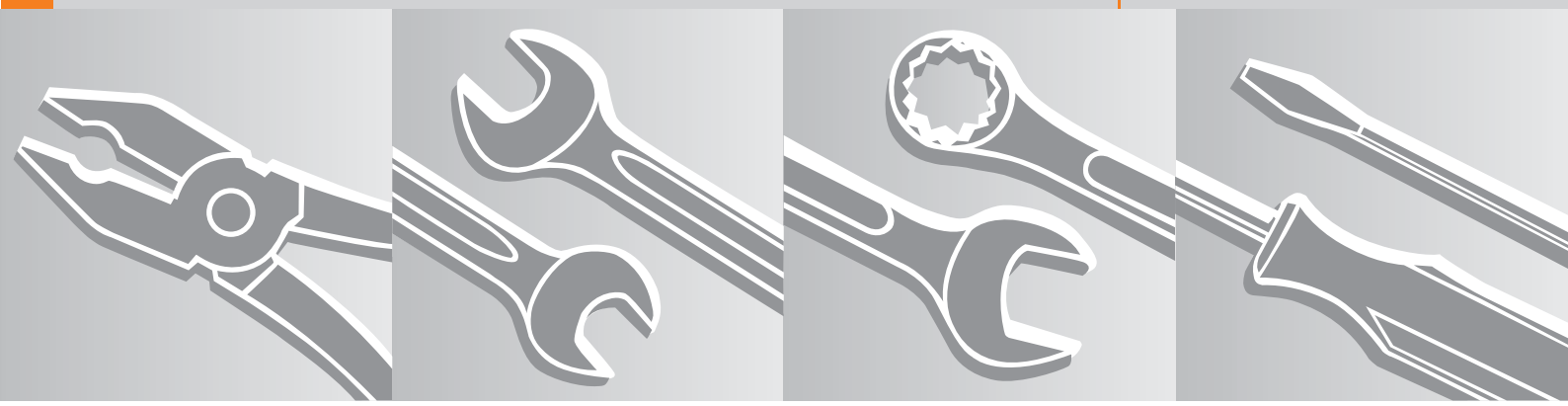
STIHL MS 261

2010-05



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1. Introduction and Safety Precautions

1.1 Introduction

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

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

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

A fault on the machine may have several causes. To help locate the fault, consult the troubleshooting charts for all assemblies and systems in this manual and the "STIHL Service Training System".

Refer to the “Technical Information” bulletins for engineering changes which have been introduced since publication of this service manual. Technical information bulletins also supplement the parts list until a revised edition is issued.

The special tools mentioned in the descriptions are listed in the chapter on "Special Servicing Tools" in this manual. Use the part numbers to identify the tools in the "STIHL Special Tools" manual. The manual lists all special servicing tools currently available from STIHL.

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

In the descriptions:

- ● Action to be taken as shown in the illustration above the text

- – Action to be taken that is not shown in the illustration above the text

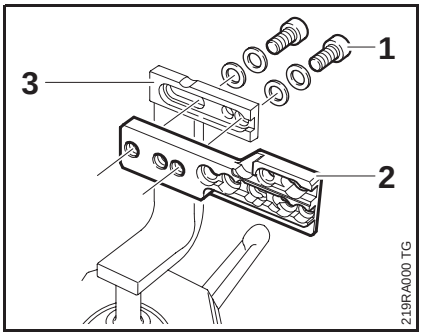
In the illustrations:

➔ Pointer

➔ Direction of movement

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

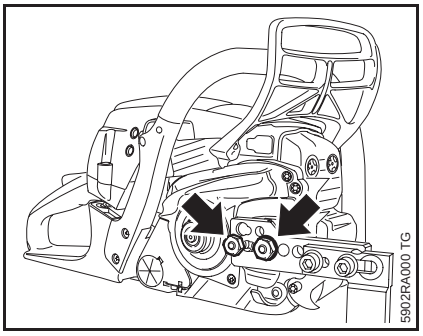
Service manuals and all technical information bulletins are intended exclusively for the use of properly equipped repair shops. They must not be passed to third parties.



Servicing and repairs are made considerably easier if the machine is mounted to assembly stand (3) 5910 890 3100. To do this, secure the mounting plate (2) 5910 850 1650 to the assembly stand with two screws (1) and washers.

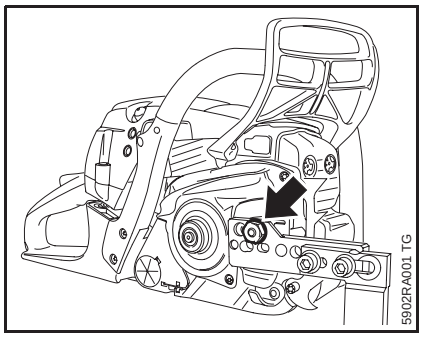
The screws must not project since they, depending on the machine, may damage housings when the machine is clamped in position.

The above operation is not necessary with the new assembly stand 5910 890 3101 since the mounting plate is already fitted.



Engage the bar mounting studs in the outer bores in the mounting plate and secure the machine in position with the M 8 nuts (arrows).

Machines with Quick Chain Tensioner



Engage the bar mounting stud in the outer bore in the mounting plate and secure the machine in position with the M 8 nut (arrow).

The machine is held in position on the mounting plate by the screw heads on the engine housing.

Preparations for servicing

Remove the chain sprocket cover, saw chain and guide bar before carrying out repairs or mounting the machine to the assembly stand.

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.

Storing and disposing of oils and fuels

Collect fuel or lubricating oil in a clean container and dispose of it properly in accordance with local environmental regulations.

1.2 Safety Precautions

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

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

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

Always wear suitable protective gloves for operations in which components are heated for assembly or disassembly.

Improper handling may result in burns or other serious injuries.

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

Always perform leakage test after working on the fuel system and the engine.

Always replace damaged parts. Check disassembled parts for wear or damage before re-installing – replace as necessary.

Run the machine only with the shroud mounted in position – there is otherwise a risk of injury from the fanwheel and a risk of engine damage due to overheating.

The chapter on tightening torques lists all machine components that have to be tightened to a specific torque or coated with threadlocking adhesive. The specifications must be maintained when tightening down screws, nuts and other fasteners in all the procedures described in this service manual.

Fuel system – hose barb connectors

Pull off or push on fuel hoses in line with the connector, preferably by hand, to ensure the tightness of the fuel system.

Avoid damaging the hose barb
– do not use sharp-edged pliers, screwdrivers, etc.
Do not cut open fuel hoses with a knife or similar tool.

Do not re-use fuel hoses after removal. Always install new hoses – fuel hoses can be overstretched during removal.

Install new fuel hoses either dry or with the aid of STIHL press fluid, 🕮 15.

Other press fluids are not approved and may result in damage to the fuel hoses.

Coat the ends of the hoses and the connectors with STIHL press fluid and then push the new hoses on to the hose barbs, 🕮 15.

2. Specifications

2.1 Engine

	MS 261
Displacement:	50.2 cm^3
Bore:	44.7 mm
Stroke:	32.0 mm
Engine power to ISO 7293:	2.8 kW (3.8 bhp) at 9,500 rpm
Maximum permissible engine speed with bar and chain:	14,000 rpm
Idle speed:	2,800 rpm
Clutch:	Centrifugal clutch without linings
Clutch engages at:	3,600 rpm
Crankcase leakage test	
at gauge pressure:	0.5 bar
under vacuum:	0.5 bar

2.2 Fuel System

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

2.3 Ignition System

Air gap between ignition module and fanwheel:	0.20 (+ 0.1/- 0.05) mm
Spark plug (resistor type):	NGK BPMR 7 A BOSCH WSR6F
Electrode gap:	0.5 mm

2.4 Chain Lubrication

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

Settings for oil delivery rate:

min.:	4.5 (+/2.0) cm^3/min at 10,000 rpm
Ematic	8.5 (+/3.0) cm^3/min at 10,000 rpm
max.:	11.5 (+/3.0) cm^3/min at 10,000 rpm

2.5 Tightening Torques

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

Fastener	Thread size	For component	Torque Nm	Remarks
Screw	P 4x12	Cover plate/sprocket cover (quick chain tensioner)	2.5	
Screw	M 4x8	Chain tensioner cover plate/crankcase	2.0	
Screw	P 5x16	Antivibration spring / handle housing	3.0	
Screw	M 4x16	Antivibration spring / crankcase	3.5	4)
Screw	M 4x12	Brake band/crankcase	3.0	1), 4)
Screw	P 4x10	Brake cable retainer/ tank housing (Q)	1.7	
Collar screw	M 8	Collar stud for bar	23.0	1)
Collar screw	M 8/M 10	Collar stud for bar (BE)	30.0	2)
Screw	M 4x12	Cover, chain brake/crankcase	3.0	4)
	M 10x1	Decompression valve	14.0	
Screw	M 4x9.6	Spark arresting screen/muffler	1.0	
Screw	M 12x0.75	Housing / switch (VW)	3.0	
Screw	M 4x12	Generator / crankcase (VW)	3.0	3)
Screw	P 6x32.5	Handlebar/tank housing	7.0	
Screw	P 6x30	Handlebar / tank housing (VW)	8.0	4)
Screw	M 6x26	Handlebar / bushing(VW)	8.0	2)
Screw	M 5x16	Handlebar / plug, antivibration spring (VW)	6.0	3), 4)
Screw	M 5x20	Hand guard/fan housing/crankcase	6.0	4)
Screw	P 6x30	Chain catcher/crankcase/bearing plug	8.0	
Screw	M 5x16	Spiked bumper / crankcase / upper locknut	8.0	3), 4)
Lock nut	M 5	Spiked bumper / crankcase / upper locknut	8.0	
Screw	M 5x16	Spiked bumper/crankcase, bottom	8.0	3), 4)
Screw	M 4x12	Manifold/cylinder	3.0	4)
Screw	M 5x25	Crankcase, sprocket side/fan side	10.0	4)
Screw	M 5x16	Bearing plug/cylinder	10.0	3), 4)
Screw	M 5x16	Fan housing/crankcase	6.0	4)
Screw	M 4x12	Air baffle/crankcase	1.5	4)
Carrier	M 12x1 L	Carrier / crankshaft	50.0	

Fastener	Thread size	For component	Torque Nm	Remarks
Screw	M 4x12	Oil pump/crankcase	3.0	4)
Screw	M 5x16	Muffler/crankcase	10.0	3), 4)
Screw	M 5x16	Muffler / cylinder	10.0	3), 4)
Nut	M 8x1	Flywheel/crankshaft	28.0	5)
Screw	M 4x12	Thermostatic switch / carburetor (VW)	2.0	
Collar nut	M 5	Carburetor / collar screw, 1st stage, fan side	2.0	
Collar nut	M 5	Carburetor / collar screw, 2nd stage, sprocket side	3.5	
Collar nut	M 5	Carburetor / collar screw, 3rd stage, fan side	3.5	
Screw	M 5x16	Preseparator/crankcase	3.0	4)
	M 14x1.25	Spark plug	25.0	
Screw	M 4x20	Ignition module/crankcase	4.0	3)
Screw	M 5x20	Cylinder/crankcase, 1st stage	4.0	4)
Screw	M 5x20	Cylinder/crankcase, 2nd stage	10.0	4)

Remarks:

1) Loctite 242 or 243, medium strength
2) Loctite 270, high strength
3) Micro-encapsulated screws
4) Screws with binding head
5) Degrease crankshaft/flywheel and mount oil-free
VW) Carburetor and handle heating system
Q) QuickStop Super
BE) Quick chain tensioner/ErgoStart

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

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

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

Coat micro-encapsulated screws with medium strength Loctite 242 or 243 before reinstalling.

Power screwdriver setting for polymer: DG and P screws max. 500 rpm
Do not use an impact wrench for releasing or tightening screws.

Do not mix up screws with and without binding heads.

3. Troubleshooting

3.1 Clutch

Condition	Cause	Remedy
Saw chain stops under full load	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 idle speed screw **LA**
	Clutch springs stretched	Replace the clutch springs or install new clutch
	Clutch springs broken	Replace the clutch springs
Loud noises	Clutch springs stretched	Replace all clutch springs
	Needle cage damaged	Fit new needle cage
	Clutch shoe retainer broken	Install new retainer or clutch
	Clutch shoes and carrier worn	Install new clutch

3.2 Chain Drive, Chain Brake, Chain Tensioner

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
Saw chain stops under full load	Clutch shoes badly worn	Install new clutch
	Clutch drum badly worn	Install new clutch drum
	Brake band blocked	Check freedom of movement and operation of brake band
Saw chain rotates at idle speed	Engine idle speed too high	Readjust idle speed screw **LA**
	Clutch springs stretched	Replace the clutch springs or install new clutch
	Clutch springs 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 or worn	Fit new brake band
	Clutch drum worn	Install new clutch drum

Condition	Cause	Remedy
QuickStop Super Coasting brake does not disengage even though interlock lever is depressed	Brake cable stretched	Readjust brake cable
	Brake cable disconnected or broken	Reconnect or replace brake cable
QuickStop Super Coasting brake does not disengage properly even though interlock lever is depressed	Too much free travel on interlock lever	Adjust brake cable
QuickStop Super Braking action of coasting brake inadequate – interlock lever not depressed	Brake cable overtensioned	Adjust brake cable

3.3 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 inlet hole in guide bar is blocked	Clean oil inlet hole
	Intake hose or pickup body clogged or intake hose ruptured	Fit new intake hose and pickup body
	Valve in oil tank blocked	Clean or replace valve
	Teeth on worm worn	Install new worm
	Oil pump damaged or worn	Install new oil pump
Machine losing chain oil	Oil pump damaged or worn	Install new oil pump
	Oil suction hose connection damaged	Install new oil intake hose
	Gasket between two halves of crankcase faulty or crankcase cracked	Install new gasket, inspect both halves of crankcase and replace if necessary
Oil pump delivers insufficient oil	Oil pump damaged or worn	Install new oil pump
	Oil pump delivery rate set too low	Adjust oil pump (only on version with adjustable oil pump)
	Worm driver is loose	Install new worm

3.4 Rewind Starter

Condition	Cause	Remedy
Starter rope broken	Rope pulled out too vigorously as far as stop or over edge, i.e. not vertically	Fit new starter rope
	Normal wear	Fit new starter rope
Starter rope does not rewind	Rewind spring very dirty or corroded	Clean or replace rewind spring
	Insufficient spring tension	Check rewind spring and increase tension
	Rewind spring broken	Fit new rewind spring
Starter rope cannot be pulled out far enough	Spring overtensioned	Check rewind spring and reduce tension
Starter rope can be pulled out almost without resistance (crankshaft does not turn)	Guide pegs on pawls or pawls themselves are worn	Fit new pawls
	Spring clip on pawl fatigued	Fit new spring clip
	Spring clip installed wrong	Install spring clip correctly
...Models with ErgoStart	Torsion springs on flywheel fatigued, pawls worn or sticking	Clean seats on pawls or replace pawls and torsion springs if necessary
	Lugs on carrier worn	Install new carrier
	Spring loop in spring housing not attached to carrier	Attach spring loop to carrier
Starter rope is difficult to pull – models with ErgoStart	Spring in spring housing fatigued	Install new spring housing

Condition	Cause	Remedy
Starter rope is difficult to pull or rewinds very slowly	Starter mechanism is very dirty	Thoroughly clean complete starter mechanism
	At very low outside temperatures: Lubricating oil on rewind spring becomes viscous (spring windings stick togteher) or moisture has got onto the rewind spring (spring windings frozen together)	Coat rewind spring with a small amount of standard solvent-based degreasant (containing no chlorinated or halogenated hydrocarbons), then pull rope carefully several times until normal action is restored

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. If sooting keeps recurring, check air filter
	Ignition lead loose in ignition module	Install new ignition lead
	Fuel/oil mixture – too much oil	Use correct mixture of fuel and oil
	Incorrect air gap between ignition module and flywheel	Set air gap correctly
	Flywheel cracked or damaged 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	Install new flywheel
	Irregular spark	Check operation of switch shaft/ contact spring and ignition module Faulty insulation or break in ignition lead or short circuit wire. Check ignition lead/ignition module and replace ignition module if necessary. Check operation of spark plug. Clean the spark plug or replace if necessary.

3.6 Carburetor

Condition	Cause	Remedy
Carburetor floods; engine stalls	Inlet needle not sealing – foreign matter in valve seat or cone	Remove and clean the inlet needle, clean the carburetor
	Inlet needle worn	Replace the inlet needle
	Inlet control lever sticking on spindle	Check the inlet control lever and replace if necessary.
	Helical spring not located on nipple of inlet control lever	Remove the inlet control lever and refit it correctly
	Perforated disc on diaphragm is deformed and presses constantly against the inlet control lever	Fit a new metering diaphragm
	Metered diaphragm deformed	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 to valve seat	Remove inlet needle, clean and refit
	Diaphragm gasket leaking	Fit new diaphragm gasket
	Metering diaphragm damaged or shrunk	Fit a new metering diaphragm
	Tank vent faulty	Replace tank vent
	Leak on fuel hose from tank to carburetor	Seal connections or install new fuel hose
Engine loses power during acceleration	Sealing ring or spring in accelerator pump worn or damaged	Install new carburetor

Condition	Cause	Remedy
Engine will not idle, idle speed too high	Throttle shutter opened too wide by idle speed screw (**LA**)	Reset idle speed screw (**LA**) correctly
	Oil seals/crankcase leaking	Seal or replace oil seals/crankcase
	Throttle shutter does not close	Install new carburetor
Engine stops while idling	Idle jet bores or ports blocked	Clean the carburetor
	Low speed screw too rich or too lean	Reset low speed screw (**L**) correctly
	Setting of idle speed screw **LA** incorrect – throttle shutter completely closed	Reset idle speed screw (**LA**) correctly
	Tank vent faulty	Replace tank vent
	Leak on fuel hose from tank to carburetor	Seal connections or install new fuel hose
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

Condition	Cause	Remedy
Engine speed drops quickly under load – low power	Air filter dirty	Clean air filter or replace if necessary
	Throttle shutter not opened fully	Check throttle cable and rod
	Tank vent faulty	Replace tank vent
	Fuel pickup body dirty	Install new pickup body
	Fuel strainer dirty	Clean fuel strainer in carburetor, replace if necessary
	Leak on fuel hose from tank to carburetor	Seal connections or install new fuel hose
	Setting of high speed screw **H** too rich	Check basic carburetor setting, correct if necessary
	Main jet bores or ports blocked	Clean the carburetor
	Pump diaphragm damaged or fatigued	Fit new pump diaphragm
	Ignition timing wrong, flywheel out of adjustment – key in flywheel has sheared off	Install new flywheel
Engine running extremely rich, has no power and a very low maximum speed	Choke shutter does not open	Check carburetor and choke shaft, service or replace if necessary

3.7 Engine

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

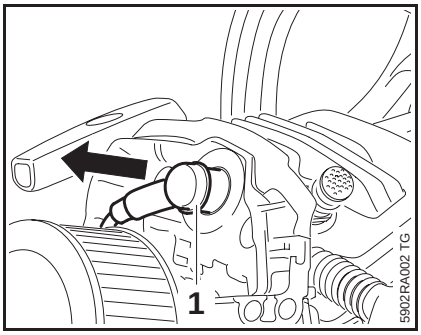
- Air filter
- Fuel system
- Carburetor
- Ignition system

Condition	Cause	Remedy
Engine does not start easily, stalls at idle speed, but operates normally at full throttle	Oil seals in crankcase damaged	Replace the oil seals
	Crankcase leaking or damaged (cracks)	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	Clean or replace air filter
	Fuel hose kinked or torn	Fit new hose or position it free from kinks
	Decompression valve is not closed	Close, check and replace decompression valve 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 the cylinder fins
	Air flow path into fan housing dirty	Clean air flow path into fan housing

– Troubleshooting, 🕮 3

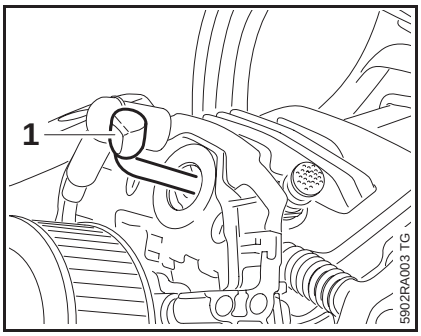
– Remove the clutch drum, 🕮 4.1

– Remove the shroud, 🕮 6.4.

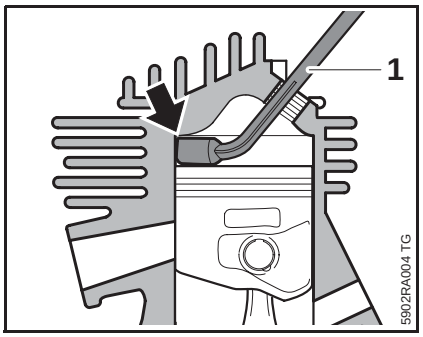


● Pull boot (1) off the spark plug.

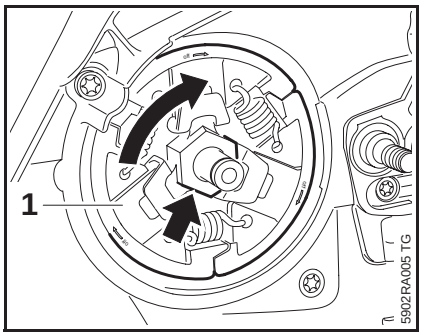
– Unscrew the spark plug.



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



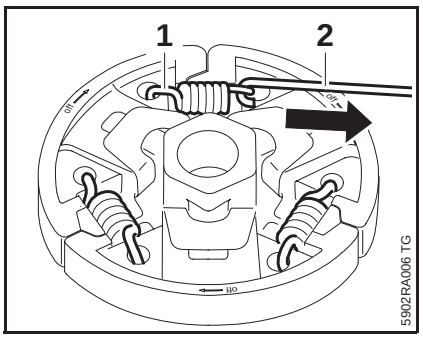
● The locking strip (1) 0000 893 5903 must butt against the cylinder wall (arrow) as shown.



● Apply wrench to hexagon (arrow) and unscrew the clutch (1).

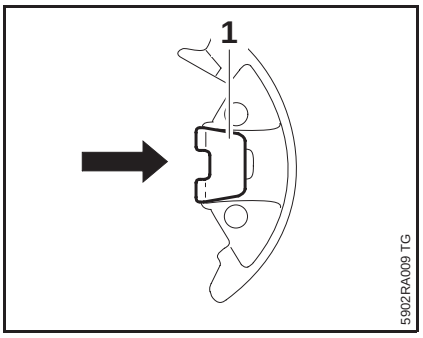
Note that the clutch has a left-hand thread.

Disassembling

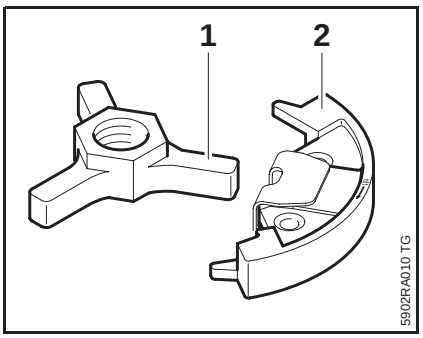


● Use hook (2) 5910 890 2800 to remove the clutch springs (1).

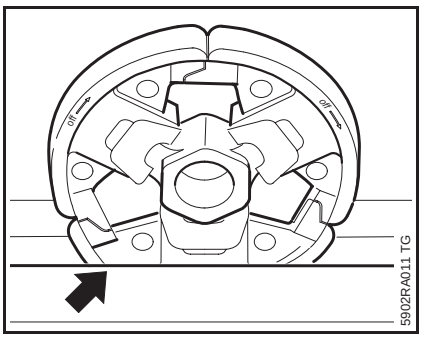
If the clutch is noticeably worn, replace all three clutch shoes at the same time – not individual shoes – since runout may otherwise affect correct operation of the clutch.



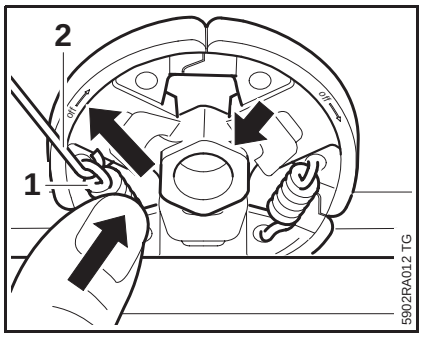
● Fit the retainers (1).



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

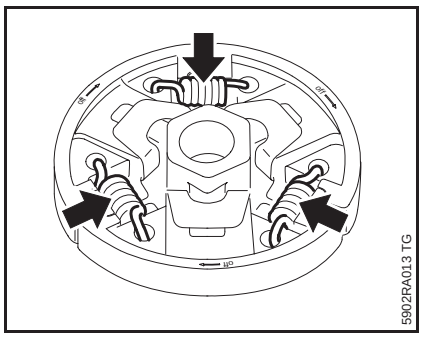


● Clamp the clutch in a vise (arrow).

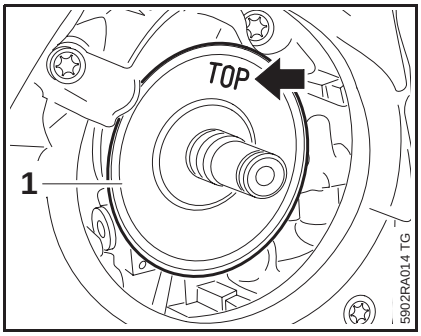


Attach the springs on the side with the raised hexagon (arrow).

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

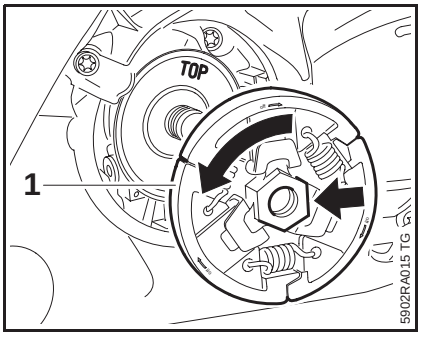


- Check the clutch – all springs (arrows) must be properly attached.



Make sure the washer (1) is in place.

Installed position is correct when "TOP" (arrow) faces outwards.



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

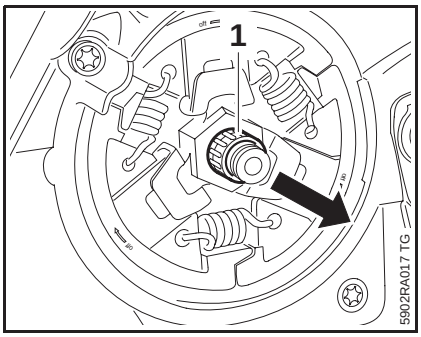
– Fit the clutch (1) and tighten it down firmly – left-hand thread.

– Remove the locking strip from the cylinder.

– Reassemble all other parts in the reverse sequence.

4.1 Clutch Drum

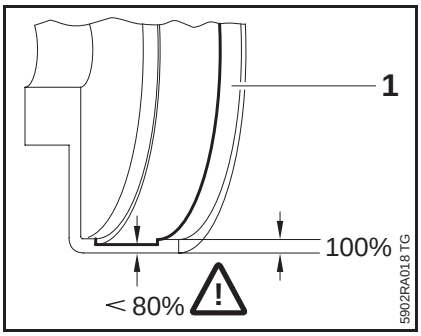
– Remove and install the clutch drum, see instruction manual.



- Pull off the needle cage (1).

– Clean the needle cage and crankshaft stub, 🕮 15

– Lubricate the needle cage and crankshaft stub, 🕮 15



– Inspect the 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, install a new clutch drum.

– Install the clutch drum.

5. Chain Brake

5.1 Checking Operation

The chain brake is one of the most important safety devices on the chain saw. 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 (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, which prolongs the braking time. A fatigued or stretched brake spring has the same negative effect.

– Starting 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.

Machines with QuickStop Super

The clutch drum must rotate freely when the interlock lever is depressed.

With the coasting brake disengaged, open the throttle wide and let go of the interlock lever on the rear handle – the chain must come to an abrupt stop.

All models

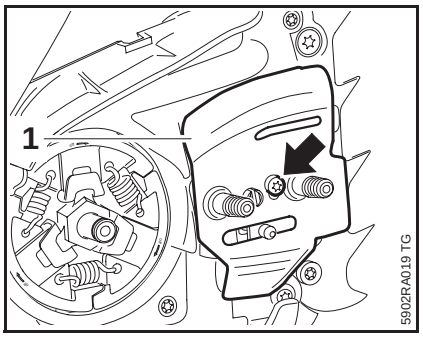
The braking time is in order if deceleration of the saw chain (less than a second) is imperceptible to the eye.

If the chain brake does not operate properly, refer to troubleshooting, 🕮 3.2.

5.2 Brake Band

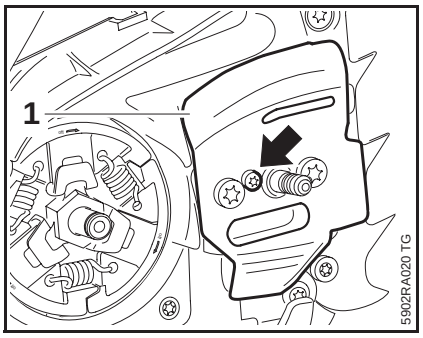
– Remove the clutch drum, 🕮 4.1

– Troubleshooting, 🕮 3.2

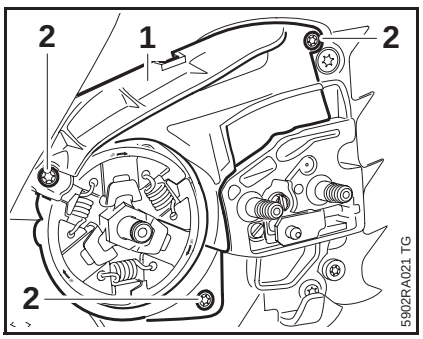


- Take out the screw (arrow) and remove the side plate (1).

Machines with Quick Chain Tensioner

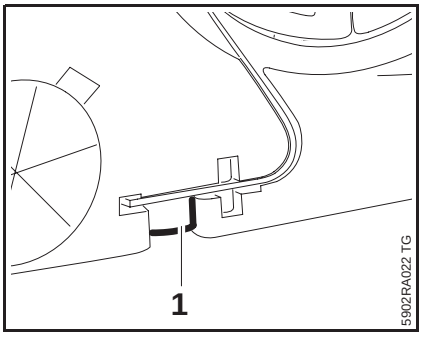


- Take out the screw (arrow) and remove the side plate (1).



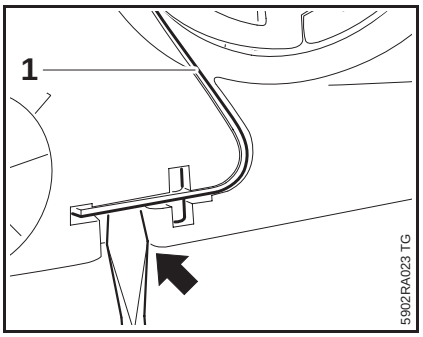
- Take out the screws (2).

- Remove the cover (1).



– Engage the chain brake.
– Brake band no longer tensioned in its seat.

- Remove the screw (1) from the underside of the machine.

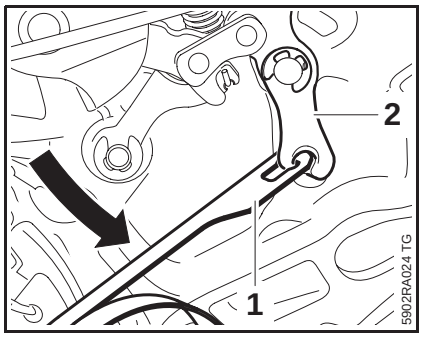


- Pry the brake band (1) out of its seat (arrow).

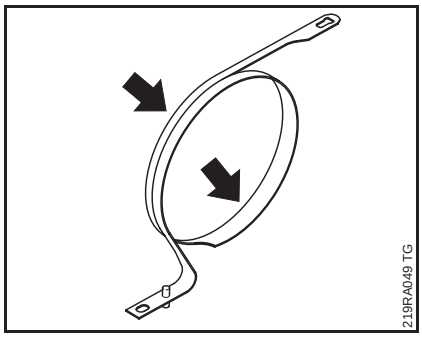
– Remove the brake band (1).

Do not overstretch the brake band.

– Disengage the chain brake
– the brake band can be disconnected when the brake lever is in this position.

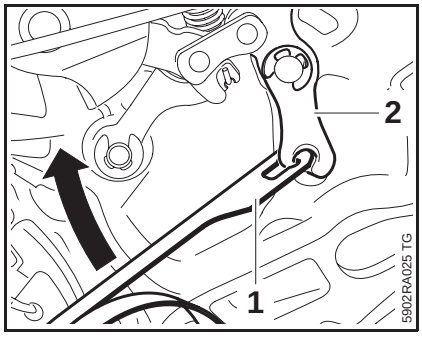


- Turn the brake band (1) to one side and disconnect it from the brake lever (2).



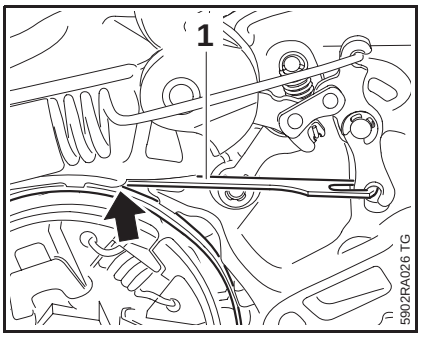
Install a new brake band if there are noticeable signs of wear (large areas on inside diameter and/or parts of outside diameter – arrows) and its remaining thickness is less than 0.6 mm.

Installing



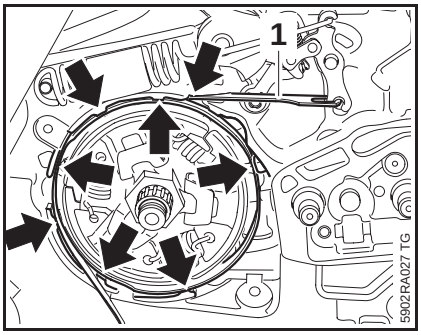
– Disengage the chain brake

- Hold the brake band (1) sideways, attach it to the brake lever (2) and then swing it in the direction of its seat.

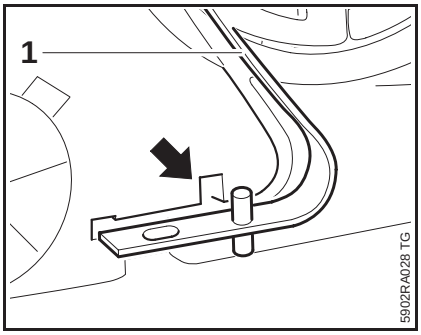


- Position the brake band (1) in the guide (arrow).

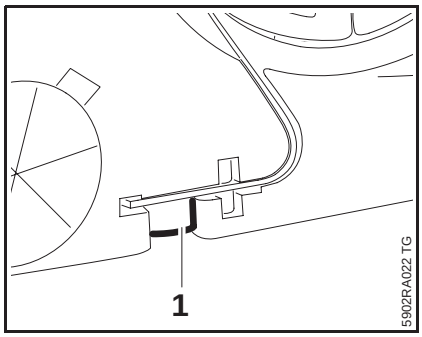
– Engage the chain brake.



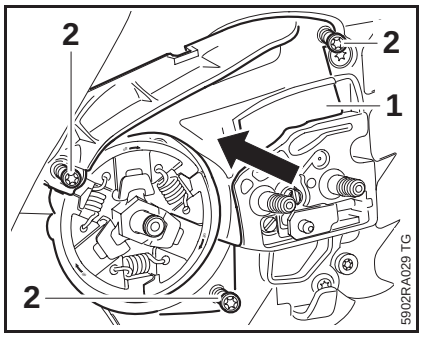
- Push the brake band (1) over the guide lugs (arrows) and into its seat.



- Push the brake band (1) into its seat (arrow) as far as stop.



- Fit the screw (1) on the underside of the machine and tighten it down firmly.



- Place the cover (1) in position.

- Insert and tighten down the screws (2) firmly.

– Install the clutch drum, 🕮 4.1

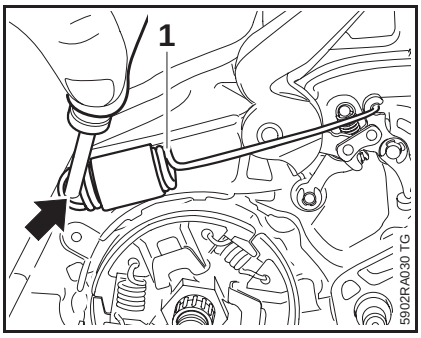
– Check operation, 🕮 5.1

– Reassemble all other parts in the reverse sequence.

5.3 Brake Lever

– Troubleshooting, 🕮 3.2

– Remove the brake band, 🕮 5.2



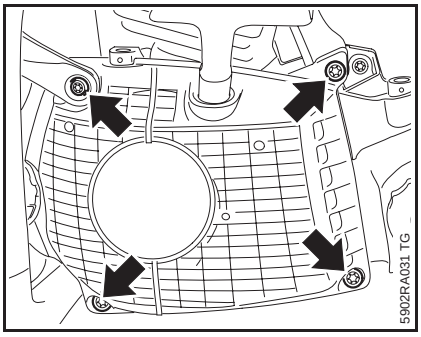
– Engage the chain brake.

The brake spring is now relaxed.

● Use the assembly tool 1117 890 0900 to disconnect the brake spring (1) from the anchor pin (arrow).

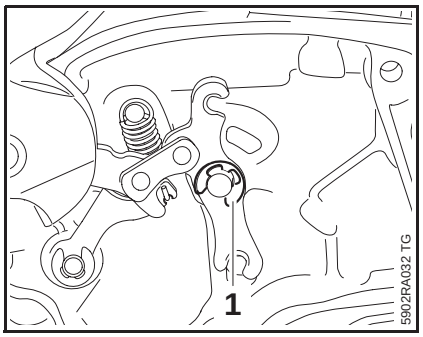
– Remove the brake spring from the brake lever.

– Remove the shroud, 🕮 6.4

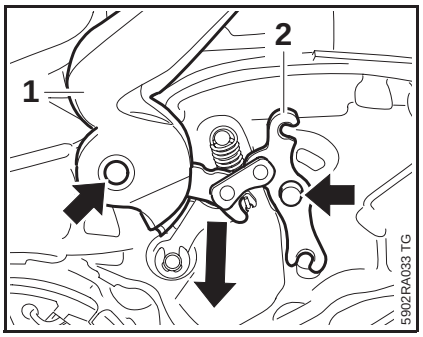


● Take out the screws (arrows).

– Lift the hand guard a little and remove the fan housing.

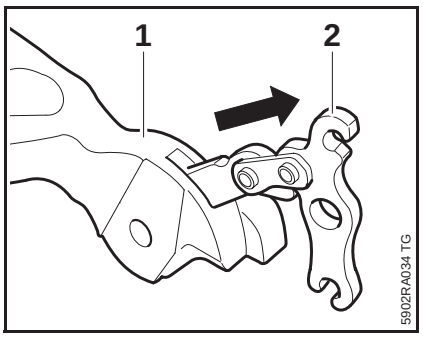


● Remove the E-clip (1).



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

– Remove the hand guard and brake lever.



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

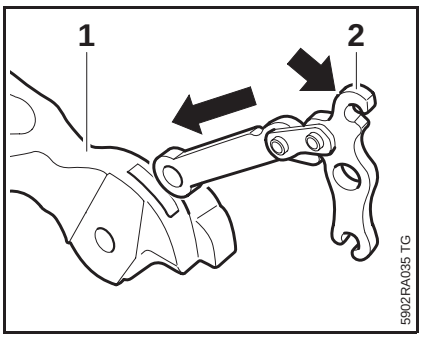
– Inspect the pivot pins and replace if necessary, 🕮 5.6

– Inspect the cam lever and replace if necessary, 🕮 5.5

Installing

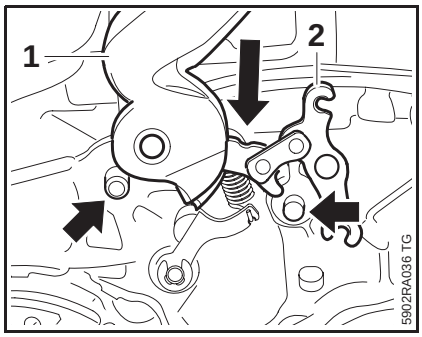
– Clean the pivot pins and disassembled parts, 🕮 15

– Lubricate the pivot pins, 🕮 15

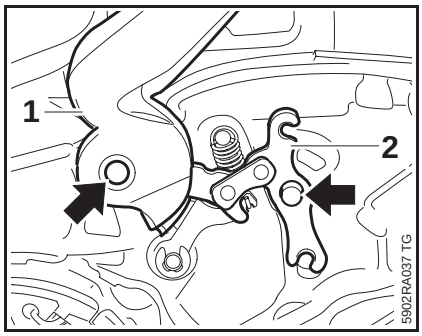


● Hold the brake lever (2) so that the brake spring attachment point (arrow) is at the top.

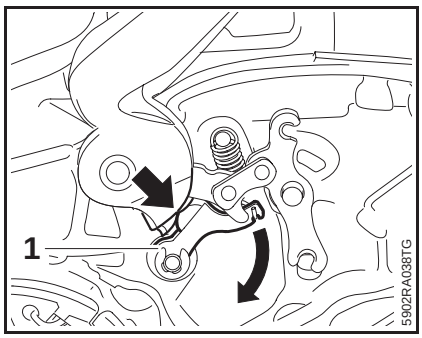
● Push the brake lever (2) into the recess in the hand guard (1) and line up the holes.



- Push the hand guard (1) with brake lever (2) over the machine until they are positioned against the pivot pins (arrows).

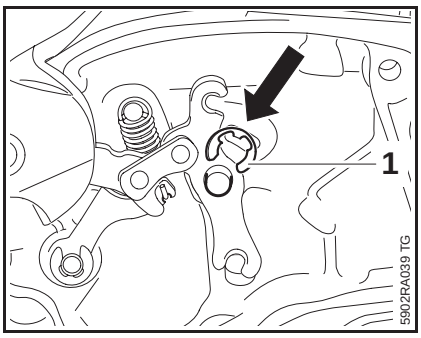


- Lift the bearing boss of the hand guard (1) and the brake lever (2) a little and position them over the pivot pins (arrows).

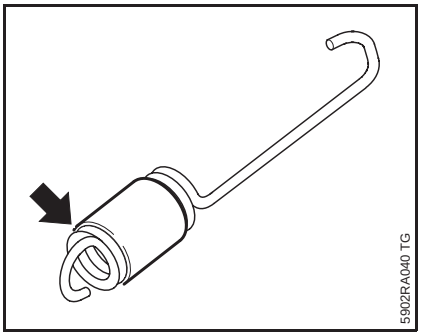


- Turn the cam lever (1) to one side until the cam of the hand guard (arrow) slips passed it.

– Push the hand guard bearing boss and the brake lever on to the pivot pins.



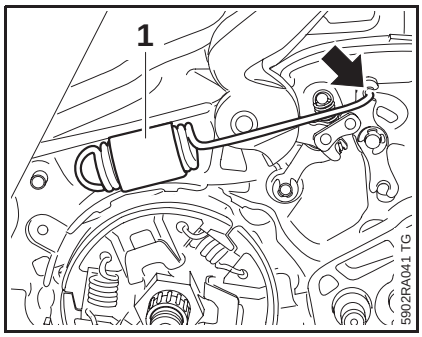
- Fit the E-clip (1).



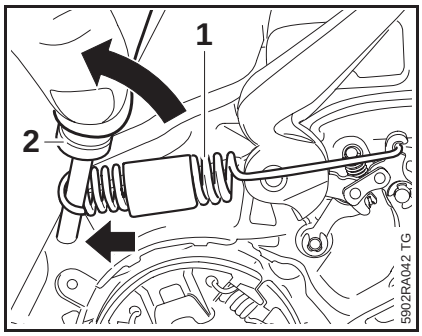
The turns of brake spring must be tightly against one another in the relaxed condition. If this is not the case, replace the brake spring.

– Position the protective tube so that it leaves the first turn (arrow) free.

– If the groove in the spring's anchor pin is worn, install a new pin, 🕮 5.6



- Attach the brake spring (1) to the brake lever (arrow).



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

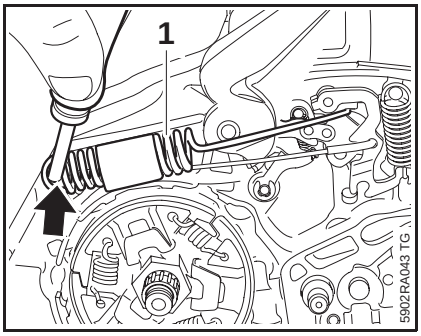
– Lubricate the brake lever, cam lever and slot in hand guard, 🕮 15

– Reassemble all other parts in the reverse sequence.

5.4 Brake lever on machines with QuickStop Super

– Troubleshooting, 🕮 3.2

– Remove the brake band, 🕮 5.2



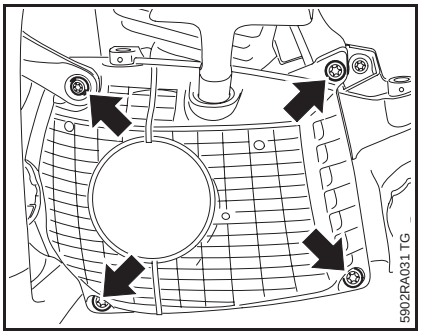
– Engage the chain brake.

The brake spring is now relaxed.

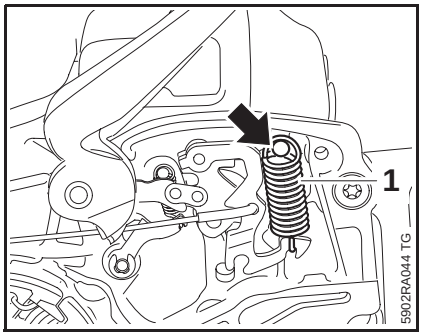
- Use the assembly tool 1117 890 0900 to disconnect the brake spring (1) from the anchor pin (arrow).

– Remove the brake spring from the brake lever.

– Remove the shroud, 🕮 6.4

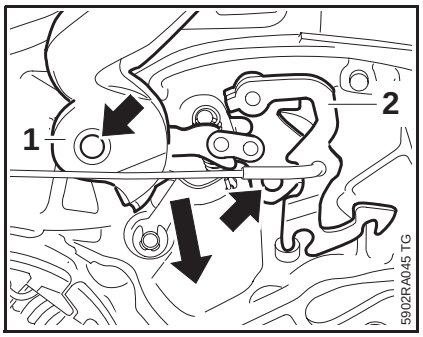


- Take out the screws (arrows).
- Lift the hand guard a little and remove the fan housing.



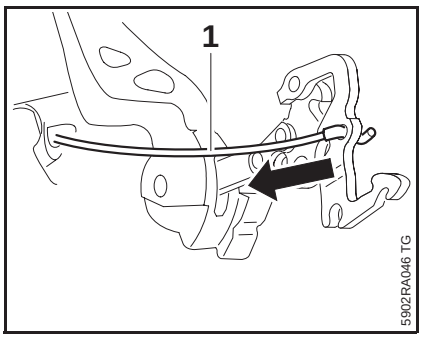
- Disconnect the spring (1) from the anchor pin (arrow).

– Remove the brake spring (1) from the brake lever.

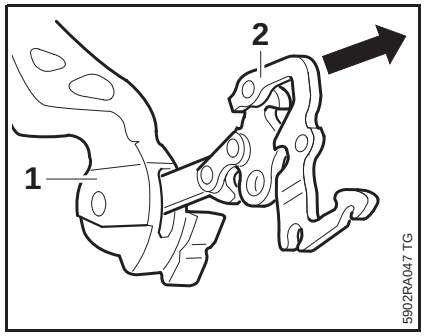


- Pull the hand guard (1) and brake lever (2) off the pivot pins (arrows) together.

– Remove the hand guard and brake lever.



- Disconnect the brake cable (1).



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

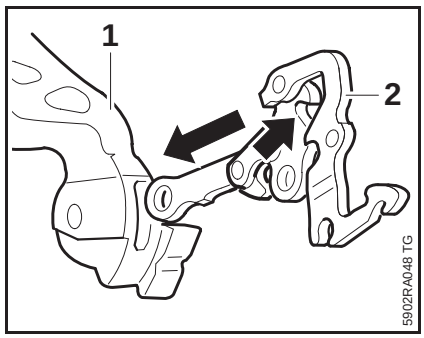
– Inspect all pivot pins and replace if necessary, 🕮 5.6

– Inspect the cam lever and replace if necessary, 🕮 5.5

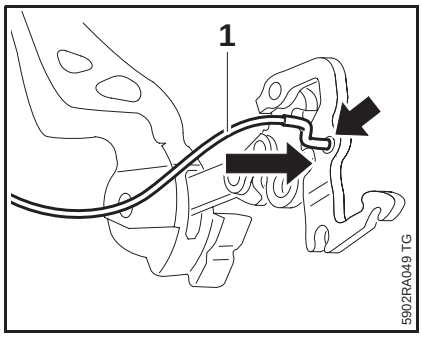
Installing

– Clean the pivot pins and disassembled parts, 🕮 15

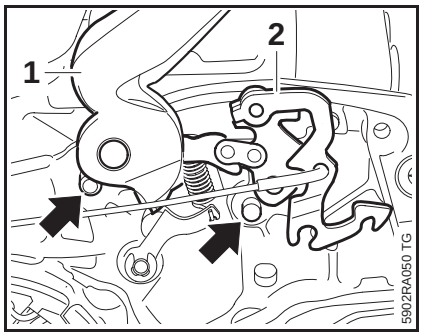
– Lubricate the pivot pins, 🕮 15



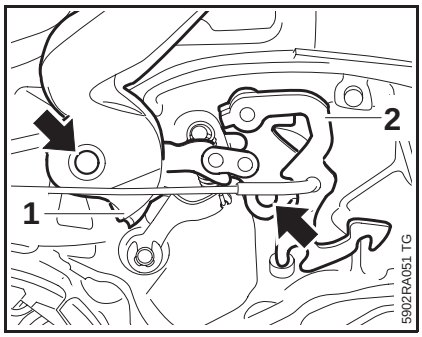
- Hold the brake lever (2) so that the brake spring attachment point (arrow) is at the top.
- Push the brake lever (2) into the recess in the hand guard (1) and line up the holes.



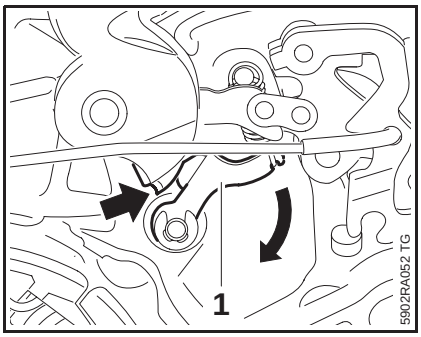
- Fit the brake cable (1) in the hole (arrow).



- Push the hand guard (1) with brake lever (2) over the machine until they are positioned against the pivot pins (arrows).

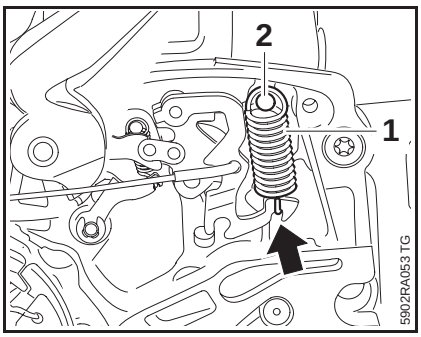


- Lift the bearing boss of the hand guard (1) and the brake lever (2) a little and position them over the pivot pins (arrows).



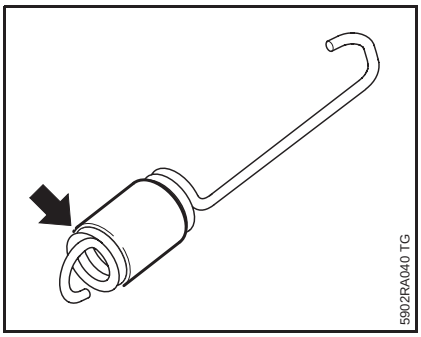
- Turn the cam lever (1) to one side until the cam of the hand guard (arrow) slips passed it.

– Push the hand guard bearing boss and the brake lever on to the pivot pins.



