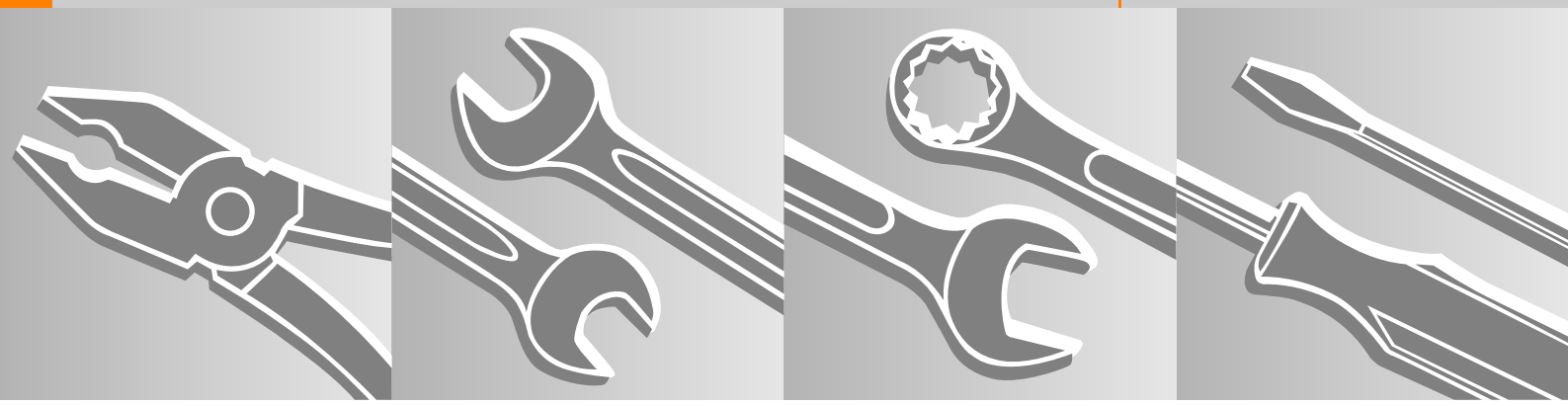
STIHL®

STIHL MS 441

2006-06



Contents

STIHL®

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

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

Always 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" for all functional groups.

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 and service manual until an updated edition is issued.

The special tools mentioned in the descriptions are listed in the chapter "Special Tools" of this manual. Use the part numbers to identify the tools in the "STIHL Tools" manual which lists all the 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)

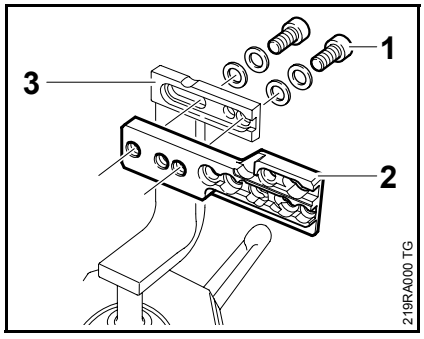
In the illustrations:

➔ Pointer (short)

➔ Direction of movement (long)

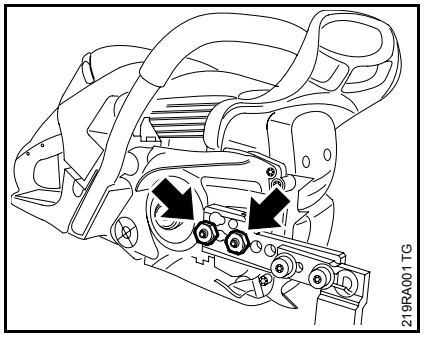
📖 4.2 = Reference to another chapter, i.e. chapter 4.2 in this example.

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 by mounting the machine on assembly stand (3) 5910 890 3100. For this purpose, secure the clamping rail (2) 5910 850 1650 to the assembly stand with two screws (1) and washers.

The screws must not protrude, as they may damage the housings when clamping the machine, depending on the model.



The flange bolts on the chainsaw are guided through the outer holes in the clamping rail and secured with the nuts (arrows).

The sprocket wheel cover, bar and chain must be removed first. 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.

All local and specific national safety regulations as well as the safety precautions and warnings in the instruction manual must be observed if the machine is started up in the course of repairs or maintenance work.

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

Suitable gloves must be worn without fail if parts are heated for assembly/disassembly purposes.

Improper handling may result in burns or other serious injuries.

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.

Test for leakages after all work on the fuel system and engine.

3. Specifications

3.1 Engine

	MS 441
Displacement:	70.7 cm^3
Bore:	50 mm
Stroke:	36 mm
Engine power to ISO 7293:	4.1 kW (5.8 HP) at 9,500 rpm
Max. permissible engine speed (with bar and chain):	13,500 rpm
Idle speed:	2,800 rpm
Clutch:	Centrifugal clutch without linings
Clutch engages at:	3,700 rpm
Crankcase leakage test	
at gauge pressure:	$p_ü$ = 0.5 bar
under vacuum:	p_u = 0.5 bar

3.2 Fuel system

Carburetor leakage test at gauge pressure:	$p_ü$ = 0.8 bar
Operation of tank vent at gauge pressure:	$p_ü$ = 0.5 bar
Fuel:	as specified in instruction manual

3.3 Ignition system

Air gap between ignition module and fan wheel:	0.15...0.35 mm
Spark plug (suppressed):	NGK BPMR 7 A
Electrode gap:	0.5 mm

3.4 Chain lubrication

Speed-controlled oil pump with reciprocating piston – manual oil flow control

Oil delivery rate:	6.0...17 cm^3/min at 10,000 rpm
Oil pump with elevated oil flow:	6.0...24 cm^3/min at 10,000 rpm

3.5 Tightening torques

DG or P 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 if the specified tightening torque is observed.
For this reason it is **essential to use a torque wrench.**

Fastener	Thread size	For component	Torque Nm	Remarks
Screw	M 4x8	Chain tensioner cover plate/crankcase	3.0	
Screw	M 7x12.5	Fan housing shaft	12.0	
Screw	P 5x20	AV spring, crankcase/bearing plug	4.0	
Screw	M 5x20	AV spring, bearing plug/front handle	6.0	
Screw	M 5x16	AV spring, bearing plug/cylinder	10.0	2)
Screw	P 5x20	AV spring, tank housing/bearing plug	4.0	
Screw	P 4x10	Brake cable/throttle cable retainer	1.0	Q
Collar screw	M 8x21.5	Bar mounting stud	23.0	1)
Collar screw	M 6x20	Collar screw/crankcase	12.0	1)
Screw	M 4x12	Cover, chain brake/crankcase	3.0	
Screw	UNC 2.84x9	Switch/carburetor cover	0.7	VW
	M 10x1	Decompression valve	14.0	
Collar nut	M 5	Filter base/baffle/carburetor/collar screw	3.5	
Collar nut	M 5	Filter base/carburetor/collar screw	3.5	
Screw	B 4.2x9.5	Spark arresting screen/muffler	2.0	
Screw	P 4x10	Throttle cable retainer/handle housing	0.8	
Screw	M 5x16	Housing/crankcase	7.5	
Mutter	M 12x0.75	Housing/switch	2.0	W, VW
Screw	M 4x12	Generator/crankcase	3.0	1), W, VW
Screw	P 6x30	Front handle/tank housing	7.0	
Screw	M 5x35	Hand guard, left/crankcase	6.0	
Screw	M 5x20	Chain catcher/spiked bumper/ crankcase	8.0	
Screw	M 5x12	Spiked bumper/top of crankcase/ lock nut	8.0	
Screw	M 5x16	Intake elbow/cylinder	6.0	
Screw	M 5x8.8	Crankcase	6.0	
Screw	M 5x25	Crankcase	10.0	
Screw	M 4x12	Crankcase/brake band	3.0	1)
Screw	M 5x20	Fan housing/crankcase	6.0	
	M 12x1 L	Crankshaft carrier	50.0	
Nut	M 5	Muffler/flange bolt (with washer)	10.0	

Fastener	Thread size	For component	Torque Nm	Remarks
Screw	M 4x12	Oil pump/crankcase	3.5	
Screw	M 5x16	Muffler/cylinder	10.0	1)
Screw	P 4x10	Slide/housing	1.0	
Nut	M 5	Slotted nut, shroud/stud, cylinder	3.0	
Screw	P 4x10	Guard/handle housing	1.5	
Nut	M 8x1	Flywheel/crankshaft	28.0	3)
Screw	M 4x8	Side plate/crankcase	3.0	
Screw	M 5x8.5	Stud/cylinder	1.4	
Nut	M 5	Hexagon cap nut/baffle/flange bolt	1.5	
Screw	M 4x12	Pre-separator/crankcase	3.0	1)
Screw	M 5x16	Elbow connector/front handle	10.0	R
Screw	P 6x30	Elbow connector/front handle/ handle housing	7.0	R
	M 14x1.25	Spark plug	25.0	
Screw	M 5x20	Ignition module/crankcase (with washer)	8.0	
Screw	M 5x12	Spacer flange/housing	5.0	
Screw	M 6x25	Cylinder/crankcase	15.0	

Remarks:

1) Loctite 243 medium strength
2) Loctite 270 high strength
3) Connection between crankshaft and flywheel must be degreased and installed oil-free
Q = QuickStop Super chain brake
R = Wrap-around handle
V = Carburetor heating
W = Handle heating

When inserting the DG and P-type screws in an existing thread:

Insert the DG or P-type screw in the hole and turn it counterclockwise until it gently drops into the hole in axial direction.
Turn the screw in clockwise and tighten with the specified torque.

This ensures that the screw engages the existing thread and does not cut a new thread, thus preserving the strength of the screw connection.

Micro-encapsulated screws must be wetted with Loctite 243, medium strength, before being refitted.

Screwdriver speed when fitted in plastic material: max. 500 rpm for DG and P-type screws.
An impact wrench must not be used to unscrew or tighten the screw connections!

Screws with and without locking serration must not be confused!

4. Troubleshooting
4.1 Clutch

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
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

Condition	Cause	Remedy
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
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 blocked	Check freedom of movement and function of brake band. Check brake cable on machines with QuickStop Super.
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
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

Condition	Cause	Remedy
QuickStop Super Chain brake is not released although trigger interlock is pressed	Brake cable stretched	Adjust brake cable
	Brake cable unhooked or broken	Reattach or replace brake cable
QuickStop Super Chain brake does not brake properly – trigger interlock not pressed	Brake cable overstretched	Adjust brake cable

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, check oil pump setting if necessary
	Oil inlet hole in guide bar is blocked	Clean oil inlet hole
	Intake hose or pick-up body clogged or intake hose ruptured	Fit new intake hose and pick-up body
	Valve in oil tank blocked	Clean or replace valve
	Tooth flanks of worm worn	Replace worm
	Oil pump damaged or worn	Install new oil pump
Machine loses chain oil	Oil pump housing defective	Install new oil pump
	Oil pump damaged or worn	Install new oil pump
	Oil intake hose connection damaged	Fit new oil intake hose
Oil pump delivers insufficient oil	Oil pump worn	Install new oil pump
	Delivery rate of oil pump set too low	Adjust oil pump

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	Very dirty or corroded	Clean or replace rewind spring
	Spring not properly tensioned	Check rewind spring and increase tension
	Rewind spring broken	Fit new rewind spring
Starter rope cannot be pulled out far enough	Rewind spring overtensioned	Check rewind spring and reduce tension
Starter rope can be pulled out almost without resistance (crankshaft does not turn)	Guide peg on pawl or pawl itself is worn	Spring clip fatigued
	Fit new pawl	Fit new spring clip
Starter rope is difficult to pull or 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 (not containing any chlorinated or halogenated hydrocarbons), then pull rope carefully several times until normal action is restored
	Decompression valve is not open	Open decompression valve and check, replace if necessary

4.5 Ignition system

Extreme caution must be exercised when looking for faults and when carrying out maintenance and repair work on the ignition system.
The high voltages occurring 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
	Ignition lead is loose in ignition module	Secure ignition lead
	Fuel/oil mixing ratio – contains too much oil	Use fuel mixture with correct mixing ratio
	Incorrect air gap between ignition module and flywheel	Set correct air gap
	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
	Irregular spark	Check operation of switches / contact springs and ignition module. Faulty insulation or break in ignition lead or short circuit wire. Check ignition lead / ignition module and replace if necessary. Check operation of spark plug, clean spark plug and replace if necessary.
	Crankcase damaged (cracks)	Replace crankcase

Condition	Cause	Remedy
No spark	Spark plug faulty	Install new spark plug
	Faulty insulation or short-circuit in short circuit wire	Check short circuit wire for short-circuiting to earth
	Break in ignition lead or insulation damaged	Check ignition lead, replace if necessary
	Ignition module faulty	Install new ignition module

Condition	Cause	Remedy
Carburetor floods; engine stalls	Inlet needle not sealing – Impurities in valve seat or cone	Remove and clean inlet needle or clean carburetor
	Inlet control lever sticking on spindle	Restore easy movement of inlet control lever
	Helical spring not located on nipple of inlet control lever	Remove 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
Poor acceleration	Setting of low speed screw "too lean"	Check basic carburetor setting, correct if necessary
	Setting of high speed screw "too lean"	Check basic carburetor setting, correct if necessary
	Inlet needle sticking in valve seat	Remove, clean and refit inlet needle
	Leak in diaphragm seal	Fit a new diaphragm seal
	Metering diaphragm damaged or shrunk	Fit a new metering diaphragm
	Impulse hose damaged or kinked	Fit a new impulse hose

Condition	Cause	Remedy
Engine will not idle, idle speed too high	Throttle shutter opened too wide by idle speed screw **LA**	Correct setting of idle speed screw **LA**
	Oil seals / crankcase leaking	Seal or replace oil seals / crankcase
	Air flap dirty – air flap does not close	Clean air flap, install new carburetor if necessary
	Air flap stiff	Check carburetor, replace if necessary
	Throttle cable stiff – throttle shutter does not close	Fit new throttle cable
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 the idle speed screw incorrect – throttle shutter completely closed	Set idle speed screw **LA** correctly

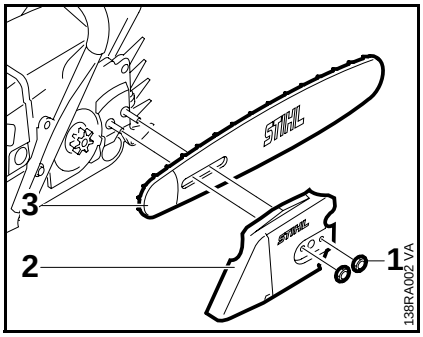
Condition	Cause	Remedy
Engine speed drops quickly under load – low power	Air filter dirty	Clean air filter, replace if necessary
	Throttle shutter does not open fully	Check throttle cable and rod
	Tank vent faulty	Fit new tank vent
	Fuel pick-up body dirty	Install a new pick-up body
	Fuel strainer dirty	Clean fuel strainer in carburetor, replace if necessary
	Leak in fuel line from tank to fuel pump	Seal connections, replace line if necessary
	Setting of high speed screw **H** too rich	Check basic carburetor setting, adjust if necessary
	Main jet bores or ports blocked	Clean carburetor
	Pump diaphragm damaged or fatigued	Fit a new pump diaphragm
	Impulse hose damaged or kinked	Fit a new impulse hose
Engine runs extremely richly, no power and very low final speed	Air flap does not open	Check carburetor; install a new carburetor if necessary
Engine too rich, loss of power and final speed too low	Air flap does not open fully at full throttle	Check carburetor; install a new carburetor if necessary
Erratic idling, too lean	Air flap does not close completely	Check carburetor; install a new carburetor if necessary

4.7 Engine

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

– Air filter,
– Fuel supply,
– 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)	Seal or replace the crankcase
Engine does not deliver full power or runs erratically	Piston rings worn or broken	Fit new piston rings
	Muffler/spark arresting screen carbonized	Clean the muffler (inlet and exhaust), replace spark arresting screen, replace muffler if necessary
	Air filter dirty	Replace air filter
	Fuel line/impulse line severely kinked or damaged	Fit new hoses or position them without kinks
	Decompression valve not closed	Close decompression valve, check and replace if necessary
	Air flap does not open	Check carburetor; install a new carburetor if necessary
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 cooling fins



Wear work gloves to protect your hands from injury.

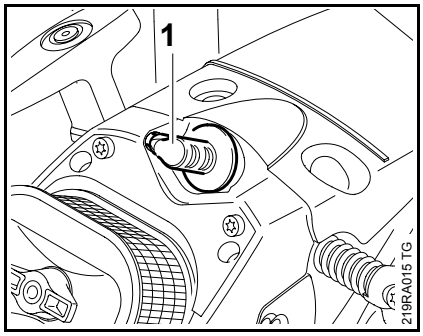
- Unscrew hex nuts (1).
- Remove chain sprocket cover (2).
- Remove bar (3) and chain.

– Reassemble in the reverse sequence.

– Troubleshooting chart, 📖 4.1.

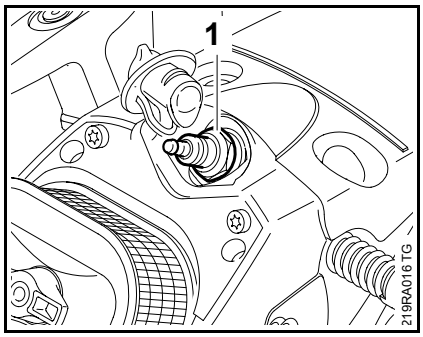
– Remove chain sprocket cover, bar and chain, 📖 5.

– Remove clutch drum, 📖 6.1.

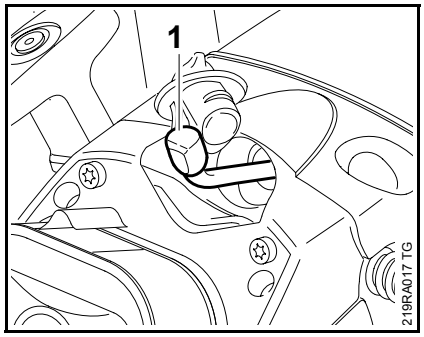


– Remove carburetor box cover, 📖 14.1.

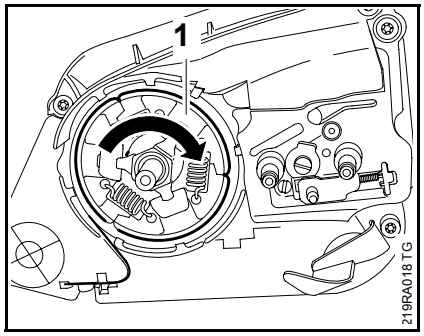
- Pull boot (1) off spark plug.



- Unscrew spark plug (1).

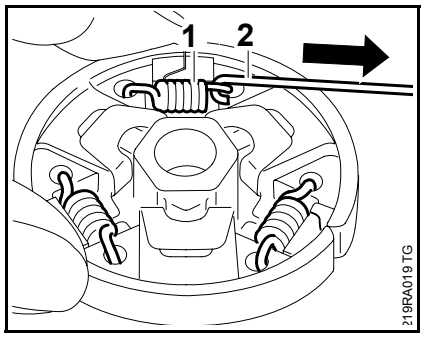


- Push locking strip (1) 0000 893 5903 into the spark plug hole so that "OBEN-TOP" faces up.



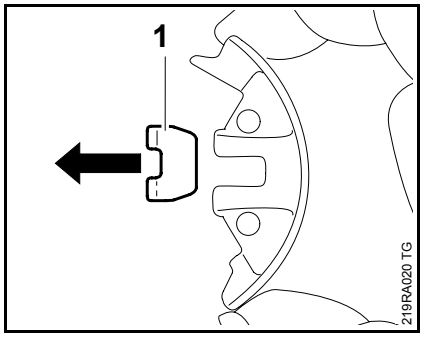
- Unscrew clutch (1).

The clutch has a left-hand thread.



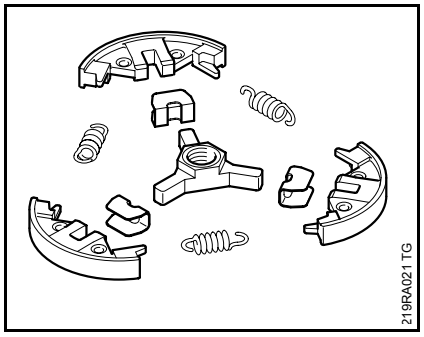
Disassembling the clutch

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



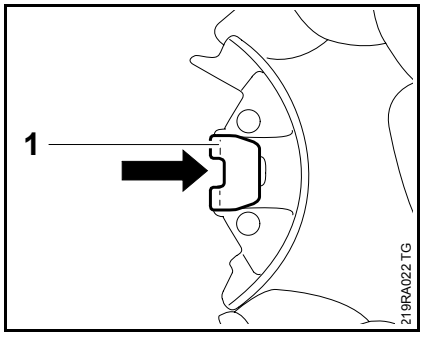
– Pull clutch shoes off the carrier.

● Pull retainers (1) off the clutch shoes.

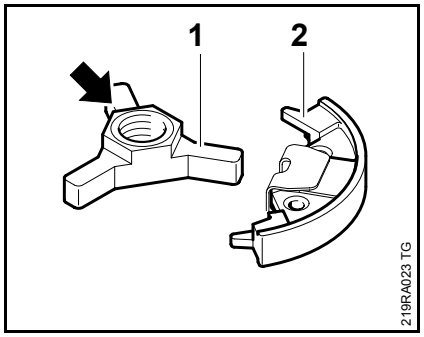


– Clean all parts.

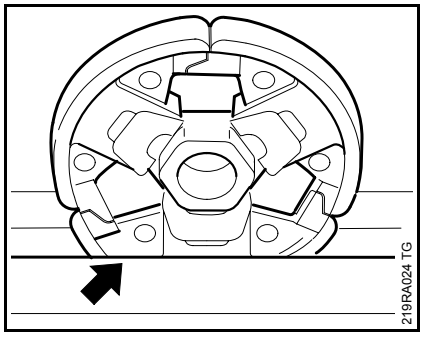
– Replace any damaged parts.



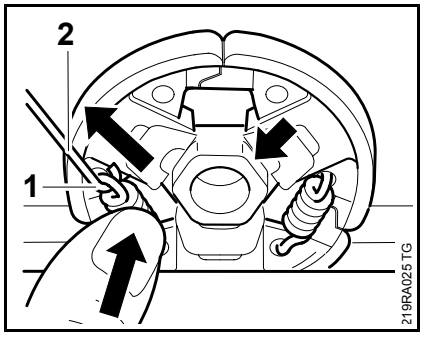
● Slip retainers (1) onto the clutch shoes.



● Fit clutch shoes (2) over the arms (1).



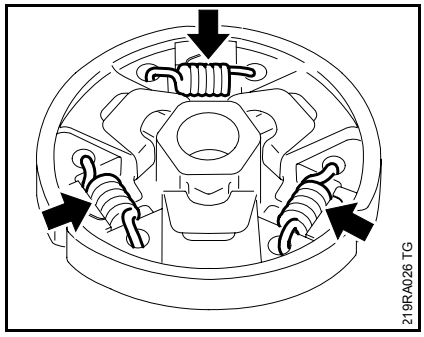
● Clamp the clutch in a vice (arrow).



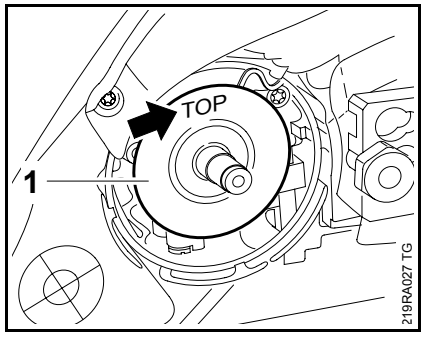
Attach the springs to the side with the raised hexagon (arrow).

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

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

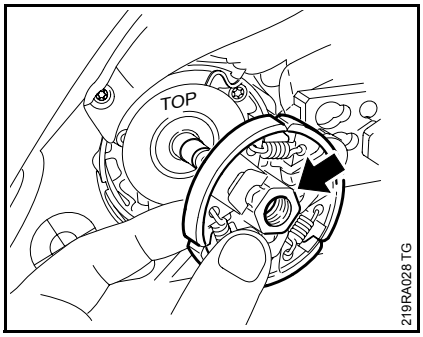


● Check the clutch: all springs (arrows) must be attached completely.

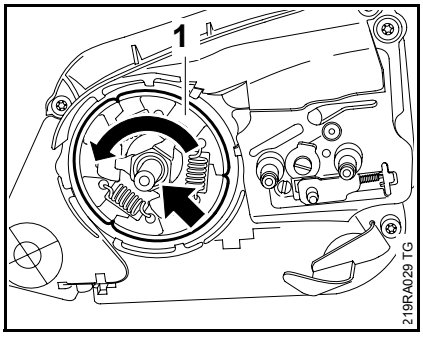


– Washer (1) must be fitted.

It has been fitted correctly when "TOP" (arrow) faces outwards.



- Position clutch on crankshaft stub so that the raised hexagon (arrow) faces outwards.

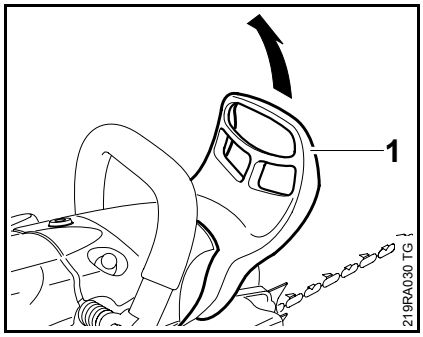


- Screw clutch (1) onto the crankshaft stub with the hexagon (arrow) and tighten it down – left-hand thread.

– Tightening torques, 🕮 3.5.

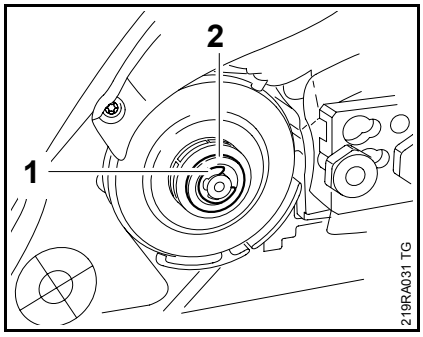
– Pull locking strip out of the cylinder.

– Reassemble all other parts in the reverse sequence.

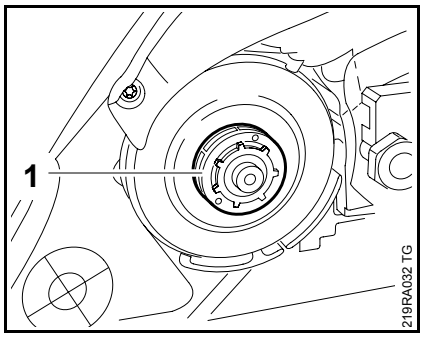


– Remove chain sprocket cover, bar and chain, 🕮 5.

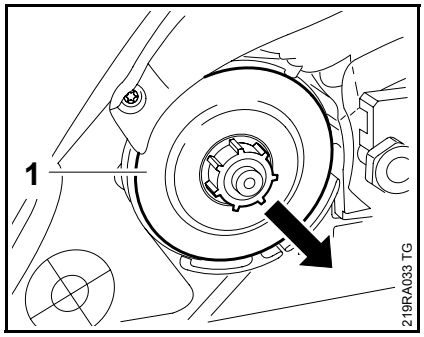
- Pull hand guard (1) towards the front handle.



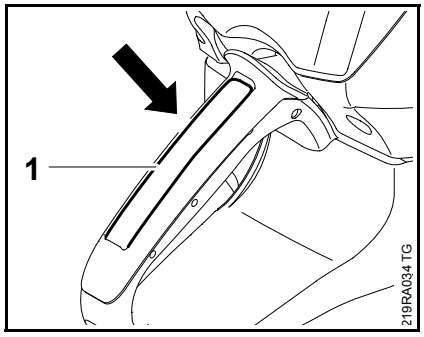
- Remove circlip (1).
- Remove washer (2).



- Remove rim sprocket (1).



- Remove clutch drum (1).

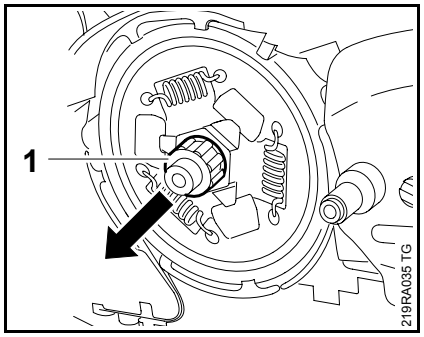


Machines with QuickStop Super

Disengage the brake before removing the clutch drum.

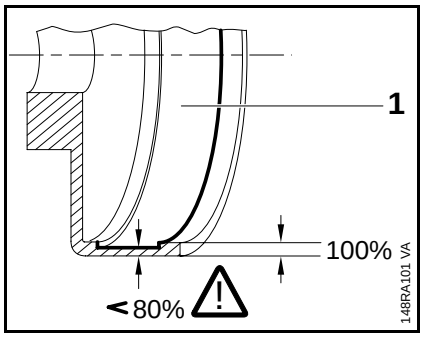
- Press and hold the trigger interlock (1).

– Remove clutch drum.



● Remove needle cage (1).

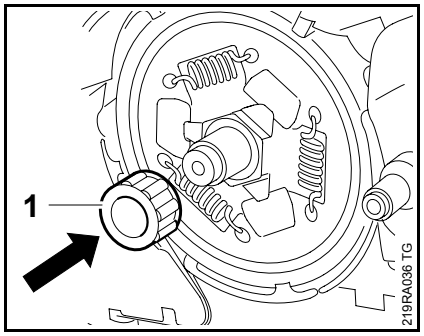
Clean the needle cage and crankshaft stub with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.



– Examine clutch drum (1) for signs of wear.

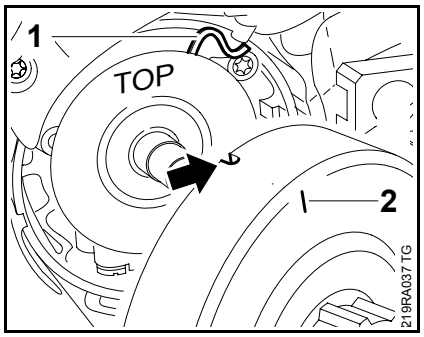
If there are signs of serious wear on the inside diameter of the clutch drum (1), check the remaining wall thickness. If it is less than about 80 % of the original thickness, fit a new clutch drum.

– Reassemble in the reverse sequence.



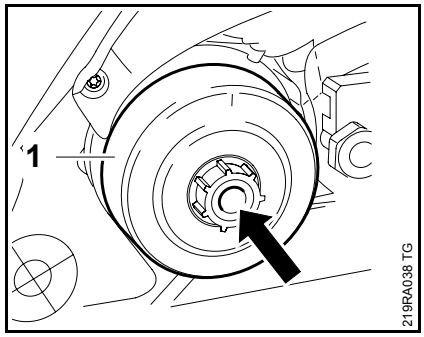
– Grease needle cage and crankshaft stub, 🕮 17.

● Push needle cage (1) onto the crankshaft stub.

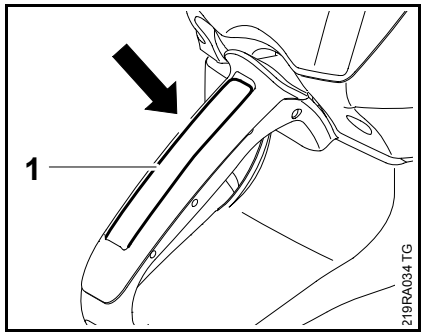


The notch (arrow) in the clutch drum must engage the carrier (1) of the wormwheel.

The mark (2) can be used for guidance.



● Fit clutch drum (1).

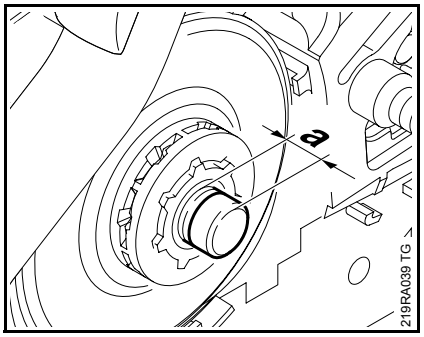


Machines with QuickStop Super

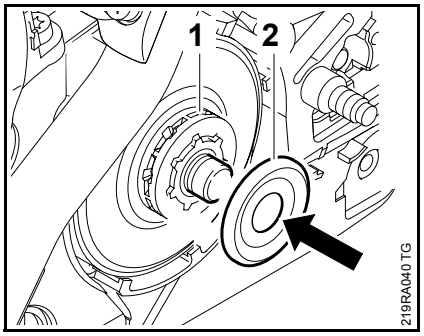
Disengage the brake before fitting the clutch drum.

● Press and hold the trigger interlock (1).

– Fit clutch drum.

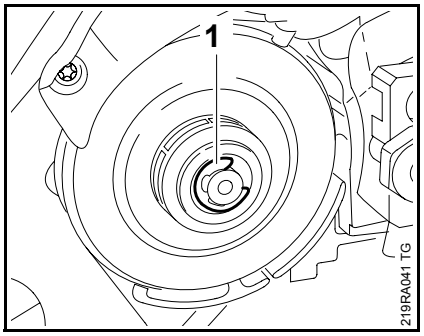


The clutch drum is correctly seated in the carrier of the wormwheel when the crankshaft stub protrudes approx. 5 mm (= distance a) from the clutch drum.



– Fit rim sprocket (1).

● Fit washer (2) with the flange facing towards the chain sprocket cover.



● Insert circlip (1) in the groove of the crankshaft stub.

– Reassemble all other parts in the reverse sequence.

7. 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.

Contamination (particularly 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 extends 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 OK if deceleration of the saw chain is imperceptible to the naked eye.

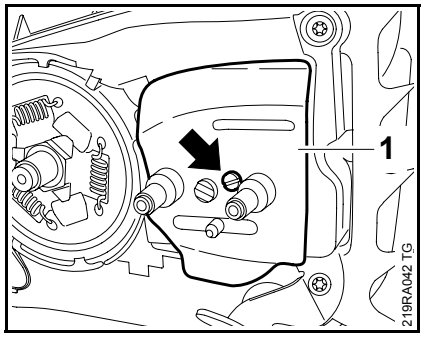
Machines with QuickStop Super

– With the chain brake released, open the throttle wide and release the trigger interlock in the rear handle – the chain must come to an abrupt stop.

The chain must come to a complete stop within less than one second.

If the chain brake does not operate properly, refer to the troubleshooting chart, 🕮 4.2.

7.1 Brake band, removal and installation

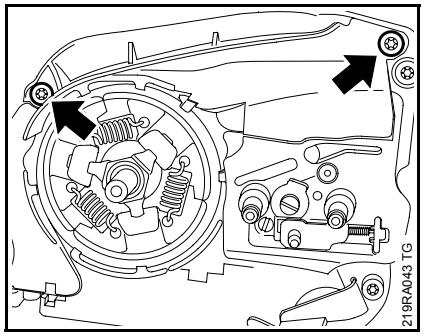


– Troubleshooting chart, 🕮 4.2.

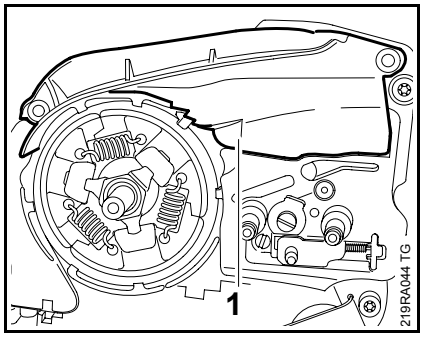
– Remove chain sprocket cover, bar and chain, 🕮 5.

● Take out screw (arrow).

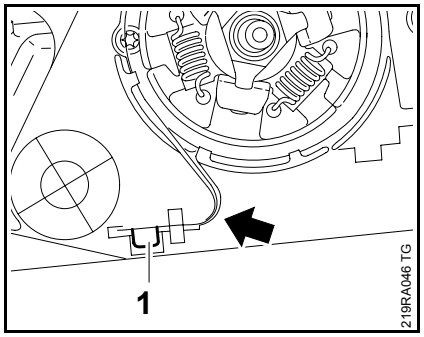
● Remove side plate (1).



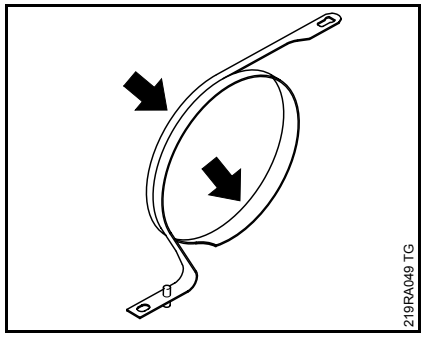
● Take out screws (arrows).



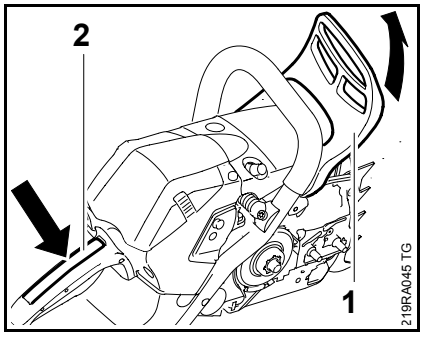
- Remove cover (1).



- Take out screw (1).
- Ease brake band out of guide (arrow).



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

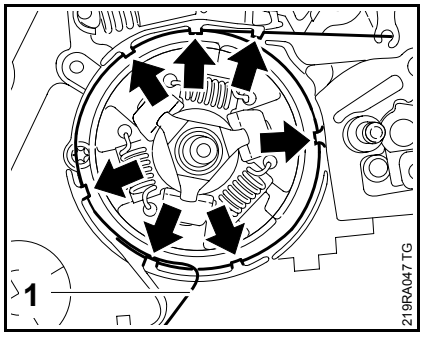


- Release the chain brake by pushing the hand guard (1) towards the front handle.
- Additionally press and hold the trigger interlock (2) on machines with QuickStop Super.

The brake band is now relaxed.

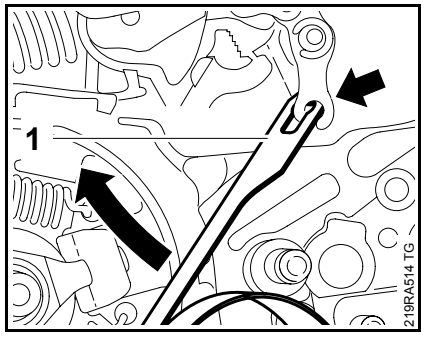
– Remove clutch drum, 🕮 6.1.

– Remove clutch, 🕮 6.

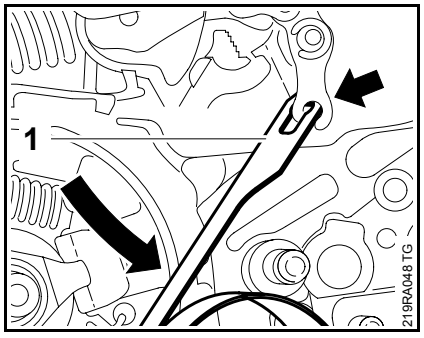


- Guide brake band (1) past guides (arrows) and take it out.

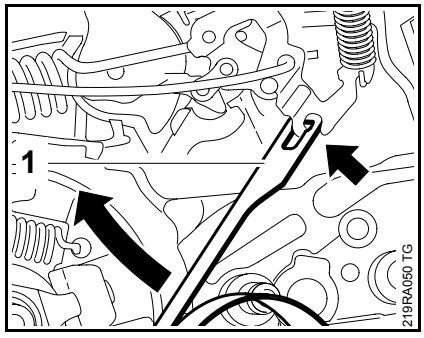
The brake band must not be overstretched.



- Attach brake band (1) to brake lever (arrow) sideways and turn it towards its mount.

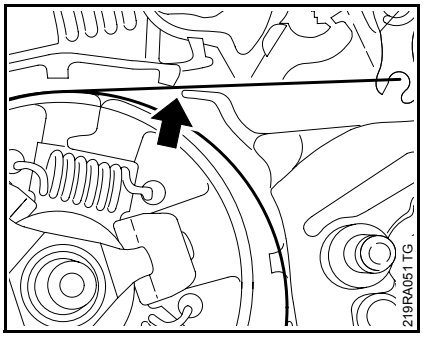


- Turn brake band (1) slightly aside and disconnect it from the brake lever (arrow).

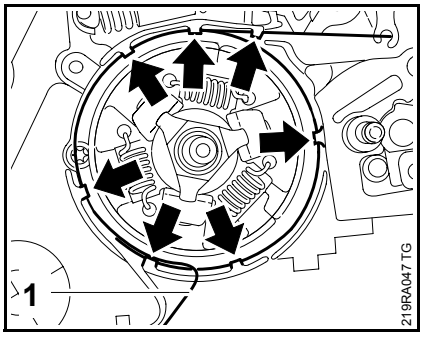


Machines with QuickStop Super

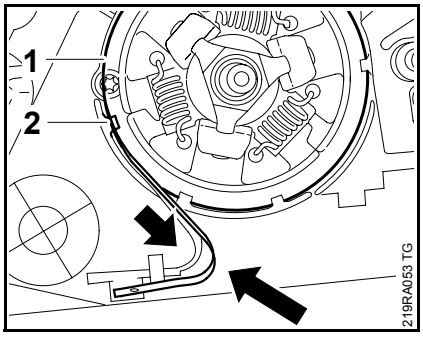
- Attach brake band (1) to brake lever (arrow) sideways and turn it towards its mount.



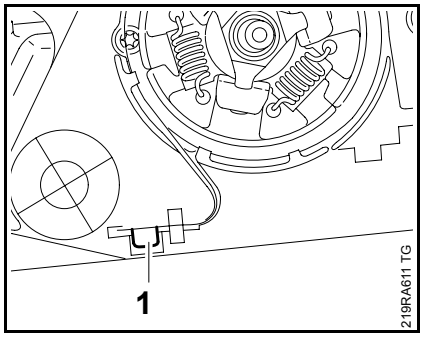
- First place brake band in guide (arrow).



- Then guide brake band (1) over studs (arrows) and press it into the mount.



- Press brake band (1) into guide (arrow) and at the same time guide it over the studs (2).

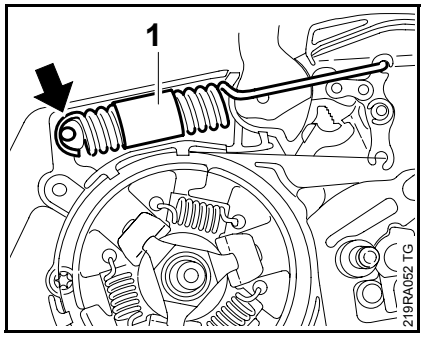


- Fit and tighten down screw (1).

– Tightening torques, 🕮 3.5.

– Reassemble all other parts in the reverse sequence.

– Check correct operation.



– Troubleshooting chart, 🕮 4.2.

– Remove shroud, 🕮 8.4.

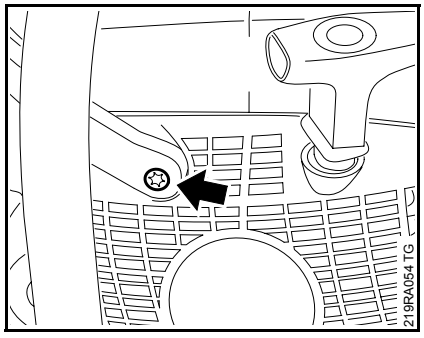
– Remove brake band, 🕮 7.1.

– Push hand guard towards saw chain.

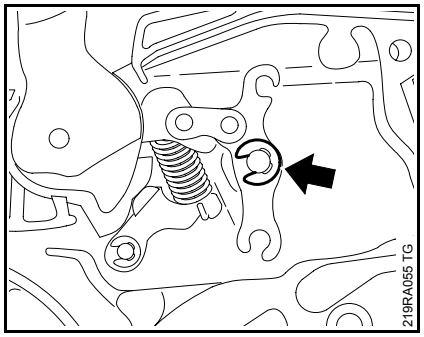
The brake spring is now relaxed.

- Ease brake spring (1) off pivot pin (arrow).

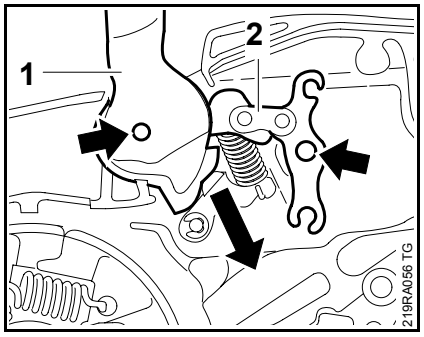
– Disconnect brake spring from brake lever.



- Take out screw (arrow).

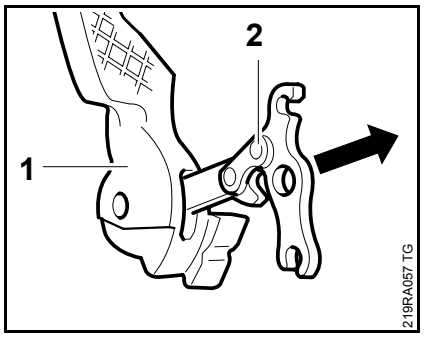


● Take out circlip (arrow).



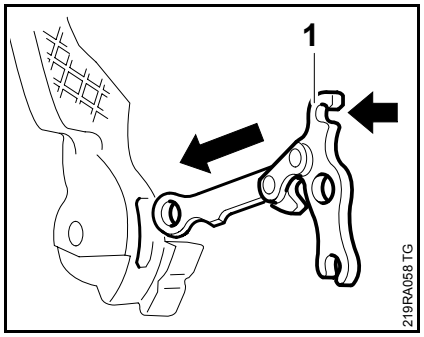
● Draw hand guard (1) and brake lever (2) off the pivot pins (arrows) simultaneously.

– Take out hand guard and brake lever.



● Pull brake lever (2) out of hand guard (1).

– Examine brake lever and hand guard; fit new parts if necessary.



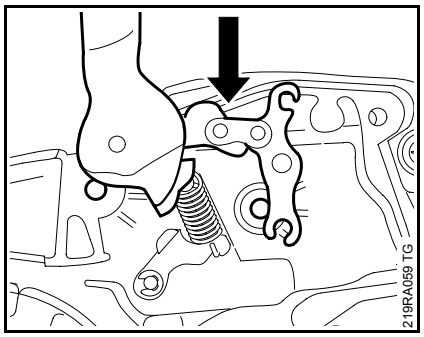
– Examine pins and replace if necessary, 🕮 7.5.

– Examine cam lever and replace if necessary, 🕮 7.4.

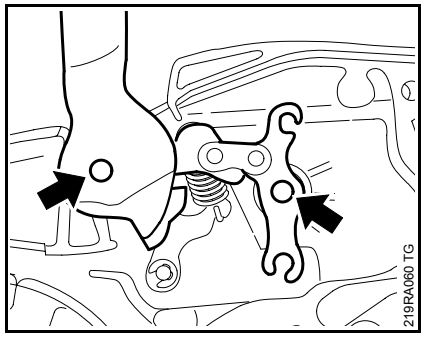
Clean the dismantled parts with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

– Position brake lever so that mount for brake spring (arrow) is at the top.

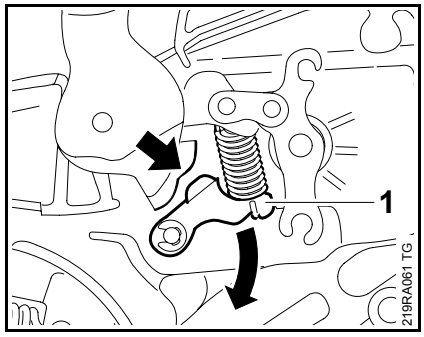
● Slide brake lever (1) into recess in hand guard until the holes are lined up.



● Slide hand guard with brake lever across the machine until it rests against the pivot pin.

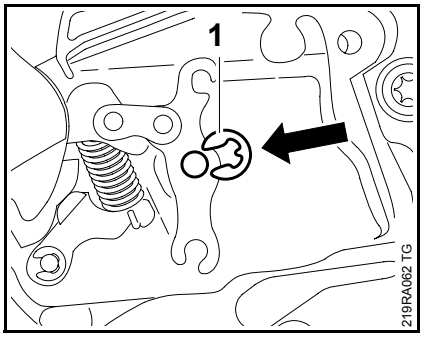


● Slightly lift up bearing eye of the hand guard and brake lever and guide the parts over the pivot pins (arrows).

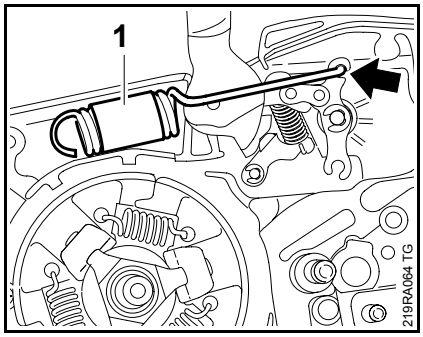


● Turn cam lever (1) aside until the cam of the hand guard (arrow) slides past.

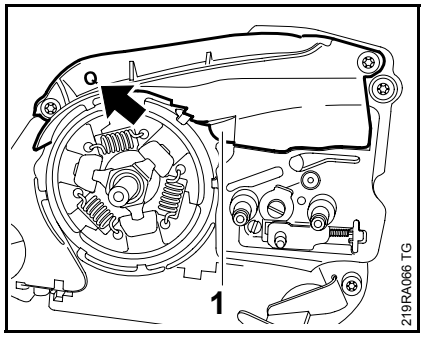
– Press bearing eye of hand guard and brake lever onto the pivot pins.



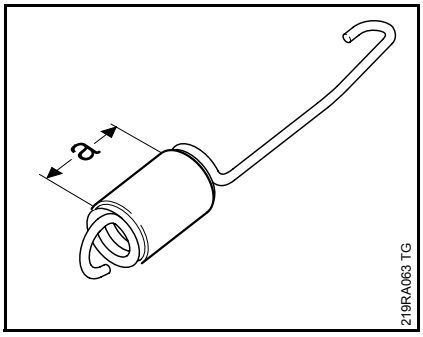
● Fit circlip (1).



● Hook brake spring (1) into brake lever (arrow).



The cover (1) on machines with QuickStop Super is marked with the letter "Q" (arrow).

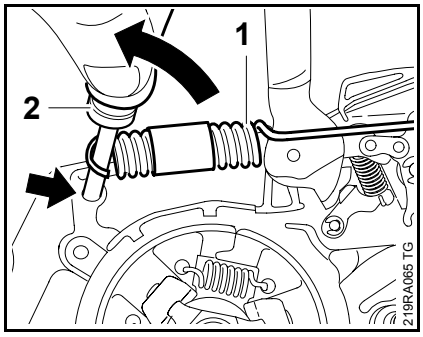


● The turns of the brake spring must be tightly spaced when not installed; use a new brake spring if necessary.

Check correct position of protective tube: it must be centred on the spring.

a = 20 mm

The pin for the brake spring must be replaced if it shows signs of wear at the groove, 🕮 7.5.

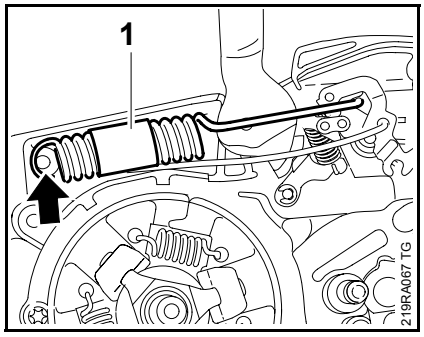


● Use assembly tool (2) 1117 890 0900 to attach brake spring (1) to anchor pin (arrow).

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Grease brake lever, 🕮 17.



– Troubleshooting chart, 🕮 4.2.

– Remove shroud, 🕮 8.4.

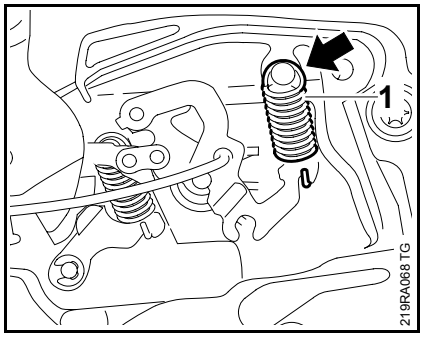
– Remove brake band, 🕮 7.1.

– Push hand guard towards chain.

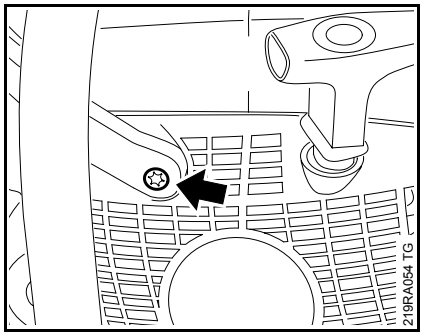
– The brake spring is now relaxed.

● Ease brake spring (1) off anchor pin (arrow).

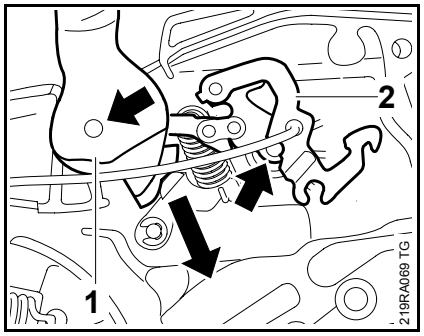
● Unhook brake spring (1) from brake lever.



- Ease brake spring (1) of brake lever off the anchor pin (arrow).
- Unhook brake spring (1) from brake lever.

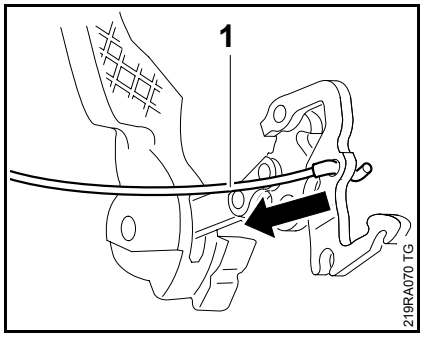


- Take out screw (arrow).

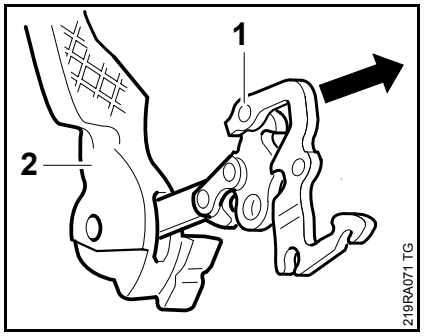


- Draw hand guard (1) and brake lever (2) off the pivot pins simultaneously.

– Take out hand guard and brake lever.

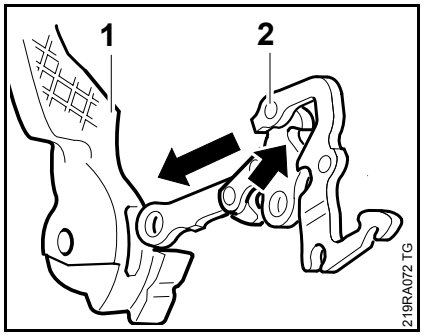


- Detach brake cable (1).



- Pull brake lever (1) out of hand guard (2).

– Examine brake lever and hand guard; fit new parts if necessary.



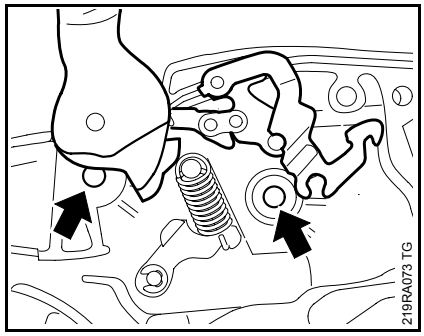
– Examine pins and replace if necessary, 🕮 7.5.

– Examine cam lever and replace if necessary, 🕮 7.4.

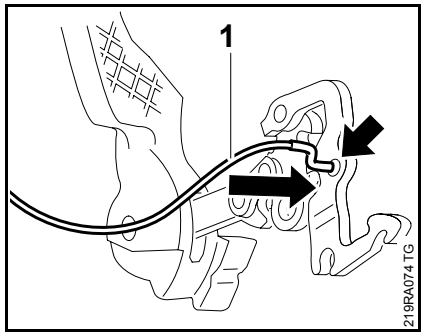
Clean the dismantled parts with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

– Position brake lever so that mount for brake spring (arrow) is at the top.

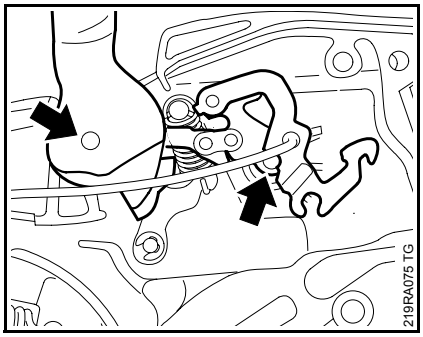
- Slide brake lever (2) into recess in hand guard (1) until the holes are lined up.



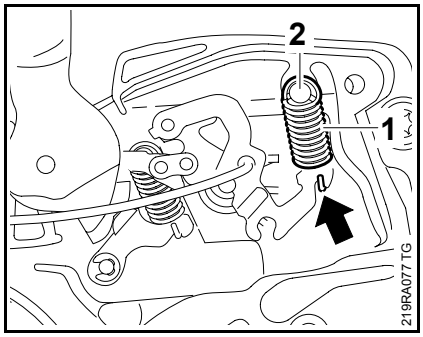
- Slide hand guard with brake lever across the machine until it rests against the pivot pins (arrows).



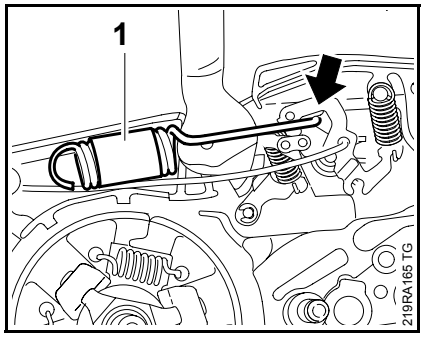
- Attach brake cable (1) to hole (arrow) in brake lever.



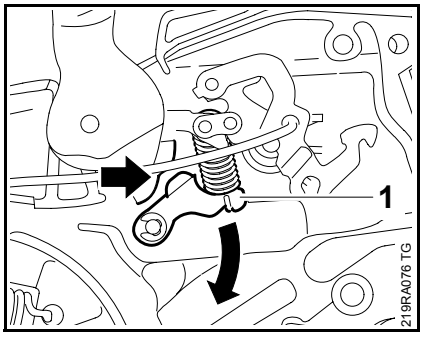
- Slightly lift up bearing eye of hand guard and brake lever and guide the parts over the pivot pins (arrows).



- Attach brake spring (1) to brake lever (arrow) and anchor pin (2).

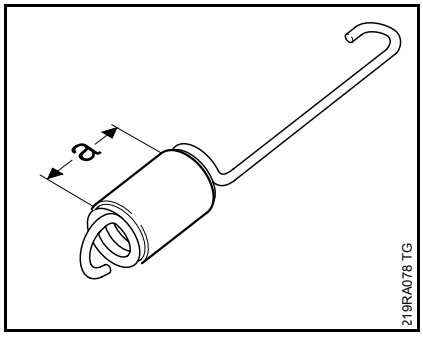


- Hook brake spring (1) into brake lever (arrow).



- Turn cam lever (1) aside until cam of hand guard (arrow) slides past.

– Press bearing eye of the hand guard and brake lever onto the pivot pins.