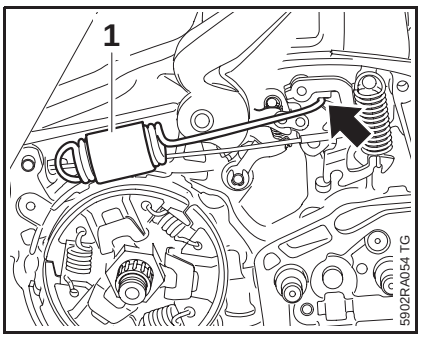
- Attach the spring (1) to the brake lever (arrow) so that the open side of the spring hook (arrow) is visible.

- Attach the spring (1) to the anchor pin (2).

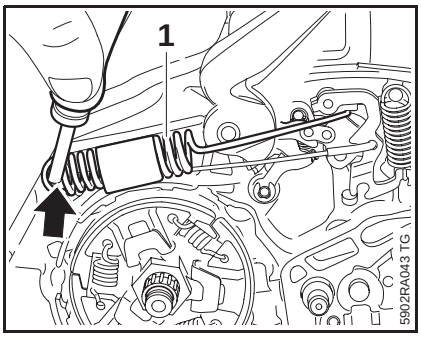


The turns of brake spring must be tightly against one another in the relaxed condition. If this is not the case, replace the brake spring.

– Position the protective tube so that it leaves the first turn (arrow) free.



- Attach the spring (1) to the brake lever (arrow).



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

– Lubricate the brake lever, cam lever and slot in hand guard, 🕮 15

– Adjust the brake cable, 🕮 5.4.1

– Reassemble all other parts in the reverse sequence.

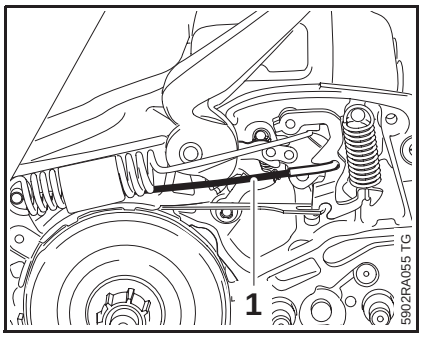
5.4.1 Adjusting the brake cable

If problems occur on the coasting brake even though the brake band is in order, the reason may be the adjustment of the brake cable.

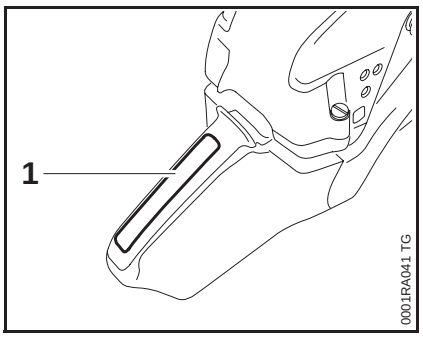
– Troubleshooting, 🕮 3.2

Checking the brake cable

– Remove the chain brake cover, 🕮 5.2

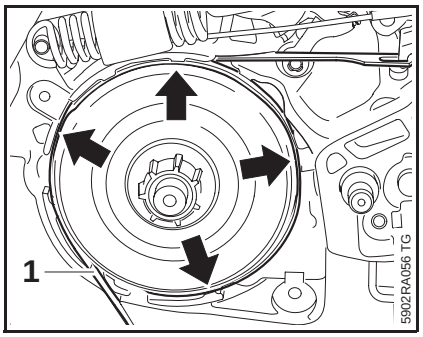


The brake cable (1) must be relaxed when the interlock lever is released.

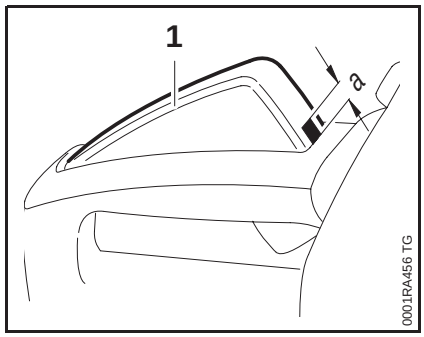


– Disengage the coasting brake.

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



The brake band (1) must locate against the crankcase (arrows) without any play
– the clutch drum must rotate freely.



– Release the interlock lever (1).

- Carefully press the interlock lever (1) to check free travel.

– Free travel must be within the mark (a).

Free travel is the distance the interlock lever (1) can be depressed without the brake lever moving.

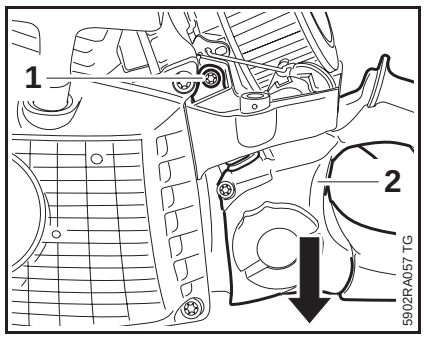
A certain free travel is necessary to guarantee correct operation of the coasting brake.

– Troubleshooting, 🕮 3.2

Adjust brake cable

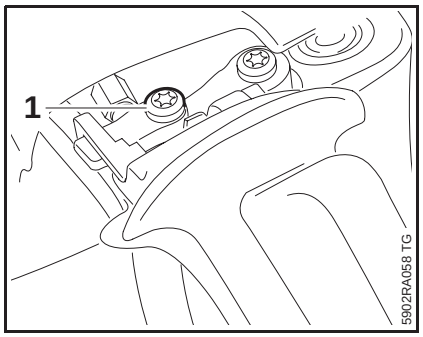
– Remove the throttle rod, 🕮 10.3.4

– Fit the handle molding, 🕮 10.3

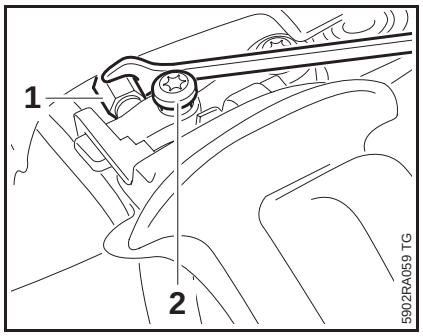


- Take out the screw (1).

- Lower the tank housing (2).



● Loosen the clamp screw (1) on the brake cable retainer.



● Use 6mm open end wrench the set free travel on the adjusting screw (1).

– Turn adjusting screw clockwise to increase free travel.

– Turn adjusting screw counterclockwise to reduce free travel.

● When the setting is correct, tighten down the clamp screw (2) firmly.

– Install the throttle rod, 🕮 10.3.4

– Fit the handle molding, 🕮 10.3

– Reassemble all other parts in the reverse sequence.

5.4.2 Brake cable

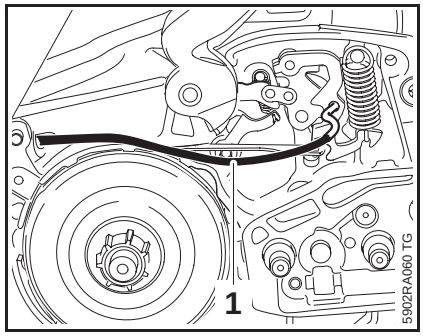
– Disconnect the brake spring, 🕮 5.3

– Remove the carburetor carrier, 🕮 12.8

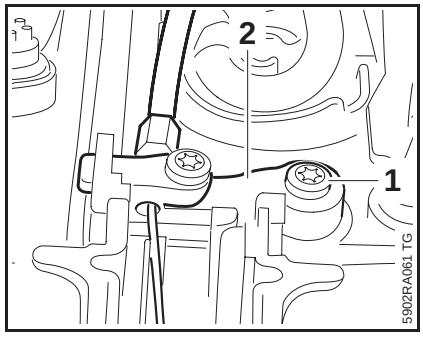
– Remove the air guide shrouds, 🕮 12.4

– Remove the throttle trigger, 🕮 10.3

– Remove the switch lever, 🕮 10.3.1



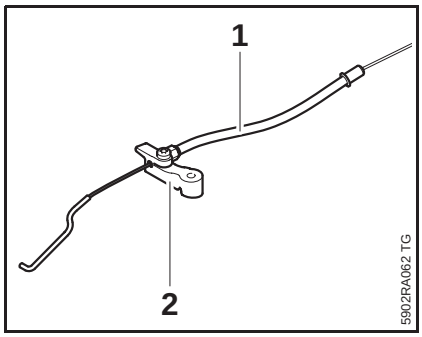
● Pull out the brake cable (1) a little and disconnect it.



● Take out the screw (1).

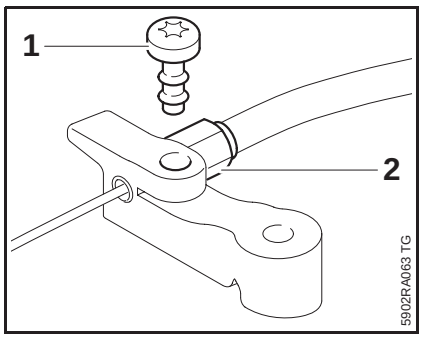
● Remove the brake cable retainer (2) with brake cable.

– Pull the brake cable out of the crankcase.

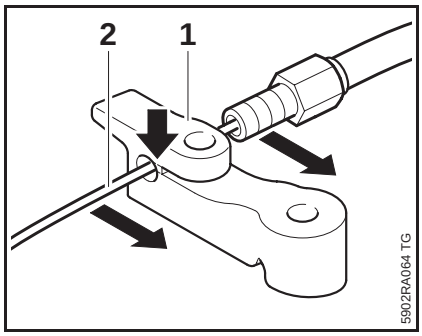


– Check the brake cable (1) and retainer (2), replace if necessary

Disassembling the brake cable and retainer



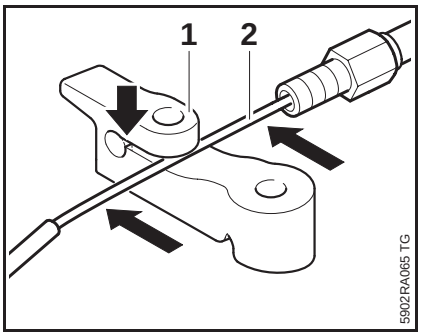
● Loosen the clamp screw (1) and take out the adjusting screw (2).



● Saw through the web (arrow) on the brake cable retainer (1).

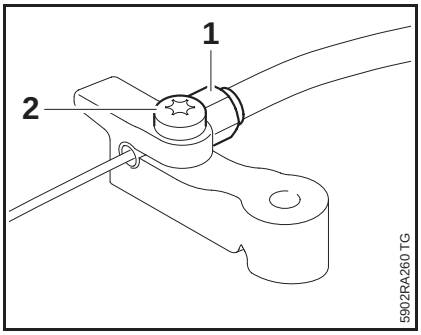
● Pull out the brake cable (2).

Installing



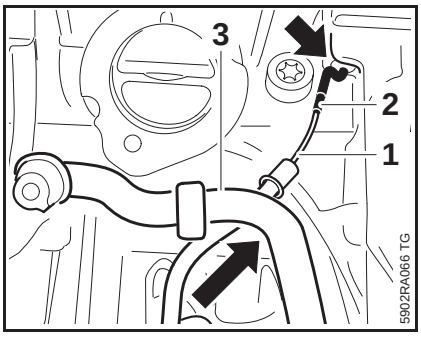
– Saw through the web (arrow) on the new brake cable retainer (1).

● Position brake cable (2) in bore of the brake cable retainer (1).

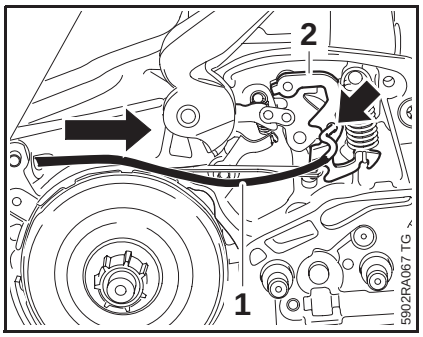


● Screw home the adjusting screw (1) as far as stop.

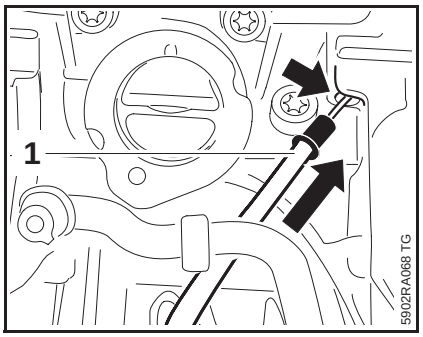
● Fit the clamp screw (2) and tighten it down firmly.



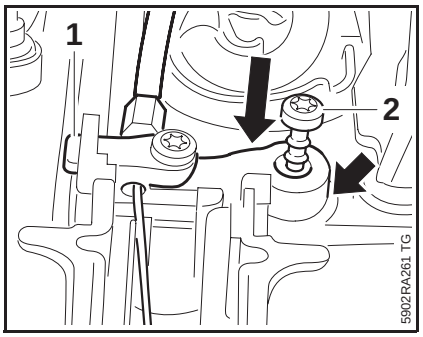
● Push the brake cable (1), short hook (2) first, under the hose (3) and through the housing bore (arrow).



● Attach the brake cable (1) to the bore (arrow) in the brake lever (2).

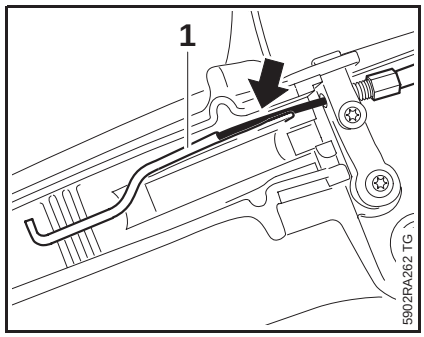


● Push grommet of brake cable (1) into the housing bore (arrow) until it is properly seated.



● Slide the brake cable retainer with lug (1) through the opening and press it into its seat (arrow).

● Insert and tighten down the screw (2) firmly.



● Position the brake cable (1) in the guide (arrow).

– Install the switch lever, 🕮 10.3.1

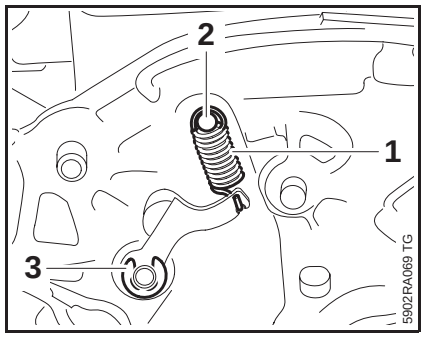
– Check operation and adjust the brake cable, 🕮 5.4.1

– Reassemble all other parts in the reverse sequence.

5.5 Cam Lever

The cam lever defines the locked position of the hand guard.

– Remove the brake lever, 🕮 5.3

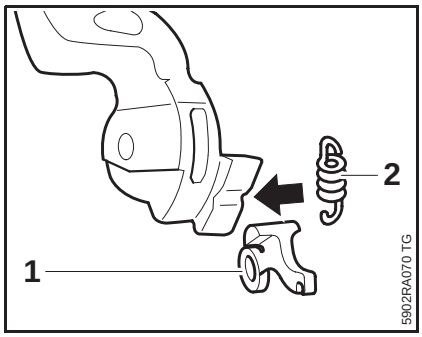


● Disconnect the spring (1) from the anchor pin (2).

– Disconnect the spring (1) from the cam lever and remove it.

● Remove the E-clip (3).

– Pull off the cam lever.



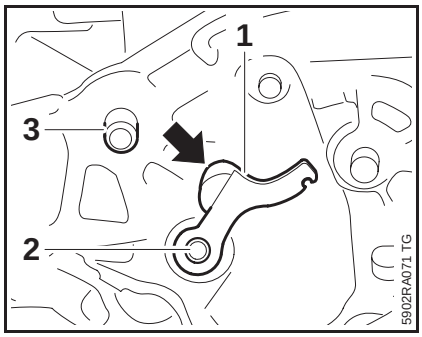
- Check the cam lever (1) and spring (2) and replace if necessary.

- Check the condition of the cam contour (arrow) and replace the hand guard if necessary.

– Inspect all pivot pins and replace if necessary,
🕮 5.6

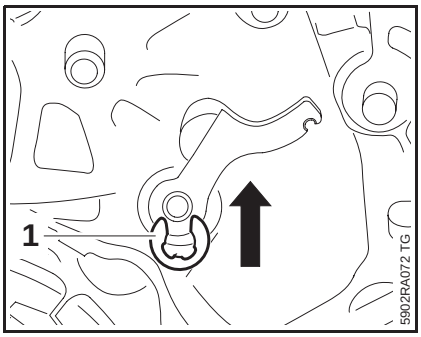
Installing

– Lubricate the pivot pins, 🕮 15

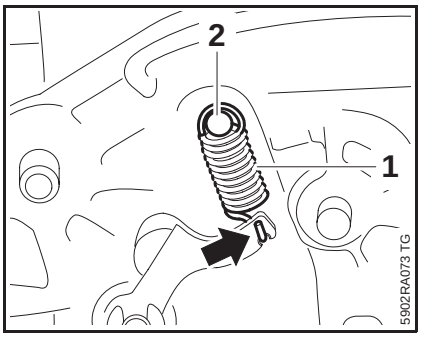


– Position the cam lever (1) so that its cam (arrow) faces the pin (3).

- Push the cam lever (1) on to the pivot pin (2).



- Fit the E-clip (1).



- Attach the spring (1) to the cam lever so that the open side of the spring hook (arrow) is visible.

- Attach the spring (1) to the anchor pin (2).

The cam lever is not yet under tension – the spring may become detached.

– Reassemble all other parts in the reverse sequence.

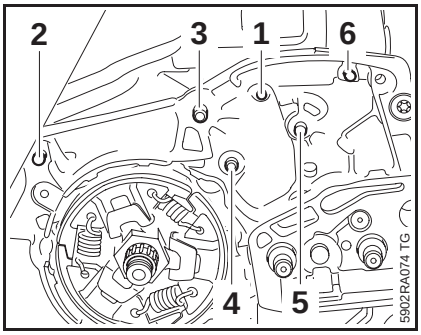
– Lubricate the cam lever, 🕮 15

5.6 Pins

The anchor and pivot pins secure the springs. Worn pins must be replaced.
– The springs may otherwise become detached and pop out.

The pins must be driven home squarely.

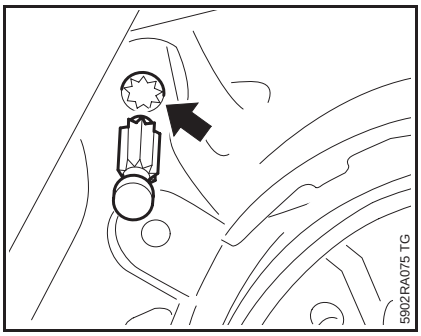
For greater clarity, all parts have been removed from the pins in the following illustrations.



- Remove the pins (1) to (6).

Pin 6 is fitted only on machines with QuickStop Super.

Installing

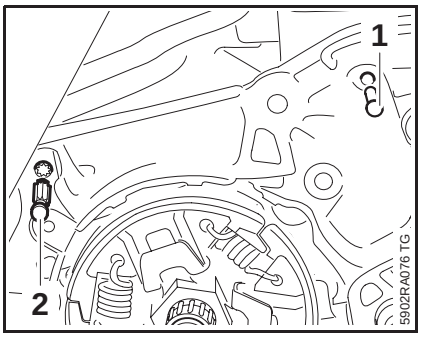


– Before installing the new pin, coat its knurled shank with threadlocking adhesive, 🕮 15

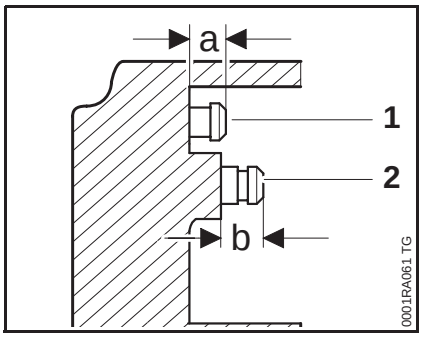
● Position the new pin in the bore (arrow) so that the knurling on the pin meshes with the existing knurling in the bore.

Turn pin back and forth as necessary.

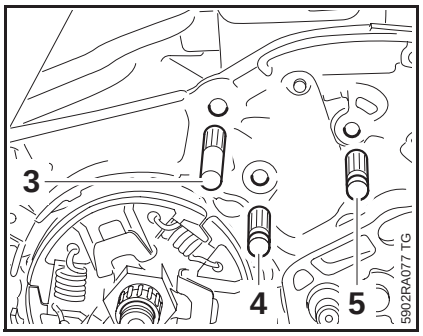
The pins must be driven home squarely.



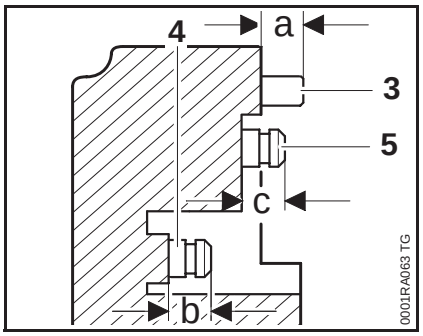
● Drive home the pins (1 and 2) as specified below.



● Pin (1) a = about 2.9 - 3.3 mm
Pin (2) b = about 4.3 - 4.7 mm

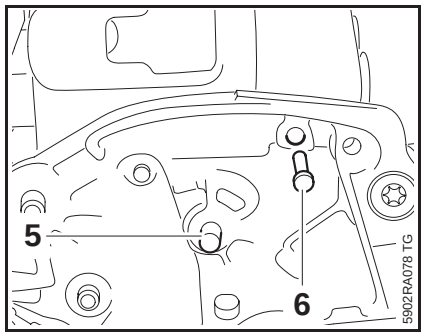


● Drive home the pins (3, 4 and 5) as specified below.

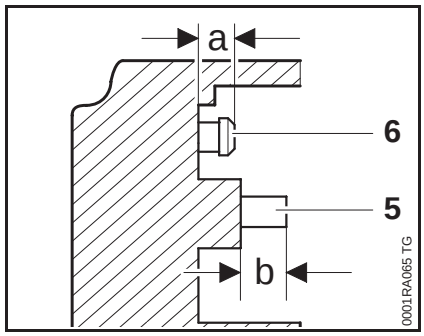


● Pin (3) a = about 10.3 - 10.5 mm
Pin (4) b = about 4.6 - 4.8 mm
Pin (5) c = about 5.1 - 5.3 mm

Machines with QuickStop Super



● Drive home the pins (5 and 6) as specified below.



● Pin (5) b = about 5.9...6.1 mm
Pin (6) a = about 2.9...3.3 mm

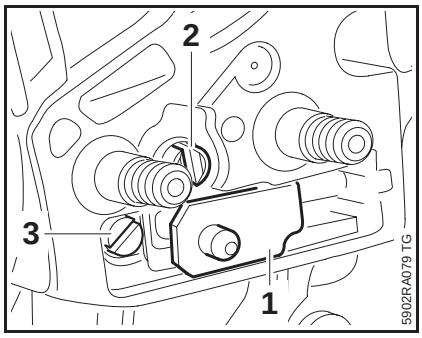
– Reassemble all other parts in the reverse sequence.

– Lubricate the brake and cam levers, 🕮 15

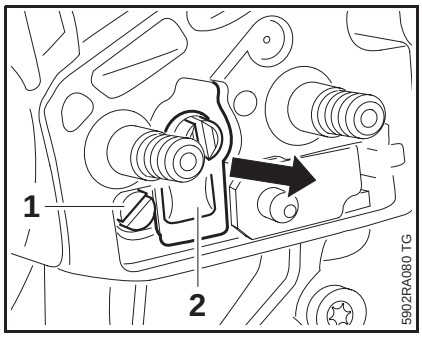
5.7 Chain Tensioner

– Troubleshooting, 🕮 3.2

– Remove the side plate, 🕮 5.2



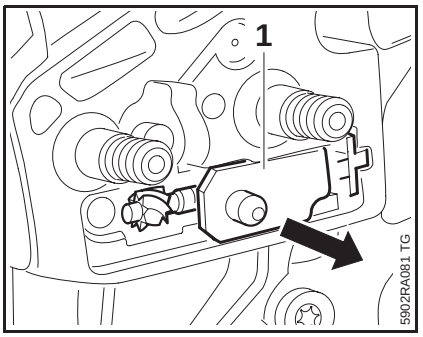
● Turn the spur gear (2) clockwise until the tensioner slide (1) butts against the right-hand end and the screw (3) is visible.



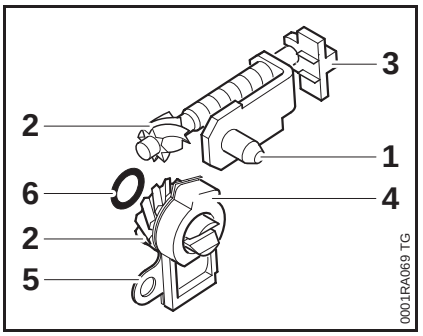
● Take out the screw (1).

– Pull out the cover plate (2) with spur gear and retainer.

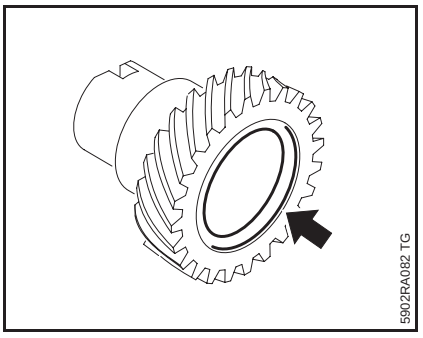
– Remove the O-ring.



● Take out the tensioner slide (1) with adjusting screw.



– Inspect the thrust pad (3), retainer (4), tensioner slide (1), cover plate (5), spur gear set (2) and O-ring (6) and replace as necessary.



● Fit the O-ring in the spur gear recess (arrow).

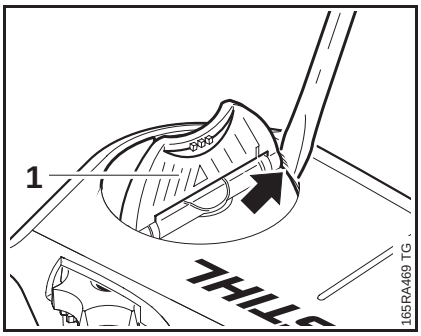
– Clean all disassembled parts, 🕮 15

– Lubricate the threads, gears and O-ring with STIHL multipurpose grease, 🕮 15

– Reassemble in the reverse sequence.

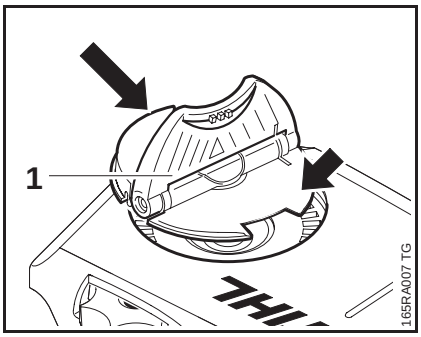
5.7.1 Quick chain tensioner

The quick chain tensioner is installed in the sprocket cover.



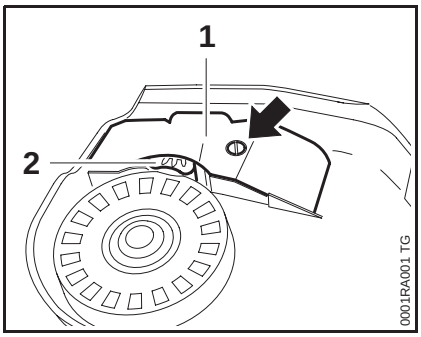
● Carefully pry the side (arrow) of the wing nut (1) out of the sprocket cover.

– Check the wing nut (1) and replace if necessary



– Swing the wing nut (1) upright.

● Push the wing nut (1), thin side first (see arrow), into the opening and press it down until it snaps into position.



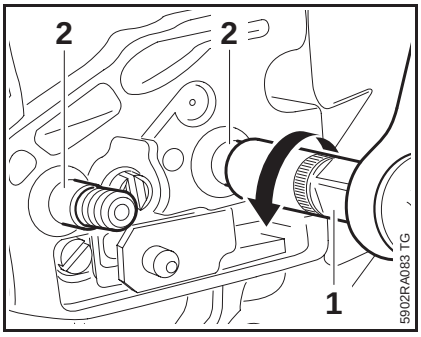
- Take out the screw (arrow).
- Remove the cover plate (1) and adjusting wheel (2).

When installing the adjusting wheel, make sure its teeth face the cover plate.

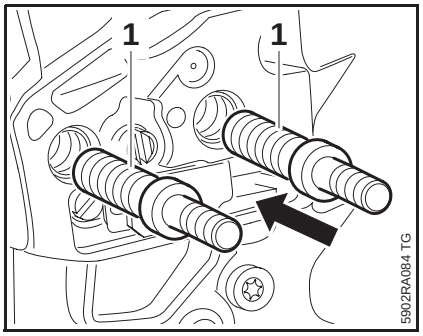
– Reassemble in the reverse sequence.

5.8 Bar Mounting Studs

– Remove the side plate, 🕮 5.2



- Push stud puller (1) 5910 893 0501 over the collar studs (2) as far as it will go and unscrew the studs counterclockwise.



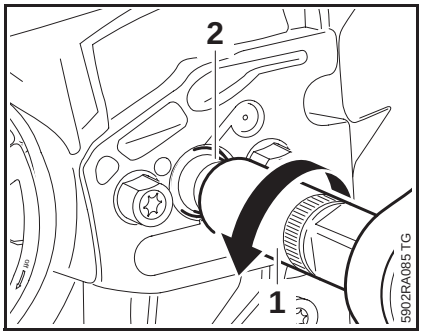
- Before installing, coat the threads (1) of the collar studs with Loctite, 🕮 15

– Fit the collar studs and tighten them down firmly.

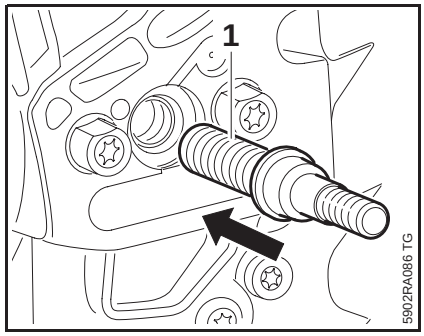
– Reassemble all other parts in the reverse sequence.

Machines with quick chain tensioner

– Remove the side plate, 🕮 5.2



- Push stud puller (1) 5910 893 0501 over the collar stud as far as it will go and unscrew the stud (2) counterclockwise.



- Before installing, coat the thread (1) of the collar stud with Loctite, 🕮 15

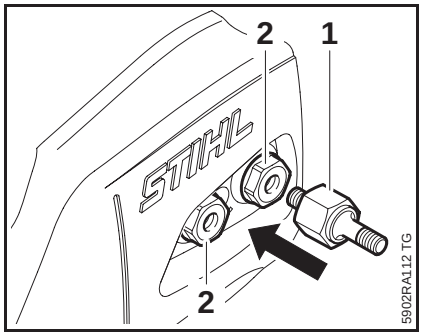
– Fit collar stud and tighten it down firmly.

– Reassemble all other parts in the reverse sequence.

5.9 Collar Nuts for Sprocket Cover

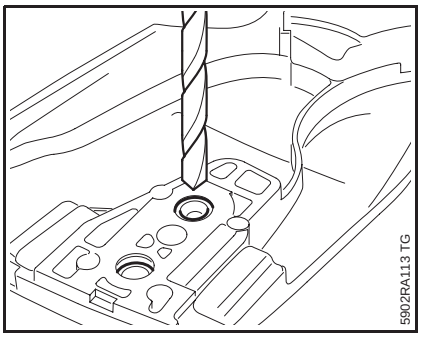
This sprocket cover can only be used on the MS 261.
Retrofitting other models is not possible. The length and shape of the collar studs must be matched to the sprocket cover with captive nuts.

Special tool 5910 893 9600 is available for replacing the nuts.



– Remove the chain sprocket cover.

● Screw the short stud of special tool (1) 5910 893 9600 into the collar nut (2) as far as stop.



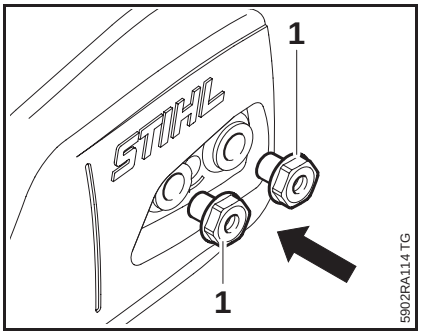
– Turn the sprocket cover over and clamp the hexagon of the special tool in a vise.

● Use an 11mm drill to drill away the flange of the captive nuts – the shoulder in the sprocket cover must not be drilled out.

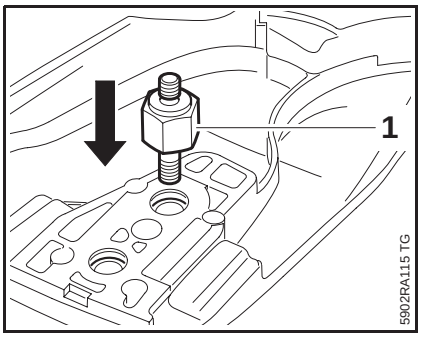
– Remove the collar nuts.

– Unscrew the special tool from the collar nuts.

Installing



● Push the new collar nuts (1) into position.



– Hold hexagon of collar nuts steady.

● Screw the long stud of special tool (1) 5910 893 9600 into the collar nuts from the other side as far as stop.

This flares the ends of the new collar nuts are secures them in the sprocket cover.

– Reassemble all other parts in the reverse sequence.

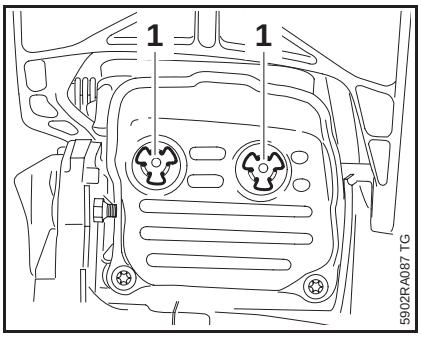
6.1 Muffler

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

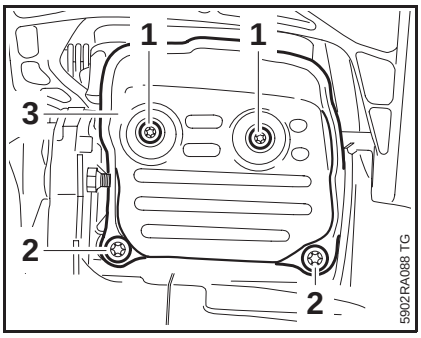
– Troubleshooting, 🕮 3

– Remove the shroud, 🕮 6.4

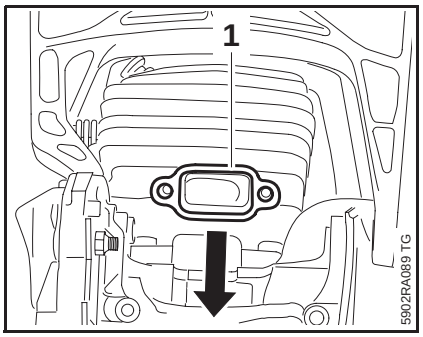
Before removing the muffler, set the piston to top dead center to ensure that no dirt falls into the cylinder.



- Pry out the plugs (1)
  – do not re-use plugs that have been removed.

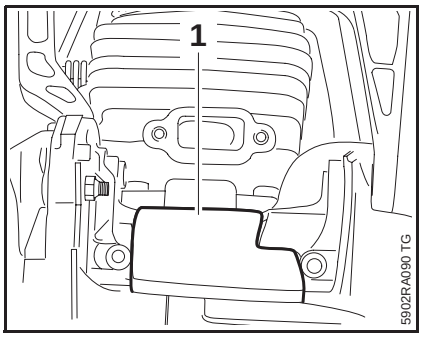


- Take out the screws (1) and (2).
- Remove the muffler (3), check and replace if necessary.

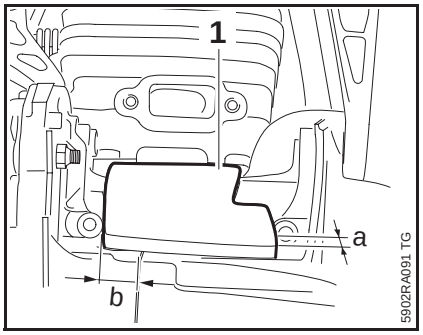


- Remove the exhaust gasket (1).

– Remove and install the spark arresting screen – see instruction manual.

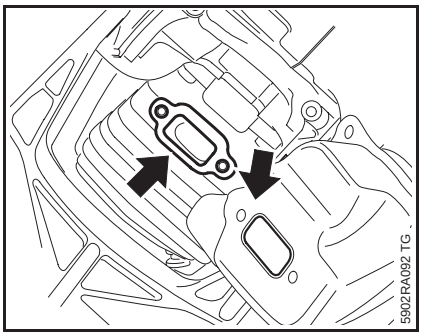


- Check the insulating mat (1) and replace it if necessary.



- Position new insulating mat (1) as follows
  a = flush
  b = 15 mm
- Bond new insulating mat (1) in position.

Installing

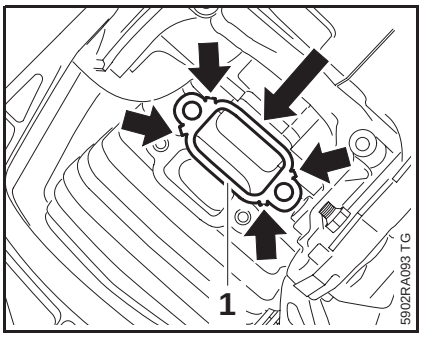


– Position the machine upright.

– Cover the exhaust port. Remove any dirt from around the cylinder and exhaust port.

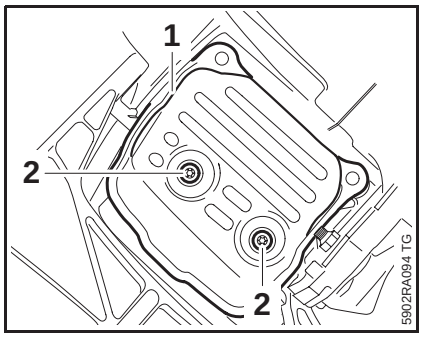
- Check and clean the sealing faces (arrows), remove any gasket residue – make sure there is no gasket residue or dirt in the exhaust port.

Always replace components with damaged sealing faces.



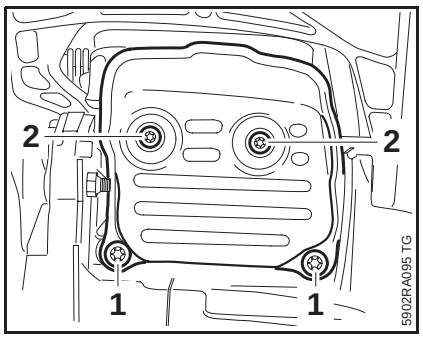
– Position the exhaust gasket (1) so that the tabs (arrows) point towards the cylinder.

- Fit the exhaust gasket (1) and use the tabs (arrows) to line it up on the cylinder.



- Carefully place the muffler (1) in position.
- Check the position of the gasket and fit the screws (2).

– Insert the screws (2) – do not tighten down yet.



- Insert the screws (1) – do not tighten down yet.
- Tighten down screws (1) and (2) firmly.

– Use a blunt tool to push home the new plugs
– take care not to damage the plugs.

6.2 Leakage Test

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

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

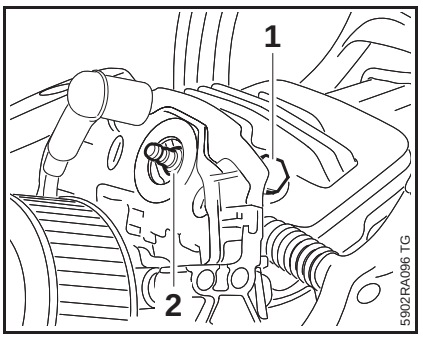
Moreover, the transition from idle speed to part or full throttle is not smooth.

Always perform the vacuum test first and then the pressure test.

The engine can be checked thoroughly for leaks with the pump 0000 850 1300.

6.2.1 Preparations

– Remove the shroud, 🕮 6.4

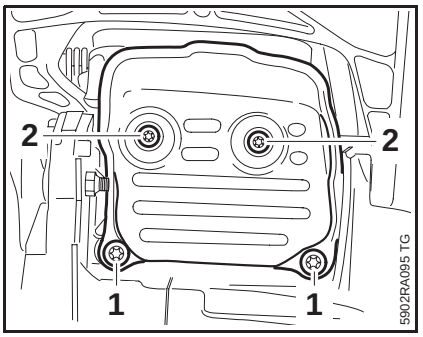


– Pull off the boot and unscrew the spark plug.

– Set the piston to top dead center. This can be checked through the spark plug hole.

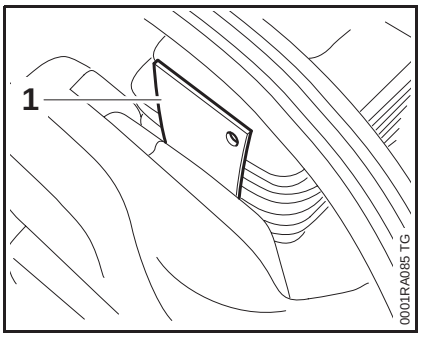
– Remove the decompression valve, 🕮 6.9

- Fit the plug (1) 1122 025 2200 and tighten it down firmly.
- Fit the spark plug (2) and tighten it down firmly.



– Pry out the plugs.
– do not re-use plugs that have been removed.

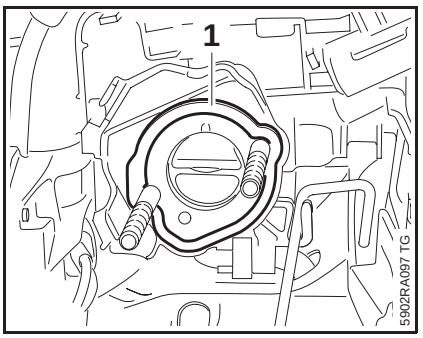
- Loosen the screws (1) and (2).



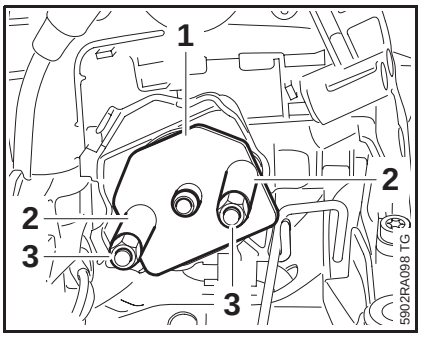
- Fit the sealing plate (1) 0000 855 8106 on the cylinder exhaust port between the gasket and muffler and tighten down the screws moderately.

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

– Remove the carburetor, 🕮 12.5



- Make sure the washer (1) is in place.



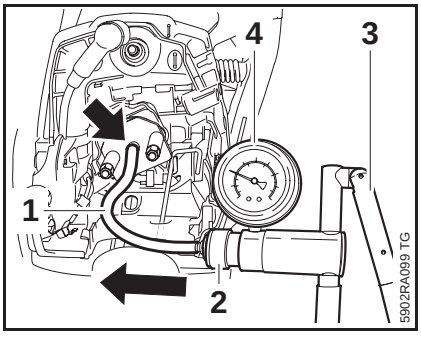
– Line up the flange and fit it over the studs.

- Fit the test flange (1) 1119 850 4201.
- Fit the sleeves (2) 5910 893 1701.
- Fit the nuts (3) and tighten them down firmly.

6.2.2 Vacuum Test

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

A test can be carried out with pump 0000 850 1300 to detect this kind of fault.



- Connect hose (1) of pump 0000 850 1300 to the nipple (arrow).
- Push ring (2) to the left – vacuum test.
- Operate the lever (3) until the pressure gauge (4) indicates a vacuum of 0.5 bar.

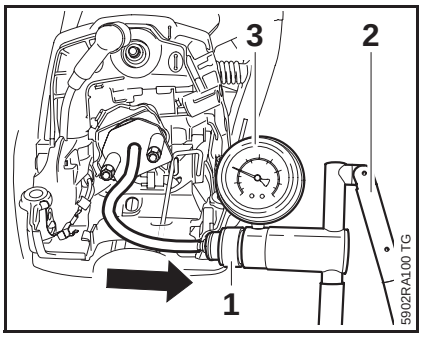
If the vacuum reading remains constant, or rises to no more than 0.3 bar within 20 seconds, it can be assumed that the oil seals are in good condition.
However, if the pressure continues to rise (reduced vacuum in the engine),
the oil seals
must be replaced, 🕮 6.3.

– After finishing the test, push the ring to the right to vent the pump.

– Continue with pressure test, 🕮 6.2.3

6.2.3 Pressure Test

Carry out the same preparations as for the vacuum test, 🕮 6.2.2



- Push ring (1) to the right – pressure test.
- Operate the lever (2) until the pressure gauge (3) indicates a pressure of 0.5 bar. If this pressure remains constant for at least 20 seconds, the crankcase is airtight.

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

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

– After finishing the test, push the ring to the left to vent the pump – disconnect the hose.

– Remove the flange 1119 850 4201.

– Loosen the muffler screws and remove the sealing plate 0000 855 8106.

– Tighten down the muffler screws firmly.

– Install the carburetor, 🕮 12.5

– Use a blunt tool to push home the new plugs – take care not to damage the plugs.

– Reassemble all other parts in the reverse sequence.

6.3 Oil Seals

It is not necessary to disassemble the engine to replace the oil seals.

Ignition side

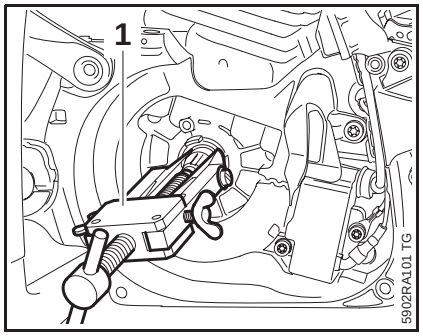
– Remove the fan housing, 🕮 8.2

– Remove the flywheel, 🕮 7.6

Machines with heating

– Remove the generator and put it to one side, 🕮 13.7

Machines with heating



Take care not to damage the crankshaft stub.

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

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

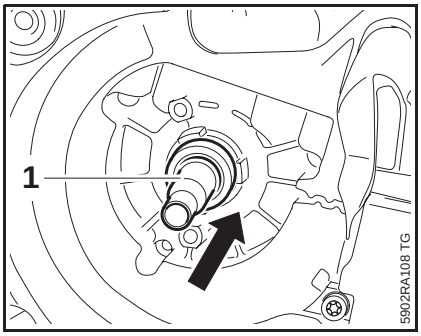
– Clamp the puller arms.

– Pull out the oil seal.

Installing

– Clean the sealing face, 🕮 15

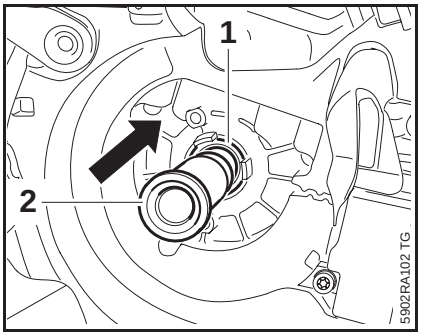
– Lubricate sealing lips of new oil seal with grease, 🕮 15



● Fit the installing sleeve (1) 1141 893 4600.

– Slip the oil seal, open side facing the crankcase, over the installing sleeve.

– Remove the installing sleeve (1).



● Use press sleeve (2) 1141 893 2400 to install the oil seal (1).

The seating face must be flat and free from burrs.

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

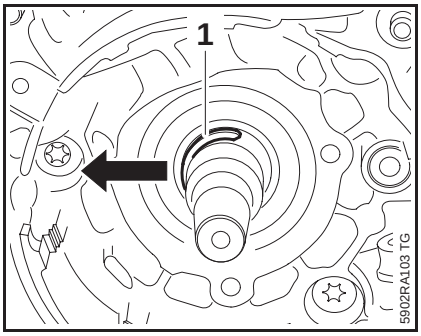
– Degrease the crankshaft taper, 🕮 15

– Reassemble all other parts in the reverse sequence.

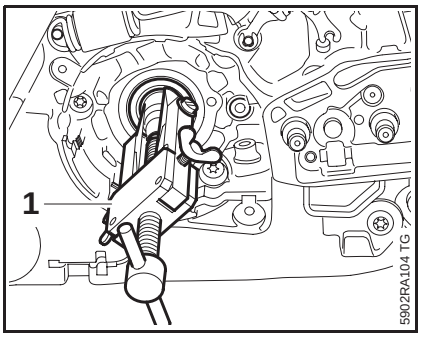
Clutch side

– Remove the clutch, 🕮 4

– Remove the oil pump, 🕮 11.3



● Remove the retaining ring (1).



Take care not to damage the crankshaft stub.

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

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

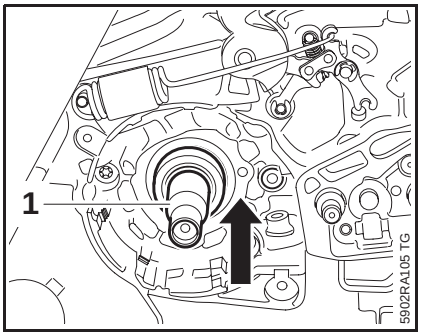
– Clamp the puller arms.

– Pull out the oil seal.

Installing

– Clean the sealing face.

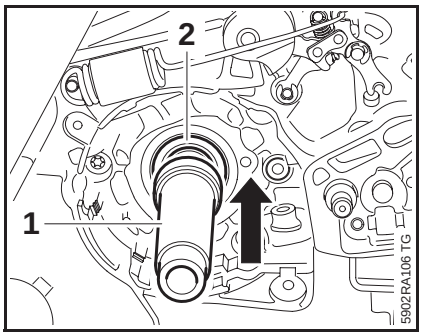
– Lubricate sealing lips of new oil seal with grease, 🕮 15



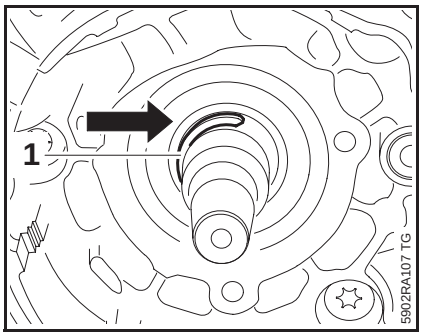
● Fit the installing sleeve (1) 1141 893 4600.

– Slip the oil seal, open side facing the crankcase, over the installing sleeve.

– Remove the installing sleeve (1).



● Use press sleeve (1) 1118 893 2401 to install the oil seal (2).

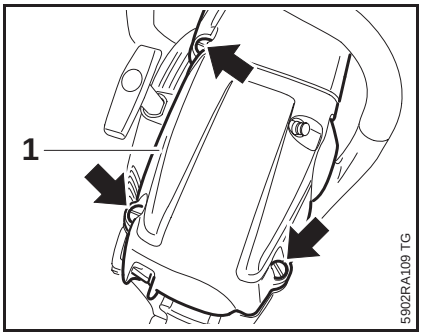


● Fit the retaining ring (1).

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

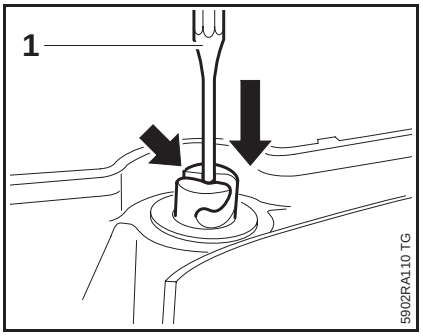
– Reassemble all other parts in the reverse sequence.

6.4 Shroud



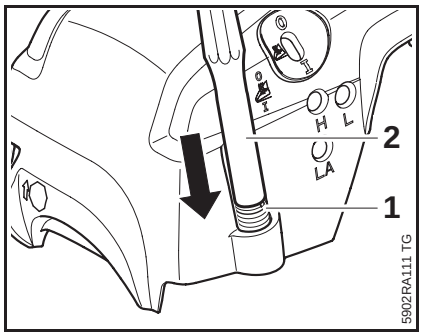
● Open the quick-release locks (arrows).
– Use the combination wrench to turn them a 1/4 turn counterclockwise.

– Remove the shroud (1).



● Use a drift (1) to drive out the lock (arrow).

Installing



- Use a drift (2) to drive home the lock (1).

– Reassemble all other parts in the reverse sequence.

6.5 Cylinder

Before removing the piston, decide whether or not the crankshaft has to be removed as well.

Cylinder installed
To remove the flywheel and clutch, the crankshaft has to be blocked by inserting the locking strip in the spark plug hole.

Cylinder removed
To remove the flywheel and clutch, the crankshaft has to be blocked by resting the piston on the wooden assembly block.

– Remove the shroud, 🕮 6.4

– Pull off the boot and unscrew the spark plug, 🕮 4

– Remove the fan housing, 🕮 8.2

– Remove the filter base, 🕮 12.3

– Remove the carburetor, 🕮 12.5

– Remove the carburetor carrier, 🕮 12.8

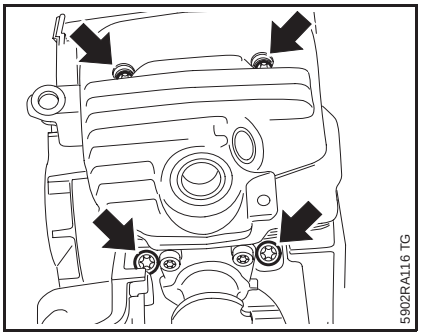
– Remove the air guide shrouds, 🕮 12.4

– Remove the muffler, 🕮 6.1

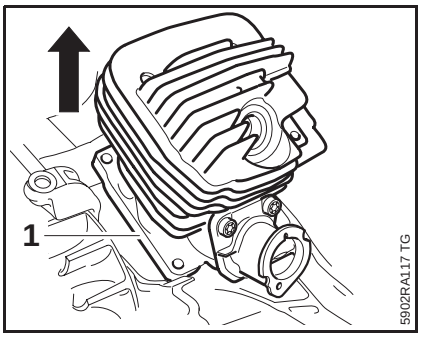
– Remove the decompression valve, 🕮 6.9
– not on machines with ErgoStart.

– Remove the handlebar, 🕮 9.4
– not on machines with heating.

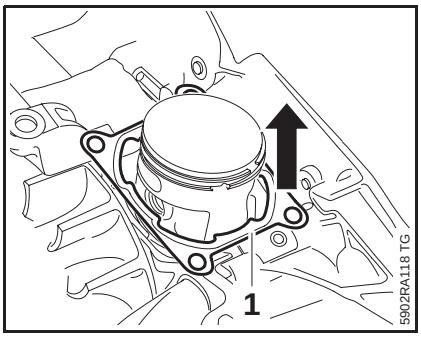
– Remove AV spring from handlebar, 🕮 9.4
– not on machines with heating.



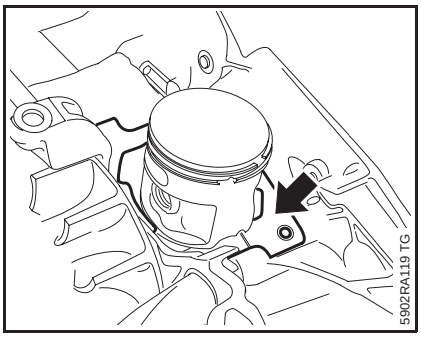
- Take out the screws (arrows).



- Carefully lift the cylinder (1) away.

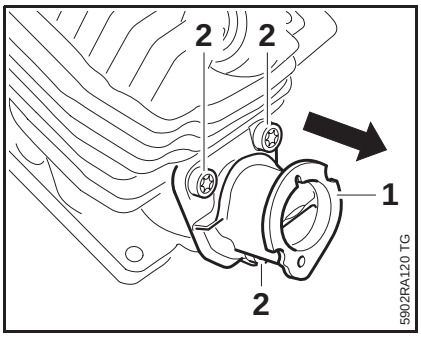


- Remove the cylinder gasket (1).



- Inspect and clean the sealing face (arrow), 🕮 15

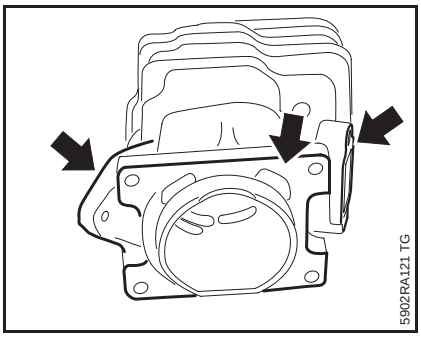
The sealing face must be in perfect condition. Always replace components with damaged sealing faces, 🕮 3.7.



– Check the intake manifold (1), replace if necessary
– even very minor damage can result in engine running problems, 🕮 3.7

● Take out the screws (2).

● Remove the intake manifold (1).



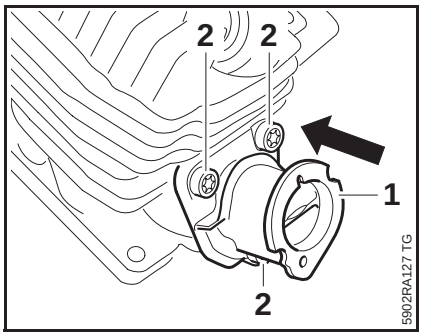
● Inspect and clean the sealing faces (arrows) and remove any gasket residue, 🕮 15

– Clean the sealing face on the intake manifold, 🕮 15

The sealing faces must be in perfect condition. If the sealing faces are damaged, install a new cylinder.

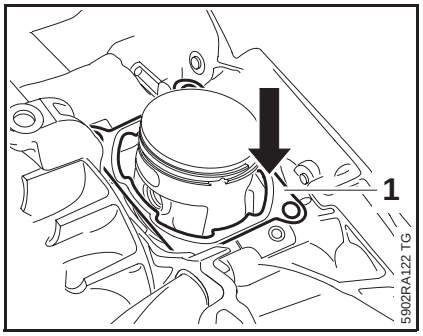
Always use a new cylinder gasket when re-installing the cylinder.

Installing



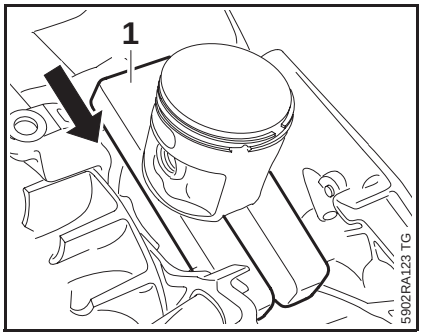
● Fit the manifold (1) in position.

● Insert and tighten down the screws (2) firmly.



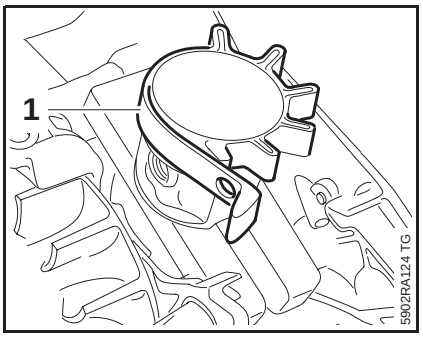
● Fit new cylinder gasket (1) over the piston and on the crankcase.

– Line up the cylinder gasket (1) with the holes.



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

Take care not to damage the cylinder gasket.

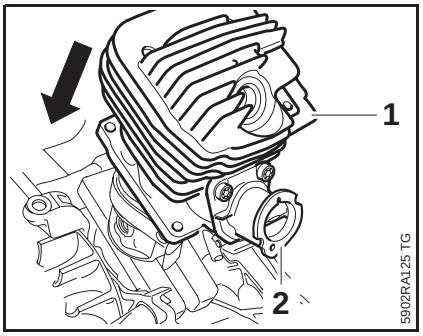


– Lubricate the piston, piston rings and cylinder wall with oil, 🕮 15

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

– Check correct installed position of rings, 🕮 6.8

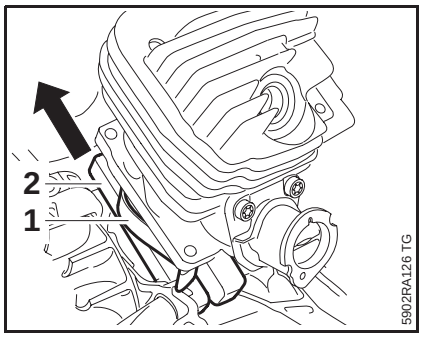
Apply the clamping strap (1) so that the piston rings do not project beyond the cylinder wall.



● Position the cylinder (1) so that the manifold (2) points towards the tank housing.

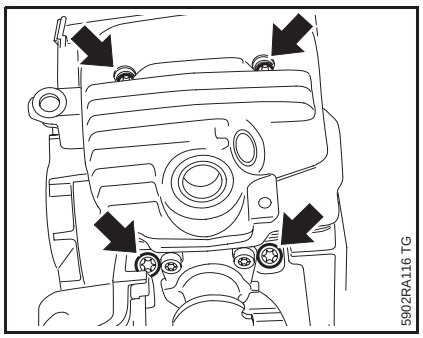
While sliding the cylinder over the piston, hold the clamping strap tightly around the piston so that the rings do not project
– they might otherwise break.

● Slide the cylinder over the piston, the clamping strap moves downwards at the same time.



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

Make sure the cylinder gasket is properly seated.



– Push the cylinder fully home.

● Insert the screws (arrows) to hold the cylinder and gasket in position..

– Tighten down the screws through the holes (arrows) in the cylinder in a crosswise pattern.

– Reassemble all other parts in the reverse sequence.

6.6 Crankshaft

– Drain the fuel and oil tanks, 🕮 1.1

– Remove the brake band, 🕮 5.2

– Remove the oil pump, 🕮 11.3

– Remove the oil suction hose, 🕮 11.2

– Remove the brake lever, 🕮 5.3 QuickStop Super, 🕮 5.4

– Remove the handlebar, 🕮 9.6 Machines with heating, 🕮 9.6.1

– Remove the tank housing, 🕮 12.11.5

– Remove the flywheel, 🕮 7.6

– Machines with handle heating Remove the generator, 🕮 13.7

– Remove the short circuit wire, 🕮 7.7.2

– Remove the cylinder, 🕮 6.5

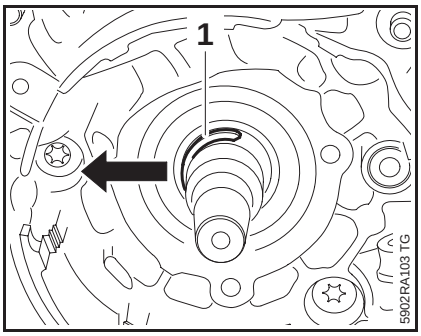
– Remove the piston, 🕮 6.7

– Remove the spiked bumper.

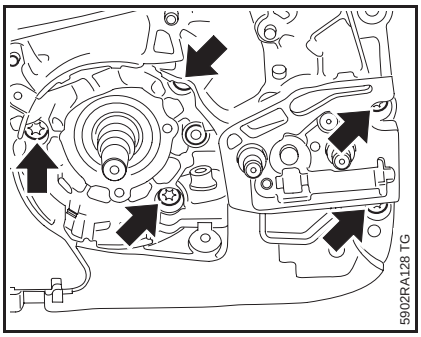
– Remove the insulating mat, 🕮 6.1

Always install new bearings and oil seals after removing the crankshaft, 🕮 6.6.1 and 🕮 6.3.

Clutch side of crankcase

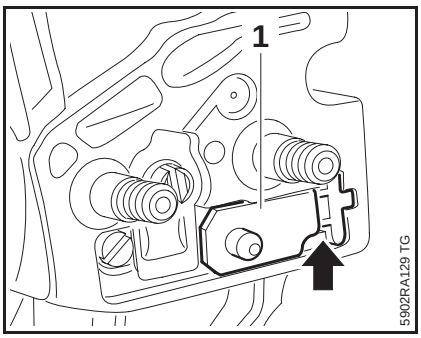


● Remove the retaining ring (1).

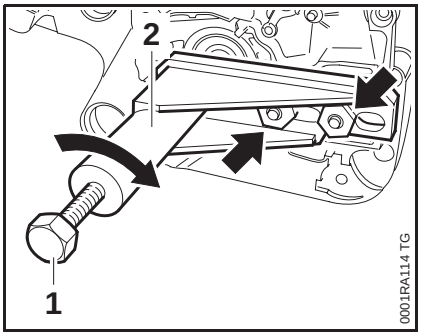


Use the tools in the service tool set 5910 007 2205 for removing and installing.

● Take out the screws (arrows).



● The tensioner slide (1) must butt against the thrust pad (arrow).



- Back off the spindle (1) in service tool until it is clear of the crankshaft stub.

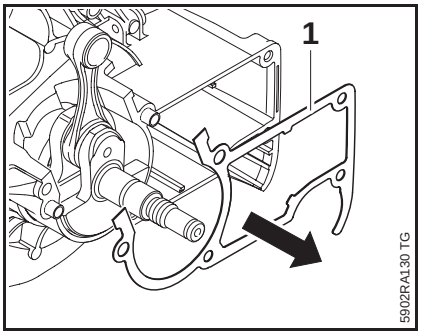
- Slip the service tool (2), from set 5910 007 2205, over the collar studs (arrows), fit the nuts and tighten them down firmly.

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

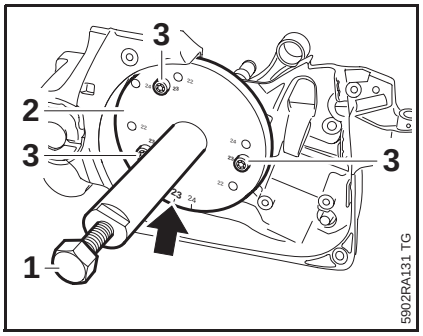
This operation releases the clutch side of the crankcase and separates the two halves.

– Install new ball bearings and oil seals, 🕮 6.6.1 and 🕮 6.3

Ignition side of crankcase



- Remove the gasket (1).



Use the tools in the service tool set 5910 007 2201 for removing and installing.
– Use drilled plate 5910 893 2103.

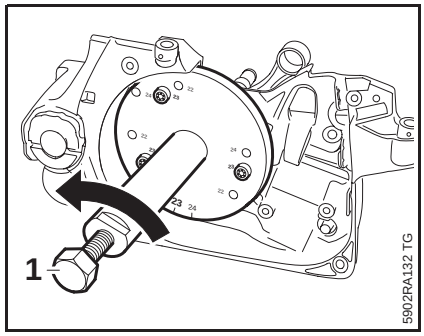
Drilled plate 5910 893 2103 can be added to service tool set 5910 007 2201.

All three drilled plates are included in the new service tool set 5910 007 2201.

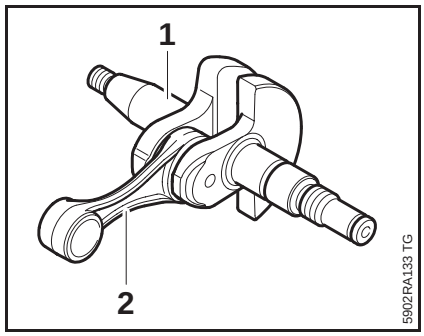
– Unscrew the spindle (1) of the service tool until the drilled plate (2) butts against the crankcase
– left-hand thread.

- Position service tool (1) with plate (2) 5910 893 2103 against the ignition side of the crankcase so that the number "23" (arrow) is at the bottom.

- Insert three M5x72 screws (3) in the holes marked "23" and tighten them down until they butt against the crankcase.



- Turn the spindle (1) counterclockwise until the crankshaft is pushed out of the ignition side of the crankcase.



The crankshaft (1), connecting rod (2) and needle bearing form an inseparable unit. Always replace as a complete unit.

– Check the two halves of the crankcase and ball bearings and replace if necessary, 🕮 6.6.1

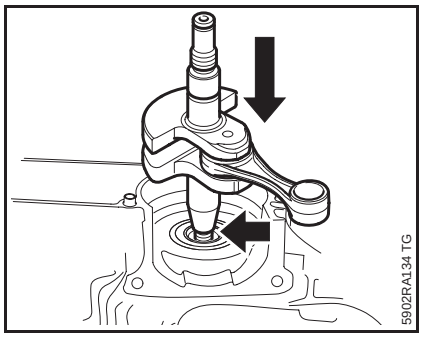
– Before installing, clean the crankshaft, 🕮 15

Installing

Ignition side of crankcase

Take care not to damage the crankshaft stub.

Inspect and clean the sealing faces on the ignition side of the crankcase (including the cylinder sealing face) – the sealing faces must not be damaged in any way.



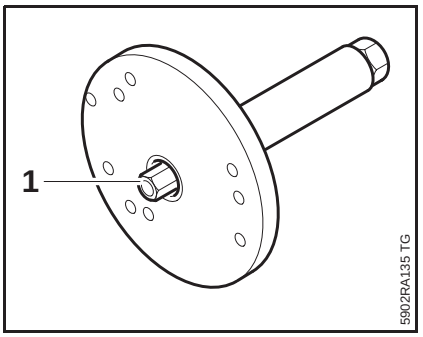
- Position the tapered stub of the crankshaft (arrow) above the ball bearing at the ignition side.

– Wear protective gloves to reduce risk of burn injury.

– Heat the bearing inner race to about 160°C (320°F).

- Push the crankshaft home as far as stop.

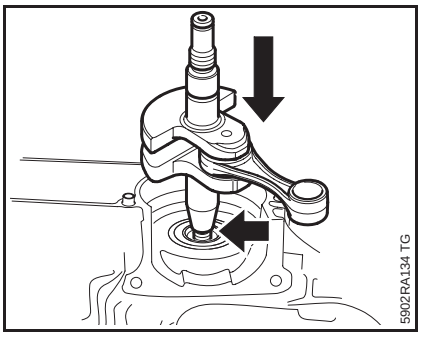
This operation must be carried out very quickly because heat is absorbed by the crankshaft, and the inner bearing race shrinks.



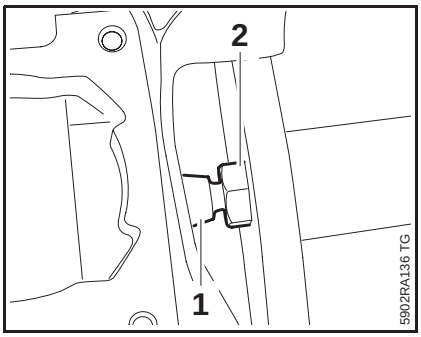
If it is not possible to heat the inner bearing race, use service tool 5910 007 2101 to install the crankshaft.
– Use drilled plate 5910 893 2103.

- Screw the threaded sleeve (1) 5910 893 2420 onto the spindle as far as stop.

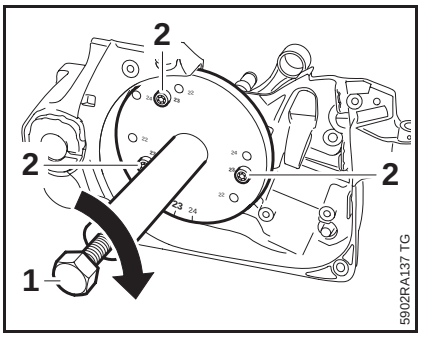
Coat tapered stub of crankshaft with oil.



- Position the tapered stub of the crankshaft (arrow) above the ball bearing at the ignition side and push it home.



- Position the screw sleeve (2) on the crankshaft thread (1) and screw it into place.

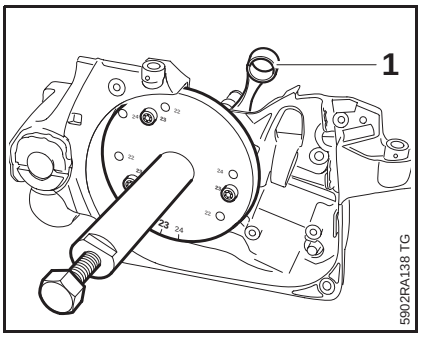


- Turn the spindle bolt (1) to position the drilled plate 5910 893 2103 against the ignition side of the crankcase and line it up so that the number "23" is at the bottom.

- Fit the M5x72 screws (2) through the holes marked "23" and tighten them down.

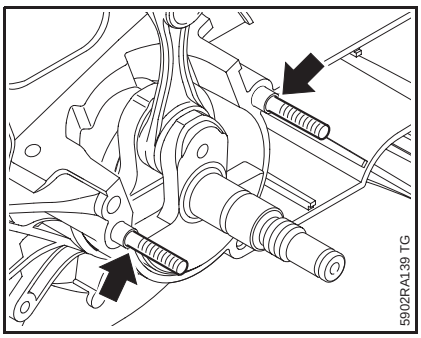
- Turn the spindle bolt (1) clockwise.

– Install the ignition side of the crankcase as far as stop.

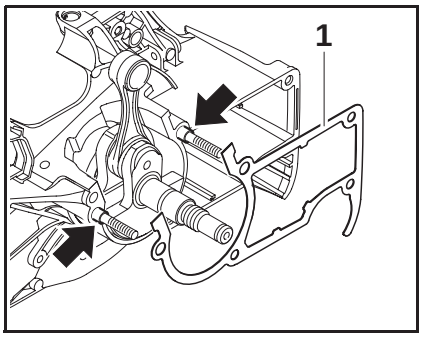


The crankshaft turns when it is being pulled into place with the service tool. Therefore, make sure the small end (1) of the connecting rod always points upward to the cylinder.

– Remove the service tool.



- At the ignition side, fit three M5x72 screws (arrows) in the holes
  to help alignment and avoid twisting.



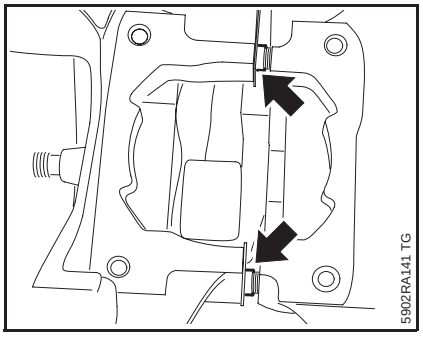
- Fit a new gasket (1) and locate it on the sleeves (arrows).

– Coat the straight stub of the crankshaft with oil.

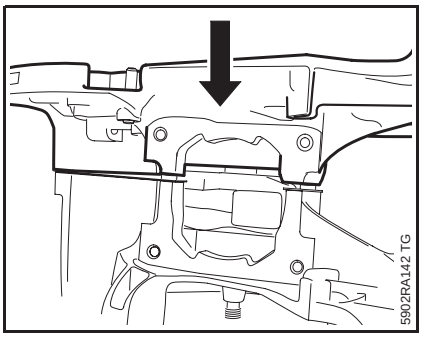
Clutch side of crankcase

Take care not to damage the crankshaft stub.

Inspect and clean the sealing faces on the clutch side of the crankcase (including the cylinder sealing face) – the sealing faces must not be damaged in any way.



Make sure the sleeves (arrows) engage the holes and the gasket is not pinched or twisted.



– Wear protective gloves to reduce risk of burn injury.

– Heat the bearing inner race to about 160°C (320°F).

– Position the clutch side of the crankcase on the straight crankshaft stub and the screws.

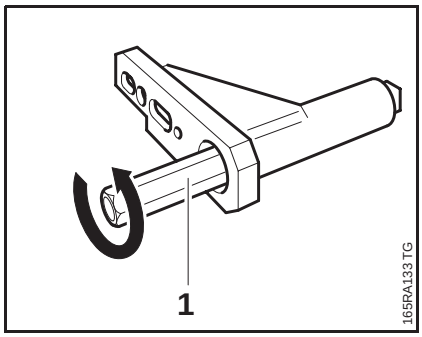
- Push the crankcase fully home.

This operation must be carried out very quickly because heat is absorbed by the crankshaft, and the inner bearing race shrinks.

If it is not possible to heat the inner bearing ring, use the service tool from set 5910 007 2205 to install the crankcase.

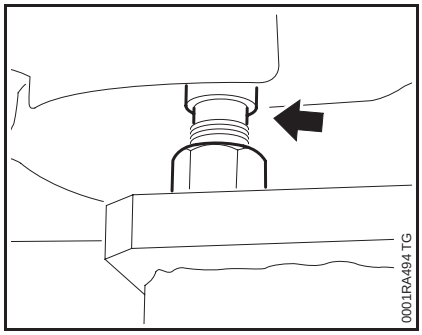
– Coat the straight stub of the crankshaft with oil.

– Position the clutch side of the crankcase on the straight crankshaft stub and the two screws.

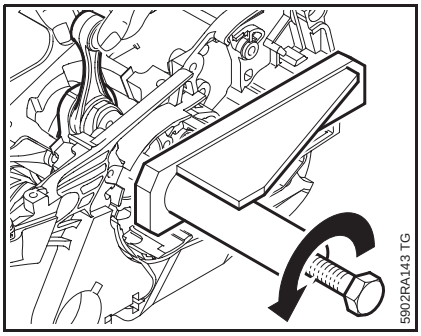


– Screw the spindle fully into the service tool.

● Screw the threaded sleeve (1) 5910 893 2409 onto the spindle as far as stop
– left-hand thread.



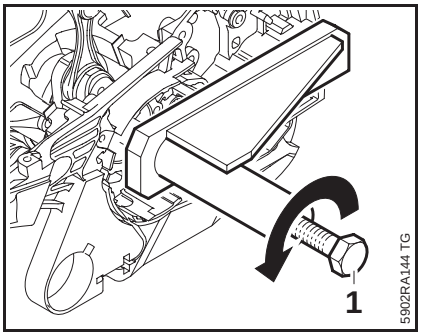
● Apply the threaded sleeve to the crankshaft stub (arrow) and push the service tool over the bar studs.



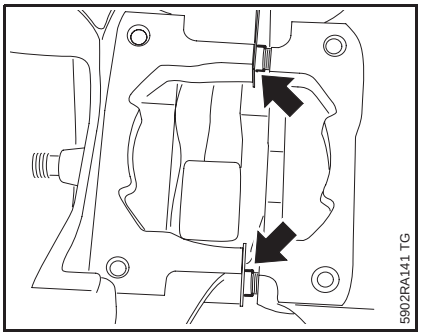
● Hold the crankshaft steady and rotate the spindle counterclockwise to screw the threaded sleeve onto the crankshaft stub.

– Release the crankshaft. Hold the service tool steady and continue turning the spindle until the tool butts against the crankcase.

– Fit the nuts on the collar studs and screw them down finger-tight.



● Turn the spindle (1) counterclockwise until the crankcase locates against the guide sleeves.



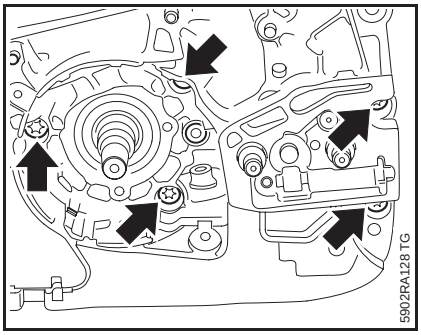
Make sure the sleeves (arrows) engage the holes and the gasket is not pinched or twisted.

– Continue turning the service tool's spindle until the gap between the two halves of the crankcase is closed.

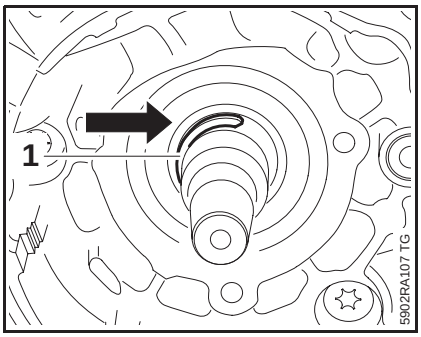
– Unscrew the mounting nuts.

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

– Take out the M5x72 screws.



● Insert the screws (arrows) and tighten them down firmly in a crosswise pattern.



● Fit the retaining ring (1).

– Check and install the piston, 🕮 6.7

– Check and install the cylinder, 🕮 6.5

– Reassemble all other parts in the reverse sequence.

6.6.1 Bearings / Crankcase

Each half of the crankcase can be replaced separately if it is damaged.

New crankcase halves are supplied with the main parts preassembled – see the parts list.

Parts not supplied with the new crankcase must be transferred from the original crankcase – check the parts and replace if necessary.

If a new crankcase is installed, the machine's serial number must be stamped on it with 2.5 mm figure stamps.

If the original crankcase is used again, replace the oil seals and ball bearings, remove any gasket residue and clean the sealing surfaces thoroughly. The sealing faces must be in good condition and clean to guarantee a perfect seal.

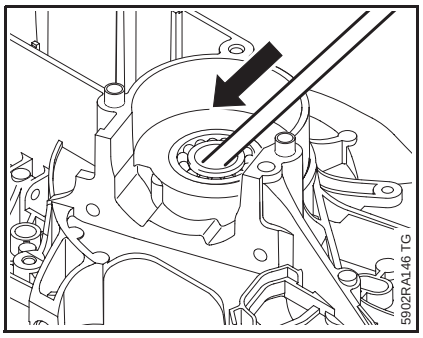
Inspect both halves of the crankcase for cracks and all sealing faces for signs of damage.

– See also Troubleshooting, 🕮 3.7

– Remove the crankshaft, 🕮 6.6

– Wear protective gloves to reduce risk of burn injury.

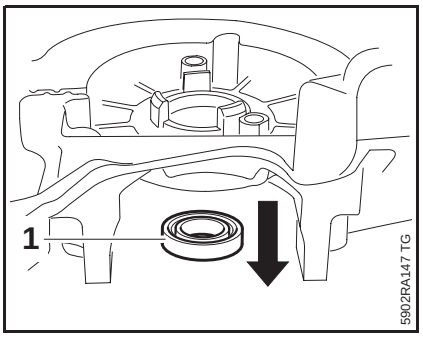
Ignition side of crankcase



● Use a punch to carefully drive out the oil seal.

● Check and clean the crankcase or replace if necessary.

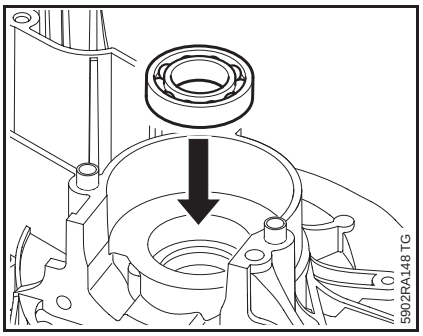
– If this half of the crankcase is in order, install a new ball bearing.



– Heat the area of the bearing seat to about 160°C (320°F).

The bearing (1) drops out as soon as this temperature is reached.

Installing



– Heat the area of the bearing seat to about 160°C (320°F).

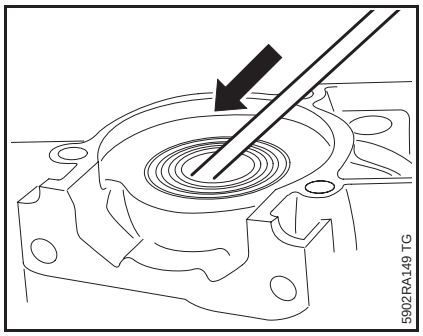
– Position the ball bearing so that its open side (balls visible) faces the inside of the crankcase.

● Push the ball bearing home as far as stop.

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

– Check that ball bearing is properly seated. If necessary, use press arbor 1118 893 7200 to press the bearing fully home.

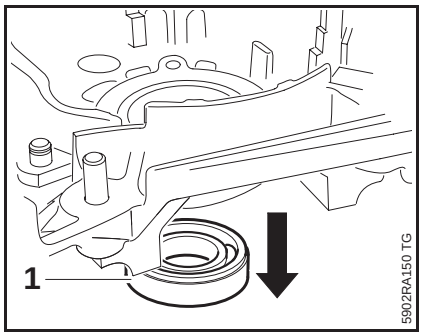
Clutch side of crankcase



- Use a punch to carefully drive out the oil seal.

– Check and clean the crankcase or replace if necessary.

– If this half of the crankcase is in order, install a new ball bearing.



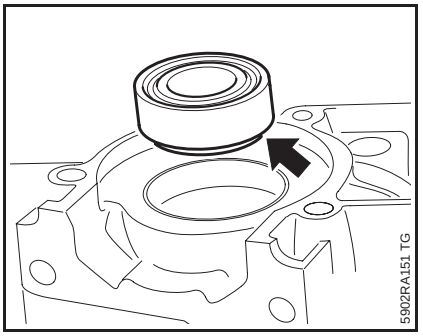
– Heat the area of the bearing seat to about 160°C (320°F).

The bearing (1) drops out as soon as this temperature is reached.

Installing

As the bearing seat in the clutch half of the crankcase has no locating face, the oil pump must be installed first
– the oil pump serves as a locating face.

– Install the oil pump, 🕮 11.3



– Heat the area of the bearing seat to about 160°C (320°F).

– Position the ball bearing so that the centering ring (arrow) points toward the oil pump.

- Push the ball bearing home as far as stop (oil pump).

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

– Check that ball bearing is properly seated. If necessary, use press arbor 1118 893 7200 to carefully press the bearing fully home until it butts against the oil pump.

– Remove the oil pump, 🕮 11.3

– Install the crankshaft, 🕮 6.6

– Install the oil seals, 🕮 6.3

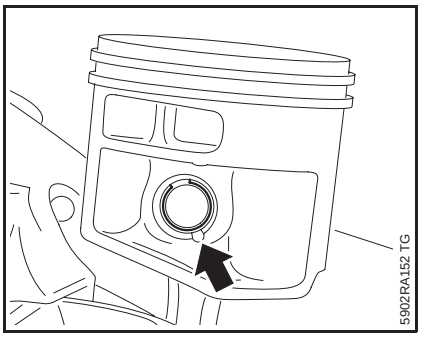
– Reassemble all other parts in the reverse sequence.

6.7 Piston

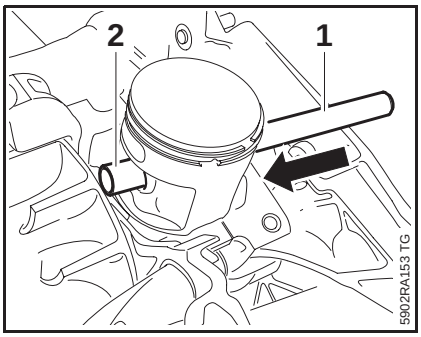
Before removing the cylinder, decide whether or not the crankshaft has to be removed as well, 🕮 6.6

– Remove the cylinder, 🕮 6.5

It is not necessary to remove the snap ring at the clutch side.



- At the ignition side, apply a suitable tool to the recess (arrow) and ease the hookless snap ring out of the piston boss.



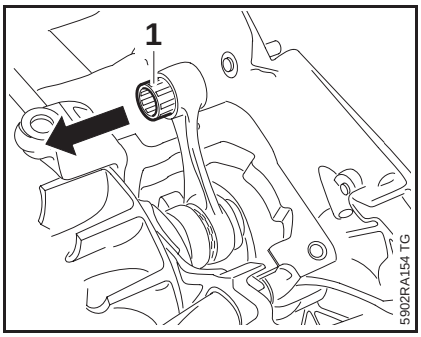
- Push the assembly drift (1) 1110 893 4700 through the installed snap ring.

- Use the assembly drift (1) 1110 893 4700 to push the piston pin (2) out of the piston.

If the piston pin is stuck, release it by tapping the end of the drift lightly with a hammer.
Hold the piston steady during this process to ensure that no jolts are transmitted to the connecting rod.

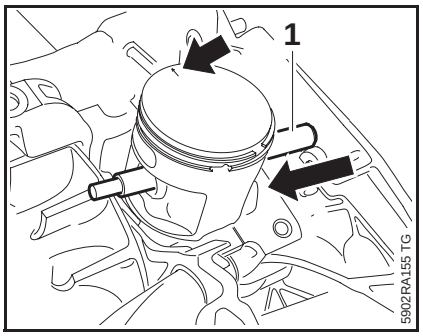
– Remove the piston.

– Inspect the piston rings and replace if necessary, 🕮 6.8



- Pull out the needle cage (1), check it and replace if necessary.

Installing



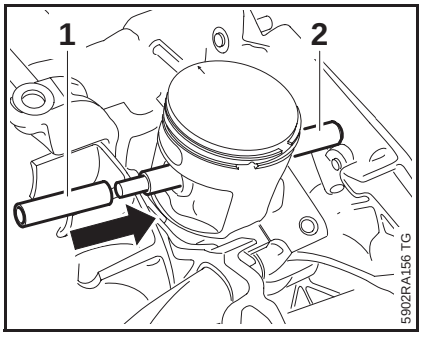
– Lubricate the needle cage with oil and push it into the connecting rod.

Line up the piston so that the arrow (arrow) on the piston crown points towards the spiked bumper (exhaust port).

The assembly drift can be pushed through the installed snap ring.

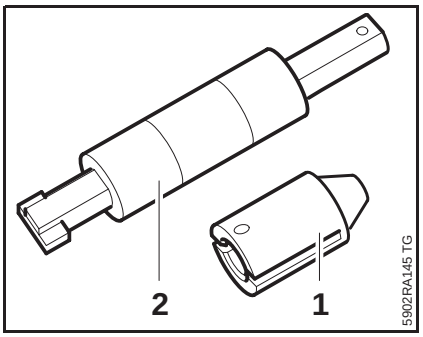
– Place the piston on the connecting rod.

- Push the assembly drift (1) 1110 893 4700, small diameter first, through the piston and small end (needle cage) and line up the piston.

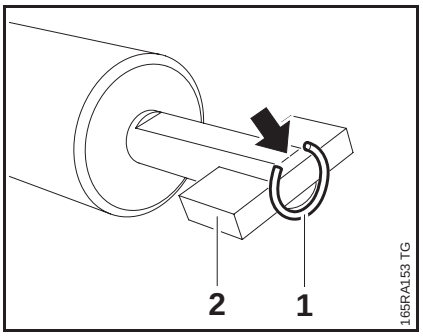


– Lubricate the piston pin (1) with oil.

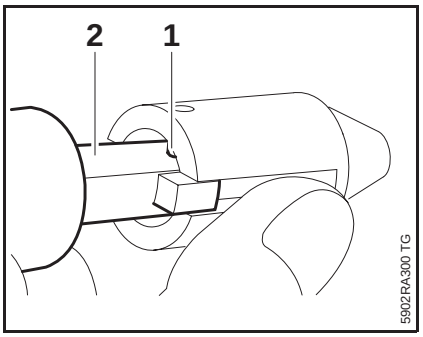
- Fit the piston pin (1) on the assembly drift (2) and slide it into the piston.



- Remove the sleeve (1) from the installing tool (2) 5910 890 2210.

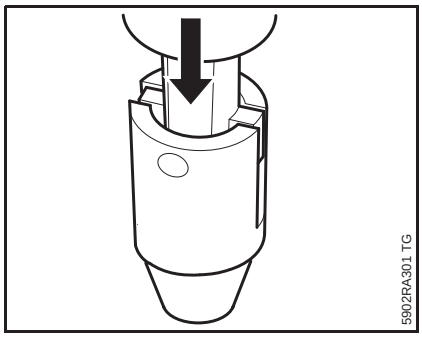


- Attach the snap ring (1) to the magnet (2) so that the snap ring gap is on the flat side of the tool's shank (arrow).



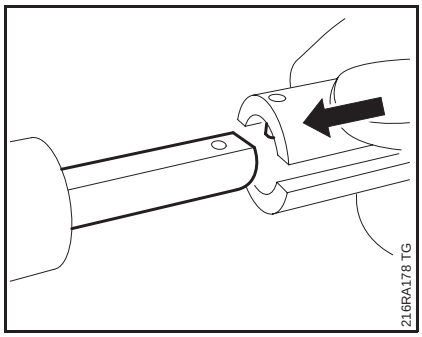
- Push the large slotted diameter of the sleeve over the magnet and snap ring.

The inner pin (1) must point towards the flat face (2) of the tool's shank.

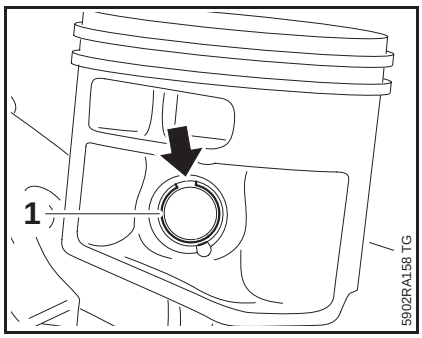


- Press the installing tool downwards into the sleeve until the magnet butts against the end of the guide slot.

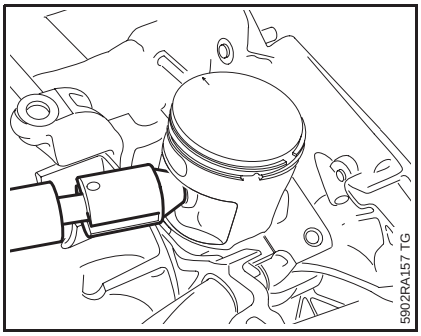
Use a suitable base.



- Remove the sleeve and slip it onto the other end of the shank – the inner pin must point towards the flat face.

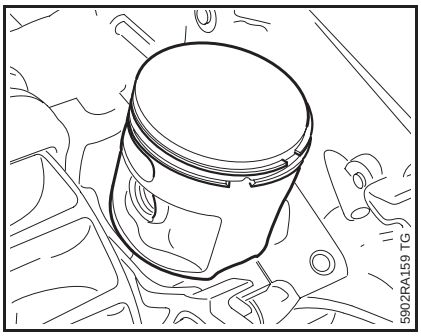


Fit the snap ring (1) so that its gap (arrow) is on the piston's vertical axis (it must point up).



- Apply the installing tool 5910 890 2210 with the sleeve's taper against the piston boss, hold the piston steady, center the tool shank exactly and press home until the snap ring slips into the groove.

Make sure the tool shank is held square on the piston pin axis.



– Inspect the piston rings and replace if necessary, 🕮 6.8

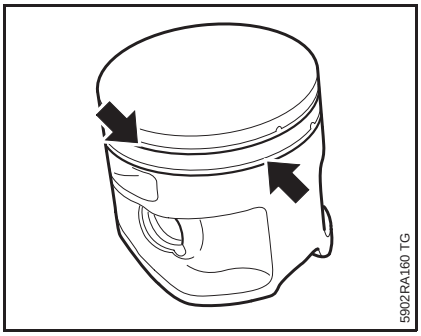
– Install the cylinder, 🕮 6.5

– Reassemble all other parts in the reverse sequence.

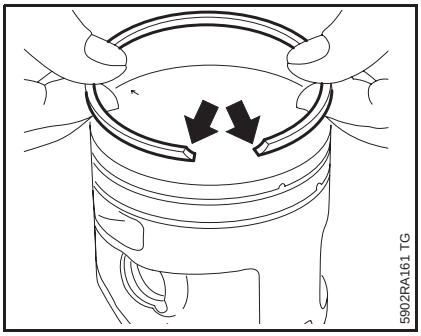
6.8 Piston Rings

– Remove the piston, 🕮 6.7

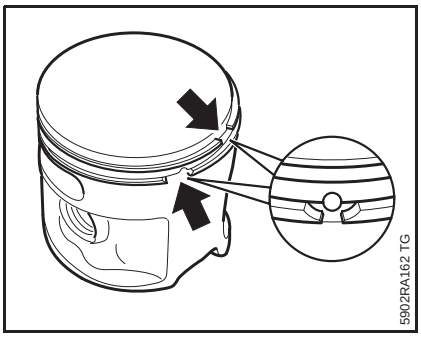
– Remove the piston rings from the piston.



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



- Position the new piston rings so that the radii face upward (arrows).



– Carefully fit the piston rings over the piston
– they might otherwise break.

● Install the piston rings so that the radii at the ring gap meet at the fixing pins in the piston grooves (arrows).

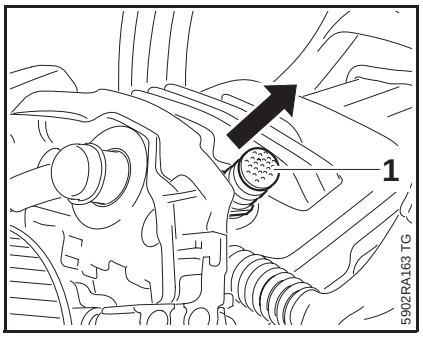
● Check correct installed position of the piston rings (arrows).

– Install the piston, 🕮 6.7

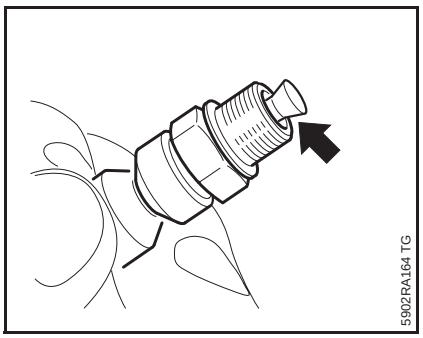
– Reassemble all other parts in the reverse sequence.

6.9 Decompression Valve

– Remove the shroud, 🕮 6.4



● Unscrew the decompression valve (1).



● Check the sealing cone (arrow) on the decompression valve for damage.

– If the sealing cone does not close completely or shows signs of damage, install a new decompression valve.

– Fit the decompression valve and screw it home by hand.

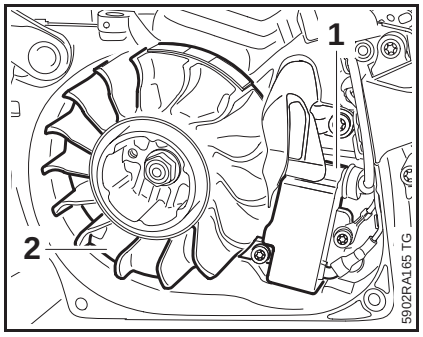
– Tighten down the decompression valve firmly.

– Reassemble all other parts in the reverse sequence.

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

Troubleshooting on the ignition system should always begin at the spark plug, 🕮 3.5

– Remove the fan housing, 🕮 8.2



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

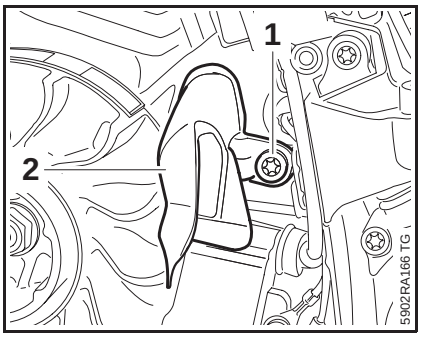
7.1 Ignition Timing

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

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

7.2 Preseparator

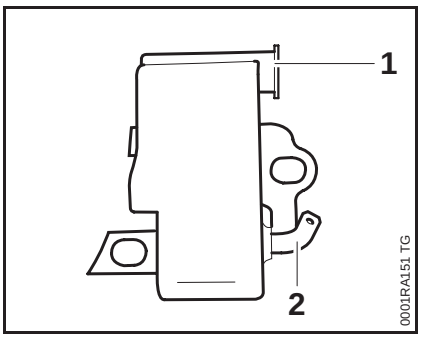
– Remove the fan housing, 🕮 8.2



- Take out the screw (1).
- Check the preseparator (2) and replace if necessary

– Reassemble in the reverse sequence.

7.3 Install new ignition Module



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

– the high voltage output (1) for the ignition lead

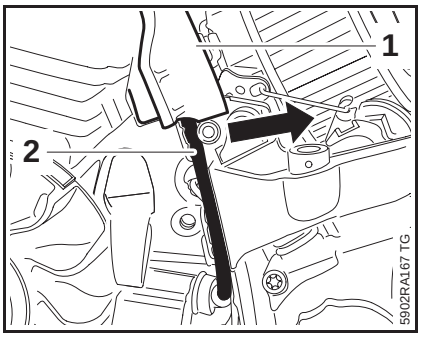
– the connector tag (2) for the short circuit wire

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

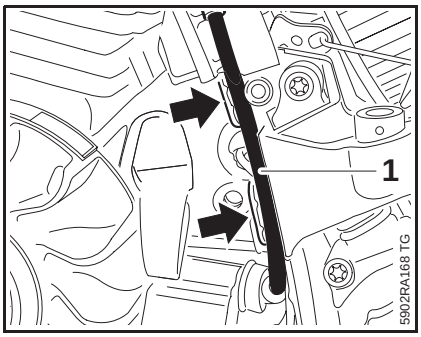
– Remove the fan housing, 🕮 8.2

– Pull the boot off the spark plug.

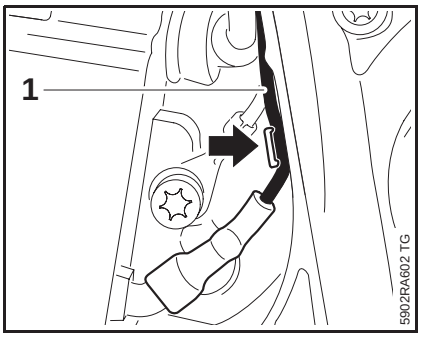
– Remove the preseparator, 🕮 7.2



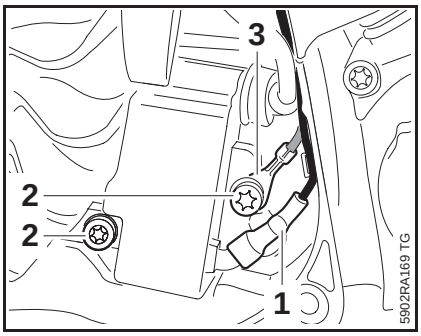
- Lift the air guide shroud (1) a little and pull out the ignition lead (2) – take care not to distort the air guide shroud.



- Pull the ignition lead (1) out of the guides (arrows).

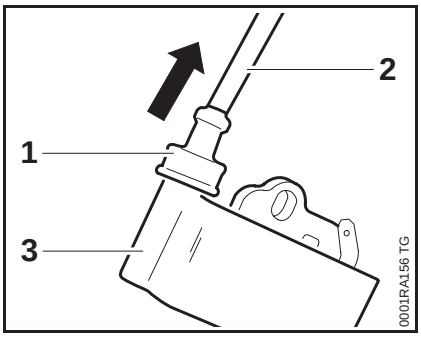


- Pull the short circuit wire (1) out of the guide (arrow).



- Disconnect the short circuit wire (1).
- Take out the screws (2).
- Remove the ground wire (3).

– Remove the ignition module.



- Pull the grommet (1) off the ignition module.
- Unscrew the ignition lead (2) from the ignition module (3).

– Check the spark plug boot and ignition lead, and replace if necessary, 🕮 7.5

– Troubleshooting, 🕮 3.5

– Before installing the ignition lead, fill the high voltage output with STIHL multipurpose grease 🕮 15.

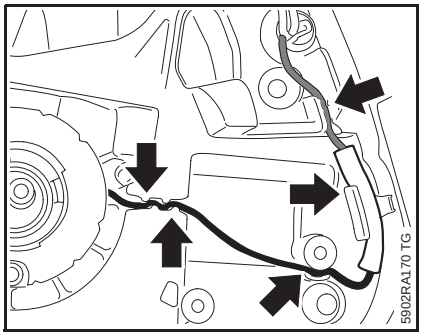
Do not use either graphite grease or silicone insulating paste.

– Reassemble in the reverse sequence.

Make sure the grommet (1) is fitted properly to avoid ignition system problems that may be caused by contamination or moisture.

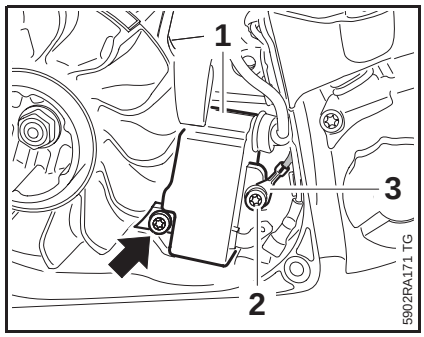
Installing

Machines with heating



The flywheel is not shown in the illustration.

Before installing the ignition module, check that the generator wire (arrows) is properly positioned, 🕮 13.7.

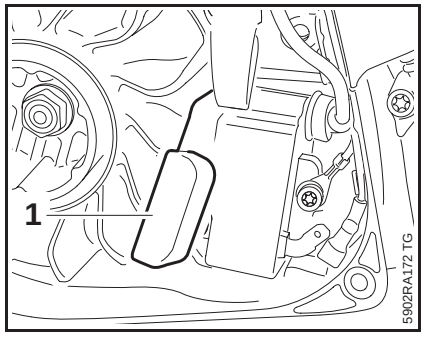


- Fit the ignition module (1) and insert the screw (arrow) – do not tighten down yet.

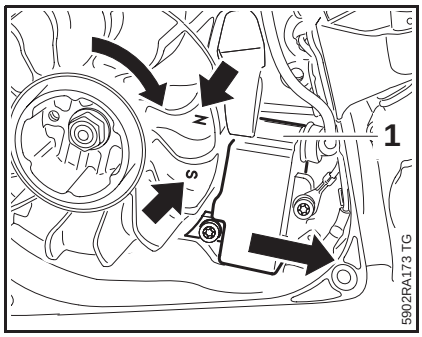
The ground wire must be positioned in the guide under the short circuit wire.

The crimped side of the ground wire terminal must face the screw head.

- Fit the ground wire (3) and insert the screw (2) – do not tighten down yet.



- Push the ignition module back and slide the setting gauge (1) 1111 890 6400 between the arms of the ignition module and the flywheel magnet.