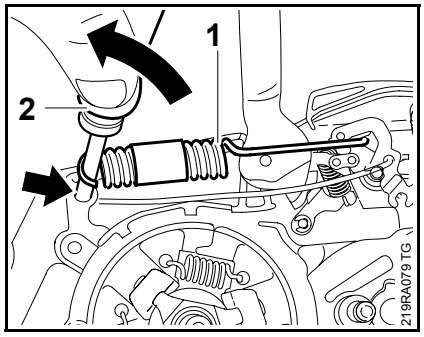


- The turns of the brake spring must be tightly spaced when not installed; use a new brake spring if necessary.

Check correct position of protective tube: it must be centred on the spring.

a = 20 mm

The pin for the brake spring must be replaced if it shows signs of wear at the groove, 🕮 7.5.



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

– Adjust brake cable, 🕮 7.3.1.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

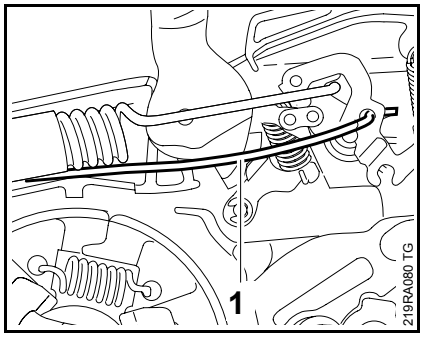
– Grease brake lever, 🕮 17.

7.3.1 Adjusting brake cable

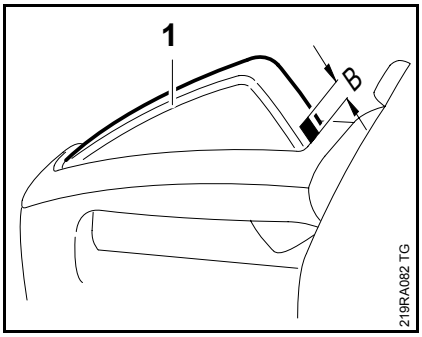
If the chain brake does not operate properly although the brake band, brake lever and brake cable are intact, it may be necessary to adjust the brake cable.

– Troubleshooting chart, 🕮 4.2.

– Remove chain sprocket cover, bar and chain, 🕮 5.



The brake cable (1) must be loose, i.e. without tension, when the trigger interlock is not pressed.



– Release trigger interlock (1).

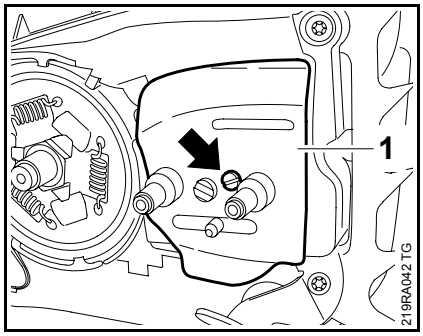
● Press trigger interlock (1) gently to check the play.

– The play must not exceed the mark (B).

The play is equal to the distance travelled by the trigger interlock (1) without causing the brake lever to move at the same time.

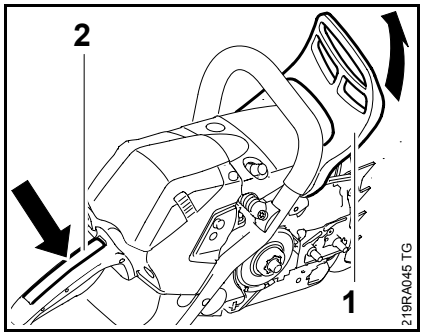
The play must be adjusted if it is too great.

– Remove carburetor housing, 🕮 14.6.2.



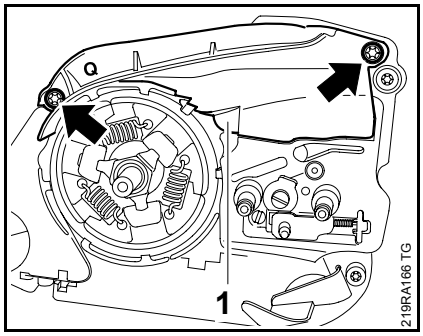
● Take out screw (arrow).

– Remove side plate (1).



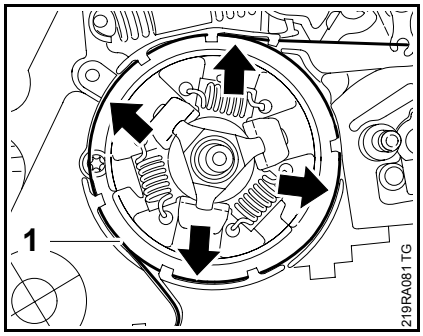
● Pull hand guard (1) towards handle.

● Press trigger interlock (2) down completely and hold it.

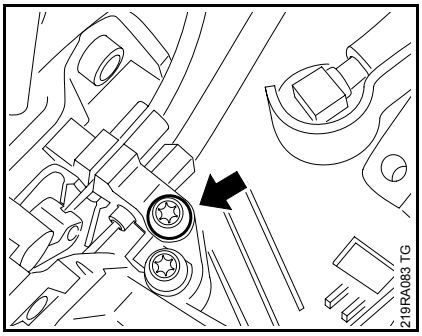


● Take out screws (arrows).

– Remove cover (1).

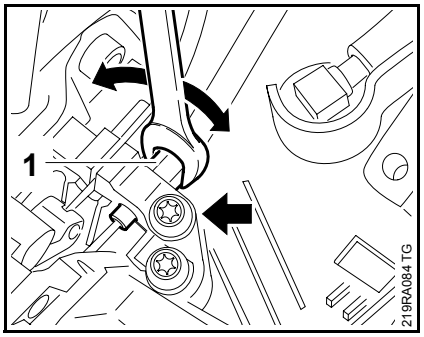


● The brake band (1) must rest against the crankcase (arrows) without play.



● Undo clamping screw (arrow).

7.3.2 Brake cable, removal and installation



● Use a size 6 fork wrench to adjust the play via the adjusting screw (1).

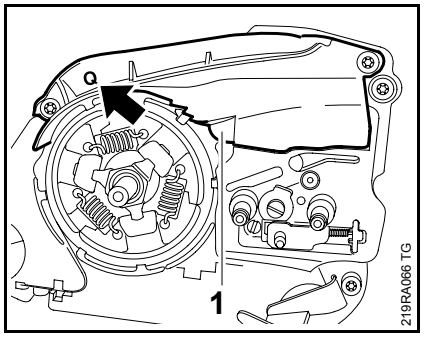
Turn the fork wrench counterclockwise to reduce the play.

Turn the fork wrench clockwise to increase the play.

● Tighten clamping screw (arrow).

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove cover (1), 🕮 7.1.

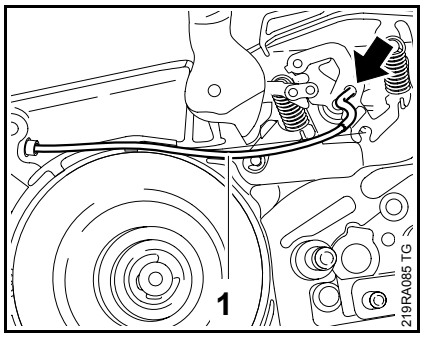
The cover (1) for machines with QuickStop Super is marked with the letter "Q" (arrow).

– Remove carburetor housing, 🕮 14.6.2.

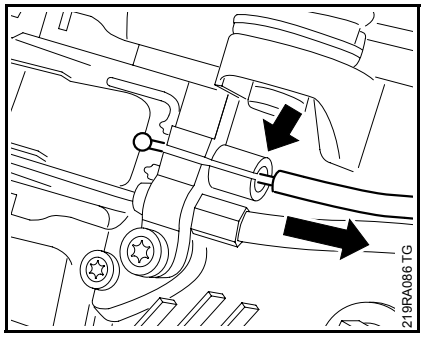
– Remove throttle trigger, 🕮 12.3.

– Remove switch lever, 🕮 12.3.1.

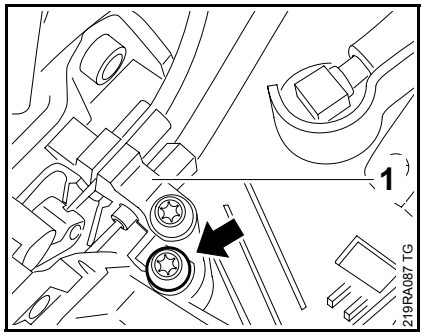
– Unhook brake spring from brake lever, 🕮 7.3.



● Pull brake cable (1) out slightly and disconnect it.

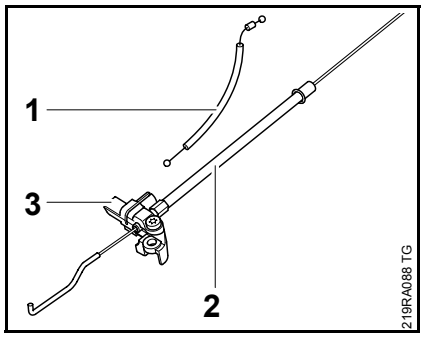


● Pull throttle cable out of guide (arrow).



● Take out screw (arrow).

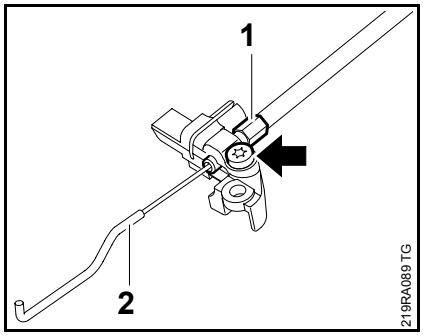
– Remove throttle cable retainer (1) with brake cable and pull brake cable out of crankcase.



– Examine throttle cable (1), brake cable (2) and throttle cable retainer (3) and replace any damaged parts.

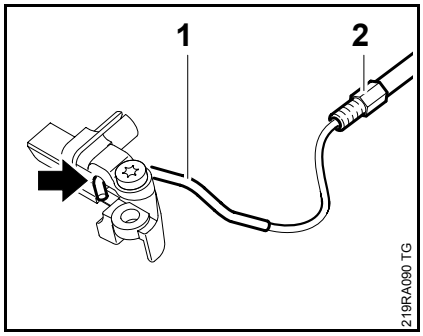
The new brake cable is supplied with preassembled throttle cable retainer.

The throttle cable retainer must be removed from the brake cable if only the retainer is to be replaced.

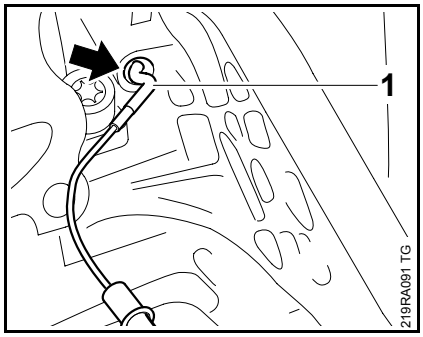


- Undo clamping screw (arrow) and take out adjusting screw (1).

– Pull out brake cable (2) and replace throttle cable retainer.

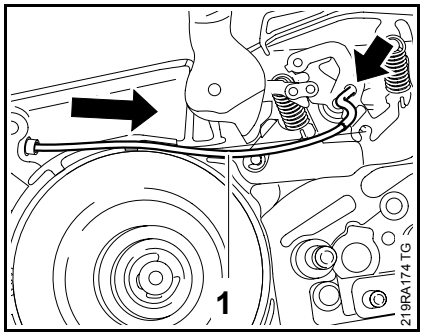


- Slide long hook (1) of brake cable through hole (arrow) and turn adjusting screw (2) down as far as possible.

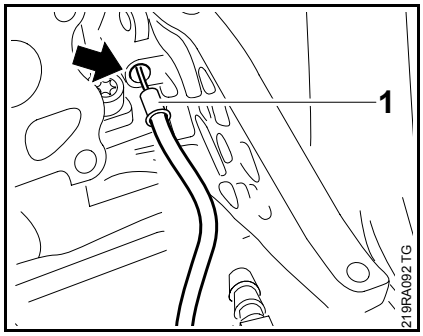


– Tighten clamping screw.

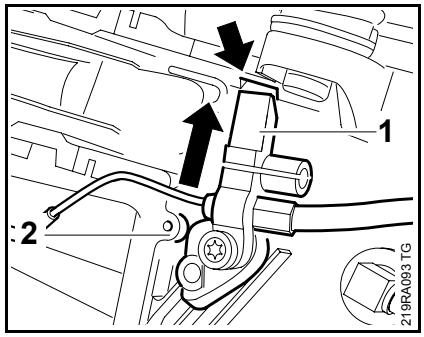
- Slide short hook (1) of brake cable through hole (arrow).



- Pull brake cable (1) through opening in housing and attach it to hole (arrow) in brake lever.

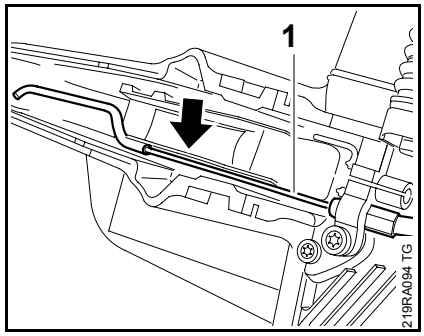


- Push grommet of brake cable (1) as far as possible into opening in housing (arrow).



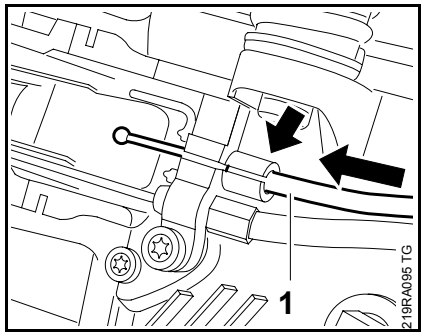
- Slide lug of throttle cable retainer (1) into mount (arrow) and press it into the mount (2).

– Fit and tighten the screw.



- Insert brake cable (1) in guide (arrow).

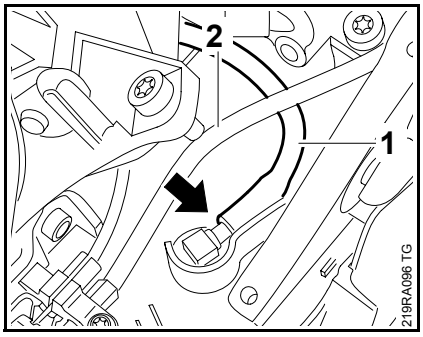
– Install switch lever, 🕮 12.3.1.



- Push end of throttle cable (1) with round nipple through guide (arrow) as far as possible.

– Install throttle trigger and handle moulding, 🕮 12.3.

– Check correct operation and adjust brake cable if necessary, 🕮 7.3.1.



● Guide fuel hose (1) under brake cable (2) and push it onto connector (arrow).

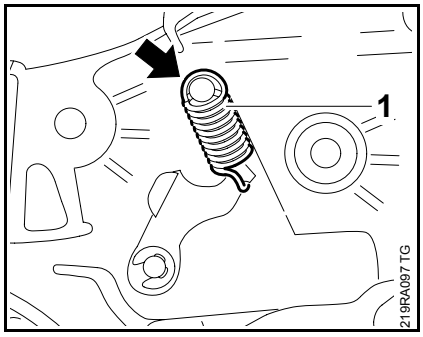
– Install carburetor housing, 🕮 14.6.2.

– Reassemble all other parts in the reverse sequence.

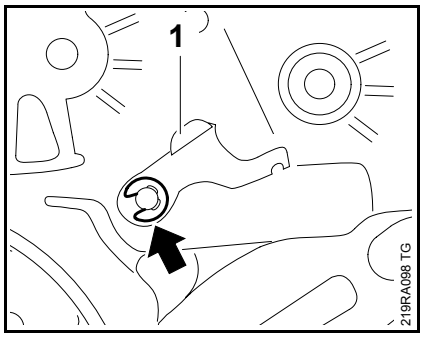
– Tightening torques, 🕮 3.5.

The cam lever defines the engaged position of the hand guard. The hand guard cannot be engaged in the position "Release or apply brake" if the spring or cam on the cam lever or hand guard is defective.

– Remove brake lever, 🕮 7.2. QuickStop Super, 🕮 7.3.

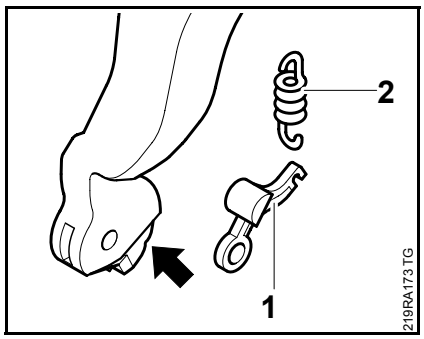


● Unhook spring (1) from anchor pin (arrow).



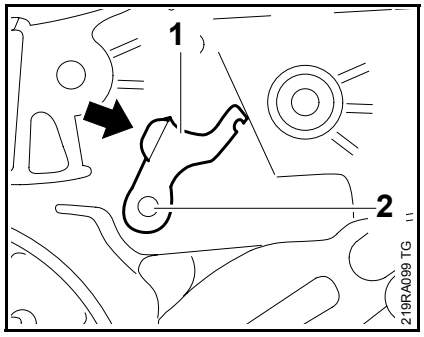
● Take out circlip (arrow).

– Remove cam lever (1) from pivot pin.



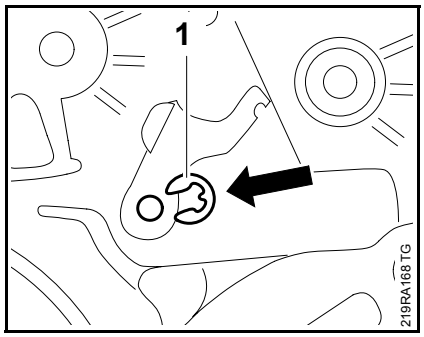
– Examine cam lever (1) and spring (2) and fit new parts if necessary.

– Check condition of cam guide (arrow) and replace hand guard if necessary.

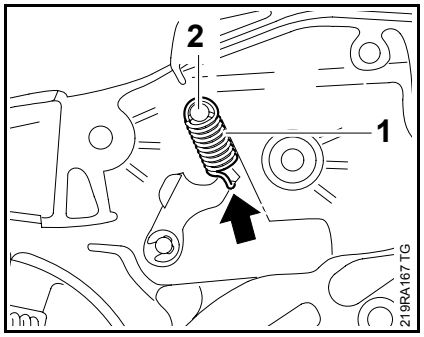


– Position cam lever (1) so that cam (arrow) points towards throttle trigger.

● Slide cam lever onto pivot pin (2).



● Fit circlip (1).



- Attach spring (1) to to cam lever so that opening of hook (arrow) faces towards housing.

The pin for the brake spring must be replaced if it shows signs of wear at the groove, 🕮 7.5.

– Attach spring (1) to pin (2).

The cam lever is not yet tensioned, the spring may become detached again.

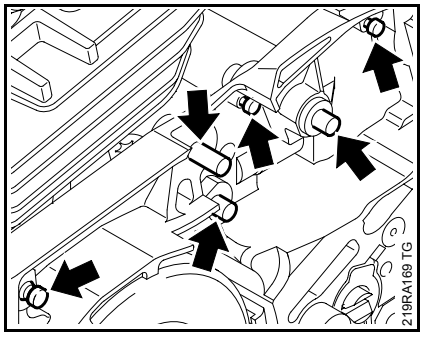
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

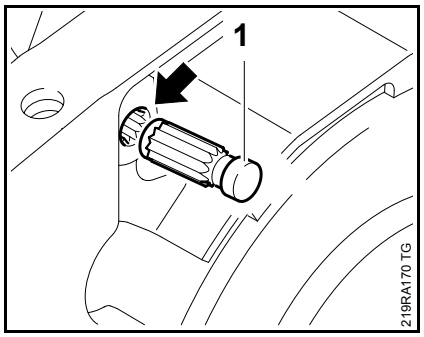
– Grease cam lever, 🕮 17.

The pins ensure that the springs are securely mounted. They must therefore be replaced when worn, otherwise the springs may pop out.

For reasons of simplicity, the parts connected to the pins have already been removed in the following illustrations.



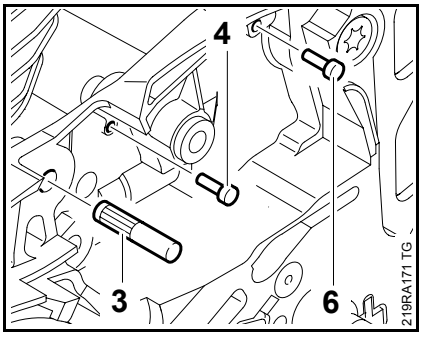
- Pull out pins (arrows) with the aid of suitable tools.



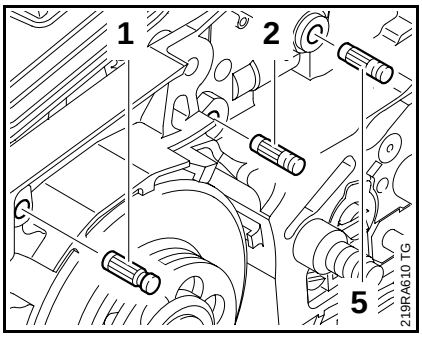
– Wet the knurled area of the new pin (1) with Loctite before fitting the pin, 🕮 17.

- The pin (1) must be inserted in the hole (arrow) so that the knurling on the pin engages the knurled profile.

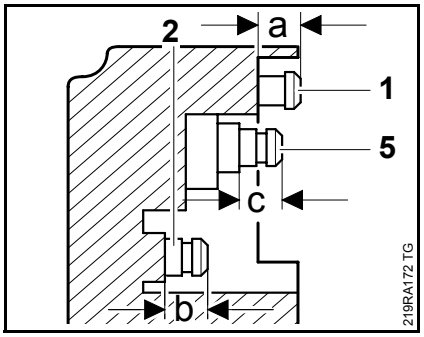
Turn the pin back and forth slightly until it fits.



- Drive home pins (3+4+6).



- Drive in pins (1+2+5) as specified below.



- Carefully drive the pins in with gentle taps until the following values have been reached:
  Pin (1) a approx. 4.3...4.7 mm
  Pin (2) b approx. 3.0...3.4 mm
  Pin (5) c approx. 3.0...3.4 mm

Pin (6) is only found in the machines with QuickStop Super.

The pins must be driven in square.

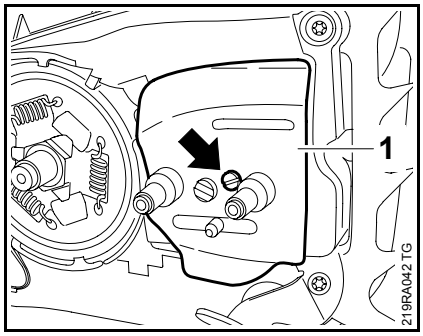
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Grease brake and cam levers, 🕮 17.

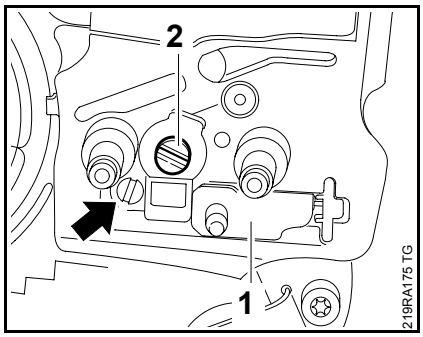
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Troubleshooting chart, 🕮 4.2.

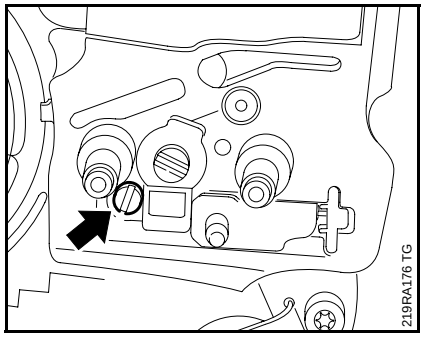


- Take out screw (arrow).

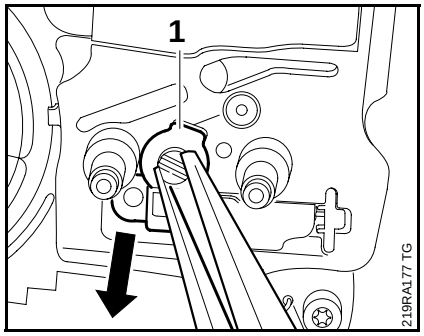
– Remove side plate (1).



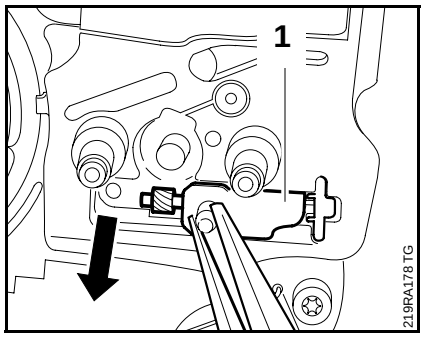
- Turn spur gear (2) clockwise until the tensioner slide (1) rests against the right-hand side and the screw (arrow) is visible.



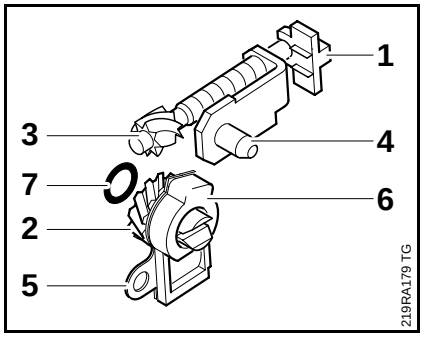
- Take out screw (arrow).



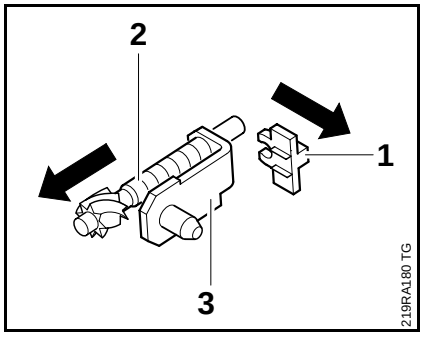
- Pull out complete spur gear (1) with a suitable tool.



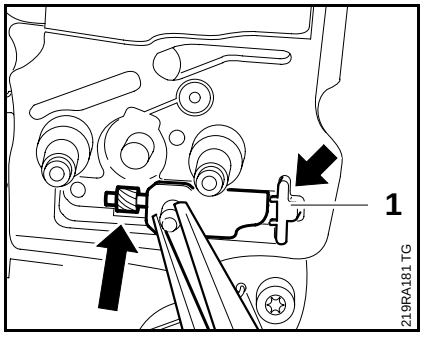
- Pull out tensioner slide (1) with a suitable tool.



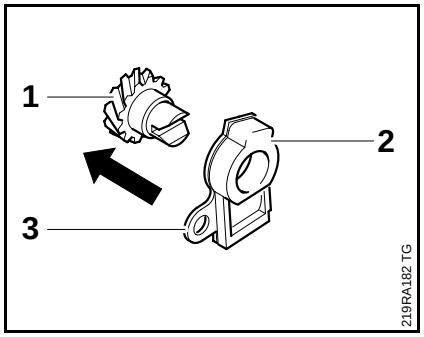
- Examine thrust piece (1), spur gear (2), tensioning screw (3), tensioner slide (4), cover plate (5), support (6) and O-ring (7) and replace any damaged parts.



- Pull out thrust piece (1) and remove tensioning screw (2) from tensioner slide (3).

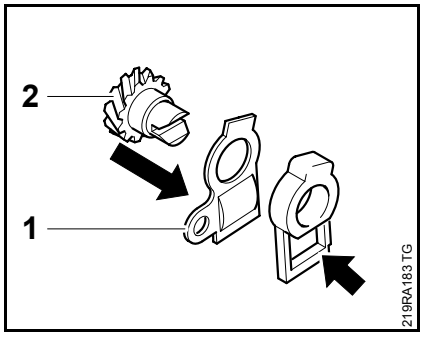


- Push complete tensioner slide with thrust piece (1) into the guide (arrow).



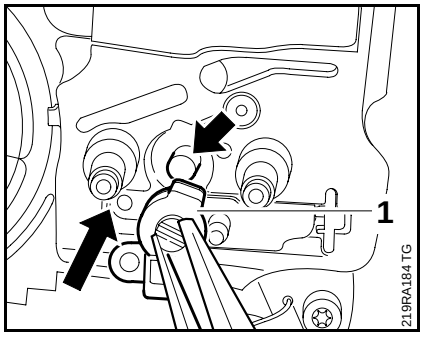
- Pull spur gear (1) out of the hole in the support (2).

– Remove cover plate (3).

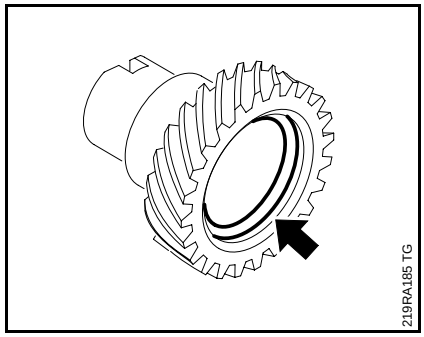


– Lay cover plate (1) on support, with the bulge in the recess (arrow).

- Fit spur gear (2).



- Slide spur gear (1) fully over the bearing journal (arrow) as far as the stop.



- Fit O-ring in the groove (arrow) of the spur gear.

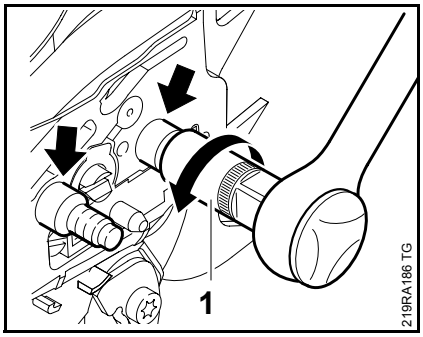
– Clean the dismantled parts with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

Tensioning screw and spur gear must always be replaced together.

– Grease screw threads, gear wheels and O-ring with STIHL multi-purpose grease, 🕮 17.

– Reassemble in the reverse sequence.

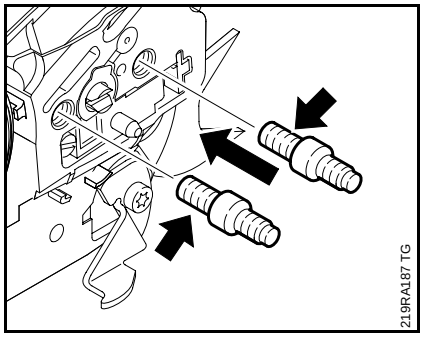
7.7 Bar mounting studs



– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove side plate, 🕮 7.6.

● Push stud puller (1) 5910 893 0501 over collar studs as far as it will go and turn it counterclockwise to remove the collar studs (arrows).



● Coat the screw thread (arrow) of the collar studs with Loctite before fitting them, 🕮 17.

– Fit collar studs and tighten them down securely.

– Tightening torques, 🕮 3.5.

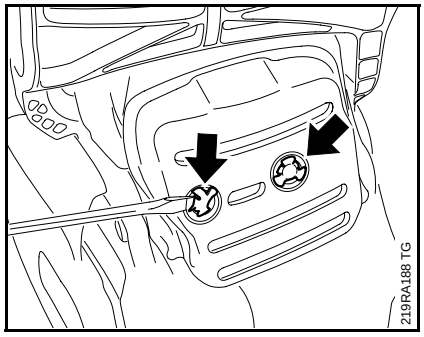
– Reassemble all other parts in the reverse sequence.

8. Engine

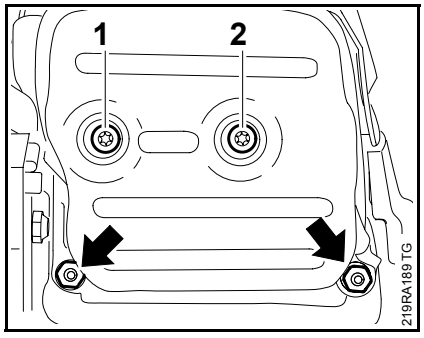
8.1 Muffler/spark arresting screen

Before looking for faults on the engine, always check and, if necessary, repair the fuel supply, carburetor, air filter and ignition system.

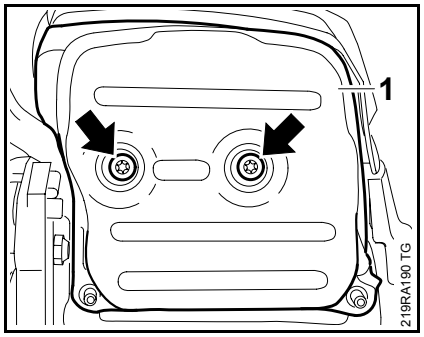
– Troubleshooting chart, 🕮 4.



● Prise out plugs (arrows).

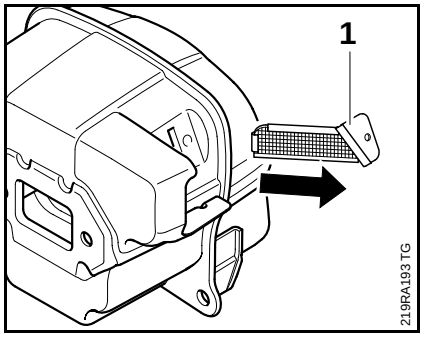


● Unscrew nuts (arrows).



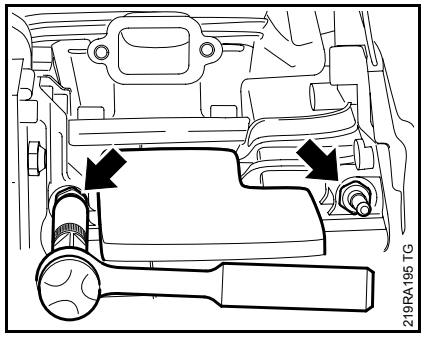
- Take out screws (arrows).

– Remove and examine muffler (1), replace if necessary.



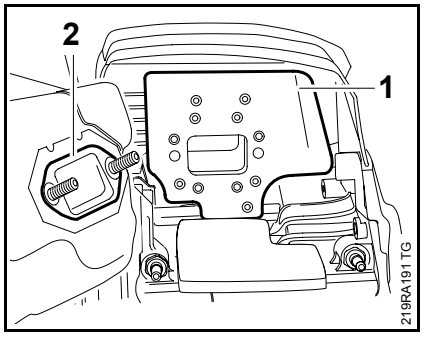
- Pull out spark arresting screen (1).

– Clean spark arresting screen (1) and fit a new screen if necessary.

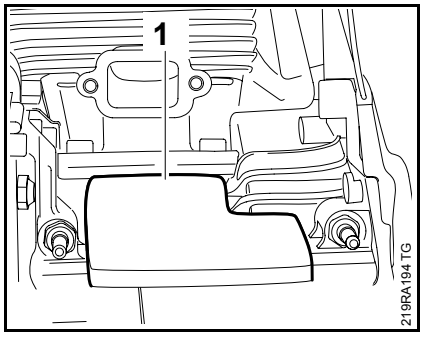


– Examine stud bolts (arrows) and replace if necessary.

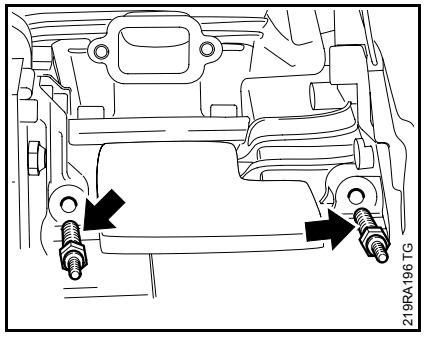
- Take out stud bolts (arrows).



- Remove heat shield (1) and gasket (2).

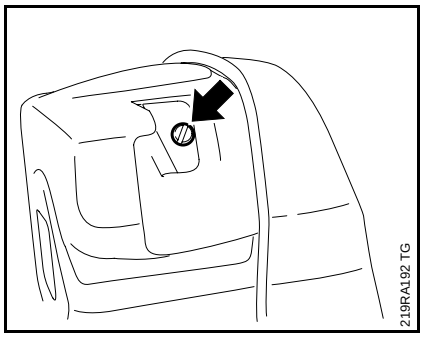


- Examine insulating mat (1) if fitted and use a new mat if necessary.

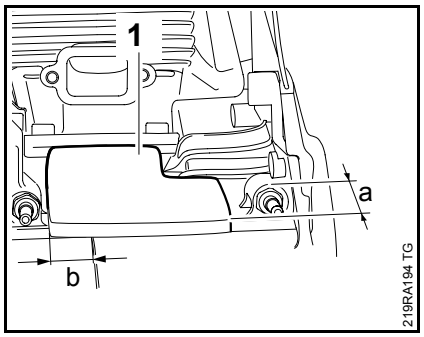


– Coat screw thread (arrow) of stud bolts with screw locking adhesive before fitting the stud bolts, 🕮 17.

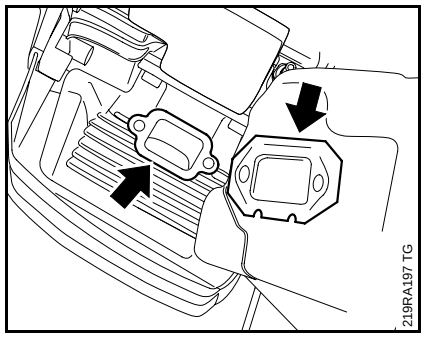
Spark arresting screen



- Take out screw (arrow).

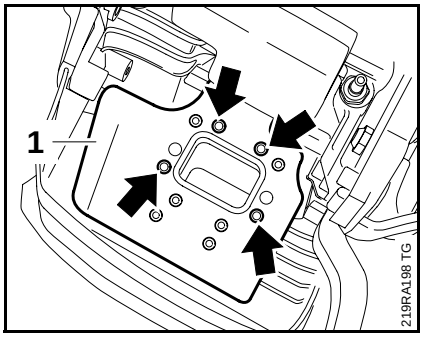


– Note the following dimensions when installing the insulating mat (1):
a = 11 mm
b = 9 mm

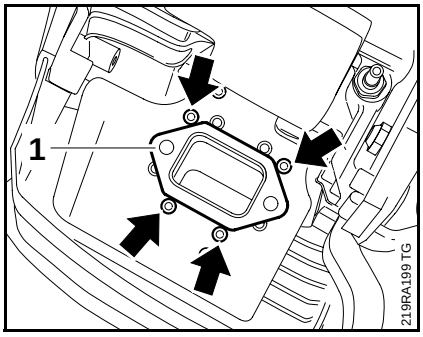


– Move the machine into a vertical position.

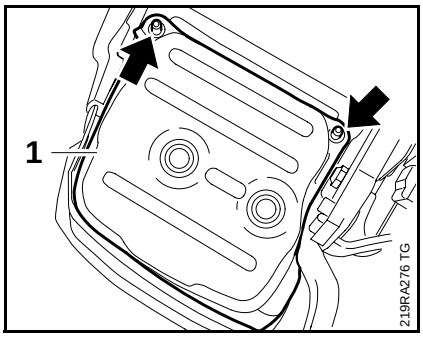
- Examine and clean the sealing faces (arrows), and remove any gasket residues.



● Fit heat shield (1) and line it up with the recesses (arrows) engaging the sealing face of the cylinder.

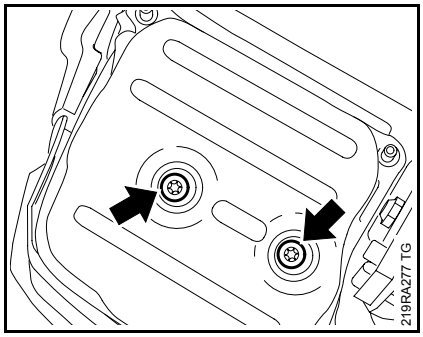


● Fit gasket (1) between the bumps (arrows) so that it is held in place.



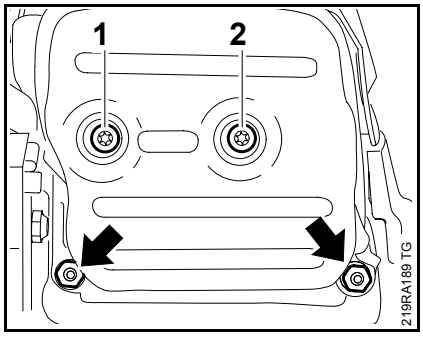
– Carefully slide muffler (1) into position.

● Slide the holes (arrows) into the stud bolts to secure the muffler in place.



– Fit screws (arrows) and check that gasket is correctly positioned.

● Tighten down screws (arrows).



– To ensure that the muffler is correctly secured and tight, tighten down screw (1) with 5 Nm and screw (2) with 10 Nm, then tighten screw (1) further to 10 Nm.

● Screw on the nuts (arrows) and tighten them securely.

– Press home plugs.

– Tightening torques, 🕮 3.5.

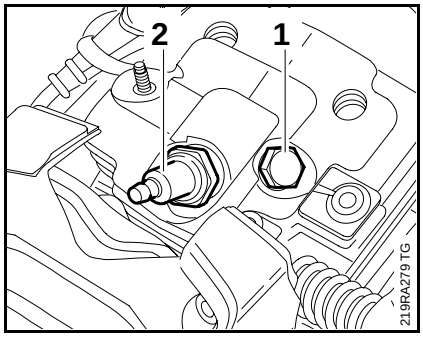
Defective oil seals and gaskets or cracks in castings cause leaks. Such faults allow supplementary air to enter the engine and thus impair the fuel-air mixture.

This makes adjustment of the specified idle speed difficult or even impossible.

It also prevents a smooth transition from idle speed to part or full throttle.

Always test under vacuum first and then continue at gauge pressure.

The power unit can be thoroughly checked for leaks under vacuum and at gauge pressure with the pump 0000 850 1300.



– Remove shroud, 🕮 8.4.

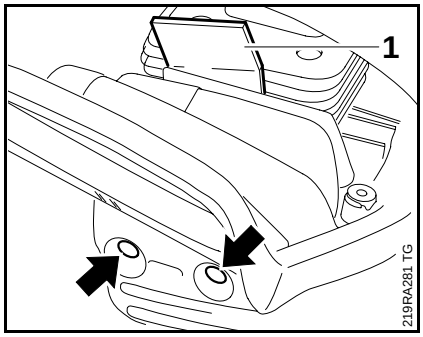
– Set piston to top dead centre (TDC) (can be seen through the spark plug hole).

– Remove decompression valve, 🕮 8.9.

● Screw in plug (1) 1122 025 2200 and tighten it securely.

● Screw in spark plug (2) and tighten it securely.

– Tightening torques, 🕮 3.5.

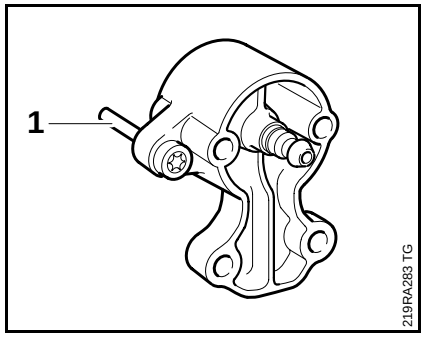


● Undo screws (arrows).

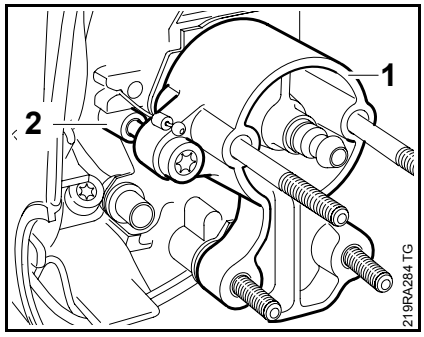
● Slide sealing plate (1) 0000 855 8107 between cylinder exhaust port and heat shield and lightly retighten the screws.

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

– Remove carburetor, 🕮 14.3.

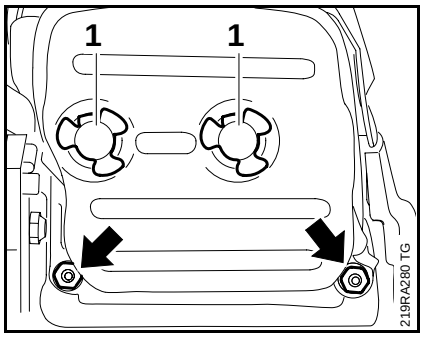


● Pin (1) must be present on test flange 1138 890 1200 – seal impulse hose.



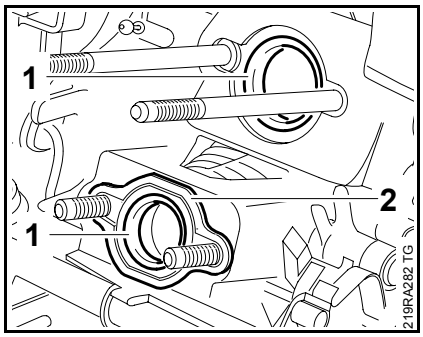
– Slide test flange 1138 890 1200 (1) into place.

– The pin must be inserted in the impulse hose (2) when sliding the test flange into place.

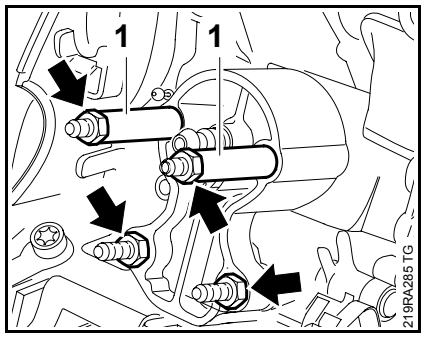


● Prise out plugs (1).

● Unscrew nuts (arrows).



● Ensure that the sleeves (1) and washer (2) are present.

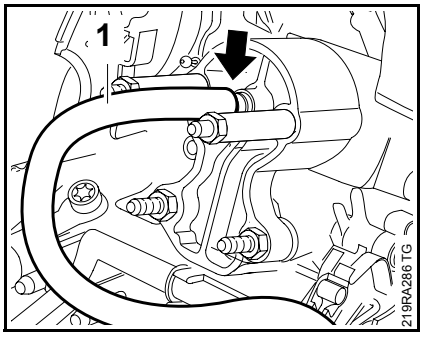


– Push 35 mm long sleeves (1) onto the upper stud bolts.

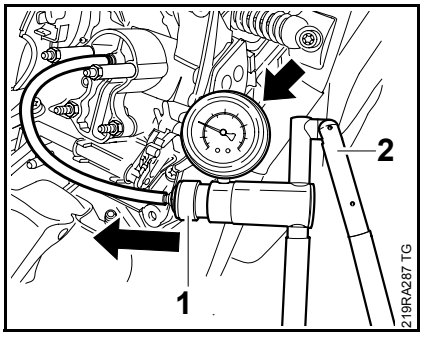
● Screw on nuts (arrows) and tighten them securely.

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.

Faults of this kind can be detected with the aid of the pump 0000 850 1300.



- Connect suction hose (1) of pump 0000 850 1300 to the nipple (arrow).

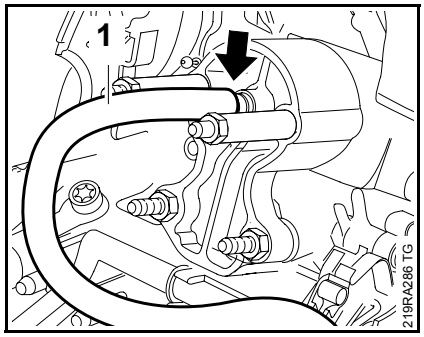


- Slide ring (1) to the left.
- Actuate lever (2) until the pressure gauge (arrow) indicates a vacuum of 0.5 bar.

The oil seals are in good condition if the indicated vacuum is maintained or if the pressure rises to no more than 0.3 bar within 20 seconds. The oil seals must be replaced if the pressure in the crankcase continues to rise, 🕮 8.3.

– When the test is complete, push the pump ring to the right to vent the system.

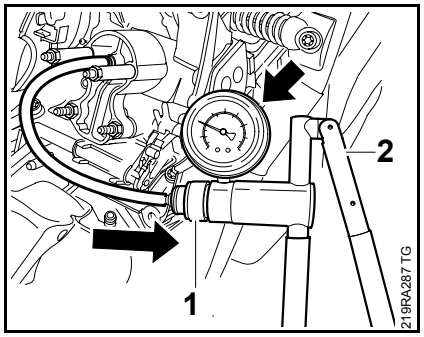
– Test at gauge pressure, 🕮 8.2.3.



The preparations are the same as for the vacuum test, 🕮 8.2.2.

– Test under vacuum, 🕮 8.2.2 before testing at gauge pressure.

- Slide pressure hose (1) of the pump 0000 850 1300 over the nipple (arrow).



- Push the ring (1) to the right.
- Actuate lever (2) until the pressure gauge (arrow) indicates an excess pressure of 0.5 bar. The crankcase is airtight if this pressure remains constant for at least 20 seconds.

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

To locate the leak, coat the suspect area with soapy water and pressurize the crankcase again. Bubbles will appear at the coated area if a leak exists.

– When the test is complete, push the pump ring to the left to vent the system. Pull off the hose.

– Remove test flange.

– Install carburetor, 🕮 14.3.

– Loosen muffler screws and pull out the sealing plate.

– Retighten muffler screws.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

It is not necessary to disassemble the complete engine if only the oil seals have to be replaced.

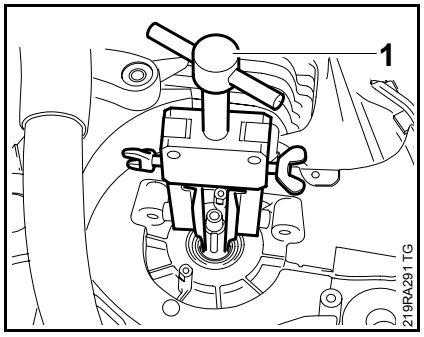
Ignition side

– Remove fan housing, 🕮 10.2.

– Remove flywheel, 🕮 9.5.

Machines with handle heating

– Remove generator, 🕮 15.7.



– Drive oil seal out of its seat with a light tap with a suitable tube or punch.

- Fit puller (1) 5910 890 4400 with jaws 0000 893 3706 (profile No. 3.1).

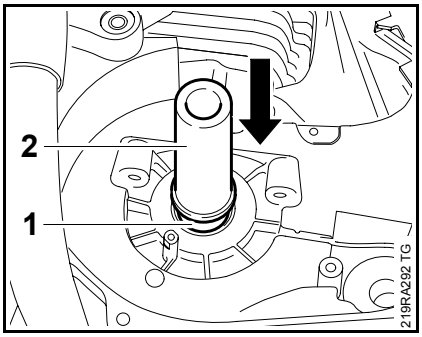
– Tension legs.

– Pull out oil seal.

The crankshaft stub must not be damaged.

– Clean the sealing area with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

– Grease the sealing lips of the new oil seal, 🕮 17.



– Thinly coat the outer circumference of the oil seal with sealant, 🕮 17.

– Slide oil seal over crankshaft stub with the open side facing the crankcase.

- Press oil seal (1) fully home with press sleeve (2) 1122 893 2405.

The press surface must be plane and free from burr.

– Turn the crankshaft through several times after approx. one minute.

– The cone on the crankshaft must be free from grease, therefore clean it with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

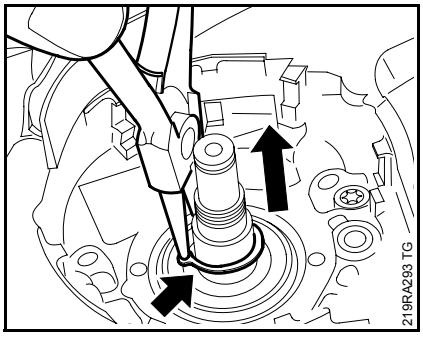
– Reassemble all other parts in the reverse sequence.

Clutch side

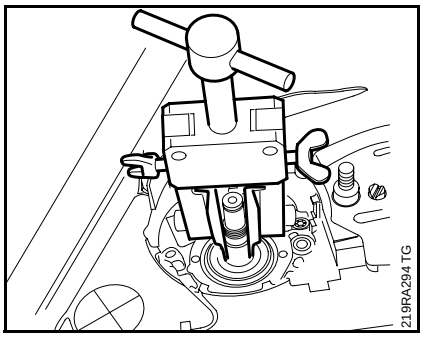
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove clutch, 🕮 6.

– Remove oil pump, 🕮 13.3.



● Take out circlip (arrow).



– Drive oil seal out of its seat with a light tap with a suitable tube or punch.

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

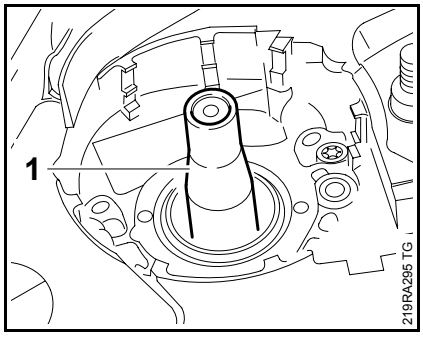
– Tension legs.

– Pull out oil seal.

The crankshaft stub must not be damaged.

– Clean the sealing area with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

– Grease the sealing lips of the new oil seal, 🕮 17.

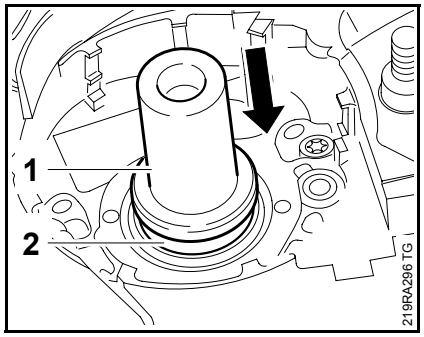


● Fit assembly sleeve (1) 1122 893 4600.

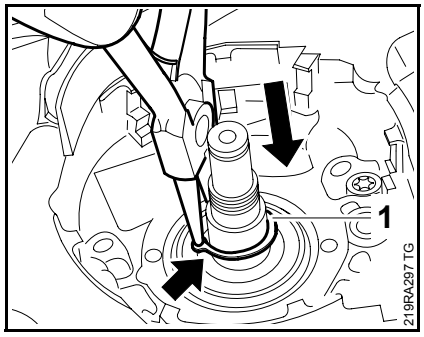
– Thinly coat the outer circumference of the oil seal with sealant, 🕮 17.

– Slide oil seal over assembly sleeve with the open side facing the crankcase.

– Remove assembly sleeve (1).



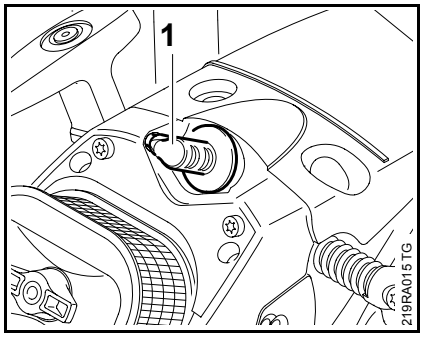
● Press oil seal (2) fully home with press sleeve (1) 1118 893 2401.



● Fit circlip (arrow).

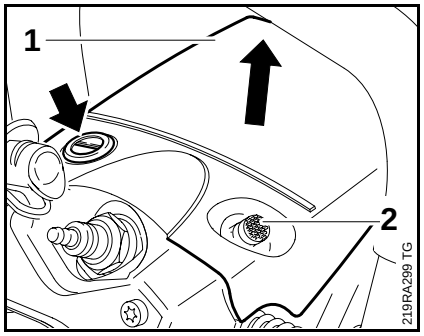
– Turn the crankshaft through several times after approx. one minute.

– Reassemble all other parts in the reverse sequence.



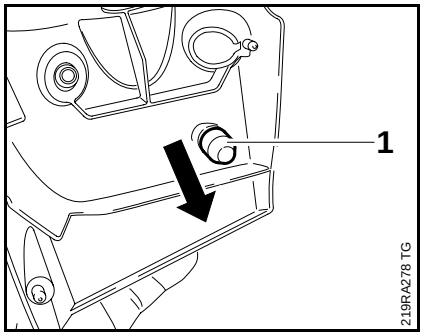
– Remove carburetor box cover, 🕮 14.1.

● Pull boot off spark plug (1).

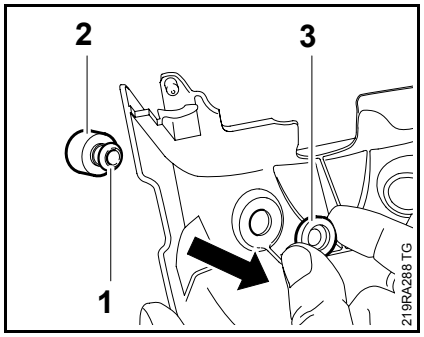


● Unscrew slotted nut (arrow).

● Lift shroud (1) off decompression valve (2).

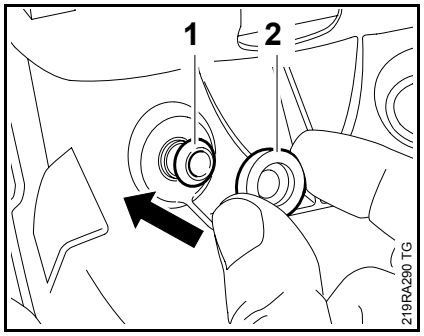


● Pull off stop buffer (1) and examine it, fit a new stop buffer if necessary.



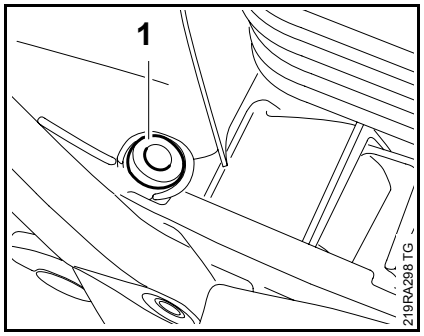
● Pull off rubber grommet (3) and remove slotted nut (1).

● Examine slotted nut (1), insulating element (2) and rubber grommet (3), replace if necessary.

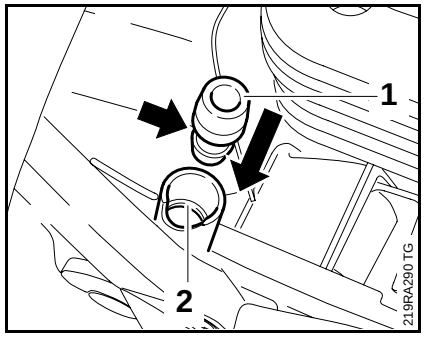


– Slide slotted nut (1) with insulating element into hole.

● Fit rubber grommet (2) until it engages the groove in the slotted screw.

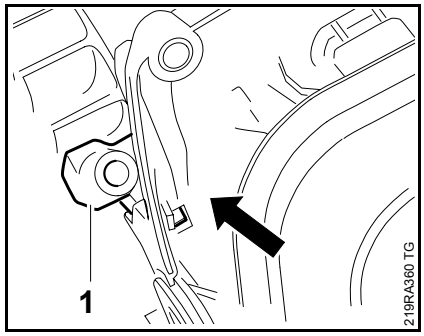


● Ease out rubber grommet (1) and examine it, fit a new grommet if necessary.



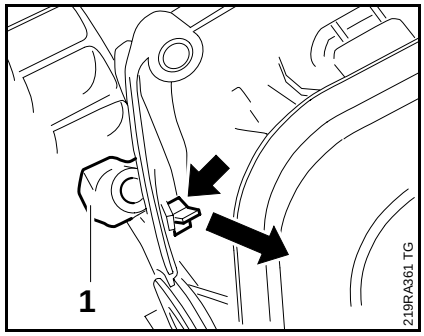
● Press rubber grommet (1) in until the groove (arrow) engages the rebate (2) in the housing.

– Use STIHL Press Fluid for easier insertion, 🕮 17.