The setting gauge is not shown in the illustration.

– Push the ignition module (1) back and hold it there.

– The flywheel must rotate freely.

● Rotate the flywheel until the magnet poles (arrows) are next to the ignition module (1).

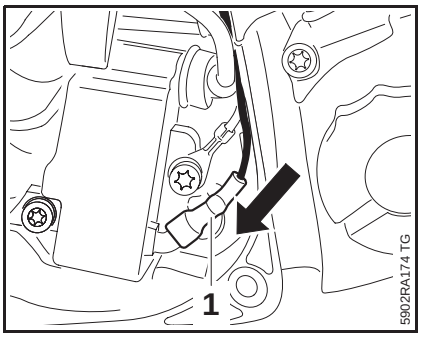
– Press the ignition module (1) against the setting gauge.

– Position the ground wire terminal so that it points in the direction of the cable guide.

– Tighten down the screws firmly.

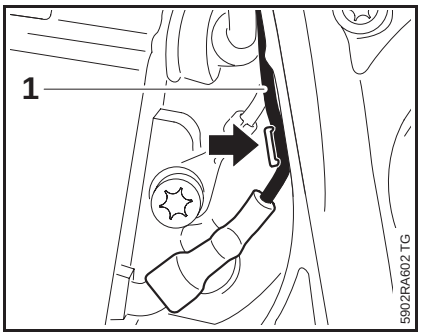
– Remove the setting gauge.

– Check operation.
– Rotate the flywheel and make sure it does not touch the ignition module.

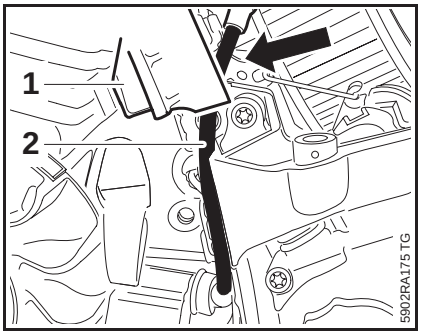


Crimped side of terminal (1) must face the crankcase.

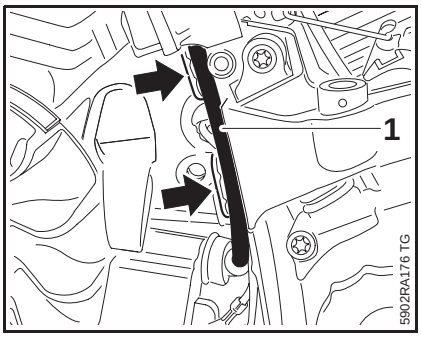
● Connect the short circuit wire terminal (1)
– the terminal must be pushed fully home.



● Press the short circuit wire (1) fully into the guide (arrow).



● Lift the air guide shroud (1) a little and push the ignition lead (2) into position
– take care not to distort the air guide shroud.



● Starting at the ignition module, press the ignition lead (1) into the guides (arrows).

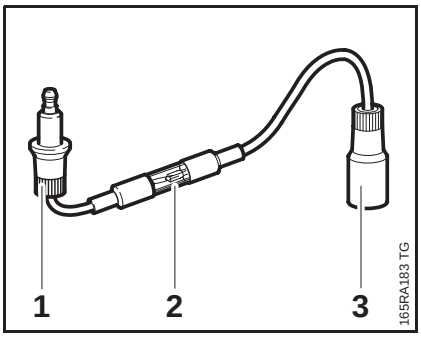
– Reassemble all other parts in the reverse sequence.

7.4 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 ZAT 4 ignition system 5910 850 4503



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

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

High voltage – risk of electric shock.

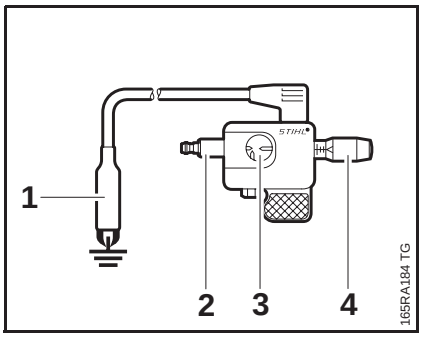
– Crank the engine quickly with the rewind starter and check spark in the tester's window (2).

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, 🕮 7.8

Using the ZAT 3 ignition tester 5910 850 4520

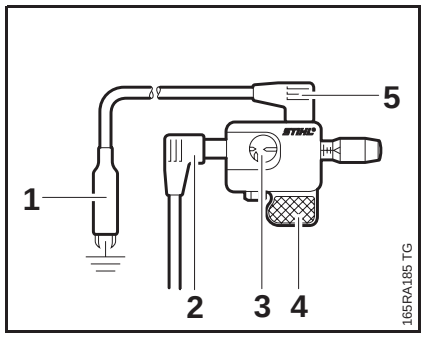


– Before starting the test, install a new spark plug in the cylinder and tighten it down firmly.

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

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

● Use adjusting knob (4) to set the spark gap to about 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 or other parts of your body at least 1 cm away from the spark window (3), high voltage connection (2), ground connection (5) and the ground terminal (1).

High voltage – risk of electric shock.

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

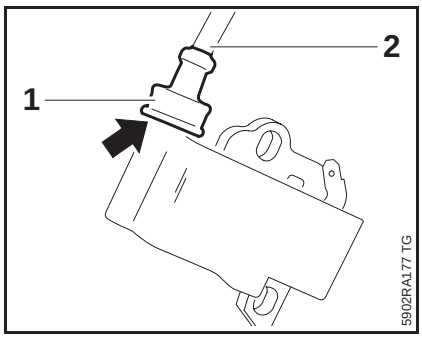
The engine may start and accelerate during the test.

If a spark is visible in the window (3), the ignition system is in order.

– If no spark is visible in the window (3), check the ignition system with the aid of the troubleshooting chart, 🕮 7.8

7.5 Spark Plug Boot / Ignition Lead

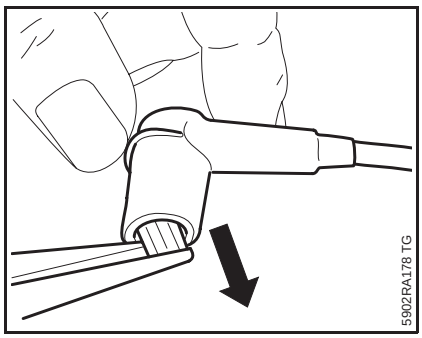
– Remove the ignition module, 🕮 7.3



● Pull the grommet (1) off the high voltage output (arrow).

– Unscrew the ignition lead (2) from the ignition module.

– Pull the grommet (1) off the ignition lead.



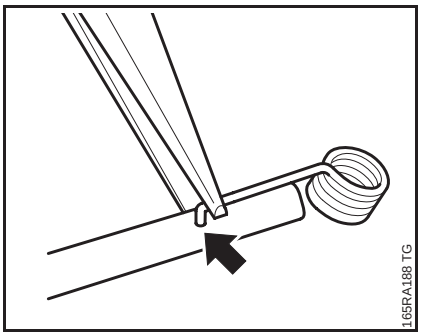
● Use suitable pliers to pull the leg spring out of the spark plug boot.

– Unhook the leg spring from the ignition lead.

– Pull the boot off the ignition lead.

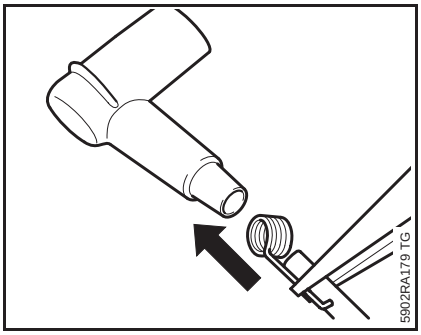
– Cut a new ignition lead to the specified length, see parts list.

Installing



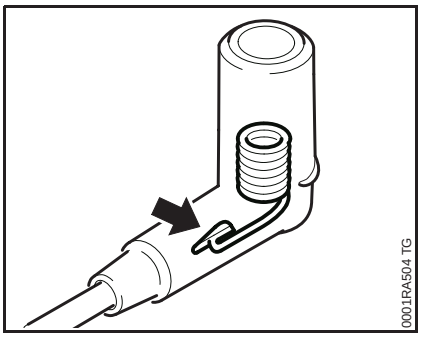
– Use a pointed tool to pierce the center of the new ignition lead's insulation, about 15 mm from the end of the lead.

● Pinch the hook of the leg spring into the pierced hole in the center of the lead (arrow).

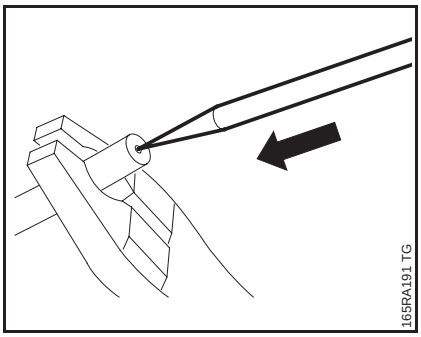


– Coat the inside of the spark plug boot with STIHL press fluid, 🕮 15

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



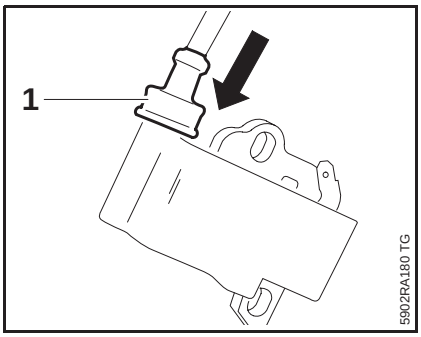
● Make sure the leg spring (arrow) locates properly inside the spark plug boot.



● Use a pointed tool to pierce the center of the other end of the ignition lead which screws into the module.

Before installing the ignition lead, fill the high voltage output with STIHL multipurpose grease 🕮 15.

Do not use either graphite grease or silicone insulating paste.



– Slide the grommet (1) onto the ignition module.

– Screw the ignition lead into the ignition module.

● Push the grommet (1) into position.

– Install the ignition module and set the air gap between the module and flywheel, 🕮 7.3

– Reassemble all other parts in the reverse sequence.

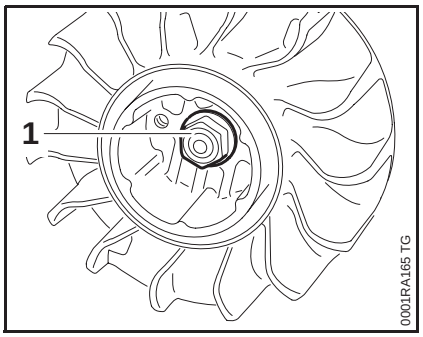
7.6 Flywheel

The new puller 5910 890 4504 (with a longer base block) must be used on models with ErgoStart. The new puller replaces the previous puller 1135 890 4500, which can still be used on standard models.

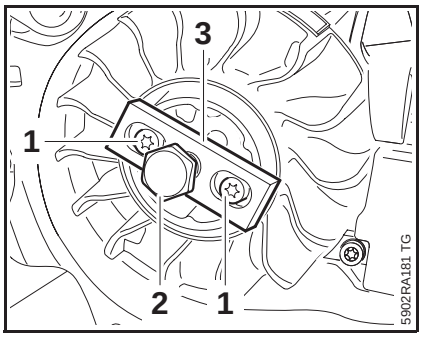
– Remove the shroud, 🕮 6.4

– Remove the fan housing, 🕮 8.2

– Use locking strip to block the piston, 🕮 4



● Unscrew the flywheel nut (1).



● Fit the puller (3) 5910 890 4504 on the flywheel and tighten the screws (1) as far as stop.
– Tighten the screws uniformly.

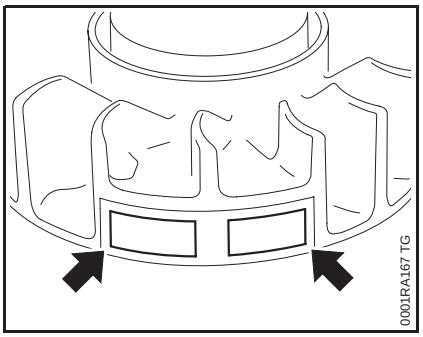
Models with ErgoStart

Take care not to damage the pawls.

All models

● Screw home the thrust bolt (2) clockwise until the flywheel is released from the crankshaft.

– Remove the puller (3) 5910 890 4504 from the flywheel.



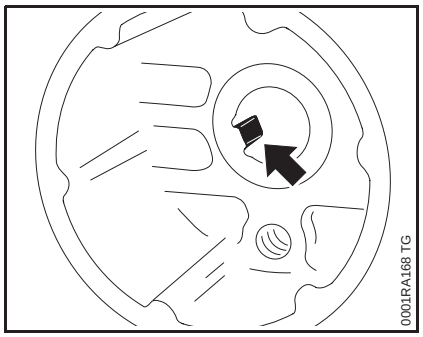
The flywheel and magnet poles (arrows) must not be damaged or have turned blue. Replace flywheel if necessary.

– On versions with heating, also check the magnet ring for signs of damage, 🕮 13.7.

On versions with ErgoStart, also check the pawls for signs of damage, 🕮 8.4.

All models

The flywheel and crankshaft stub must be free from grease before assembly.



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

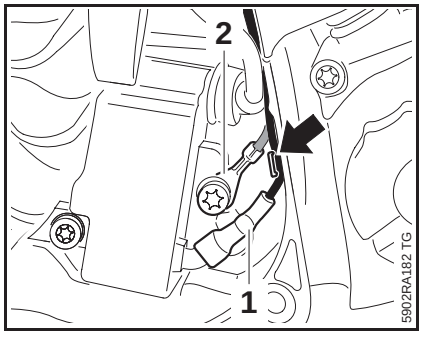
– Set the air gap between the ignition module and flywheel, 🕮 7.3

– Reassemble all other parts in the reverse sequence.

7.7 Short Circuit Wire

The ground and short circuit wires are combined in a wiring harness.

7.7.1 Testing



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

– Remove the fan housing, 🕮 8.2

● Pull the short circuit wire (1) out of the guide (arrow) and take it away.

– Connect the ohmmeter to ground (2) and the short circuit wire (1).

– Set the Master Control lever to "**0**".

The resistance measured must be about 0 Ω. If it is much higher, the reason is a break and the wiring harness has to be replaced, 🕮 7.7.

– Set the Master Control lever to "**I**".

The resistance measured must be infinitely high. If not, replace the wiring harness, 🕮 7.7.

Perform the contact and continuity test on the ground wire too.

If the ground wire is damaged, the complete wiring harness has to be replaced.

– If no fault can be found, check the ignition system with the aid of the troubleshooting chart, 🕮 7.8

– Reassemble in the reverse sequence.

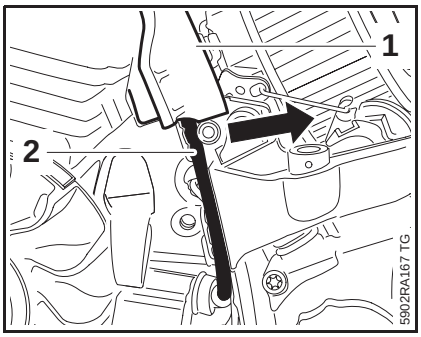
7.7.2 Removing and Installing

– Remove the shroud, 🕮 6.4

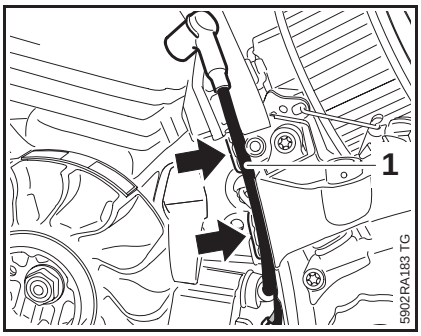
– Pull the boot off the spark plug.

– Remove the fan housing, 🕮 8.2

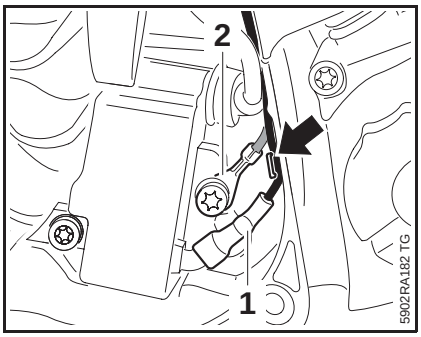
– Remove the choke rod, 🕮 10.3.3



● Lift the air guide shroud (1) a little and pull out the ignition lead (2) – take care not to distort the air guide shroud.

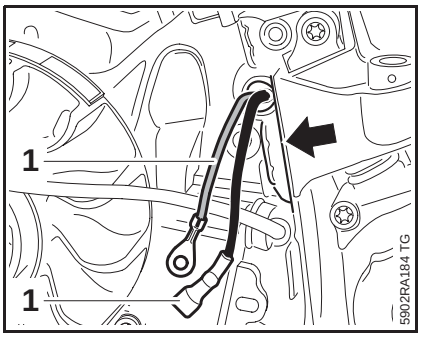


● Pull the ignition lead (1) out of the guide (arrows).

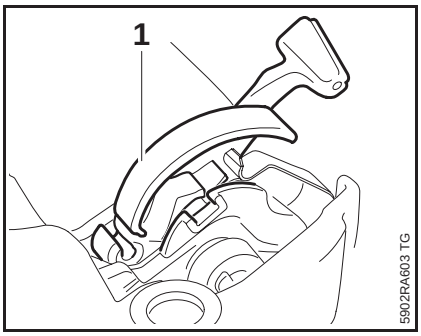


● Pull the short circuit wire out of the guide (arrow) and disconnect the terminal (1).

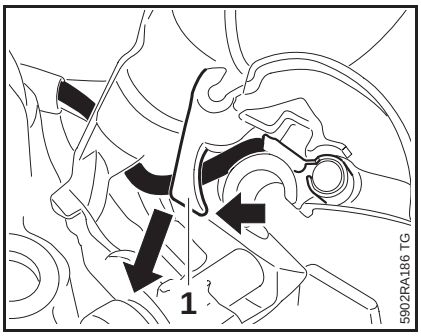
● Take out the screw and remove the ground wire (2).



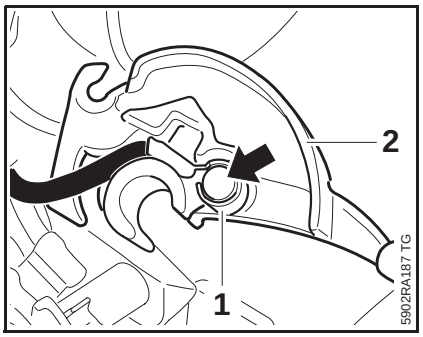
- Pull the wiring harness (1) out of the guide (arrow).



– Remove the switch shaft (1), 🕮 10.1



- Pull the short circuit wire (1) out from behind the tab (arrow).



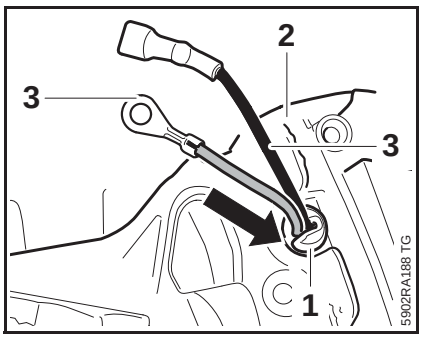
- Pull the ring terminal (1) off the peg (arrow).

- Remove the switch shaft (2).

– Remove the filter base, 🕮 12.3

– Remove the carburetor, 🕮 12.5

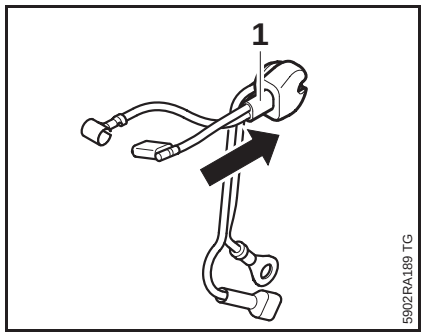
– Remove the carburetor carrier, 🕮 12.8



- Push the rubber grommet (1) out of the crankcase (2).

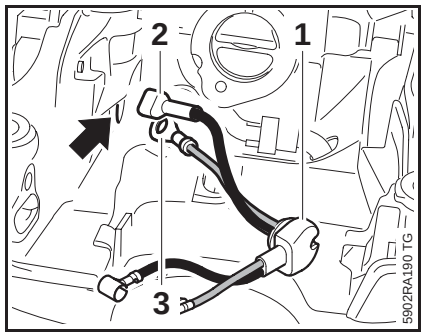
- Pull out the wiring harness (3).

Installing



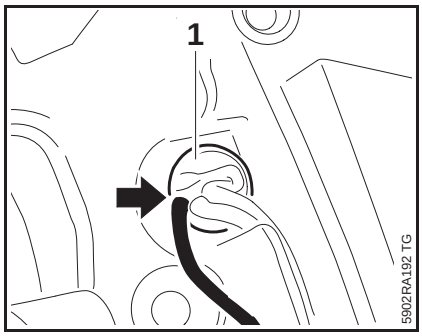
The protective tube (1) must butt against the rubber grommet.

- If necessary, push the wiring harness in the direction of the grommet until the protective tube (1) butts against the grommet (2).



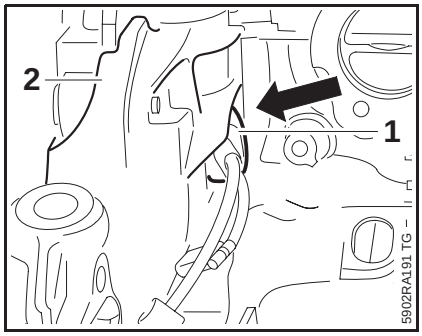
- Push the wiring harness (1), cable lug (2) and ring terminal (3) first, through the hole (arrow).

Machines with heating



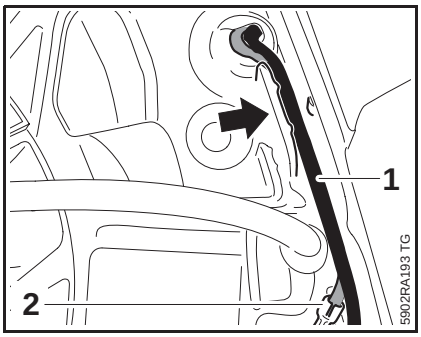
The protective tube (arrow) must butt against the rubber grommet.

Take care not to damage the wiring harness (arrow) when installing the rubber grommet (1).



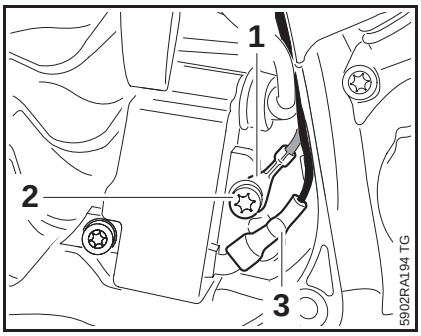
– Use STIHL press fluid to simplify assembly, 🕮 15

- Push the rubber grommet (1) into the bore in the crankcase (2) until it is properly seated.



- Fit the ground wire (1) and short circuit wire (2) in the guide (arrow).

The ground wire (1) must be positioned in the guide under the short circuit wire (2).



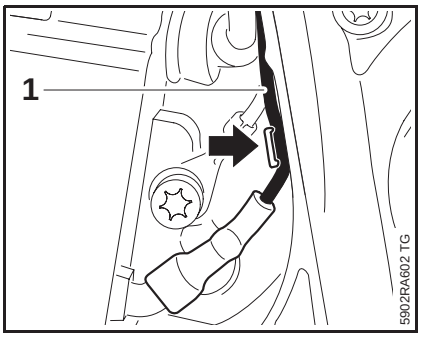
Ground wire: Crimped side of terminal (1) must face the screw head (2).

- Place the cable lug (1) in position and fit the screw (2).

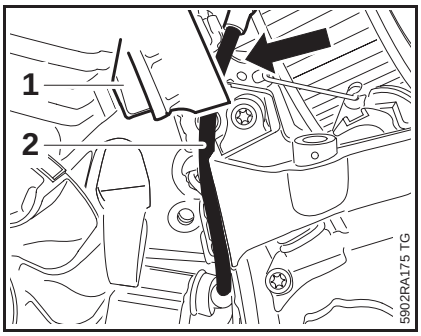
- Position the cable lug (1) so that it points in the direction of the cable guide.

Short circuit wire: Crimped side of terminal (3) must face the crankcase.

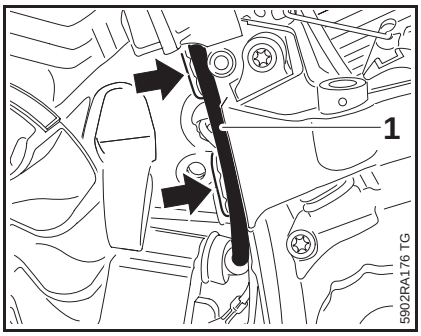
- Connect the short circuit wire terminal (3)
  – the terminal must be pushed fully home.



- Press the short circuit wire (1) fully into the guide (arrow).



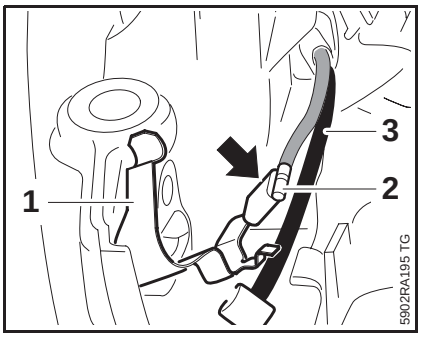
- Lift the air guide shroud (1) a little and push the ignition lead (2) into position
  – take care not to distort the air guide shroud.



- Starting at the ignition module, press the ignition lead (1) into the guides (arrows).

– Install the carburetor carrier, 🕮 12.8

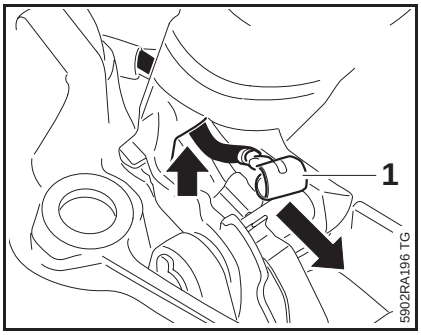
– Install the carburetor, 🕮 12.5



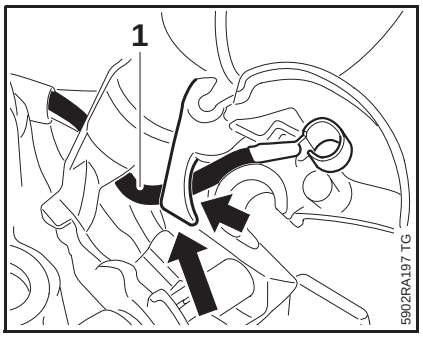
- Push the contact spring (1) onto the ground wire (2).
- Position the short circuit wire (3) so that it is above the ground wire's flag terminal (arrow).

– Fit the contact spring, 🕮 7.7.4

– Install the filter base, 🕮 12.3

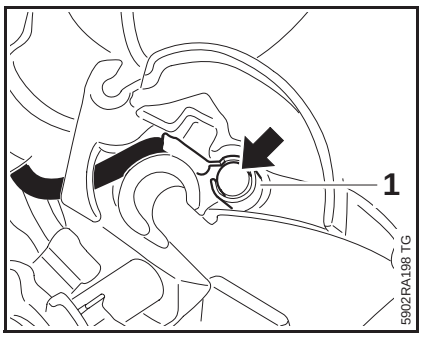


- Pass the ring terminal (1) through the opening (arrow) in the filter base.

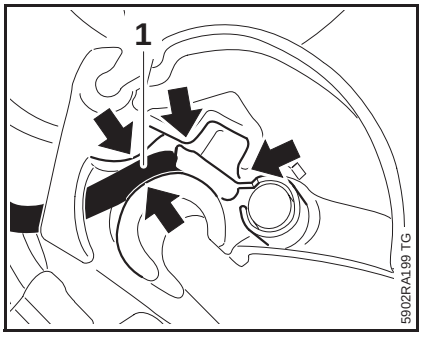


– Place the switch shaft in position.

- Position the short circuit wire (1) behind the tab (arrow).

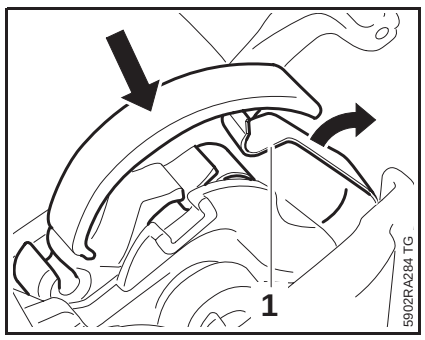


- Position the ring terminal (1) so that the gap in the ring faces down.
- Push the ring terminal (1) onto the peg (arrow) as far as stop.

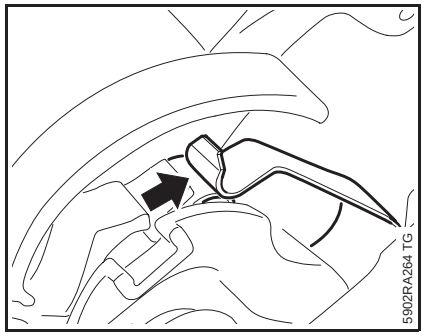


- Push the short circuit wire (1) into the guides (arrows).

– Install the switch shaft, 🕮 10.1



- When installing the switch shaft, lift the contact spring (1) a little – no more than 2 mm.



- Check operation.
  – Short circuit wire's ring terminal must touch the contact spring (arrow) in position "**0**".

– Reassemble all other parts in the reverse sequence.

7.7.3 Ground Wire

A faulty ground wire may impair or prevent operation of the short circuit wire.

The ground wire is combined with the short circuit wire in a wiring harness. If damaged, the complete wiring harness must be replaced

– Check for contact and continuity and replace wiring harness if necessary, 🕮 7.7

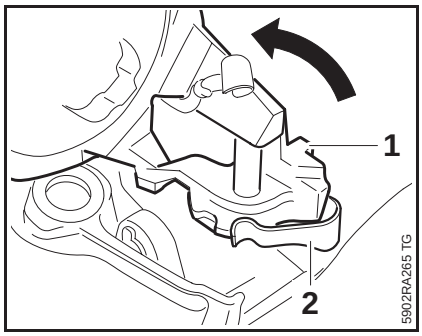
7.7.4 Contact Spring

– Remove the shroud, 🕮 6.4

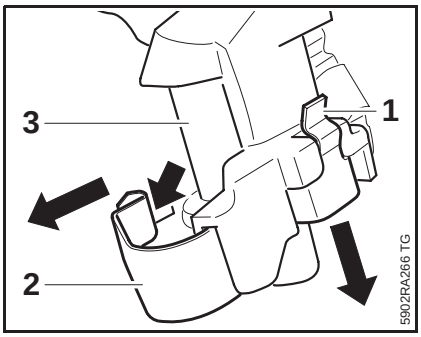
– Remove the choke rod, 🕮 10.3.3

– Remove the switch shaft, 🕮 10.1

– Remove the filter base, 🕮 12.3

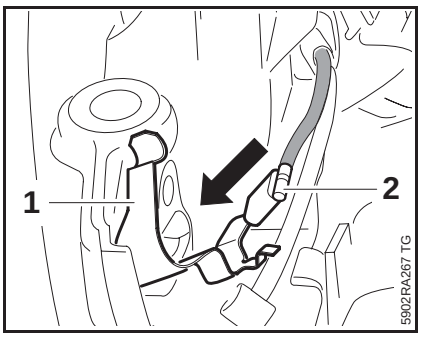


● Carefully turn the filter base (1) until the seat of the contact spring (2) is visible.



● Lift the contact spring (2) a little and ease it over the seam (arrow).

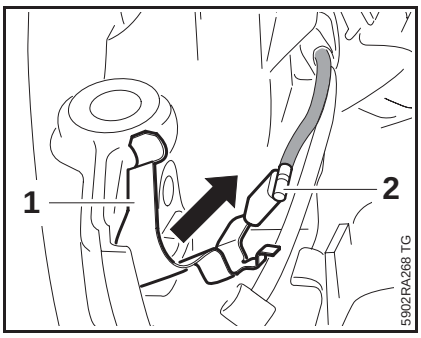
● Lift the tab (1) a little and slide the contact spring (2) out of the filter base (3).



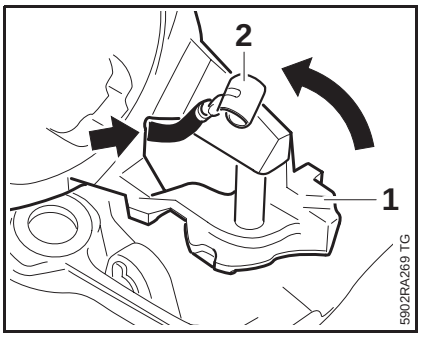
● Disconnect the contact spring (1) from the ground wire (2).

– Check the contact spring (1) and replace if necessary

Installing

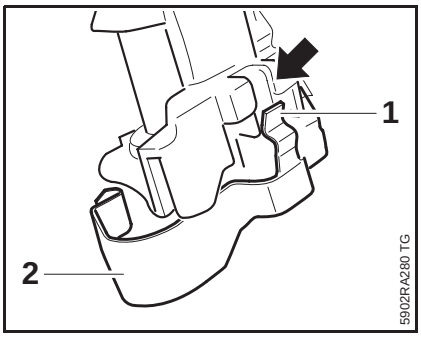


● Push the contact spring (1) fully onto the ground wire's flag terminal (2).

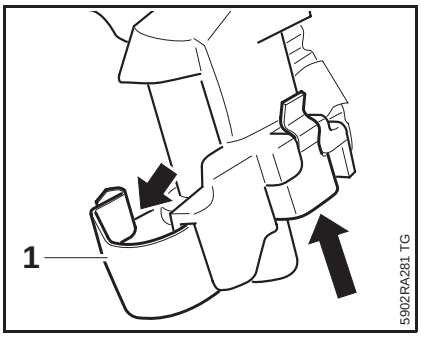


● Place the filter base (1) in position and pass the ring terminal (2) through the opening (arrow) at the same time.

● Turn the filter base (1) about 90° in direction of ignition side.

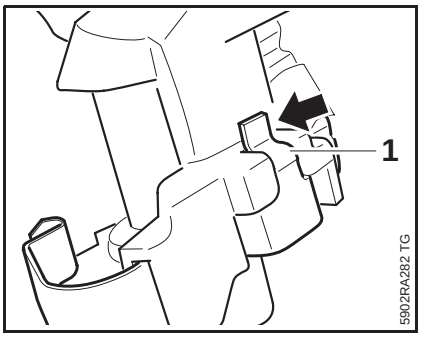


● Position the contact spring (2) in its seat so that the tab (1) is in line with the guide (arrow).



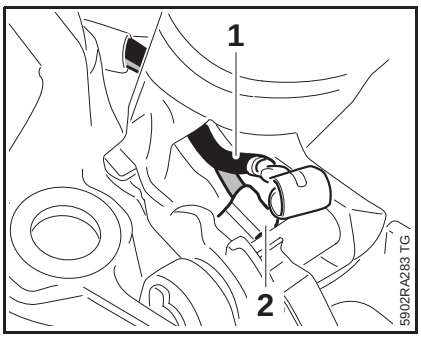
● Lift the contact spring (1) a little and ease it over the bead (arrow).

● Push the contact spring (1) into its seat as far as stop.



The tab (arrow) on the contact spring (1) must locate securely on the edge of the filter base.

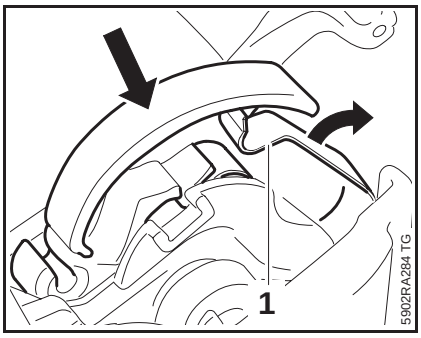
– Install the filter base, 🕮 12.3



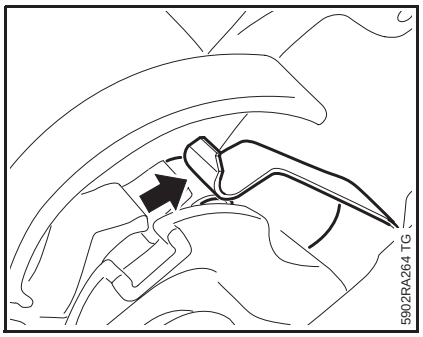
The short circuit wire (1) must be above the ground wire's insulated flag terminal (2).

– Fit the short circuit wire in the switch shaft, 🕮 7.7.2

– Install the switch shaft, 🕮 10.1

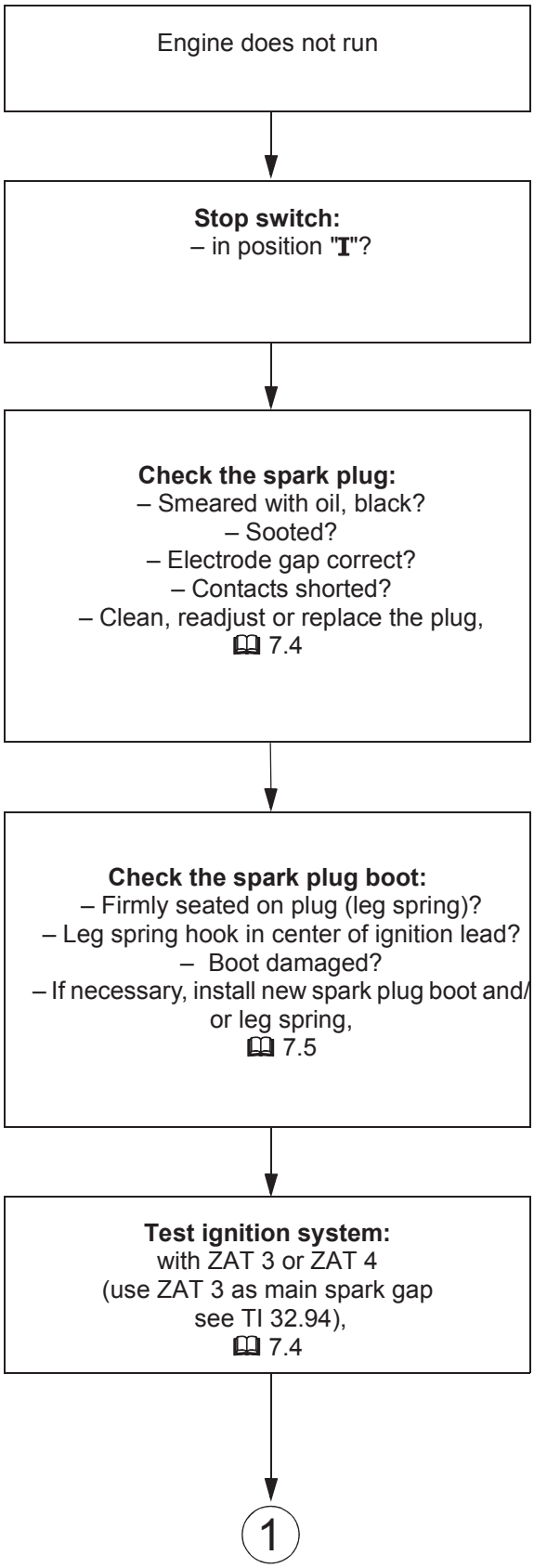


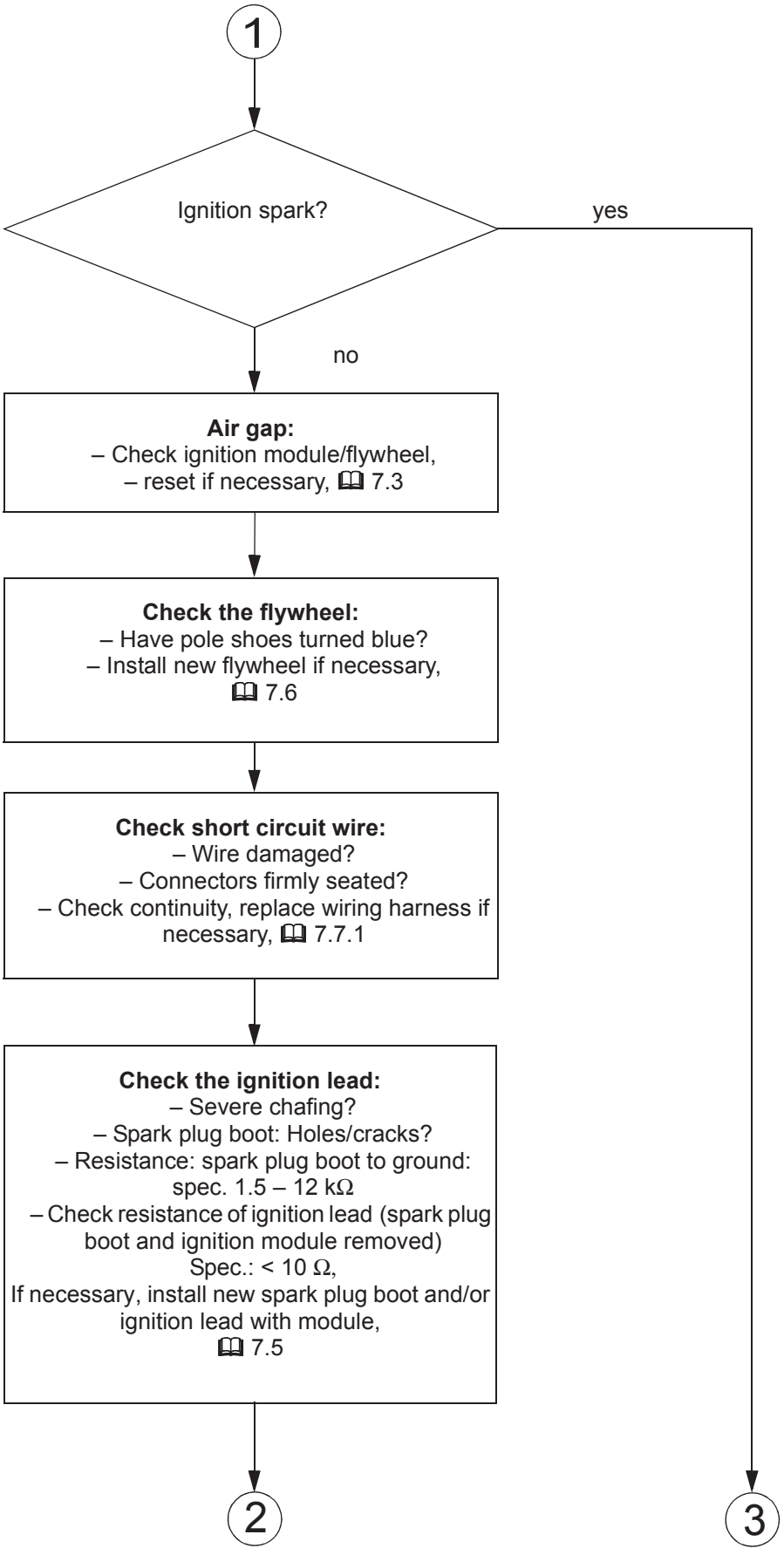
- When installing the switch shaft, lift the contact spring (1) a little – no more than 2 mm.

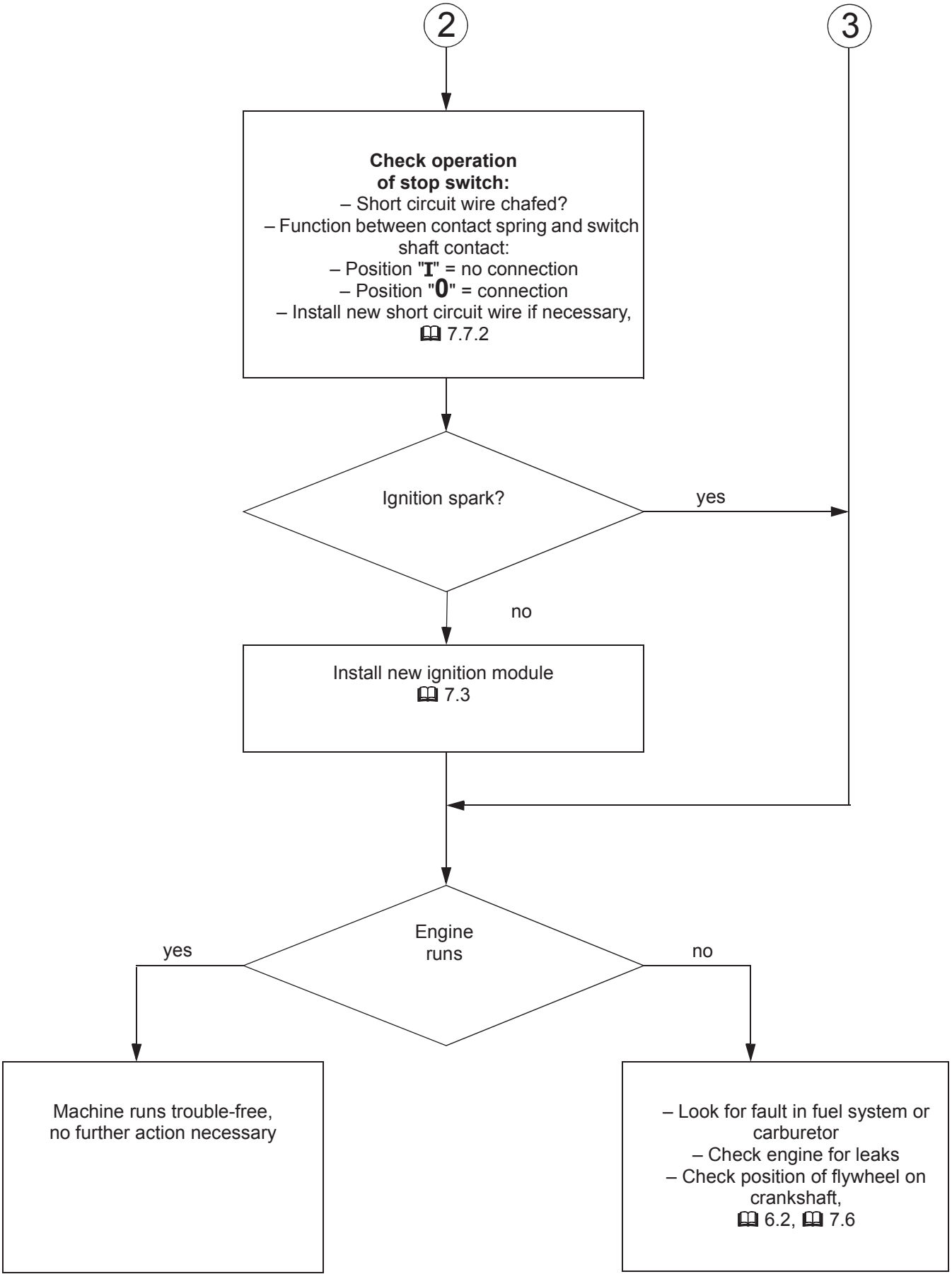


- Check operation.
  – Short circuit wire's ring terminal must touch the contact spring (arrow) in position "**0**".

– Reassemble all other parts in the reverse sequence.


Engine does not run
Stop switch:
– in position "I"?
Check the spark plug:
– Smeared with oil, black?
– Sooted?
– Electrode gap correct?
– Contacts shorted?
– Clean, readjust or replace the plug,
📖 7.4
Check the spark plug boot:
– Firmly seated on plug (leg spring)?
– Leg spring hook in center of ignition lead?
– Boot damaged?
– If necessary, install new spark plug boot and/
or leg spring,
📖 7.5
Test ignition system:
with ZAT 3 or ZAT 4
(use ZAT 3 as main spark gap
see TI 32.94),
📖 7.4
1


1
Ignition spark?
yes
no
Air gap:
– Check ignition module/flywheel,
– reset if necessary, 🕮 7.3
Check the flywheel:
– Have pole shoes turned blue?
– Install new flywheel if necessary,
🕮 7.6
Check short circuit wire:
– Wire damaged?
– Connectors firmly seated?
– Check continuity, replace wiring harness if necessary, 🕮 7.7.1
Check the ignition lead:
– Severe chafing?
– Spark plug boot: Holes/cracks?
– Resistance: spark plug boot to ground:
spec. 1.5 – 12 kΩ
– Check resistance of ignition lead (spark plug boot and ignition module removed)
Spec.: < 10 Ω,
If necessary, install new spark plug boot and/or ignition lead with module,
🕮 7.5
2
3


2
3
Check operation
of stop switch:
– Short circuit wire chafed?
– Function between contact spring and switch shaft contact:
– Position "I" = no connection
– Position "0" = connection
– Install new short circuit wire if necessary,
📖 7.7.2
Ignition spark?
yes
no
Install new ignition module
📖 7.3
Engine runs
yes
no
Machine runs trouble-free, no further action necessary
– Look for fault in fuel system or carburetor
– Check engine for leaks
– Check position of flywheel on crankshaft,
📖 6.2, 📖 7.6

8. Rewind Starter

8.1 General

If the action of the starter rope becomes very stiff and the rope rewinds very slowly or not completely, it can be assumed that the starter mechanism is in order but plugged with dirt. At very low outside temperatures the lubricating oil on the rewind spring may thicken and cause the spring windings to stick together. This has a detrimental effect on the function of the starter mechanism.

In such a case it is sufficient to apply a few drops of a standard solvent-based degreasant (containing no chlorinated or halogenated hydrocarbons) to the rewind spring.

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

Before installing, lubricate the rewind spring and starter post with STIHL special lubricant, 🕮 15.

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 rewind spring.

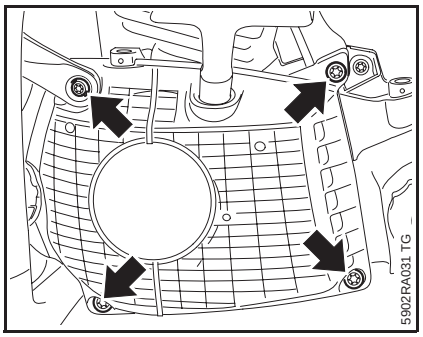
– Clean all components.

Models with ErgoStart

– Relieve tension of rewind spring, 🕮 8.4

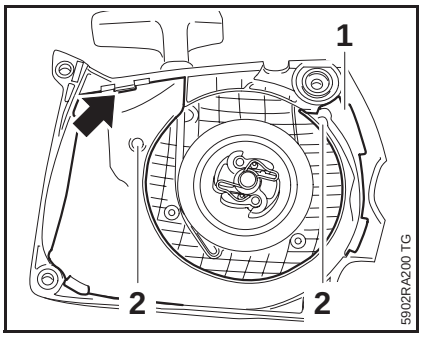
8.2 Fan housing

– Remove the shroud, 🕮 6.4



● Take out the screws (arrows).

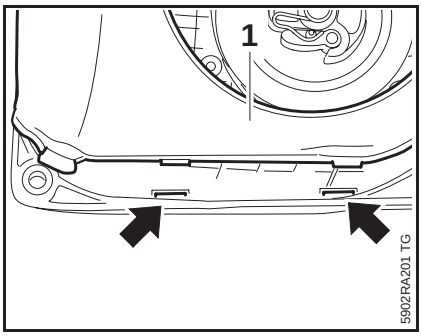
– Lift the hand guard a little and remove the fan housing.



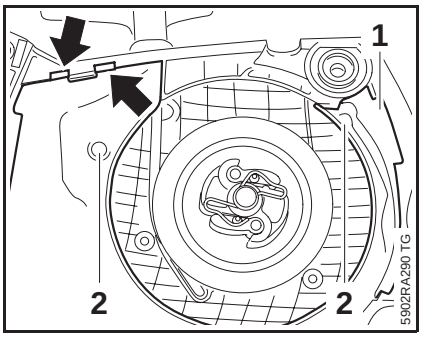
● Pry the segment (1) away at the recess (arrow) and pull it off the pegs (2).

– Examine the fan housing and segment and replace if necessary.

Installing



● Engage the segment (1) in the slots (arrows) in the fan housing first and then swing it into position.



● Push the segment (1) onto the pegs (2) until it engages the tabs (arrows).

Models with ErgoStart

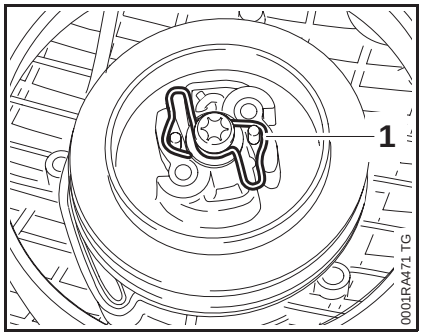
● Push the segment (1) onto the pegs (2) as far as stop.