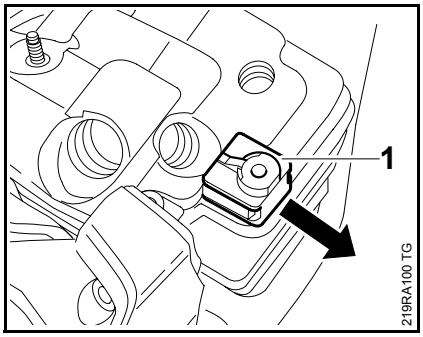
– Remove filter base, 🕮 14.1.2.

● Push out rubber grommet (1) and examine it, replace if necessary.



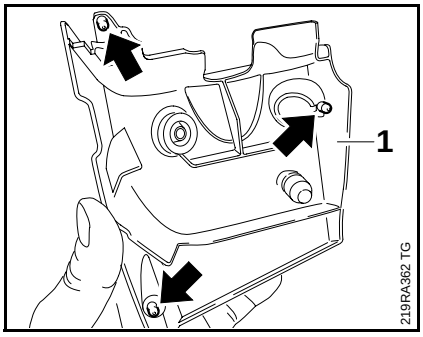
● Pull grommet (1) in until the lug (arrow) has been pulled in completely.

– Use STIHL Press Fluid for easier insertion, 🕮 17.



- Remove grommet (1) and examine it, replace if necessary.

– Reassemble in the reverse sequence.



- Press lugs (arrows) on shroud (1) into rubber grommets.

Ensure that the stud bolt contacts the slotted screw.

– Screw slotted nut on as far as possible.

– Reassemble all other parts in the reverse sequence.

Before removing the cylinder, decide whether or not the crankshaft has to be removed.

With cylinder installed
The crankshaft must be prevented from twisting by blocking the piston in order to remove the flywheel and clutch.

With cylinder removed
To remove the flywheel and clutch, the crankshaft must be blocked by resting the piston on the wooden assembly block.

– Remove shroud, 🕮 8.4.

– Remove fan housing, 🕮 10.2.

– Remove spacer flange, 🕮 14.2.

– Remove carburetor, 🕮 14.3.

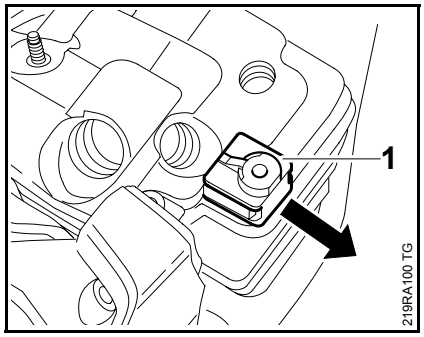
– Remove intake elbow, 🕮 14.6.3.

– Remove muffler, 🕮 8.1.

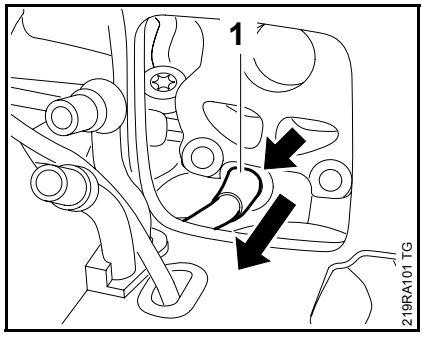
– Remove decompression valve, 🕮 8.9.

– Pull boot off spark plug and remove spark plug, 🕮 6.

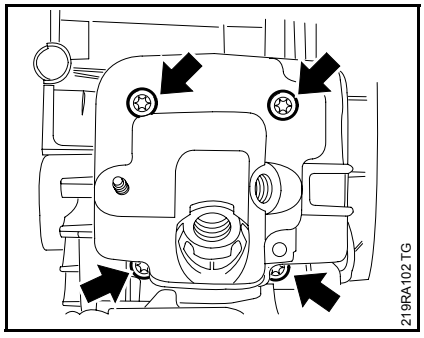
– Remove front handle, 🕮 11.5 Machines with handle heating, 🕮 11.5.1.



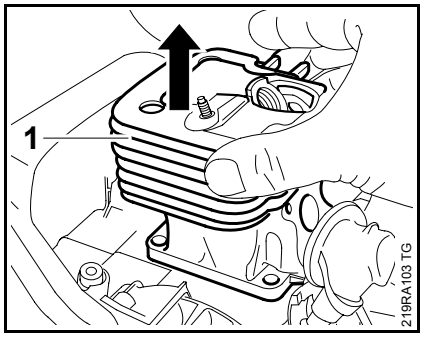
- Pull off grommet (1).



- Pull impulse hose (1) off connector (arrow).



- Take out socket head screws (arrows).



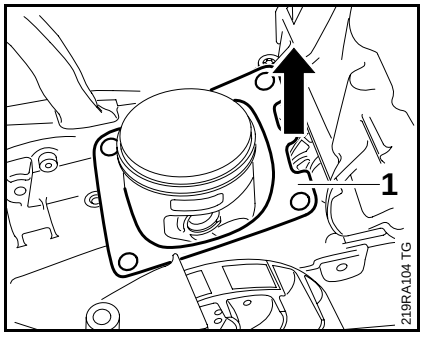
● Carefully pull off the cylinder (1).

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

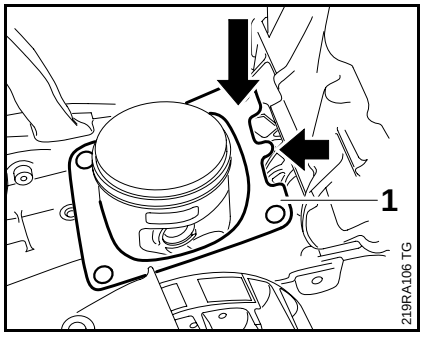
The sealing face must be in faultless condition and undamaged. Parts with damaged sealing face must be replaced, 🕮 8.6.3.

Always fit a new cylinder gasket whenever the cylinder has been removed.

The sealing faces must be in faultless condition and undamaged. Use a new cylinder if the sealing faces are damaged.

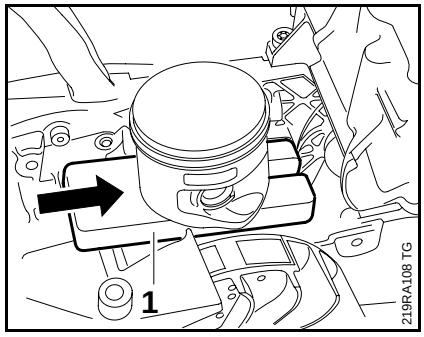


● Remove the cylinder gasket (1).

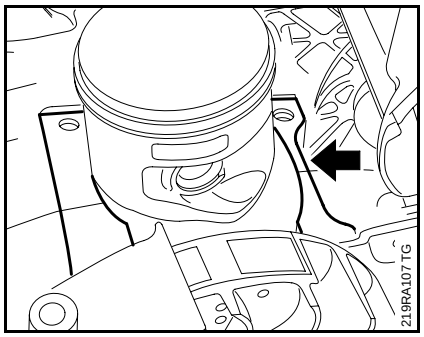


– Position the cylinder gasket (1) so that the tab (arrow) faces towards the carburetor.

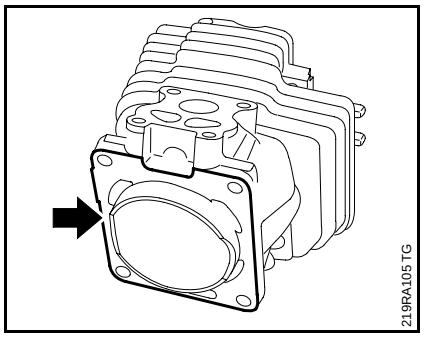
● Fit cylinder gasket (1).



● Slide wooden assembly block (1) 1108 893 4800 between piston and crankcase.

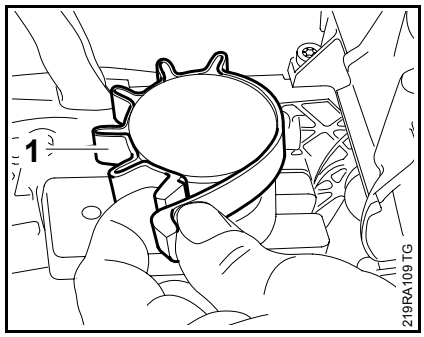


– Examine and clean the sealing face (arrow).



● Examine and clean the sealing face (arrow) and remove any gasket residues.

– Examine sealing faces on cylinder inlet and exhaust.

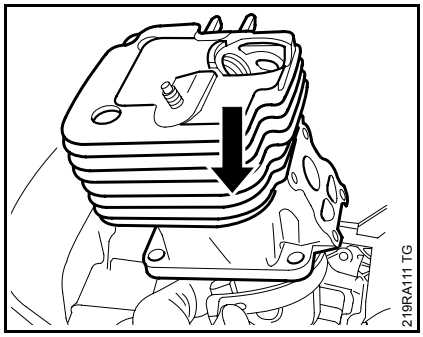


– Wet piston, piston rings and inside of cylinder with oil, 🕮 17.

- Fit clamping strap (1) 0000 893 2600 round piston and piston rings.

– Ensure that piston rings are correctly positioned, 🕮 8.8.

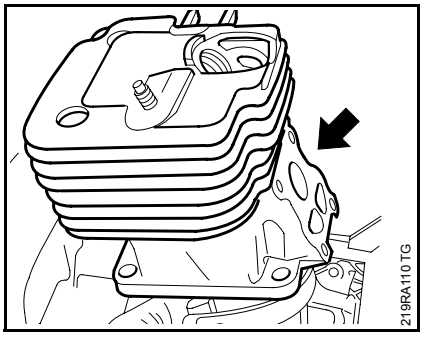
The clamping strap (1) must be fitted in such a way that the piston rings do not protrude beyond the piston sides.



- Slide cylinder over piston; the clamping strap is removed at the same time.

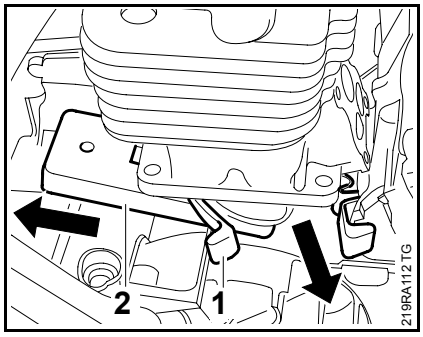
– Tighten down screws cross-wise.

– Tightening torques, 🕮 3.5.



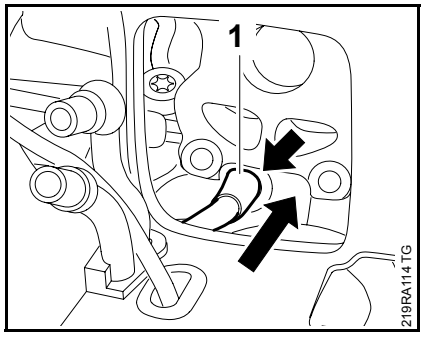
- Position cylinder so that the inlet (arrow) faces the rear handle.

When fitting the cylinder over the piston, ensure that the clamping strap securely encloses the piston and that none of the piston rings protrudes, otherwise it may break.



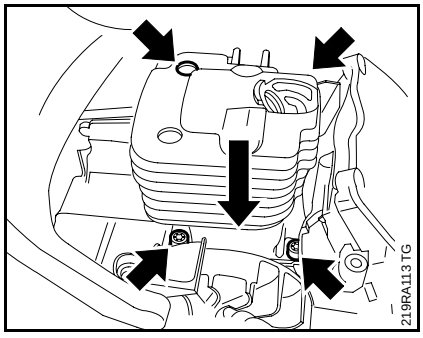
- Remove clamping strap (1) and wooden assembly block (2).

Ensure that the cylinder gasket is correctly positioned.



- Push impulse hose (1) onto connector (arrow).

– Reassemble all other parts in the reverse sequence.



– Push cylinder home as far as possible.

- Fit screws (arrows) and secure cylinder with gasket.

– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove oil pump, 🕮 13.3.

– Remove brake band, 🕮 7.1.

– Remove brake lever, 🕮 7.2 QuickStop Super, 🕮 7.3.

– Remove cylinder, 🕮 8.5.

– Remove piston, 🕮 8.7.

– Remove tank housing, 🕮 14.8.4.

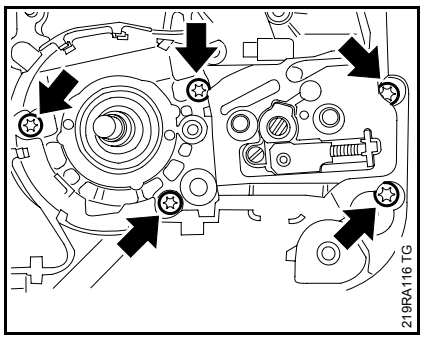
– Remove flywheel, 🕮 9.5.

– Machines with handle heating, remove generator, 🕮 15.7.

– Drain fuel tank and oil tank.

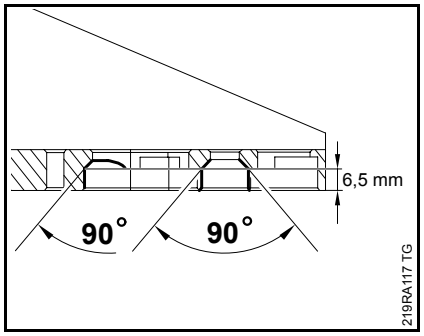
Fuel and oil must be disposed of in accordance with environmental regulations.

Always fit new ball bearings and oil seals when the crankshaft is removed.



● Take out screws (arrows).

– Remove chain tensioner, 🕮 7.6.



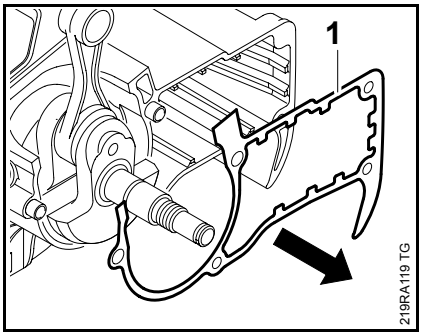
● The existing removing tool 5910 890 2205 must be reworked as illustrated.

● Slide removing tool 5910 890 2205 over the collar screws, screw on nuts and tighten them down.

● Turn spindle (1) in clockwise until the crankshaft stub has been forced out of the ball bearing.

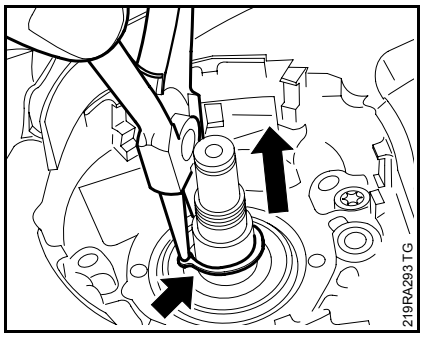
The crankcase half on the clutch side is removed in this way and the two halves of the crankcase separated.

– Replace ball bearings and oil seals, 🕮 8.3 and 🕮 8.6.3.

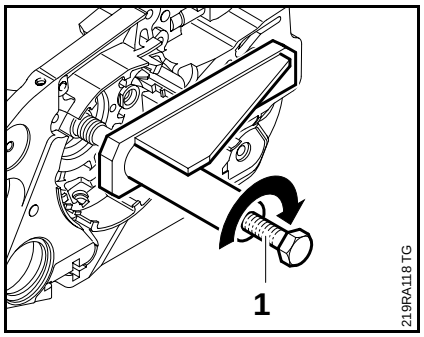


● Remove gasket (1).

Clutch side

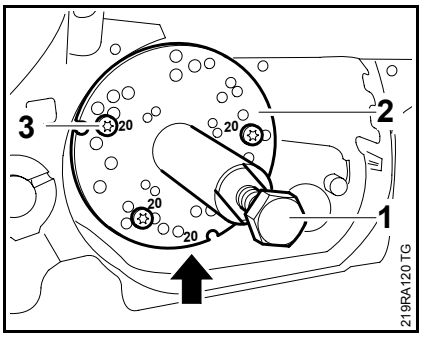


● Remove circlip (arrow).



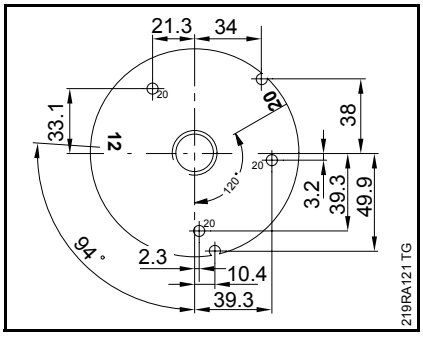
– Unscrew spindle (1) until it no longer rests on the crankshaft stub.

Ignition side



– Unscrew spindle of assembly tool (1) 5910 007 2220 until the flange rests against the housing half – left-hand thread.

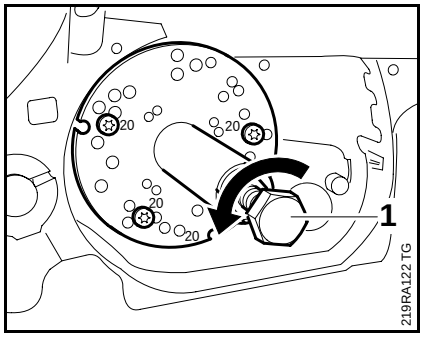
- Position flange (2) of assembly tool 5910 893 2101 against crankcase half on ignition side so that the number 20 (arrow) is at the bottom.
- Insert three screws M5x72 (3) through the holes marked "20" and tighten them down against the crankcase half.



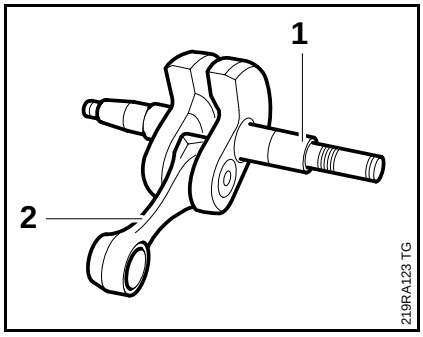
Assembly tools without "20" holes can be reworked as illustrated.

The drilled plate is shown as seen from above.

Values are stated in millimetres.



- Turn spindle (1) counterclockwise until the crankshaft has been forced out of the housing half on the ignition side.



- Crankshaft (1), con-rod (2) and the needle bearing between them form a complete unit which must always be replaced as such.

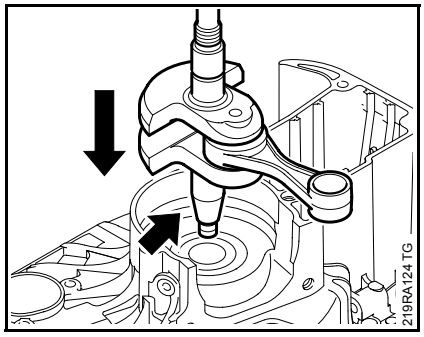
– Examine the two halves of the crankcase and ball bearings and replace if necessary, 🕮 8.6.3.

Before installing the crankshaft, it must be cleaned with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

Ignition side

The crankshaft stub must not be damaged.

Examine and clean the sealing faces of the crankcase half on the ignition side (including the cylinder sealing face). There must not be any sign of damage on the sealing faces.



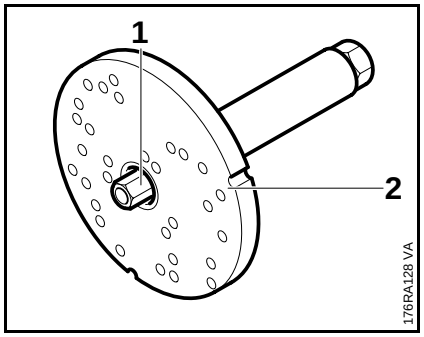
– Line the crankshaft up so that the tapered stub (arrow) faces the ball bearing on the ignition side.

Wear protective gloves to prevent injury due to burns.

– Heat inner race of ball bearing to approx. 150 °C (300 °F).

- Press crankshaft fully home on the crankshaft stub.

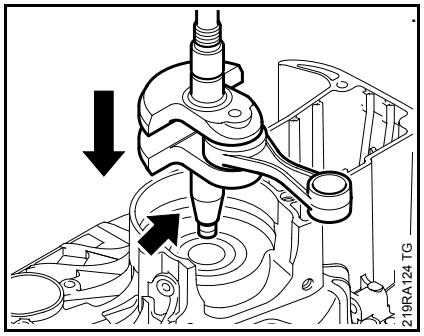
The crankshaft must be fitted quickly, as the heat is transferred to the stub and the inner race contracts again.



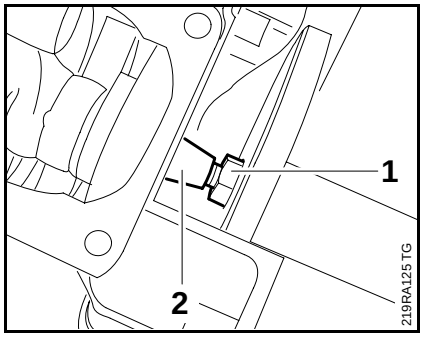
If it is not possible to heat the inner race, the crankshaft is drawn in with assembly tool 5910 893 2101.

- Screw threaded sleeve (1) 5910 893 2420 as far as possible onto the completely screwed-in spindle of the assembly tool kit (2) 5910 893 2101.

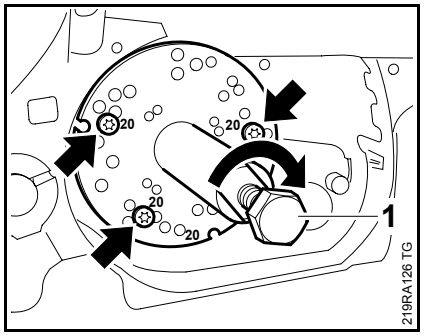
Coat the tapered crankshaft stub with oil.



- Line the crankshaft up so that the tapered stub (arrow) faces the ball bearing on the ignition side and push it home.



- Fit threaded sleeve (1) over thread (2) of the tapered stub and screw it on.



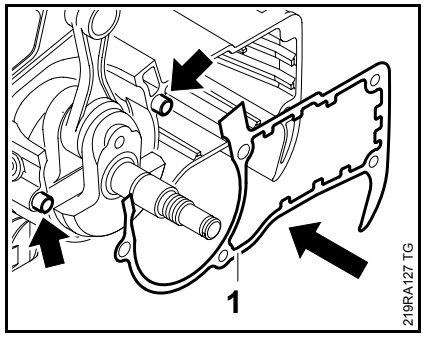
– Turn spindle (1) until the drilled plate rests against the crankcase half on the ignition side.

- Fit assembly tool with three screws (arrows) M5x72 in the holes marked "20" on the drilled plate and secure it to prevent it twisting. Screw spindle (1) in clockwise.

– Pull crankcase half on ignition side in until it is fully home.

The crankshaft rotates when it is drawn in with the assembly tool, therefore ensure that the small end always faces upwards towards the cylinder.

– Remove assembly tool.

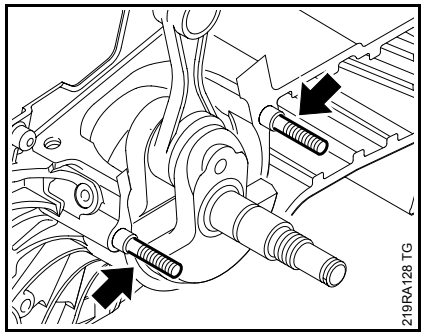


- Fit new gasket (1) and secure it with the guide sleeves (arrows).

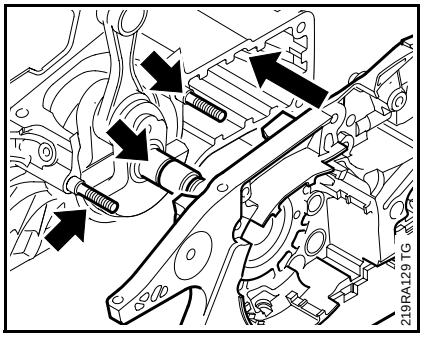
Clutch side

The crankshaft stub must not be damaged.

Examine and clean the sealing faces of the crankcase half on the clutch side (including the cylinder sealing face). There must not be any sign of damage on the sealing faces.



- Fit two screws (arrows) M5x72 on the ignition side in the holes with guide sleeves – for guidance and to prevent twisting.



– Coat cylindrical crankshaft stub with oil.

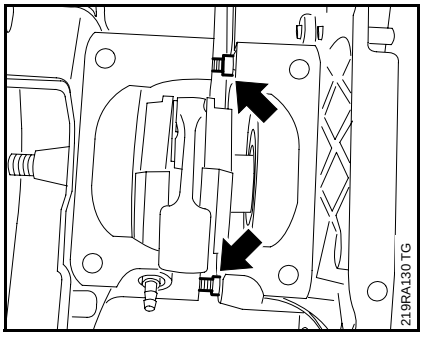
– Line crankcase half up with the cylindrical stub and the two screws (arrows).

Wear protective gloves to prevent injury due to burns.

– Heat inner race of ball bearing to approx. 150 °C (300 °F).

● Press crankcase half fully home.

The crankcase half must be fitted quickly, as the heat is transferred to the stub and the inner race contracts again.

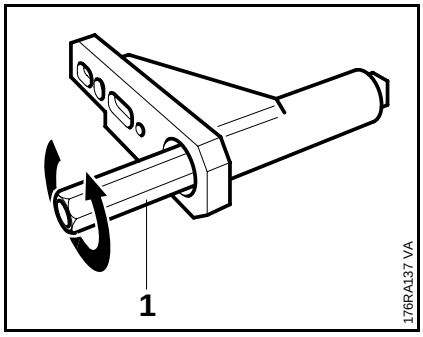


● Ensure that the sleeves (arrows) enter the holes and that the housing gasket is not jammed or buckled.

If it is not possible to heat the inner race, the crankcase half is drawn in with assembly tool 5910 890 2205.

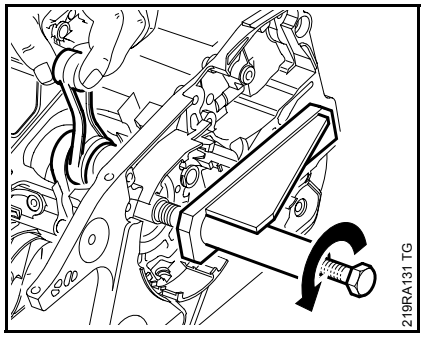
– Coat cylindrical crankshaft stub with oil.

– Line crankcase half up with the cylindrical stub and the two screws (arrows).



– Turn spindle of assembly tool 5910 890 2205 fully into the assembly tool (left-hand thread).

● Screw threaded sleeve (1) 5910 893 2409 on assembly tool 5910 890 2205 fully home on the spindle (left-hand thread).

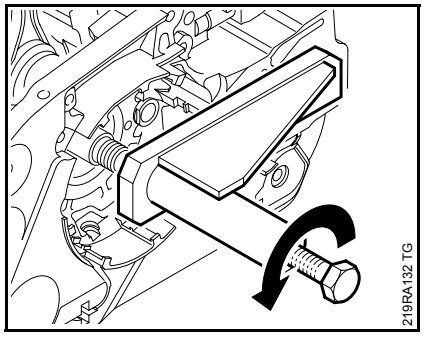


– Fit threaded sleeve on crankshaft stub and push assembly tool over collar screws.

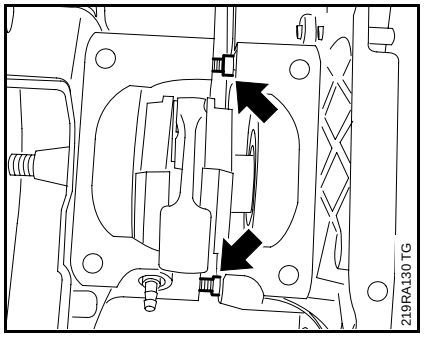
● Hold crankshaft steady and screw threaded sleeve onto thread of crankshaft stub by turning the spindle counterclockwise.

– Release crankshaft, but hold assembly tool steady instead and continue turning the spindle until the assembly tool rests against the crankcase half.

– Fit nuts for chain sprocket cover on the collar screws and tighten them down by hand.



● Turn spindle counterclockwise until the crankcase half rests against the guide sleeves.

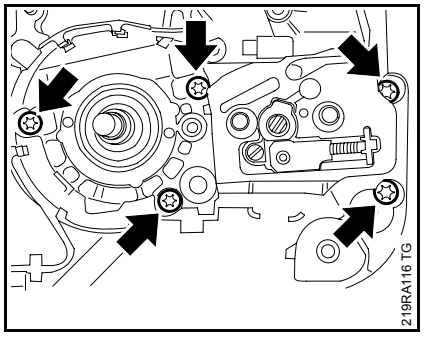


Ensure that the sleeves (arrows) enter the holes and that the housing gasket is not jammed or buckled.

– Unscrew nuts.

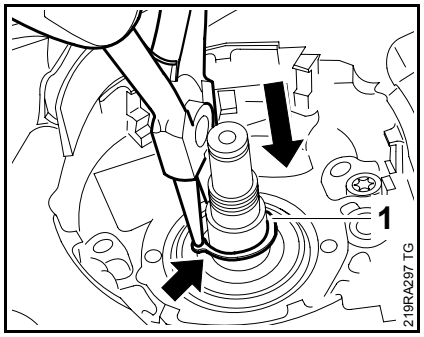
– Turn spindle clockwise to remove assembly tool.

– Take out screws M5x72 which were fitted to prevent twisting.



● Fit screws (arrows) and tighten them down working cross-wise.

– Tightening torques, 🕮 3.5.



● Install circlip (1) in groove (arrow).

– Examine and install piston, 🕮 8.7.2.

– Examine and install cylinder, 🕮 8.5.

– Reassemble all other parts in the reverse sequence.

If the two halves of the crankcase are damaged, they can be replaced separately.

New crankcase halves are supplied with the relevant parts already fitted – see spare parts list. Those parts which are not supplied with the new crankcase halves must be removed from the old halves and examined or replaced if necessary.

The serial number must be punched 2.5 mm deep into the number strip of the crankcase with figure stamps before installing a new crankcase.

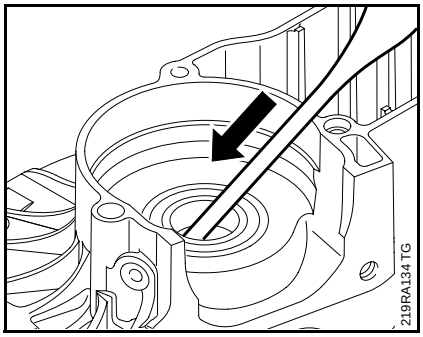
If the original crankcase is reused, install new oil seals and ball bearings, remove the gasket residues and thoroughly clean the sealing faces. The sealing faces must be absolutely clean to ensure a perfect seal.

Examine both crankcase halves for cracks and all sealing faces for any signs of damage.

– Refer also to the troubleshooting chart, 🕮 4.7.

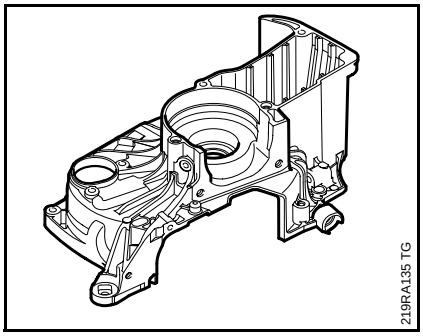
– Remove crankshaft, 🕮 8.6.1.

– Wear protective gloves to prevent injury due to burns.



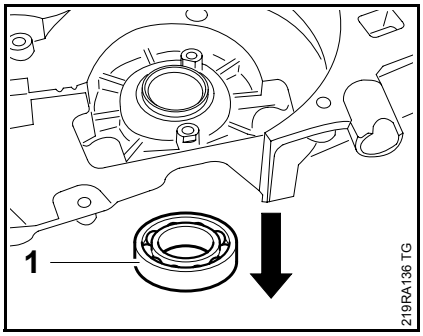
Crankcase half on ignition side

- Carefully drive out oil seal with a suitable punch.



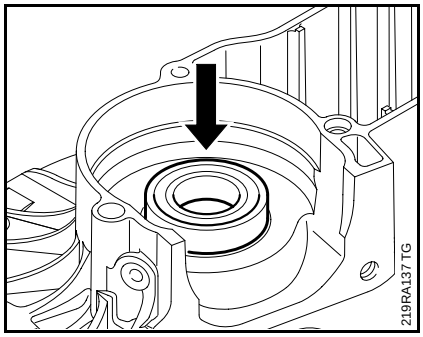
- Examine and clean crankcase half, replace if necessary.

Replace the ball bearing if the crankcase half is OK.



– Heat area around bearing seat to approx. 150 °C (300 °F).

The bearing (1) drops out of its own accord when the required temperature is reached.

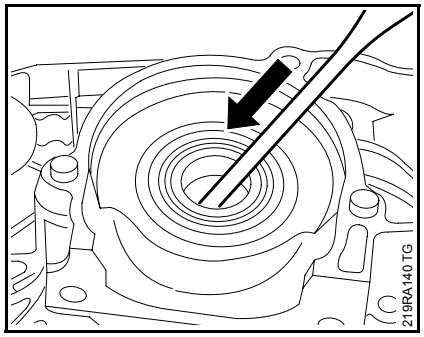


– Heat area around bearing seat to approx. 150 °C (300 °F).

– Position ball bearing so that the open side (balls visible) faces the outside of the crankcase.

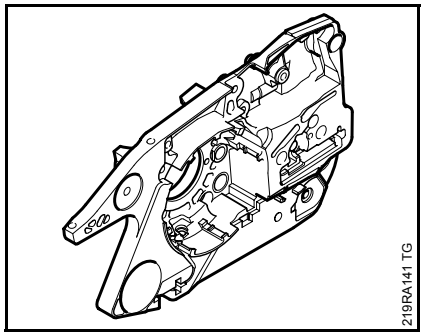
- Press ball bearing fully home.

The ball bearing must be fitted quickly as it absorbs heat and expands.



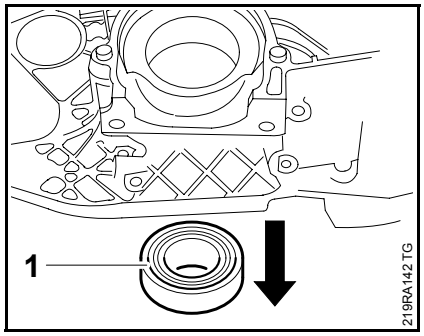
Crankcase half on clutch side

- Carefully drive out oil seal with a suitable punch.



- Examine and clean crankcase half, replace if necessary.

Replace the ball bearing if the crankcase half is OK.



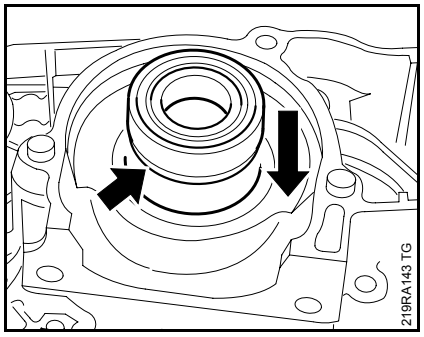
– Heat area around bearing seat to approx. 150 °C (300 °F).

The bearing (1) drops out of its own accord when the required temperature is reached.

8.7 Piston
8.7.1 Removal

Since the crankcase half on the clutch side does not have a fixed bearing seat, the oil pump must be installed. It then serves as reference.

– Install oil pump, 🕮 13.3.



– Heat area around bearing seat to approx. 150 °C (300 °F).

– Position ball bearing so that the centring ring (arrow) points towards the oil pump.

● Press ball bearing fully home (oil pump).

The ball bearing must be fitted quickly as it absorbs heat and expands.

– Remove oil pump, 🕮 13.3.

– Install crankshaft, 🕮 8.6.

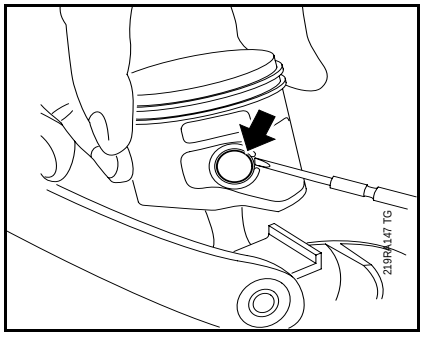
– Install oil seals, 🕮 8.3.

– Reassemble all other parts in the reverse sequence.

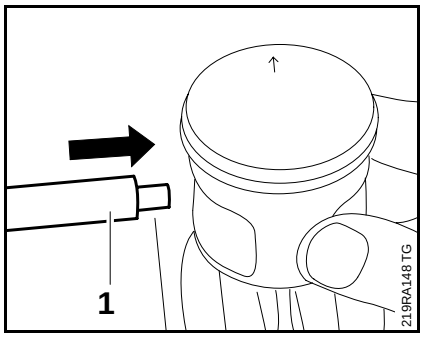
– Tightening torques, 🕮 3.5.

Before removing the cylinder, decide whether the crankshaft is to be removed, 🕮 8.6.

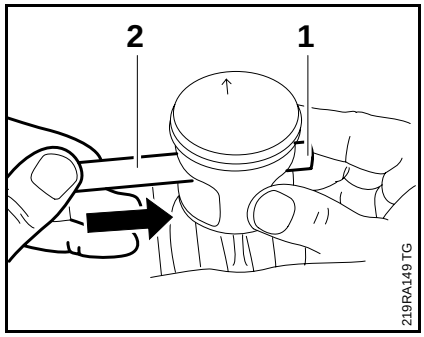
– Remove cylinder, 🕮 8.5.



● Prise hookless snap rings on both sides out at the recess (arrow) with a suitable tool.

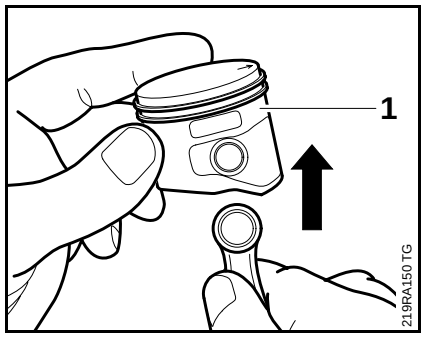


● Apply assembly drift (1) 1111 893 4700.



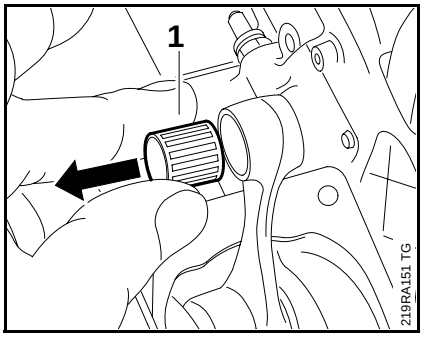
● Push piston pin (1) out of the piston with assembly drift (2) 1111 893 4700.

If the piston pin is stuck, it can be loosened by lightly tapping the assembly drift with a hammer. The piston must be steadied during this process to ensure that jolts are not transmitted to the con-rod.



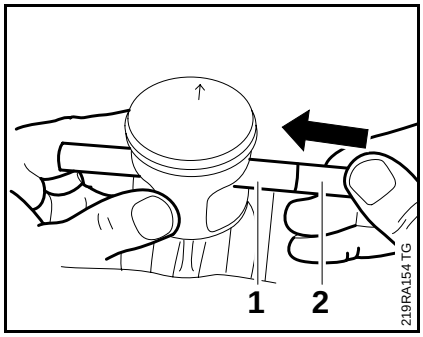
● Remove piston (1) from con-rod.

– Examine piston rings, replace if necessary, 🕮 8.8.



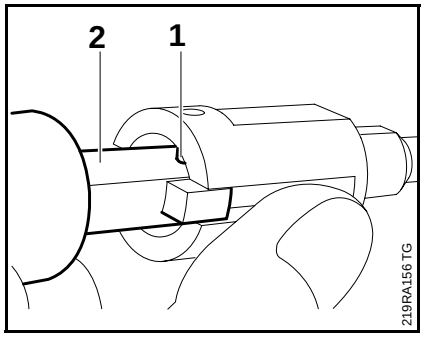
● Pull out and clean needle bearing (1), replace if necessary.

– Coat needle bearing with oil and slide it into the small end.



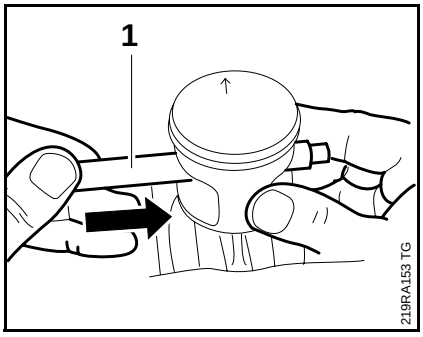
– Coat piston pin with oil.

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



● Slide slotted end of sleeve over the magnet and snap ring.

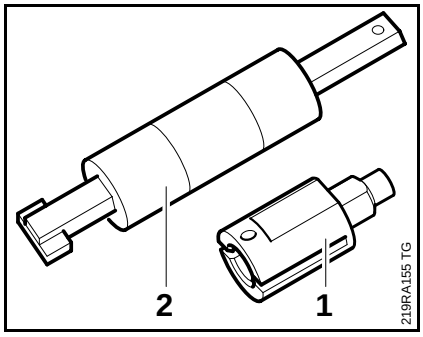
The internal pin must point towards the flat surface on the shaft.



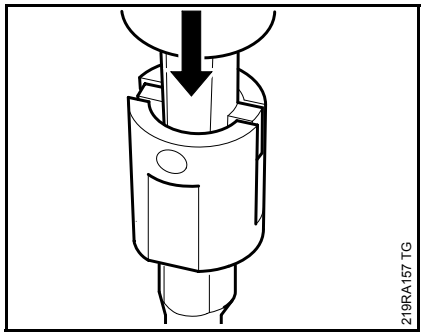
– Line up the piston so that the arrow in the piston base points towards the cylinder exhaust port.

– Place piston on small end.

● Push assembly drift (1) 1111 893 4700 mit dem Zapfen voraus durch Kthrough piston and small end (needle cage) with the small diameter first and secure the piston.

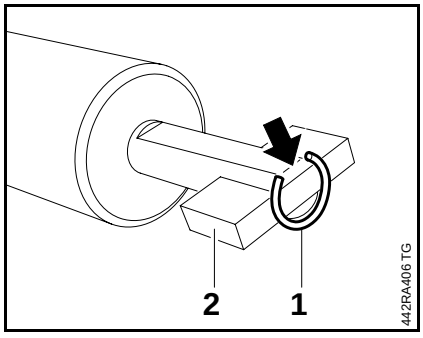


● Remove sleeve (1) 5910 893 1706 from assembly tool (2) 5910 890 2212.

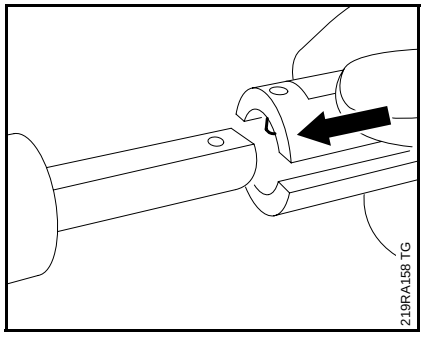


● Press assembly tool down in the sleeve until the magnet reaches the end of the guide slits.

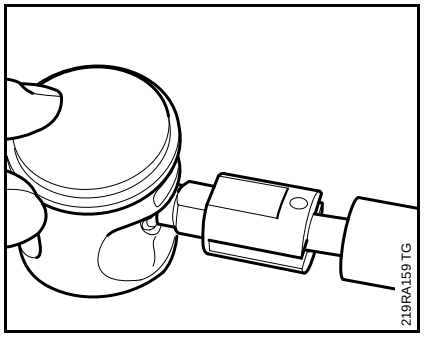
Push down onto a suitable surface.



● Place snap ring (1) against magnet (2) and align it so that the gap in the ring is on the flat side (arrow).



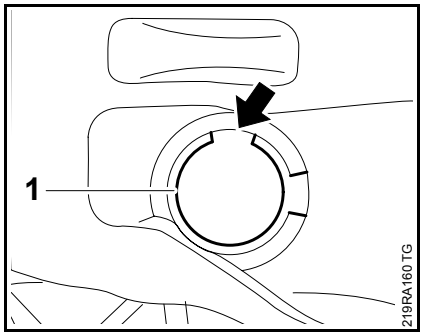
● Remove sleeve and fit it over the opposite shaft end of the assembly tool, with the internal pin pointing towards the flat surface.



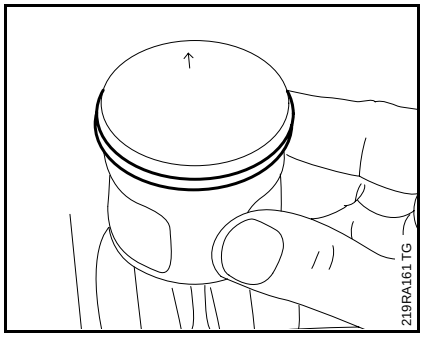
- Apply assembly tool 5910 890 2212 to the piston boss with the tapered end of the sleeve, hold the piston steady and press the tool shaft in until the snap ring engages in the groove.

The tool must be precisely lined up in axial direction of the piston pin.

This procedure must be performed for both sides, as the piston has a snap ring on each side.



The snap ring (1) must be fitted so that the gap in the ring (arrow) points upwards or downwards in axial direction of the piston.



– Examine piston rings, replace if necessary, 🕮 8.8.

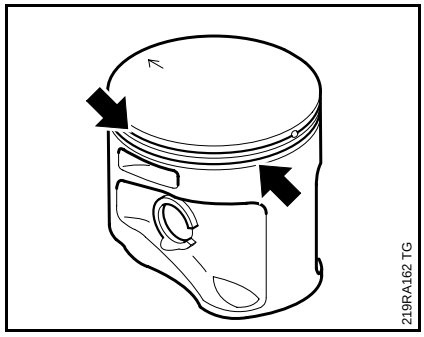
– Install cylinder, 🕮 8.5.

– Reassemble all other parts in the reverse sequence.

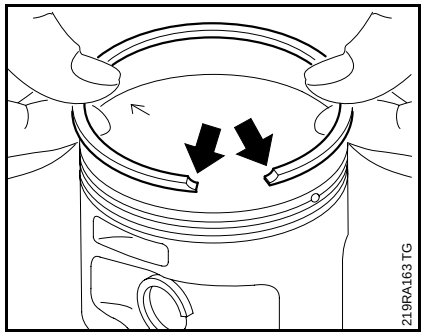
– Tightening torques, 🕮 3.5.

– Remove piston, 🕮 8.7.1.

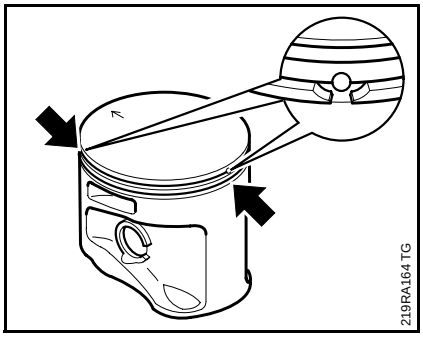
– Remove piston rings from piston.



- Scrape the grooves clean with a piece of old piston ring.



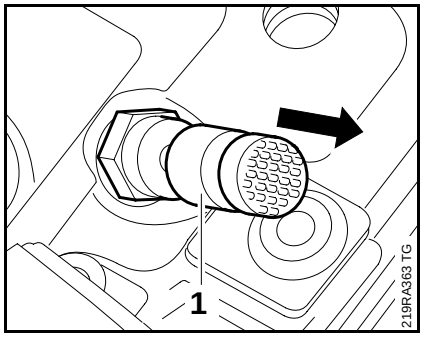
- Fit the new piston rings so that the ground radii (arrows) at the ring gap face upwards.



- Install the piston rings so that the ground radii at the ring gap meet at the fixing pin in the piston groove (arrows).
- Ensure that the piston rings are positioned correctly (arrows).

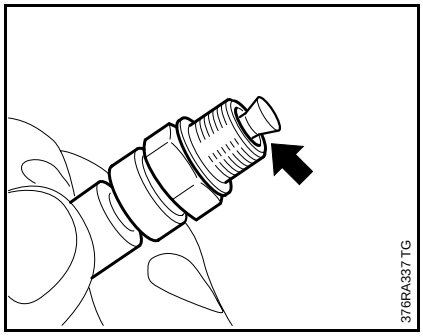
– Install piston, 🕮 8.7.

– Reassemble all other parts in the reverse sequence.



– Remove shroud, 🕮 8.4.

- Unscrew decompression valve (1).



- Examine sealing cone (arrow) on decompression valve for signs of damage.

The decompression valve must be replaced if the sealing cone on the decompression valve does not close completely or is damaged.

– Fit decompression valve and screw in by hand.

– Tighten down decompression valve.

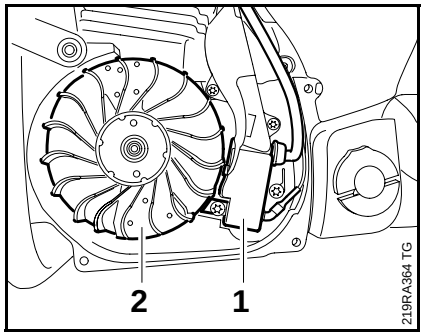
– Tightening torques, 🕮 3.5.

– Reassemble all other parts in the reverse sequence.

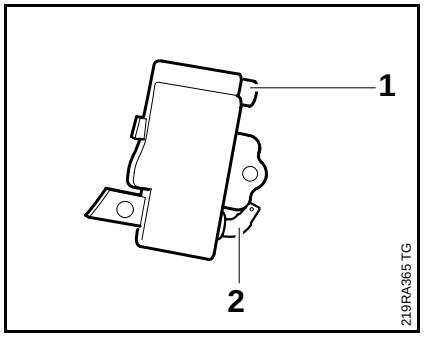
Great care must be taken when looking for faults and when carrying out maintenance and repair work on the ignition system. The high voltages encountered can cause serious or even fatal accidents.

Troubleshooting on the ignition system should always start with the spark plug, 🕮 4.5.

– Remove fan housing, 🕮 10.2.



The electronic breakerless ignition system essentially comprises the ignition module (1) and flywheel (2).



The ignition module accommodates all the components required to control the ignition timing. Only two electrical connections emerge from the ignition module.

– High-voltage output (1) with permanently connected ignition lead.

– Connector tag (2) for short circuit wire.

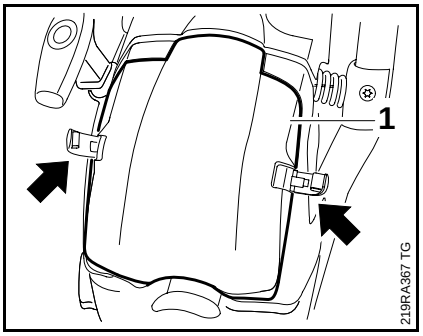
Testing of the ignition module only encompasses a spark test. The ignition module must be replaced if an ignition spark is not obtained (although wiring and stop switch are intact).

The ignition timing is fixed and cannot be adjusted.

Since there is no mechanical wear in these systems, the ignition timing cannot become maladjusted during operation.

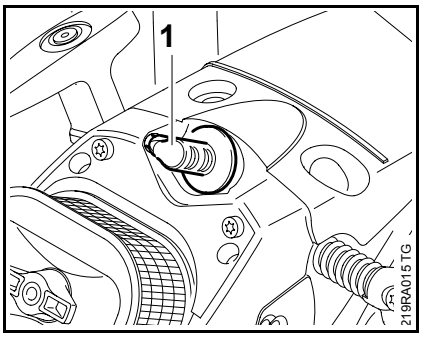
– Remove fan housing, 🕮 10.2.

– Remove pre-separator, 🕮 9.7.

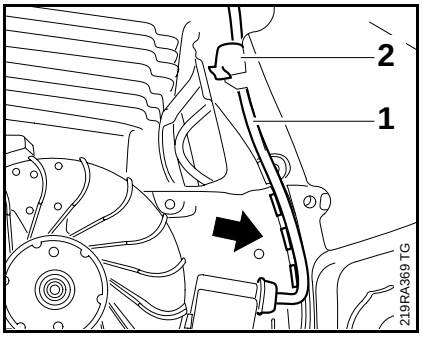


– Release clamps (arrows).

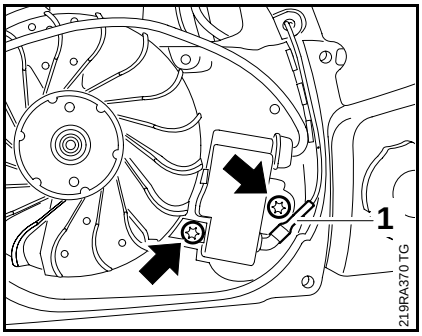
● Remove carburetor box cover (1).



● Pull boot off spark plug (1).

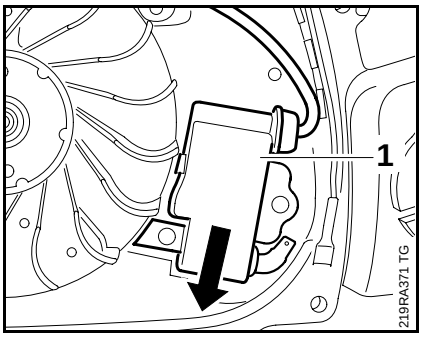


● Remove ignition lead (1) from rubber buffer (2) and cable guide (arrow).

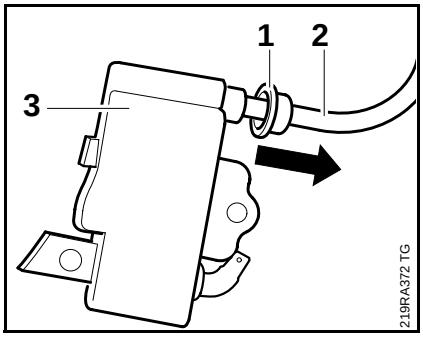


● Disconnect short circuit wire (1).

● Take out screws (arrows).



● Remove ignition module (1).



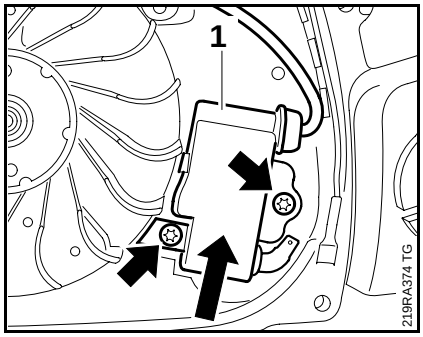
- Slide grommet (1) away from ignition module.
- Unscrew ignition module from ignition lead (2).

– Examine ignition module (3), replace if necessary.

– Examine spark plug boot and ignition lead, replace if necessary, 🕮 9.4.

– Reassemble in the reverse sequence.

– Troubleshooting chart, 🕮 4.5.



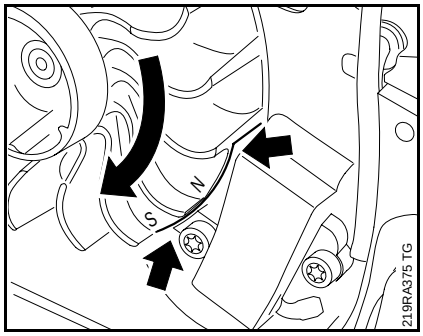
- Fit ignition module (1) and insert screws (arrows), but do not tighten them down yet.

– Press ignition module against setting gauge.

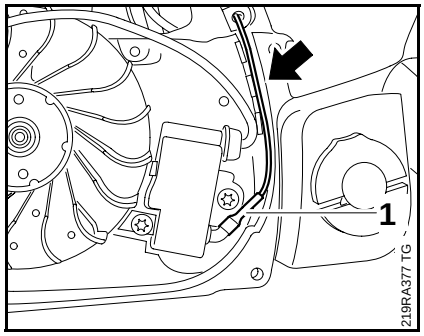
– Tighten screws.

– Tightening torques, 🕮 3.5.

– Pull out setting gauge.

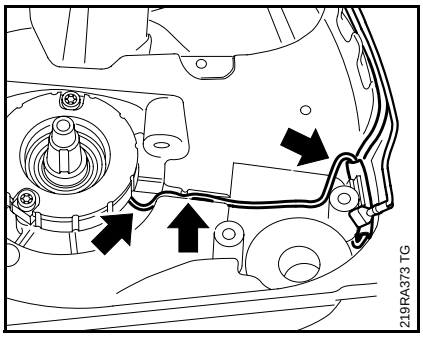


- Turn flywheel until the magnets (arrows) are beside the ignition module.

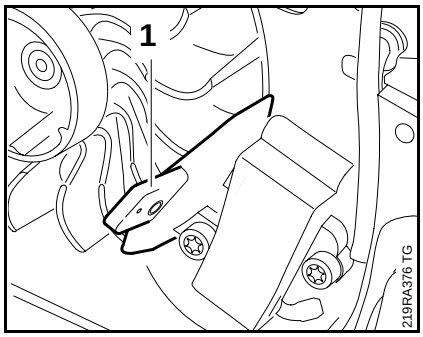


- Connect short circuit wire (1) and press it into the guide (arrow).

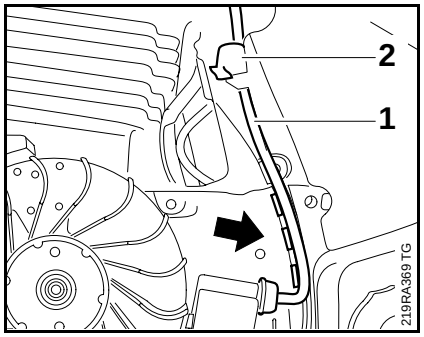
– Fit wiring harness with short circuit wire in machines with handle heating, 🕮 15.8.2 and 🕮 9.6.2.



- Before installing the ignition module in machines with handle heating, ensure that the generator lead (arrows) has been fitted correctly, 🕮 15.7.



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



- Press ignition lead (1) into rubber buffer and cable guides (arrow).

– Press boot onto spark plug.

– Reassemble all other parts in the reverse sequence.

9.2 Ignition timing

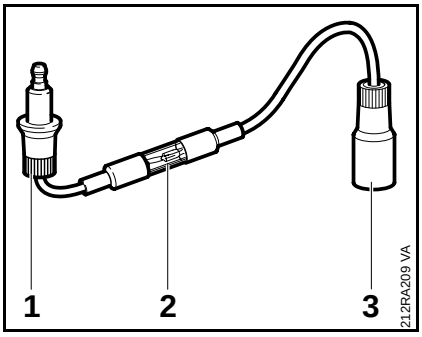
The ignition timing is fixed and cannot be adjusted.

Since there is no mechanical wear in these systems, the ignition timing cannot become maladjusted during operation.

9.3 Testing the ignition module

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 system tester 5910 850 4503

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

– Tightening torques, 🕮 3.5.

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

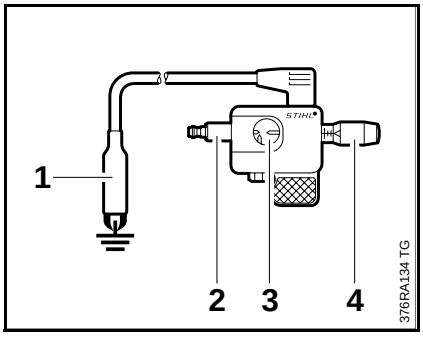
Beware of electric shocks due to the high voltage.

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

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, 🕮 9.8.



Using the ZAT 3 ignition system tester 5910 850 4520

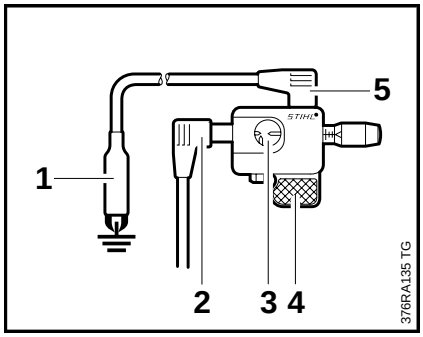
– Before starting the test, install a new spark plug and tighten it down firmly.

– Tightening torques, 🕮 3.5.

● Connect spark plug boot to terminal (2).

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

● Use adjusting knob (4) to set the spark gap to approx. 2 mm, see window (3).



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

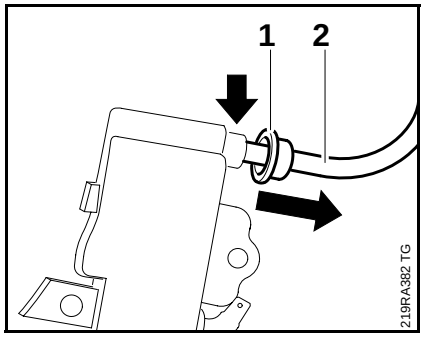
Beware of electric shocks due to the high voltage.

– Crank the engine quickly with the rewind starter and check the spark in the tester's window (3).

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, 🕮 9.8.

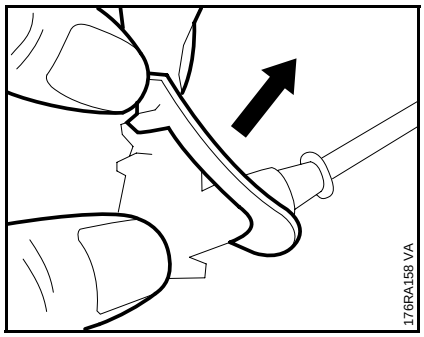


– Remove ignition module, 🕮 9.1.1.

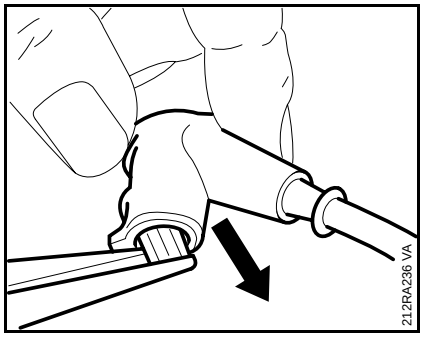
● Pull grommet (1) off high-voltage connection (arrow).

– Unscrew ignition lead (2) from contact pin and pull it out of the high-voltage connection.

– Pull grommet (1) off ignition lead.



● Peel cover off spark plug boot.



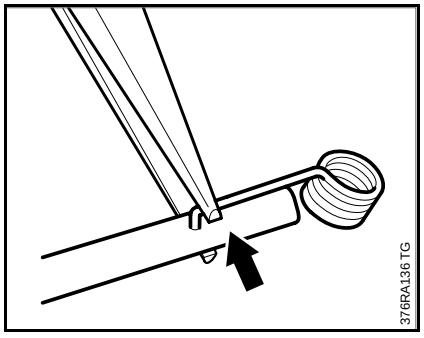
- Use suitable pliers to pull leg spring out of spark plug boot.

– Unhook leg spring from ignition lead.

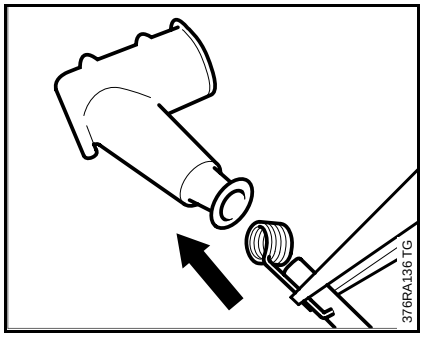
– Pull boot off ignition lead.

– Cut new ignition lead to the specified length.

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

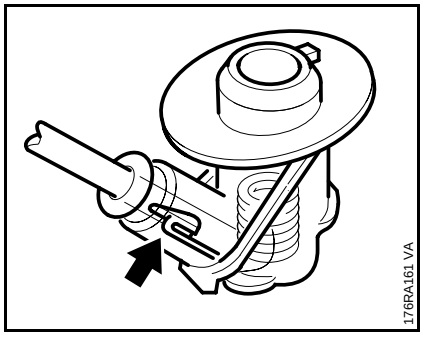


- Pinch the hook of the leg spring into the centre of the lead (arrow).



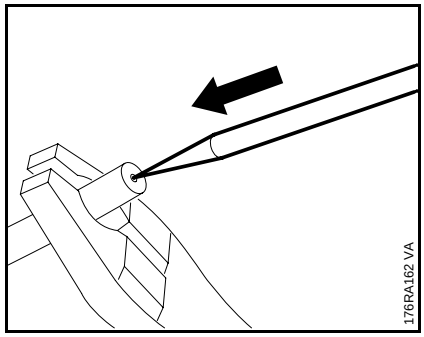
– Coat the inside of the spark plug boot with STIHL Press Fluid, 🕮 17.

- Hold ignition lead together with leg spring and push them into the spark plug boot.



- Make sure that the leg spring is properly located in the spark plug boot (arrow).

– Slide cover back over spark plug boot.



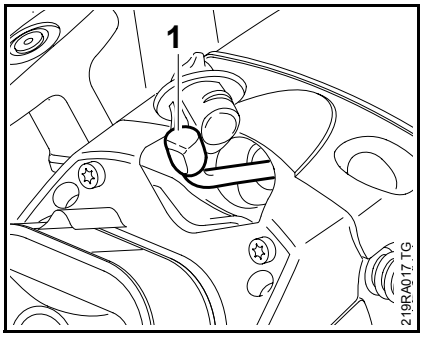
- Pierce the end of the ignition lead to be screwed into the ignition module with a pointed tool.

– Slide grommet into place.

Do not use either graphite grease or silicone insulating paste.

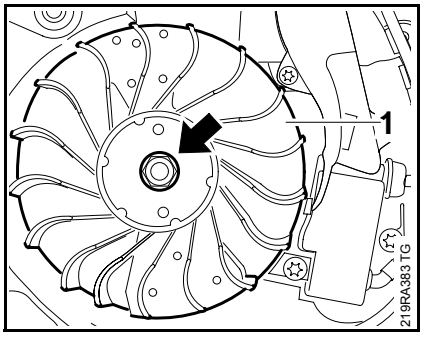
– Install ignition module and adjust clearance between ignition module and flywheel, 🕮 9.1.

– Reassemble all other parts in the reverse sequence.

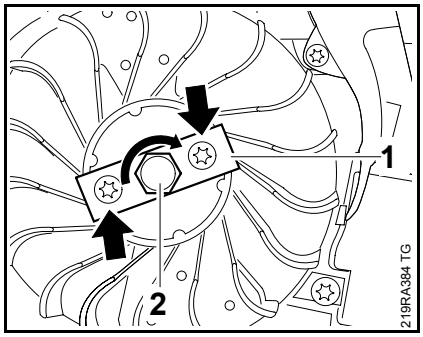


– Remove fan housing, 🕮 10.2.

– Block piston with locking strip (1), 🕮 6.



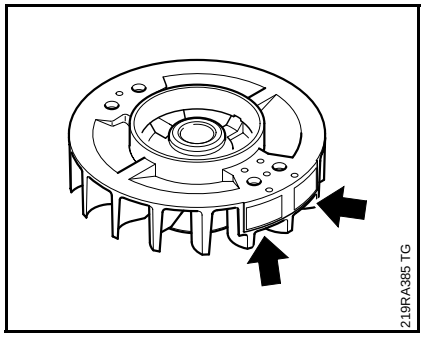
● Unscrew collar nut (arrow).



● Turn screws of puller (1) 1135 890 4500 into the holes (arrows) of the flywheel until the puller makes contact. Ensure that the screws are turned in uniformly.

● Turn screw (2) clockwise until the flywheel is released from the crankshaft stub.

– Unscrew puller (1) 1135 890 4500 from the flywheel.



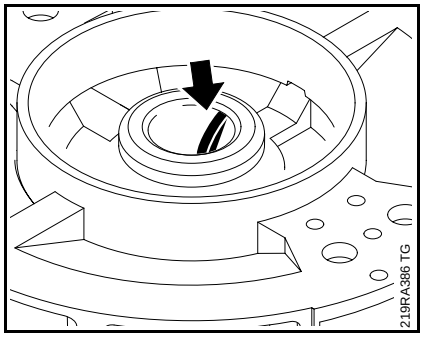
Flywheel and magnet poles (arrows) must not show any signs of damage or discoloration, otherwise the flywheel must be replaced.

The magnet ring must also be examined for signs of damage in machines with handle heating, 🕮 15.7.

Flywheel and crankshaft stub must be free from grease for installation.

Degrease crankshaft stub and bore in flywheel hub with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

– Reassemble in the reverse sequence.

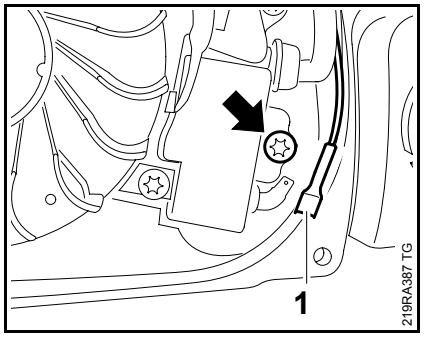


- Make sure that the machined key (arrow) engages the slot in the crankshaft.

– Adjust clearance between ignition module and flywheel, 🕮 9.1.1.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



If spark plug, ignition lead and spark plug boot are in order, test the short circuit wire.

– Remove fan housing, 🕮 10.2.

- Disconnect short circuit wire (1).

– Connect ohmmeter to ground (arrow) and short circuit wire (1).

– Set switch shaft to "0".

The measured resistance must be approx. 0 Ω. If the value is significantly higher, a break has occurred and the wire must be replaced, 🕮 9.6.2.

– Set switch shaft to "I".

The measured resistance must be infinitely high, otherwise replace the short circuit wire, 🕮 9.6.2.

Test ignition system in accordance with flow chart if no fault is found, 🕮 9.8.

– Reassemble in the reverse sequence.

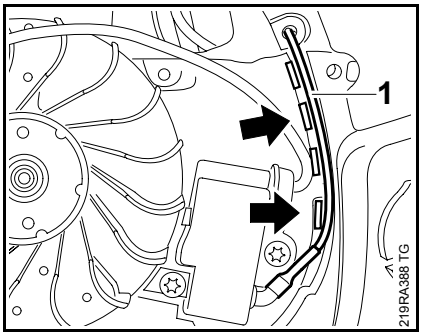
– Remove fan housing, 🕮 10.2.

– Remove ignition lead from guide, 🕮 9.1.1.

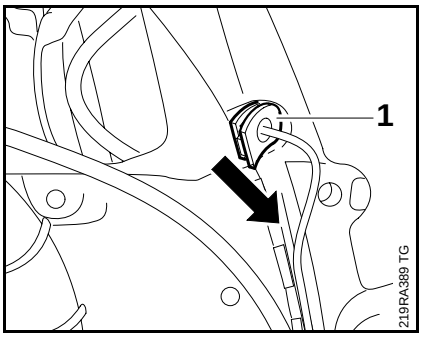
– Remove filter base, 🕮 14.1.2.

– Remove switch shaft, 🕮 12.1.

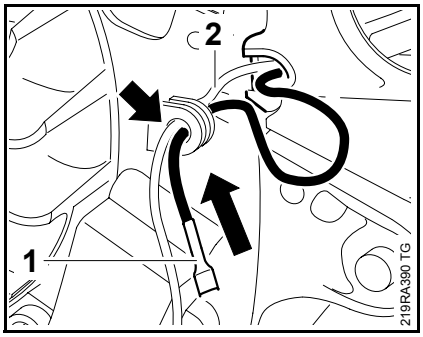
– Remove carburetor support, 🕮 14.6.1.



- Disconnect short circuit wire (1) and remove it from the cable guide (arrows).

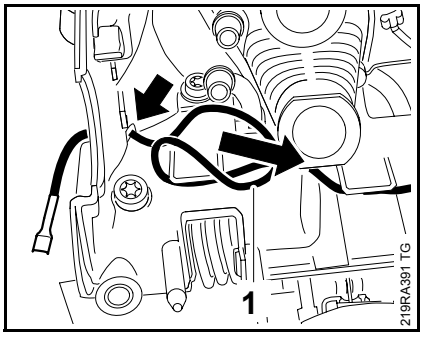


- Ease out the grommet (1).



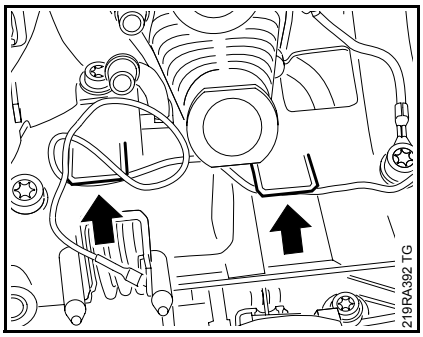
- Pull short circuit wire (1) out of the grommet (arrow).

The wiring harness (2) is additionally drawn through the grommet in machines with handle heating, 🕮 15.8.

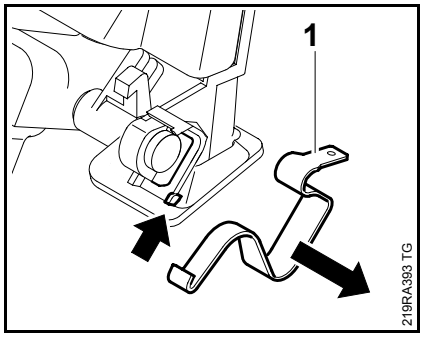


- Pull short circuit wire (1) out through the recess (arrow).

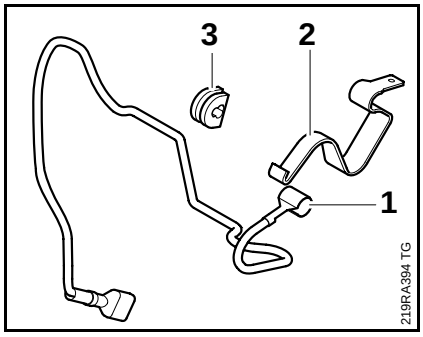
– Pull short circuit wire out of the guides below the carburetor support.



– Take short circuit wire out of the guides (arrows).

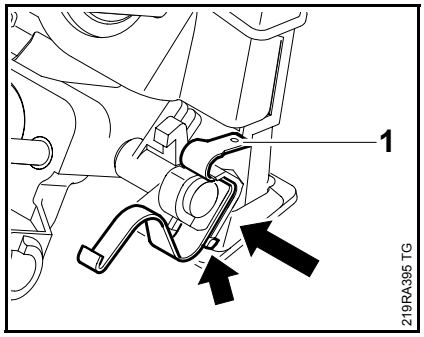


- Carefully push retaining lug (arrow) aside and pull out contact spring (1).



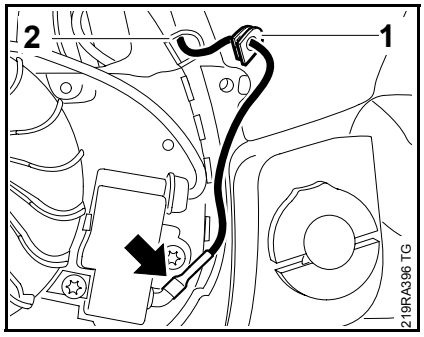
- Examine short circuit wire (1), contact spring (2) and grommet (3), replace if necessary.

The wiring harness must additionally be pulled off the generator lead in order to replace the grommet in machines with handle heating, 🕮 15.8.

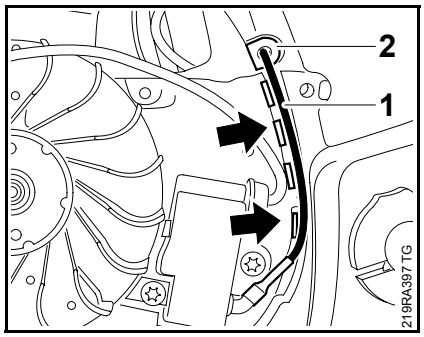


- Push contact spring (1) fully home in the guide.

Ensure that the contact spring is secured by the retaining lug (arrow).



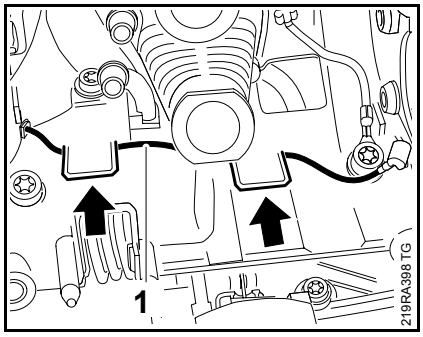
- Slide the short circuit wire through the opening (2) and grommet (1), then connect it to the ignition module (arrow).



– Fit the short circuit wire in the guides, starting at the ignition module.

- Press short circuit wire (1) in guides (arrows).

– Press grommet (2) in until it completely encloses the opening.



● Lay the short circuit wire (1) flat in the guides (arrows).

Press the short circuit wire home in the guides with a narrow, blunt tool.

– Ensure that the short circuit wire is correctly located in the guides during the further assembly work.

– Reassemble in the reverse sequence.

– Tightening torques, 🕮 3.5.

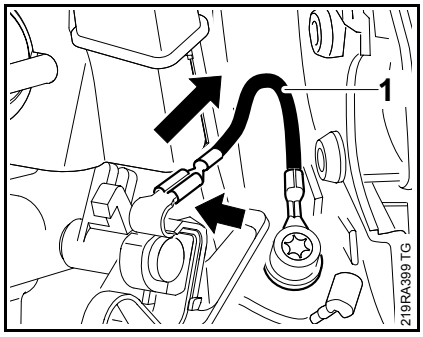
Functioning of the short circuit wire, as well as of the heaters in machines with handle heating, may be impaired or made impossible by a faulty ground wire.

The ground wire must be removed and tested for contact and continuity.

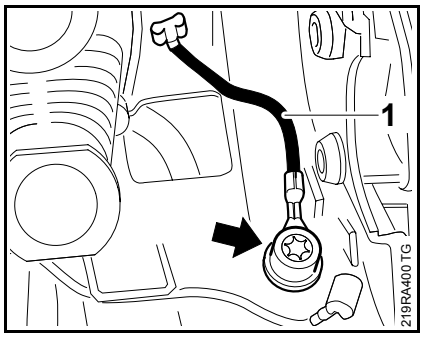
– Remove filter base, 🕮 14.1.2.

– Pull out switch shaft, 🕮 12.1.

– Remove carburetor support, 🕮 14.6.1.

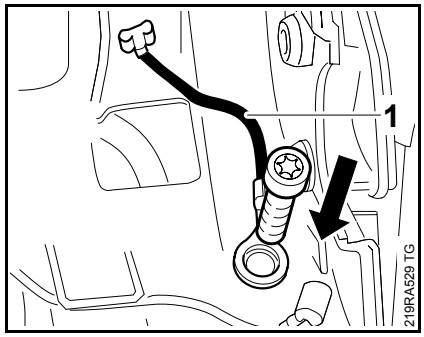


● Disconnect ground wire (1) from contact spring (arrow).



● Take out screw (arrow).

– Remove and examine ground wire (1), replace if necessary.

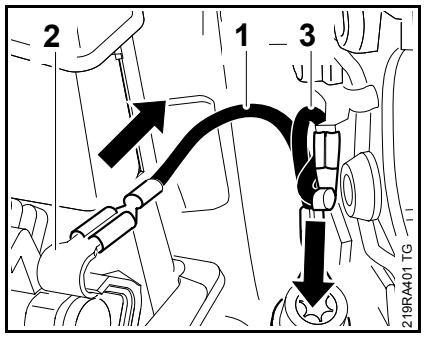


● Fit ground wire (1) and support eyelet at supporting rib (2).

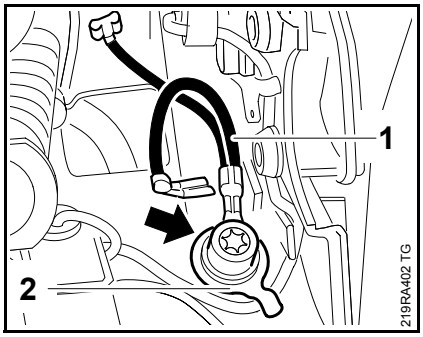
● Fit screw (3) and tighten it down.

– Reassemble all other parts in the reverse sequence.

Machines with handle heating

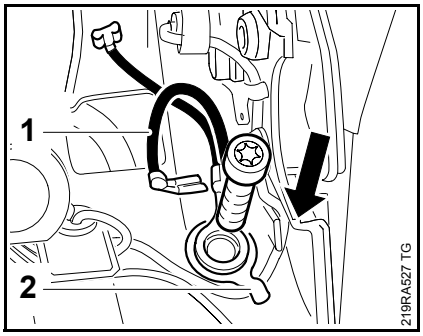


● Disconnect ground wire (1) from contact spring (2) and terminal socket (3).

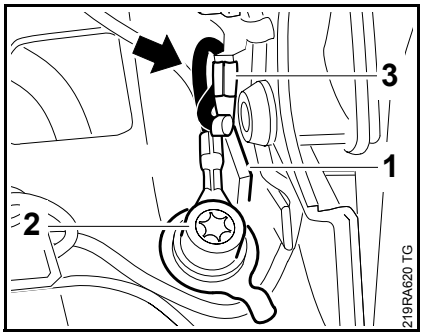


- Take out screw (arrow).

– Remove and examine ground wire (1) and cable guide (2), replace if necessary.



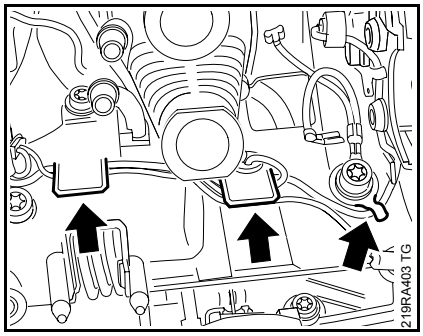
- Fit ground wire (1) and cable guide (2) and insert screw.



– Support eyelet at supporting rib (1).

- Insert screw (2) and tighten it down.

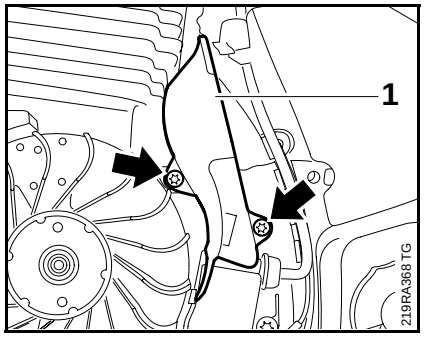
- Push connector (3) onto the terminal socket so that it is out of line in counterclockwise direction – the loop (arrow) must face the housing wall.



- Wiring harness and short circuit wire must lie flat in the guides (arrows).

– Reassemble all other parts in the reverse sequence.

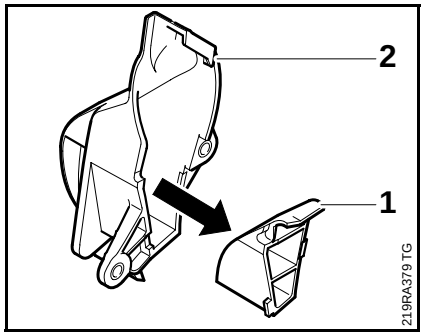
– Tightening torques, 🕮 3.5.



– Remove fan housing, 🕮 10.2.

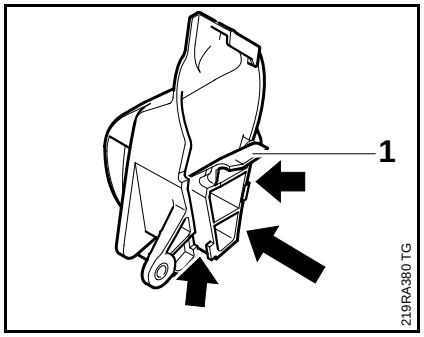
- Take out screws (arrows).

– Slide pre-separator (1) up slightly and take it out.

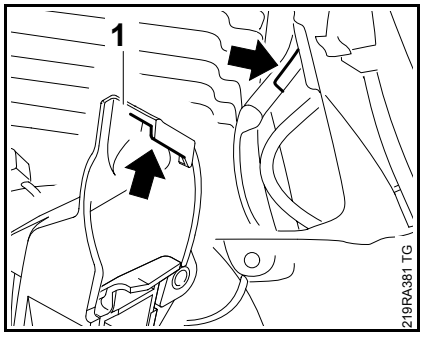


- Pull out duct base (1).

– Examine pre-separator (2) and duct base (1) and replace if necessary.



- Push duct base (1) fully home in the recesses (arrows).



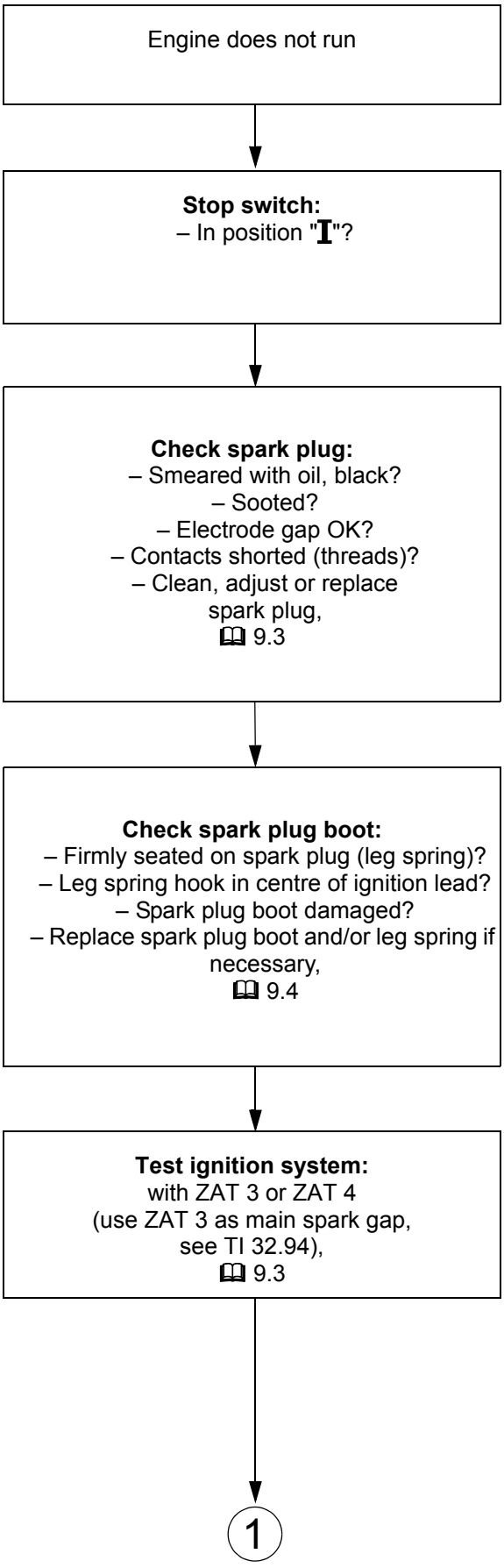
- Hook pre-separator (1) into the carburetor housing (arrows) and fit it in position.

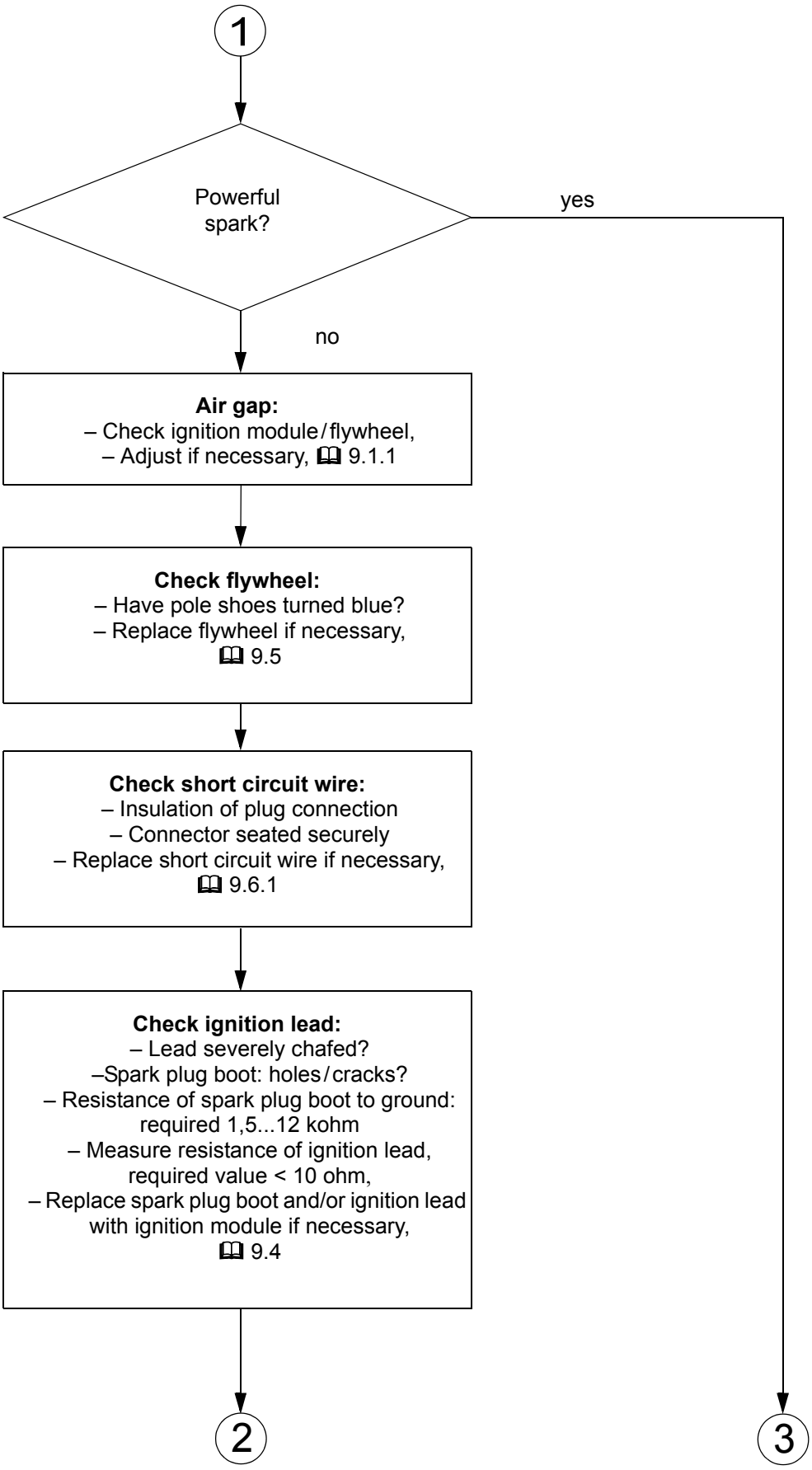
– Insert screws and tighten them down.

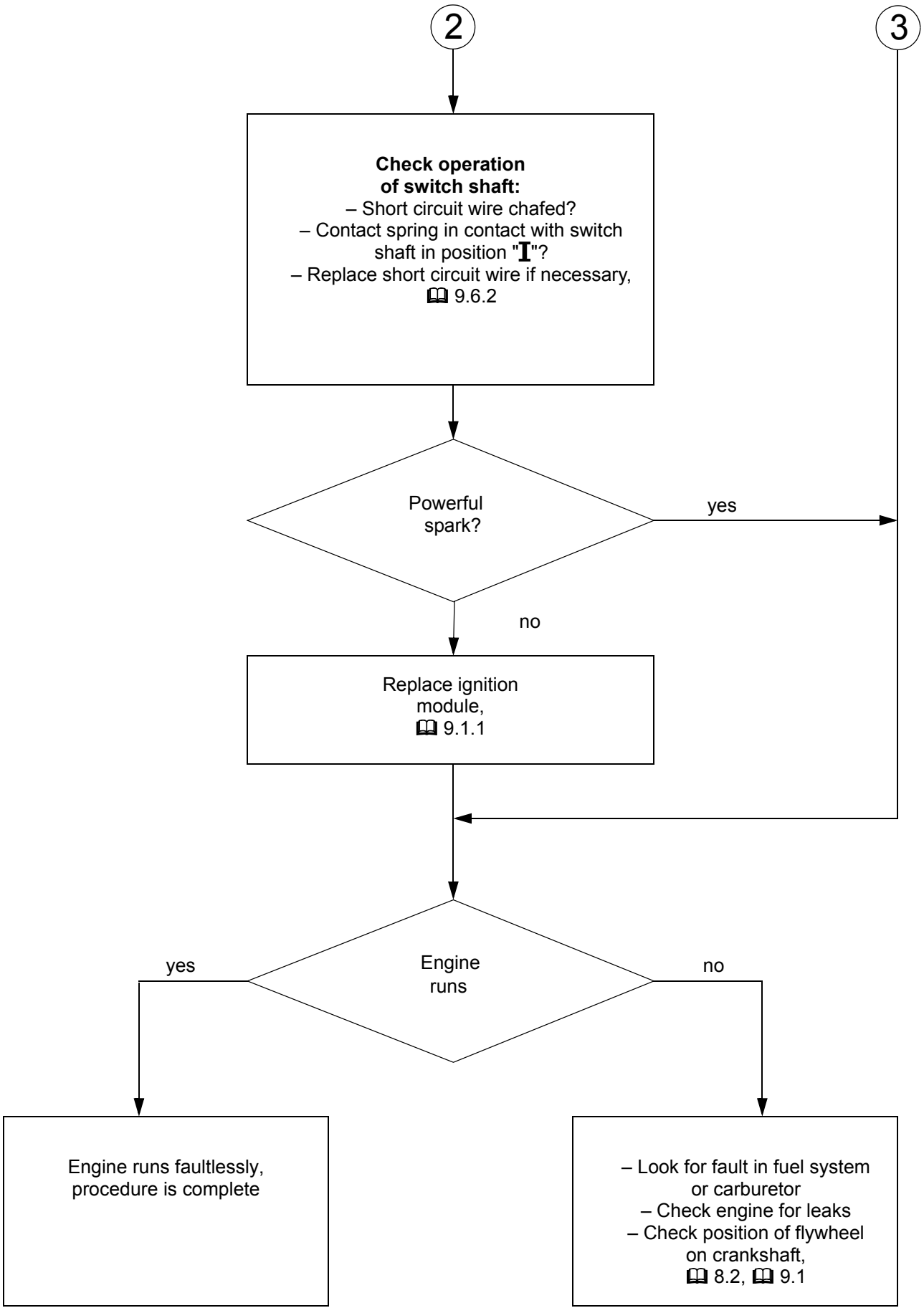
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

9.8 Troubleshooting chart, ignition system




1
Powerful spark?
yes
no
Air gap:
– Check ignition module / flywheel,
– Adjust if necessary, 🕮 9.1.1
Check flywheel:
– Have pole shoes turned blue?
– Replace flywheel if necessary,
🕮 9.5
Check short circuit wire:
– Insulation of plug connection
– Connector seated securely
– Replace short circuit wire if necessary,
🕮 9.6.1
Check ignition lead:
– Lead severely chafed?
–Spark plug boot: holes / cracks?
– Resistance of spark plug boot to ground:
required 1,5...12 kohm
– Measure resistance of ignition lead,
required value < 10 ohm,
– Replace spark plug boot and/or ignition lead
with ignition module if necessary,
🕮 9.4
2
3


2
3
Check operation
of switch shaft:
– Short circuit wire chafed?
– Contact spring in contact with switch
shaft in position "I"?
– Replace short circuit wire if necessary,
🕮 9.6.2
Powerful
spark?
yes
no
Replace ignition
module,
🕮 9.1.1
Engine
runs
yes
no
Engine runs faultlessly,
procedure is complete
– Look for fault in fuel system
or carburetor
– Check engine for leaks
– Check position of flywheel
on crankshaft,
🕮 8.2, 🕮 9.1

10. Rewind starter

10.1 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.

To clean the rewind spring, it is sufficient to apply a few drops of commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons to the spring.

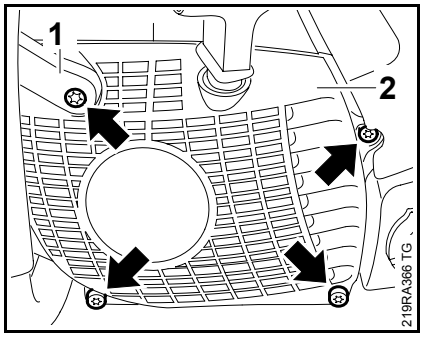
Carefully pull out the starter rope several times and let it rewind until its normal smooth action is restored.

Before installing, lubricate the rewind spring and post with STIHL special lubricant.

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.

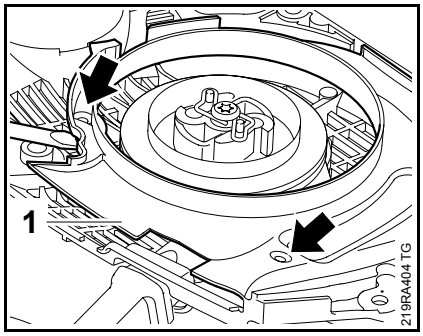
– Clean all components.

10.2 Removal and installation



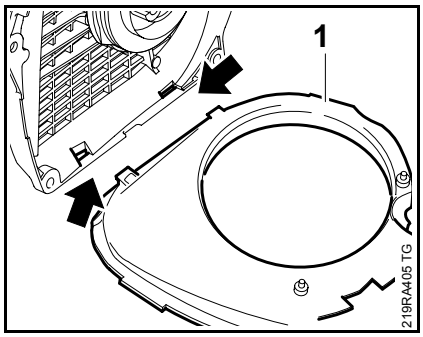
● Take out screws (arrows).

– Lift hand guard (1) slightly and remove fan housing (2).



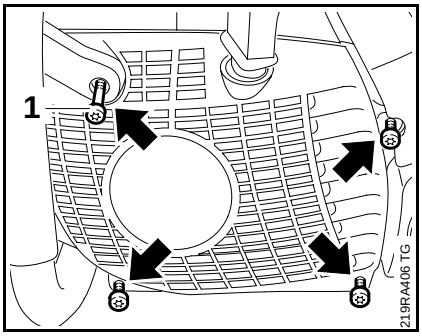
● Prise out segment (1) at the lugs (arrows) and remove the fan housing.

– Examine fan housing and segment, replace if necessary.



● First slide segment (1) into the slits (arrows) in the fan housing, then press it home on the lugs.

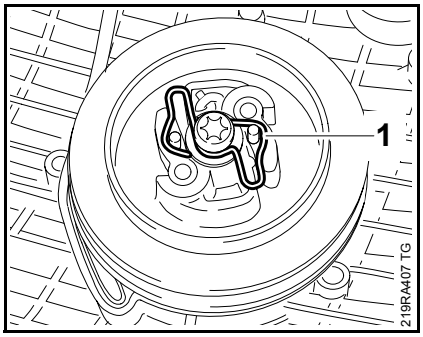
– Reassemble all other parts in the reverse sequence.



– Fit screws (arrows). The hand guard is additionally secured with the longer screw (1).

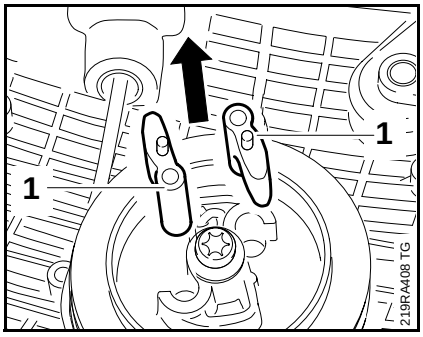
– Tighten screws.

– Tightening torques, 🕮 3.5.

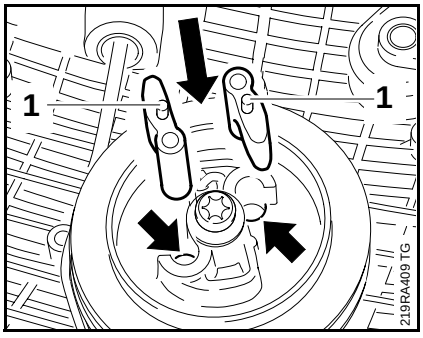


– Remove fan housing, 🕮 10.2.

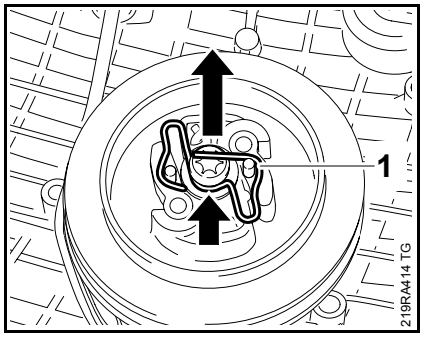
● Carefully ease spring (1) off the rope rotor post.



● Pull out pawls (1).



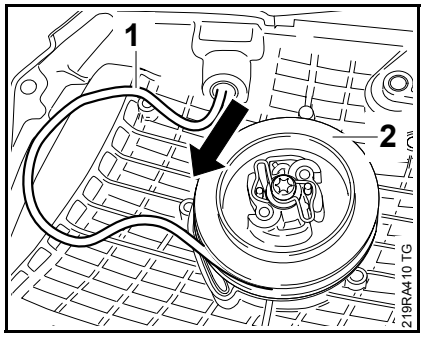
– Press new pawls into holes (arrows) and grease the pegs (1), 🕮 17.



● Position spring (1) so that its anchor loops engage the pegs of the pawls and the curved part of the spring (arrow) is located in the groove of the rope rotor post.

● Then slide the straight part of the spring over the rope rotor post until it engages in the groove.

– Reassemble all other parts in the reverse sequence.



Relieve tension of rewind spring

– Remove fan housing, 🕮 10.2.

● Pull out the starter rope (1) about 5 cm, holding the rope rotor (2) steady at the same time.

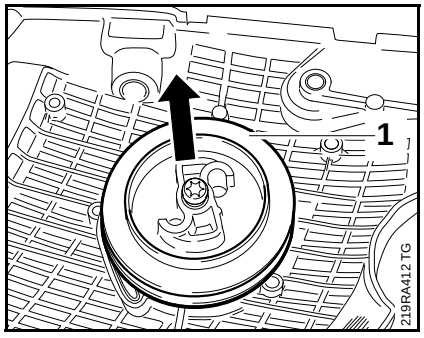
– Take three full turns off the installed rope rotor.

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

– Remove the starter rope and any remaining rope, 🕮 10.5.

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

– Remove spring and pawls, 🕮 10.3.



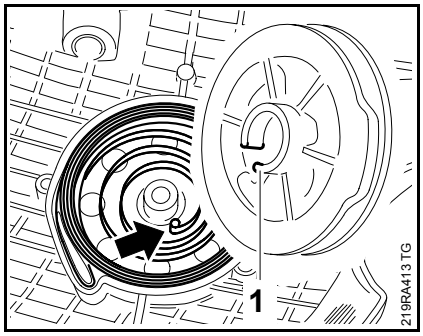
– Take out washer (1).

The rewind spring must be relieved.

- Carefully pull off rope rotor (1) – the rewind spring could pop out.

– Examine the rope rotor, replace if necessary.

– Lubricate the hole of the rope rotor with STIHL special lubricant, 🕮 17.



- Fit rotor on starter post so that inner spring loop (arrow) slips into recess (1).

The recess on the rope rotor hub serves as carrier for the spring loop.

– Fit washer.

– Install pawls and spring, 🕮 10.3.

– Install starter rope, 🕮 10.5.

– Tension rewind spring, 🕮 10.6.

– Grease pawl pegs, 🕮 17.

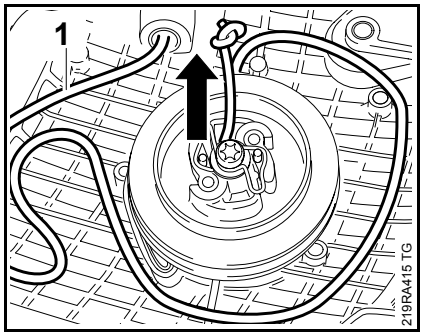
– Remove fan housing and segment, 🕮 10.2.

– Relieve tension of rewind spring, 🕮 10.4.

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

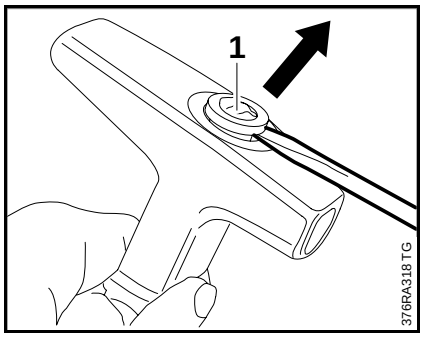
– Remove any remaining rope from the rope rotor and starter grip.

The starter rope must not be shortened.

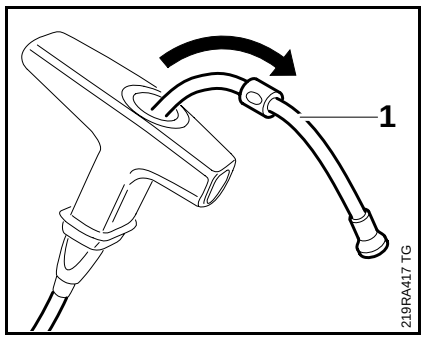


- Push starter rope (1) out a short distance and undo the knot.

– Pull starter rope out of rope rotor and fan housing.

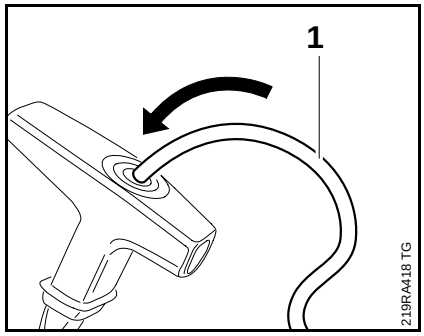


- Prise off the nipple (1) with a suitable tool.



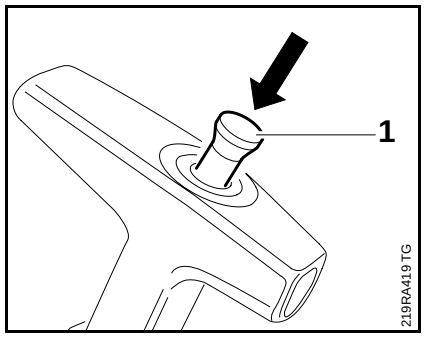
- Pull rope or remaining rope (1) out of the starter grip.

Do not shorten the starter rope.



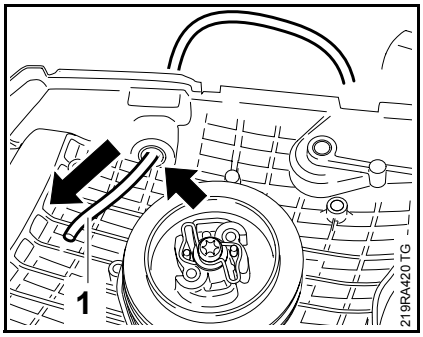
- Push new starter rope (1) into the top of the grip.

– Pull starter rope through starter grip completely.

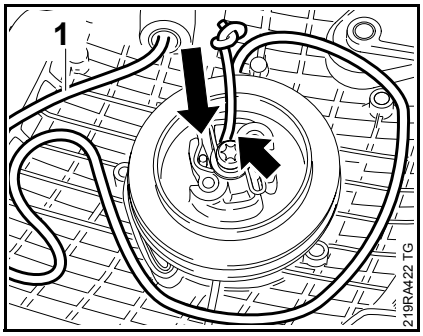


- Press nipple (1) firmly into starter grip until it engages.

10.6 Tensioning the rewind spring



● Then pull starter rope (1) through the opening (arrow).



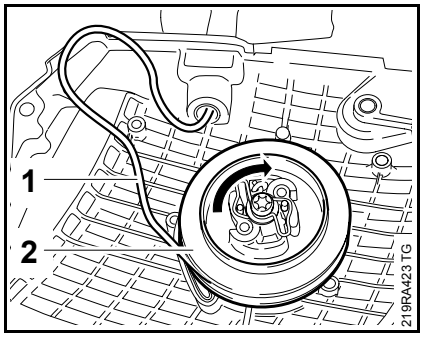
– Thread starter rope (1) into rope rotor.

● Tie a simple knot in the end of the starter rope (1).

– Pull rope into rotor until the knot rests in the recess (arrow) of the rope rotor.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



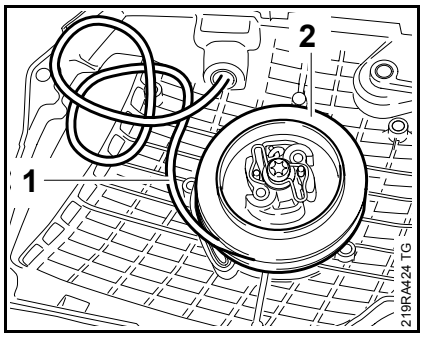
– Remove fan housing and segment, 🕮 10.2.

● Pull out part of the starter rope (1).

● Turn rope (1) with rope rotor (2) six times clockwise.

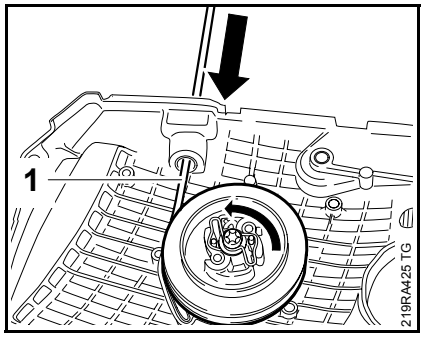
The rope is twisted as the rope and rope rotor are turned. The rewind spring is now tensioned.

Hold the tensioned rope rotor securely as it may damage the rewind spring if it pops back abruptly.



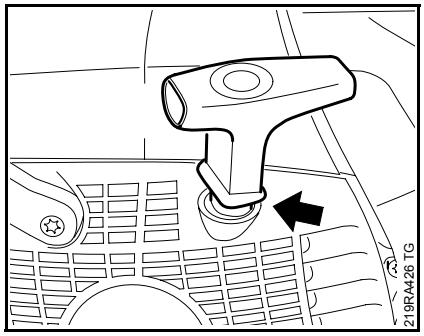
– Hold rope rotor (2) securely.

● Pull out the rope (1) 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 let the starter rope rewind on the rope rotor.



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 turn the rope rotor at least another half-turn before maximum spring tension is reached. If this is not the case, the spring tension must be relieved otherwise the spring will break.

To relieve the spring tension:
Pull the rope out, hold the rope rotor steady and take off one turn of the rope.

– Install fan housing, 🕮 10.2.

– Tightening torques, 🕮 3.5.

– Troubleshooting, 🕮 4.4.

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

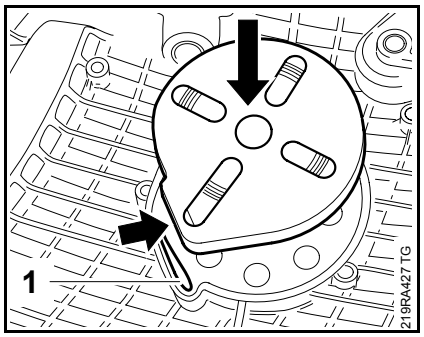
Wear a face shield and protective gloves.

– Remove fan housing and segment, 🕮 10.2.

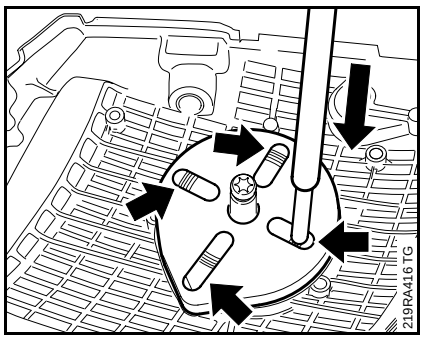
– Relieve tension of rewind spring if necessary and remove rope rotor, 🕮 10.4.

– Remove any remaining scraps of the old spring.

– Lubricate rewind spring with a few drops of STIHL special lubricant before installing it, 🕮 17.



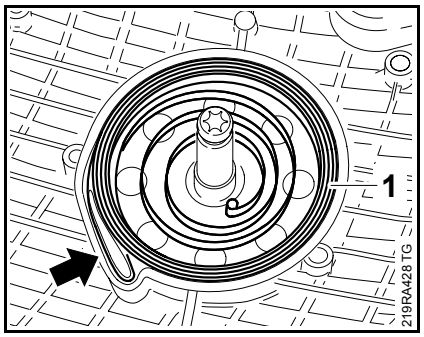
● Position the replacement spring with frame so that the anchor loop (arrow) is over the fixture (1).



● Apply suitable tools (screwdriver, punch, etc.) at the recesses (arrows) and push the spring into its seat in the housing. The spring slips out of its frame.

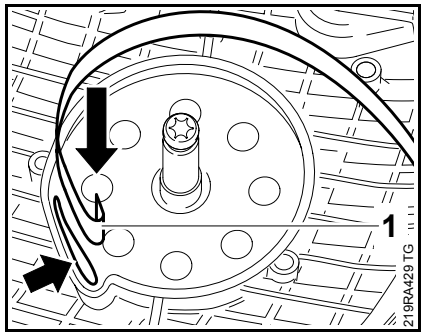
– Remove frame.

The rewind spring may pop out.



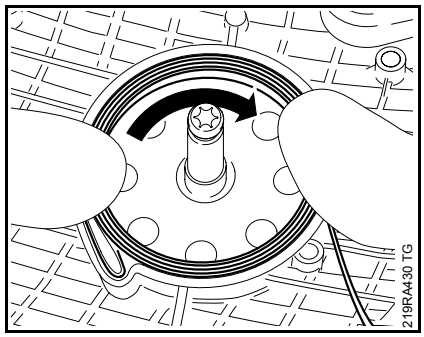
Make sure that the new rewind spring (1) is fully inserted and the anchor loop is located in the fixture (arrow).

If the rewind spring pops out, fit it in the fan housing as follows:



– Arrange spring (1) in its original position as illustrated.

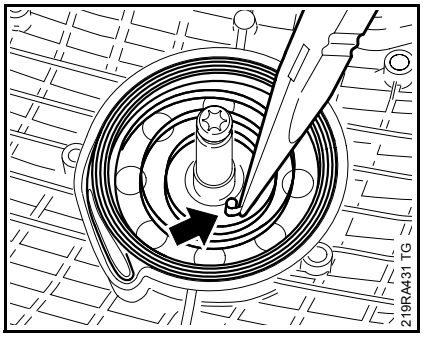
● Position the anchor loop in the fixture (arrow).



● Fit rewind spring (1), working in circular fashion in clockwise direction.

● Hold the fitted spring turns to prevent them popping out.

10.8 Starter rope guide bushing



– Make sure the rewind spring cannot pop out.

● Use suitable pliers to align the inner spring loop (arrow) so that it rests against the rope rotor post at a slight angle.

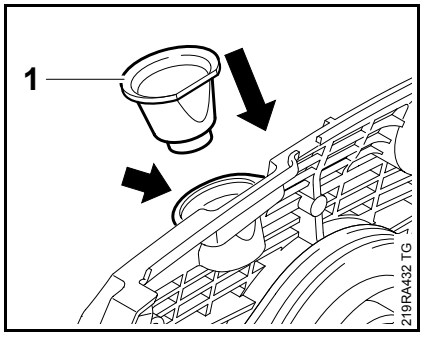
– Install rope rotor, 🕮 10.4.

– 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.

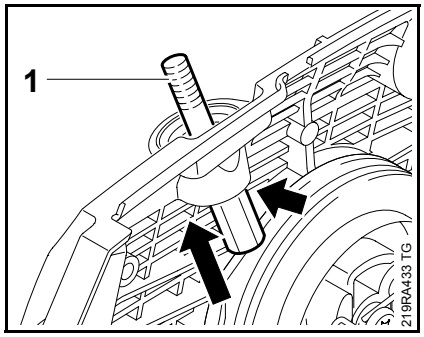
– Remove fan housing, 🕮 10.2.

– Relieve the tension of the rewind spring and remove starter rope, 🕮 10.4.

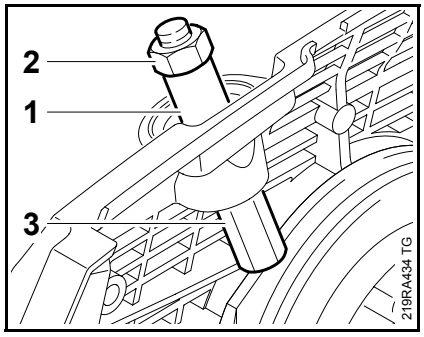


– Use a suitable tool to remove the defective guide bushing.

● Insert new guide bushing (1) in the hole of the fan housing.



● Insert screw spindle (1) of assembly tool 0000 890 2201 through the starter rope guide bushing from the inside (arrow) outwards.



● Fit thrust sleeve (1) and screw on hex nut (2).

● Tighten down hex nut, holding screw (3) steady until the bushing is tight.

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

– Remove assembly tool.

– Reassemble all other parts in the reverse sequence.

11. Anti-vibration system, repair

11.1 Annular buffers

The front handle/tank housing and engine housing are connected by vibration-damping rubber buffers and springs.

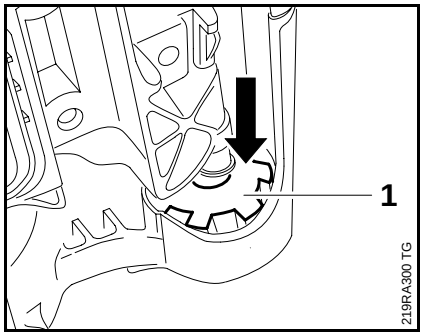
Damaged rubber buffers (annular buffers) and springs must always be replaced as a matter of principle.

Defective annular buffers must be replaced.

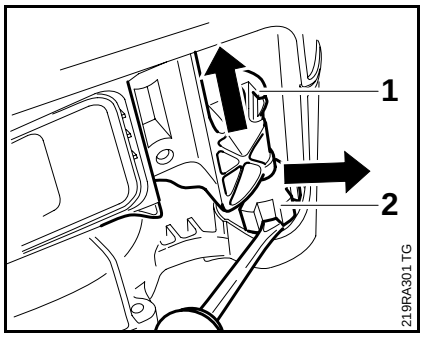
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove anti-vibration spring on oil tank, 🕮 11.3.1.

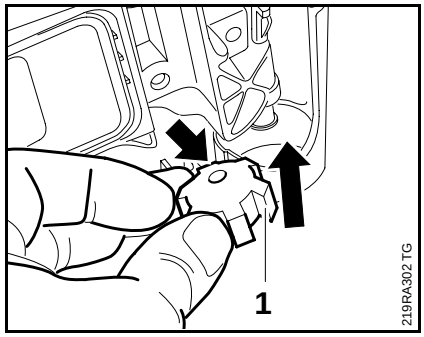
– Remove front handle, 🕮 11.5 Machines with handle heating, 🕮 11.5.1.



● Push annular buffer (1) off peg on tank housing.

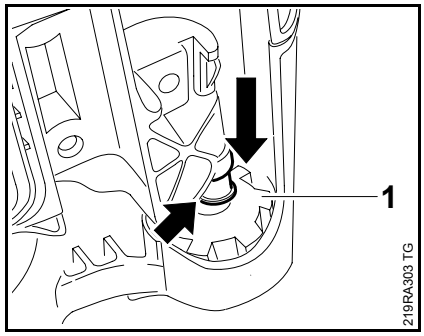


● Push tank housing (1) aside and prise off annular buffer (2).



– Hold annular buffer (1) so that the tapered side (arrow) faces the tank housing.

● Insert annular buffer (1) between tank housing and crankcase.