– Reassemble all other parts in the reverse sequence.

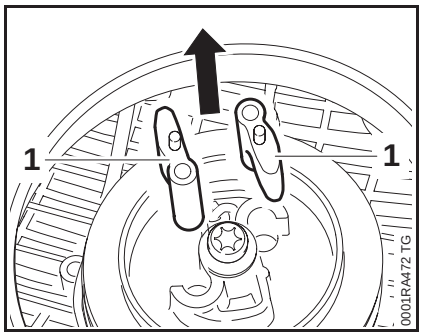
8.3 Pawls

– Remove the fan housing, 🕮 8.2

– Relieve tension of rewind spring, 🕮 8.5

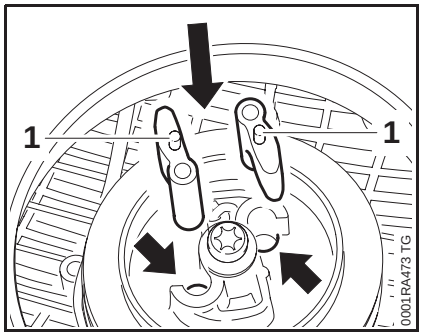


● Carefully ease the spring clip (1) off the starter post.

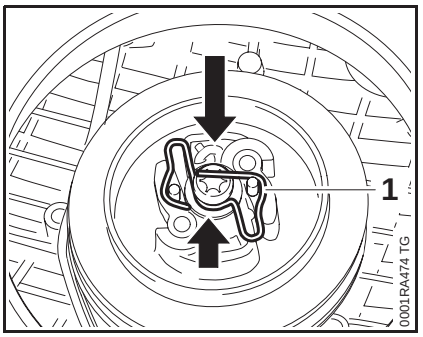


● Remove the pawls (1).

Installing

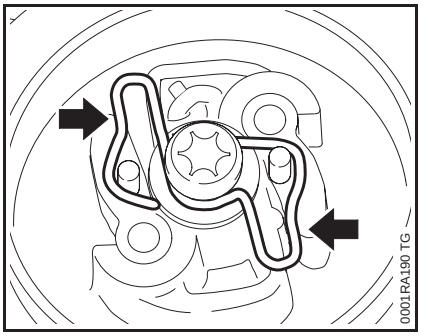


– Fit the new pawls in the bores (arrows) and lubricate the pegs (1), 🕮 15



● Position the spring clip (1) so that its loops engage the pegs on the pawls. The rounded part of the spring clip (short arrow) must engage the starter post's groove.

● Push the straight part of the spring clip over the starter post until it snaps into the groove.



The spring clip's guide loops must be in line with the pawls (arrows).

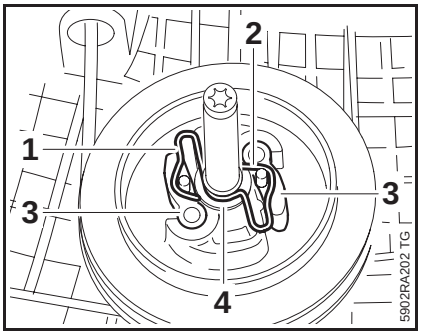
Check operation.

– Pull the starter rope, the rotor turns and the pegs on the pawls move in the direction of spring loops – the pawls move outwards.

– Reassemble all other parts in the reverse sequence.

Models with ErgoStart

– Remove the ErgoStart, 🕮 8.4



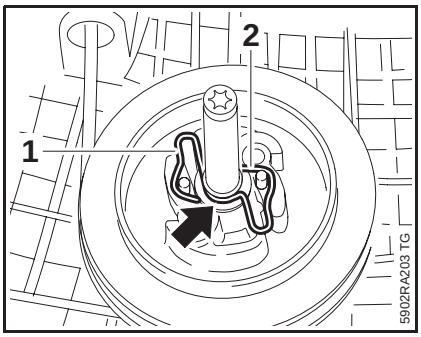
● Carefully ease the straight part (2) of the spring clip out of the groove in the starter post and take the spring clip (1) off the starter post.
– The rewind spring may pop out and unwind.

– Pull out the pawls (3), check them and clean or replace if necessary.

– Lubricate the seats of the new pawls, 🕮 15

– Fit the new pawls and lubricate their pegs with resin-free oil, 🕮 15

Make sure washer (4) is in place.



- Position the spring clip (1) so that its loops engage the pegs on the pawls. The rounded part of the spring clip (arrow) must engage the starter post's groove.
- Push the straight part (2) of the spring clip over the starter post until it snaps into the groove.

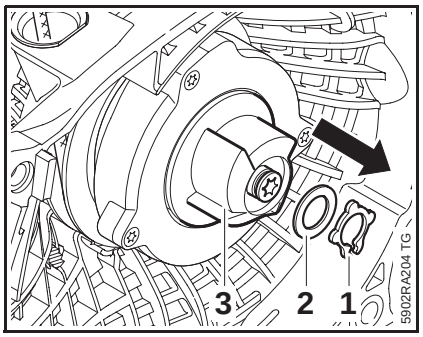
– Reassemble all other parts in the reverse sequence.

8.4 ErgoStart

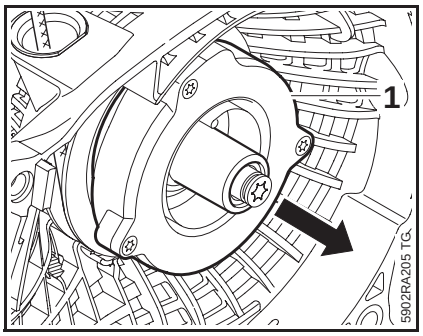
The spring may still be under tension and must always be relieved before assembling.

– Pull out the starter rope until the engine turns
– this relieves spring tension.

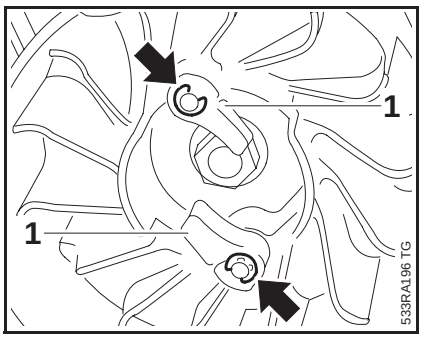
– Remove the fan housing and, if necessary, the segment, 🕮 8.2



- Remove the retaining ring (1)
– do not overstretch the retaining ring.
- Remove the cover washer (2).
- Pull off the carrier (3).



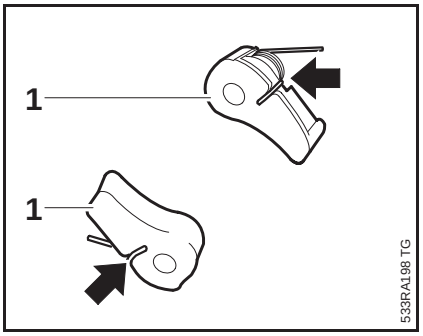
- Pull off the spring housing (1).



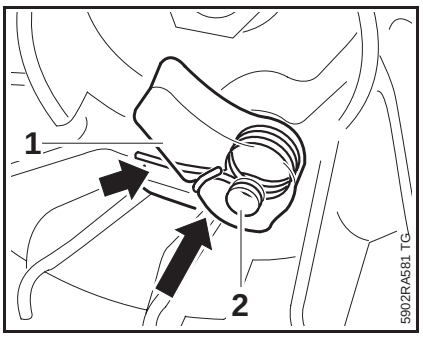
- Remove the E-clips (arrows).
- Pull off the pawls (1) and remove the torsion springs.

– Clean the seats of the pawls (1), 🕮 15

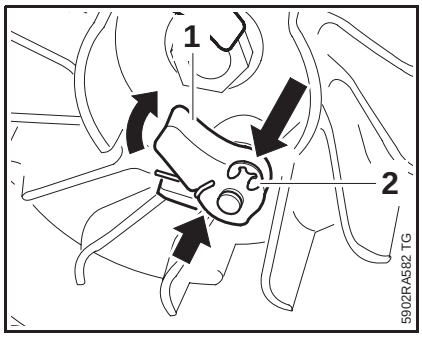
Installing



- Fit the torsion springs on the pawls (1)
– note the installed position (arrows).



- Fit the pawls (1) on the pins (2) on the flywheel, preload the torsion springs at the same time and locate them against the ribs (arrow).

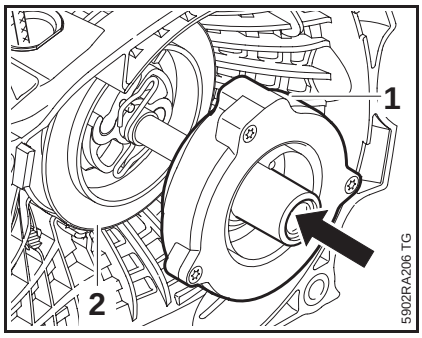


- Fit the pawls (1) so that they can move towards the center of the flywheel as far as stop (arrow).

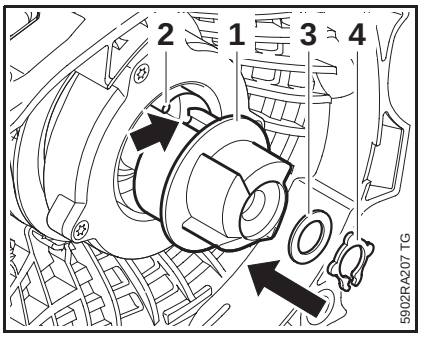
- Fit the E-clips (2).

Check operation.

Pawls must move freely and be held against the stop by the torsion springs.



- Push the spring housing (1) over the starter post and into the pawls in the rope rotor (2)
  – the pawls must engage the spring housing.



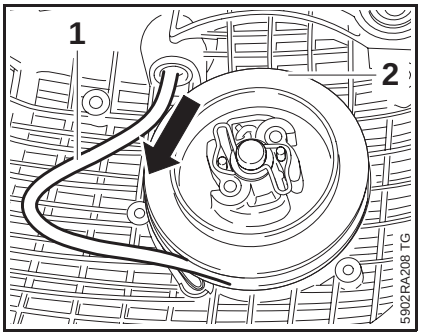
- Push the carrier (1) into the spring housing (2) so that its lug (arrow) engages the loop (2) of the rewind spring.

- Fit the washer (3).

- Fit the E-clip (4).
  – do not overstretch the retaining ring.

– Reassemble all other parts in the reverse sequence.

8.5 Rope Rotor



Relieving tension of rewind spring

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

– Remove the fan housing, 🕮 8.2

Models with ErgoStart

– Remove the ErgoStart, 🕮 8.4

All models

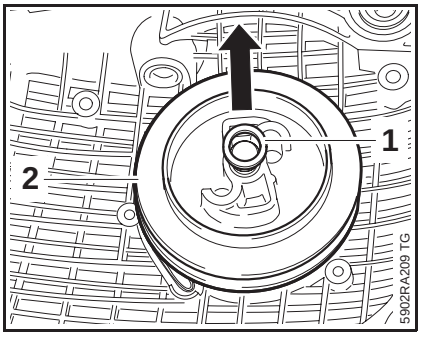
- Pull out the starter rope (1) about 5 cm and hold the rope rotor (2) steady.

– take three full turns of the rope off the rope rotor.

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

– Remove the starter rope or remaining rope from the rotor, 🕮 8.6

– Remove the spring clip and pawls, 🕮 8.3



- Remove the shim (1).

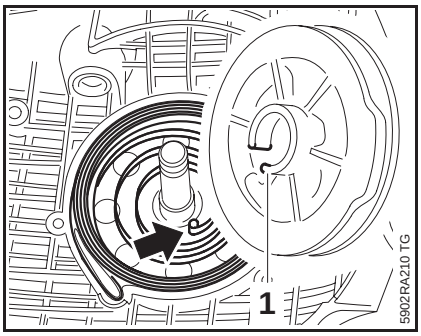
Rewind spring must be relaxed.

- Carefully remove the rope rotor (2).
  – The rewind spring may pop out and unwind.

– Check the rope rotor and replace if necessary.

– Coat bore in rope rotor with STIHL special lubricant, 🕮 15

Installing



- Fit the rope rotor on the starter post so that the inner spring loop (arrow) engages the recess (1).

The recess in the hub of the rope rotor is the anchor point for the spring.

– Fit the cover washer.

– Install the pawls and spring clip, 🕮 8.3

– Install the starter rope, 🕮 8.6

– Tension the rewind spring, 🕮 8.7

– Lubricate pegs on pawls with grease, 🕮 15

– Reassemble all other parts in the reverse sequence.

8.6 Starter Rope / Grip

– Remove the fan housing and the segment, 🕮 8.2

Models with ErgoStart

– Remove the ErgoStart, 🕮 8.4

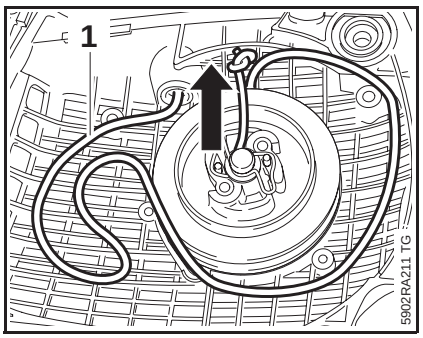
All models

– Relieve tension of rewind spring, 🕮 8.5

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

– Remove any remaining rope from the rope rotor.

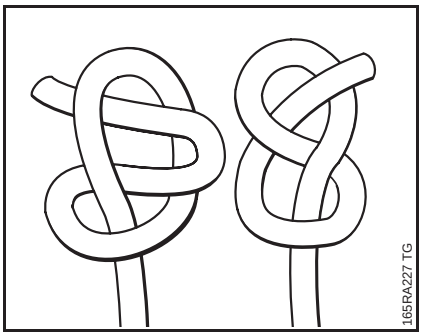
Do not shorten the starter rope.



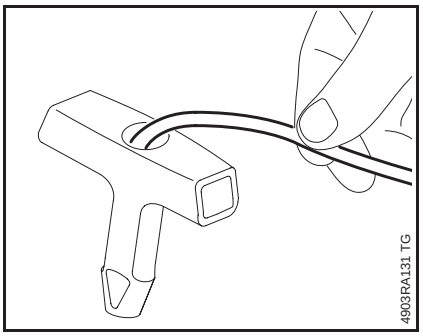
- Push the end of the starter rope (1) out a little and undo the knot.

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

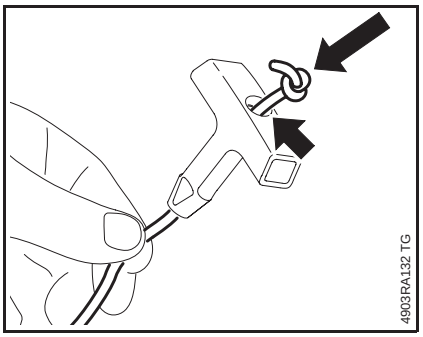
Models with standard starter grip



- Tie one of the special knots shown in the end of the rope.

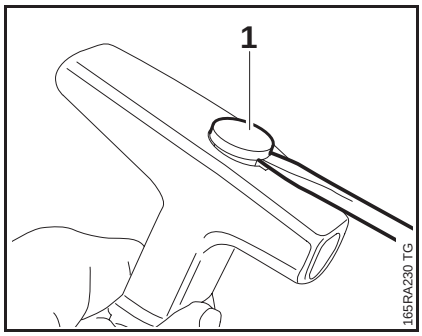


- Thread the rope through the top of the starter grip.

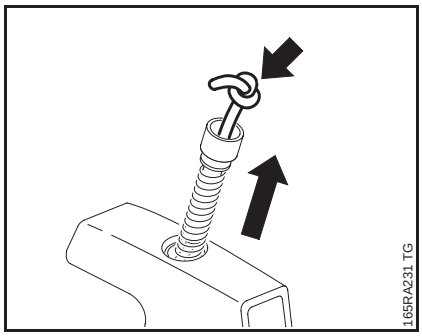


- Pull the rope into the starter grip until the knot is properly seated in the grip (small arrow).

Models with ElastoStart grip



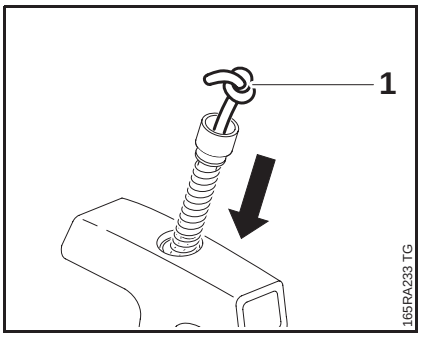
● Use a suitable tool to pry the cap (1) out of the starter grip.



● Pull the sleeve, washers, spring and remaining rope (arrow) out of the grip.

– Check the individual parts and replace if necessary.

Do not shorten the starter rope.



– Thread the new starter rope through the sleeve.

– Tie a simple overhand knot in the end of the new rope.

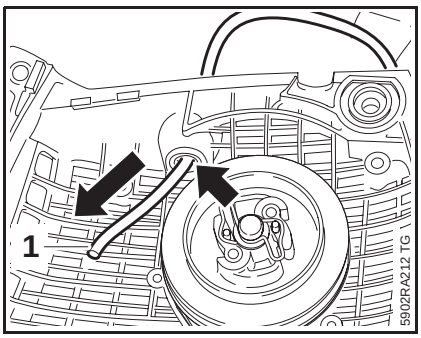
– Fit the washers and spring.

● Pull the starter rope with sleeve, spring and washers into the starter grip (1).

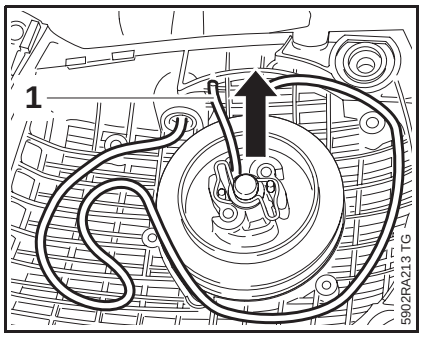
Make sure the washers and spring remain on the sleeve while the rope its being pulled into the grip.

– Position cap so that its lug engages the slot in the starter grip.

– Press the cap into the starter grip.

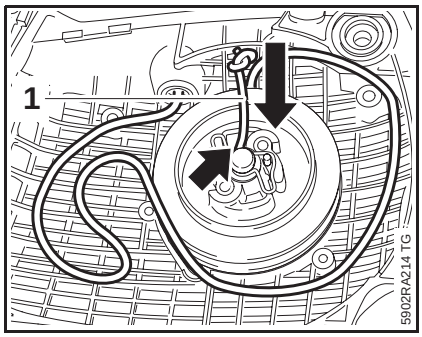


● Thread the starter rope (1) through the guide bushing (arrow).



● Thread the starter rope (1) through the side of the rope rotor.

– Secure the rope (1) with a simple overhand knot.



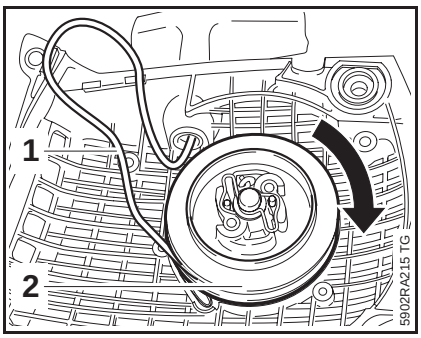
● Pull the rope (1) back into the rotor until the knot locates in the recess (arrow).

– Tension the rewind spring, 🕮 8.7

– Install the segment and fan housing, 🕮 8.2

8.7 Tensioning the Rewind Spring

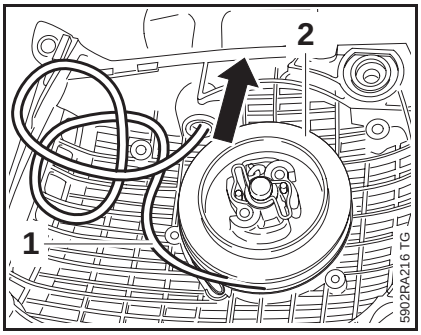
– Remove the fan housing and the segment, 🕮 8.2



- Pull out a short length of starter rope (1).
- Use the starter rope (1) to rotate the rope rotor (2) six turns clockwise.

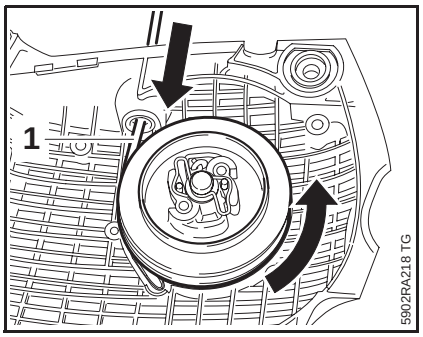
The rewind spring is now tensioned.

Hold the rope rotor steady since it will otherwise spin back and may damage the rewind spring.



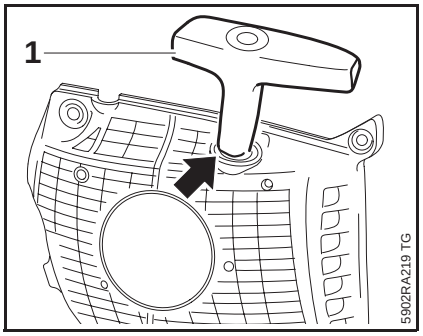
– Hold the rope rotor (2) steady.

- Pull out the twisted rope (1) with the starter grip and straighten it out.



– Hold the starter grip (1) firmly to keep the rope tensioned.

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



The starter grip (1) must sit firmly in the rope guide bushing (arrow) without drooping to one side. If this is not the case, tension the spring by one additional turn.

When the starter rope is fully extended, it must still be possible to rotate the rope rotor at least another full turn before maximum spring tension is reached. If this is not the case, reduce spring tension since there is otherwise a risk of breakage.

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

– Install the fan housing, 🕮 8.2

8.8 Replacing the Rewind Spring

– Troubleshooting, 🕮 3.4

The replacement spring, in a spring housing, comes ready for installation.

– Wear a face shield and work gloves
to protect your eyes and hands from injury.

– Remove the fan housing and the segment, 🕮 8.2

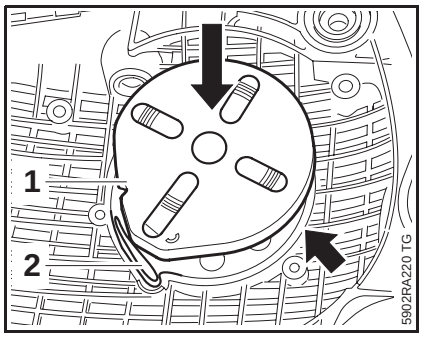
– Relieve tension of rewind spring if necessary and remove the rope rotor, 🕮 8.5

– Remove any remaining pieces of the old rewind spring.

If the rewind spring can no longer be properly tensioned, install a new spring.

Even a worn rewind spring is still pre-loaded in the installed condition.

– Place a blanket over the work area and pull the rewind spring out of the fan housing.



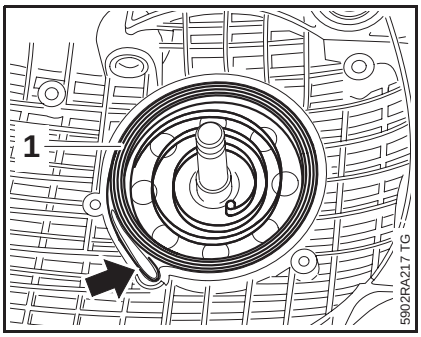
– Lubricate the replacement spring with frame with a few drops of STIHL special lubricant before installing, 🕮 15

● Position the replacement spring with frame in the fan housing – the anchor loop (1) must be above the lug (2).

● Push the rewind spring with frame into its seat (arrow) in the fan housing.
The frame slips off during this process.

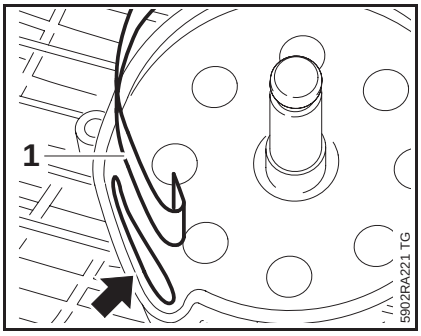
The rewind spring may pop out and unwind.

– Remove the frame and keep it in a safe place
– the frame is used as an assembly tool for installing a rewind spring that has popped out and unwound.



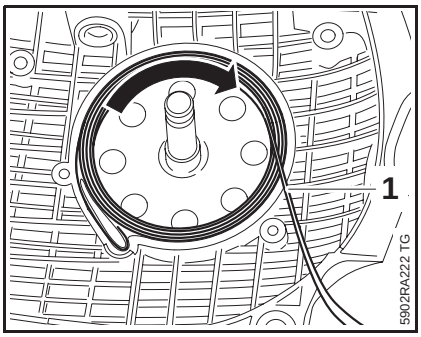
Make sure that the new rewind spring (1) is properly seated and the outer anchor loop is engaged on the lug (arrow). If necessary, use suitable tools to push the rewind spring fully into its seat in the fan housing.

If the rewind spring has popped out, refit it in the fan housing as follows:



– Arrange the rewind spring (1) in its original position.

● Fit the anchor loop in its seat (arrow) in the fan housing.



● Fit the rewind spring (1) clockwise in the housing.

– Hold the spring windings so that they cannot pop out.

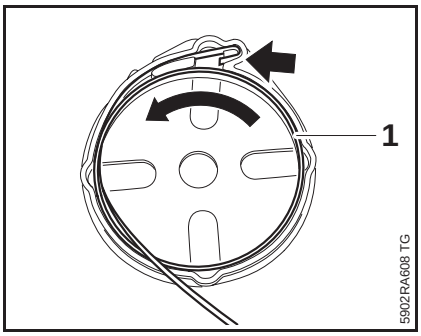
Make sure that the rewind spring (1) is properly seated. If necessary, use suitable tools to push the rewind spring fully into its seat in the fan housing

– Secure the spring so that it cannot pop out.

– Install the rope rotor, 🕮 8.5

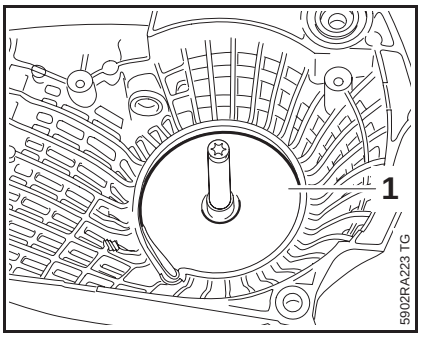
– Reassemble all other parts in the reverse sequence.

Models with ErgoStart

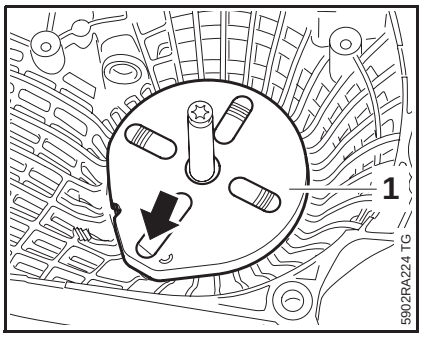


As the spring seat is deeper on this model, the rewind spring cannot be fitted directly in the fan housing.

- Fit the anchor loop in its seat (arrow) in the frame.
- Fit the rewind spring (1) counterclockwise in the frame.



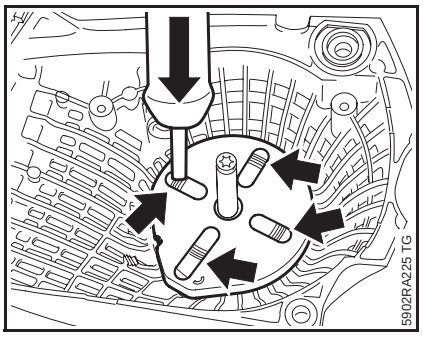
- Check the washer (1) and replace it if necessary.



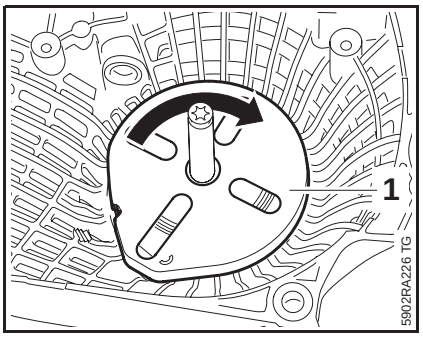
– Slip the frame (1) with the rewind spring over the starter post.

– Position the frame (1) so that the spring's anchor loop (arrow) lines up with the lug on the fan housing.

- Use a suitable tool to push the anchor loop (arrow) over the lug and into its seat in the fan housing.

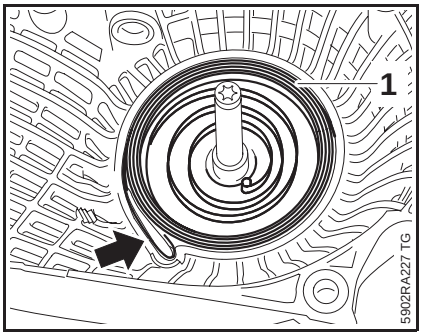


- Apply tool to openings (arrows) to push the rewind spring into its seat in the fan housing.



- Press the frame (1) against the rewind spring and rotate it slightly clockwise until the spring is properly seated.

– Carefully remove the frame.



Check that the rewind spring (1) is properly seated and the anchor loop engages the lug (arrow).

– Secure the spring so that it cannot pop out.

– Install the rope rotor, 🕮 8.5

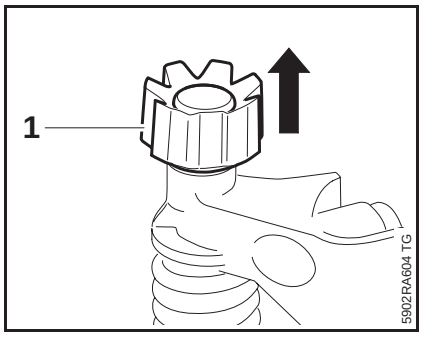
– Reassemble all other parts in the reverse sequence.

Vibration-damping springs and buffers are used for the connection between the handlebar, tank housing and engine housing.

Damaged springs and buffers must always be replaced.

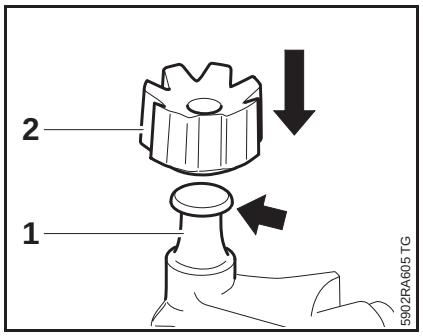
9.1 Buffer on Oil Tank

– Remove the handlebar, 🕮 9.6 Machines with handle heating, 🕮 9.6.1



● Pull off and replace the buffer (1).

Installing



– Use STIHL press fluid to simplify assembly, 🕮 15

● Push the buffer (2) onto the peg (1) on the handlebar as far as stop.

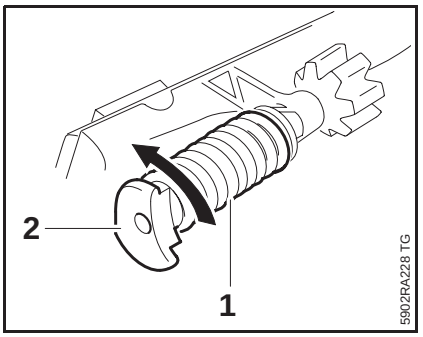
The peg's head (arrow) must locate properly on the buffer.

– Reassemble all other parts in the reverse sequence.

9.2 AV Spring on Oil Tank

The antivibration spring is at the forward end of the oil tank and is secured to the underside of the machine.

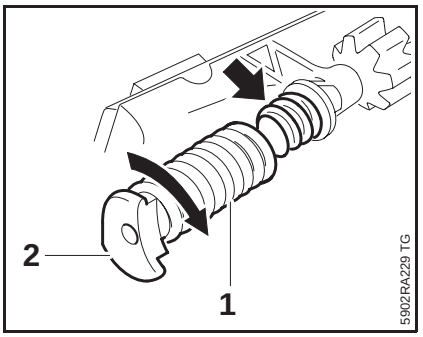
– Remove the handlebar, 🕮 9.6



● Unscrew the AV spring (1).

– Unscrew the bearing plug (2).

– Check the AV spring and plug, replace if necessary.



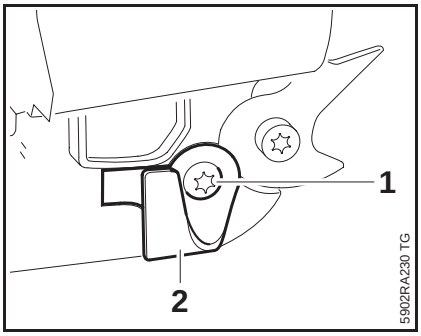
– Screw home the bearing plug (2).

● Screw the AV spring (1) into the handlebar (arrow) as far as stop.

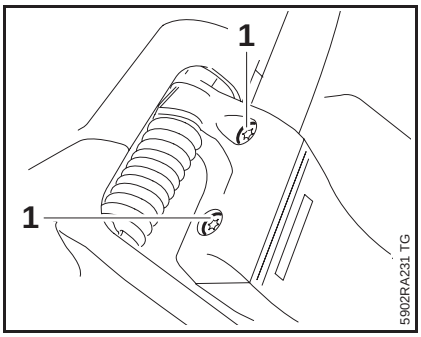
– Check the annular buffer and replace it if necessary, 🕮 9.1

– Reassemble all other parts in the reverse sequence.

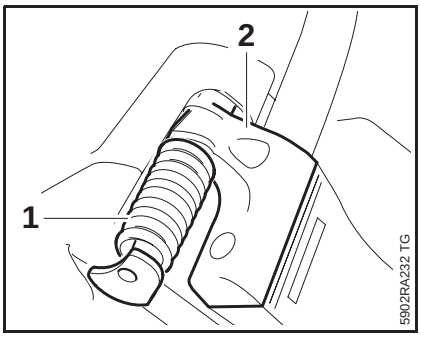
9.2.1 AV Spring on Oil Tank - Machines with Heating



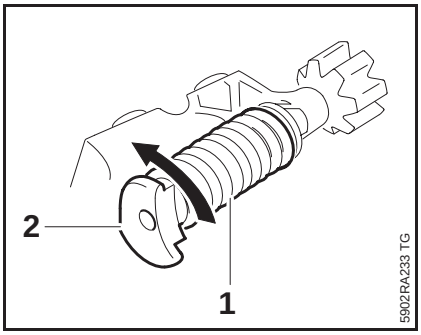
● Take out the screw (1) and remove the chain catcher (2).



● Take out the screws (1).

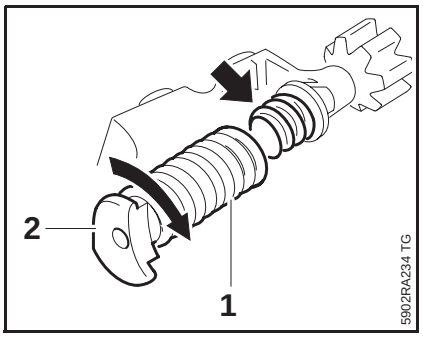


- Pry out the AV spring (1).
- Remove the complete bracket (2).



- Unscrew the AV spring (1).
- Unscrew the bearing plug (2).

– Check the AV spring and plug, replace if necessary.



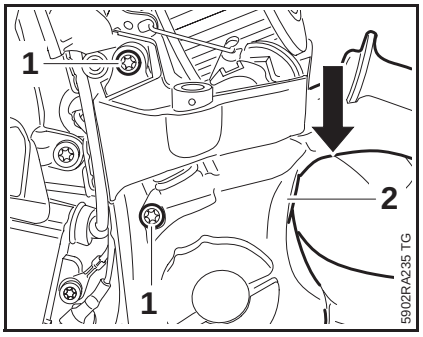
- Screw home the bearing plug (2) as far as stop.
- Screw the AV spring (1) into the bracket (arrow) as far as stop.

– Reassemble all other parts in the reverse sequence.

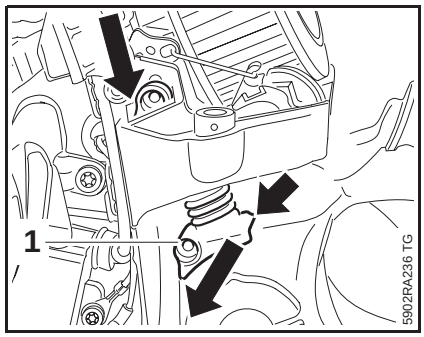
9.3 AV Spring on Fuel Tank

– Remove AV spring from handlebar, 🕮 9.4

– Remove the stop buffer, 🕮 9.5



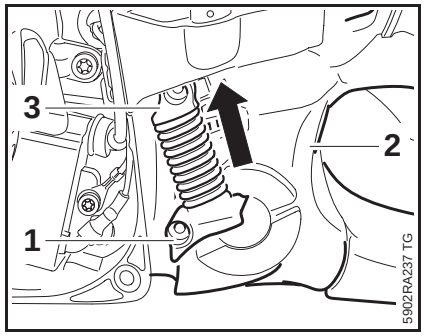
- Take out the screws (1).
- Press the tank housing (2) down a little and hold it there.



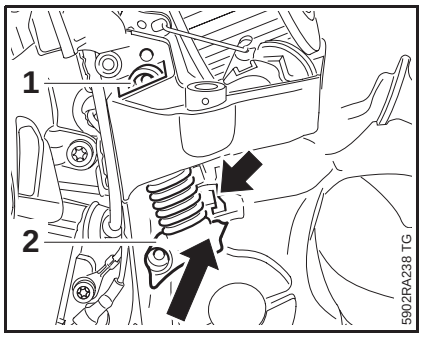
- Pull the AV spring (1) out of the guide (arrow) and remove it from between the crankcase and tank housing.

– Check the AV spring and plug, replace if necessary.

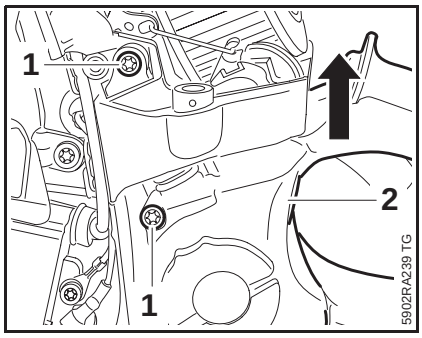
Installing



- Press the tank housing (2) down a little and hold it there.
- Push the AV spring (1), bearing plug (3) first, between the crankcase and tank housing.



- Push the bearing plug (1) through the opening.
- Push the bearing plug (2) into its seat (arrow).



- Push the tank housing (2) upwards and hold it there.
- Insert and tighten down the screws (1) firmly.

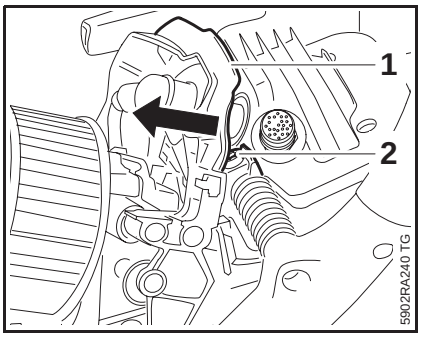
– Reassemble all other parts in the reverse sequence.

9.4 AV Spring on Handlebar

The AV spring is located between the handle frame and cylinder.

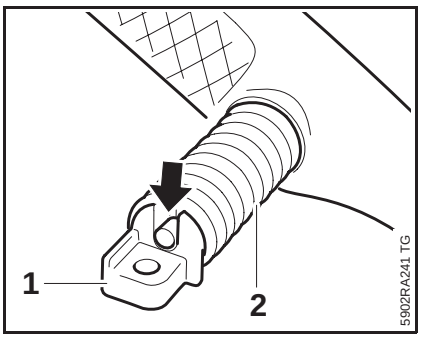
– Remove the shroud, 🕮 6.4

– Remove the air filter, 🕮 12.1



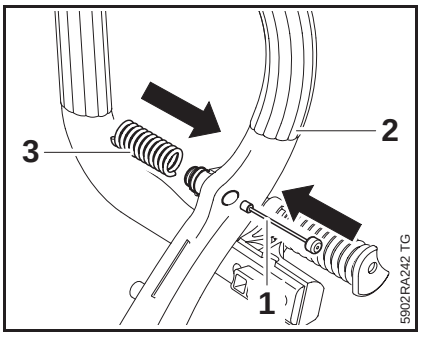
- Push the air guide shroud (1) in direction of rear handle.
- Take out the screw (2).

– Remove the handlebar, 🕮 9.6

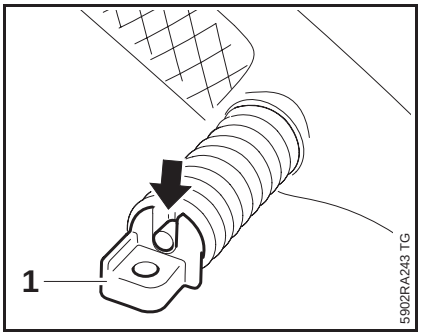


- Unscrew the bearing plug (1) and disconnect the retainer (arrow).
- Unscrew the spring (2) and pull the retainer (arrow) out of the handlebar.

Installing

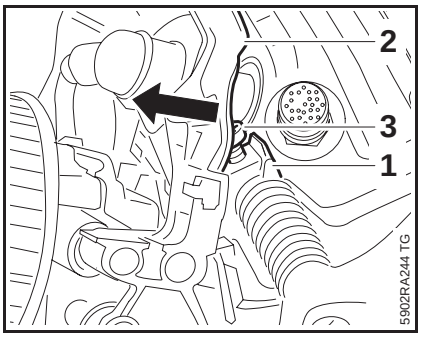


- Push the retainer (1), small nipple first, through the hole in the handlebar (2).
- Screw the spring (3) onto the peg as far as stop.



- Attach the retainer (arrow) to the bearing plug (1).
- Screw the bearing plug (1) into the spring as far as stop.

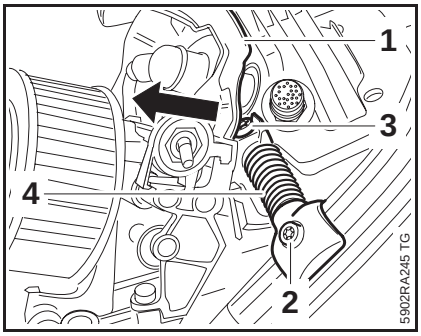
– Install the handlebar, 🕮 9.6



- Position the bearing plug (1) on the cylinder.
- Push the air guide shroud (2) in direction of rear handle.
- Coat the screw (3) with Loctite, fit it and tighten it down firmly, 🕮 15

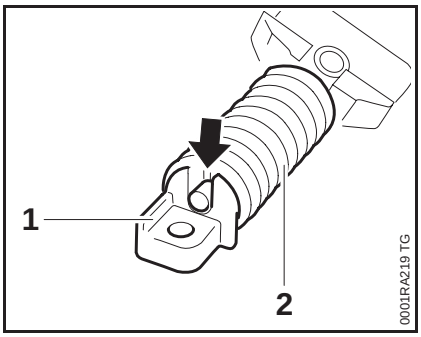
– Reassemble all other parts in the reverse sequence.

9.4.1 Models with Heating



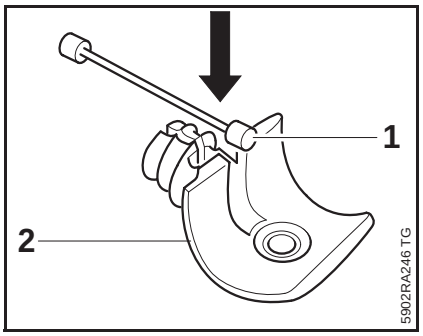
– Push the air guide shroud (1) in direction of rear handle.

- Take out the screws (2) and (3).
- Remove the complete AV spring (4).

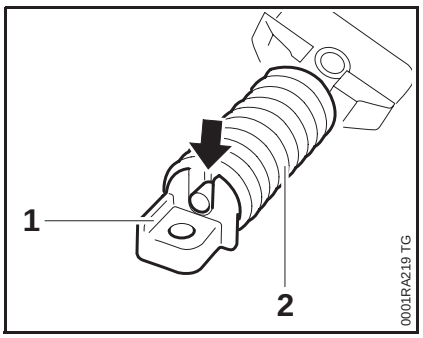


- Unscrew the bearing plug (1) and disconnect the retainer (arrow).
- Unscrew the spring (2) and pull out the retainer (arrow).

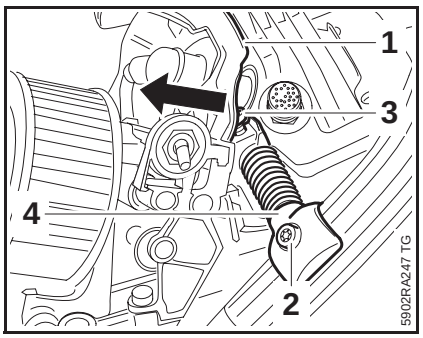
Installing



- Fit the retainer (1) in the bracket (2) and engage the nipple.



- Screw the spring (2) onto the peg.
- Attach the retainer (arrow) to the bearing plug (1).
- Screw the bearing plug (1) into the spring (2) as far as stop.



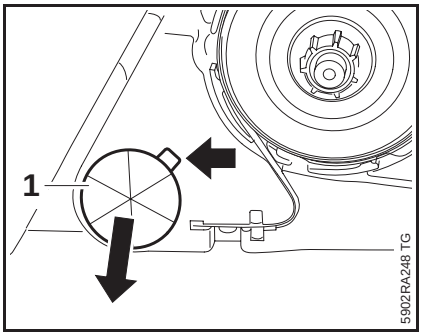
- Position the AV spring (4) on the handlebar and cylinder.
- Insert and tighten down the screw (2) firmly.
- Push the air guide shroud (1) in direction of rear handle.
- Coat the screw (3) with Loctite, fit it and tighten it down firmly, 🕮 15

– Reassemble all other parts in the reverse sequence.

9.5 Stop Buffer at Clutch Side

The stop buffers are located between the tank housing and crankcase. They are fitted at the ignition and clutch sides.

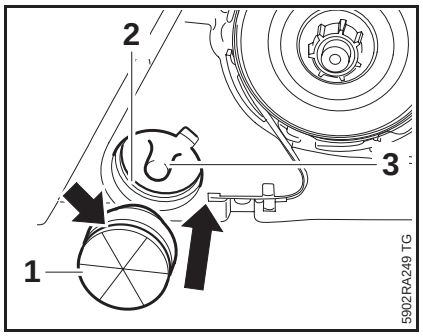
Stop buffer at clutch side



- Pry out the stop buffer (1) at the recess (arrow).

– Check the stop buffer and replace if necessary.

Installing



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

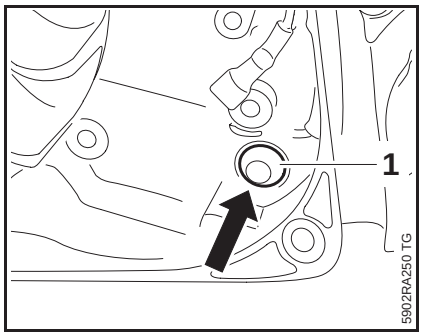
– Use STIHL press fluid to simplify assembly, 🕮 15

● Push home the stop buffer (1) until its groove (arrow) engages the housing rib (2).
– The peg (3) must engage the stop buffer (1).

9.5.1 Stop Buffer at Ignition Side

– Remove the ignition module, 🕮 7.3

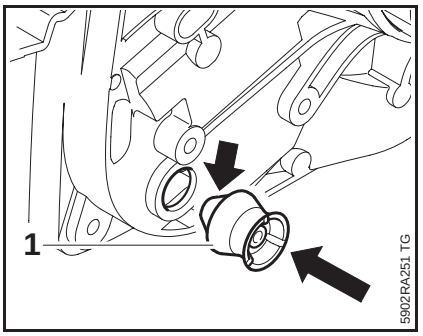
– Remove the tank housing, 🕮 12.11.5



● Ease the stop buffer (1) out of the bore.

– Check the stop buffer (1) and replace if necessary

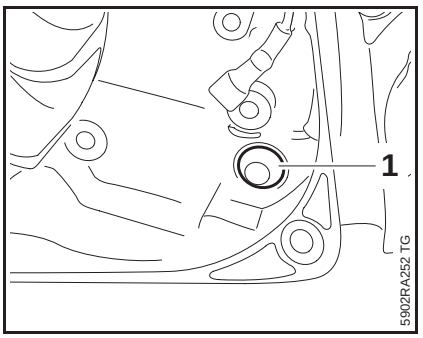
Installing



– Position the stop buffer (1) with its tapered end (arrow) facing the crankcase.

– Use STIHL press fluid to simplify assembly, 🕮 15

● Push the stop buffer (1), tapered end inside the crankcase, fully into the bore.
– Turn the stop buffer back and forth to simplify installation.

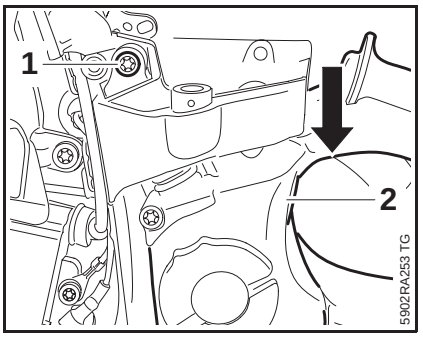


The tapered end (1) must be properly seated in the bore at the ignition side.

– Reassemble all other parts in the reverse sequence.

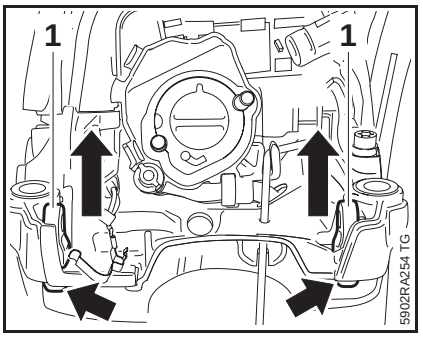
9.5.2 Buffers on Filter Base

– Remove the filter base, 🕮 7.3



● Take out the screw (1).

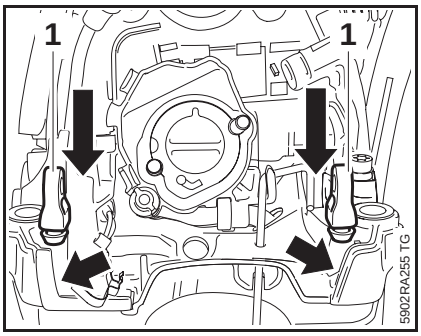
● Press the tank housing (2) down a little and hold it there.



● Push out the buffers (1) from the underside (arrows).

– Check the buffers (1) and replace if necessary

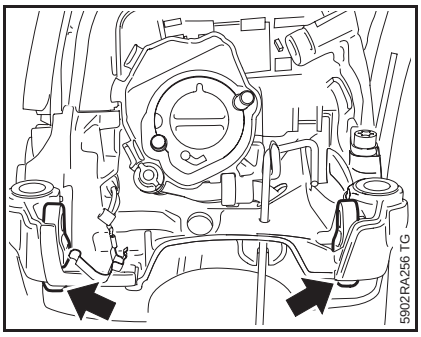
Installing



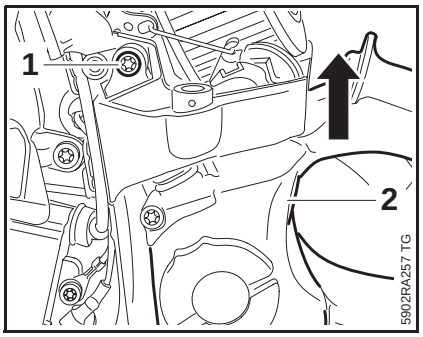
– Position the buffers (1) with their tapered ends facing the bores.

– Use STIHL press fluid to simplify assembly, 🕮 15

● Push the tapered ends of the buffers (1) fully into the bores (arrows).



The tapered ends (arrows) must be properly seated on the other sides of the bores.



– Push the tank housing (2) upwards and hold it there.

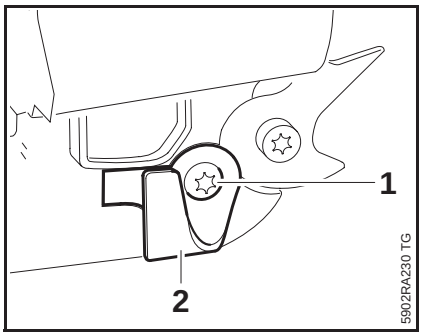
● Insert and tighten down the screw (1) firmly.

– Reassemble all other parts in the reverse sequence.