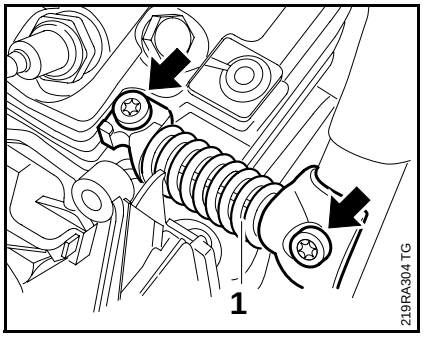
– Use STIHL Press Fluid for easier insertion, 🕮 17.

● Push peg (arrow) of tank housing as far as possible into annular buffer (1).

– Reassemble in the reverse sequence.

– Tightening torques, 🕮 3.5.

11.2 Anti-vibration spring, front handle



– Remove shroud, 🕮 8.4.

● Take out screws (arrows).

– Remove and examine anti-vibration spring (1), replace if necessary.

– Reassemble in the reverse sequence.

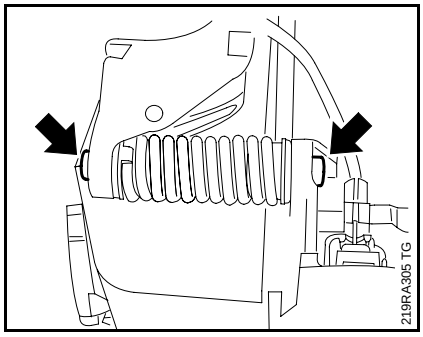
– Tightening torques, 🕮 3.5.

11.3 Anti-vibration spring, fuel tank

– Remove fan filter, 🕮 14.1.

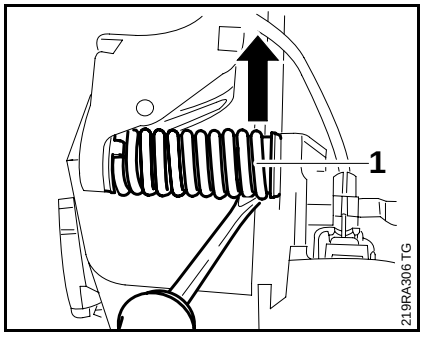
– Remove spacer flange, 🕮 14.2.

For reasons of simplicity, the carburetor housing is not shown in the following illustrations.

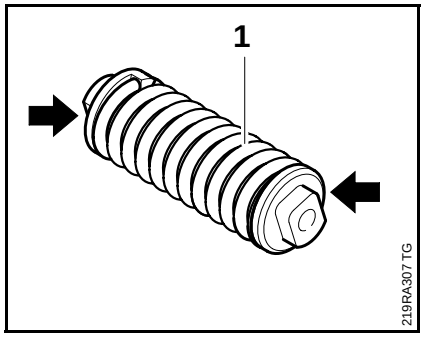


– Remove anti-vibration spring on front handle, 🕮 11.2.

● Take out screws (arrows).

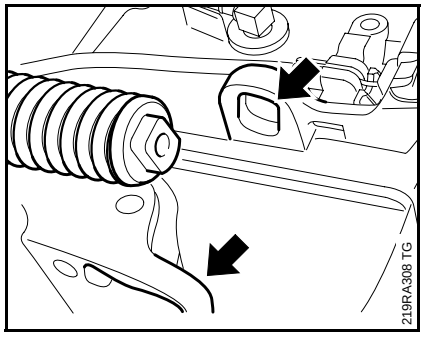


● Prise off anti-vibration spring (1).



– Examine anti-vibration spring, replace if necessary.

● Ensure that spring (1) is fully screwed into the bearing plugs (arrows).



● Install anti-vibration spring so that it engages the mounts (arrows).

– Fit screws.

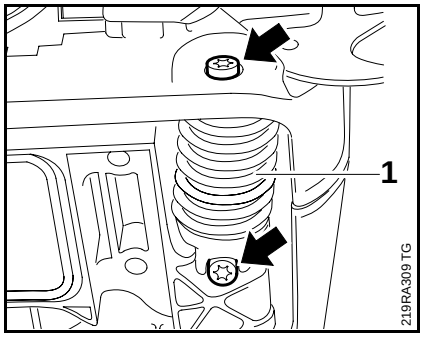
– Ensure that bearing points are correctly seated during installation.

– Tighten screws.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

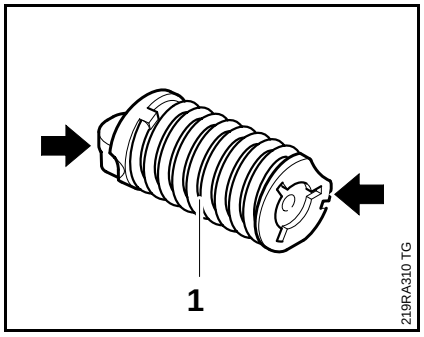
11.3.1 Anti-vibration spring, oil tank



– Remove chain catcher, 🕮 6.

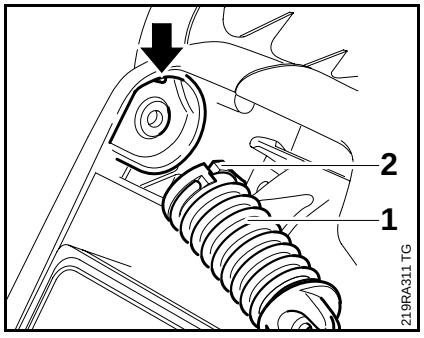
● Take out screws (arrows).

– Prise off anti-vibration spring (1).

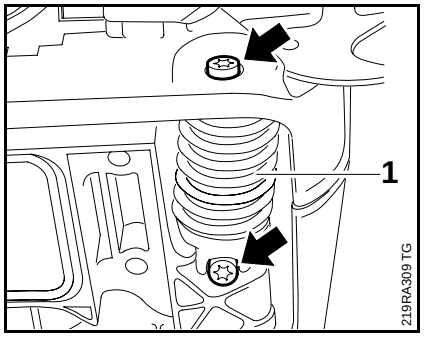


– Examine anti-vibration spring, replace if necessary.

● Ensure that spring (1) is fully screwed into the bearing plugs (arrows).



● Position anti-vibration spring (1) so that the form of the bearing plug (2) engages the mount in the crankcase (arrow).



– Press anti-vibration spring (1) into bearing seat in tank housing.

● Fit screws (arrows) and tighten them down.

– Tightening torques, 🕮 3.5.

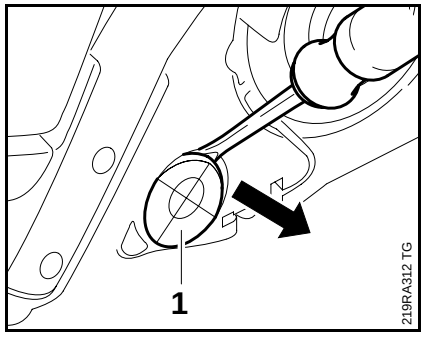
– Reassemble all other parts in the reverse sequence.

11.4 Stop buffers

The stop buffers are located between tank housing and crankcase and are installed on the ignition and clutch sides.

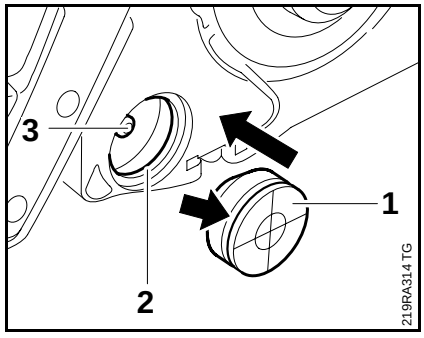
Stop buffer on clutch side

– Remove chain sprocket cover, bar and chain, 🕮 5.



● Prise out stop buffer (1).

– Examine stop buffer and replace if necessary.



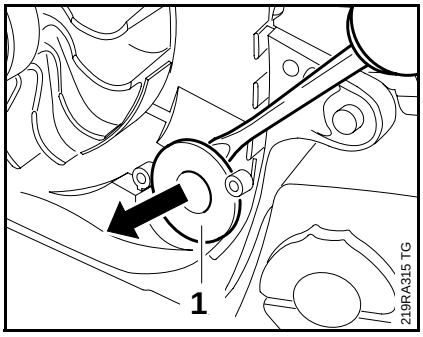
– Position stop buffer (1) with the tapered side facing the crankcase.

– Use STIHL Press Fluid for easier insertion, 🕮 17.

● Press stop buffer (1) home until the groove (arrow) completely encloses the ridge (2) and the peg (3) of the tank housing engages the hole in the stop buffer.

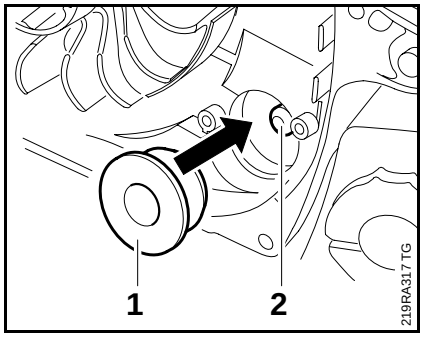
Stop buffer on ignition side

– Remove ignition module, 🕮 9.1.1.



● Prise out stop buffer (1).

– Examine stop buffer and replace if necessary.



– Position stop buffer (1) with the tapered side facing the crankcase.

● Press stop buffer (1) home until the peg (2) of the tank housing engages the hole in the stop buffer.

– Install ignition module, 🕮 9.1.1.

Machines with handle heating

– Ensure accurate routing of the generator lead, 🕮 15.7.

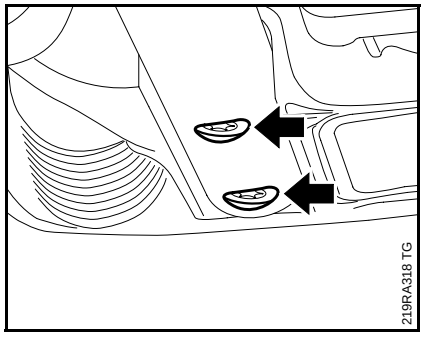
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

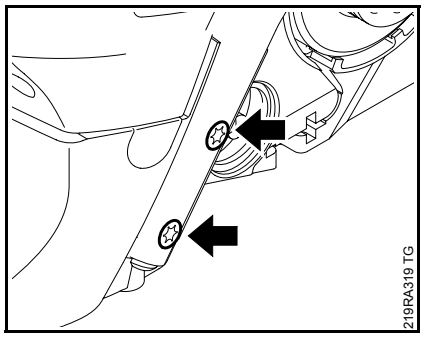
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove shroud, 🕮 8.4.

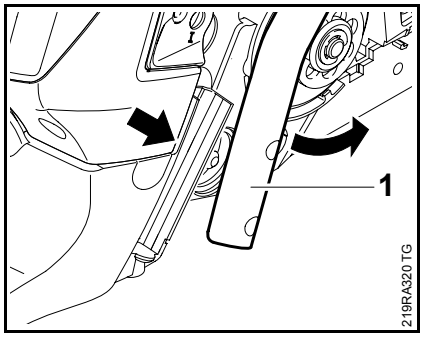
– Remove anti-vibration spring on front handle, 🕮 11.2.



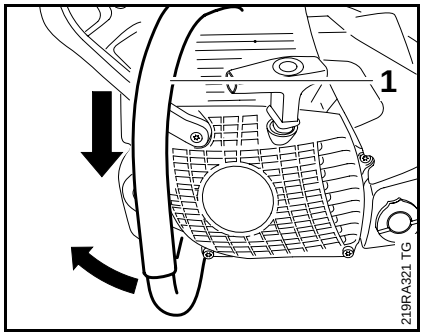
● Take out screws (arrows) underneath machine.



● Take out screws (arrows).

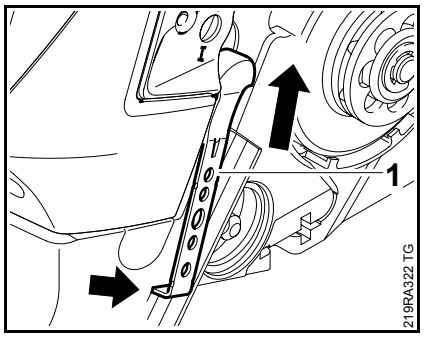


● Lift front handle (1) slightly at the side and remove it from the guide (arrow).

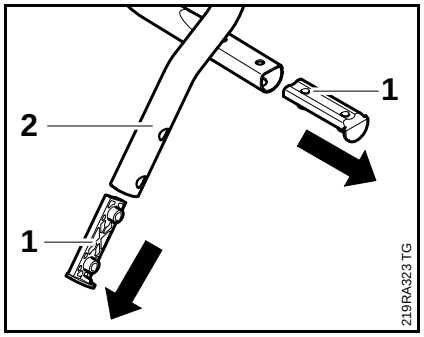


● Slide front handle (1) out of lower guide and turn it towards the spiked bumper.

– Remove front handle.



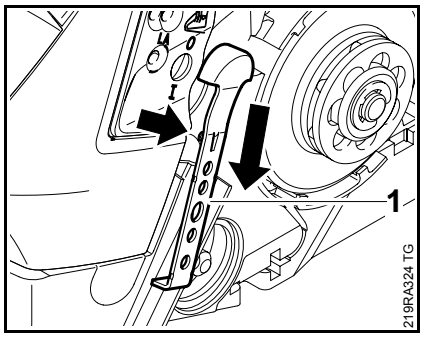
● First lift stop (1) out of bottom mount (arrow) and then pull it up and off.



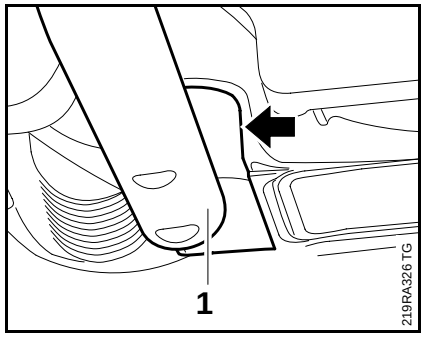
● Pull handle inlays (1) out of front handle (2).

– Examine handle inlays, front handle and stop, replace if necessary.

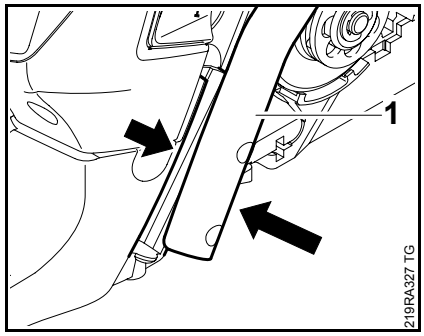
– Slide handle inlays (1) back into front handle.



● First push stop (1) into the upper ridge (arrow), then press it into the lower mount.



● First position front handle (1) against the bottom handle mount (arrow), then turn it towards the rear handle.



● Lift front handle (1) slightly at the side and ease it into the guide (arrow).

– Ensure that the stop is correctly positioned.

– Fit and tighten screws.

– Reassemble all other parts in the reverse sequence.

Tightening torques, 🕮 3.5.

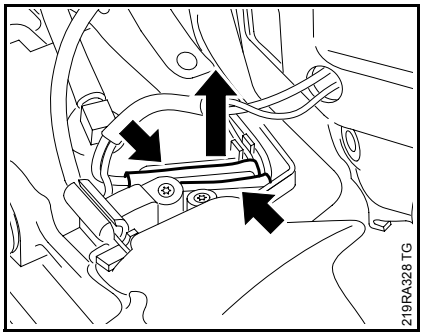
11.5.1 Front handle with handle heating

As the front handle is heated in these machines, the wiring must also be disconnected for installation.

– Troubleshooting, 🕮 15.3.1.

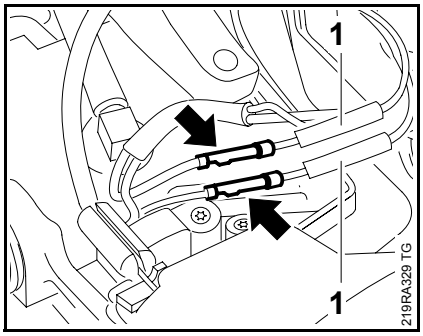
Except for the electrical connections, removal and installation of the front handle is the same as for the front handle without heating, 🕮 11.5.

– Unscrew carburetor housing and lift it up, 🕮 14.6.2.



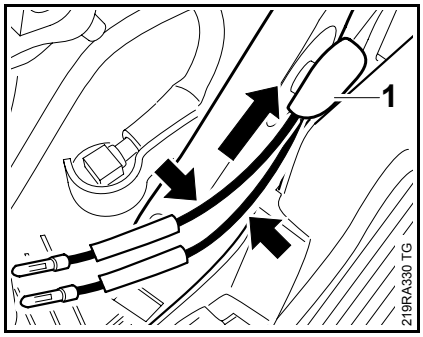
● Pull plug connections (arrows) out of guides.

– Pull wiring out of cable guides.



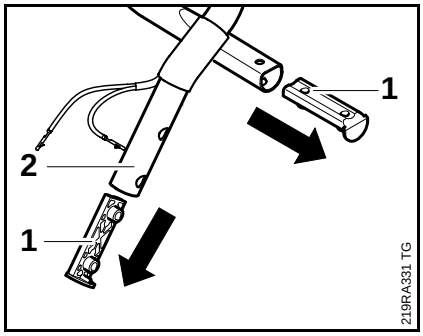
– Slide insulating tubes (1) towards the front handle.

● Disconnect plug connections (arrows).



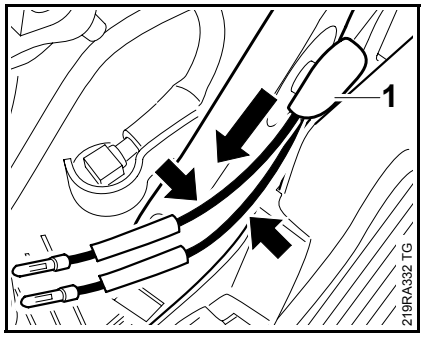
● Pull out leads (arrows) between stop (1) and housing.

– Remove front handle, 🕮 11.5.1.



● Pull handle inlays (1) out of front handle (2).

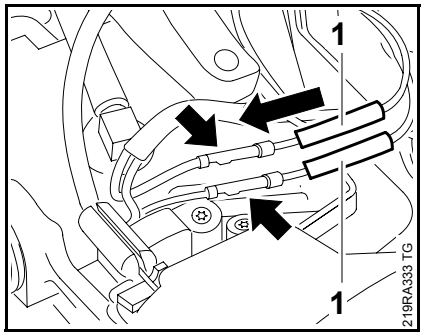
– Examine handle inlays, front handle and stop, replace if necessary.



– Test handle heating, 🕮 15.3.1.

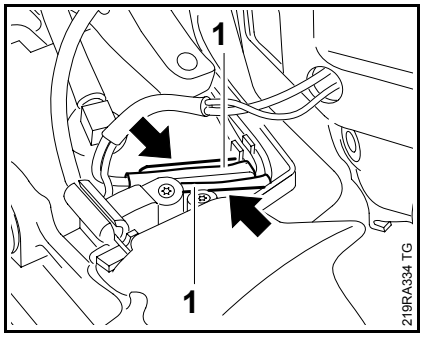
– Install front handle, 🕮 11.5.1.

● Fit leads (arrows) between stop (1) and housing.



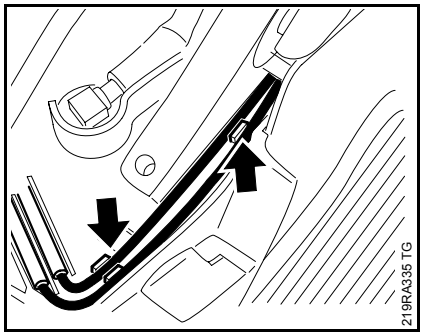
– Securely reconnect plugs and terminal sockets (arrows).

● Slide insulating tubes (1) back over the plug connections.



The insulating tubes must completely enclose the plug connections – risk of short-circuiting.

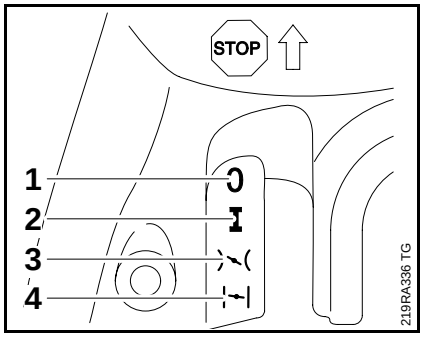
- Press plug connections (1) into the guides (arrows).



- Press wiring (arrows) into the cable guides.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



The following operating states are set with the switch shaft:

– Position (1) = Engine off, ignition is switched off

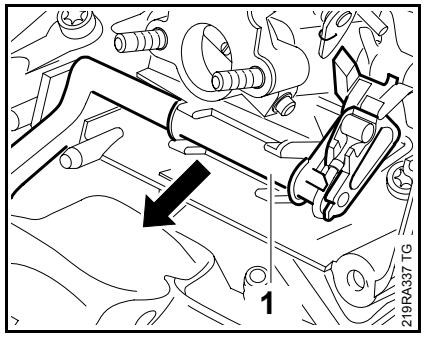
– Position (2) = Operation, engine is running or may start

The throttle trigger interlock and throttle trigger must be pressed simultaneously to adjust the switch lever from I to |↘| or |↘|.

– Position (3) = Hot start, engine is already warm when it is started.

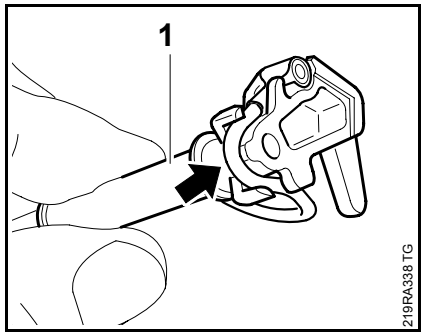
The switch shaft returns to the operating position when the throttle trigger is squeezed.

– Position (4) = Cold start, engine is cold when it is started.



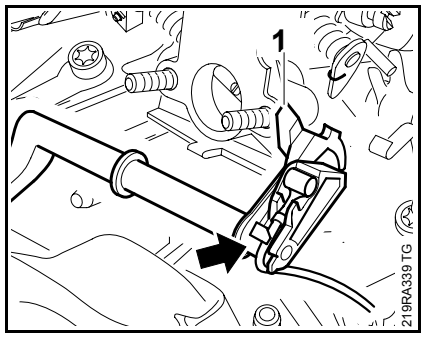
– Remove filter base, 🕮 14.1.2.

- Pull out switch shaft (1).



– Disconnect short circuit wire from switch shaft (arrow), 🕮 9.6.2.

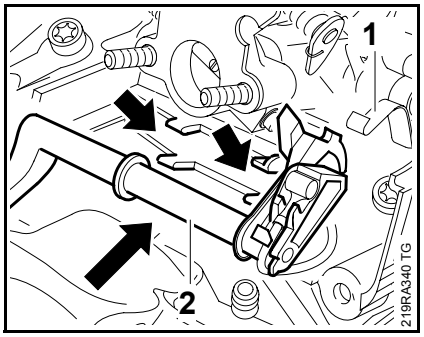
- Examine switch shaft (1) and replace if necessary.



– Install short circuit wire (arrow), 🕮 9.6.2.

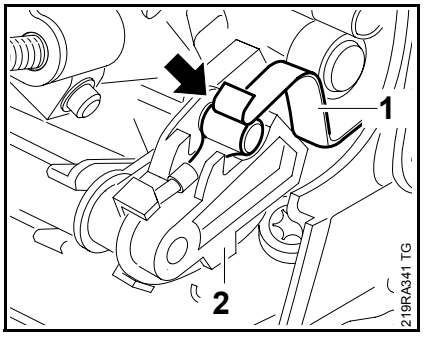
- Align switch shaft: the stop (1) must point towards the carburetor.

12.2 Throttle trigger/throttle trigger interlock



– Lift contact spring (1).

● Push switch shaft (2) into the bearing guides (arrows) until it engages.



– Contact spring (1) must engage the guide of the switch shaft (2).

● Contact must be made between short circuit wire and contact spring (arrow) in switch position "**0**".

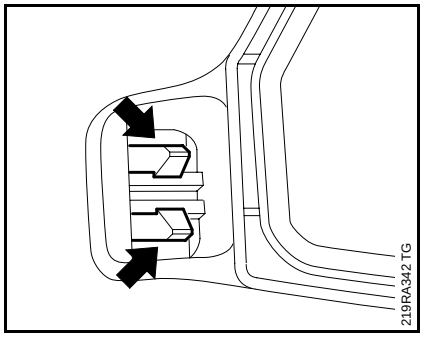
– Install filter base, 🕮 14.1.2.

– Install wiring to heating element in machines with handle heating, 🕮 15.1.

– Check correct operation.

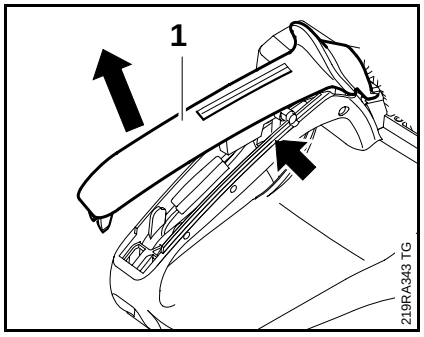
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



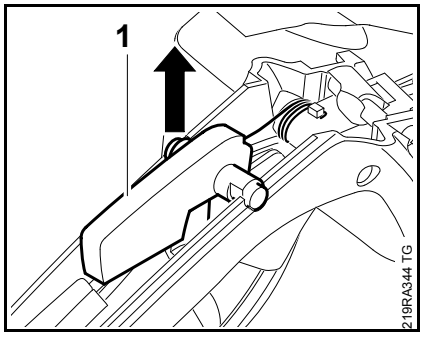
– Remove spacer flange, 🕮 14.2.

● Push pegs (arrows) apart and through the tank housing.

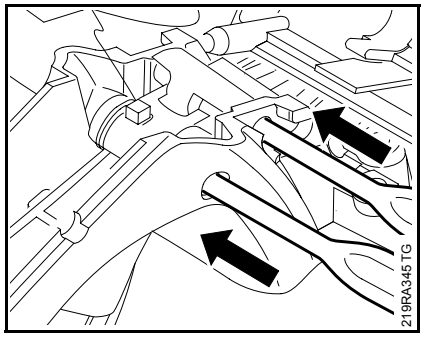


● Remove handle moulding (1).

The trigger interlock (arrow) may pop out.

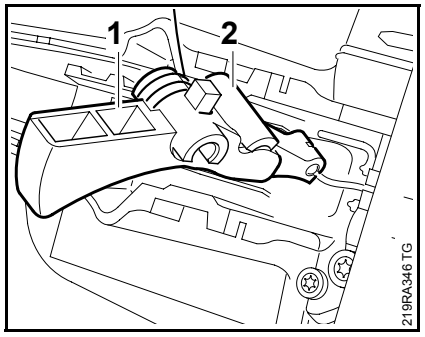


● Remove throttle trigger interlock (1).

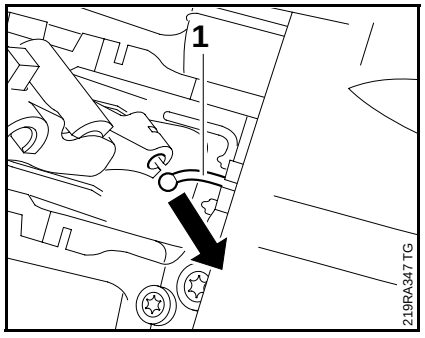


The drag lever is located in the throttle trigger and must therefore also be removed.

● Drive pins (arrows) out with a punch.

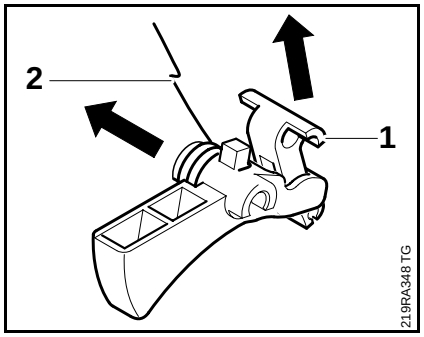


● Lift and turn throttle trigger (1) with lever (2).

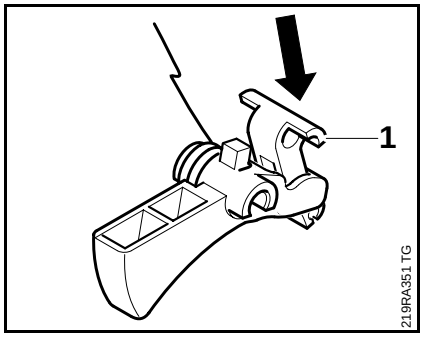


● Disconnect throttle cable (1).

– Remove throttle trigger and lever.

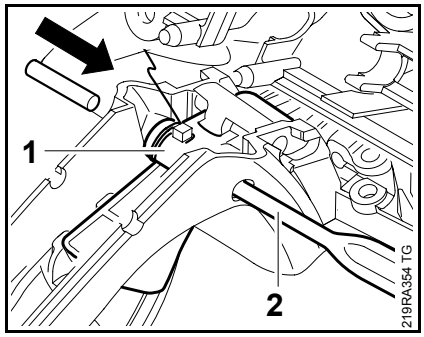


- Pull out the lever (1).
- Unhook leg spring (2) from throttle trigger.



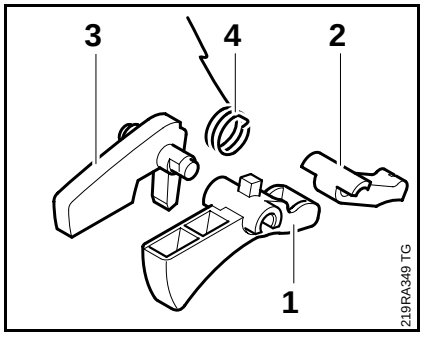
- Push lever (1) into place.

– Turn throttle trigger with lever over.

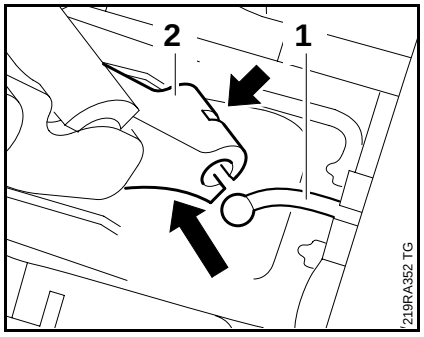


- Centre the throttle trigger (1) with punch (2).

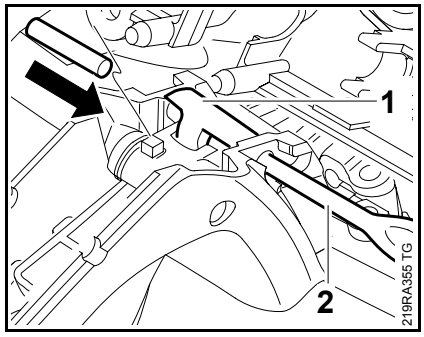
– Drive in the pin until it is equidistant on both sides.



– Examine throttle trigger (1), lever (2), trigger interlock (3) and leg spring (4), replace if necessary.

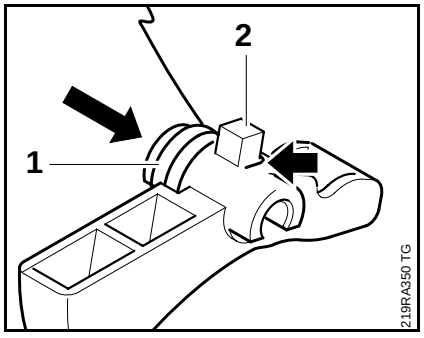


- Push throttle cable (1) into hole until the wire engages the guide (arrow) of the lever (2).

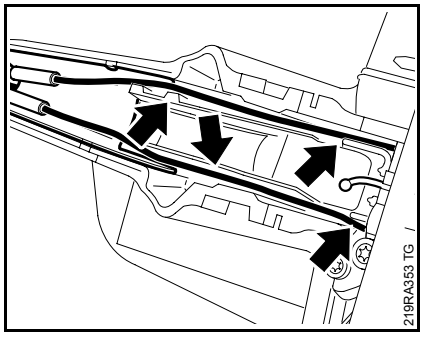


- Centre lever (1) with punch (2).

– Drive in the pin until it is equidistant on both sides.

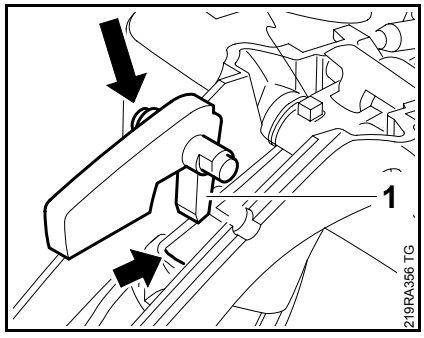


- Hook leg spring (1) into throttle trigger (2), noting the installed position (arrow).



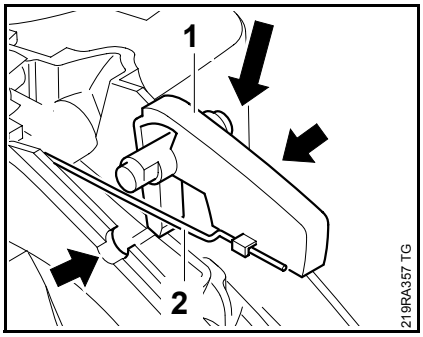
Machines with handle heating

Ensure that the wiring is located in the guides (arrows).



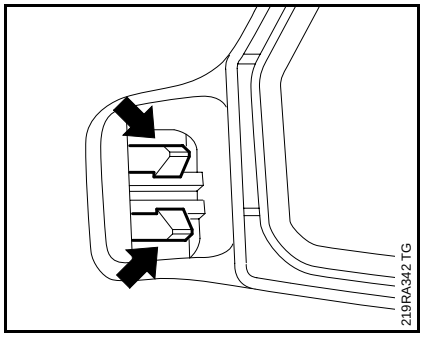
- When installing the trigger interlock, ensure that the stop (1) engages the guide (arrow).

12.3 Throttle trigger / throttle trigger interlock / QuickStop Super



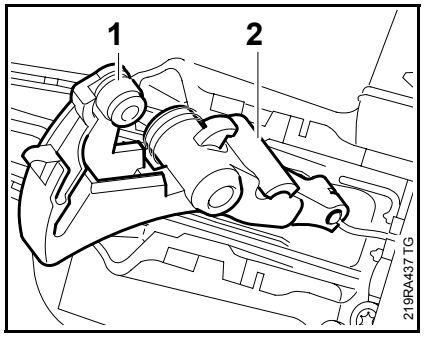
● Hook trigger interlock (1) into leg spring (2) and insert it in the bearing guides (arrows).

The trigger interlock may pop out.

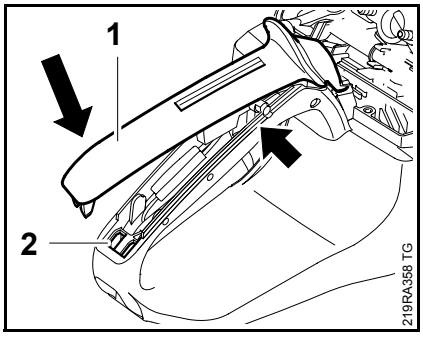


– Remove spacer flange, 🕮 14.2.

● Push pegs (arrows) apart and through the tank housing.



● Lift and turn throttle trigger (1) with lever (2).



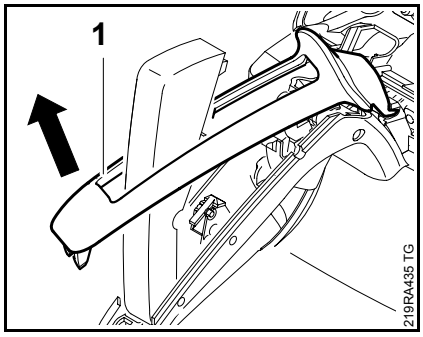
– Attach handle moulding (1) (arrow).

● Fit handle moulding (1) over the trigger interlock and press the pegs into the mounts (2) until they engage.

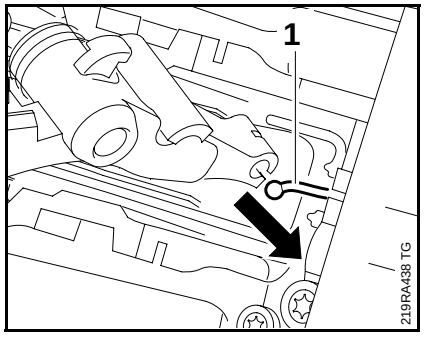
– Check correct operation.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

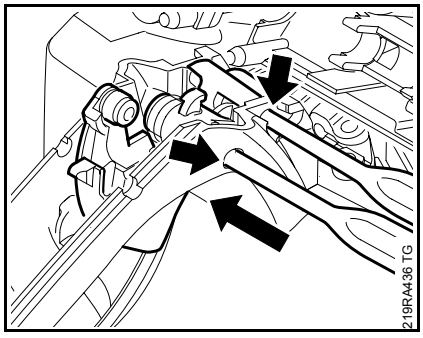


● Remove handle moulding (1).



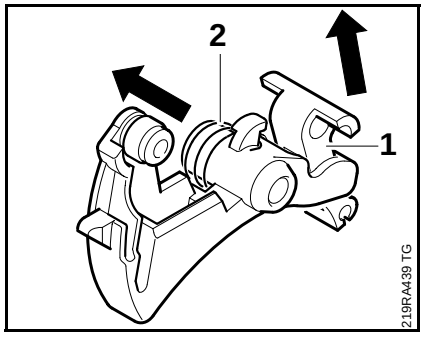
● Disconnect throttle cable (1).

– Remove throttle trigger and lever.



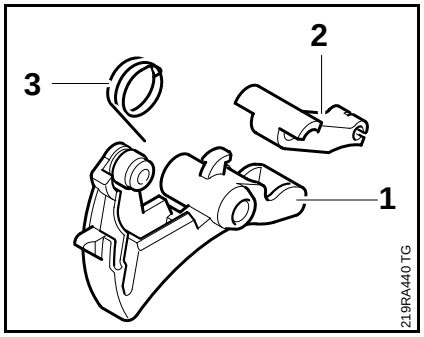
The drag lever is located in the throttle trigger and must therefore also be removed.

● Drive pins (arrows) out with a punch.

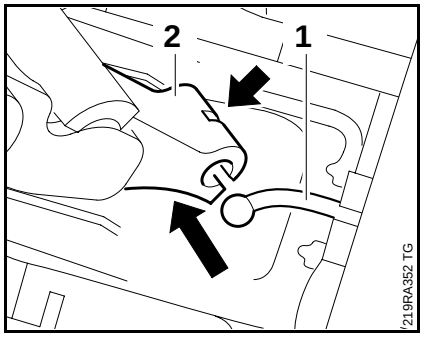


● Pull out the lever (1).

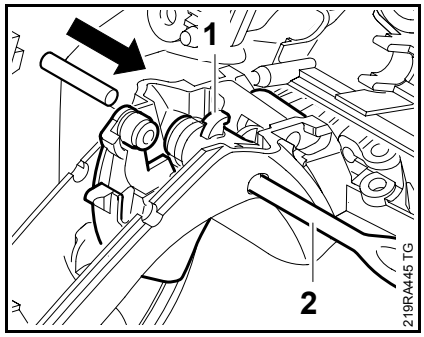
– Unhook leg spring (2) from throttle trigger.



– Examine throttle trigger (1), lever (2) and leg spring (3), replace if necessary.

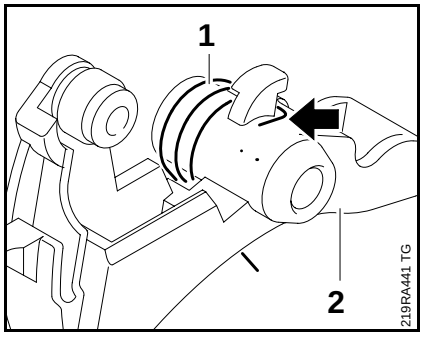


● Push throttle cable (1) into hole (arrow) until the wire (2) engages the guide of the lever (3).

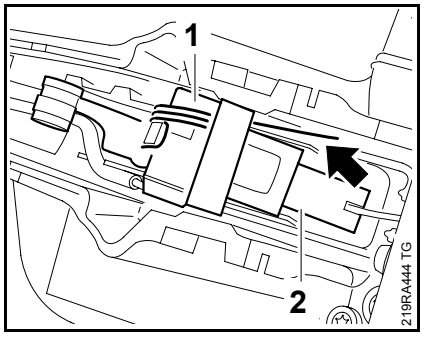


● Centre the throttle trigger (1) with punch (2).

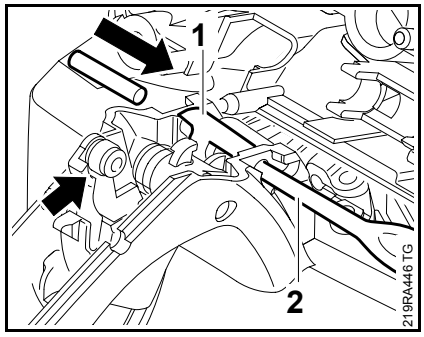
– Drive in the pin until it is equidistant on both sides.



● Hook leg spring (1) into throttle trigger (2), noting the installed position (arrow).



● Fit throttle trigger (1) with lever (2) so that the leg spring is located in the guide (arrow).

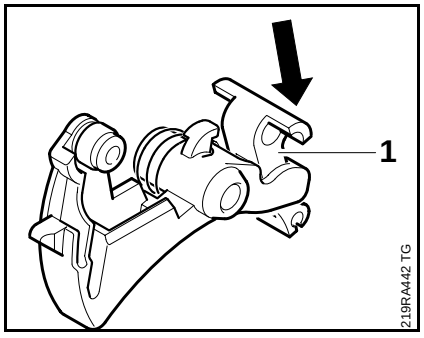


● Centre lever (1) with punch (2).

– Drive in the pin until it is equidistant on both sides.

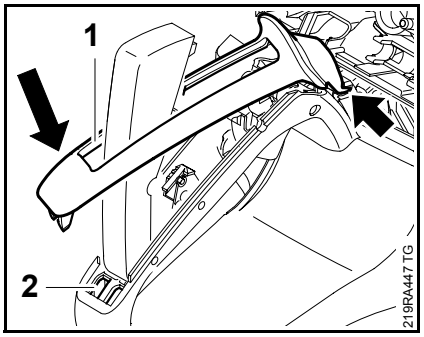
– Check correct operation.

– Grease roller (arrow) before installing it, 🕮 17.



● Push lever (1) into place.

– Turn throttle trigger with lever over.



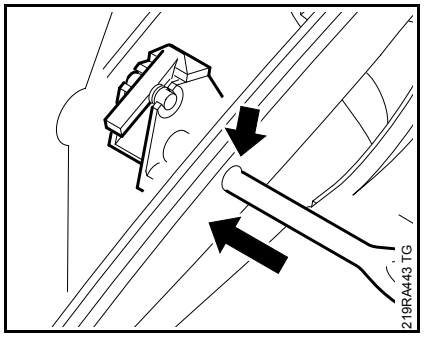
– Attach handle moulding (1) (arrow).

● Fit handle moulding (1) over the trigger interlock and press the pegs into the mounts (2) until they engage.

– Check correct operation again.

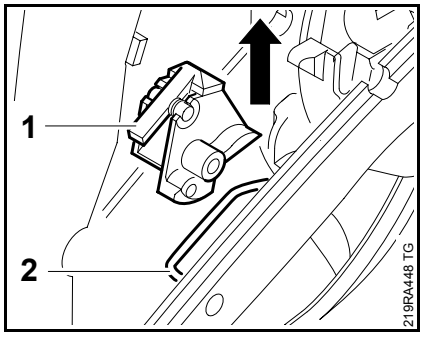
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.



– Remove handle moulding, 🕮 12.3.

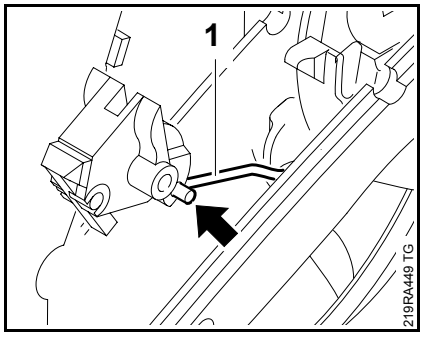
● Drive out pin (arrow) with a punch.



● Disconnect brake cable (2).

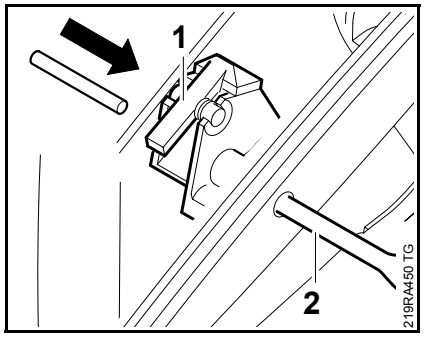
● Take out switch lever (1).

– Examine switch lever (1), replace if necessary.



● Hook brake cable (1) into hole (arrow) in switch lever.

– Align switch lever.



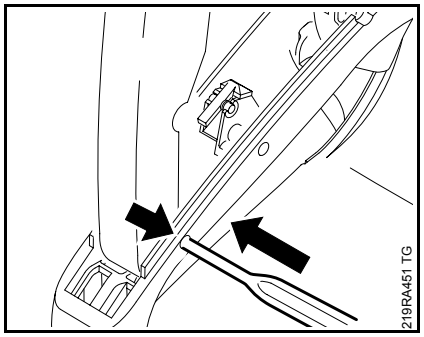
● Centre switch lever (1) with punch (2).

– Drive in the pin until it is equidistant on both sides.

– Reassemble in the reverse sequence.

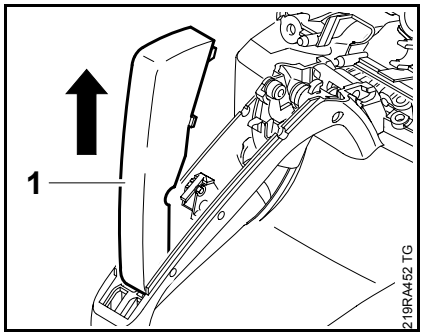
– Tightening torques, 🕮 3.5.

– Check correct operation.

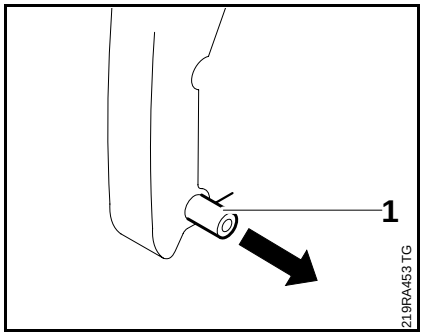


– Remove handle moulding, 🕮 12.3.

● Drive out pin (arrow) with a punch.

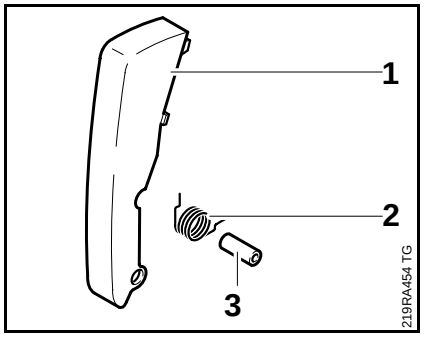


● Remove trigger interlock (1).

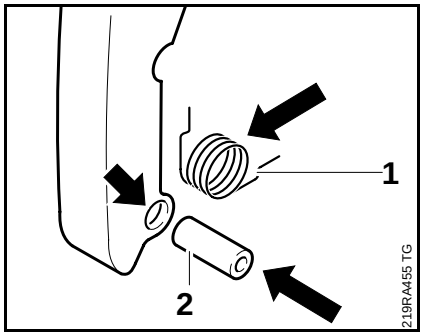


● Drive out bushing (1).

– Remove leg spring.

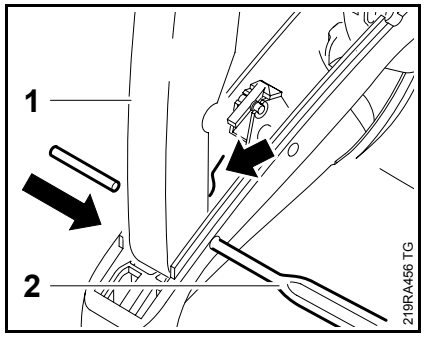


– Examine trigger interlock (1), leg spring (2) and bushing (3), replace if necessary.



● Align leg spring (1) and insert in trigger interlock.

● Slide bushing (2) into hole (arrow) to secure leg spring in place.



– The leg (arrow) of the leg spring must rest against the tank housing.

● Centre trigger interlock (1) with punch (2).

– Drive in the pin until it is equidistant on both sides.

– Reassemble in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Check correct operation.

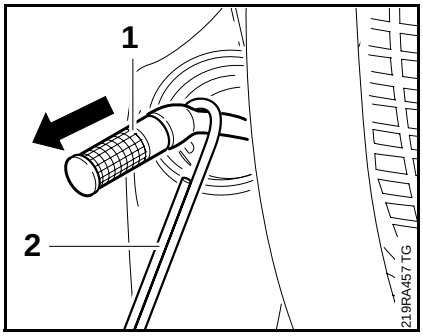
13.1 Pick-up body

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 pick-up body. Clean the oil tank if necessary.

– Troubleshooting chart, 🕮 4.3.

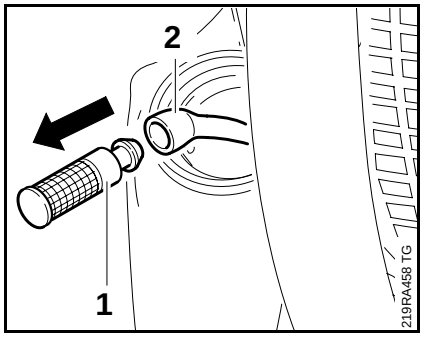
– Unscrew oil tank cap and drain oil tank.

Collect chain oil in a clean container and dispose of it in accordance with environmental regulations.



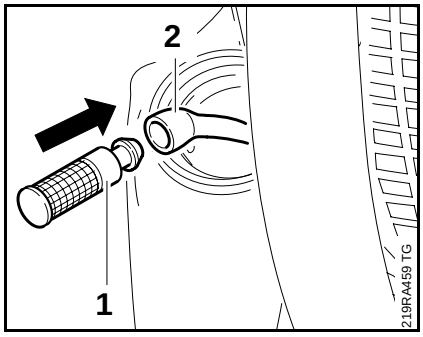
● Pull pick-up body (1) out of oil tank with assembly hook (2) 5910 893 8800.

Take care not to overstretch the suction hose.



– Hold suction hose (2).

● Pull pick-up body (1) off suction hose.



– Rinse oil tank.

– Fit a new pick-up body.

● Push pick-up body (1) into suction hose (2) and return it to the oil tank.

– Reassemble all other parts in the reverse sequence.

13.2 Oil suction hose

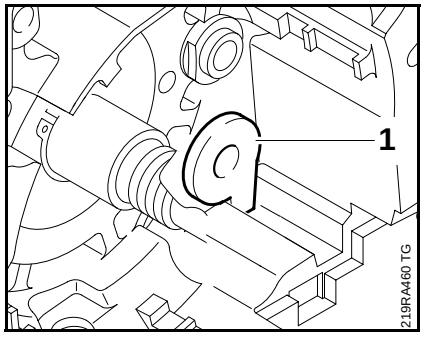
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Remove clutch, 🕮 6.

– Remove oil pump, 🕮 13.3.

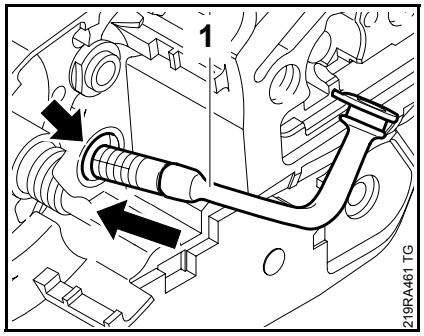
– Unscrew oil tank cap and drain oil tank.

Collect chain oil in a clean container and dispose of it in accordance with environmental regulations.

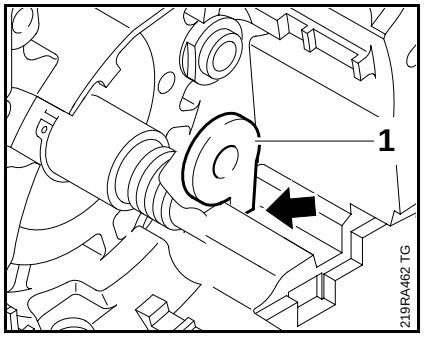


● Prise out oil suction hose (1) and pull it out.

– Examine oil suction hose and pick-up body, replace if necessary. Installation of pick-up body, 🕮 13.1.



● Slide oil suction hose (1) through opening in housing (arrow) with the pick-up body first.



- Align oil suction hose (1) – the tab (arrow) must engage in the guide.

– Press oil suction hose in until the groove engages the bevel on the crankcase.

– Check position of pick-up body with the aid of assembly hook 5910 893 8800 if necessary.

– Install oil pump, 🕮 13.3.

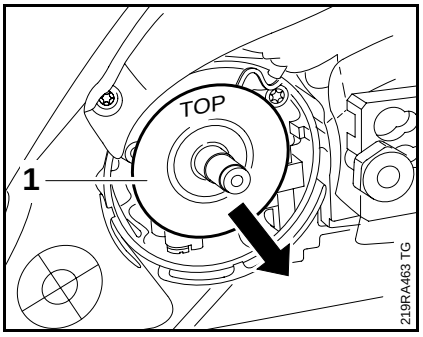
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

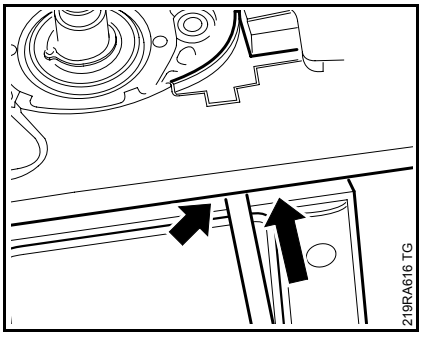
– Troubleshooting chart, 🕮 4.3.

– Remove clutch, 🕮 6.

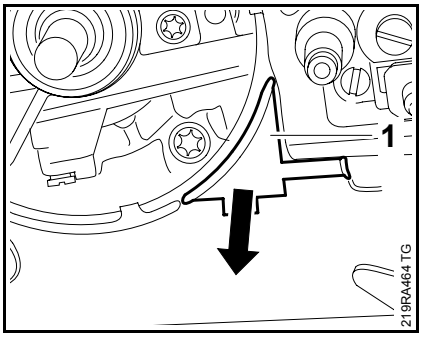
– Remove side plate, 🕮 7.1.



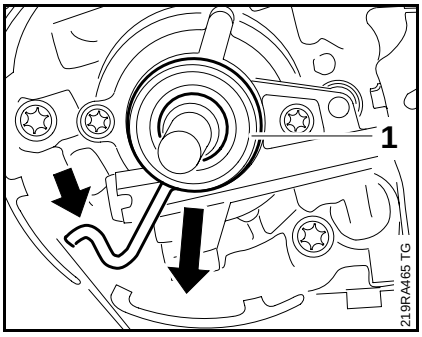
- Remove washer (1).



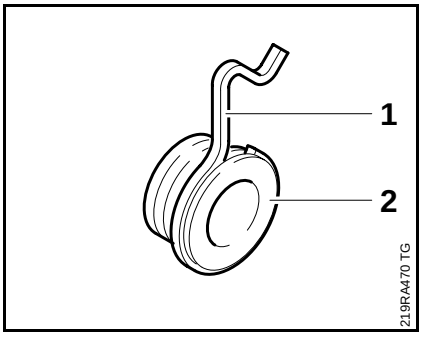
- Push out detent between crankcase and tank housing (arrow).



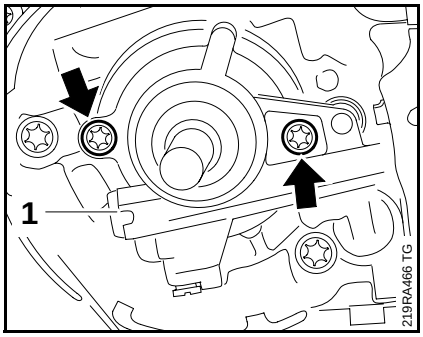
- Take out cover (1).



- Pull worm (1) with spring (arrow) out of oil pump.

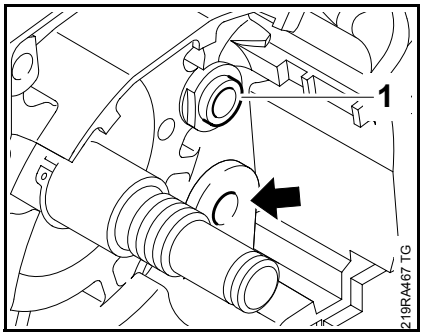


- Examine spring (1) and worm (2), replace if necessary.



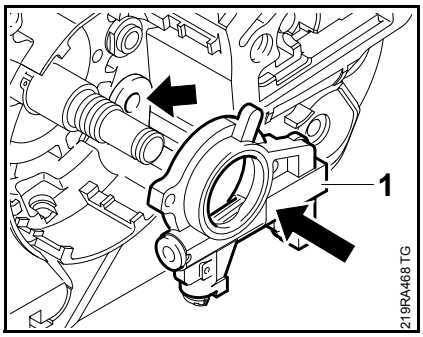
- Take out screws (arrows).

– Remove and examine oil pump (1), repair or replace if necessary.



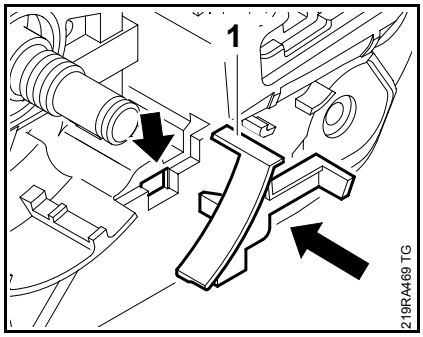
- Fit new O-ring (1) and check connection (arrow) of oil suction hose.

Always fit a new O-ring.

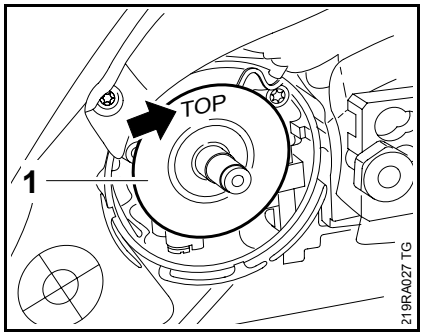


- Slide connector of oil pump (1) into hole (arrow).

– Fit and tighten screws.



- Slide cover (1) into recess (arrow) until it engages.



– Push worm into oil pump.

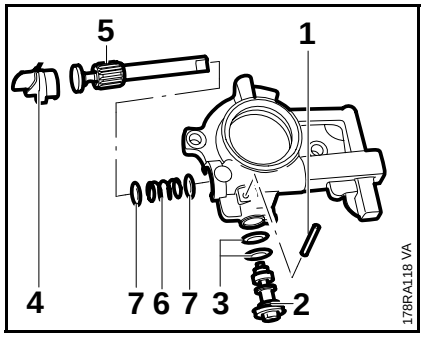
– Grease worm before installing it, 🕮 17.

- Slide washer (1) into place so that the word "TOP" (arrow) is visible.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Check setting of oil pump, adjust if necessary, 🕮 13.3.2.



Check suction hose and pick-up body before dismantling the oil pump.

– Remove oil pump, 🕮 13.3.

– Drive roll pin (1) out with a drift dia. 2 mm.

– Pull out control bolt (2).

– Remove O-rings (3).

– Prise out plug (4).

– Pull out pump piston (5) with compression spring (6) and washers (7).

– Check whether parts can be reused and clean them, 🕮 17.

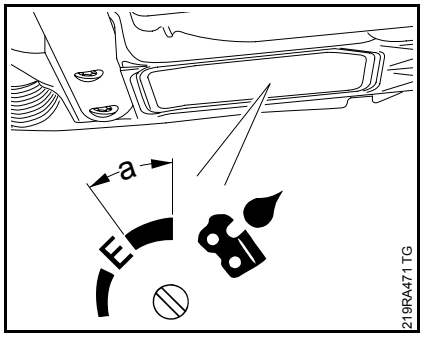
Always use new O-rings.

– Grease pump piston and worm before installing them, 🕮 17.

– Press plug (4) in against the spring pressure when fitting the control bolt (2).

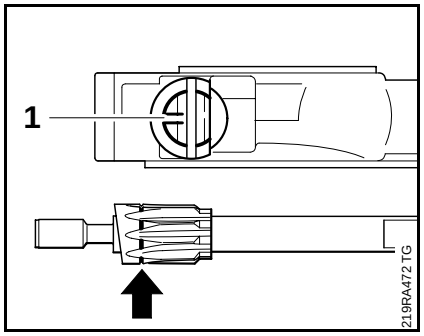
– Reassemble in the reverse sequence.

– Check setting of oil pump, adjust if necessary, 🕮 13.3.2.



The relevant settings are described in the instruction manual.

In the case of oil pumps with increased delivery rate, note that the oil tank is empty before the fuel tank and the saw chain may therefore run dry when range "a" is reached.
For setting range "a", the fuel tank should therefore only be half-filled or the oil tank refilled when the fuel tank is half-empty.



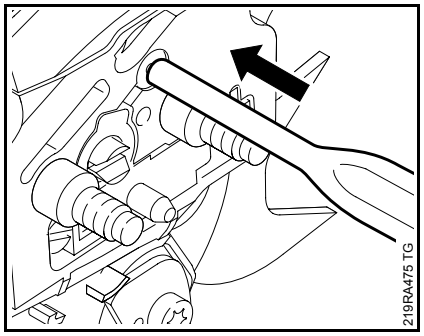
The oil pump with increased delivery rate can be identified via the groove (1) or all-round groove (arrow) in the pump piston.

A valve is installed in the tank wall to keep internal tank pressure equal to atmospheric pressure. The valve must be replaced if faulty.

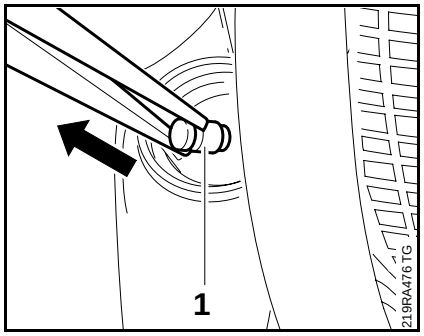
– Remove chain sprocket cover, bar and chain, 🕮 5.

– Unscrew oil tank cap and drain oil tank.

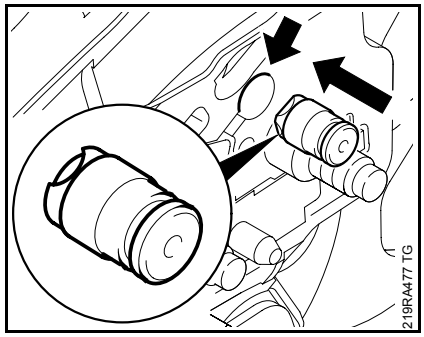
Collect chain oil in a clean container and dispose of it in accordance with environmental regulations.



- Carefully drive valve out of the housing from the outside, into the tank, with a drift dia. 6 mm.

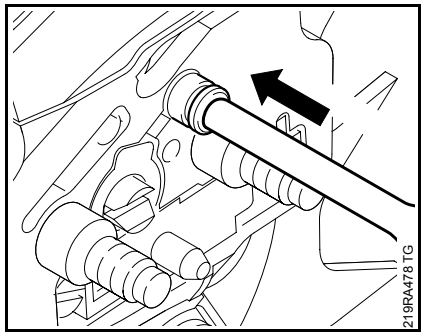


- Remove old valve (1) from oil tank.

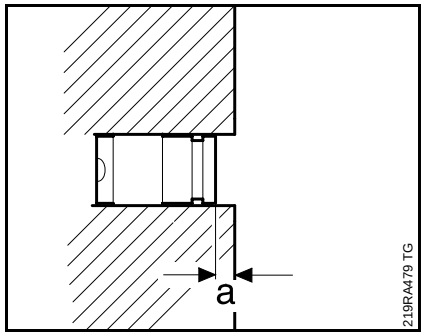


Ensure that valve is correctly positioned.

- Insert valve in hole (arrow) of engine housing.

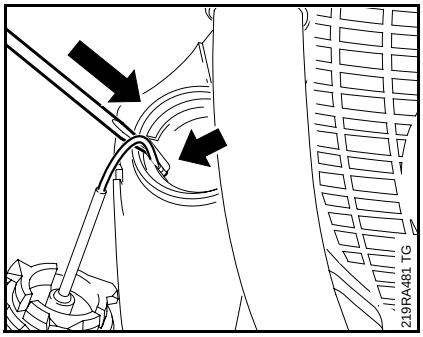


- Carefully drive valve into hole in engine housing from the outside with a drift dia. 6 mm, noting the insertion depth.



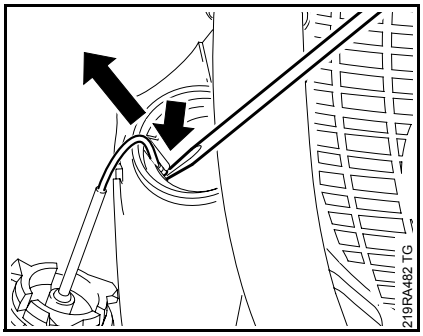
- Drive new valve into hole a = approx. 2 – 3 mm.

– Reassemble all other parts in the reverse sequence.



– Open oil tank cap.

● Prise out nipple inside tank (arrow).



– Examine oil tank cap, rope and O-ring, replace if necessary.

● Press nipple into mount (arrow) inside tank.

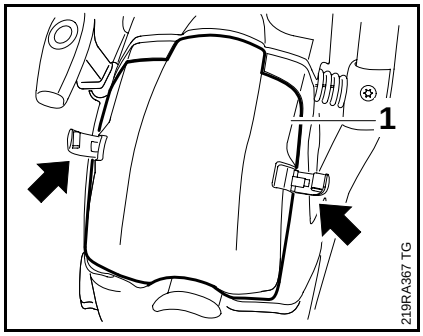
– Close oil tank cap.

– Perform leakage test.

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

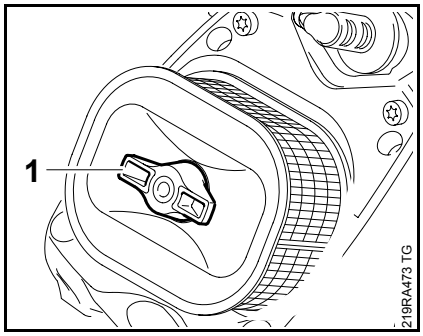
The air filter should be checked if engine power declines noticeably.

– See troubleshooting chart, 🕮 4.6.



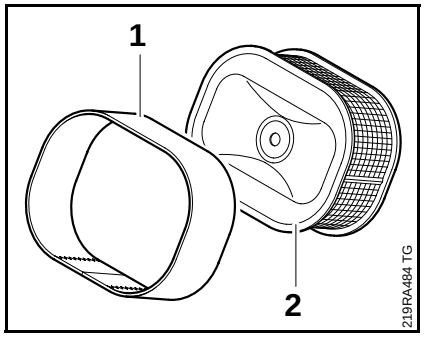
– Release clamps (arrows).

● Remove carburetor box cover (1).



● Unscrew twist lock (1).

– Remove air filter.



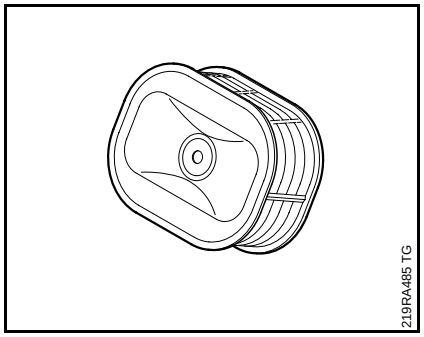
HD filter (black) for use in dry, very dusty conditions.

● Pull pre-filter (1) off air filter (2).

– Examine pre-filter and air filter, clean or replace if necessary.

– Clean pre-filter (1).

– Tap HD filter (2) clean or blow through compressed air from the inside outwards.



Standard filter (green) with wire mesh for normal operating conditions and use in winter.

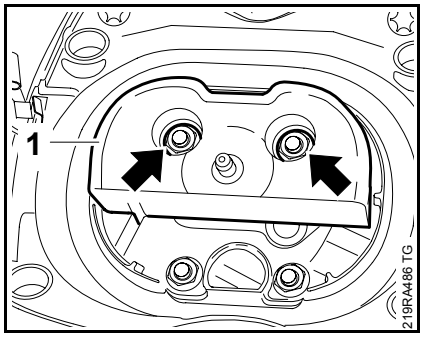
– Examine air filter, replace if necessary.

– Tap filter clean or blow through compressed air from the inside outwards.

– To remove stubborn dirt, wash the filter in STIHL all-purpose detergent or a clean, non-flammable cleaning liquid (e.g. lukewarm soapy water) and then dry it.

Do not oil the filter.

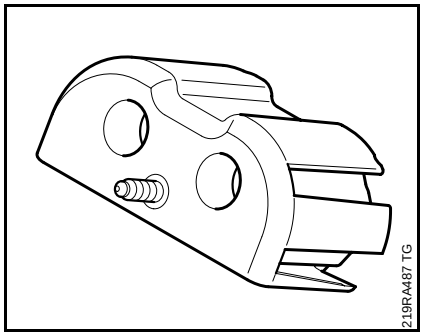
– Reassemble in the reverse sequence.



– Remove air filter, 🕮 14.1.

● Take out nuts (arrows).

– Remove baffle (1).

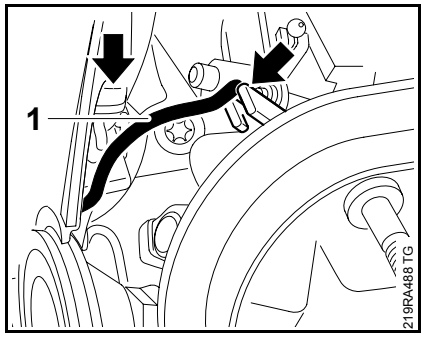


– Examine baffle, replace if necessary.

– Reassemble in the reverse sequence.

– Tightening torques, 🕮 3.5.

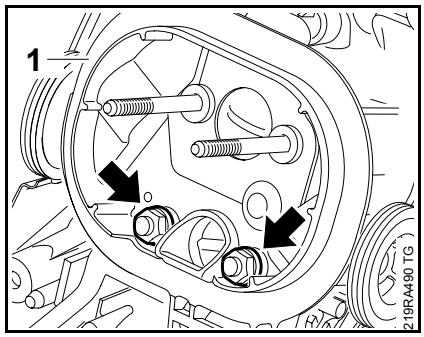
– Test air filter, 🕮 14.1.



– Remove baffle, 🕮 14.1.1.

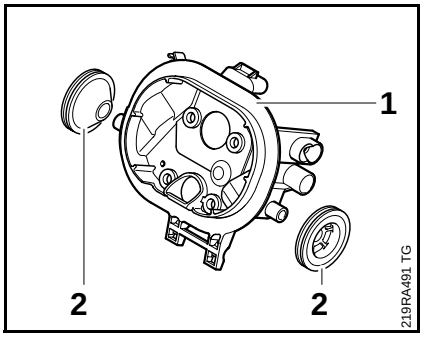
– Remove spacer flange, 🕮 14.2.

● Disconnect lead (1) on machines with handle heating (arrows).

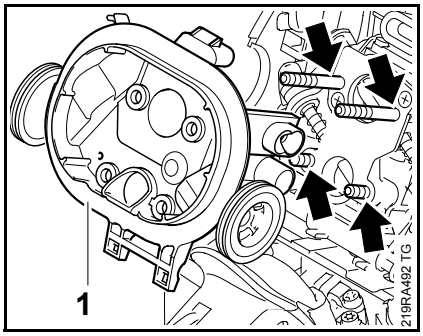


● Take out nuts (arrows).

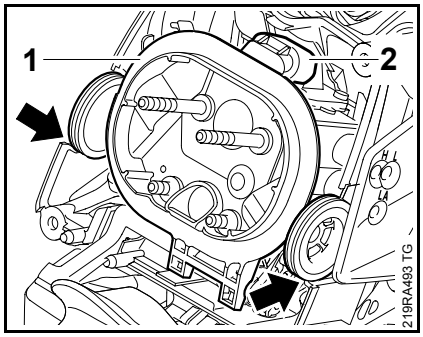
– Remove filter base (1).



– Examine buffer (2) and filter base (1), replace if necessary.

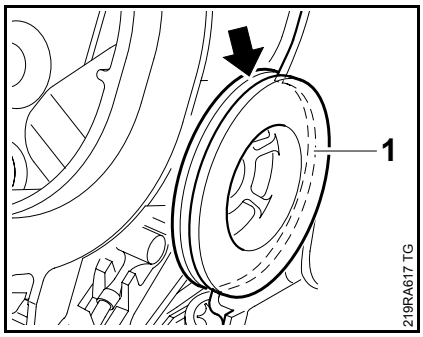


● Slide filter base (1) onto stud bolts (arrows).



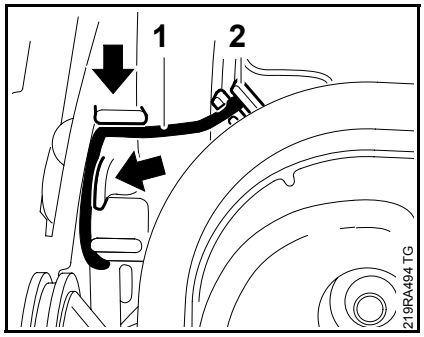
– Coat bushing (2) with STIHL Press Fluid before installing the filter base, 🕮 17.

● Push filter base (1) fully home in bushing (2) and mounts (arrows).



● The groove (arrow) on the buffer must engage the ridge (1) of the carburetor housing.

– Fit nuts and screw them tight.



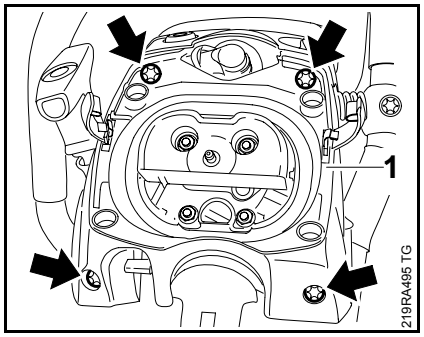
Machines with handle heating

● Attach lead (1) to mount (2) and press it into the cable guides (arrows).

The lead must not touch either the carburetor levers or the spacer flange.

– Reassemble in the reverse sequence.

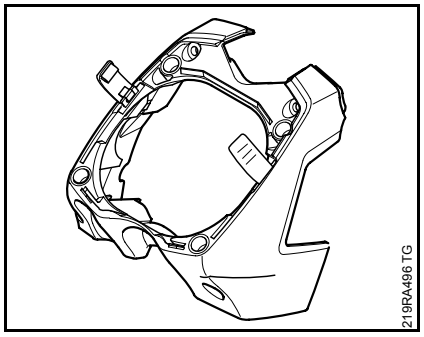
– Tightening torques, 🕮 3.5.



– Remove air filter, 🕮 14.1.

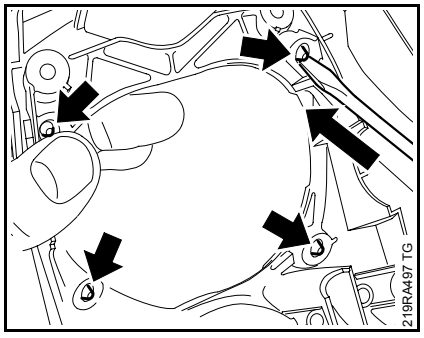
● Take out screws (arrows).

– Turn switch shaft to position "I" and remove spacer flange (1).

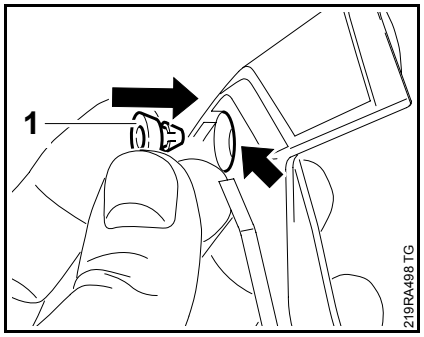


– Examine spacer flange, replace if necessary.

The new spacer flange is supplied complete with rubber buffers and clamps.

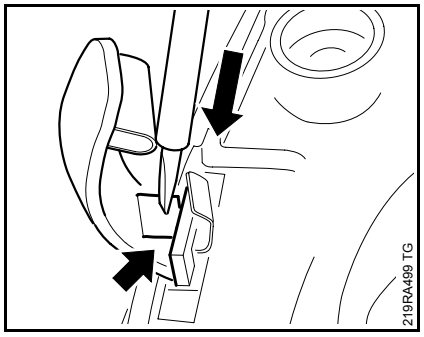


● Drive out rubber buffers (arrows) and examine them, replace if necessary.



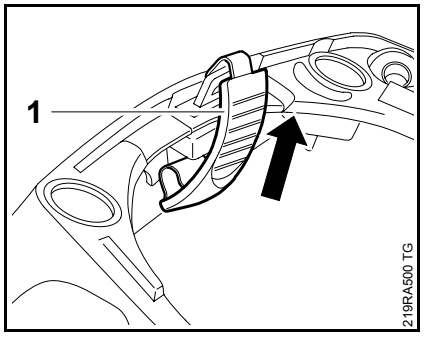
● Press rubber buffer (1) into hole (arrow) until it encloses the hole completely.

– Use STIHL Press Fluid for easier insertion, 🕮 17.



● Press tab (arrow) downwards.

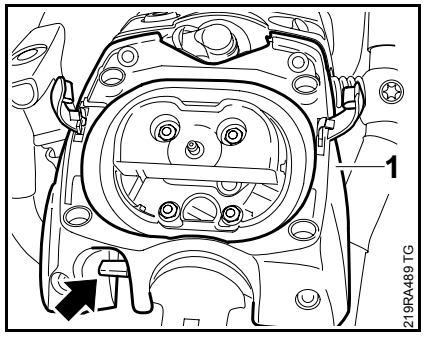
– Turn clamps downwards.



● Slide clamps (1) up and out of the mount.

– Examine clamps, replace if necessary.

– Install clamps in reverse sequence, taking care to ensure that the tab engages.



Ensure that the clamps are open.

● Slide spacer flange (1) into position over the switch shaft (arrow).

– The bearing guides must engage the buffers in the filter base.

– Insert screws and tighten them down.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

14.3 Carburetor removal and installation

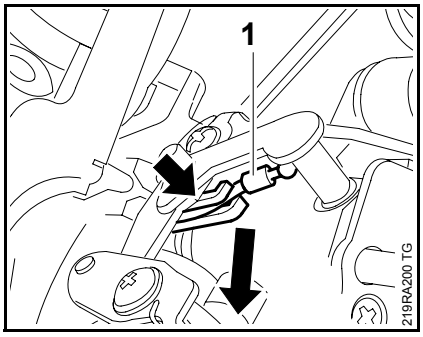
– Remove air filter, 🕮 14.1.

– Remove filter base, 🕮 14.1.2.

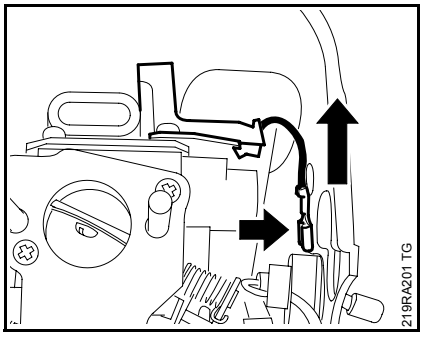
– Open filler cap and drain fuel tank.

– Collect fuel in a clean container and dispose of it in accordance with environmental regulations.

The carburetor may only be removed when the tank filler cap is open.

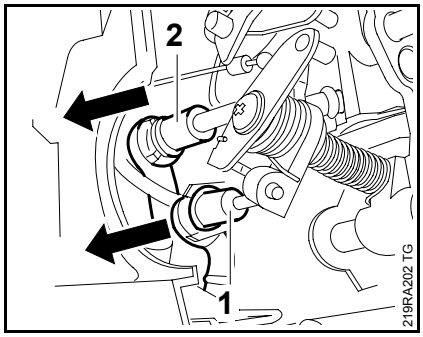


● Set throttle trigger (arrow) to full throttle and disconnect throttle cable (1).



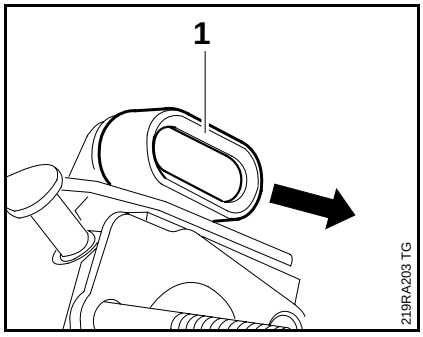
Machines with handle heating

● Unplug connector (arrow) from terminal socket.



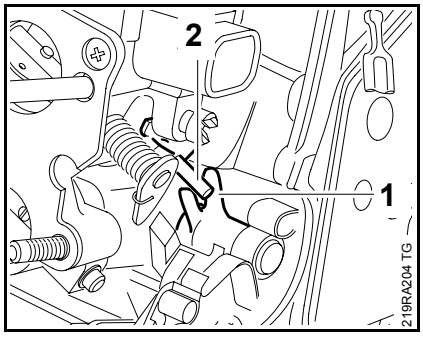
● Push fuel hose (1) and impulse hose (2) back slightly to release them.

– Remove carburetor.



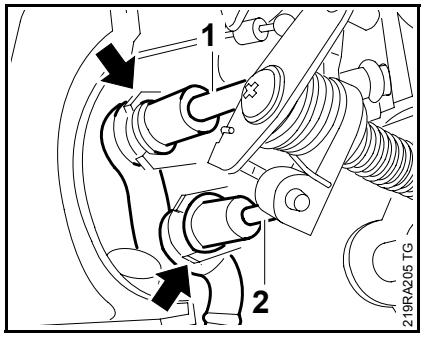
– Examine carburetor, replace if necessary.

● Remove and examine bushing (1), replace if necessary.



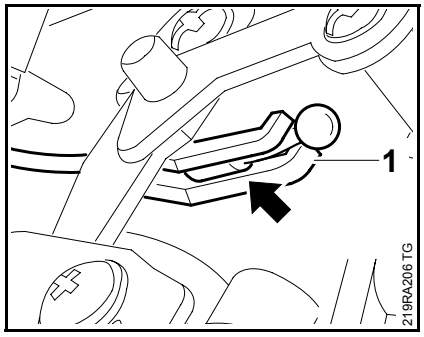
– Refit carburetor.

● Lever (1) must engage lever (2) in the carburetor.



– Hoses must be located in the mounts (arrows).

– When reconnecting the hoses, ensure that connectors (1+2) are pushed into the hoses.



● Hook throttle cable into the throttle cable retainer (1) so that the nipple is squarely seated in the mount (arrow).

– Reassemble all other parts in the reverse sequence.

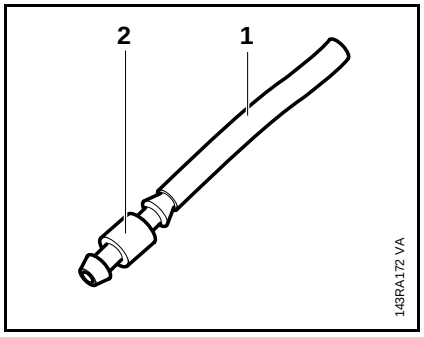
– Tightening torques, 🕮 3.5.

– Check correct operation.

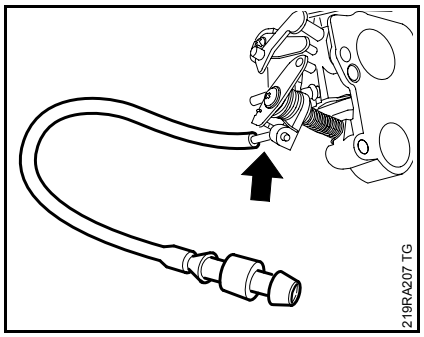
In the case of problems with the carburetor or fuel supply system, also check and clean the tank vent, 🕮 14.7.

The carburetor can be tested for leaks with the pump 0000 850 1300.

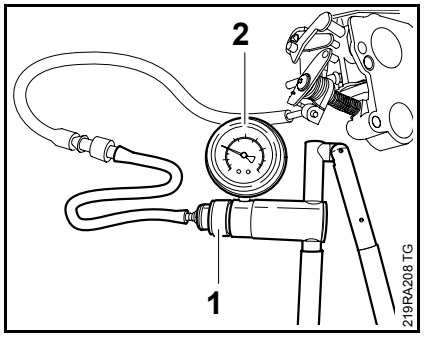
– Remove carburetor, 🕮 14.3.



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



● Push fuel line with nipple onto fuel connection (arrow).



– Connect pressure hose of pump 0000 850 1300 to nipple.

● Slide ring (1) to the right and pump air into the carburetor until the pressure gauge (2) shows a reading of approx. 0.8 bar (80 kPa).

If this pressure remains constant, the carburetor is airtight. If it drops, this may be due to three causes:

1. Inlet needle valve is not sealing (impurities in valve seat or sealing cone of inlet needle is damaged or inlet control lever sticking). Remove to clean, 🕮 14.4.3.

2. Metering diaphragm or gasket is damaged, replace if necessary, 🕮 14.4.2.

3. Pump diaphragm or gasket is damaged, replace if necessary, 🕮 14.4.5.

– After completing the test, slide ring (1) to the left and vent the system, then disconnect fuel line from elbow connector of carburetor.

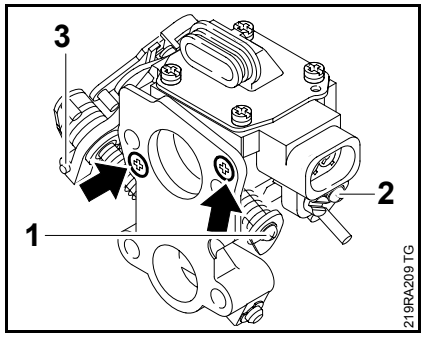
– Install carburetor, 🕮 14.3.

– Tightening torques, 🕮 3.5.

– Reassemble all other parts in the reverse sequence.

14.4 Carburetor repair

14.4.1 Air flap



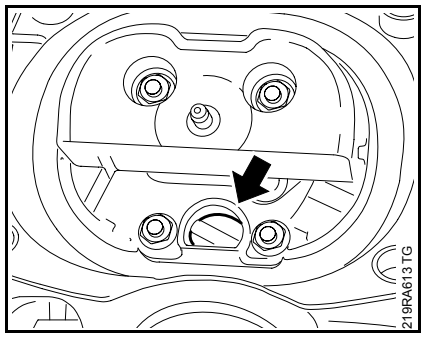
The air flap must not be removed, nor may any changes be made in the control system.

– Troubleshooting chart, 🕮 4.6.

The screws (arrows + 1, 2) are bonded into place and must not be loosened or removed.

Screws (1+2) and adjusting screw (3) must not be adjusted, otherwise the manufacturer's setting will no longer be correct and operation may be impaired.

Check air flap



● In idle position, the air flap (arrow) must make contact with the housing all round and seal the air duct.

● Examine a soiled air flap and the surrounding area, clean with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons if necessary, taking care not to damage the air flap.

Setting of throttle shutter (throttle trigger position) / air flap

The correct setting of the air flap can be visually checked as follows.

– Throttle shutter in idle position – air flap fully closed.

– Throttle shutter in idle position to full throttle – air flap closed to fully open[1)].

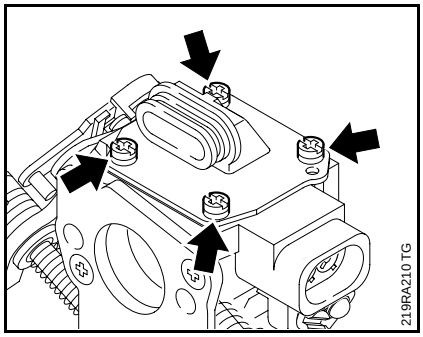
– Throttle shutter in full throttle position – air flap fully open[1)].

– Throttle shutter during cold start |↜| – air flap fully closed

– Throttle shutter during warm start |↖| – air flap open approx. 10°

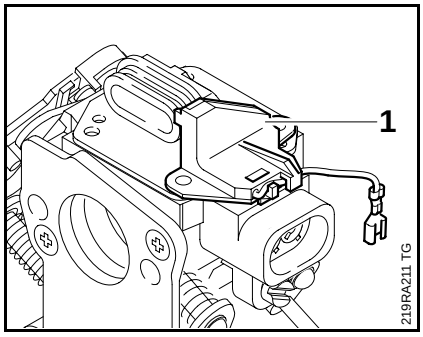
[1)] Air flap must move in both directions (open and closed) and must always return to its starting position.

– Reassemble in the reverse sequence.



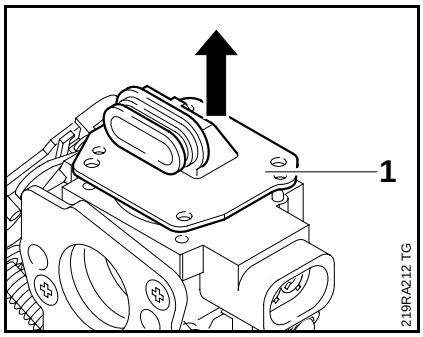
– Remove carburetor, 🕮 14.3.

● Take out screws (arrows).



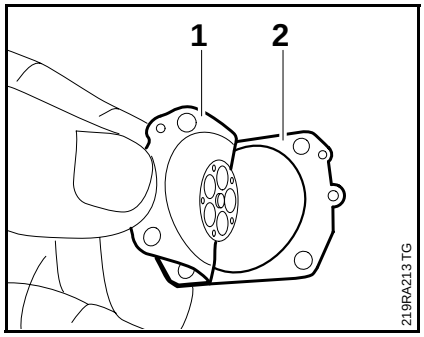
Machines with handle heating

● Remove switch (1).



● Remove cover (1).

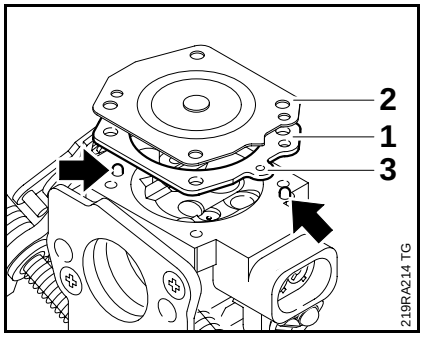
If gasket and diaphragm stick to carburetor parts, they must be detached with great care.



● Carefully detach metering diaphragm (1) from gasket (2).

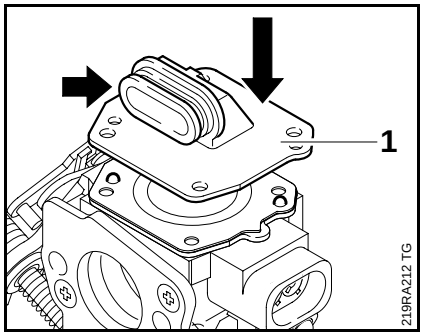
The diaphragm material is subjected to continuous alternating stresses and eventually shows signs of fatigue, i.e. the diaphragm distorts and swells and has to be replaced.

– Examine metering diaphragm for signs of damage and wear, replace gasket.

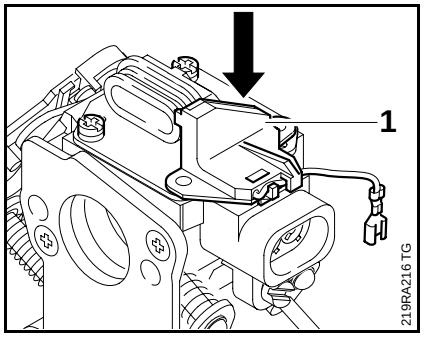


– Note installation sequence for metering diaphragm (2) and gasket (1).

● Position gasket (1) and metering diaphragm (2) in the pegs (arrows), ensuring that the tab (3) faces towards the adjusting screws.

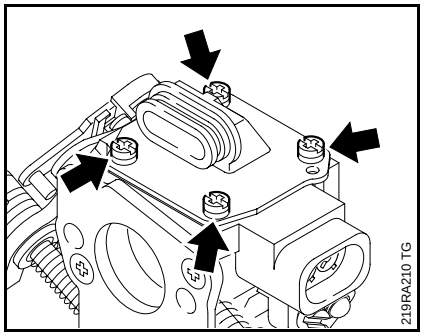


● Position cover (1) so that the connector (arrow) faces towards the choke shutter and is secured by the pegs.



Machines with handle heating

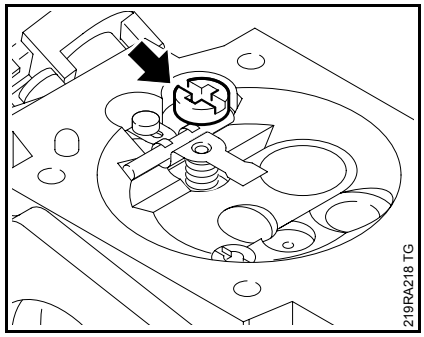
● Fit switch (1).



● Insert screws (arrows) and tighten them down.

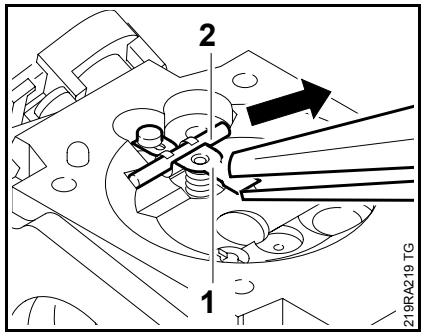
– Check that diaphragm and gasket are correctly seated, then tighten screws cross-wise.

– Reassemble all other parts in the reverse sequence.



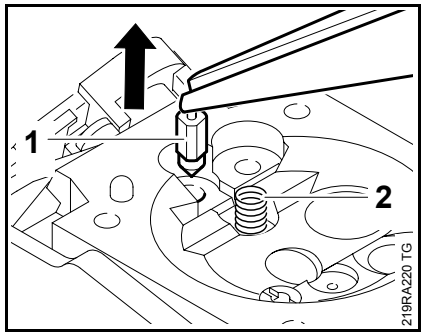
– Remove metering diaphragm, 🕮 14.4.2.

● Take out screw (arrow).



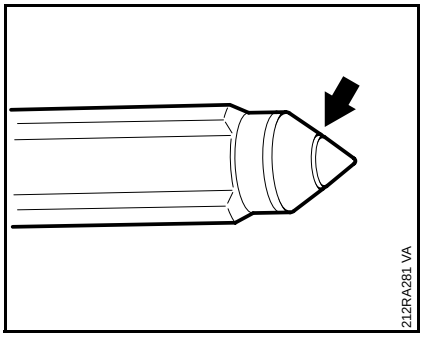
● Pull inlet control lever (1) with spindle (2) out of the groove in the inlet needle.

The spring under the inlet control lever may pop out.

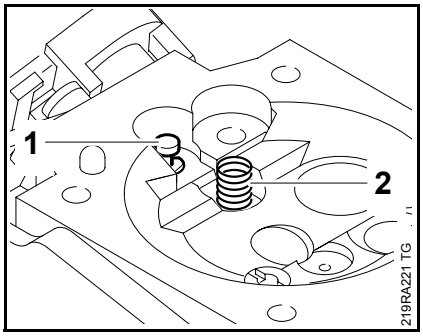


● Pull out inlet needle (1).

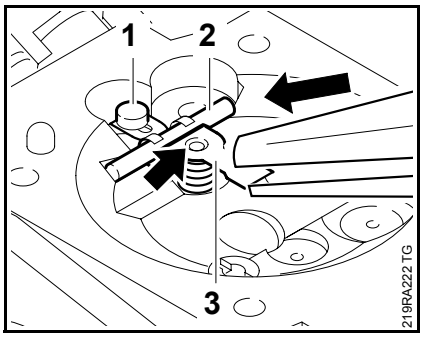
– Remove and examine spring (2), replace if necessary.



- The inlet needle must be replaced if a circular indentation (arrow) is visible on the needle's sealing cone.



- Fit inlet needle (1).
- Fit helical spring (2) in bore.



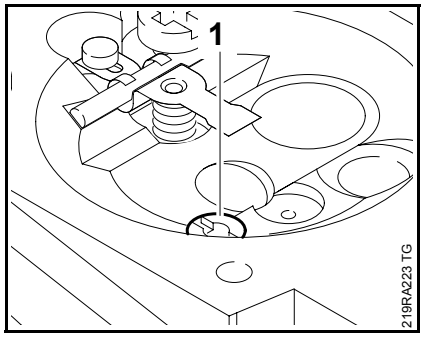
- First position inlet control lever (3) with spindle (2) on the seat (arrow) of the spring, then push the clevis of the inlet control lever into the groove in the inlet needle (1).

The helical spring must locate on the control lever's nipple.

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

– Check that inlet control lever moves freely.

– Install metering diaphragm, 🕮 14.4.2.



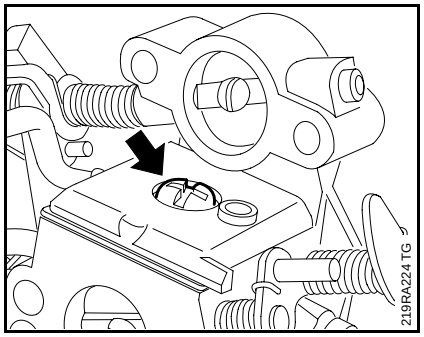
– Remove metering diaphragm, 🕮 14.4.2.

- Unscrew fixed jet (1) with a suitable screwdriver.

Take care not to damage the jet.

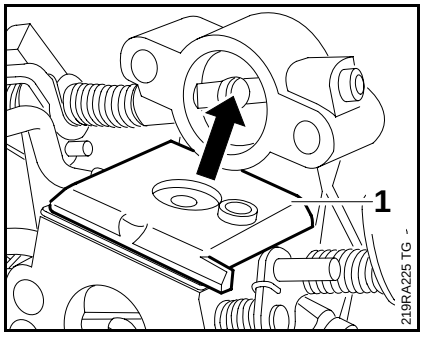
– Examine the fixed jet and replace if necessary.

– Reassemble in the reverse sequence.

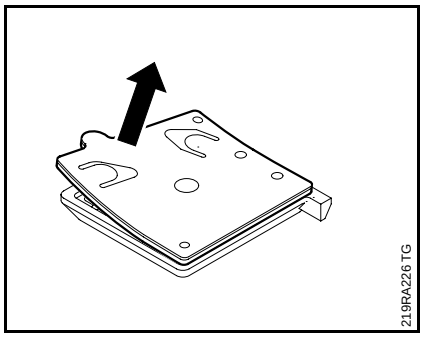


– Remove carburetor, 🕮 14.3.

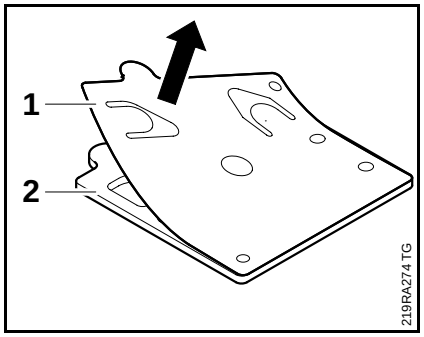
● Take out screw (arrow).



● Carefully remove end cover (1).



● Carefully remove gasket with pump diaphragm from the end cover.

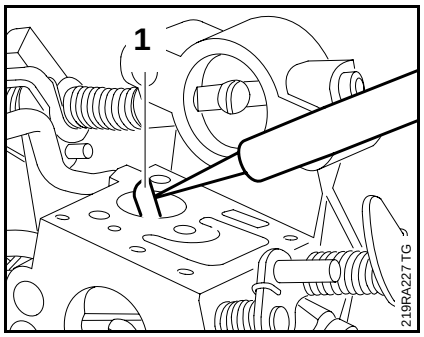


● Carefully separate pump diaphragm (1) and gasket (2).

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.

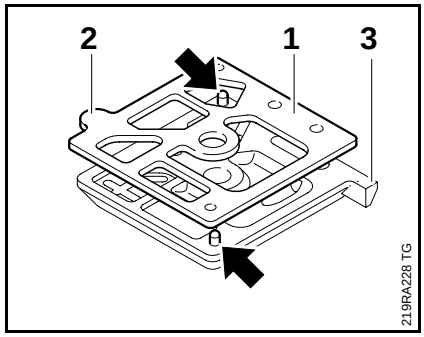
– Examine pump diaphragm for signs of damage and wear, replace gasket.

– Examine fuel strainer for contamination and damage, clean or replace if necessary.

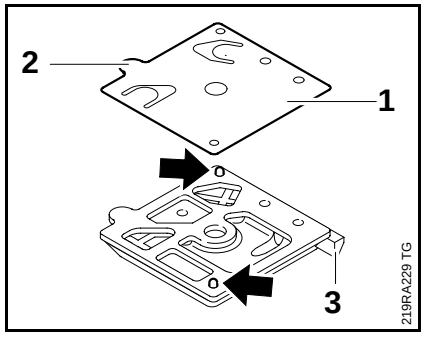


● Pull fuel strainer (1) with needle out of the carburetor housing and clean it, replace if necessary.

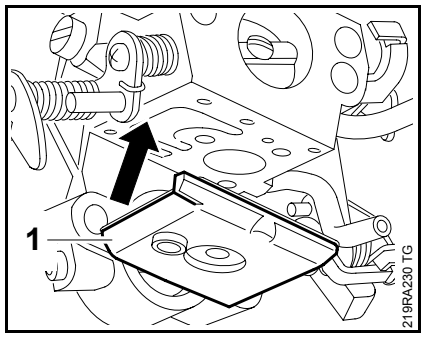
– Reassemble in the reverse sequence.



● Fit gasket (1) so that tab (2) is opposite lug (3) and the gasket is secured by the pegs (arrows).

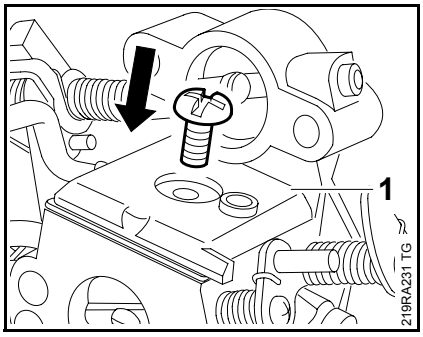


● Place diaphragm (1) on the gasket so that tab (2) is opposite lug (3) and the diaphragm is secured by the pegs (arrows).



● Fit end cover so that the lug (arrow) points towards the adjusting screws.

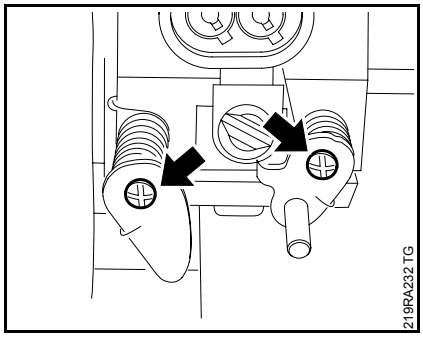
– Fit end cover on carburetor housing from below so that the gasket and pump diaphragm remain secured in position on the end cover.



– Move the end cover (1) slightly until the pegs in the end cover engage the holes in the carburetor housing.

– Check that diaphragm and gasket are correctly seated.

● Fit and tighten screw.

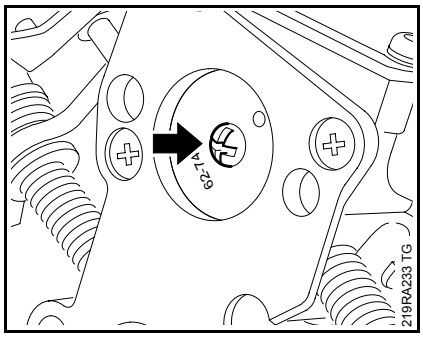


– Remove carburetor, 🕮 14.3.

The screws (arrows) must not be removed. They have been set and sealed by the manufacturer. The choke or throttle shaft must be removed to replace the corresponding leg spring.

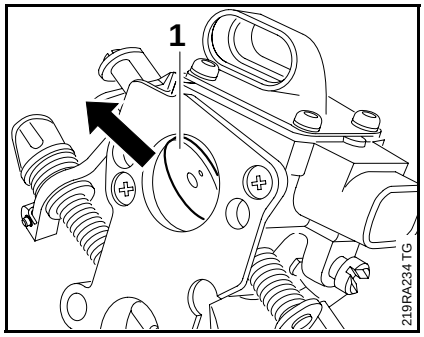
If the choke shaft moves stiffly or if the choke shutter does not open or close properly:

Remove choke shaft and clean the shaft and shaft guides with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

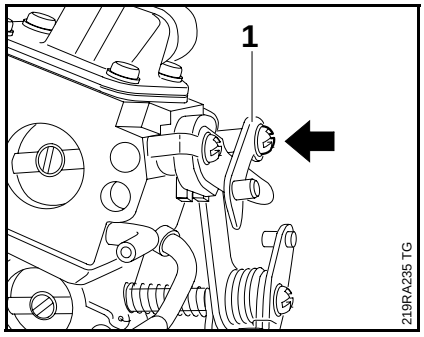


– Turn choke shaft until choke shutter is closed.

● Take out screw (arrow) in choke shutter.

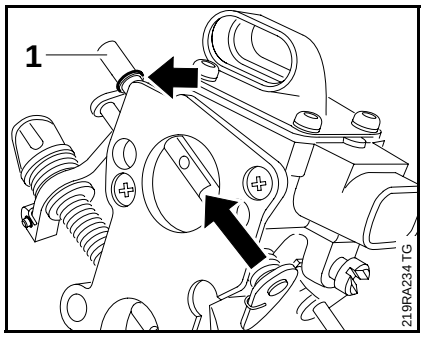


● Turn choke shaft slightly and take out choke shutter (1).



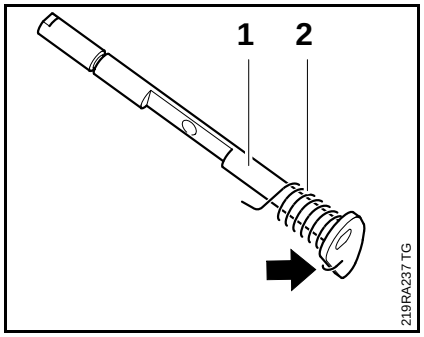
● Take out screw (arrow).

– Remove lever (1).



● Push choke shaft (1) towards connector.

– Remove lock washer (arrow).



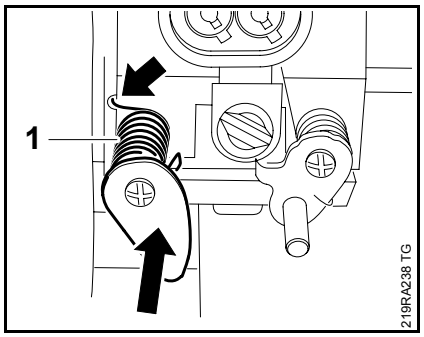
– Pull choke shaft (1) out towards adjusting screws.

– Examine choke shaft (1) and leg spring (2), replace if necessary.

● Note installed position (arrow) when fitting the leg spring.

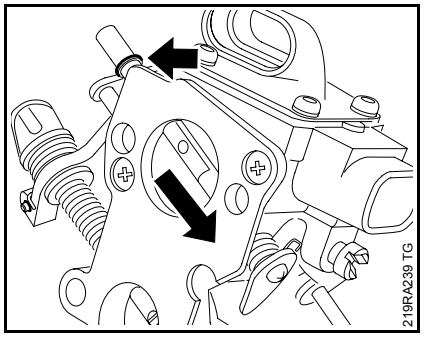
– Clean choke shaft and guides.

– Reassemble in the reverse sequence.



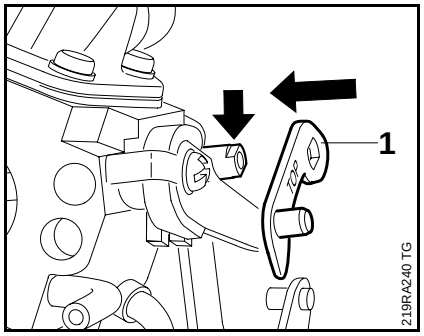
● Attach leg spring (1) to hole (arrow).

● Slide choke shaft (2) through the leg spring into the carburetor.



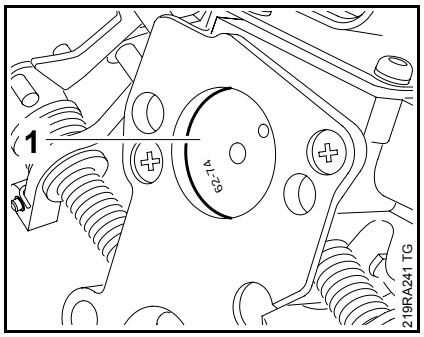
– Push choke shaft towards lever.

● Install lock washer (arrow) and release choke shaft.



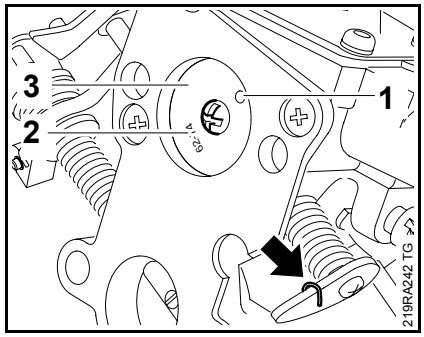
● Fit lever (1) on choke shaft so that the legend "TOP" is visible and engages properly (arrow).

– Fit and tighten screw.



– Turn choke shaft until flat side appears.

● Fit choke shutter (1).



The choke shutter (3) must be installed so that the hole (1) is above the choke shaft and the number (2) is below it.

– Coat screw with screw locking adhesive, 🕮 17.

● Fit new screw in shaft and tighten it down lightly.

– Close choke shutter (3) and centre it in the hole of the carburetor housing so that a small air gap remains – open throttle shutter to check.

– Tighten screw securely.

– Turn leg spring roughly half a turn clockwise and attach it to the lever (arrow).

– Check correct operation and easy movement.

– Reassemble all other parts in the reverse sequence.

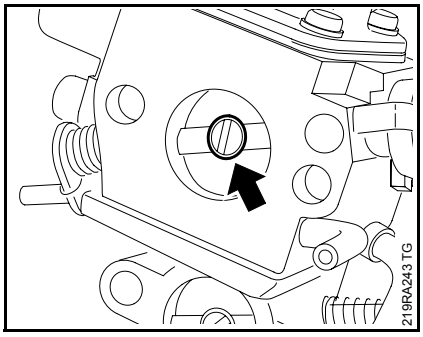
14.4.7 Throttle shaft / throttle shutter

If the throttle shaft moves stiffly or the throttle shutter does not open or close properly:

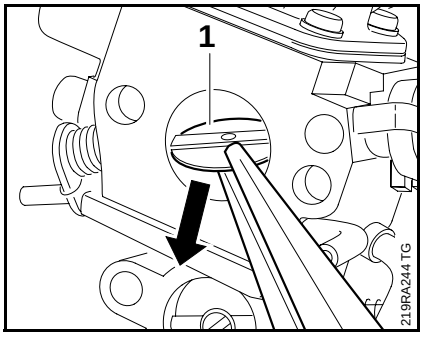
– Remove carburetor, 🕮 14.3.

– Carburetor troubleshooting chart, 🕮 4.6.

– Remove throttle shaft and clean the shaft and shaft guides with a little commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons.

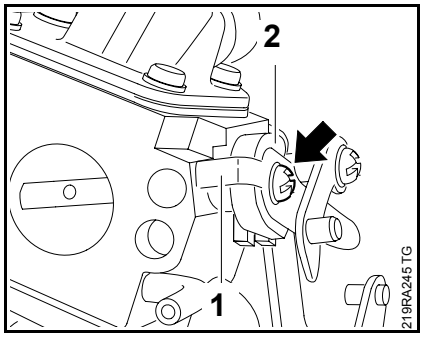


● Take out screw (arrow).



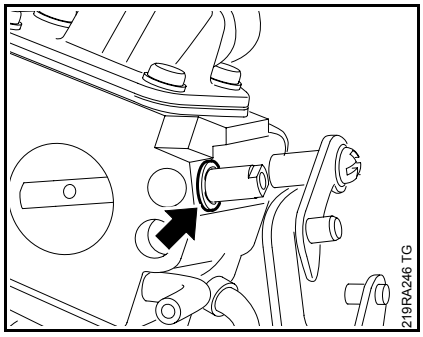
– Turn throttle shaft slightly.

● Pull out throttle shutter (1).

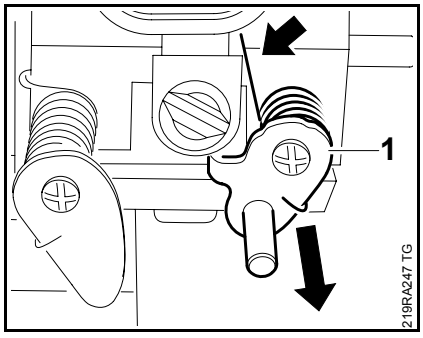


● Take out screw (arrow).

– Disconnect lever (1) and throttle cable retainer (2).

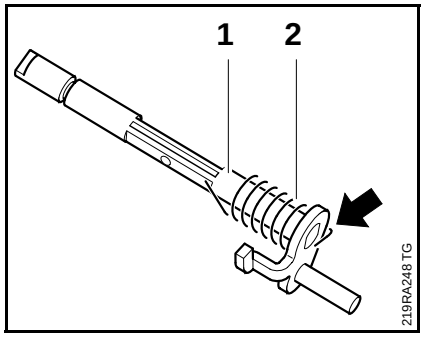


● Remove lock washer (arrow).



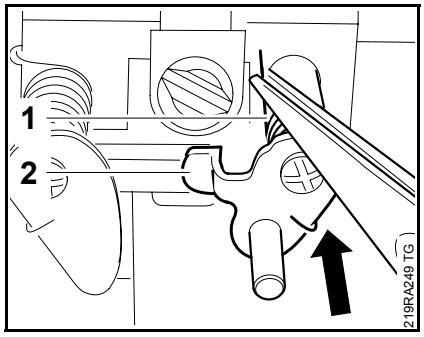
● Pull throttle shaft (1) out towards adjusting screws, detaching and relaxing the leg spring (arrow) at the same time.

– Clean throttle shaft and guides.



– Examine throttle shaft (1) and leg spring (2), replace if necessary.

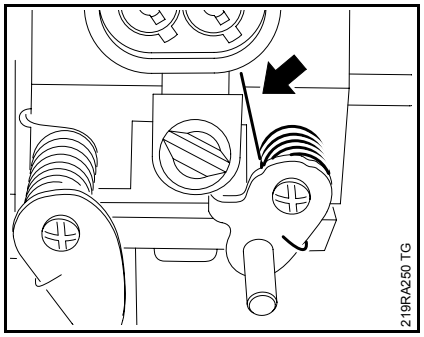
– Note installed position (arrow) of leg spring.



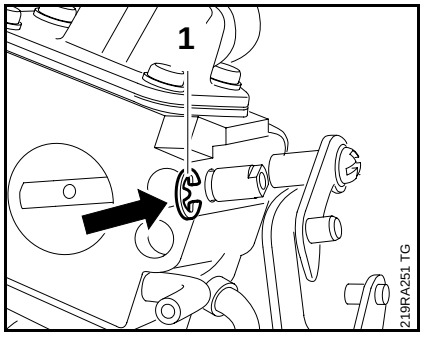
– Turn leg spring (1) roughly half a turn clockwise to tension it.

– Drive ball of accelerator pump into bore in carburetor with a suitable tool, 🕮 14.4.8.

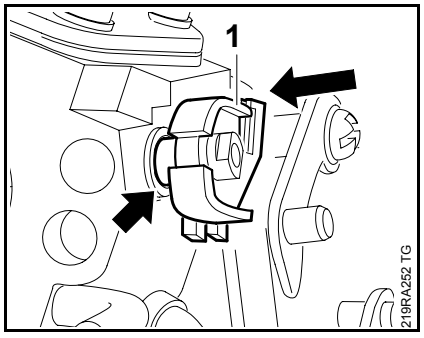
● Slide throttle shaft (2) with tensioned leg spring into carburetor housing from the side with the adjusting screws.



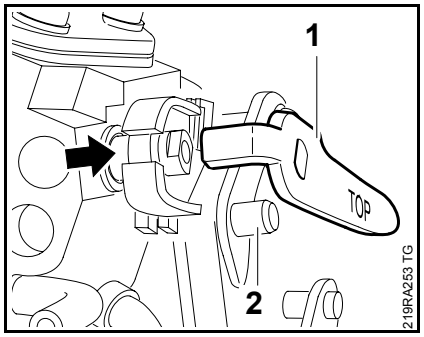
- Position tensioned leg spring on shoulder (arrow) of carburetor housing.



- Install circlip (1).

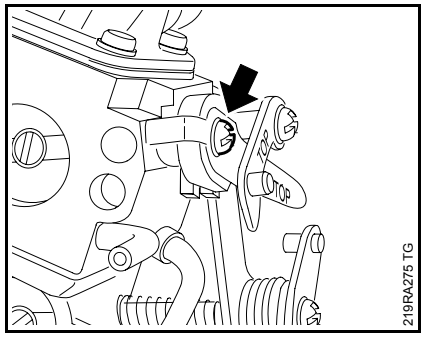


- Slide throttle cable retainer (1) onto the throttle shaft with the shoulder (arrow) first.



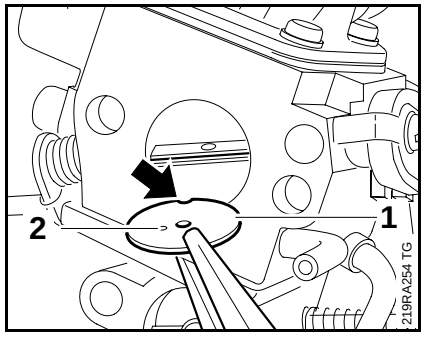
– Position lever (1) so that the word "TOP" is at the front.

- Lever (1) must be fitted behind lever (2); then push it into the groove (arrow) of the throttle cable retainer and onto the mating lug of the throttle shaft.

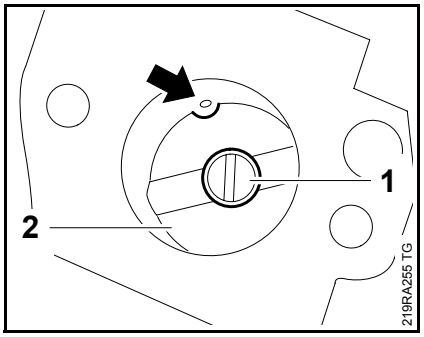


- Insert and tighten screw (arrow).

– Turn throttle shaft to full throttle position.



- Slide throttle shutter (1) into the slit in the throttle shaft with the recess (arrow) at the front and the hole (2) on the left.



– Coat screw with screw locking adhesive, 🕮 17.

● Fit new screw (1) in flat side of shaft and tighten it lightly.