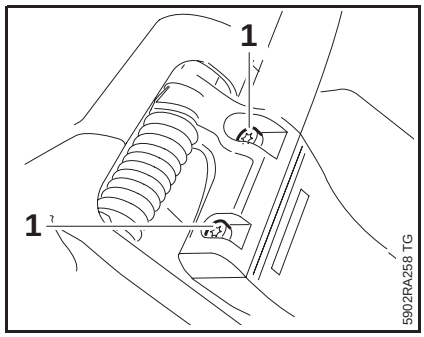
9.6 Handlebar

– Remove the shroud, 🕮 6.4

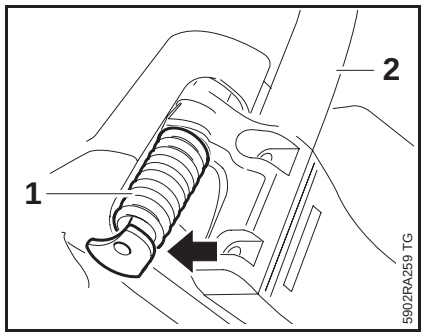
– Remove AV spring from handlebar, 🕮 9.4



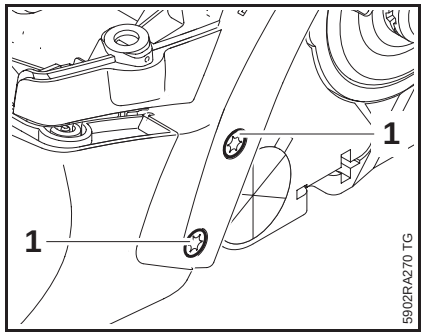
● Take out the screw (1) and remove the chain catcher (2).



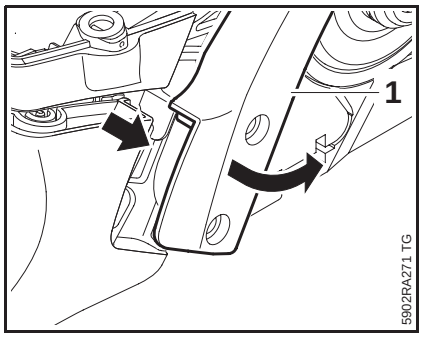
● Remove the screws (1) from the underside of the machine.



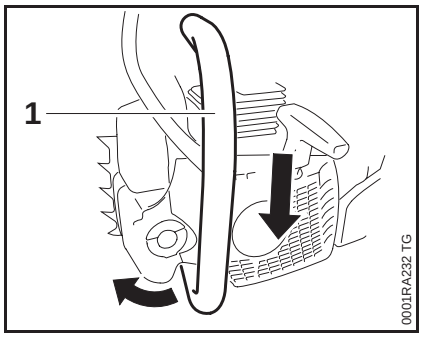
● Push the handlebar (2) sideways and pry the AV spring (1) out of its bearing seat (arrow).



● Take out the screws (1).



- Ease the handlebar (1) sideways and take it out of the guide (arrow).

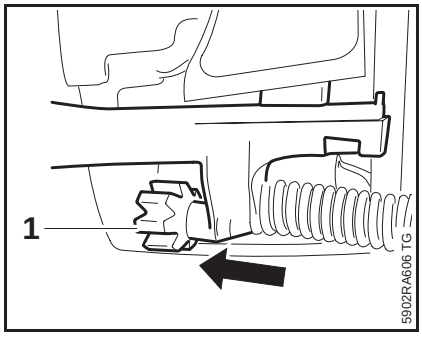


- Push the handlebar (1) out of the lower guide.

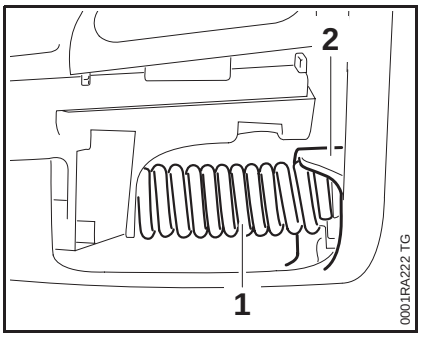
– Remove the handlebar (1), check it and replace if necessary.

– Check the annular buffer and replace it if necessary, 🕮 9.1

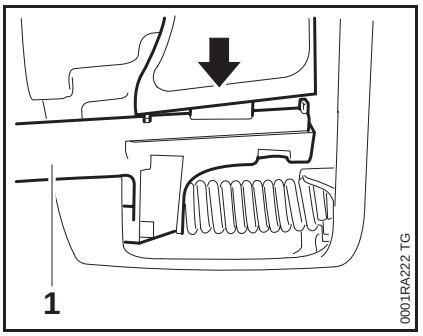
Installing



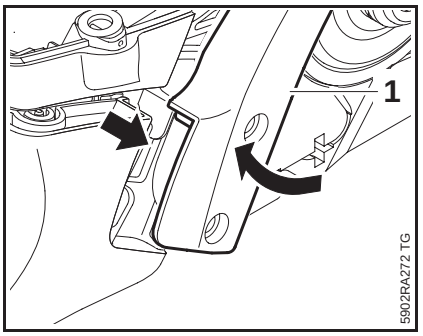
- Push the handlebar, buffer (1) first, into the crankcase.



- Push the AV spring (1) into its seat (2).

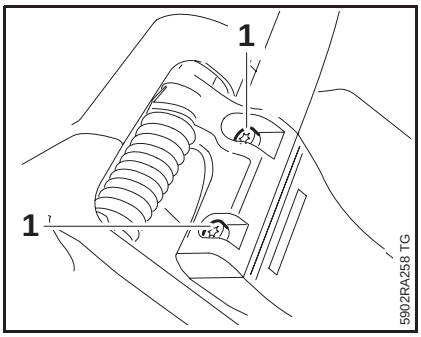


- Position the handlebar (1) against the guide (arrow).



- Ease the handlebar (1) sideways and place it in the guide (arrow).

– Insert the screws and tighten them down firmly.



- Insert and tighten down the screws (1) firmly.

– Reassemble all other parts in the reverse sequence.

9.6.1 Handlebar with Heating

The handlebar on this version is equipped with a heating system – the electrical wires have to be disconnected.

– Troubleshooting, 🕮 13.7.1

– Remove the shroud, 🕮 6.4

– Remove the fan housing, 🕮 8.2

– Remove AV spring from handlebar, 🕮 9.4.1

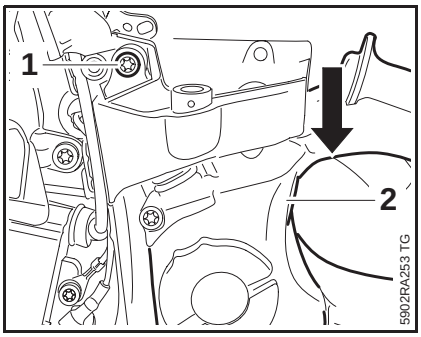
– Remove the carburetor carrier, 🕮 12.8

– Remove the ignition module, 🕮 7.3

– Remove the lockout lever, 🕮 10.2

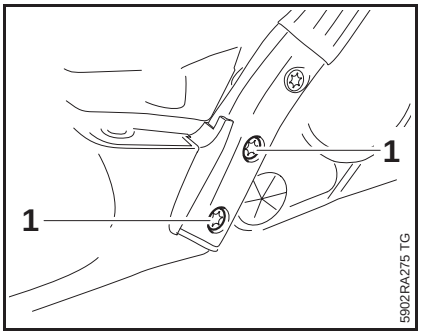
– Remove the throttle rod, 🕮 10.3.4

– Remove the air guide shrouds, 🕮 12.4

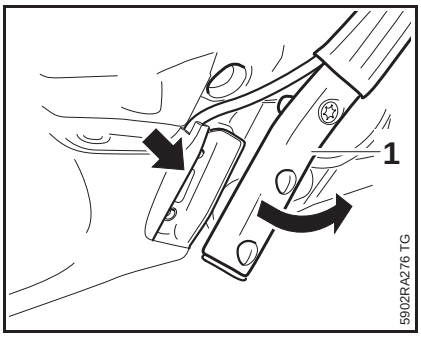


● Take out the screw (1).

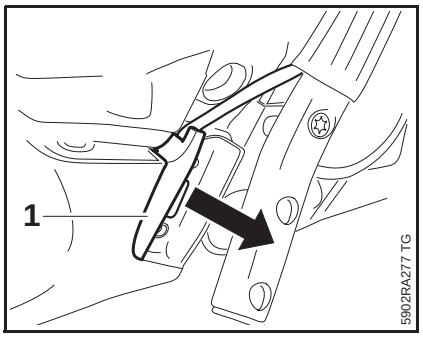
– Press the tank housing (2) down a little and hold it there.



● Take out the screws (1).

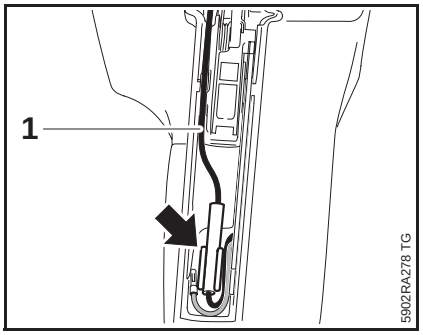


– Ease the handlebar (1) sideways and take it out of the guide (arrow).



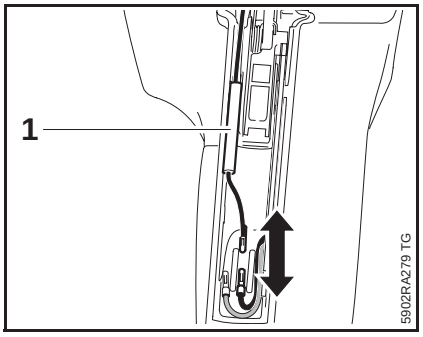
● Remove the bracket (1).

– Remove the wiring harness, 🕮 13.8



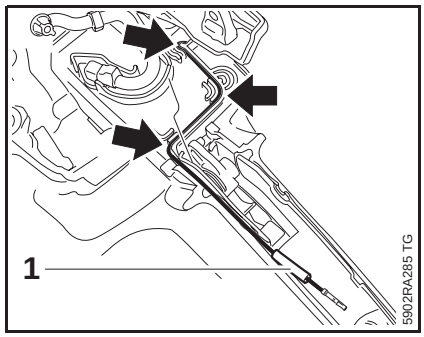
– Pull the pin and socket connector with insulating tube out of the guide (arrow).

● Pull the handlebar heating wire (1) out of the cable guide.



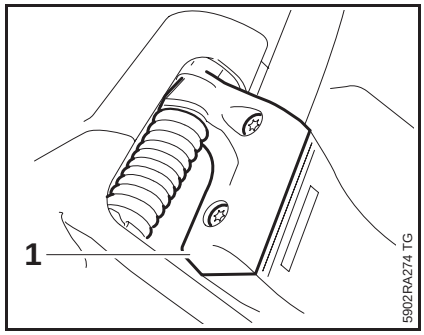
● Push the insulating tube (1) in the direction of the handlebar heating element.

● Separate the pin and socket connector.

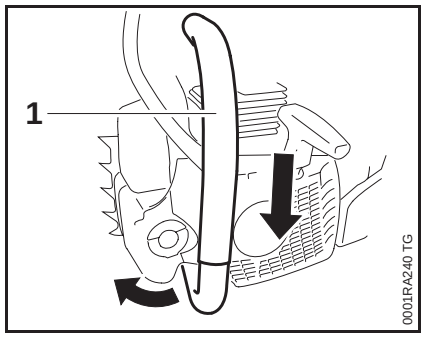


● Pull off the insulating tube (1).

● Pull the wires out of the guides (arrows).

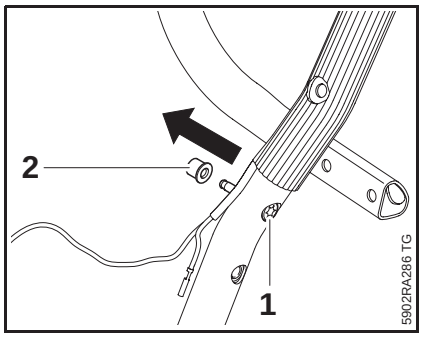


– Remove the bracket (1), 🕮 9.2.1



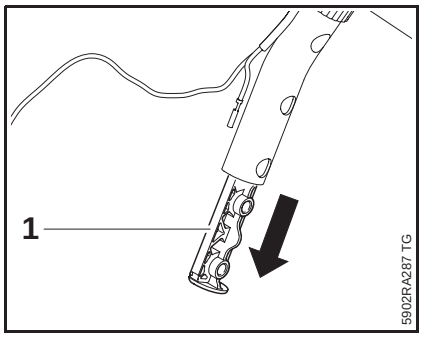
● Push the handlebar (1) out of the lower guide.

– Remove the handlebar.



- Take out the screw (1) - the plastic sleeve (2) is pushed off in the process.

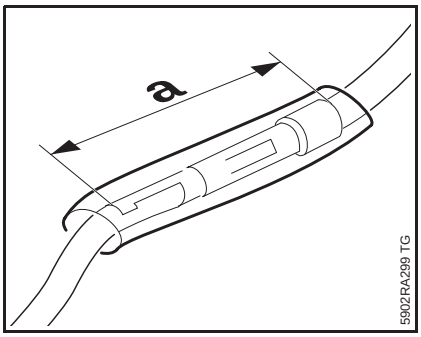
– Remove the plastic sleeve (2).



- Pull out the handlebar stiffener (1).

– Check handlebar heating and replace handlebar if necessary, 🕮 13.7.1

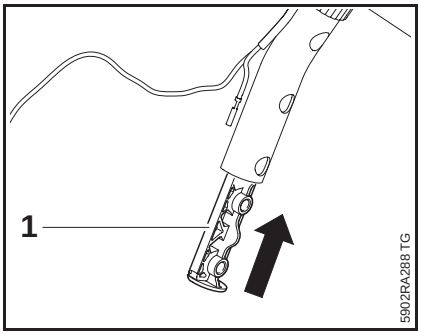
Installing



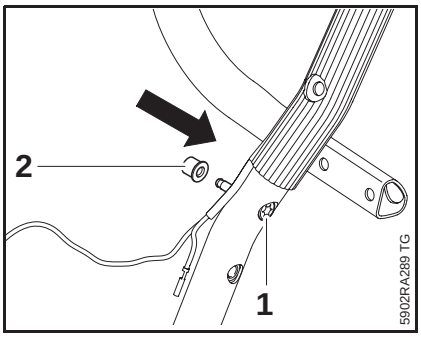
During all the following procedures:

- Insulating tubes must be centered on the pin and socket connectors and cover them completely
  to avoid the risk of a short circuit.

- Push the pin and socket connector together
  – overall length of connector 'a' = max. 30 mm.



- Push home the handlebar stiffener (1) as far as stop.

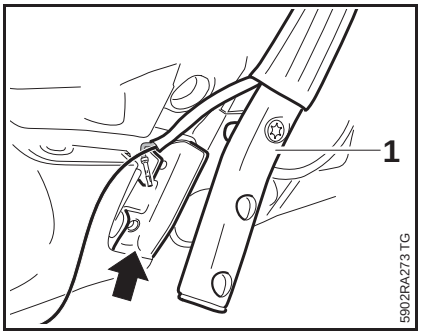


- Insert and tighten down the screw (1) firmly.

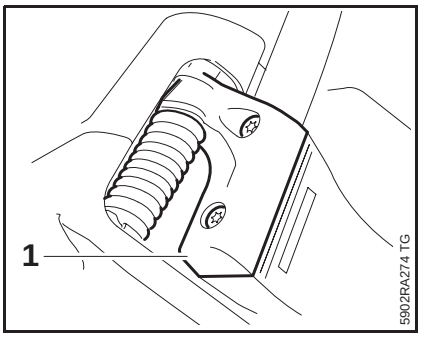
- Push on the plastic sleeve (2) until it snaps into position.

When installing the handlebar make sure the wires to the handlebar are long enough
– the wires may be damaged if they are constantly under strain.

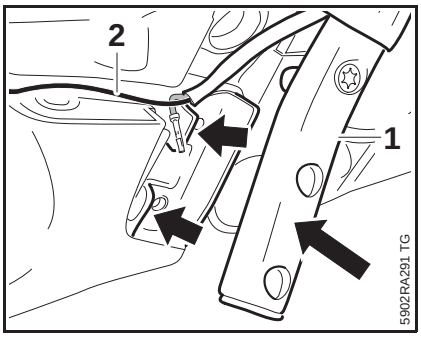
To obtain the correct wire length, fit the handlebar in its seat first, then lay the wires.



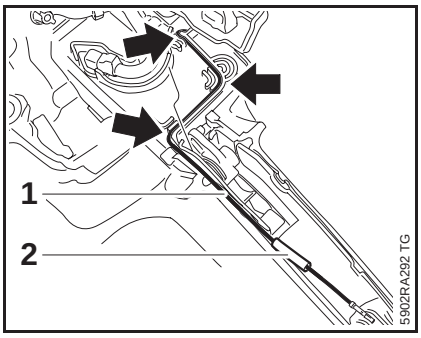
- Fit the handlebar (1) over the machine as far as the seat (arrow).



– Install the retainer (1), 🕮 9.2.1



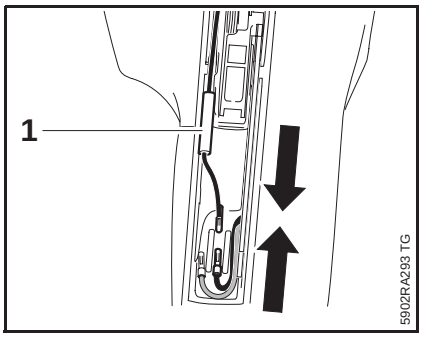
- Straighten the wire (2) and fit it between the crankcase and tank housing.
- Push the handlebar (1) into its seat (arrows)
  – do not pinch the wires.



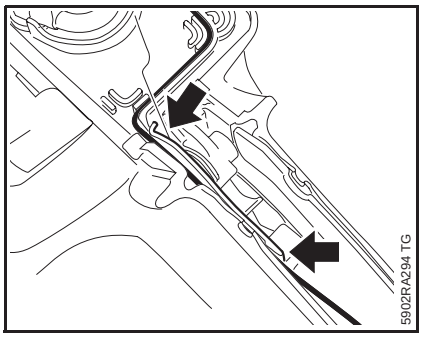
- Position the wire (1) in the upper guide (arrows).

Lay the wires without loops and snugly against the housing.

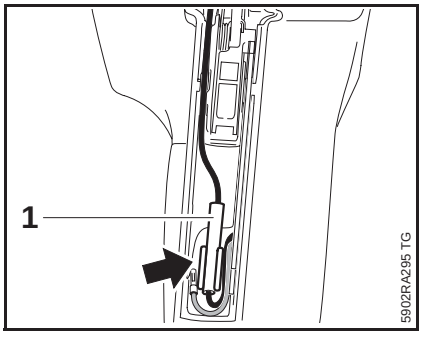
- Fit the insulating hose (2).



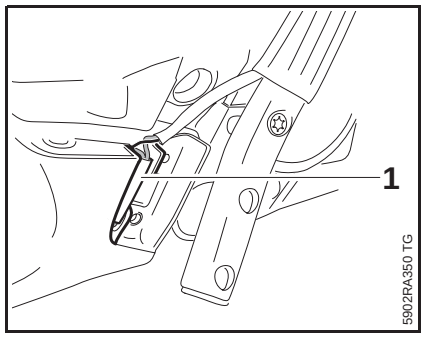
- Push the pin and socket connector together.
- Push the insulating tube (1) over the connector.



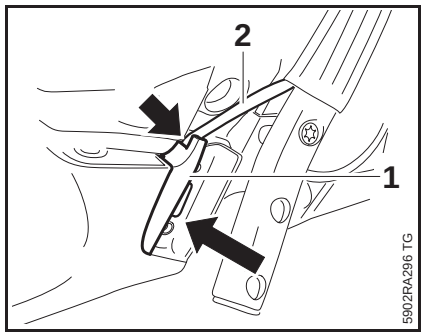
- Push the wire fully into the guide (arrows).



- Push the pin and socket connector with insulating tube (1) into the guide (arrows).

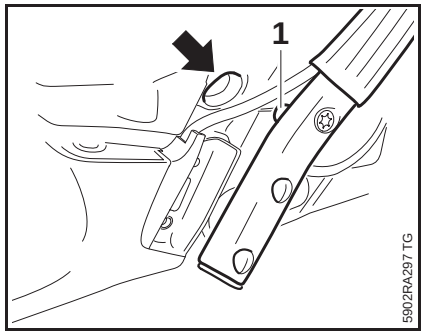


- Install the wiring harness (1), 🕮 13.8

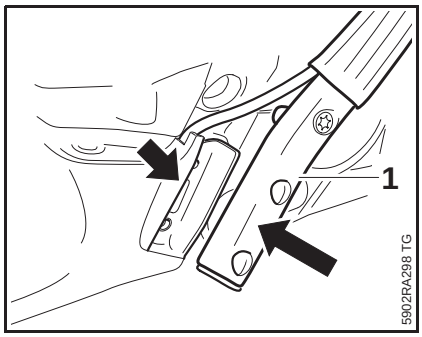


- Push the retainer (1) into the seat so that the wires with insulating tube (2) locate in the guide (arrow).

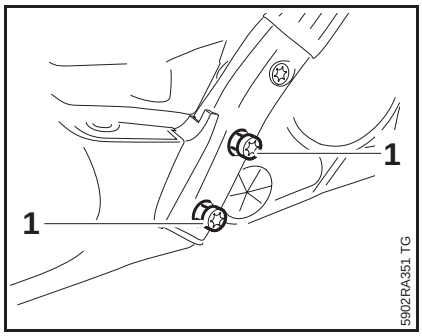
Make sure that the wires are not pinched.



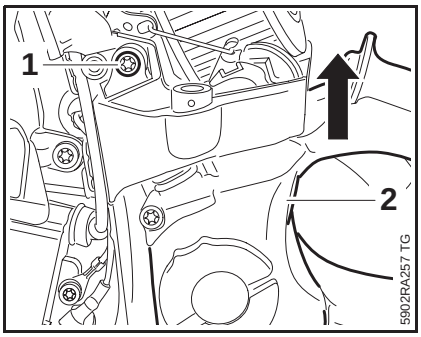
The peg (1) must engage the seat (arrow).



● Push the handlebar (1) into its seat (arrow) and hold it there.



● Insert and tighten down the screws (1) firmly.

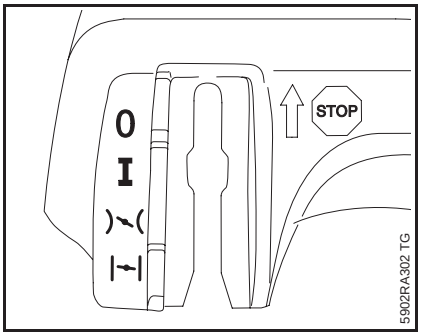


– Push the tank housing (2) upwards and hold it there.

● Insert and tighten down the screw (1) firmly.

– Reassemble all other parts in the reverse sequence.

10.1 Master Control Lever

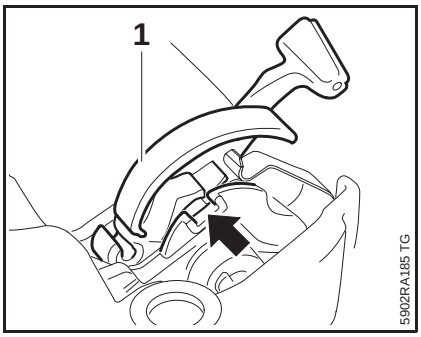


The positions of the Master Control lever are described in the instruction manual.

10.1.1 Removing and Installing

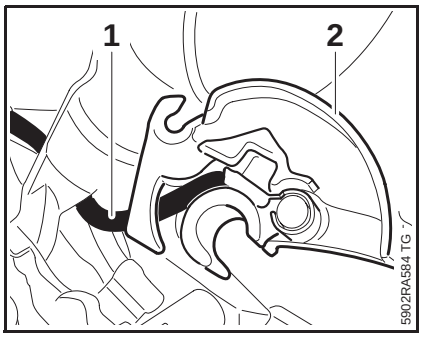
– Remove the air filter, 🕮 12.3

– Remove the choke rod, 🕮 10.3.3



– Set the switch lever (1) to "**0**".

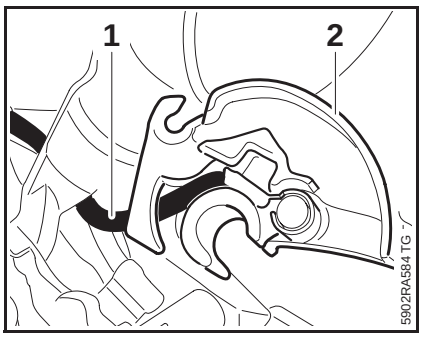
● Pry out the switch lever (1) at the opening (arrow) and lift it slightly.



– Remove the short circuit wire (1) from the switch lever, 🕮 7.7.2

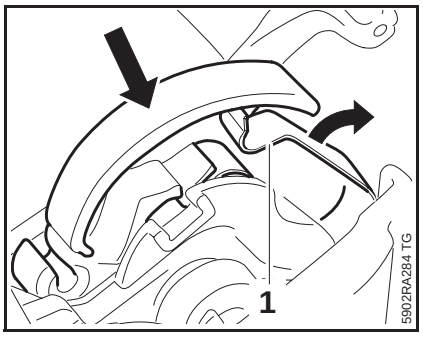
● Remove the switch lever (2), check it and replace if necessary.

Installing

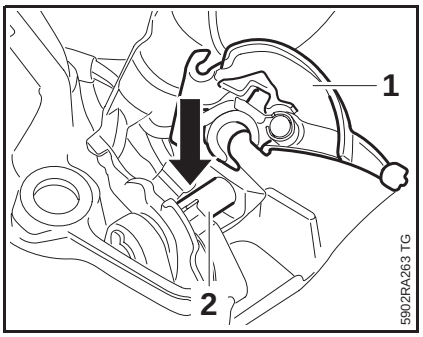


– Place the switch lever (2) in position.

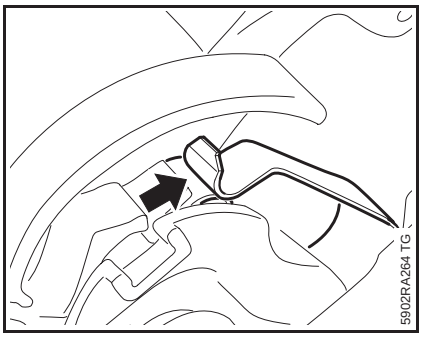
– Fit the short circuit wire (1) on the switch lever, 🕮 7.7.2



● When installing the switch lever, lift the contact spring (1) a little – no more than 2 mm.



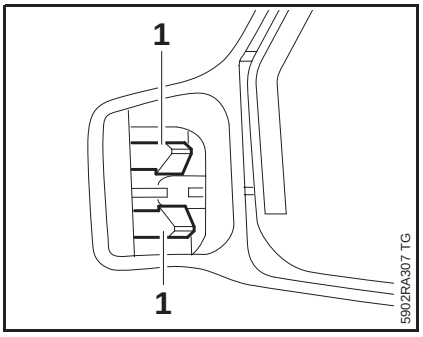
● Push the switch lever (1) onto the filter base's pivot pin (2) until it snaps into position.



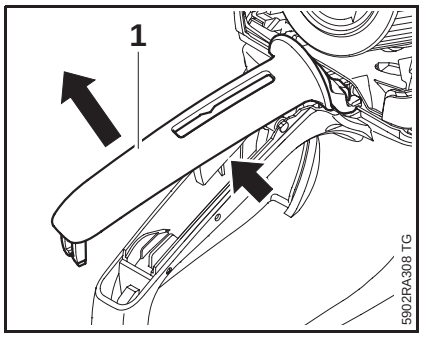
● Check operation.
– Short circuit wire's ring terminal must touch the contact spring (arrow) in position "**0**".

– Reassemble all other parts in the reverse sequence.

10.2 Throttle Trigger/Lockout Lever

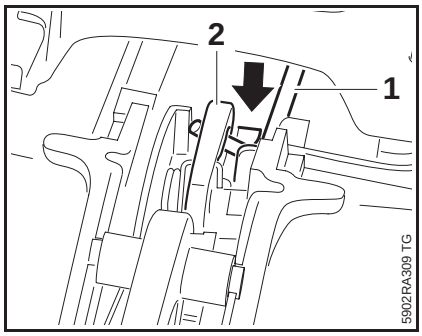


● Push the tabs (1) apart and through the tank housing.

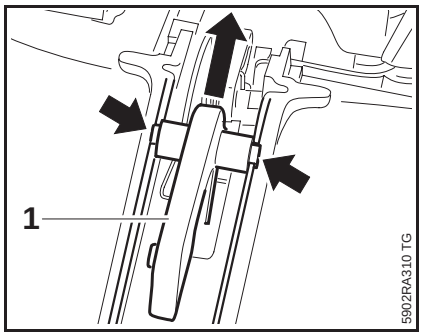


● Remove the handle molding (1).

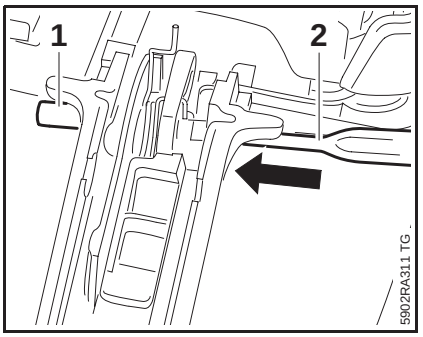
The lockout lever (arrow) may pop out.



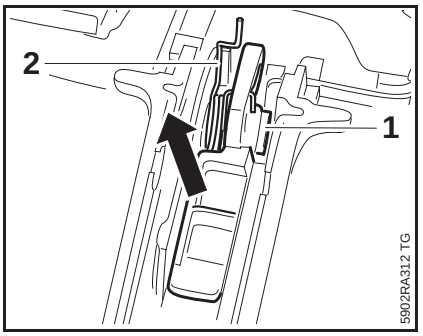
● Take the throttle rod (1) out of the guide (arrow) and disconnect it from the throttle trigger (2).



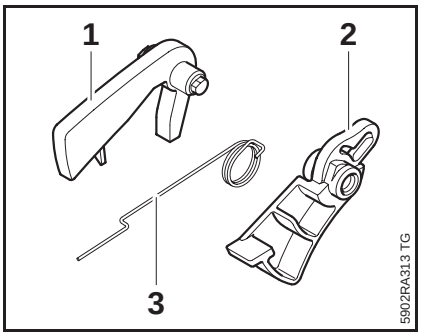
● Rotate the lockout lever (1) in direction of carburetor until it is vertical and then take it out of its mounts (arrows).



● Use a drift (2) to drive out the pin (1).

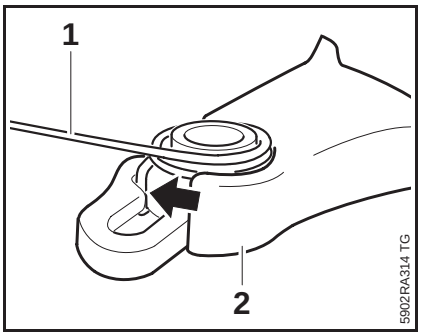


● Remove the throttle trigger (1) with torsion spring (2).

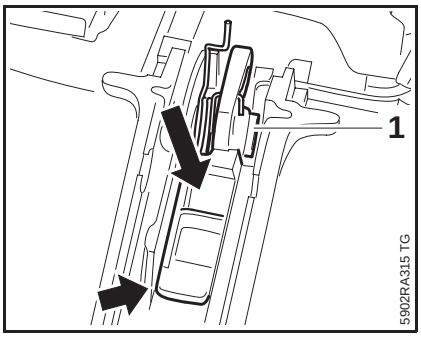


– Check the lockout lever (1), throttle trigger (2) and torsion spring (3) and replace if necessary

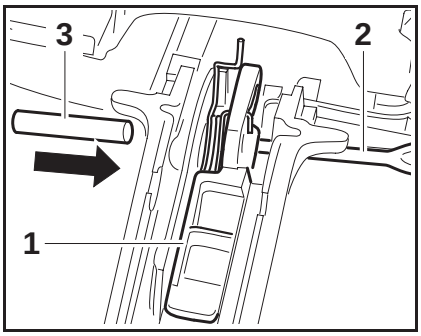
Installing



● Attach the torsion spring (1) to the trigger (2) – note the installed position (arrow).

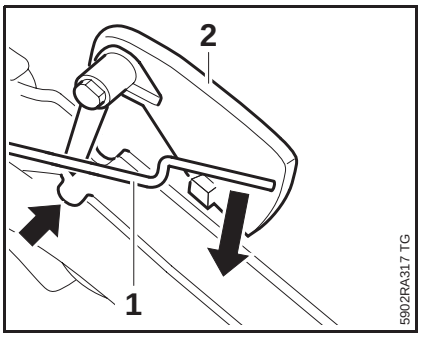


● Place the throttle trigger (1) in the rear handle so that the tongue (arrow) is within the handle and the holes in the throttle trigger and handle are in alignment.

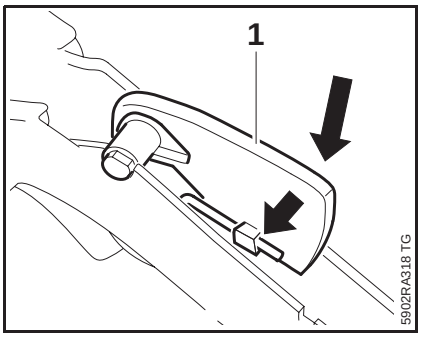


● Use a drift (2) to center the throttle trigger (1).

● Drive home the pin (3) until it is recessed by same amount at both sides.

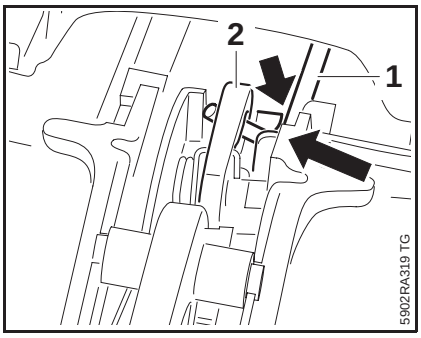


- Push leg (1) of torsion spring in direction of rear handle.
- Push the lockout lever (2) into its mounts (arrow).

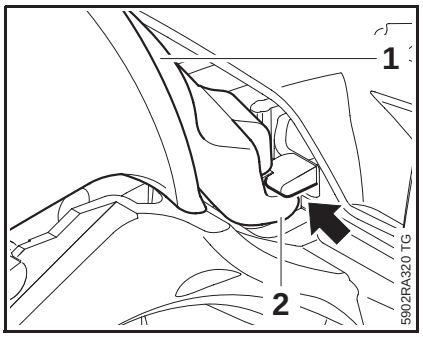


- Rotate the lockout lever (1) in direction of rear handle and engage the torsion spring (arrow).

The lockout lever (1) may pop out.



- Attach the throttle rod (1) to the trigger (2) and fit it in the guide (arrow).



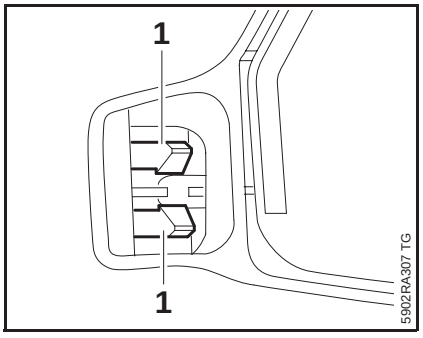
- Engage tabs (2) of handle molding (1) in the openings (arrow).

– Push down the handle molding (1) until it snaps into position.

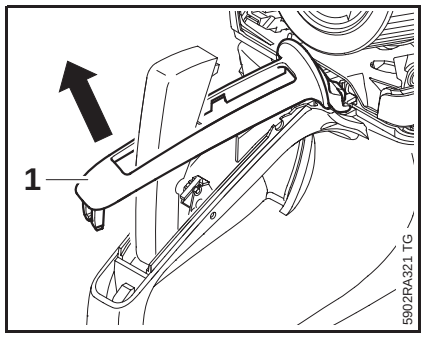
– Check operation.

– Reassemble all other parts in the reverse sequence.

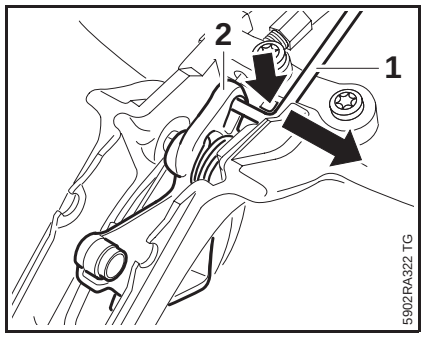
10.3 Throttle Trigger/Lockout Lever – QuickStop Super



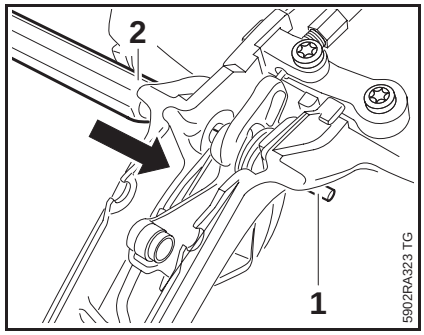
- Push the tabs (1) apart and through the tank housing.



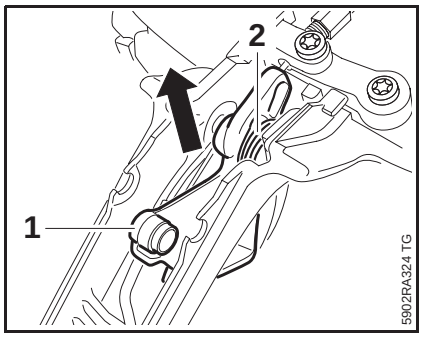
- Remove the handle molding (1).



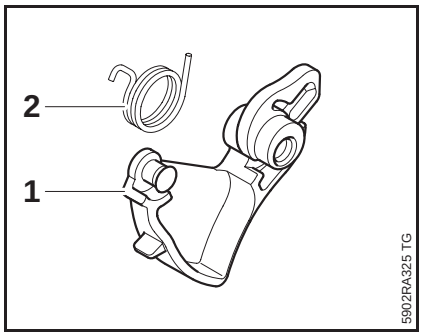
- Take the throttle rod (1) out of the guide (arrow) and disconnect it from the throttle trigger (2).



- Use a drift (2) to drive out the pin (1).

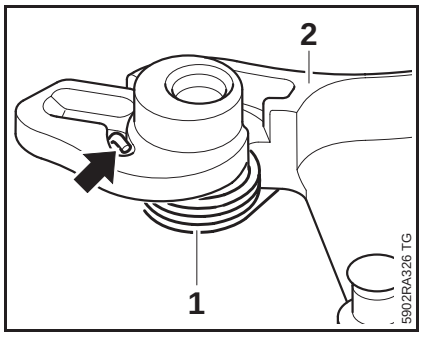


- Remove the throttle trigger (1) with torsion spring (2).

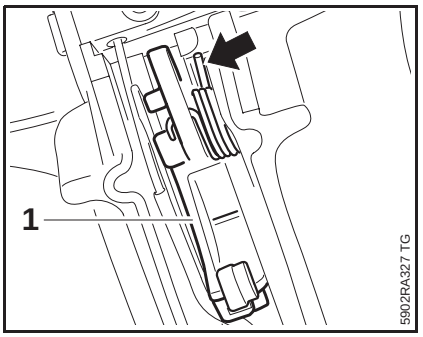


– Check the throttle trigger (1) and torsion spring (2) and replace if necessary

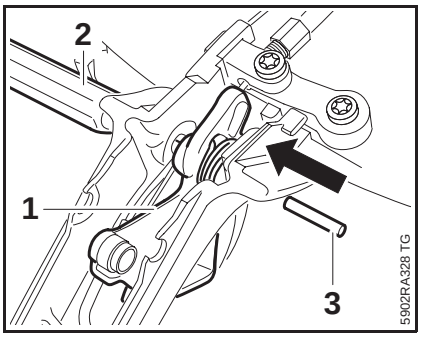
Installing



- Attach the torsion spring (1) to the trigger (2) – note the installed position (arrow).



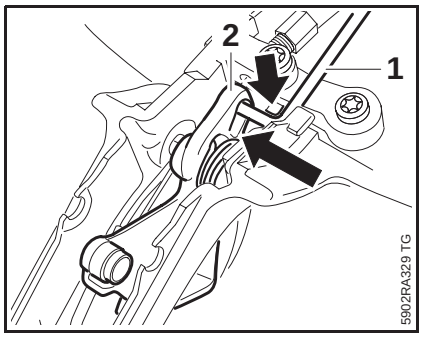
- Place the throttle trigger (1) in the rear handle so that the leg of the torsion spring locates against the handle (arrow) and the holes in the throttle trigger and handle are in alignment.



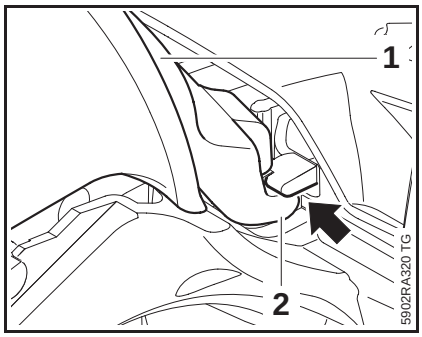
Brake cable must be in the handle housing guide below the drift – take care not to damage the brake cable.

- Use a drift (2) to center the throttle trigger (1).

- Drive home the pin (3) until it is recessed by same amount at both sides.



- Attach the throttle rod (1) to the trigger (2) and fit it in the guide (arrow).



- Engage tabs (2) of handle molding (1) in the openings (arrow).

– Press the lockout lever down.

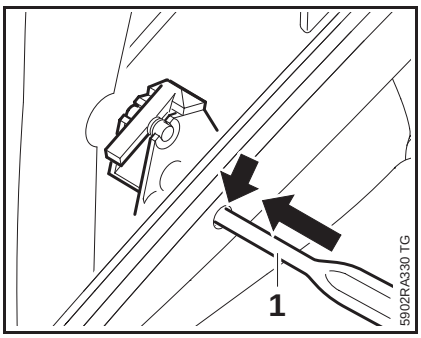
– Push down the handle molding (1) until it snaps into position.

– Check operation.

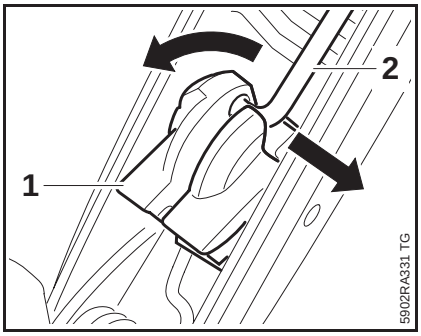
– Reassemble all other parts in the reverse sequence.

10.3.1 Switch Lever – QuickStop Super

– Remove the handle molding, 🕮 10.3



● Use a drift (1) to drive out the pin (arrow).

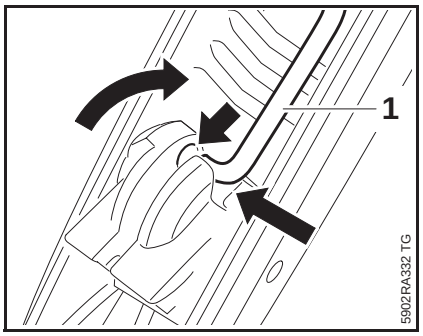


– Lift the switch lever (1) slightly.

● Turn the switch lever (1) about 90° and pull it off the brake cable (2).

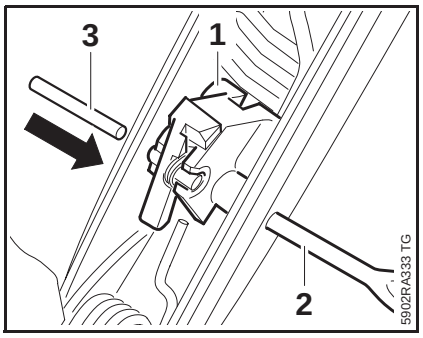
– Check the switch lever (1) and replace it if necessary.

Installing



● Connect the brake cable (1) to the bore (arrow) in the switch lever.

– Turn the switch lever so that it faces up.



● Use a drift (2) to center the switch lever (1).

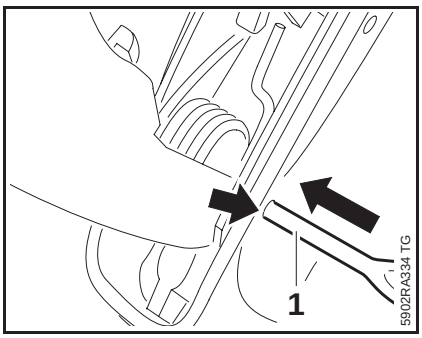
● Drive home the pin (3) until it is recessed by same amount at both sides.

– Reassemble in the reverse sequence.

– Check operation of switch lever by operating the lockout lever.

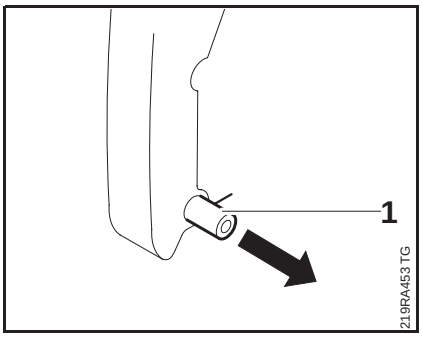
10.3.2 Lockout Lever – QuickStop Super

– Remove the handle molding, 🕮 10.3



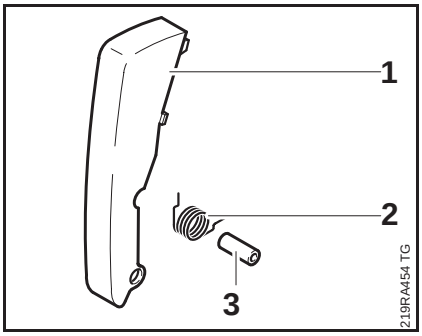
● Use a drift (1) to drive out the pin (arrow).

– Take out the lockout lever.



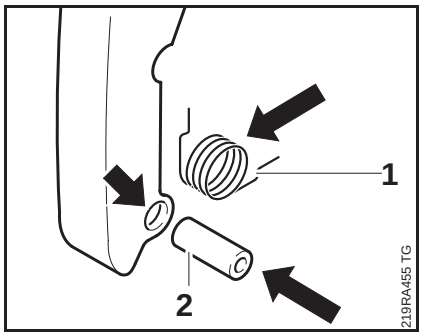
● Push out the bushing (1).

– Remove the torsion spring.

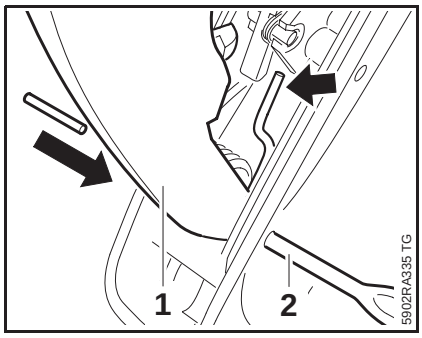


– Check the lockout lever (1), torsion spring (2) and bushing (1) and replace if necessary

Installing



- Position the torsion spring (1) and fit it in the lockout lever.
- Push the bushing (2) into the bore (arrow) – the torsion spring is held in position.



– The torsion spring (arrow) must locate against the tank housing.

- Use a drift (2) to center the lockout lever (1).

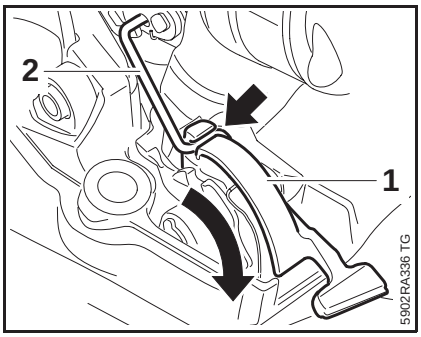
– Drive home the pin until it is recessed by same amount at both sides.

– Reassemble all other parts in the reverse sequence.

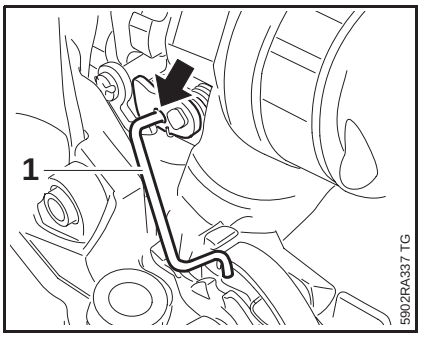
– Check operation.

10.3.3 Choke Rod

– Remove the air filter, 🕮 12.1



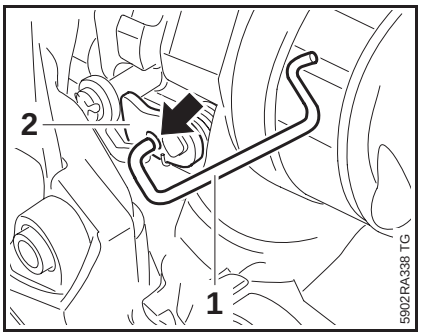
- Move the switch lever (1) in direction of cold start and hold it there.
- Pry the choke rod (2) carefully out of the guide (arrow).



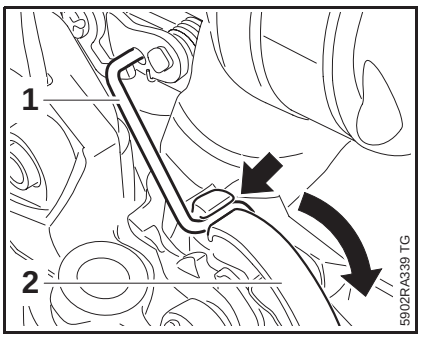
- Disconnect the choke rod (1) from the choke shaft (arrow).

– Check the choke rod and replace it if necessary

Installing



- Engage the choke rod (1) in the bore (arrow) in the choke shaft (2).



- Position the choke rod (1) in the guide (arrow).

– Move the switch lever (2) in direction of cold start until the choke rod (1) snaps into position.

– Check operation.

Check that the choke rod is properly seated.

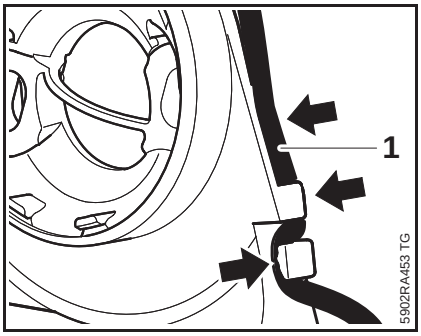
– Reassemble all other parts in the reverse sequence.

10.3.4 Throttle Rod

– Remove the throttle trigger, 🕮 10.2

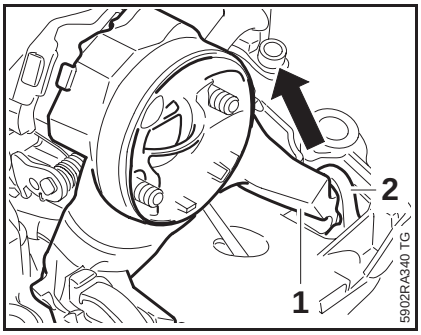
– Remove the baffle, 🕮 12.3

Models with heating

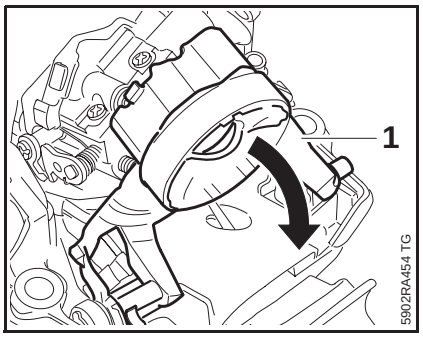


- Pull the wire (1) out of the guide (arrows).

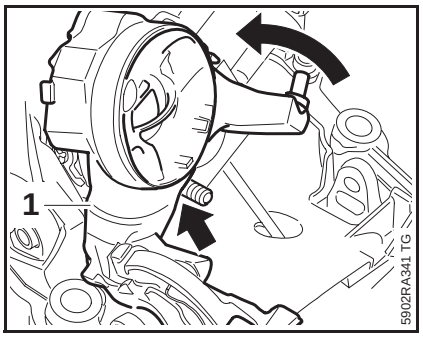
All models



- Pry the filter base (1) out of the buffer (2).