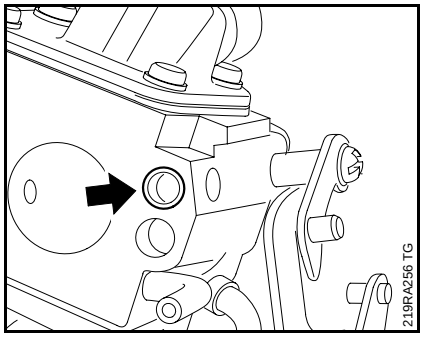
– Close throttle shutter (2) and centre it in the hole of the carburetor housing so that a small air gap remains.

The recess (arrow) in the throttle shutter must line up with the small hole in the carburetor housing.

– Tighten screw securely.

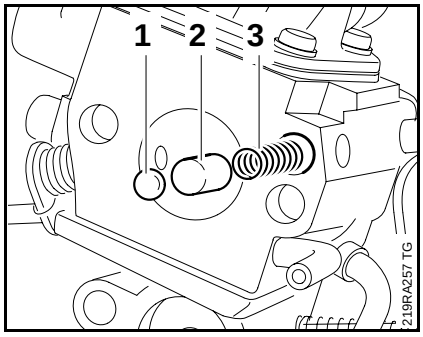
– Check correct operation and easy movement.

– Reassemble all other parts in the reverse sequence.



● Prise out sealing plug (arrow).

– Remove throttle shaft, 🕮 14.4.7.

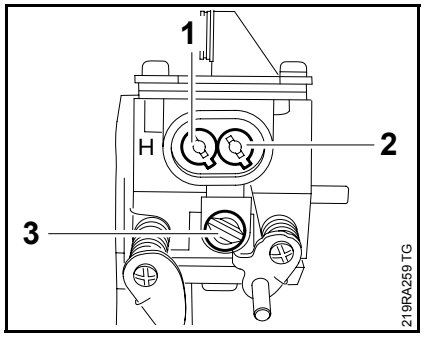


– Put on protective goggles and cover the hole in the accelerator pump with your fingers to prevent the parts popping out.

● Examine ball (1), pump piston (2) and spring (3), replace pump piston set if necessary.

– Press a new sealing plug in until flush with the hollow facing outwards.

– Reassemble all other parts in the reverse sequence.



There are three adjusting screws on the carburetor
H = High speed screw (1)
L = Low speed screw (2)
LA = Idle speed screw (3)

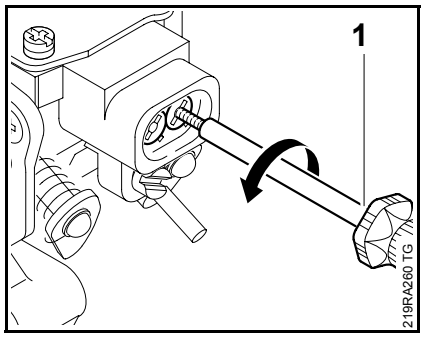
If the carburetor can no longer be adjusted, this may also be due to the adjusting screws.

The high speed screw **H** and low speed screw **L** have limiter caps which must be removed before removing the adjusting screws.

Always use new limiter caps.

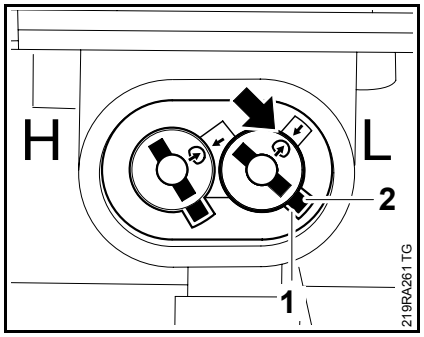
– Remove carburetor, 🕮 14.3.

– See also carburetor troubleshooting chart, 🕮 4.6.



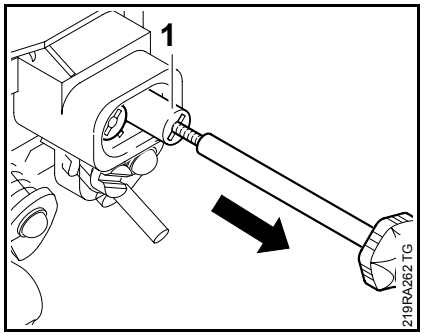
Low speed screw

● Screw puller (1) 5910 890 4500 onto limiter cap – left-hand thread.



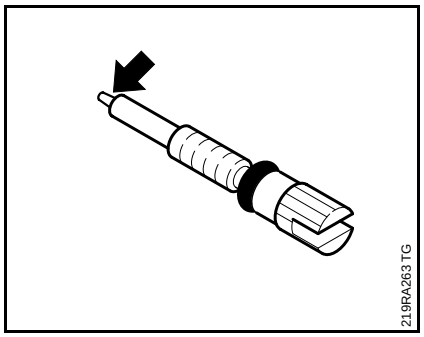
● Turn limiter cap until lug (2) is lined up with groove (1).

The dot on the limiter cap must be lined up with the mark (arrow).



● Pull off limiter cap (1).

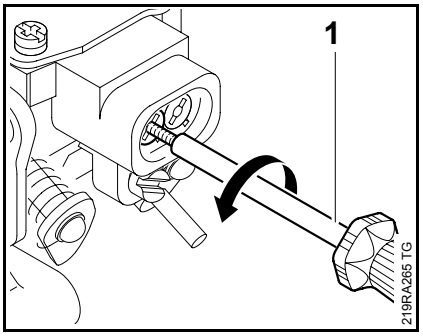
– Unscrew low speed screw **L**.



● Examine tip (arrow) for signs of damage or wear, replace low speed screw **L** if necessary.

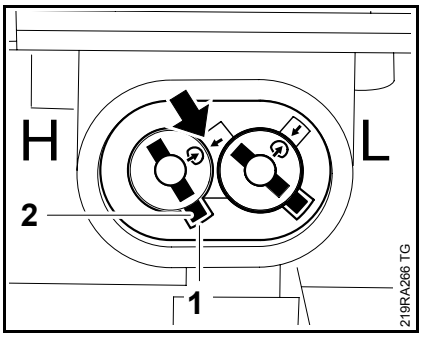
– Turn in low speed screw **L** until it is fully in its seat.

– Continue with high speed screw.



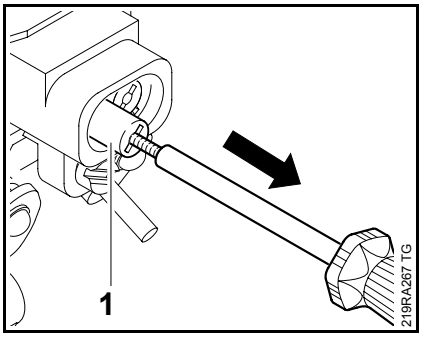
High speed screw

● Screw puller (1) 5910 890 4500 onto limiter cap – left-hand thread.



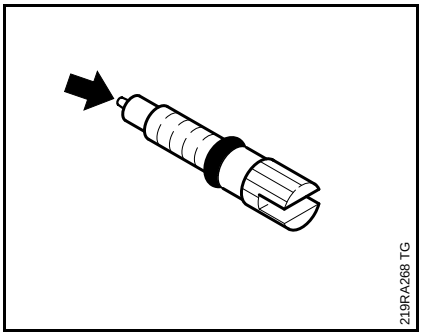
● Turn limiter cap until lug (2) is lined up with groove (1).

The dot on the limiter cap must be lined up with the mark (arrow).



● Pull off limiter cap (1).

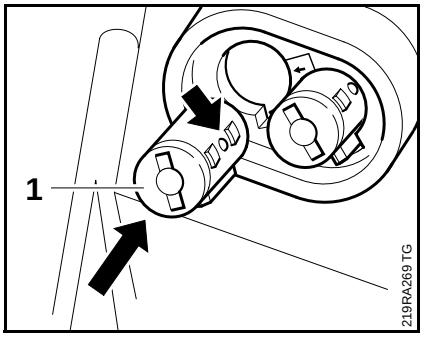
– Unscrew high speed screw **H**.



● Examine tip (arrow) for signs of damage or wear, replace high speed screw **H** if necessary.

– Turn in high speed screw **H** until it is fully in its seat.

– Continue with Fitting the limiter caps.



Fitting the limiter caps

- Press new limiter caps (1) onto the hole in the adjusting screw until they engage the first position (arrow) – do not push them down fully.

If screwdriver 5910 890 2304 is not available, the basic setting must be made without fitting the limiter caps.

– Reassemble in the reverse sequence.

– Make basic setting, 🕮 14.5.1.

Only required if it is necessary to replace the high speed screw **H** or low speed screw **L** and for cleaning or making basic settings on the carburetor.

The basic setting must always be made after removing the limiter caps.

The carburetor and air filter are installed, the adjusting screws preset and the new limiter caps have been fitted.

– Check chain tension, adjust if necessary.

– Examine spark arresting screen (if installed), clean or replace if necessary, 🕮 8.1.

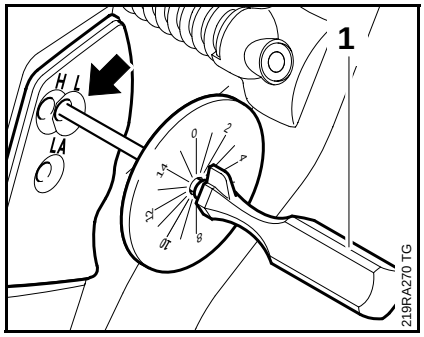
– Examine air filter, clean or replace if necessary, 🕮 14.1.

– Check air flap, clean if necessary, 🕮 14.4.1.

– With the low speed and high speed screws in their seats, turn them one turn counterclockwise.

– Let engine warm up.

Setting washer 5910 893 6600 can be fitted on screwdriver 5910 890 2304 to assist in making the setting.



- Position screwdriver (1) 5910 890 2304 through the grommet (arrow) and fitted limiter caps on the adjusting screws.

Set idle speed with speed tester. Set the specified speed with a tolerance of ± 200 rpm.

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

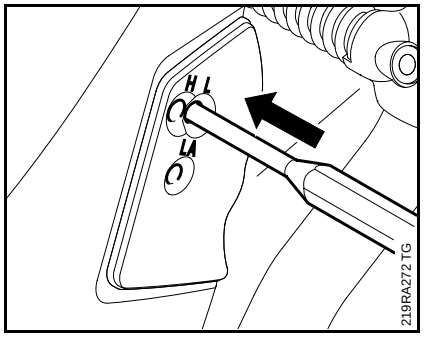
2. Turn low speed screw **L** clockwise or counterclockwise to obtain maximum engine speed.

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

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

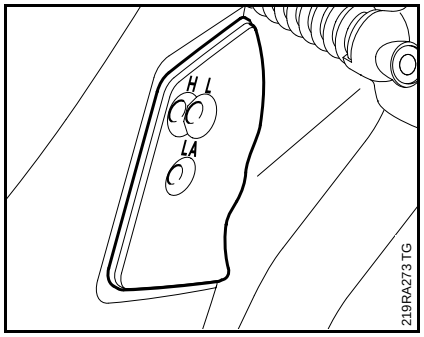
4. Set engine speed to 2,800 rpm with the low speed screw **L**.

5. Set maximum engine speed of 13,500 rpm with high speed screw **H**.



- Insert a suitable punch through the holes (arrow) and press the limiter caps fully home.

The basic setting of the high speed screw **H** and low speed screw **L** is now secured.



The limiter caps must not be removed when making the standard setting.

The following steps must be taken for all settings in order to avoid complications:

– Troubleshooting, 🕮 4.6.

– Check chain tension, adjust if necessary.

– Examine spark arresting screen (if installed), clean or replace if necessary, 🕮 8.1.

– Examine air filter, clean or replace if necessary, 🕮 14.1.

– Check air flap, clean if necessary, 🕮 14.4.1.

Standard setting

– Switch off engine.

– Carefully turn high speed screw **H** counterclockwise up to the stop, max. 3/4 turn.

– Carefully turn low speed screw **L** clockwise up to the stop, then back off 1/4 turn.

Set idle speed

– Let engine warm up.

– Open low speed screw **L** 1/4 turn.

– Turn idle speed screw **LA** clockwise up to the stop or until chain starts to rotate, then back off 1 1/2 turns.

Erratic idling behaviour, poor acceleration
(despite standard setting)

Idle setting too lean.

– Let engine warm up.

– Turn low speed screw **L** counterclockwise until engine runs and accelerates smoothly, but no further than the stop.

It is usually necessary to change the setting of the idle speed screw **LA** whenever the setting of the low speed screw **L** is corrected.

Correcting the carburetor setting for operation at high altitude

A minor correction may be necessary if engine performance is not satisfactory.

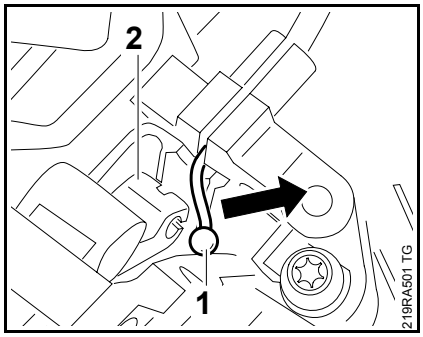
– Check standard setting.

– Let engine warm up.

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

If the setting is made too lean, the engine may be damaged due to insufficient lubrication and overheating.

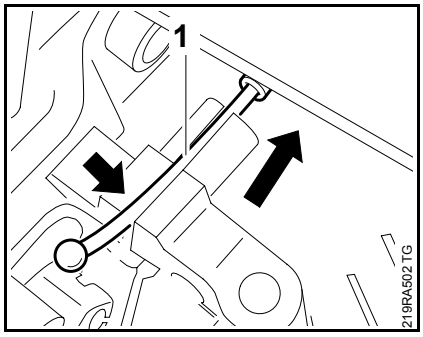
If these adjustments do not yield any improvement, refer also to the troubleshooting chart for ignition system, carburetor and engine, 🕮 4.5, 🕮 4.6 and 🕮 4.7.



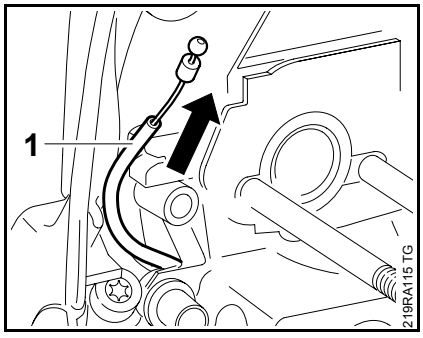
– Remove carburetor, 🕮 14.3.

– Remove anti-vibration spring on fuel tank, 🕮 11.3.

● Disconnect throttle cable (1) from lever (2).

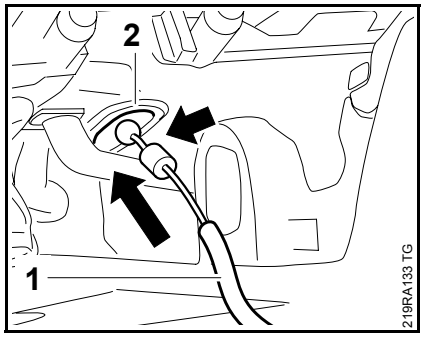


● Pull throttle cable (1) out of guide (arrow).

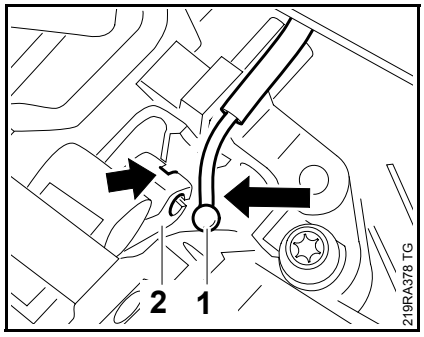


● Pull throttle cable (1) out of carburetor housing.

– Examine throttle cable and replace if necessary.

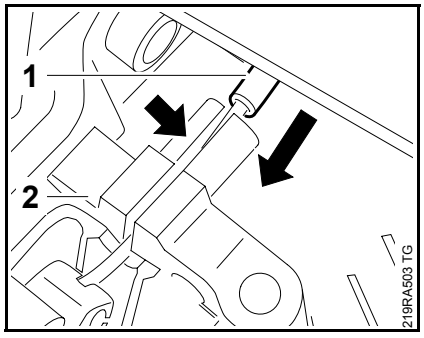


● Slide throttle cable (1) through grommet (2) with the double-nipple (arrow) first.

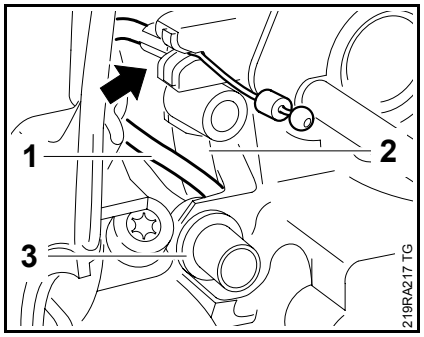


– Examine throttle cable retainer, replace if necessary, 🕮 7.3.2.

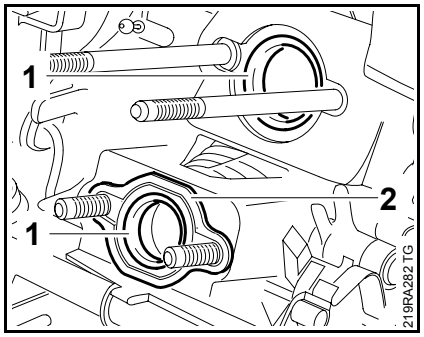
● Connect throttle cable (1) to lever (2) and guide wire through slot (arrow).



● Push throttle cable grommet (1) into guide (arrow) of throttle cable retainer (2).



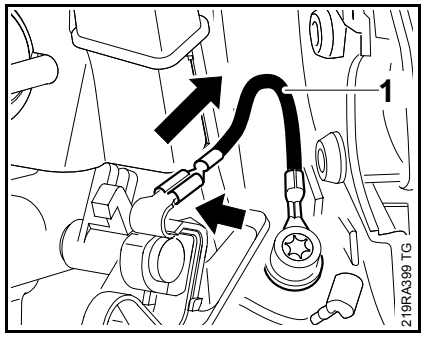
● Fit throttle cable (1) between impulse hose (2) and fuel hose (3), then hook it into carburetor support (arrow).



– Remove carburetor, 🕮 14.3.

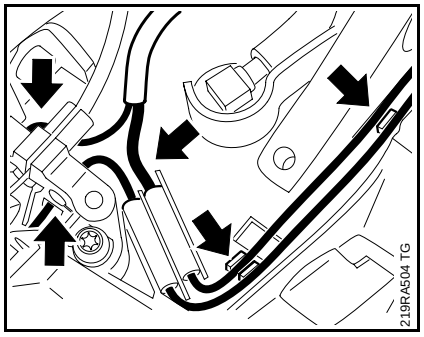
– Remove switch shaft, 🕮 12.1.

● Take out sleeves (1) and remove washer (2).



– Remove carburetor support.

● Disconnect ground wire (1) from contact spring (arrow).

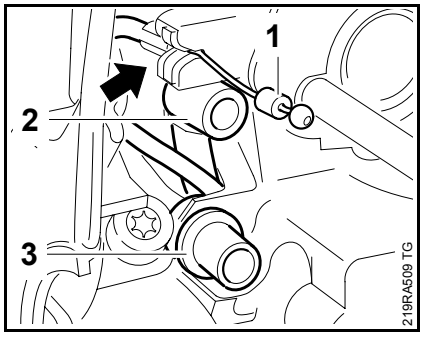


Machines with handle heating

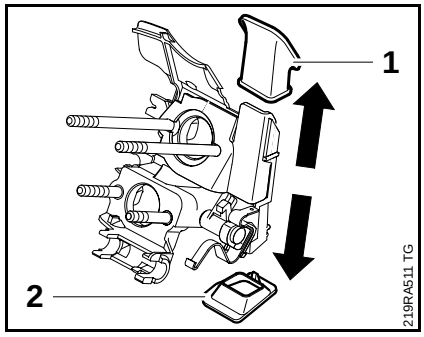
If the throttle cable retainer is replaced, ensure that the wiring is routed correctly (arrows).

– Reassemble all other parts in the reverse sequence.

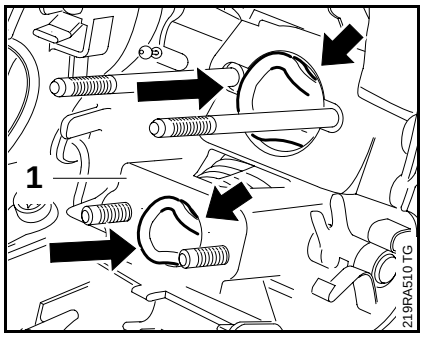
– Tightening torques, 🕮 3.5.



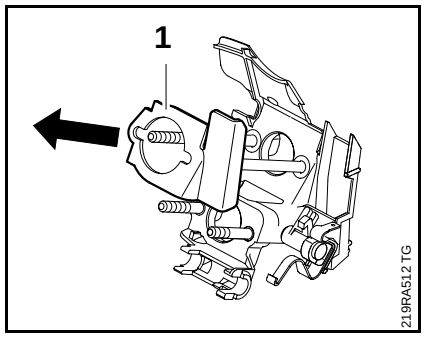
● Pull out throttle cable (1), impulse hose (2) and fuel hose (3).



● Remove air guide inlet (1) and air guide outlet (2).

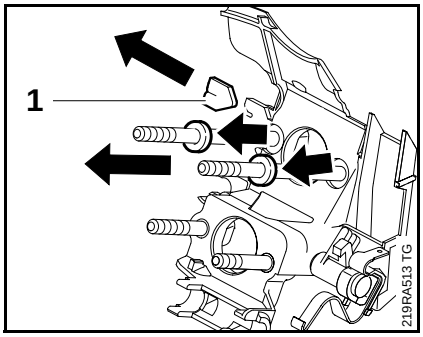


● Press rubber lips (arrows) of intake elbow out through the openings in the carburetor support (1) towards the cylinder.



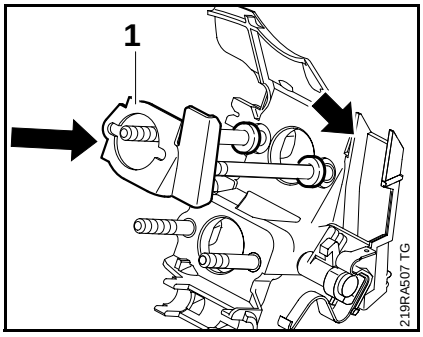
● Pull off preheating plate (1).

– Remove contact spring 🕮 9.6.2.



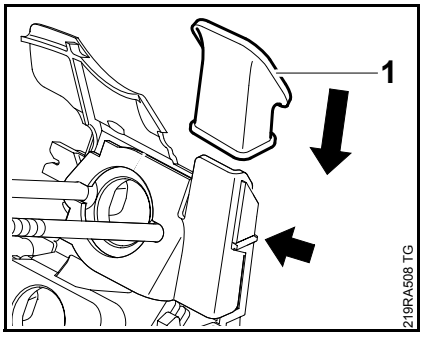
- Remove washers (arrows) and pull out felt (1).

– Examine carburetor support and all attached parts, replace if necessary.

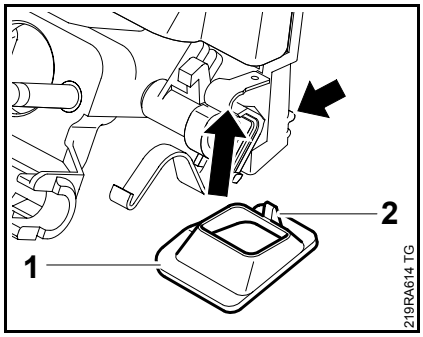


– Slide washers onto stud bolts.

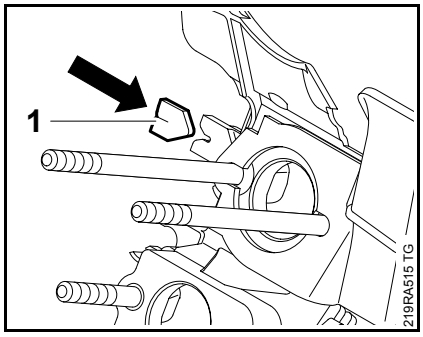
- Slide preheating plate (1) onto stud bolts so that it engages the air duct (arrow).



- Fit air guide inlet (1) until it engages the heel (arrow).



- Fit air guide outlet (1) until it engages the heel (arrow). Peg (2) must engage the notch.



– Install contact spring 🕮 9.6.2.

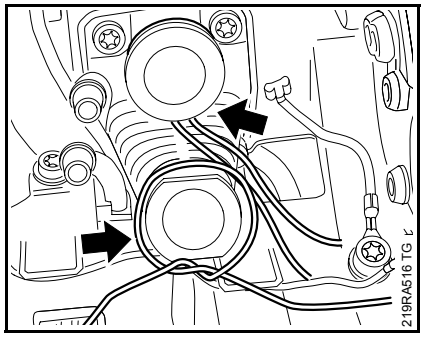
- Slide felt (1) into mount.

– Examine impulse hose, replace if necessary, 🕮 14.6.4.

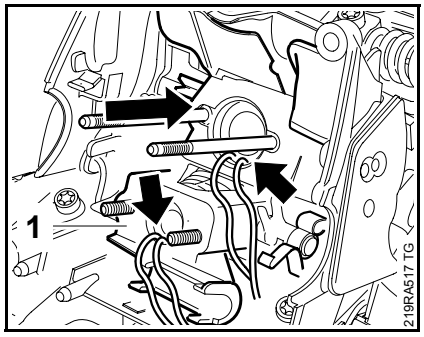
– Examine fuel hose, replace if necessary, 🕮 14.8.2.

– Examine throttle cable, replace if necessary, 🕮 14.6.

– Examine intake elbow, replace if necessary, 🕮 14.6.3.

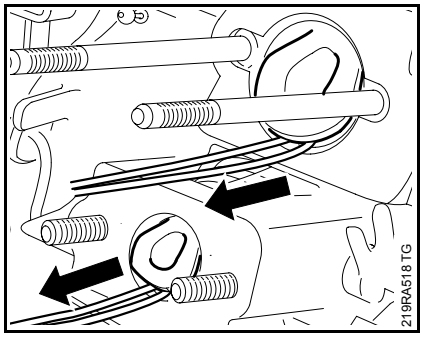


- Tie a piece of string round each flange (arrows), forming a loop with a simple knot and gently pulling it tight.



- Guide the ends of the string through the openings (arrows) in the carburetor support (1).

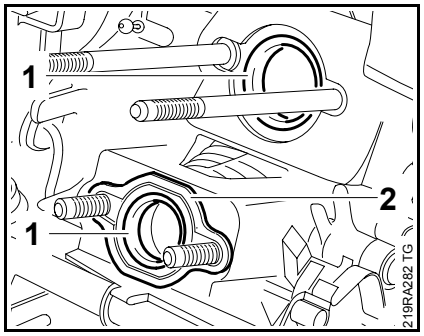
– Fit carburetor support against intake elbow and slip ground wire connector onto contact spring.



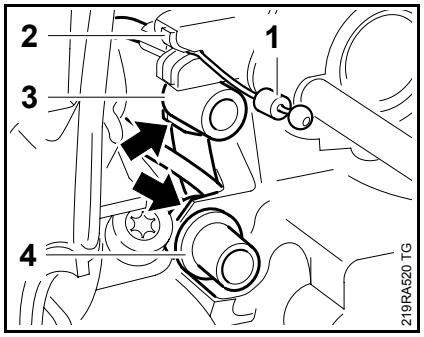
– Use STIHL Press Fluid for easier insertion, 🕮 17.

● Pull elbow flanges through the openings in the carburetor support with the aid of the string.

The rubber lips must enclose the openings completely.



● Press sleeves (1) into the openings of the elbow and fit washer (2).



– Guide throttle cable between fuel hose and impulse hose.

● Press throttle cable (1) into guide, so that wire glides through felt (2).

● Press impulse hose (3) and fuel hose (4) into the mounts (arrows).

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Remove pre-separator, 🕮 9.7.

– Remove shroud, 🕮 8.4.

– Remove short circuit wire, 🕮 9.6.2.

– Remove carburetor support, 🕮 14.6.1.

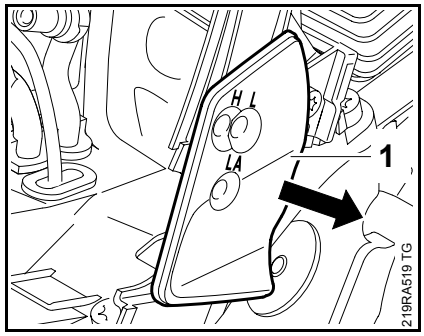
– Remove intake elbow, 🕮 14.6.3.

– Remove anti-vibration spring on front handle, 🕮 11.2.

Machines with handle heating

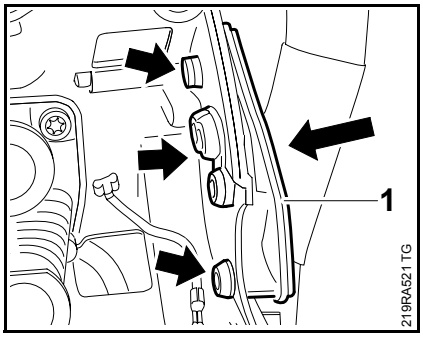
– Remove wiring harness, 🕮 15.8.1.

– Remove heating switch, 🕮 15.4.

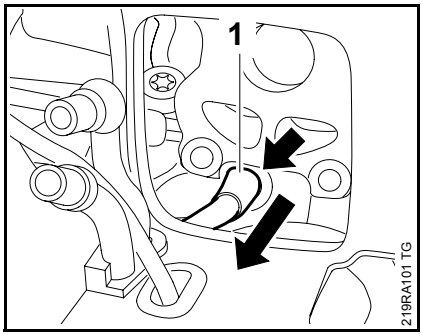


● Pull off grommet (1) and examine it, replace if necessary.

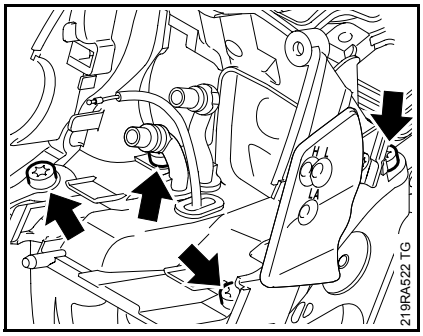
– Use STIHL Press Fluid for easier insertion, 🕮 17.



● Press grommet (1) into holes (arrows) until rubber lips enclose holes completely.

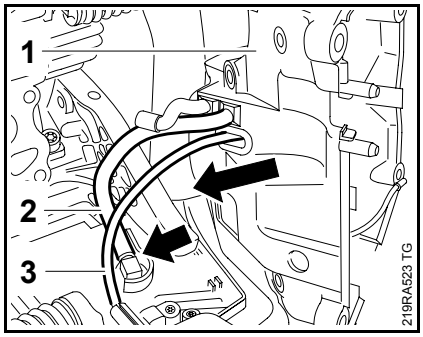


● Pull impulse hose (1) off connector (arrow).



● Take out screws (arrows).

– Disconnect ground wire.



– Lift carburetor housing (1) and turn it aside.

● Pull fuel hose (2) off elbow connector (arrow).

● Pull out throttle cable (3).

– Pull out wiring harness on machines with handle heating, 🕮 15.8.

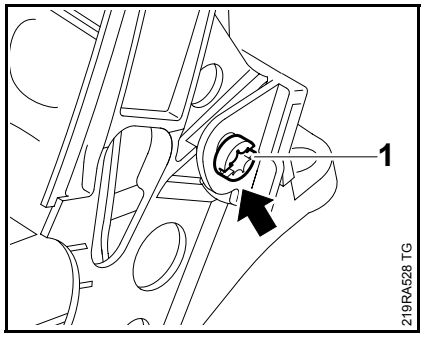
– Remove and examine carburetor housing, replace if necessary.

If a new housing is installed, all attached parts must be transferred to the new housing.

– Remove impulse hose, 🕮 14.6.4.

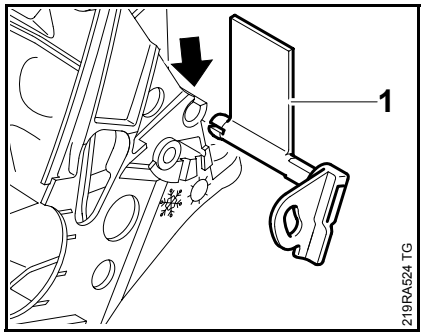
– Remove fuel hose, 🕮 14.8.2.

– Remove grommet/ignition cable retainer, 🕮 8.4.



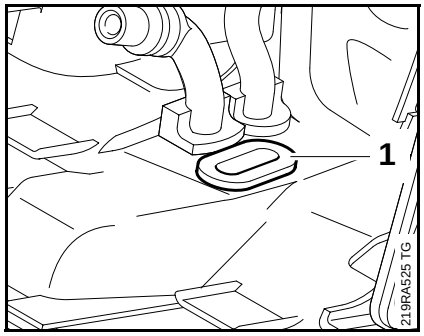
● Take out screw (arrow).

– Pull out slide (1).



● Push slide (1) fully home in the guide (arrow).

– Fit and tighten screw.



– Ease out grommet (1) and examine it, replace if necessary.

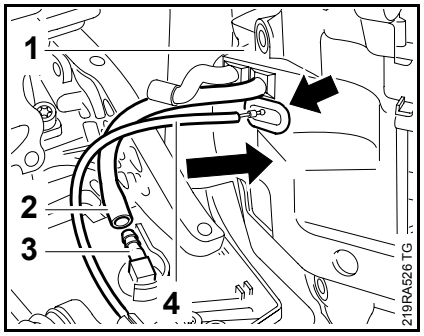
– Use STIHL Press Fluid for easier insertion, 🕮 17.

● Press grommet in until rubber lip completely encloses the oblong hole.

– Install impulse hose, 🕮 14.6.4.

– Install fuel hose, 🕮 14.8.2.

– Install grommet/ignition cable retainer, 🕮 8.4.

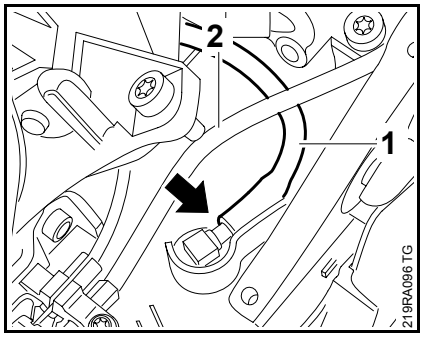


– Fit carburetor housing (1) and turn it aside.

● Push fuel hose (2) onto elbow connector (3).

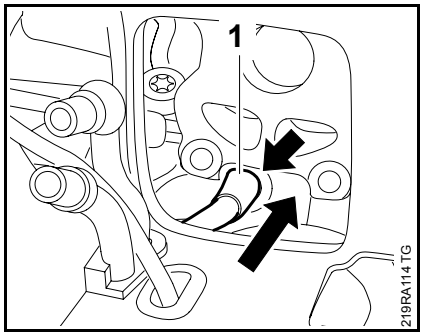
● Push throttle cable (4) through grommet (arrow).

– Install wiring harness in machines with handle heating, 🕮 15.8.2.



Machines with QuickStop Super

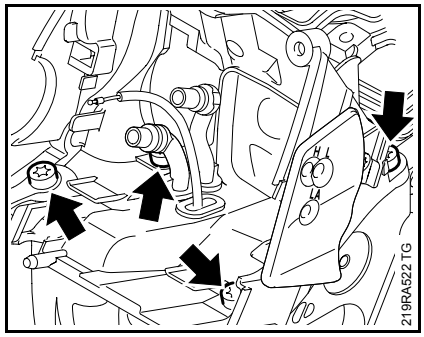
– Guide fuel hose (1) under brake cable (2) and push it onto the elbow connector (arrow).



– Fit carburetor housing.

● Push impulse hose (1) onto connector (arrow).

– Install ground wire, 🕮 9.6.3.



– Install intake elbow, 🕮 14.6.3.

● Check that intake elbow is correctly seated and tighten all four screws (arrows) securely.

– Throttle cable must be routed between impulse hose and fuel hose.

– Reassemble all other parts in the reverse sequence.

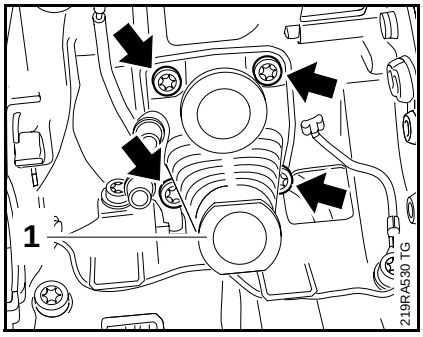
– Tightening torques, 🕮 3.5.

14.6.3 Intake elbow, removal and installation

A damaged intake elbow can lead to impaired engine operation.

– Troubleshooting chart, 🕮 4.6 or 🕮 4.7.

– Remove carburetor support, 🕮 14.6.1.



● Take out screws (arrows).

– Remove intake elbow (1) and examine it, replace if necessary.

– Fit intake elbow on cylinder intake port.

– Fit and tighten screws.

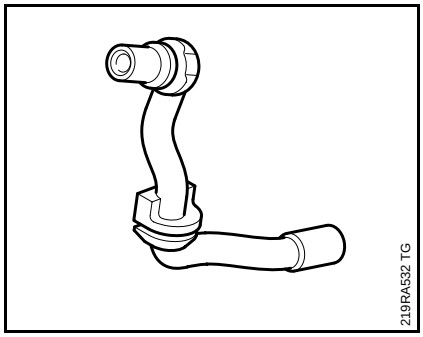
– Check that intake elbow is correctly seated and tighten screws securely.

– Ensure that short circuit wire is correctly located in the guides during the further installation procedure.

– Reassemble all other parts in the reverse sequence.

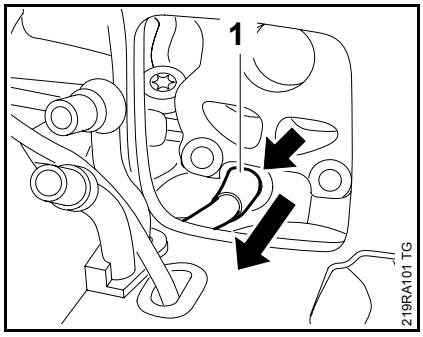
– Tightening torques, 🕮 3.5.

14.6.4 Impulse hose

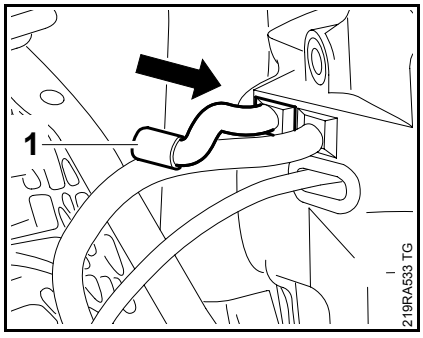


A damaged impulse hose can lead to impaired engine operation.

– Remove carburetor housing, 🕮 14.6.2.

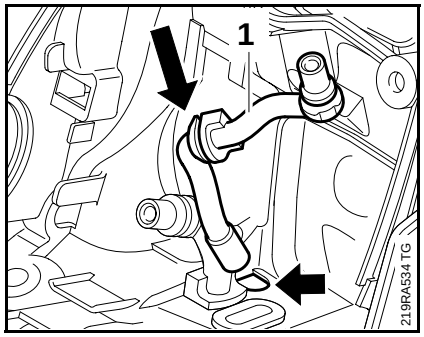


● Pull impulse hose (1) off connector (arrow).



● Push impulse hose (1) out of carburetor housing.

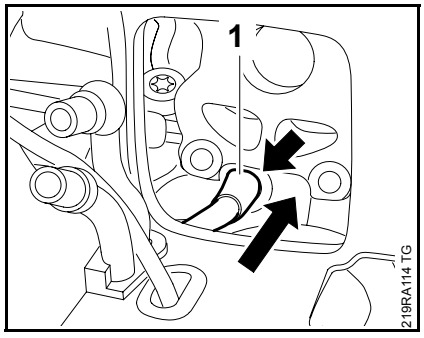
– Examine impulse hose, replace if necessary.



● Push impulse hose (1) through opening (arrow) until rubber lip encloses opening completely.

– Wet with STIHL Press Fluid, 🕮 17.

– Install carburetor housing, 🕮 14.6.2.



● Push impulse hose (1) onto connector (arrow).

– Reassemble all other parts in the reverse sequence.

14.7 Tank vent
14.7.1 Check

Always check and clean the tank vent in the event of trouble with the carburetor or fuel supply system, replace if necessary. Check function by testing the fuel tank under vacuum or at gauge pressure via the fuel hose.

– Open fuel filler cap and drain fuel tank.

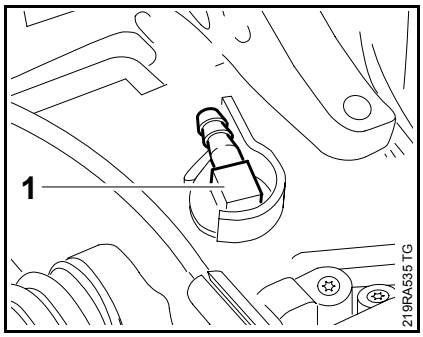
Collect fuel in a clean container and dispose of it in accordance with environmental regulations.

– Close fuel filler cap.

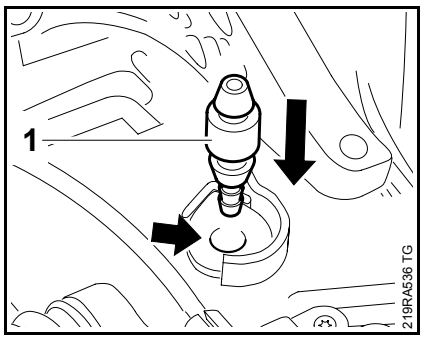
– Remove carburetor, 🕮 14.3, before checking function via fuel hose.

Work through the following steps and repeat the test if a leak is found.

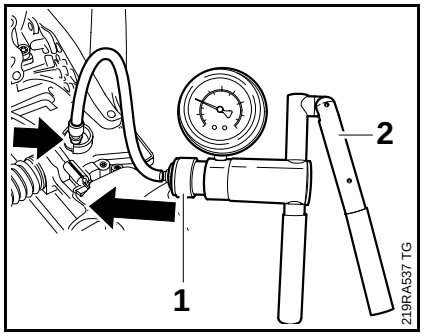
– Remove carburetor housing, 🕮 14.6.2.



● Pull out elbow connector (1).



● Push nipple (1) 0000 855 9200 into flange (arrow) of intake hose.



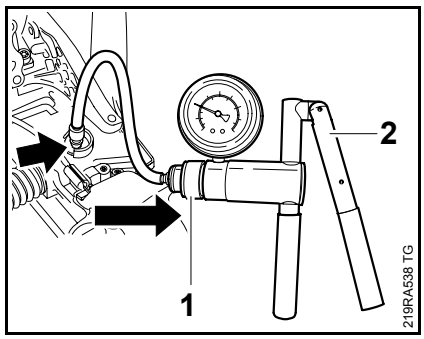
Vacuum test

● Slide ring (1) to the left and connect pump (2) 0000 850 1300 to nipple (arrow). Build up vacuum in fuel tank.

Equalization of pressure takes place via the tank vent. A vacuum must not build up in the tank.

– Clean area around the tank vent.

– Replace tank or tank vent if necessary, 🕮 14.7 or 🕮 14.8.4.

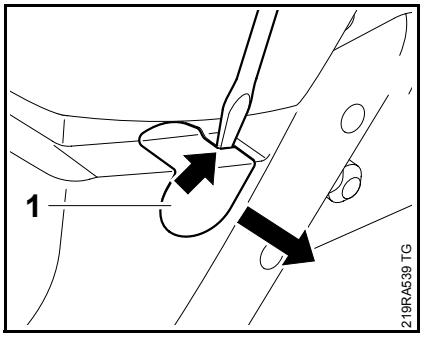


Pressure test

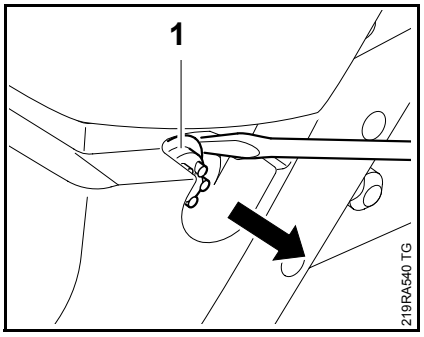
● Slide ring (1) to the right and connect pump (2) 0000 850 1300 to nipple (arrow). Build up pressure in fuel tank.

– Actuate pump until pressure gauge shows a reading of 0.5 bar. If this pressure is maintained for at least 20 seconds, the tank and tank vent are airtight. If the pressure drops, the leak must be located and the faulty part replaced.

– Reassemble in the reverse sequence.



● Prise off and remove cover (1).



● Prise out tank vent (1).

Always fit a new tank vent.

– Wet O-ring of new tank vent with STIHL Press Fluid, 🕮 17.

– Press new tank vent as far as possible into opening.

– Reassemble all other parts in the reverse sequence.

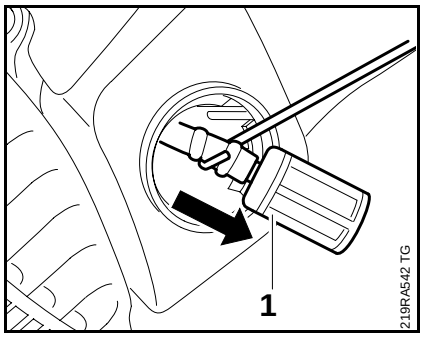
14.8 Fuel intake

14.8.1 Pick-up body

Any impurities mixed with the fuel are retained by the pick-up 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.

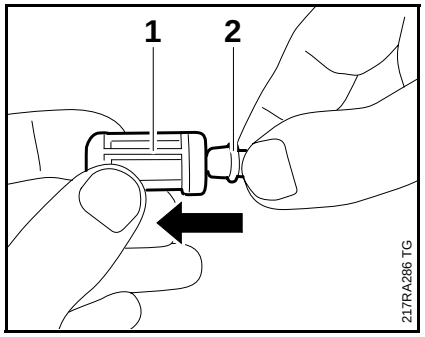
In the event of trouble in the fuel system, always check the fuel tank and pick-up body first.

– Troubleshooting, 🕮 4.6 or 🕮 4.7.



● Pull pick-up body (1) out of the fuel tank with assembly hook 5910 893 8800.

Do not over-extend the fuel hose.



● Pull pick-up body (1) off the fuel hose (2).

– Examine pick-up body and clean or replace if necessary.

– Reassemble in the reverse sequence.

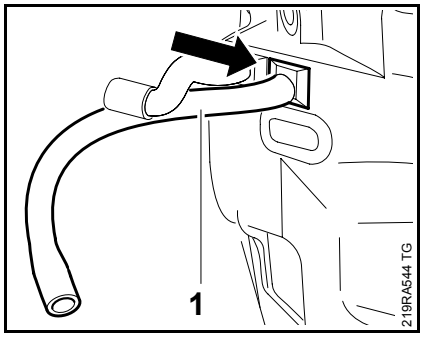
Clean fuel tank if necessary.

– Open fuel filler cap and drain fuel tank.

– Fill tank with a little fresh gasoline, close the tank and shake it thoroughly.

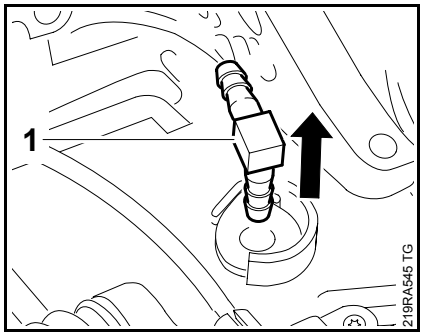
– Reopen and empty the tank.

– Dispose of fuel in accordance with environmental regulations.



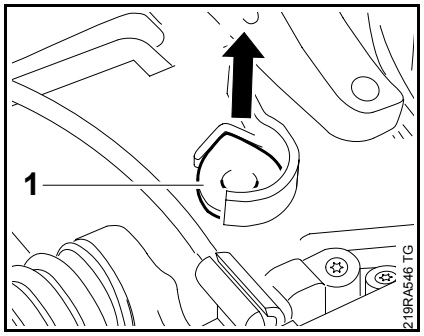
– Remove carburetor housing, 🕮 14.6.2.

● Push fuel hose (1) out.



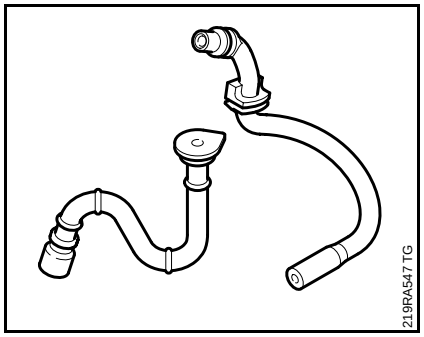
● Pull off elbow connector (1).

– Remove pick-up body, 🕮 14.8.1.

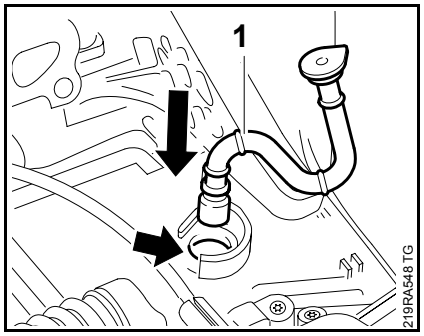


● Ease out fuel hose (1).

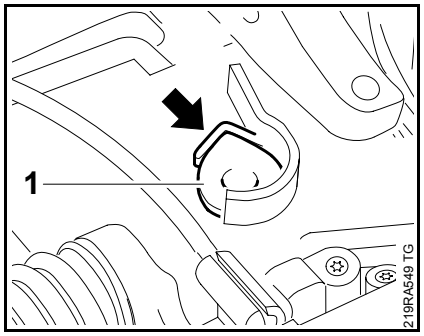
– Pull fuel hose out from inside tank.



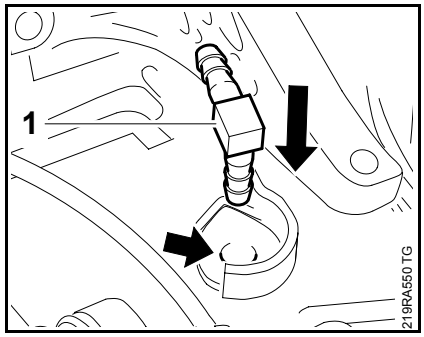
● Examine fuel hoses and replace if necessary.



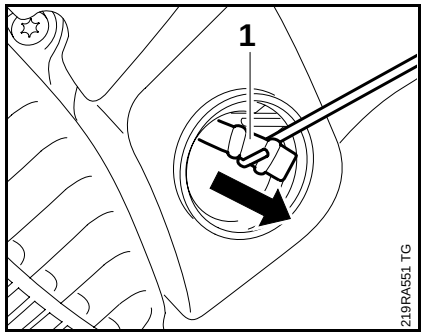
● Push fuel hose (1) into opening (arrow) in fuel tank.



● Fit flange (1) and press it into the fixture (arrow) on the housing until it rests against the housing.



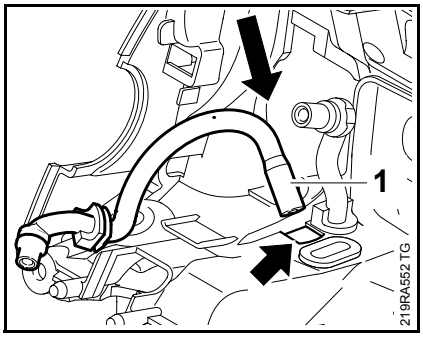
● Push elbow connector (1) into fuel hose (arrow).



● Pull fuel intake hose (1) out of fuel tank with assembly hook 5910 893 8800.

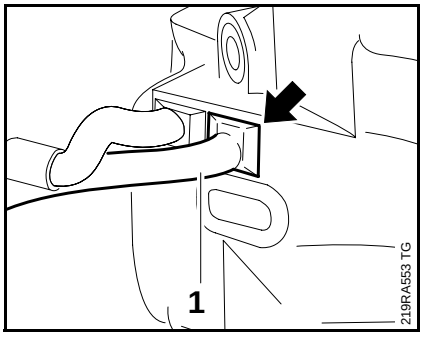
Do not over-extend the fuel hose.

– Install pick-up body, 🕮 14.8.1.

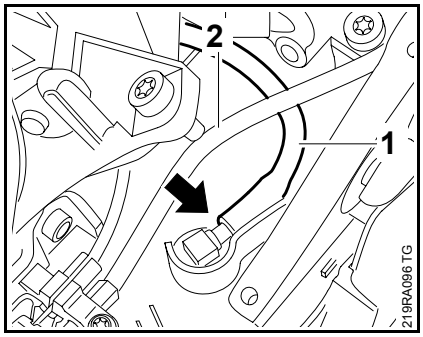


● Push fuel hose (1) through the opening (arrow).

– Use STIHL Press Fluid for easier insertion, 🕮 17.



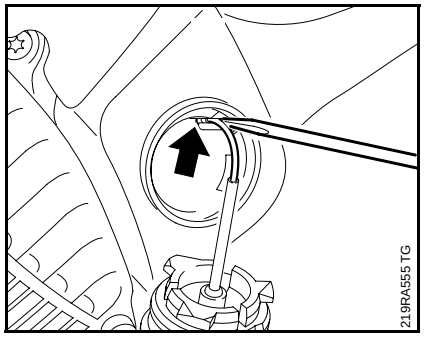
– Press fuel hose (1) in until rubber lip (arrow) encloses the opening completely.



Machines with QuickStop Super

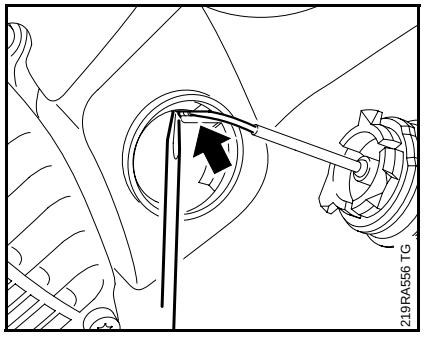
– Guide fuel hose (1) under brake cable (2) and push it onto the elbow connector (arrow).

– Reassemble all other parts in the reverse sequence.



– Open filler cap.

● Prise out nipple inside tank (arrow).



– Examine filler cap, rope and O-ring, replace if necessary.

● Press nipple into mount (arrow) inside tank.

– Close fuel filler cap.

– Perform leakage test.

14.8.4 Tank housing, removal and installation

– Drain fuel tank.

Collect fuel in a clean container and dispose of in accordance with environmental regulations.

– Remove front handle, 🕮 11.5 or 🕮 11.5.1.

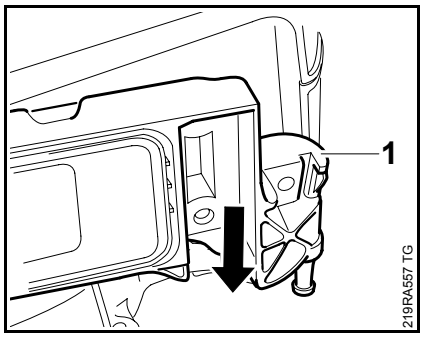
– Remove carburetor housing, 🕮 14.6.2.

– Remove stop buffer, 🕮 11.4

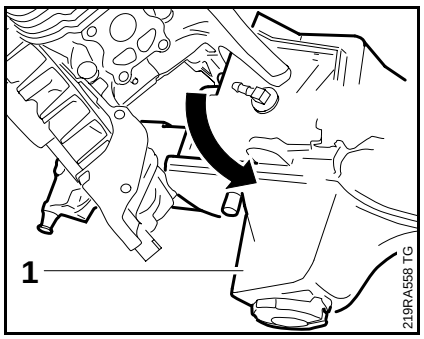
– Remove actuating lever, 🕮 12.

– Remove anti-vibration springs, 🕮 11.

– Remove wiring harness, 🕮 15.8.1 in machines with handle heating.

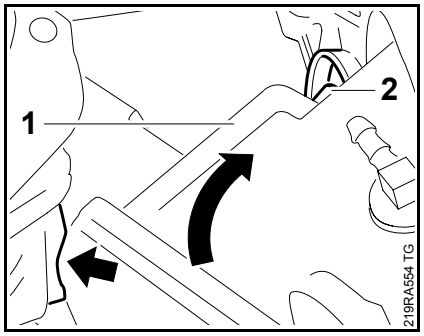


● First move front part of tank housing (1) down and out of the crankcase.



● Then turn tank housing (1) to the side and remove it.

– Examine tank housing, replace if necessary.



Only those parts of the old tank housing should be reused which are not included with the new tank housing – see spare parts list.

● Fit right-hand peg (2) of tank housing (1) into the hole of the stop buffer on the clutch side first, then turn it into the crankcase past the moulded bump (arrow).

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

15. Heating

15.1 Carburetor heating

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

The heating element is controlled via the temperature regulator on the carburetor.

The heating element must also be checked if running problems occur when the cold engine is idling or running at part load, particularly at sub-zero temperatures.

Idling problems with a hot engine may also indicate a fault in the heating element.

Complete system

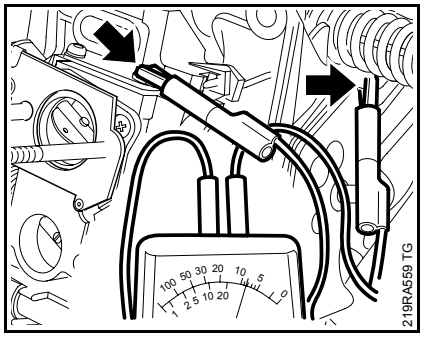
The generator and heating element are checked in the following test, which should be performed at an ambient temperature of at least + 20 °C (68 °F).

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

Check the carburetor heating in accordance with the troubleshooting chart, carburetor heating, 🕮 15.2.

– Remove filter base, 🕮 14.1.2.

– Set ohmmeter to measuring range "Ω".

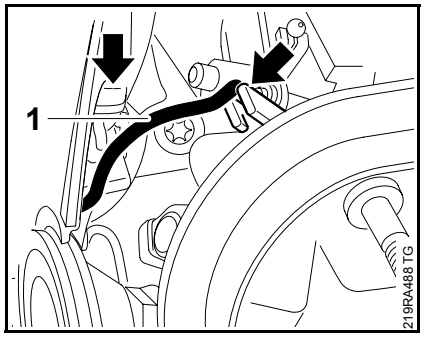


● Clip one of the two test leads onto the carburetor and the other onto a cylinder fin.

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

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

If the reading obtained is outside this tolerance, each component must be tested separately.

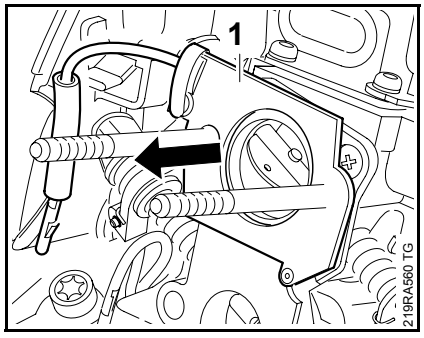


Heating element

– Remove air filter, 🕮 14.1.

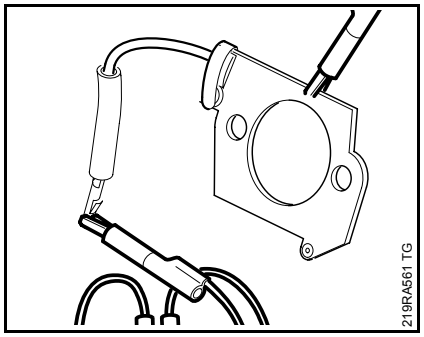
● Pull wiring (1) out of retainers (arrows).

– Remove filter base, 🕮 14.1.2.



– Push insulating tube towards the heating element and unplug the connectors.

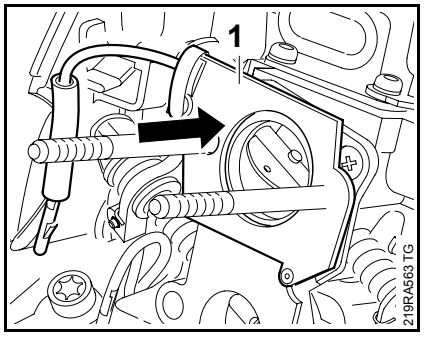
● Remove heating element (1).



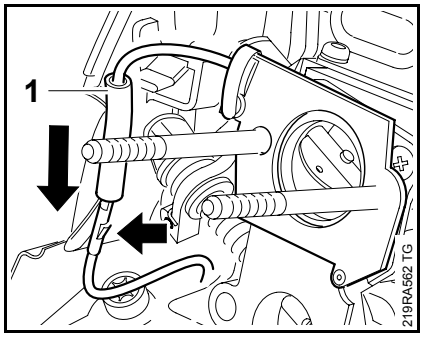
- Clip one of the two test lines onto the heating element and the other onto the round connector.

If the heating element is in good condition, the ohmmeter will indicate about 8 ohm in the measuring range "Ω".

– Check correct operation, 🕮 15.2.

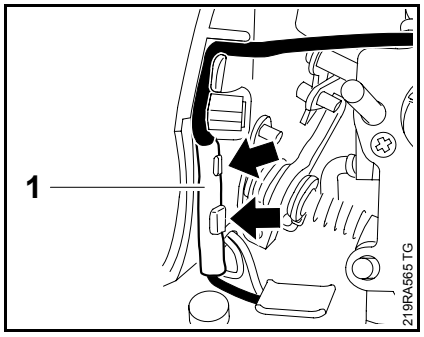


- Slide heating element (1) onto the carburetor.



– Push connector and terminal socket (arrow) together as far as possible.

- Slide insulating tube (1) over the plug connection.

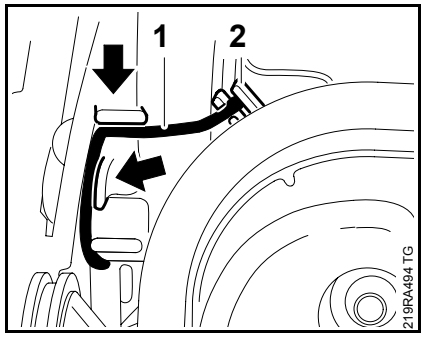


The insulating tube must cover the plug connection completely – risk of short circuiting.

- Press plug connection (1) into the guides (arrows).

Ensure that wires are not crossed.

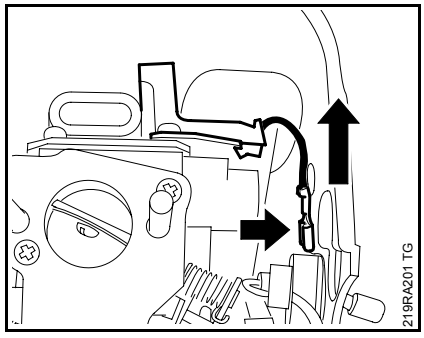
– Install filter base, 🕮 14.1.2.



- Attach wiring (1) to mount (2) and press it into the cable guides (arrows).

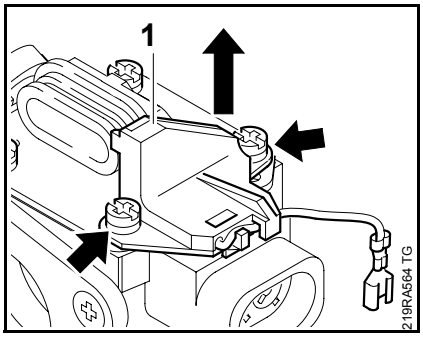
The wiring must not touch either the carburetor levers or the spacer flange.

Thermostatic switch



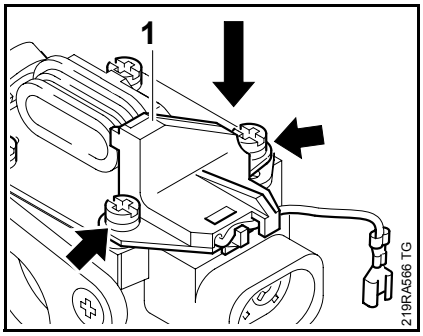
- Pull connector (arrow) off terminal socket.

– Remove carburetor, 🕮 14.3.



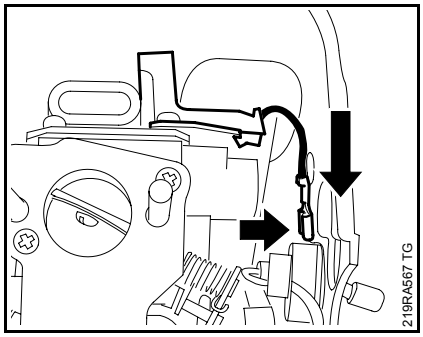
● Take out screws (arrows).

– Remove thermostatic switch (1).



– Fit new thermostatic switch (1).

● Fit and tighten screws (arrows).



– Install carburetor, 🕮 14.3.

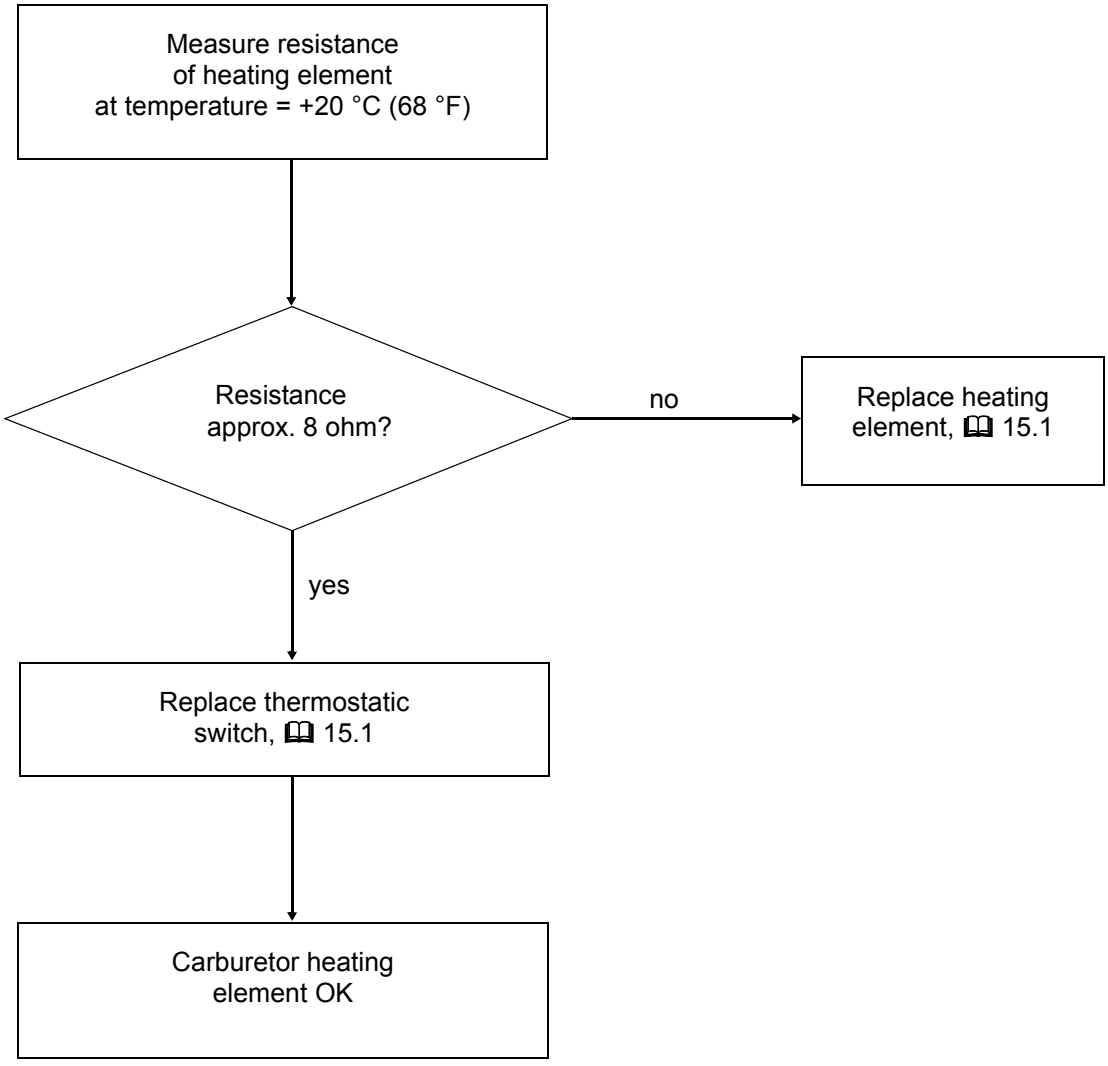
● Push connector (arrow) onto terminal socket.

– Wiring must rest in the retaining lug (strain relief).

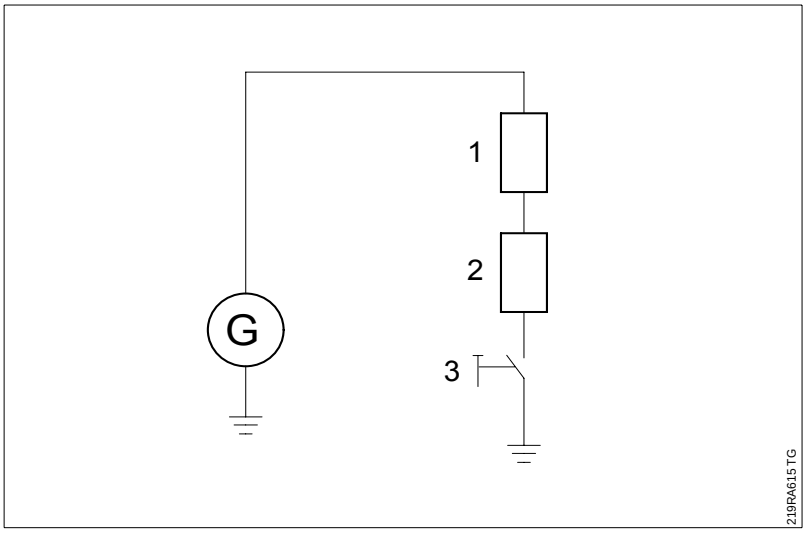
– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

– Check correct operation.



Circuit diagram



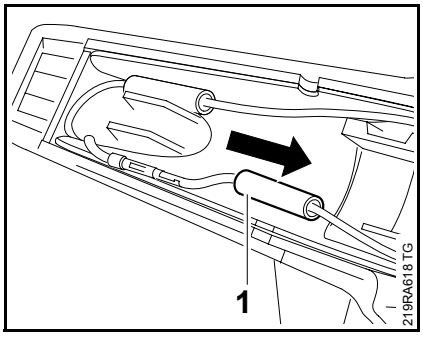
G = Generator
1 = Front handle
2 = Rear handle
3 = Heating switch

15.3 Handle heating systems
15.3.1 Troubleshooting

The entire handle heating system is maintenance-free and not subject to electrical wear. Faults in the generator, heating elements and wiring are generally caused by mechanical damage.

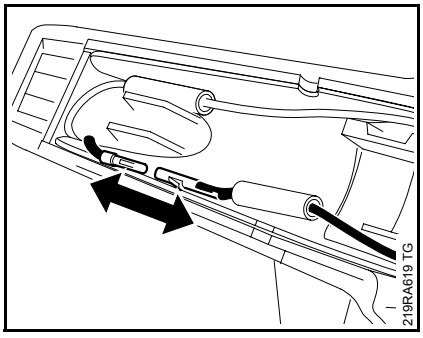
Failures in the heating system may be due to two reasons:

1. A break in the circuit due to a faulty wire or component.
2. A short circuit resulting from damage to the insulation.

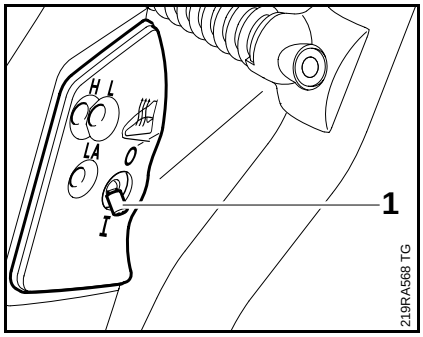


– Remove handle moulding, 🕮 12.2.

● Detach plug connection from guide and slide insulating tube (1) towards wiring harness.

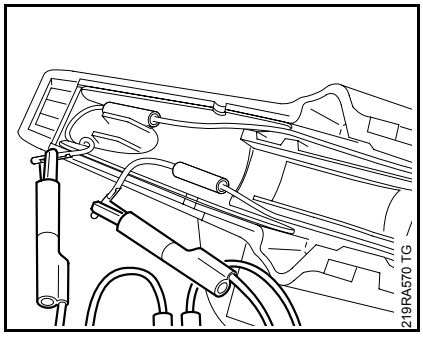


● Disconnect plug connection.



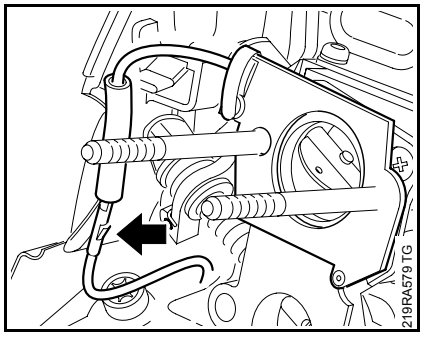
● Set heating switch (1) to position "I".

– Set ohmmeter to "Ω" position.



– Set slide control to position "O".

● Clip test leads onto the lead from the wiring harness and the lead from the heating element.



Machines with carburetor heating

● Disconnect lead from heating element (arrow).

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

If the system is OK, the ohmmeter will show a reading of about 10 ohm in the measuring range "Ω".

If the pointer does not move, 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 both cases, each component must be checked individually, ensuring that the generator connection remains separate from the heating element connection.

– Test according to the troubleshooting chart, handle heating and generator, 🕮 15.7.1.

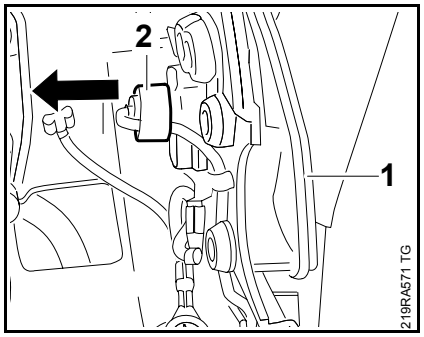
– Measure resistance in front handle, 🕮 15.6.

– Measure resistance in rear handle, 🕮 15.5.

– After testing, reconnect the leads and slide the protective tube back over the plug connection.

– Install handle moulding, 🕮 12.2.

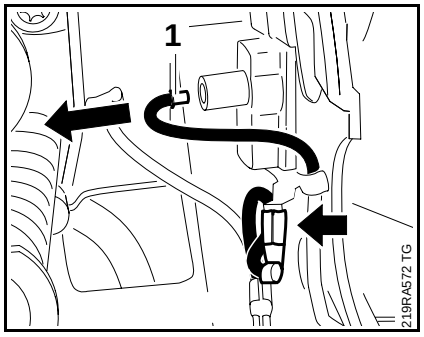
15.4 Heating switch, removal and installation



– Remove carburetor, 🕮 14.3.

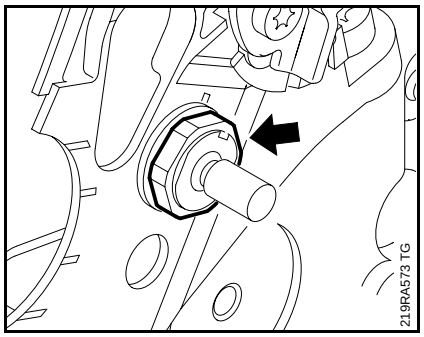
– Remove grommet (1), 🕮 14.6.2.

● Pull off cable retainer (2).

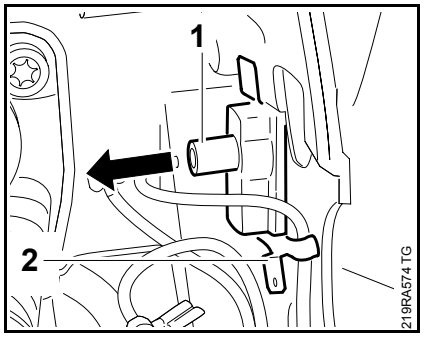


● Pull contact sleeve (1) out of heating switch.

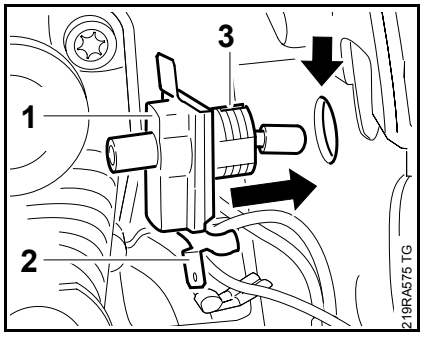
● Disconnect plug (arrow) from socket terminal.



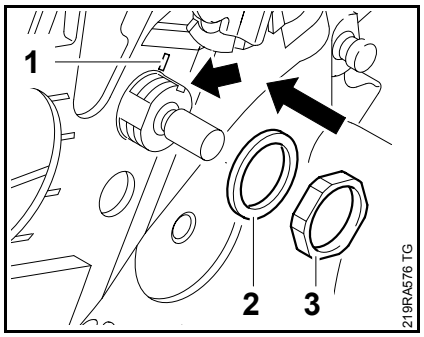
● Unscrew nut (arrow) of heating switch.



● Pull heating switch (1) with socket terminal (2) off to the inside and examine them, replace if necessary.

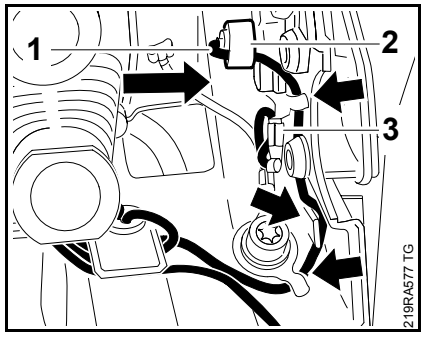


● Reconnect heating switch (1) and socket terminal (2) and push them through the opening (arrow) – the groove (3) must face upwards.



● Position heating switch so that the groove (arrow) is lined up with the mark (1) on the carburetor housing.

● Fit washer (2), screw on hex nut (3) and tighten it securely.



– Push contact sleeve (1) into switch.

– Fit cable retainer (2).

– Fit terminal socket ground wire (3) so that the loop in the lead faces towards the housing.

● Push wiring harness into guides (arrows).

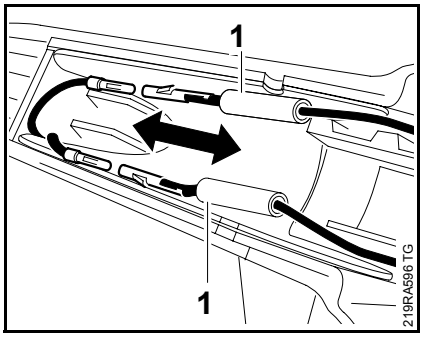
– Install carburetor and connect plug of thermostatic switch in machines with carburetor heating, 🕮 14.3.

– Check correct operation.

– Reassemble all other parts in the reverse sequence.

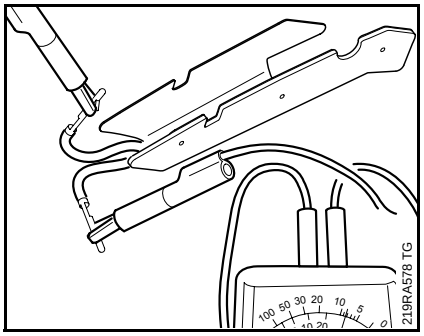
– Tightening torques, 🕮 3.5.

15.5 Heating element in handle, removal and installation



– Remove handle moulding, 🕮 12.2.

● Slide insulating tubes (1) towards wiring harness and disconnect plug connections.



– Take heating element out of handle moulding.

● Examine heating element, replace if necessary.

If the heating element is OK, the ohmmeter will indicate a reading of about 2 ohm in the measuring range "Ω".

The heating element must be replaced if the value is outside this range.

If the heating element does not work despite a resistance being measured:

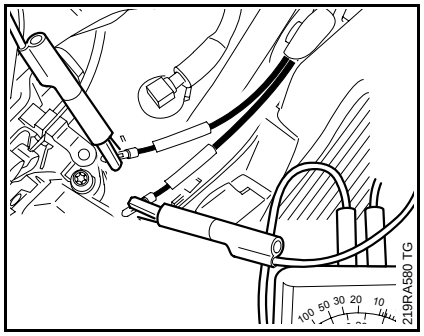
– Test generator and heating switch, 🕮 15.3.

– Reassemble in the reverse sequence.

15.6 Heating element in front handle, removal and installation

The heating element in the front handle cannot be replaced. The complete front handle must be replaced if the heating element is faulty.

– Remove front handle, 🕮 11.5.1.



– Clear connecting leads, 🕮 11.5.1

● Clip measuring instrument onto the two round connectors.

If the heating element is OK, the ohmmeter will indicate a reading of about 7 ohm in the measuring range "Ω".

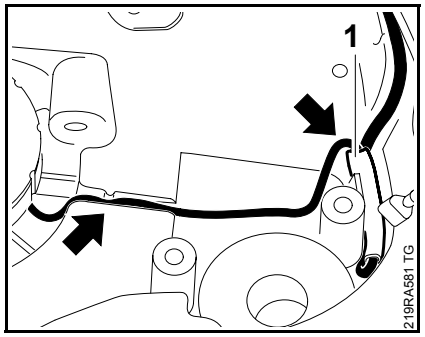
The heating element must be replaced if the value is outside this range.

If the heating element does not work despite a resistance being measured:

– Test generator and heating switch, 🕮 15.3.

– Reassemble in the reverse sequence.

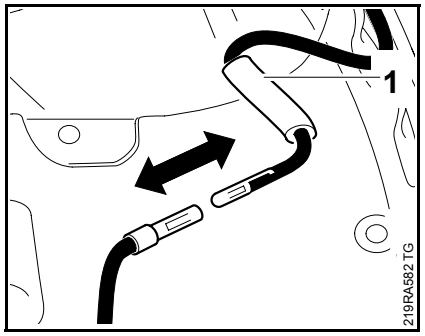
15.7 Generator, removal and installation



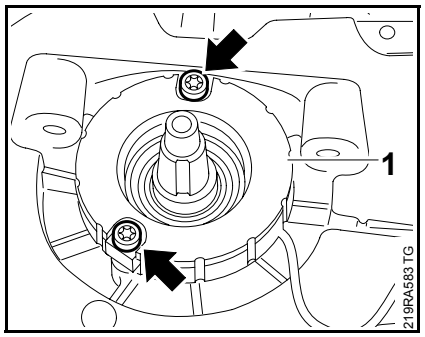
– Remove ignition module, 🕮 9.1.1.

– Remove flywheel, 🕮 9.5.

● Detach plug connection (1) and wiring from guides (arrows).

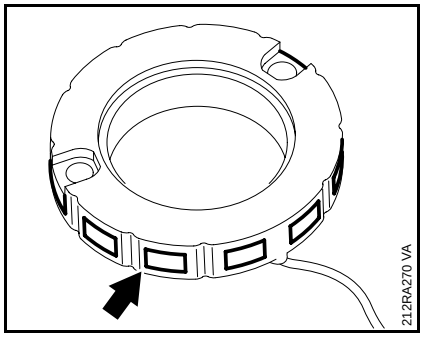


● Slide insulating tube (1) towards wiring harness and disconnect plug connection.

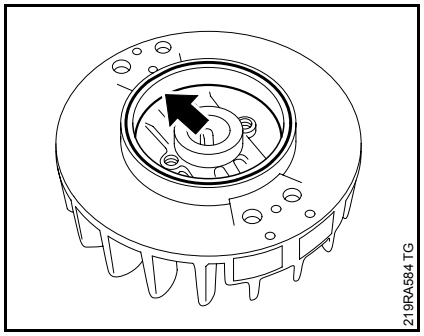


● Take out screws (arrows).

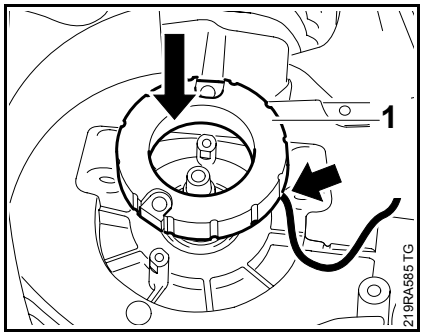
– Remove generator (1).



- Check generator and poles (arrow) for cracks or other damage. Replace generator if necessary.



- Check magnet ring (arrow) in flywheel for cracks or other damage. Replace flywheel if necessary.

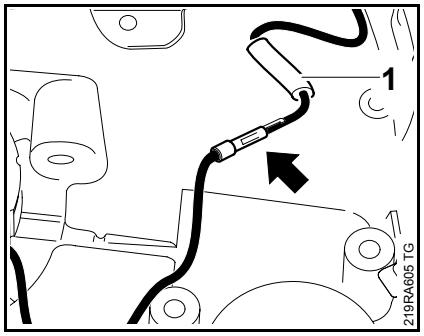


- Fit generator (1) with connecting lead (arrow) facing the housing.

– Fit and tighten screws.

– Apply screw locking adhesive, 🕮 17.

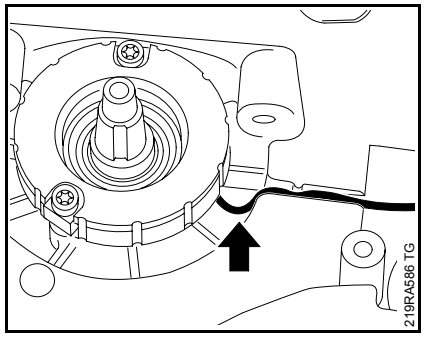
– Tightening torques, 🕮 3.5.



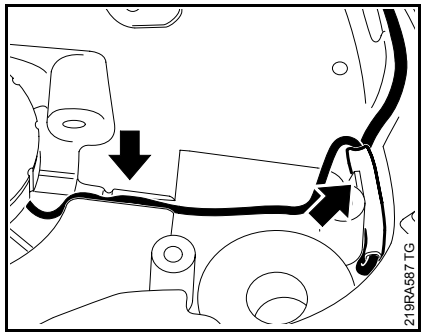
- Connect plug and socket terminal (arrow).

– Slide insulating tube (1) over plug connection.

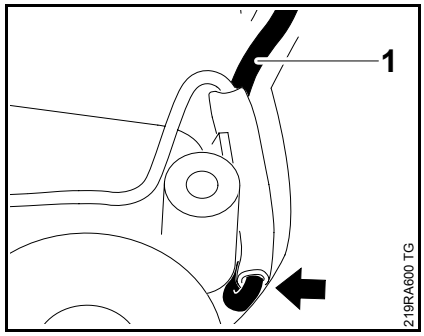
The insulating tube must enclose the plug connection completely – risk of short circuiting.



- Lay generator lead in bottom of recess (arrow).



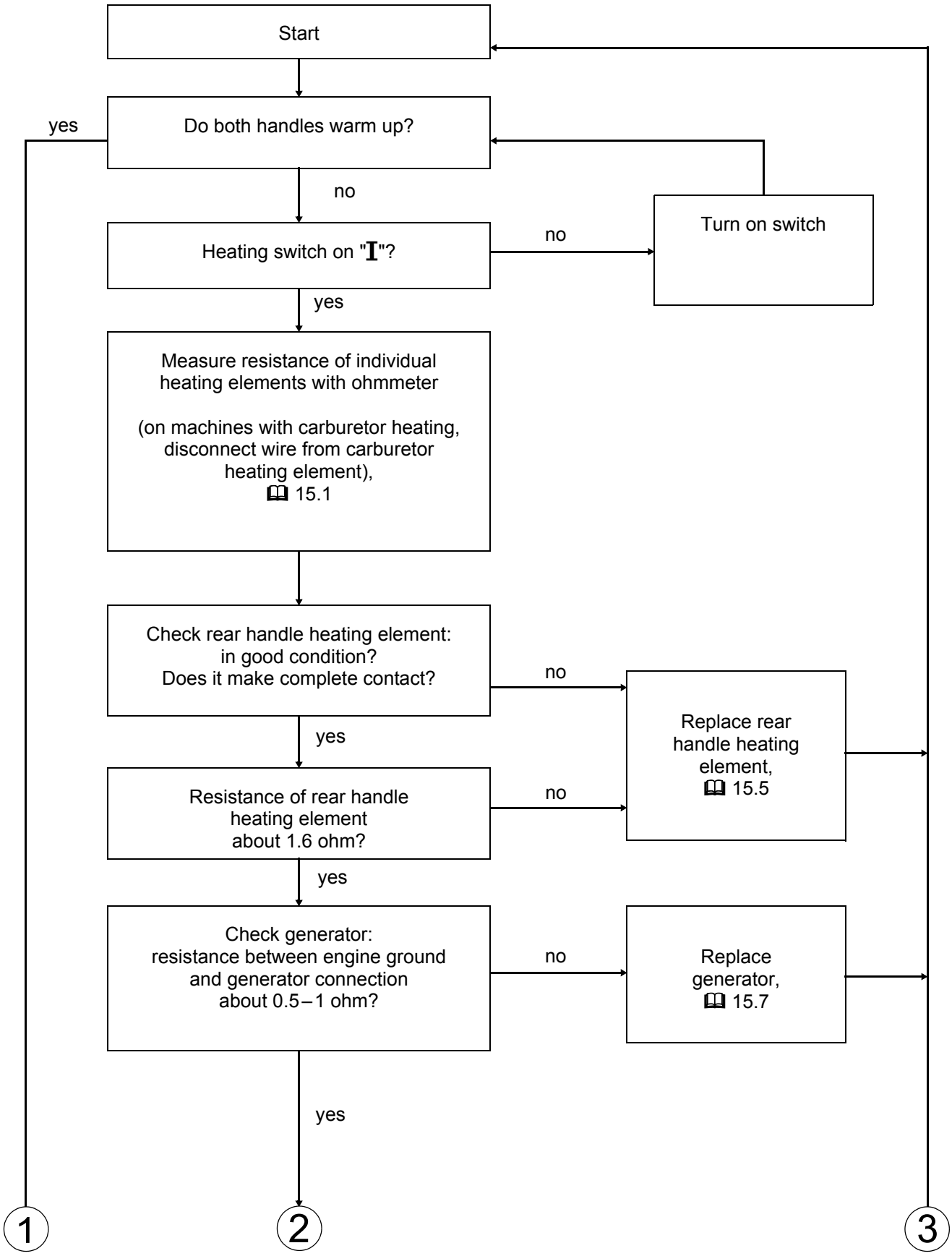
- Press wiring and plug connection into guides (arrows).

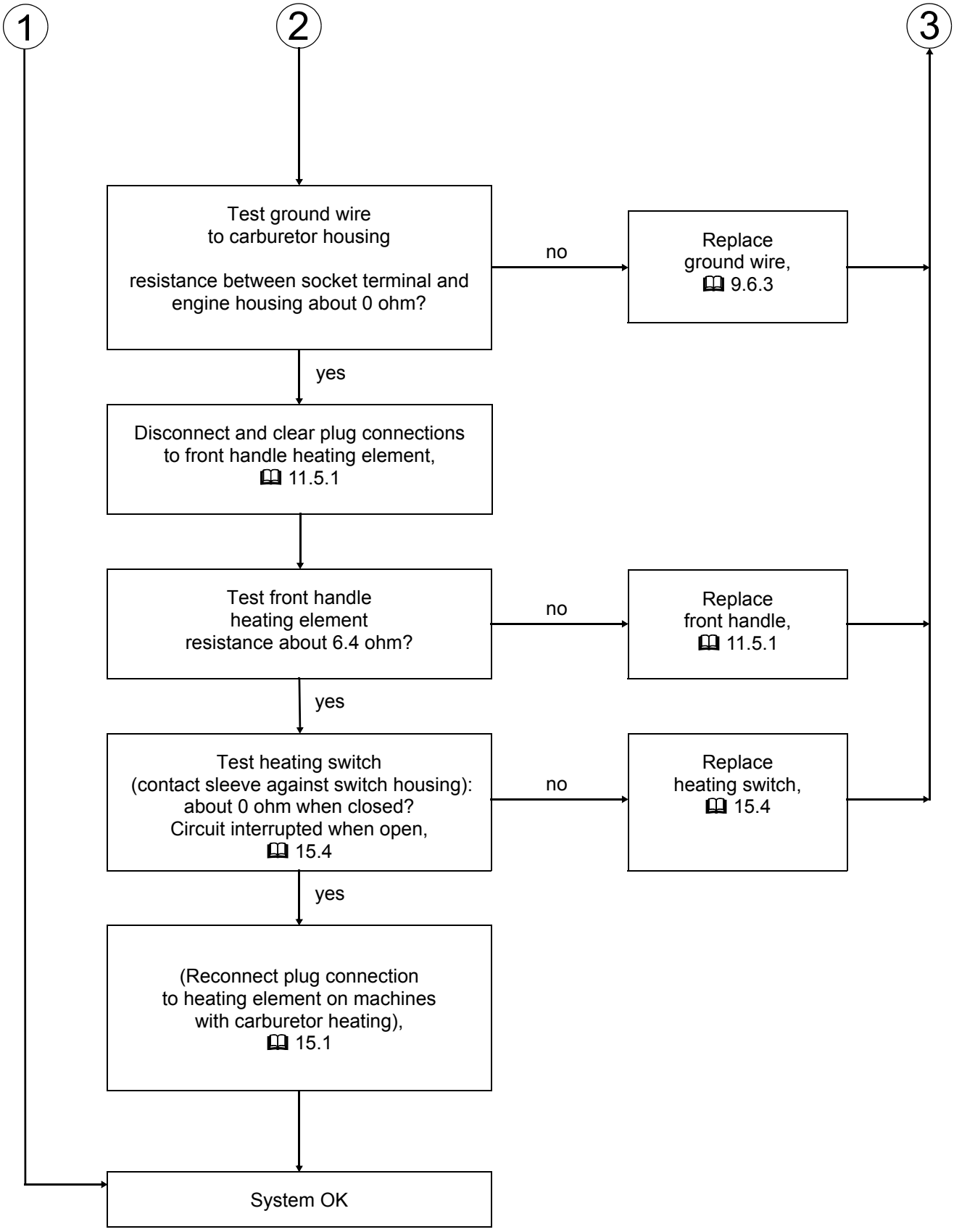


- Lead wiring harness (1) through under plug connection (arrow).

– Reassemble all other parts in the reverse sequence.

15.7.1 Troubleshooting chart, handle heating systems and generator




1
2
3
Test ground wire
to carburetor housing
resistance between socket terminal and
engine housing about 0 ohm?
no
Replace
ground wire,
📖 9.6.3
yes
Disconnect and clear plug connections
to front handle heating element,
📖 11.5.1
Test front handle
heating element
resistance about 6.4 ohm?
no
Replace
front handle,
📖 11.5.1
yes
Test heating switch
(contact sleeve against switch housing):
about 0 ohm when closed?
Circuit interrupted when open,
📖 15.4
no
Replace
heating switch,
📖 15.4
yes
(Reconnect plug connection
to heating element on machines
with carburetor heating),
📖 15.1
System OK

15.7.2 Summary of test connections and test values

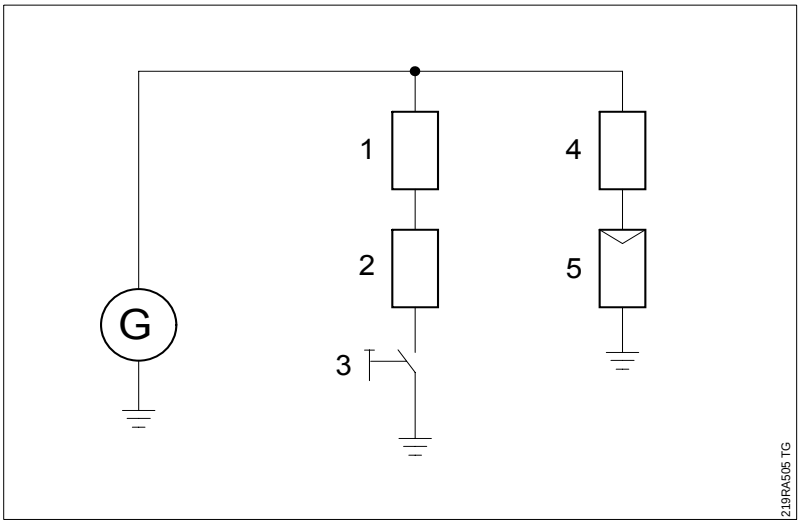
– The wires in the rear handle must be unplugged to test the individual components separately.

Component	Ohmmeter connection (either test lead can be used)		Resistance in ohm		If faulty	
	Lead 1	Lead 2	Required	Actual	Cause	Remedy
Switch	Switch connection[1)]	Switch housing	< 0.5	–	Switch faulty	Replace switch
Socket terminal	Socket terminal	Ground	0	> 1.0	Poor ground connection	Replace ground wire
Heating element in rear handle	Connector to lead from heating element	Connector to lead from heating element	1.6	1.5 – 2.0	Heating element OK	
				–	Break in wire, heating element damaged	Replace heating element and repair insulation
				0	Short circuit due to damaged insulation	
Heating element in front handle	Connector to lead from front handle heating element	Connector to lead from front handle heating element	6.4	6.0...8.0	Heating element OK	
				–	Break in wire, heating element damaged	Replace front handle
				0	Short circuit due to damaged insulation	Repair insulation

[1)] Pull wire out for this purpose

Component	Ohmmeter connection (either test lead can be used)		Resistance in ohm		If faulty	
	Lead 1	Lead 2	Required	Actual	Cause	Remedy
Generator	Connector to generator lead	Ground	0.6	0.5 – 1	Generator OK	
				–	Break in wire, generator damaged	Replace generator
				0	Short circuit due to damaged insulation	Repair insulation

Circuit diagram



G = Generator
1 = Front handle
2 = Rear handle
3 = Heating switch
4 = Heating element (carburetor)
5 = Thermostatic switch

15.8 Wiring harness
15.8.1 Removal

– Remove shroud, 🕮 8.4.

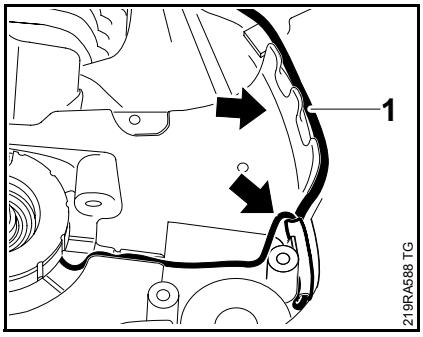
– Pull boot off spark plug, 🕮 9.4.

– Remove ignition module, 🕮 9.1.1.

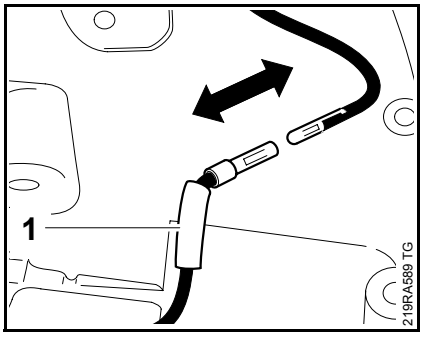
Remove flywheel, 🕮 9.5, so that generator lead can be routed correctly.

– Remove carburetor support, 🕮 14.6.1.

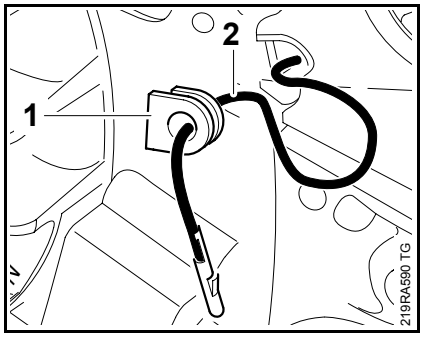
– Remove short circuit wire, 🕮 9.6.2.



● Pull wiring harness (1) and plug connection out of cable guides (arrows).

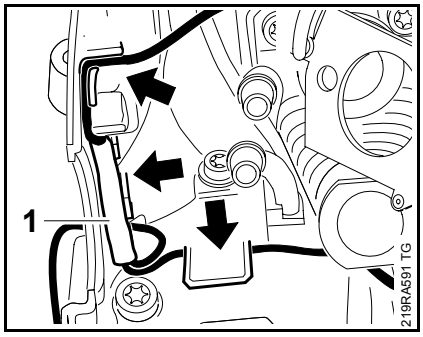


● Slide insulating tube (1) towards generator lead and disconnect plug connection.

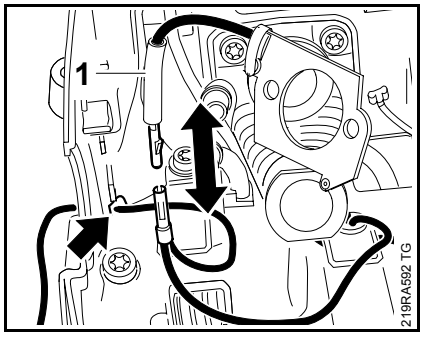


● Pull grommet (1) off wiring harness (2).

– Examine grommet for signs of damage, replace if necessary.

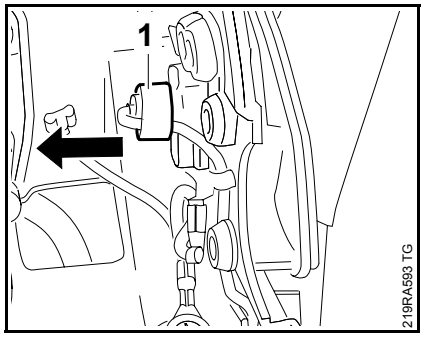


● Pull plug connection (1) and wiring out of guides (arrows).

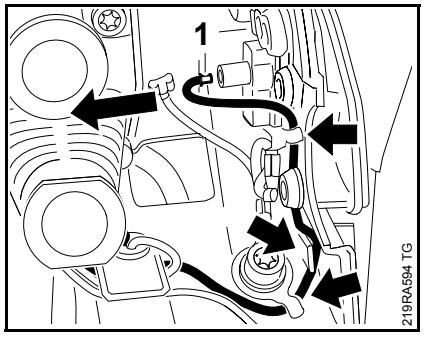


● Slide insulating tube (1) towards carburetor heating element and disconnect plug connection.

– Pull wiring harness out through opening at the side (arrow).

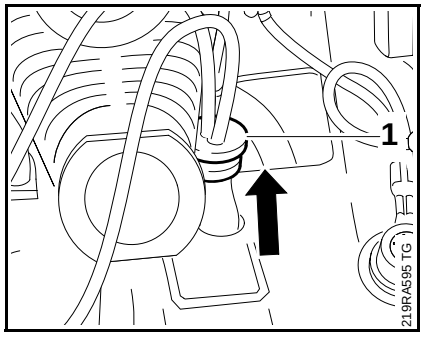


● Pull cable retainer (1) off.



● Pull contact sleeve (1) out of heating switch.

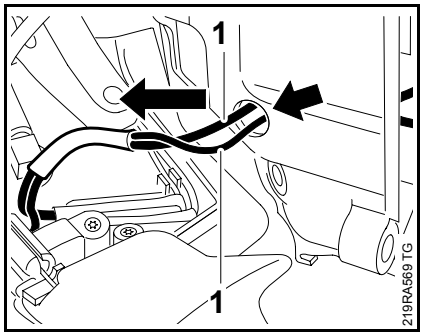
● Pull wiring harness out of cable guides (arrows).



● Prise out grommet (1) and pull it off the wiring harness.

– Examine grommet, replace if necessary.

– Remove carburetor housing and turn it aside, 🕮 14.6.2.

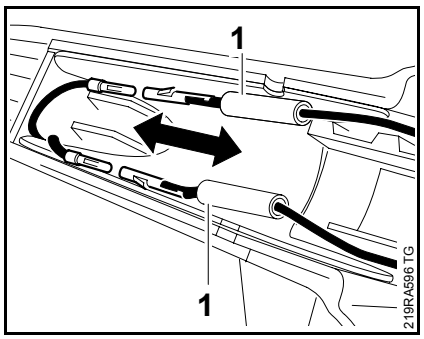


- Pull wiring harness (1) out of carburetor housing.

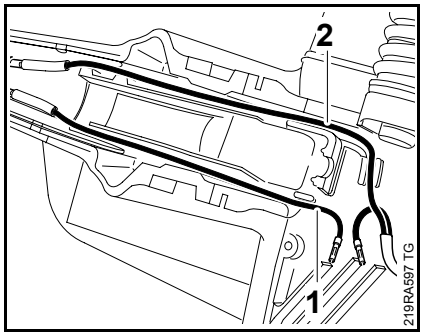
– Disconnect front handle heating element from wiring harness, 🕮 11.5.

– Remove throttle trigger and trigger interlock, 🕮 12.2 or 🕮 12.3.

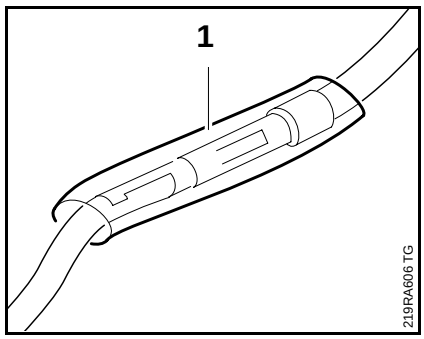
– Remove throttle cable retainer, 🕮 7.3.2.



- Slide insulating tubes (1) towards handle heating element and disconnect plug connections.

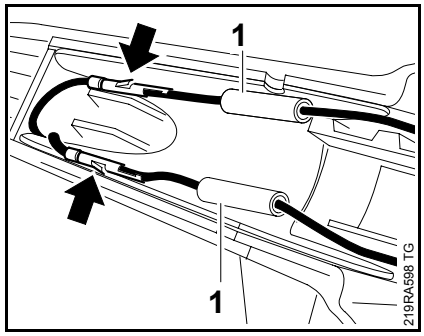


- Detach wiring harness (1) and wiring (2) from guides and examine them, replace if necessary.



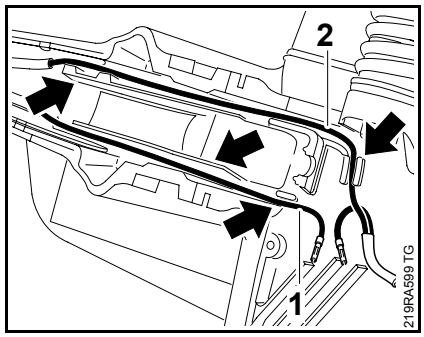
For all the following assembly steps:

- Insulating tubes must enclose the plug connections completely – risk of short circuiting.



– Push connector and socket terminals (arrows) together as far as possible.

- Slide insulating tubes (1) over the plug connections.

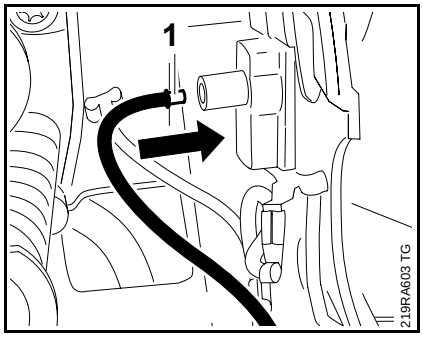


- Press wiring harness (1) and wiring (2) into the guides (arrows).

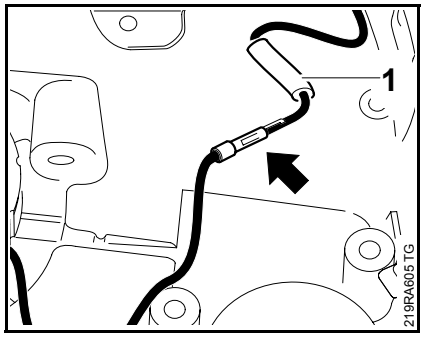
– Install throttle trigger and trigger interlock, 🕮 12.2.

– Install throttle cable retainer and throttle cable, 🕮 7.3.2.

Reconnect front handle heating element and wiring harness, 🕮 11.5.

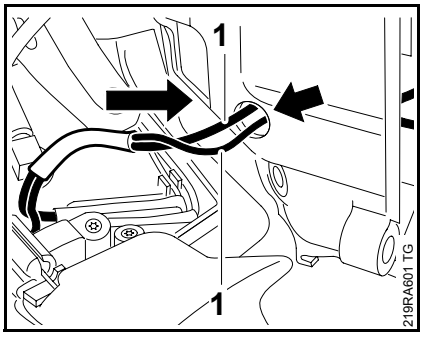


● Push round connector (1) into heating switch.



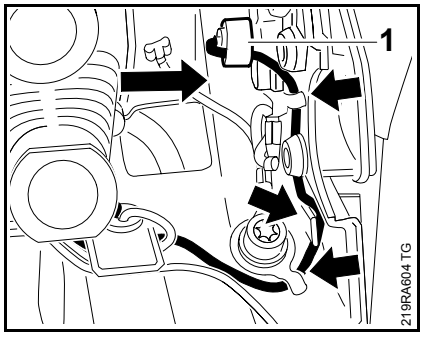
● Push connector and socket terminal (arrow) together as far as possible.

– Slide insulating tube (1) over the plug connection.



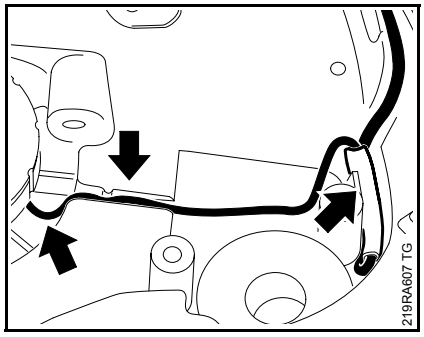
● Pull wiring harness (1) through the opening (arrow).

– Install carburetor housing, 🕮 14.6.2.



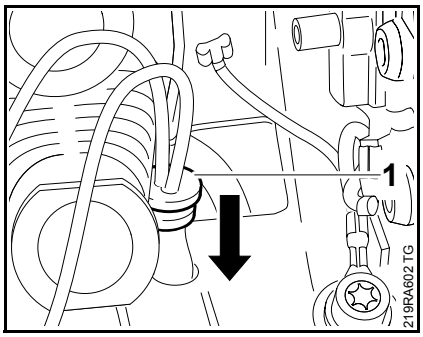
● Fit cable retainer (1).

● Press wiring into cable guides (arrows).

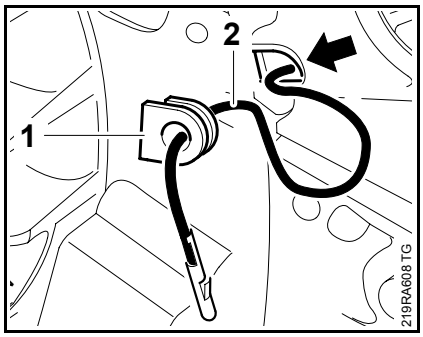


– Press wiring and plug connection into the cable guides (arrows).

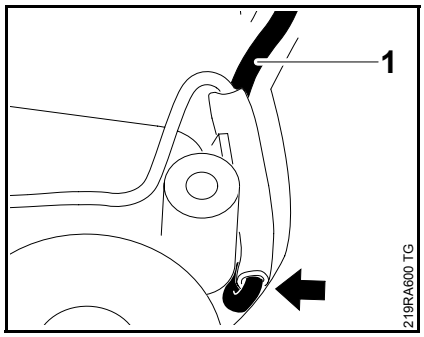
The generator lead must be accurately seated in the cable guides.



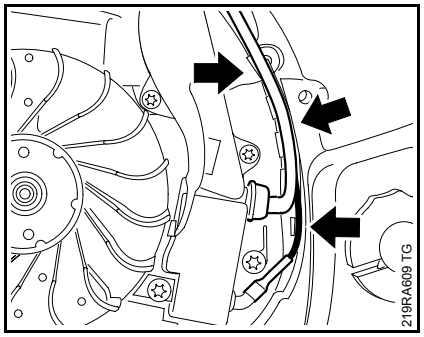
● Push grommet (1) over wiring harness until it rests against the shrink hosing, then press it into the opening (arrow).



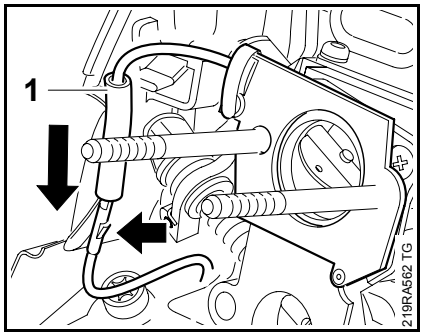
● Route wiring harness (1) through the opening (arrow) and grommet (2).



● Guide wiring harness (1) through under the plug connection (arrow).

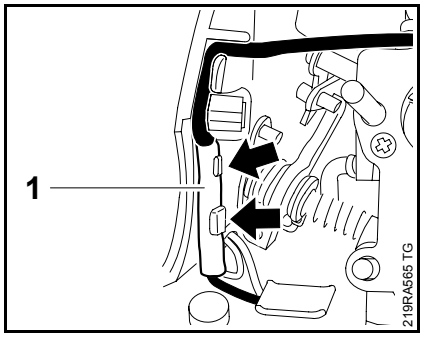


- Lay wiring harness and short circuit wire in cable guides (arrows) under the ignition lead.



– Push connector and socket terminal (arrow) together as far as possible.

- Slide insulating tube (1) over the plug connection.

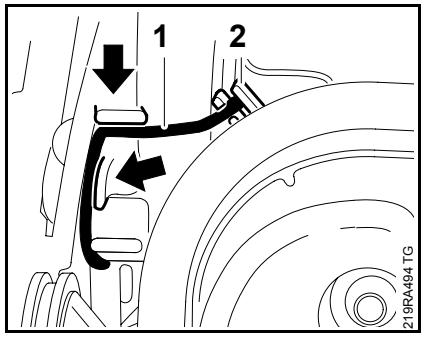


- Press plug connection (1) and wiring into guides (arrows).

– Install short circuit wire and press grommet into place, 🕮 9.6.

Ensure that wires are not crossed.

– Install filter base, 🕮 14.1.2.



Machines with handle heating

- Attach wiring (1) to retainer (2) and press it into the guides (arrows).

The wiring must not touch either the carburetor levers or the spacer flange.

– Reassemble all other parts in the reverse sequence.

– Tightening torques, 🕮 3.5.

16. Special tools

New special tools

No.	Part name	Part No.	Use	Remarks
1	Sealing plate	0000 855 8107	Sealing exhaust port	
2	Test flange	1138 890 1200	Leakage testing	
3	Clamping rail for assembly stand	5910 850 1650	Clamping machine on assembly stand	
4	Screwdriver	5910 890 2304	Carburetor adjustment	
5	Sleeve	5910 893 1706	Supplements assembly tool 12	

Existing special tools

No.	Part name	Part No.	Use	Remarks
1	Carburetor and crankcase tester	0000 850 1300	Testing crankcase and carburetor for leaks	
	- Hose for leakage testing	1110 141 8600	Testing carburetor for leaks	
	- Plug for leakage testing	1122 025 2200	Testing decompression valve for leaks	
	- Nipple	0000 855 9200	Testing carburetor for leaks	
2	Assembly tool	0000 890 2201	Installation of starter rope guide bushing	
3	Clamping strap	0000 893 2600	Clamping piston rings	
4	Locking strip	0000 893 5903	Blocking crankshaft	
5	Bushing	0000 963 1008	Supplement for test flange	
6	Pliers DIN 5254-A 19	0811 611 8380	Removal and installation of external retaining rings	
7	Screwdriver bit T 27 x 125	0812 542 2104	Removal and installation of spline socket head screws with electric or pneumatic screwdrivers; tightening down screws with torque wrench	
8	Wooden assembly block	1108 893 4800	Fitting the piston	
9	Assembly drift	1114 893 4700	Removal and installation of piston pins	
10	Assembly tube	1117 890 0900	Connecting helical spring	
11	Setting gauge	1111 890 6400	Adjusting air gap between ignition module and flywheel	
12	Assembly sleeve	1118 893 2401	Pressing in oil seals (clutch side)	
13	Press arbor	1118 893 7200	Pressing in and removing ball bearings	
14	Assembly sleeve	1122 893 2405	Pressing in oil seals (starter side)	
15	Assembly sleeve	1122 893 4600	Protecting oil seals (clutch side)	
16	Combination wrench	1129 890 3401	Spark plug	1)
17	Puller	1135 890 4500	Removal of flywheel	
18	Assembly tool set AS	5910 007 2205	Removal and installation of crankshaft (clutch side)	
19	Assembly tool set ZS	5910 007 2220	Removal and installation of crankshaft (starter side)	

No.	Part name	Part No.	Use	Remarks
20	Locking strip for assembly stand	5910 850 1650	Clamping machine on assembly stand	
21	Ignition system tester ZAT 4	5910 850 4503	Testing ignition system	
22	Ignition system tester ZAT 3	5910 850 4520	Testing ignition system	
23	Torque wrench	5910 890 0302	Screw connections (0.5 to 18 Nm)	
24	Torque wrench	5910 890 0312	Screw connections (6 to 80 Nm)	
25	Assembly tool 12	5910 890 2212	Fitting hookless snap rings in piston	
26	Screwdriver	5910 890 2304	Carburetor adjustment	
	- Setting washer	5910 893 6600	Supplement to screwdriver (carburetor adjustment)	
27	Screwdriver bit T 27 x 150	5910 890 2400	IS-P screws (4 mm)	
28	Assembly hook	5910 890 2800	Disconnecting helical springs from clutch shoes	
29	Assembly stand	5910 890 3100	Mounting chainsaw for repairs	
30	Puller	5910 890 4400	Pulling out oil seals	
	- Claws (with profile No. 3.1)	0000 893 3706	Pulling out oil seal(s)	
31	Puller	5910 890 4500	Pulling off limiter caps	
32	Crimping pliers	5910 890 8210	Cable ties, cable lugs, etc.	
33	Stud puller M8	5910 893 0501	Unscrewing bar mounting studs	
34	Screw sleeve	5910 893 2420	Pulling in crankshaft	
35	Socket, 13 mm, long	5910 893 2804	Removal and installation of decompression valve	
36	Assembly hook	5910 893 8800	Pulling out pick-up body	

Remark:

1) Only to be used for releasing.

17. Servicing accessories

No.	Part name	Part No.	Use
1	Lubricating grease (225 g tube)	0781 120 1111	Oil seals, sliding surfaces and bearings
2	STIHL special lubricating oil	0781 417 1315	Bearing bore in rope rotor, rewind spring in fan housing
3	Press Fluid OH 723	0781 957 9000	Rubber elements in anti-vibration system
4	STIHL multi-purpose grease	0781 120 1109	High-voltage output on ignition module
5	Sealant Dirko HT red	0783 830 2000	Engine pan, oil seals (outside)
5	Thread-locking adhesive, medium strength (Loctite 242)	0786 111 2101	
6	Thread-locking adhesive, normal strength (Loctite 270)	0786 111 2109	
7	Thread-locking adhesive, high strength (Loctite 648)	0786 111 2117	
8	Commercially available solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons		Cleaning sealing surfaces and carburetor, cleaning crankshaft stub and cone in flywheel

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