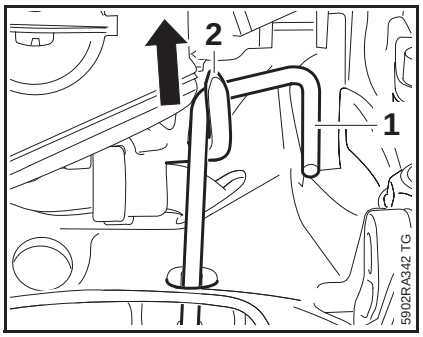


- Swing the filter base (1) in direction of throttle trigger until it is clear of the studs.

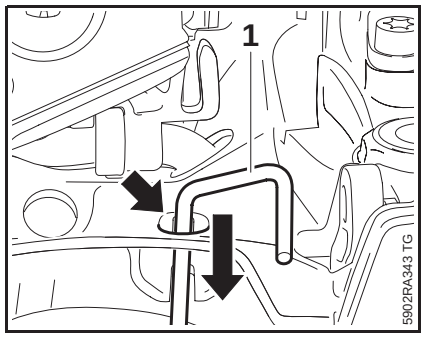


– Swing the filter base (1) in direction of throttle trigger until it is clear of the studs.

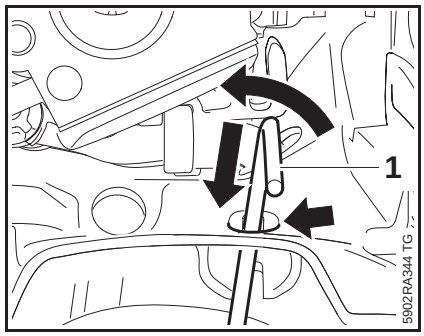
- Swing the filter base (1) in direction of ignition side and rest it against the stud (arrow).



- Pry the throttle rod (1) out of the carburetor carrier (2).



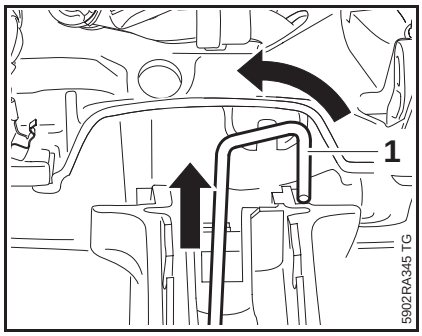
- Pull the throttle rod in the direction of the rear handle until its bent end (1) is at the opening (arrow).



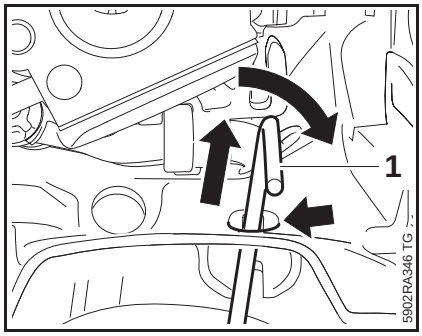
- Rotate the throttle rod (1) about 90° counterclockwise. Pass the throttle rod (1) through the opening (arrow) in the direction of the tank housing and remove it.

– Check the throttle rod and replace if necessary

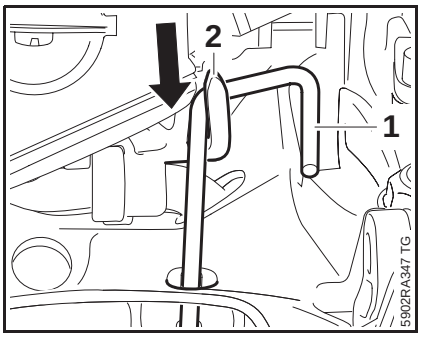
Installing



- Line up the throttle rod (1) (see illustration).
- Push the throttle rod (1) between the tank housing and air guide shroud and rotate it about 90° at the same time.



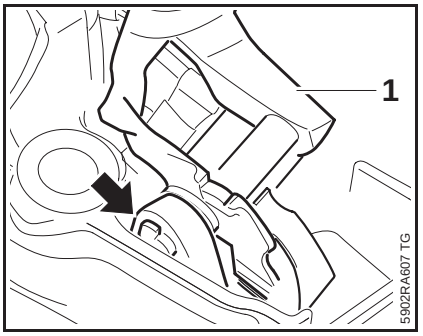
- Pass the throttle rod (1) through the opening (arrow).
- Turn the bent end (1) clockwise and push it under the throttle trigger in the direction of the engine.



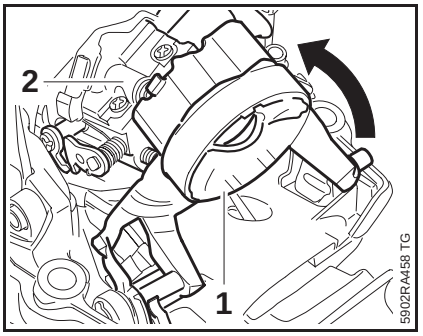
- Push the throttle rod (1) into the guide (2) in the carburetor carrier until it snaps into position.

– Install the throttle trigger, 🕮 10.2

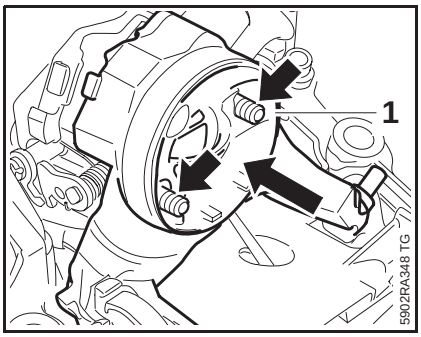
– Check operation
– the throttle lever on the carburetor must move upwards when then throttle trigger is pulled.



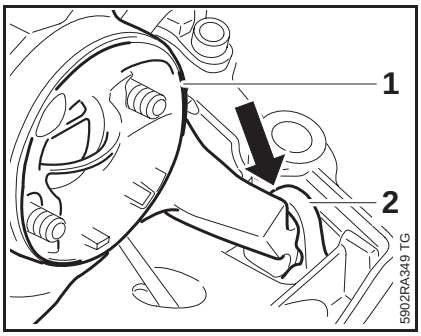
Engage peg of filter base (1) in buffer (arrow) at ignition side.



- Swing the filter base (1) in direction of clutch side so that it is against the carburetor (2) studs.

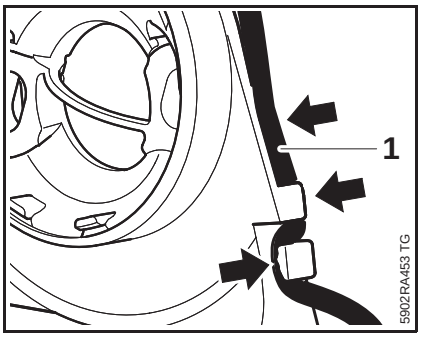


- Push the filter (1) onto the studs and the carburetor.



- Engage the filter base (1) in the buffer (2).

Models with heating



- Fit the wire (1) in the guide (arrows).

– Reassemble all other parts in the reverse sequence.

11. Chain Lubrication

11.1 Pickup Body

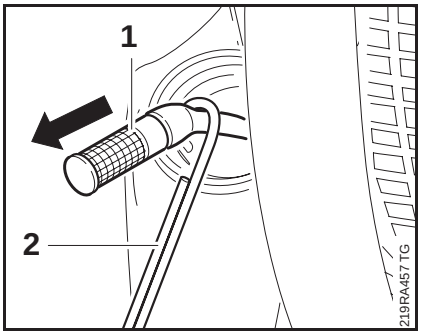
Impurities gradually clog the fine pores of the filter with minute particles of dirt. This prevents the oil pump from supplying sufficient oil. In the event of problems with the oil supply system, first check the oil tank and the pickup body.

– Troubleshooting, 🕮 3.3

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

– Collect chain oil in a clean container, 🕮 1

– Clean the oil tank if necessary, 🕮 1



● Use hook (2) 5910 893 8800 to remove the pickup body (1) from the oil tank.

Do not overstretch the suction hose.

– Pull off the pickup body (1), check it and replace if necessary.

– Reassemble in the reverse sequence.

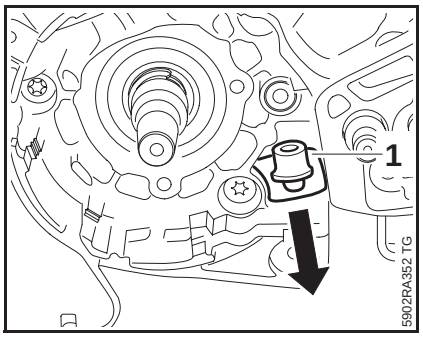
11.2 Oil Suction Hose

– Open the oil tank cap and drain the oil tank 🕮 1.

– Remove the clutch, 🕮 4

– Remove the brake band, 🕮 5.2

– Remove the oil pump, 🕮 11.3

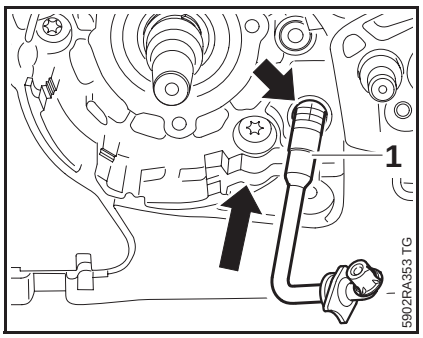


● Remove the oil suction hose (1) together with the pickup body.

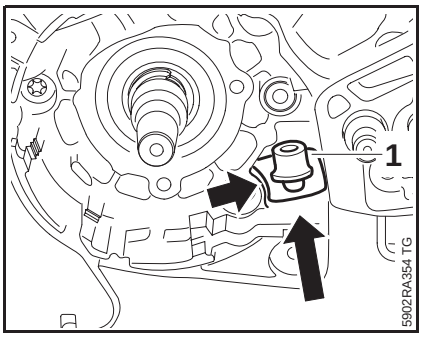
– Check the oil suction hose and pickup body and replace if necessary.

– Fit the pickup body, 🕮 11.1

Installing



● Push the oil suction hose (1), pickup body first, through the housing bore (arrow).



● Line up the oil suction hose (1) – the tab (arrow) must locate against the housing.

– Push home the oil suction hose (1) until its groove is properly seated in the crankcase bore.

– Check position of pickup body. If necessary, use hook 5910 893 8800 to position it properly.

– Install the oil pump, 🕮 11.3

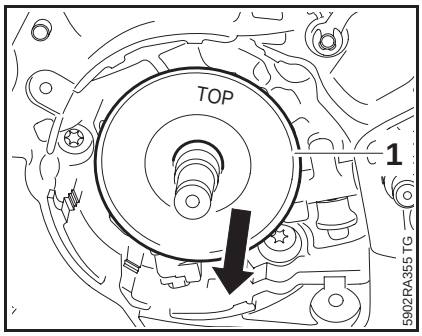
– Reassemble all other parts in the reverse sequence.

11.3 Oil Pump

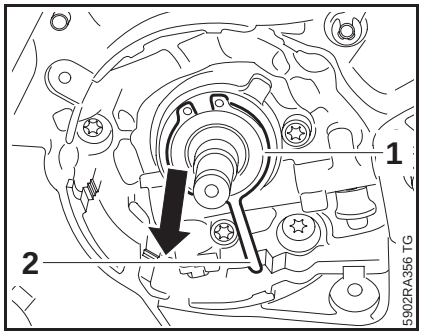
– Troubleshooting, 🕮 3.3

– Remove the clutch, 🕮 4

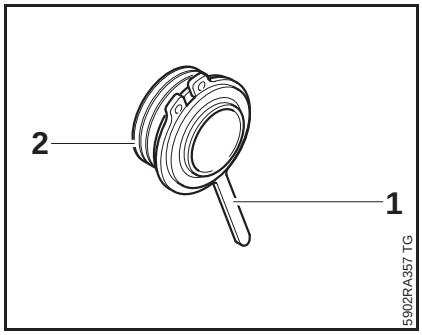
– Remove the brake band, 🕮 5.2



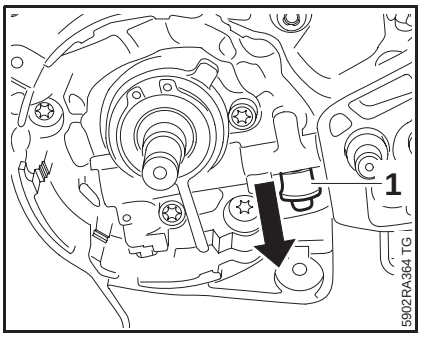
● Remove the washer (1).



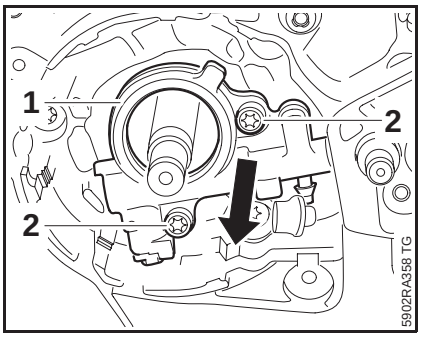
● Pull the worm (1) with drive spring (2) out of the oil pump.



● Check the spring (1) and worm (2) and replace if necessary.

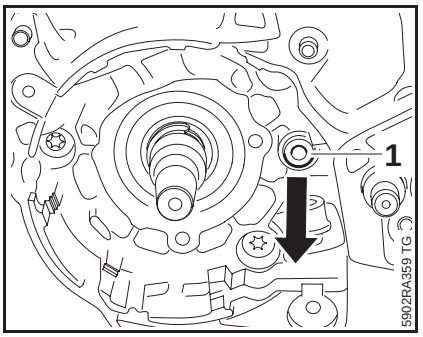


● Pull off the oil suction hose (1).



● Take out the screws (2).

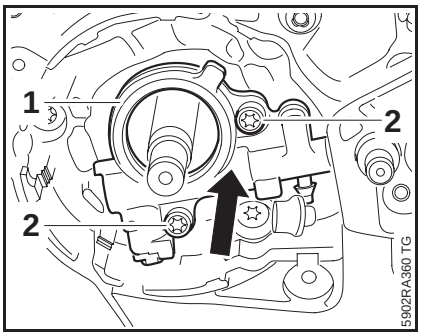
● Pull off the oil pump (1), check and replace if necessary.



● Fit a new sealing ring (1).

Always use a new sealing ring.

Installing

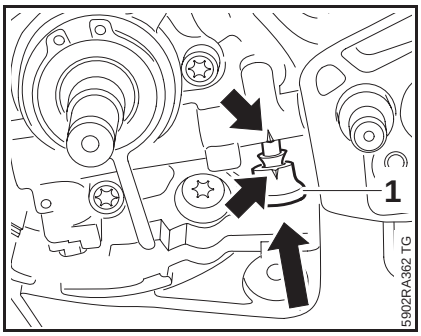


Check that sealing ring is fitted.

● Position the oil pump (1) so that its rear nipple engages the sealing ring.

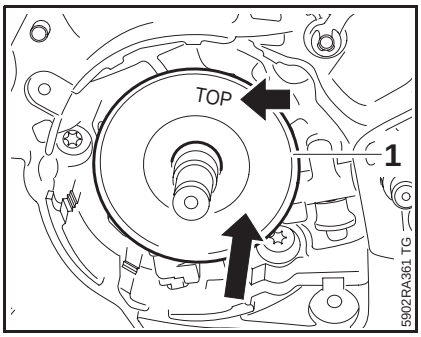
● Insert and tighten down the screws (2) firmly.

– Push the worm fully home.



● Position the oil suction hose (1) so that the lugs (arrows) are in alignment.

● Push the oil suction hose (1) onto the nipple.



● Fit the cover washer (1).

Installed position is correct when "TOP" (arrow) faces outwards.

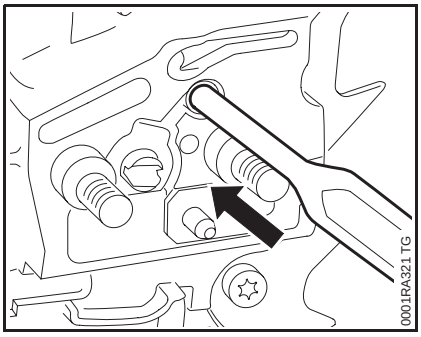
– Check adjustment of oil pump and readjust if necessary – see instruction manual.

– Reassemble all other parts in the reverse sequence.

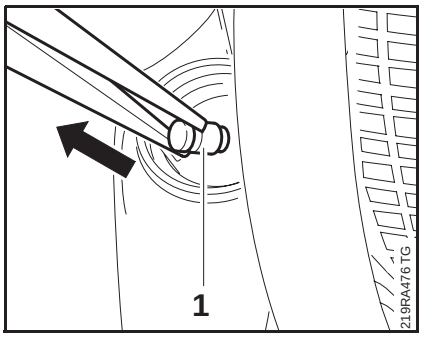
11.4 Valve

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

– Open the oil tank cap and drain the oil tank 🕮 1.

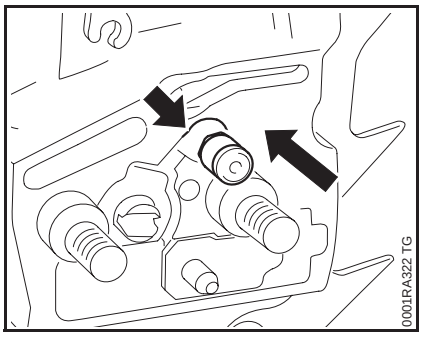


● Use a 6 mm drift to carefully drive the valve out of its seat in the housing and into the oil tank.



● Remove the old valve (1) from the oil tank.

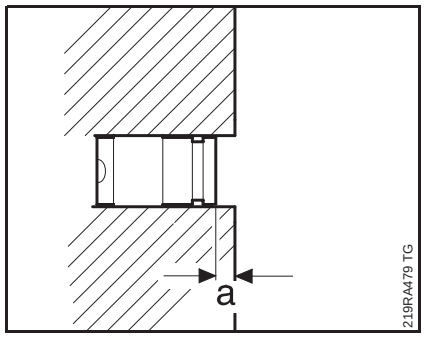
Installing



Check correct installed position.

● Insert the valve in the housing bore (arrow).

– Use a 6 mm drift to carefully drive in the new valve from outside – note installed depth.



● Installed depth of new valve: a = 1 mm +/- 0.1.

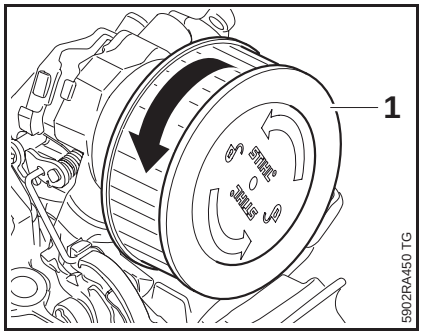
– Reassemble all other parts in the reverse sequence.

12.1 Air Filter

Dirty air filters reduce engine power, increase fuel consumption and make starting more difficult. The air filter should be checked when there is a noticeable loss of engine power.

– See also Troubleshooting, 🕮 3.6, 🕮 3.7

– Remove the shroud, 🕮 6.4



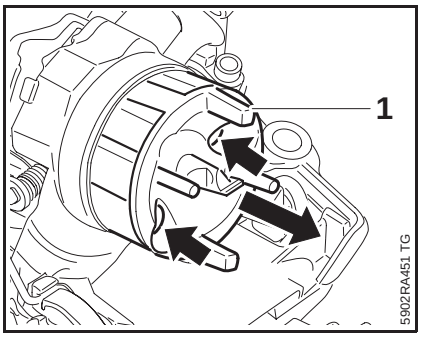
● Rotate the air filter (1) counterclockwise and lift it away.

– Check the air filter and clean or replace if necessary – see instruction manual.

– Reassemble in the reverse sequence.

12.2 Baffle

– Remove the air filter, 🕮 12.1



● Unscrew the nuts (arrows).

● Remove the baffle (1).

– Check the baffle and replace it if necessary

– Reassemble in the reverse sequence.

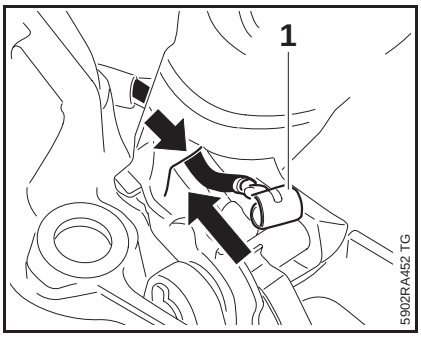
12.3 Filter Base

– Remove the air filter, 🕮 12.1

– Remove the baffle, 🕮 12.2

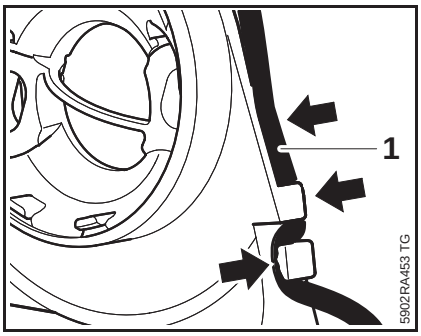
– Remove the choke rod, 🕮 10.3.3

– Remove the switch shaft, 🕮 10.1



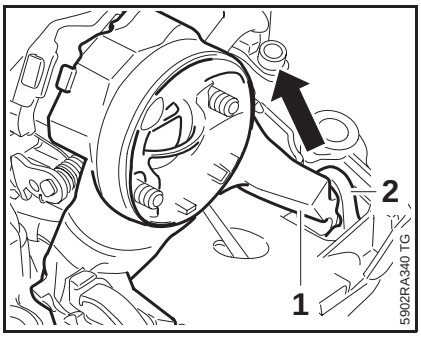
● Push the short circuit wire (1) out through the opening (arrow).

Models with heating

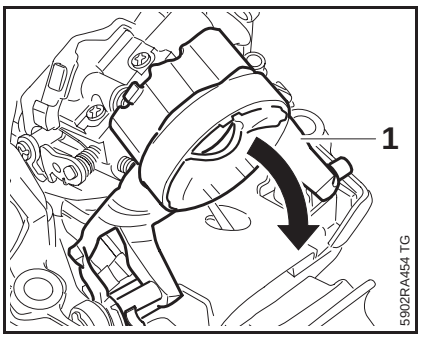


● Pull the wire (1) out of the guide (arrows).

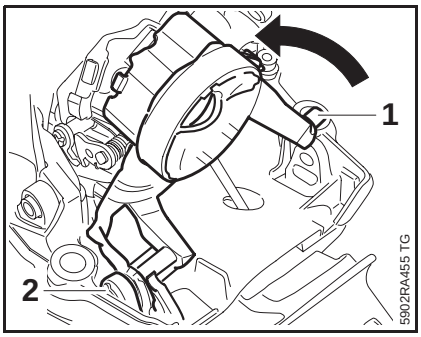
All models



● Pry the filter base (1) out of the buffer (2).

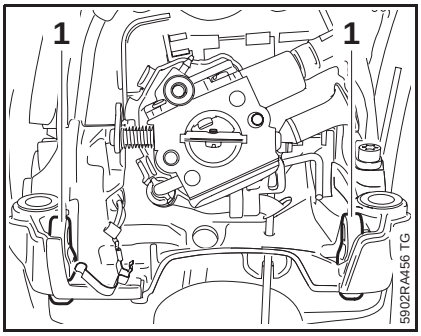


● Swing the filter base (1) in direction of throttle trigger until it is clear of the studs.



- Turn the filter base (1) in direction of ignition side.
- Disengage the filter base (1) from the buffer (2).

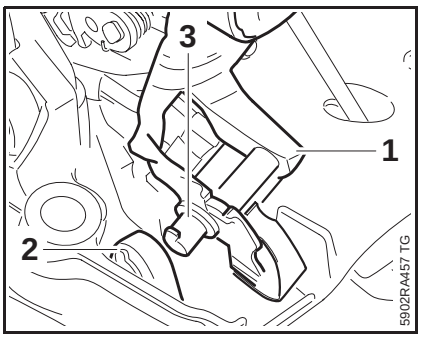
– Remove the contact spring, 🕮 7.7.4



– Check the buffers (1) and replace if necessary, 🕮 9.5.2

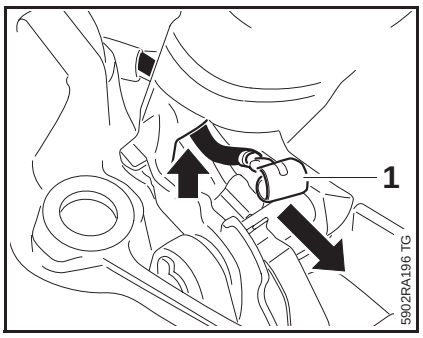
Installing

– Fit the contact spring, 🕮 7.7.4

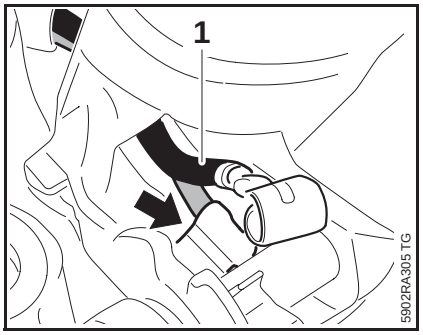


– Use STIHL press fluid to simplify assembly, 🕮 15

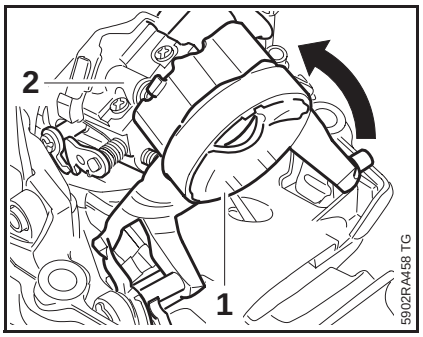
- Engage the filter base (1) in the buffer (2) – make sure the peg (3) is properly seated in the buffer.



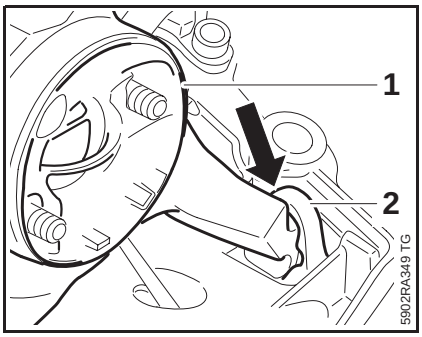
- Push the short short circuit (1) through the opening (arrow).



- Position the short circuit wire (1) so that it is above the ground wire's flag terminal (arrow).



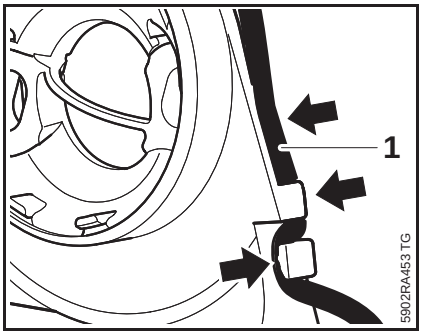
- Push the filter (1) onto the studs and the carburetor (2).



– Use STIHL press fluid to simplify assembly, 🕮 15

- Engage the filter base (1) in the buffer (2).

Models with heating



- Fit the wire (1) in the guide (arrows).

– Reassemble all other parts in the reverse sequence.

12.4 Air Guide Shrouds

– Remove the fan housing, 🕮 8.2

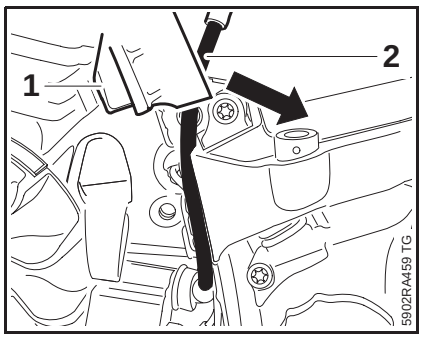
– Remove the filter base, 🕮 12.3

– Remove the throttle rod, 🕮 10.3.4

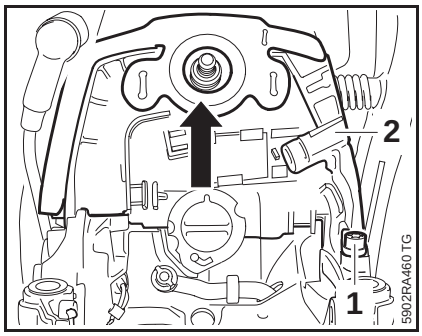
– Remove the carburetor, 🕮 12.5

– Remove the carburetor carrier, 🕮 12.8

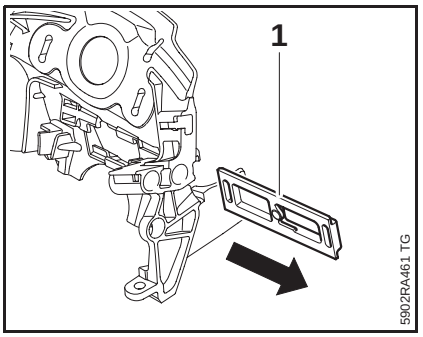
– Pull the boot off the spark plug.



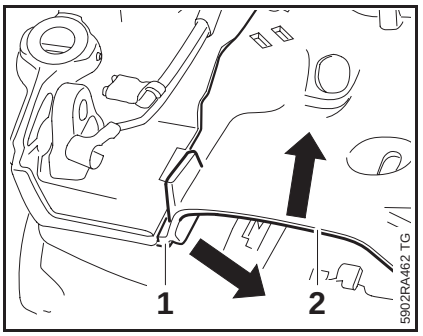
- Lift the air guide shroud (1) a little and pull out the ignition lead (2) – take care not to distort the air guide shroud.



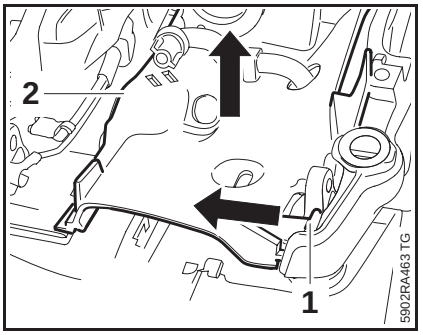
- Take out the screw (1).
- Lift the air guide shroud (2) a little and pull it out of its seats.



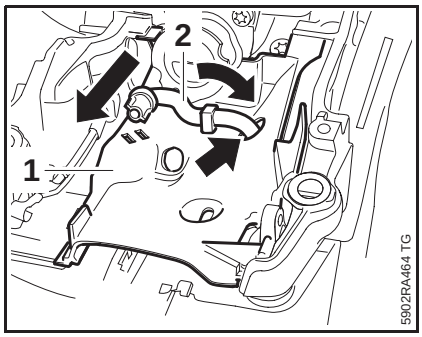
- Pull out the shutter (1), check it and replace if necessary.



- To simplify disassembly, lift the bottom of the air guide shroud (2) slightly during the following steps.
- Push the tab (1) towards the clutch side and lift the air guide shroud (2) out of its seat.

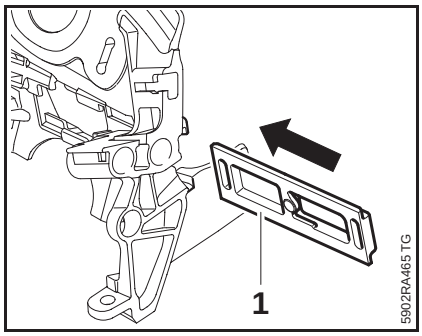


- Push the tab (1) towards the ignition side and lift the air guide shroud (2).

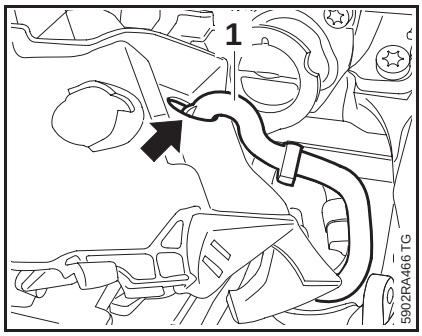


- Pull the air guide shroud (1) out of its seats and lift it away, removing the fuel hose (2) through the opening (arrow) at the same time.

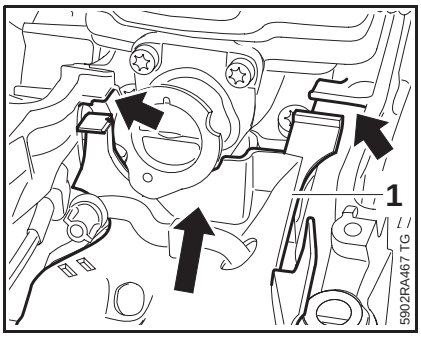
Installing



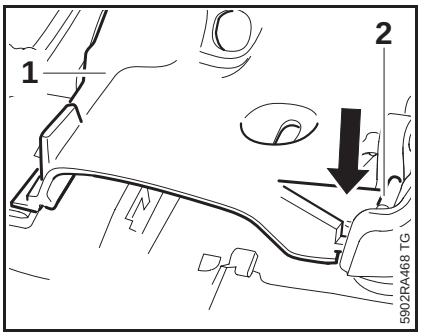
- Push the shutter (1) into the guide until it snaps into place.



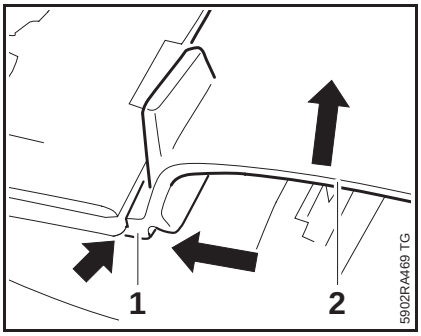
- Fit the fuel hose (1) through the opening (arrow) from the underside of the air guide shroud.



● Push the air guide shroud (1) into its seats (arrows).

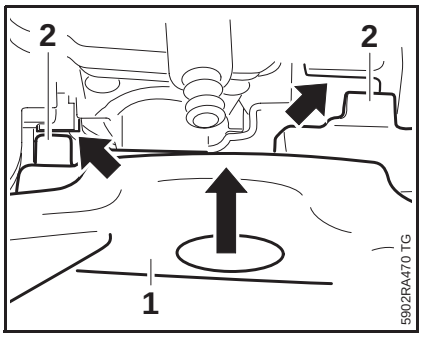


● Press the air guide shroud (1) into its seat until the tab (2) snaps into place.

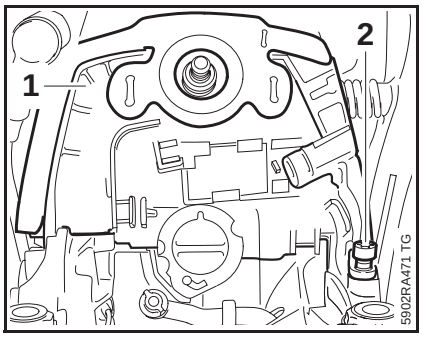


● To simplify assembly, lift the bottom of the air guide shroud (2) slightly during the following steps.

● Push the tab (1) towards the clutch side and under the edge of the housing (arrow).

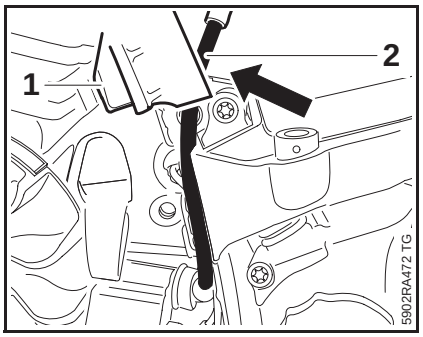


● Push the lugs (2) of the air guide shroud (1) into their seats (arrows).



– Place the air guide shroud (1) in position.

● Insert and tighten down the screw (2) firmly.



● Lift the air guide shroud (1) a little and place the ignition lead (2) in the guide
– take care not to distort the air guide shroud.

– Press the ignition lead (2) fully into the guide.

– Reassemble all other parts in the reverse sequence.

12.4.1 Air Guide Shrouds – Models with Manual Fuel Pump

– Remove the fan housing, 🕮 8.2

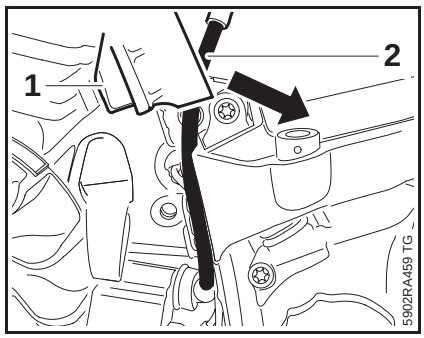
– Remove the filter base, 🕮 12.3

– Remove the throttle rod, 🕮 10.3.4

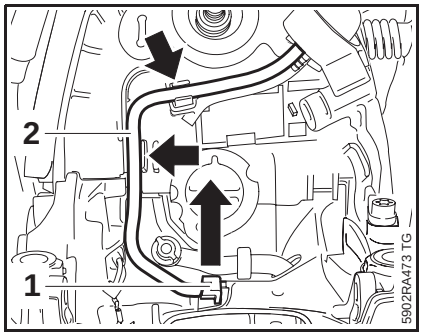
– Remove the carburetor, 🕮 12.5

– Remove the carburetor carrier, 🕮 12.8

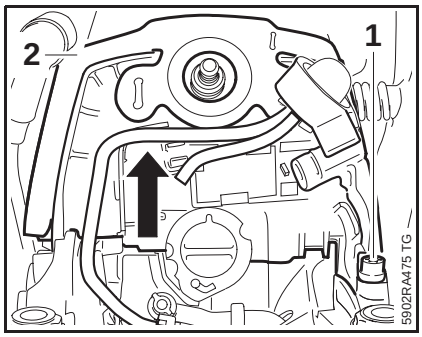
– Pull the boot off the spark plug.



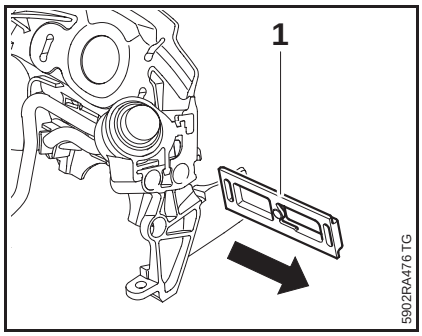
● Lift the air guide shroud (1) a little and pull out the ignition lead (2) – take care not to distort the air guide shroud.



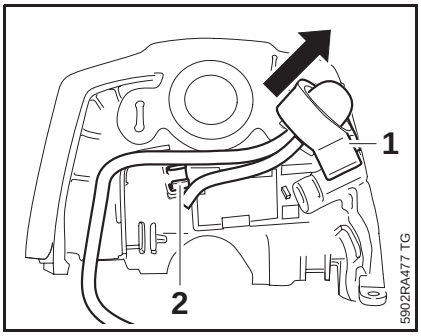
- Pull out the connector (1) with fuel return hose (2).
- Pull the fuel return hose (2) out of the guides (arrows).



- Take out the screw (1).
- Lift the air guide shroud (2) a little and pull it out of its seats.

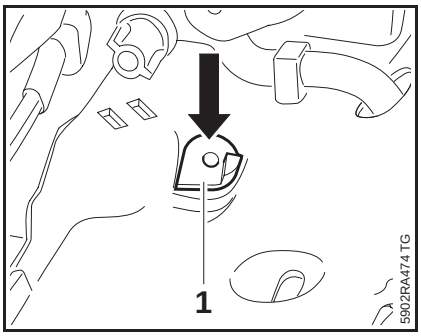


- Pull out the shutter (1), check it and replace if necessary.

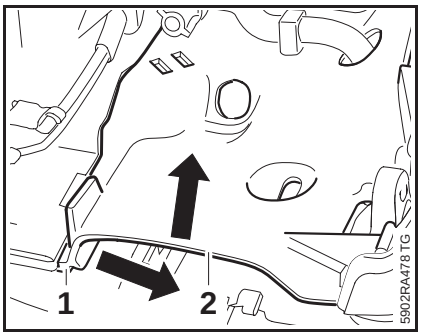


- Push the retainer (1) with fuel pump out of the guide.
- Remove the hose clip (2).

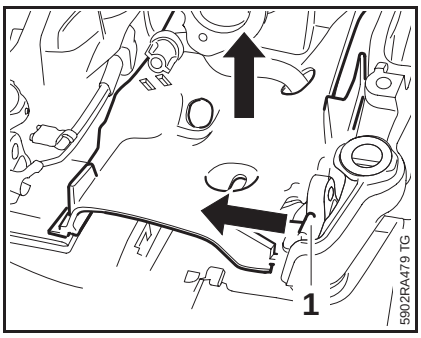
– Check the oil fuel pump and replace if necessary, 🕮 12.11.4



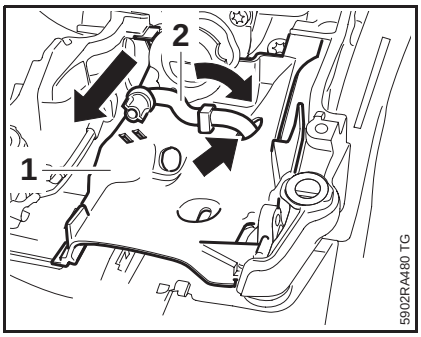
- Press out the fuel return hose (1) in direction of tank housing.



- To simplify disassembly, lift the bottom of the air guide shroud (2) slightly during the following steps.
- Push the tab (1) towards the clutch side and lift the air guide shroud (2) out of its seat.

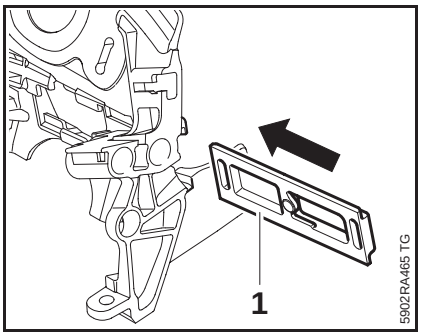


- Push the tab (1) towards the ignition side and lift the air guide shroud.

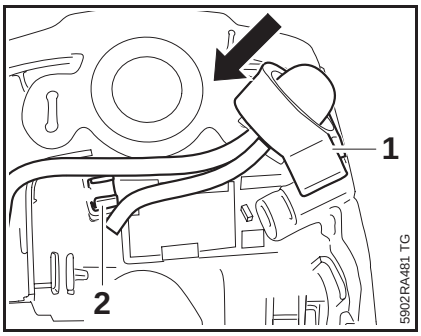


- Pull the air guide shroud (1) out of its seats and lift it away, removing the fuel hose (2) through the opening (arrow) at the same time.

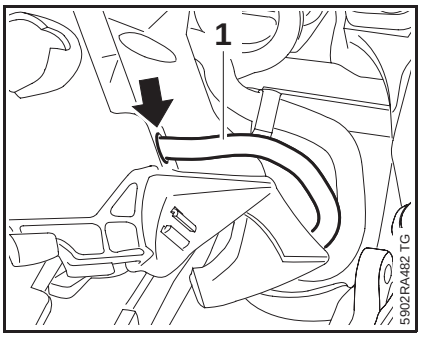
Installing



- Push the shutter (1) into the guide until it snaps into place.

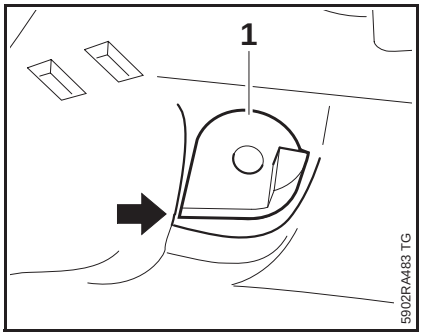


- Push the retainer (1) with fuel pump into the guide as far as stop.
- Position the hose clip (2) so that its locking tabs face the air guide shroud and press it into its seat.



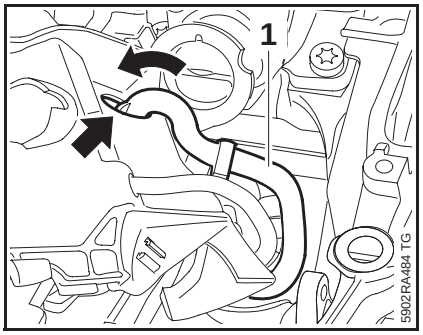
– Use STIHL press fluid to simplify assembly, 🕮 15

- Fit the fuel return hose (1) through the opening (arrow) from the underside of the air guide shroud.

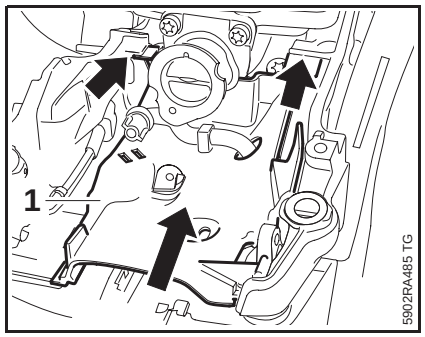


The fuel suction hose must locate properly in the bore.

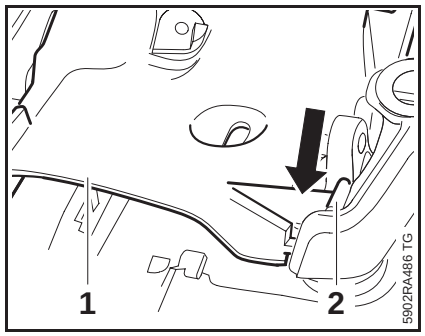
- Align the fuel suction hose (1) so that the flange is seated in the guide (arrow).



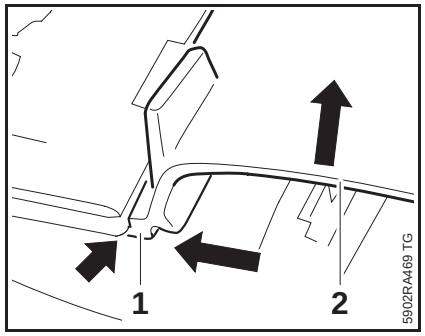
- Fit the fuel hose (1) through the opening (arrow) from the underside of the air guide shroud.



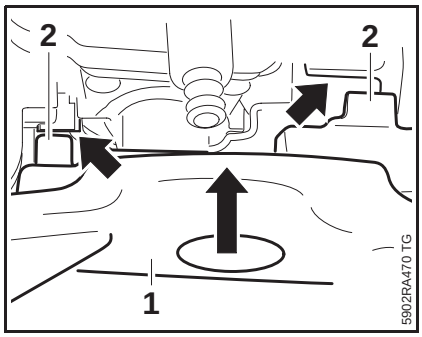
- Push the air guide shroud (1) into its seats (arrows).



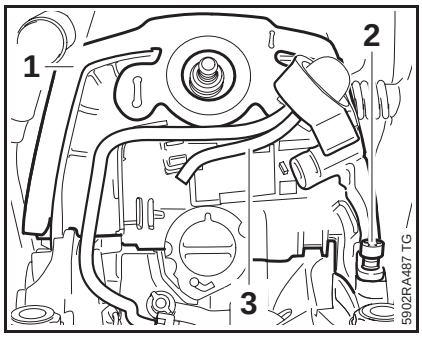
- Press the air guide shroud (1) into its seat until the tab (2) snaps into place.



- To simplify assembly, lift the bottom of the air guide shroud (2) slightly during the following steps.
- Push the tab (1) towards the clutch side and under the edge of the housing (arrow).



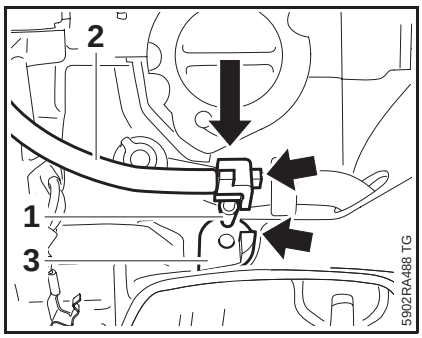
● Push the lugs (2) of the air guide shroud (1) into their seats (arrows).



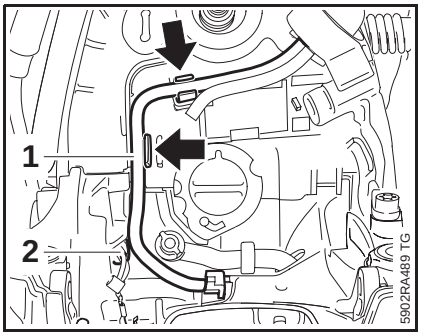
– Place the air guide shroud (1) in position.

● Insert and tighten down the screw (2) firmly.

– Fit a new fuel suction hose (3), 🕮 12.11.3



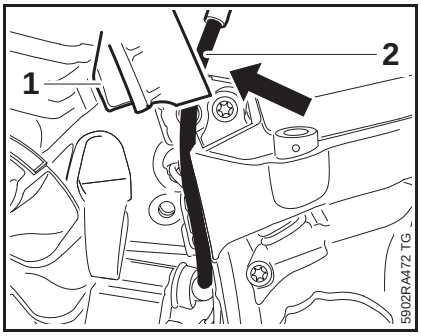
● Push the connector (1) with fuel return hose (2) into the fuel return hose (3) so that the contours (arrows) are in alignment.



● Push the fuel return hose (1) into the guides (arrows).

● Position the fuel return hose (1) so that it is beside the short circuit wire's grommet (2).

Do not kink or pinch the fuel return hose.



● Lift the air guide shroud (1) a little and place the ignition lead (2) in the guide
– take care not to distort the air guide shroud.

– Press the ignition lead (2) fully into the guide.

– Reassemble all other parts in the reverse sequence.

12.4.2 Air Guide Shrouds – Models with Heating

– Remove the fan housing, 🕮 8.2

– Remove the filter base, 🕮 12.3

– Remove the throttle rod, 🕮 10.3.4

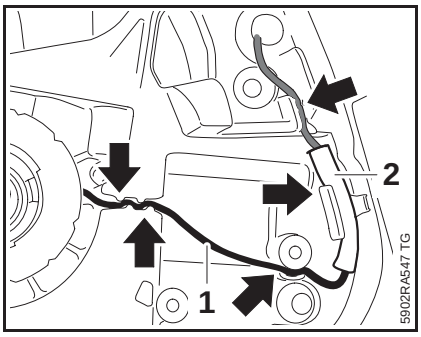
– Remove the carburetor, 🕮 12.5

– Remove the carburetor carrier, 🕮 12.8

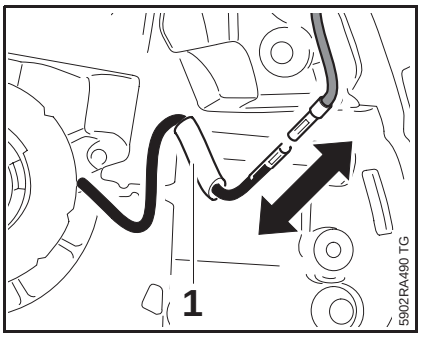
– Remove the ignition module, 🕮 7.3

– Remove the flywheel, 🕮 7.6

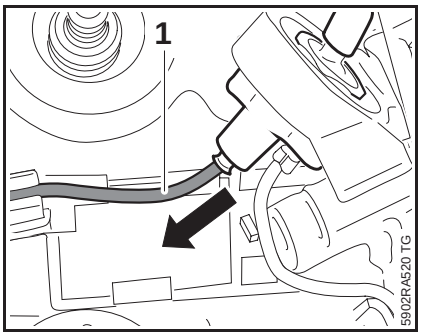
– Remove the short circuit wire, 🕮 7.7.2



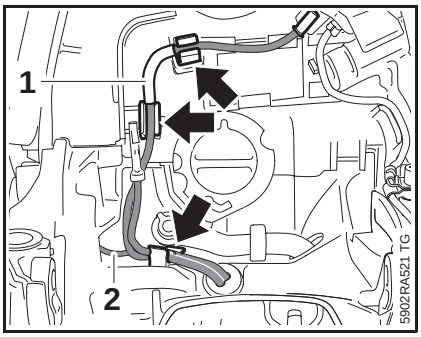
● Take the pin and socket connector with insulating tube (2) and generator wire (1) out of the guides (arrows).



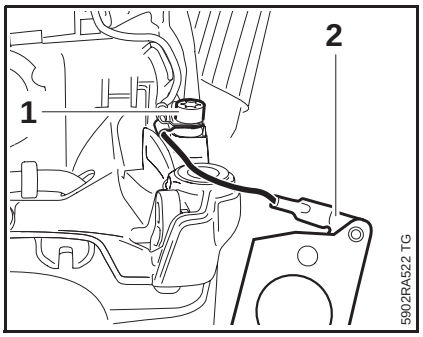
- Push back the insulating tube (1) in the direction of the generator and separate the pin and socket connector.



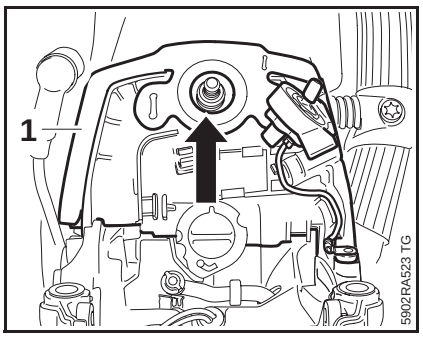
- Pull the wire (1) with connector sleeve out of the heater switch.



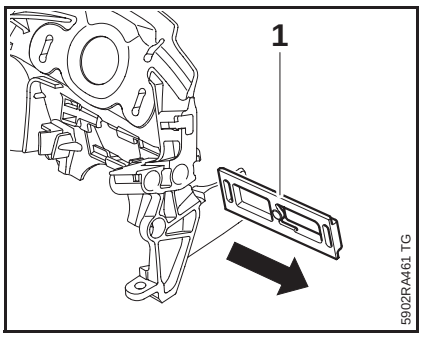
- Pull the wiring harness (1) out of the guides (arrows).
- Pull the generator wire (2) out of the hole.



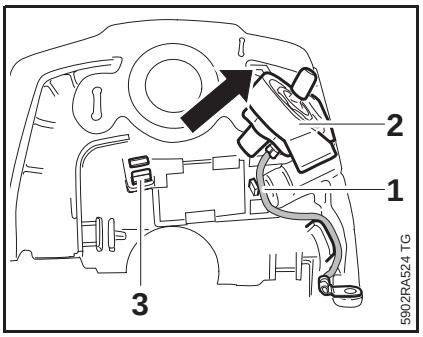
- Take out the screw (1).
- Remove the carburetor heating element (2).



- Lift the air guide shroud (1) with heater switch and ground wire a little and pull it out of its seats.



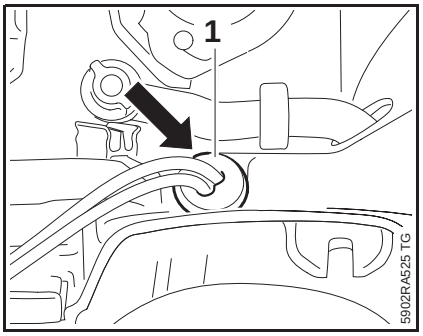
- Pull out the shutter (1), check it and replace if necessary.



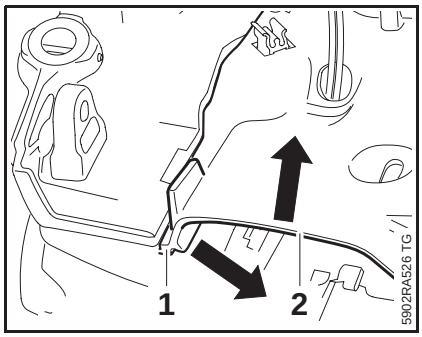
- Pull the ground wire (1) out of the guides.
- Push the retainer (2) with heater switch out of the guide.
- Remove the cable clip (3).

– Check the heater switch and replace it if necessary, 🕮 13.4

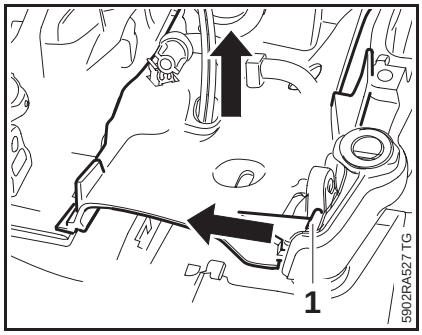
– Check the ground wire and replace it if necessary, 🕮 7.7.1



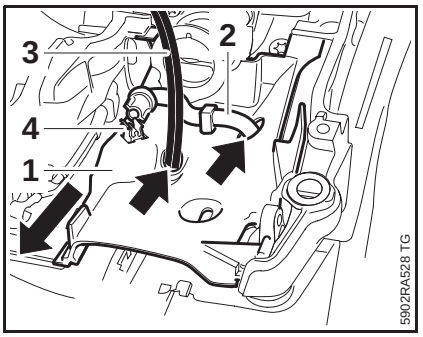
- Press out the grommet (1) in direction of tank housing.



- To simplify disassembly, lift the bottom of the air guide shroud (2) slightly during the following steps.
- Push the tab (1) towards the clutch side and lift the air guide shroud out of its seat.

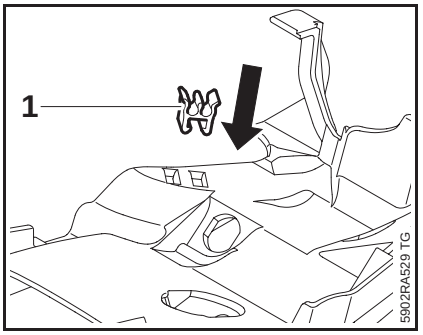


- Push the tab (1) towards the ignition side and lift the air guide shroud.

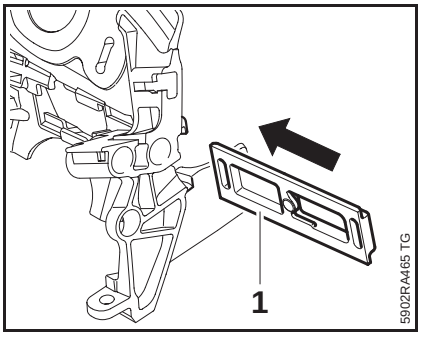


- Pull the air guide shroud (1) out of its seats and lift it away, removing the fuel hose (2) and wiring harness (3) through the openings (arrows) at the same time.
- Remove the cable clip (4).

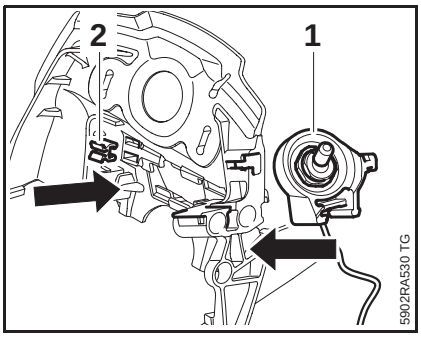
Installing



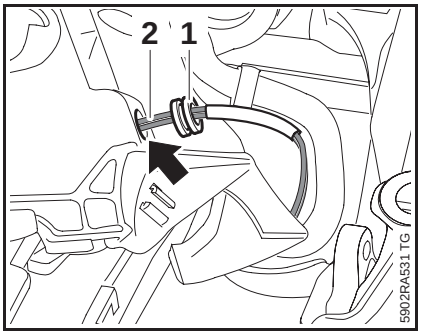
- Position the cable clip (1) so that its locking tabs face the air guide shroud and press it into its seat.



- Push the shutter (1) into the guide until it snaps into place.

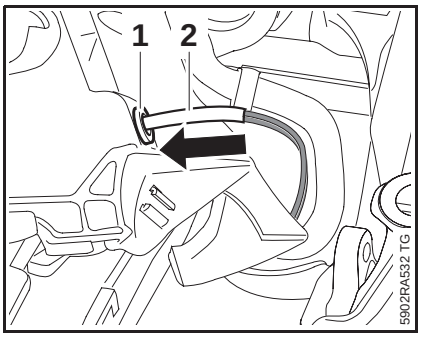


- Push the retainer (1) with heater switch into the guide as far as stop.
- Position the cable clip (2) so that its locking tabs face the air guide shroud and press it into its seat.



Make sure the grommet (1) is in place.

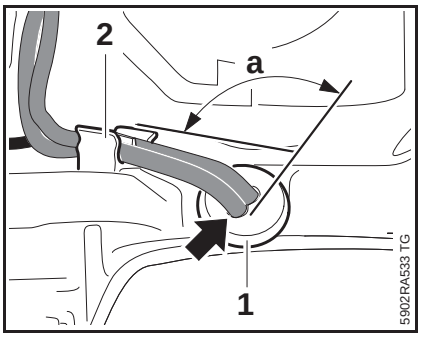
- Fit the wiring harness (2) through the hole (arrow) from the underside of the air guide shroud.



– Use STIHL press fluid to simplify assembly, 🕮 15

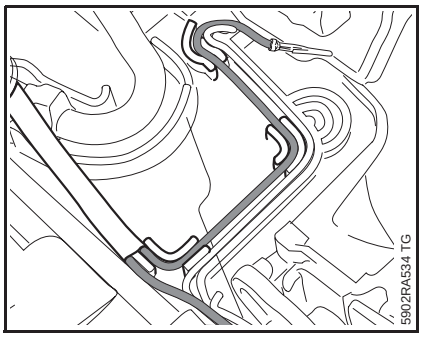
- Press the grommet (1) fully into the bore from the underside.

- Pull the wiring harness through until the protective tube (2) butts against the grommet.

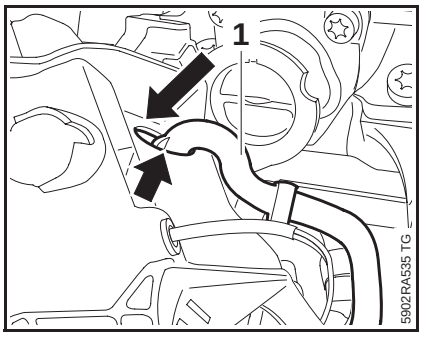


The grommet (1) must be properly seated in the bore.

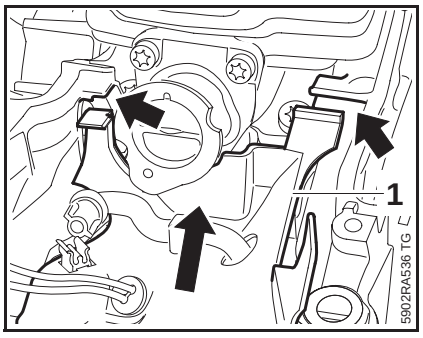
- Line up the grommet (1) so that its holes (arrow) are at an angle of a = 90° to the cable guide (2).



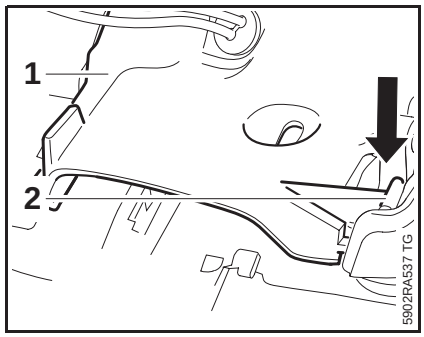
- The wiring harness must be properly seated in the guides on the tank housing, press it firmly into the guides if necessary.



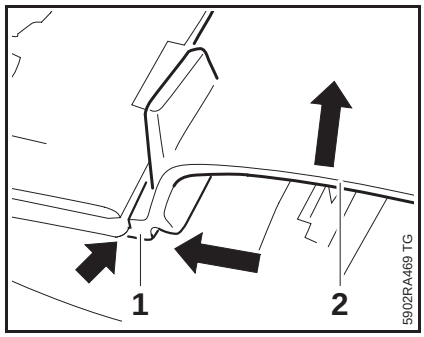
- Push the fuel hosea (1) through the opening (arrow) on the underside of the air guide shroud.



- Push the air guide shroud (1) into its seats (arrows).

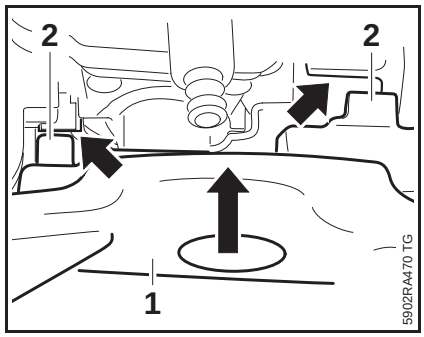


- Press the air guide shroud (1) into its seat until the tab (2) snaps into place.

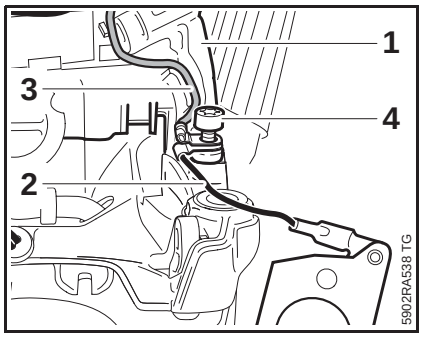


- To simplify assembly, lift the bottom of the air guide shroud (2) slightly during the following steps.

- Push the tab (1) towards the clutch side and under the edge of the housing (arrow).



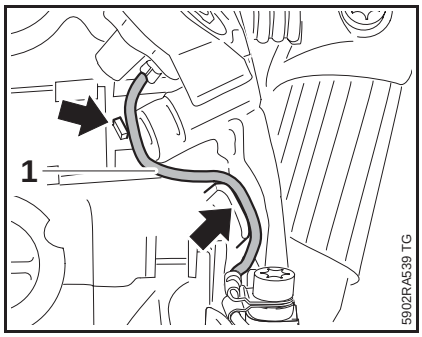
- Push the lugs (2) of the air guide shroud (1) into their seats (arrows).



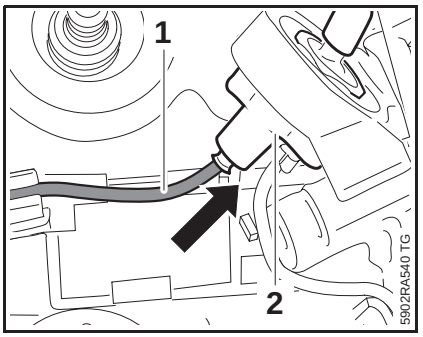
– Place the air guide shroud (1) in position.

- Position the wire (2) of the carburetor's heating element so that the crimped side of the terminal faces down.
- Position the ground wire (3) so that the crimped side of the terminal faces up.
- Insert and tighten down the screw (4) firmly.

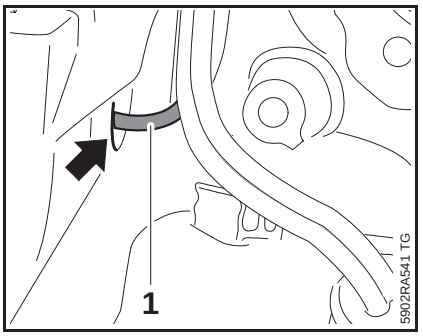
Do not twist the terminals.



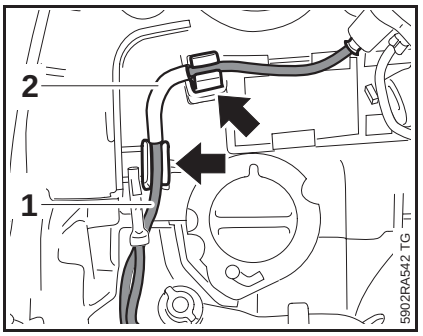
- Push the ground wire (1) into the guides (arrows).



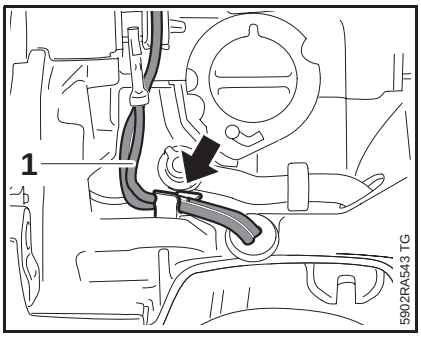
- Push the connector (1) into the heater switch (2) as far as stop.



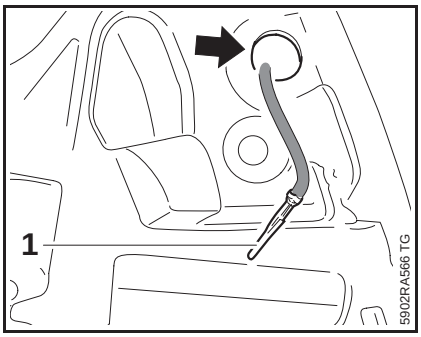
- Fit the generator wire (1) through the bore (arrow).



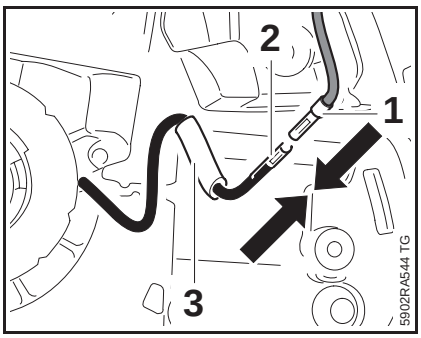
- Fit the wiring harness (1) into the guides so that the protective tube (2) butts against the guides (arrows).



- Fit the wiring harness (1) snugly and press it into the guide (arrow).

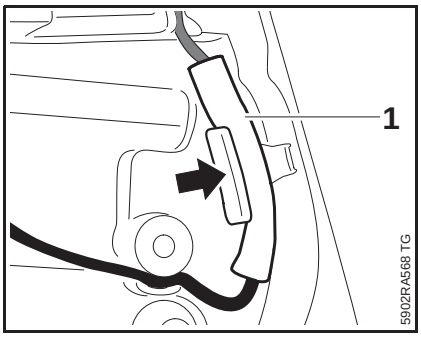


- Pull the generator wire (1) through the bore (arrow).

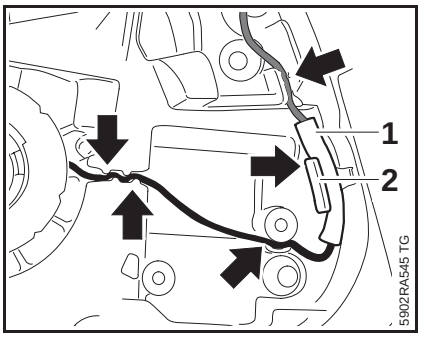


- Connect the pin (1) and socket (2).

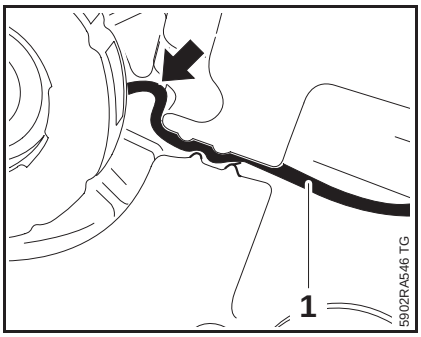
– Push the insulating tube (3) over the connector.



- Center the connector and insulating tube (1) in the guide (arrow).



- Press the generator wire and wiring harness into the guides (arrows).
- Push the pin and socket connector with insulating tube (1) into the guide (2).



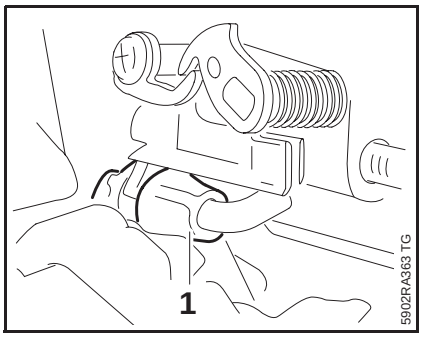
Generator wire (1) must be seated at the bottom of the recess (arrow).

– Install the ignition module, 🕮 7.3
– Install the short circuit wire, 🕮 7.7
– Install the carburetor, 🕮 12.5
– Reassemble all other parts in the reverse sequence.

12.5 Carburetor

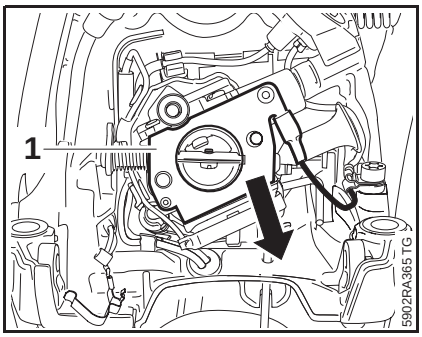
– Remove the filter base, 🕮 12.3
– Open the fuel tank cap and drain the fuel tank.
– Collect the fuel in a clean container, 🕮 1

Disconnect the fuel hose only when the tank cap is open.

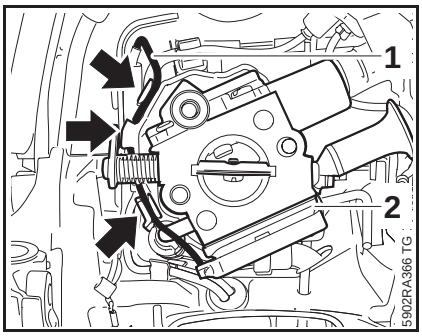


- Push the fuel hose (1) back a little – the fuel hose is disconnected.

Models with handle and carburetor heating

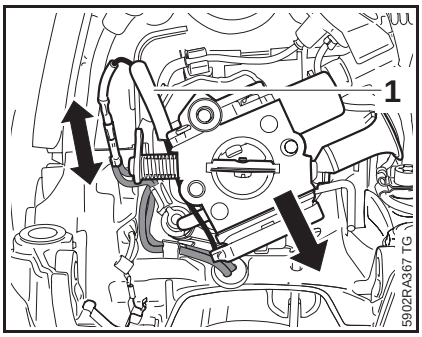


- Remove the heating element (1).



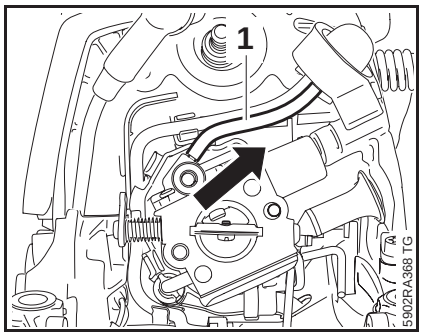
- Remove the wire (1) from the guides (arrows).

– Pull the carburetor (2) out a little.



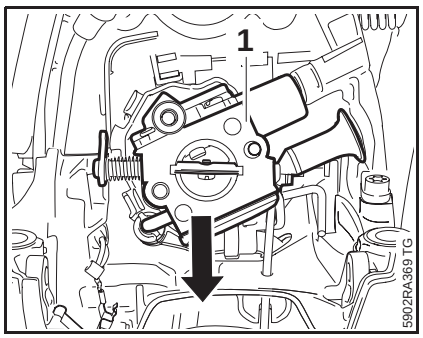
- Push the insulating tube (1) in the direction of the thermostatic switch and separate the pin and socket connector.

Models with manual fuel pump



- Remove the fuel hose (1).

All models



- Remove the carburetor (1).

– Check the carburetor and service or replace if necessary.

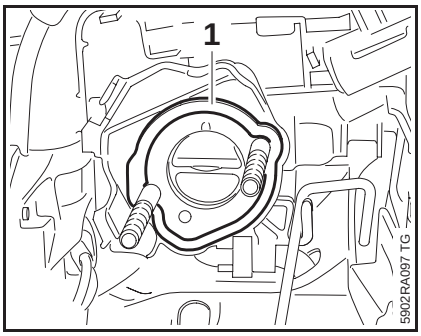
Models with handle and carburetor heating

– Check the thermostatic switch and replace if necessary, 🕮 13.1.3

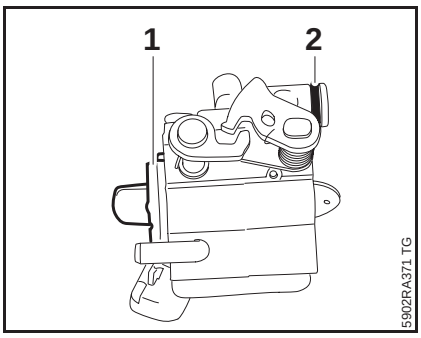
Models with manual fuel pump

– Install a new fuel hose, 🕮 11.2

Installing



Make sure the washer (1) is in place.

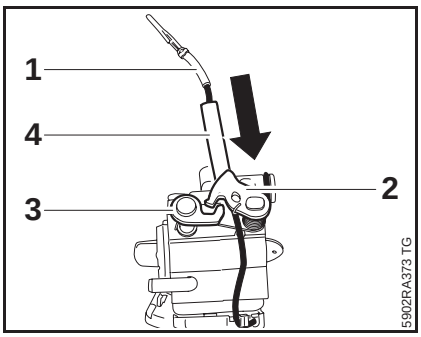


Make sure the ring (1) is in place.

Make sure sealing ring (2) is in place.

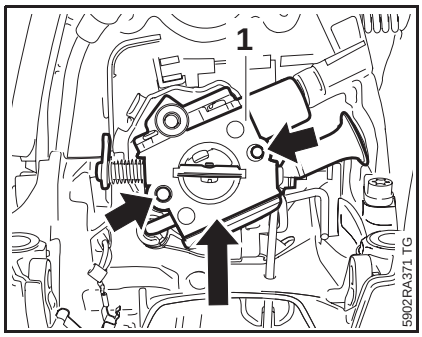
– Check the components and replace as necessary.

Models with handle and carburetor heating

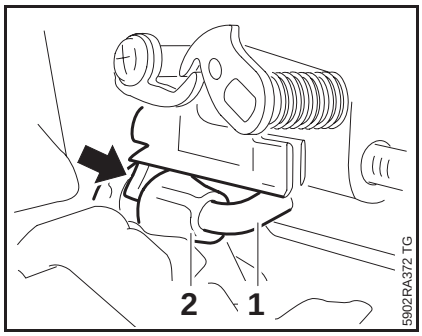


- Fit the wire (1) behind the levers (2) and (3).

- Fit the insulating tube (4).



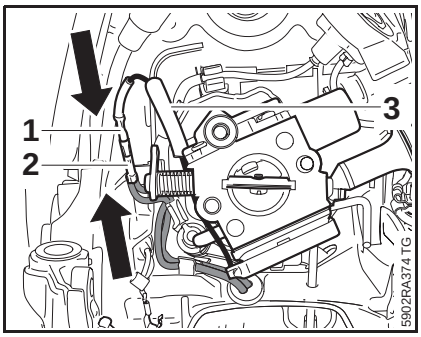
- Push the carburetor (1) onto the studs (arrows).



– The fuel hose must be located in its seat (arrow).

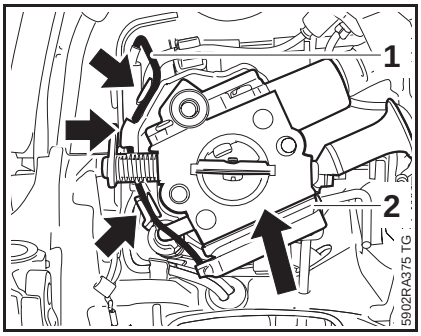
- When positioning the carburetor, make sure the stub (1) is pushed into the fuel hose (2).

Models with handle and carburetor heating



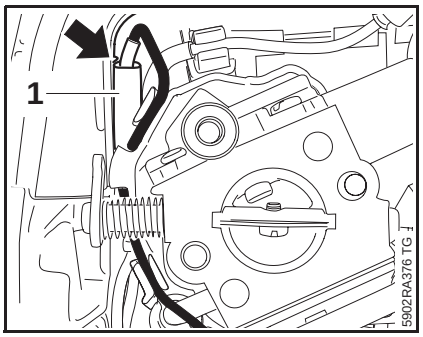
- Connect the pin (1) and socket (2).

– Push the insulating tube (3) over the pin and socket connector – turn it back and forth if necessary.

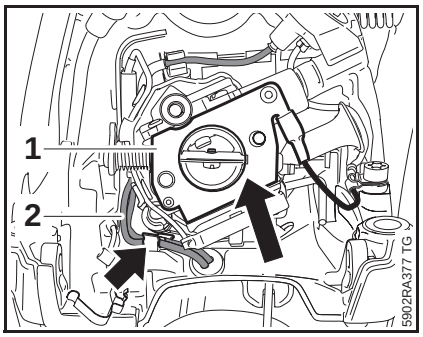


- Fit the wire (1) in the guides (arrows).

- Push the carburetor (2) fully home as far as stop.



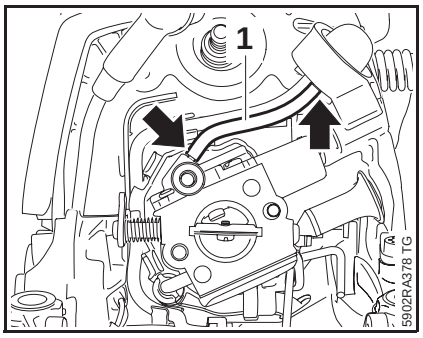
- Push the insulating tube (1) and connector into the guide so that it butts against the web (arrow).



- Fit the heating element (1).

– The wiring harness (2) must be properly seated in the guide (arrow) – press it firmly home if necessary.

Models with manual fuel pump



- Push the new fuel hose (1) onto the nipples (arrows).

All models

– Install the filter base, 🕮 12.3

– Install the air filter, 🕮 12.1

– Check operation

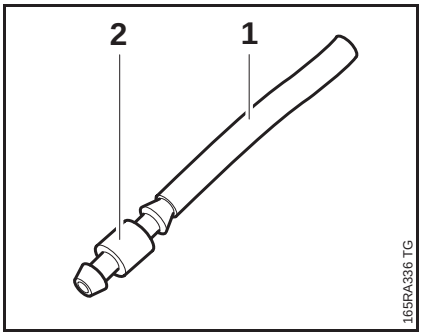
– Reassemble all other parts in the reverse sequence.

12.5.1 Leakage Test

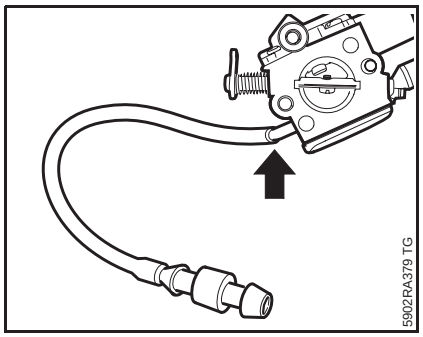
In the case of problems with the carburetor or fuel supply system, also check and clean or replace the tank vent, 🕮 12.10

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

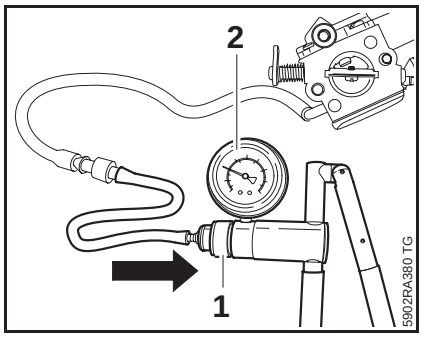
– Remove the carburetor, 🕮 12.5



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



● Push the fuel hose with nipple onto the carburetor's fuel stub (arrow).



– Push the pressure hose of pump 0000 850 1300 onto the nipple.

● Push the ring (1) to the right and pump air into the carburetor until the pressure gauge (2) indicates a pressure of about 0.8 bar (80 kPa).

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

1. The inlet needle is not sealing (foreign matter in valve seat, sealing cone of inlet needle is damaged or inlet control lever is sticking), remove to clean, 🕮 12.6.2 or 🕮 12.6.2

2. Metering diaphragm or gasket damaged, replace if necessary, 🕮 12.6.1 or 🕮 12.10.1

3. Pump diaphragm or gasket damaged, replace ifnecessary, 🕮 12.6.3 or 🕮 12.10.1

– After completing the test, push the ring (1) to the left to vent the system and then pull the fuel hose off the carburetor.

– Install the filter base, 🕮 12.3

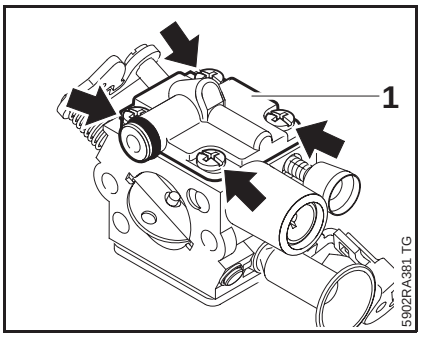
– Reassemble all other parts in the reverse sequence.

12.6 Servicing the Carburetor

12.6.1 Metering Diaphragm

– Troubleshooting, 🕮 3.6

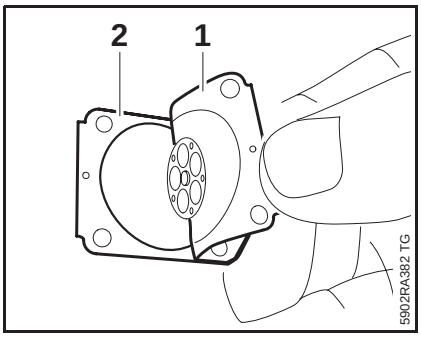
– Remove the carburetor, 🕮 12.5



● Take out the screws (arrows).

● Remove the end cover (1).

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

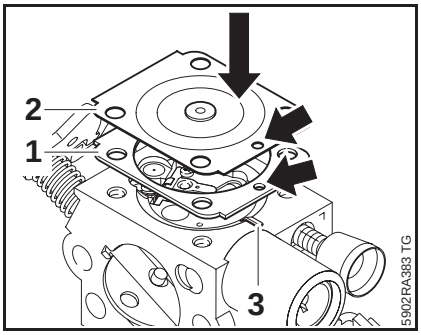


● Carefully separate the metering diaphragm (1) and gasket (2).

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.

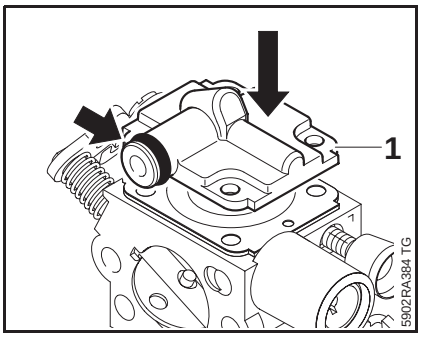
– Check the metering diaphragm for signs of damage and wear. Install a new gasket.

Installing



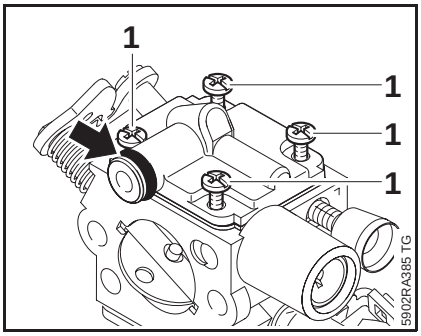
– Note installed positions of metering diaphragm (2) and gasket (1).

● Position the gasket (1) and metering diaphragm (2) so that the holes (arrows) are in line with the recess (3).



- Position the end cover (1) so that the stub (arrow) points in the direction of the choke shutter.

– Fit the end cover (1) and line up the holes.



- Fit the screws (1).

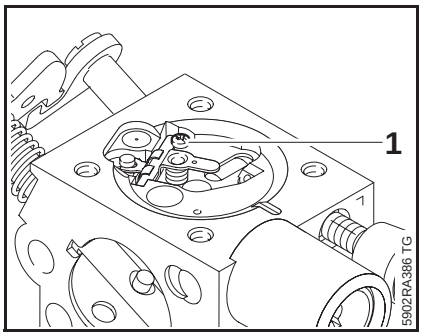
– Check position of metering diaphragm and gasket, then tighten down the screws firmly in a crosswise pattern.

- Check the sealing ring (arrow) and replace it if necessary

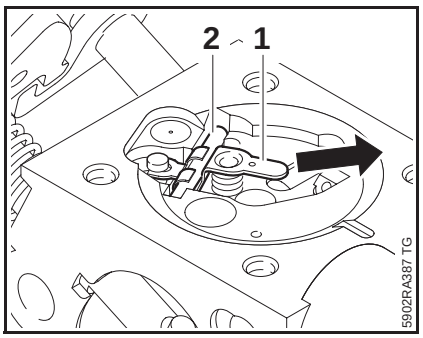
– Reassemble all other parts in the reverse sequence.

12.6.2 Inlet Needle

– Remove the metering diaphragm, 🕮 12.6.1

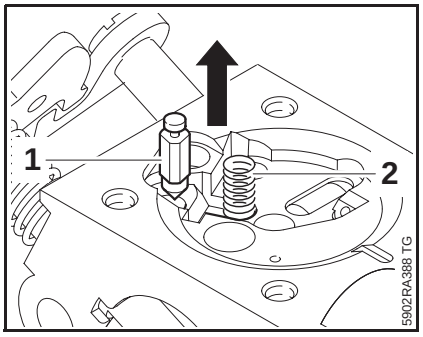


- Take out the screw (1).



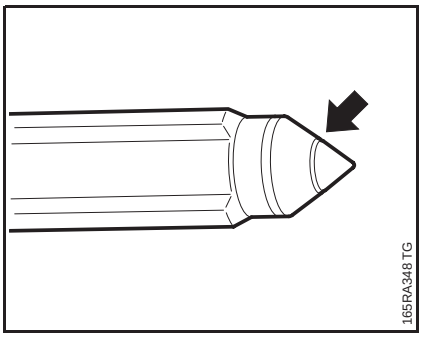
- Pull the inlet control lever (1) with spindle (2) out of the inlet needle's groove.

The small spring under the inlet control lever may pop out.



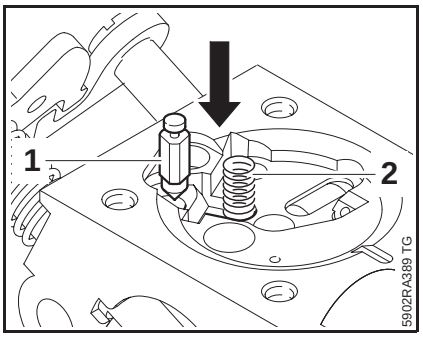
- Remove the inlet needle (1).

- Remove the spring (2). Inspect and replace if necessary.



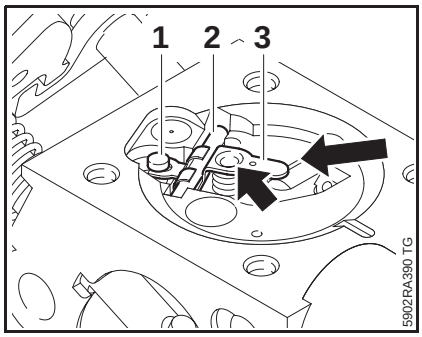
- If there is an annular indentation (arrow) on the sealing cone of the inlet needle, fit a new inlet needle.

Installing



- Fit the inlet needle (1).

- Fit the spring (2) in the bore.



- Position the inlet control lever (3) with spindle (2) on the spring (arrow) first, then slide the inlet control lever's clevis into the groove in the inlet needle (1).

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

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

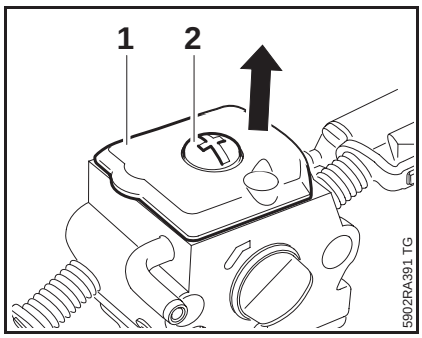
– Check that the inlet control lever moves freely.

– Install the metering diaphragm, 🕮 12.6.1

12.6.3 Pump Diaphragm

– Troubleshooting, 🕮 3.6

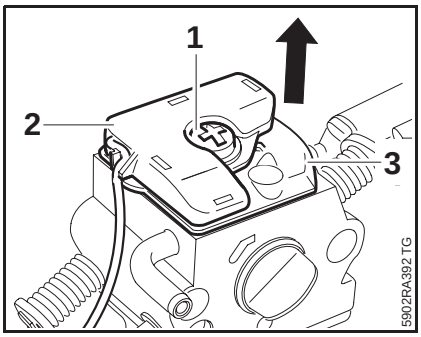
– Remove the carburetor, 🕮 12.5



- Take out the screw (1).

- Remove the end cover (2).

Models with handle and carburetor heating

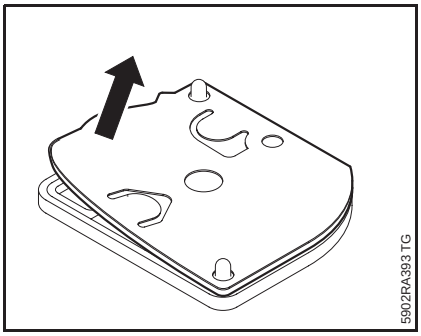


- Take out the screw (1).

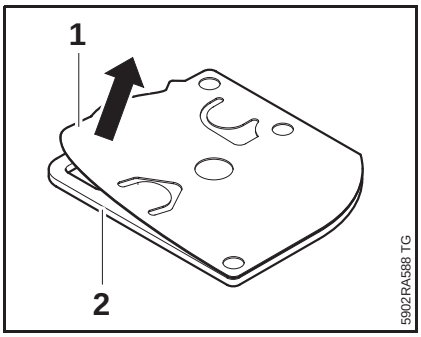
- Remove the thermostatic switch (2).

- Remove the end cover (3).

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



- Carefully remove the pump diaphragm with gasket.

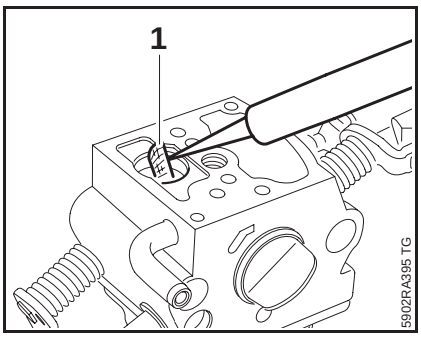


- Carefully separate the pump diaphragm (1) and gasket (2).

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.

– Check the pump diaphragm for signs of damage and wear. Install a new gasket.

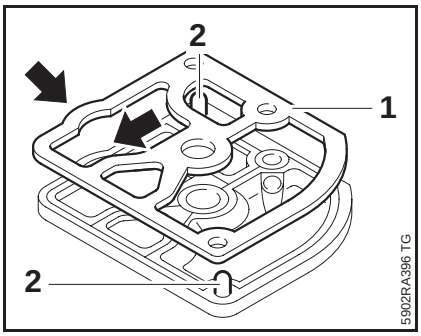
– Check fuel strainer for contamination and damage. Clean or replace if necessary.



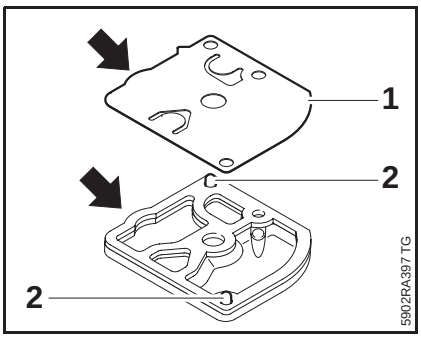
- Use a needle to remove the fuel strainer (1) from the carburetor body. Clean or replace the fuel strainer.

– Reassemble in the reverse sequence.

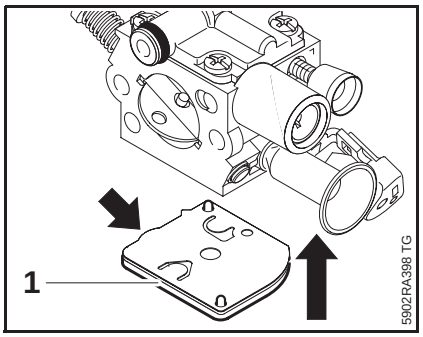
Installing



- Fit the new gasket (1) so that the contours (arrows) match and it is held in position by the pegs (2).



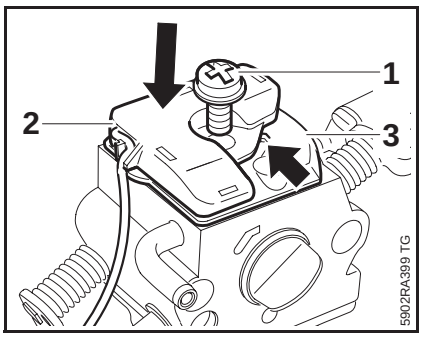
- Fit the pump diaphragm (1) on the gasket so that the contours (arrows) match and it is held in position by the pegs (2).



– Fit the end cover (1) from below so that the pump diaphragm and gasket are still held in position.

- Position the end cover (1) so that the contour (arrow) points in the direction of the throttle and choke shaft levers.

Models with heating



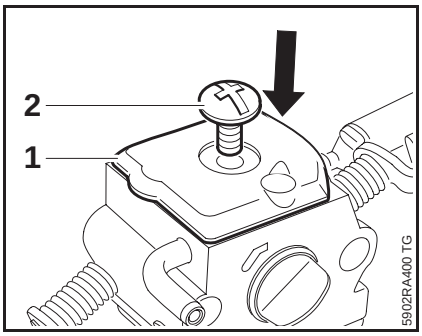
– Move the end cover (3) back and forth until its pegs engage the holes in the carburetor body.

- Position the thermostatic switch (2) so that it butts against the hump (arrow).

– Check that the pump diaphragm and gasket are properly seated.

- Fit the screw (1) with washers and tighten it down firmly.

All models



– Move the end cover (1) back and forth until its pegs engage the holes in the carburetor body.

– Check that the pump diaphragm and gasket are properly seated.

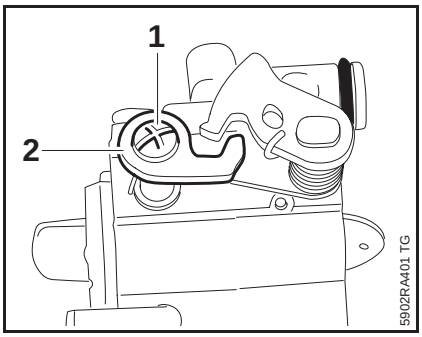
- Insert and tighten down the screw (2) firmly.

– Reassemble all other parts in the reverse sequence.

12.6.4 Levers on Throttle Shaft

– Remove the carburetor, 🕮 12.5

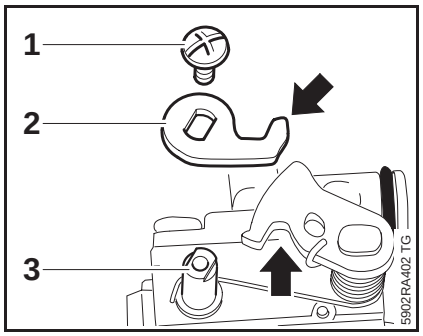
– Carburetor troubleshooting, 🕮 3.6



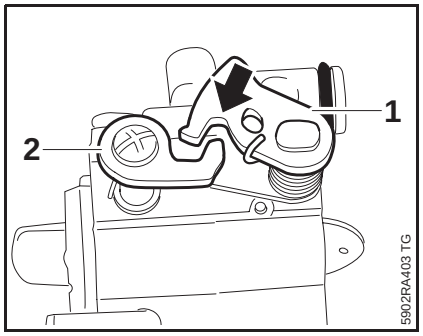
- Take out the screw (1).

- Pull off the lever (2).

Installing



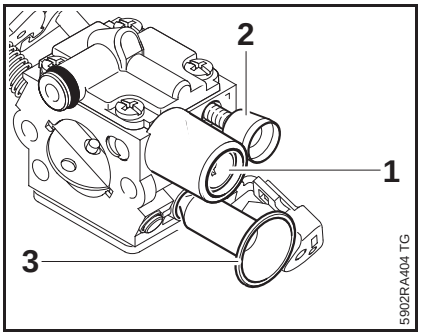
- Position the lever (2) so that its hook engages the lever on the choke shaft (arrows).
- Push the lever (2) onto the throttle shaft so that it engages the flats on the end of the shaft (3).
- Insert and tighten down the screw (1) firmly.



- Check operation
  – lever (1) must engage lever (2) (arrow).

– Reassemble all other parts in the reverse sequence.

12.6.5 Adjusting Screws



Grommet has been removed for the sake of clarity.

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 cannot be adjusted properly, the problem may be the adjusting screws.

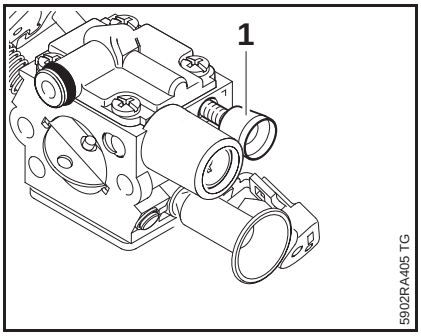
The high speed screw **H** has a limiter cap, which has to be removed before the screw is removed.

Always install a new limiter cap.

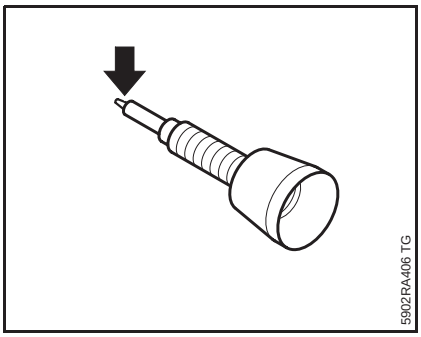
– Remove the carburetor, 🕮 12.5

– See also carburetor troubleshooting, 🕮 3.6

Low speed screw



- Take out the low speed screw **L** (1).



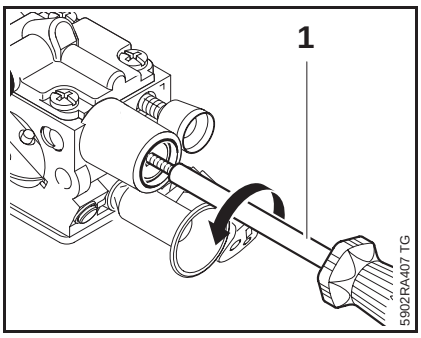
- Inspect the tip (arrow) for damage or wear and replace the low speed screw (**L**) if necessary.

– Screw down the low speed screw (**L**) as far as stop.

– Continue with the high speed screw **H**.

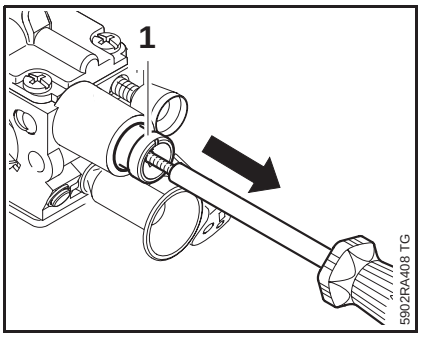
High speed screw

The high speed screw **H** has a limiter cap, which has to be removed before the screw is removed.



- Screw the puller (1) 5910 890 4502 about 5 turns counterclockwise into the limiter cap
  – left-hand thread.

– Do not turn the puller (1) any further
  – the high speed screw (**H**) may otherwise be damaged.

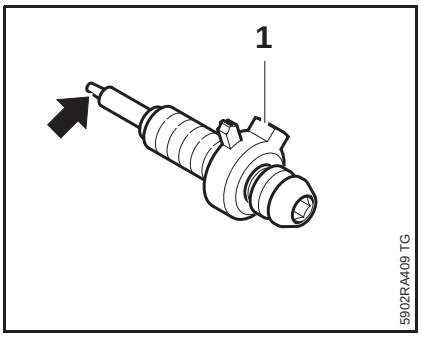


● Pull out the limiter cap (1).

The polymer segment is left on the high speed screw (**H**) after the limiter cap has been pulled off. It is necessary to unscrew the high speed screw (**H**) to remove the old polymer segment.

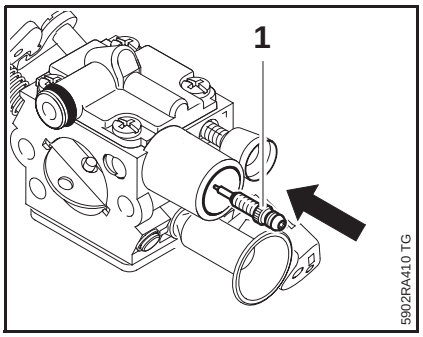
– Take out the high speed screw (**H**).

Always install a new limiter cap.



● Inspect the tip (arrow) for damage or wear and replace the screw (**H**) if necessary.

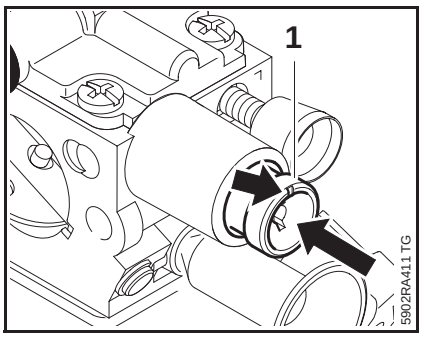
● If the high speed screw (**H**) is in order, remove the old polymer segment (1)
– take care not to damage the high speed screw (**H**).



● Screw down the high speed screw **H** (1) as far as stop.

– Continue with "Pre-installing limiter cap".

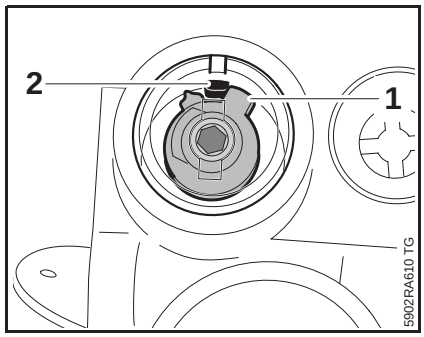
Pre-installing limiter cap



Make sure the stop on the limiter cap is clear of the stop on the carburetor body.

● Line up the new limiter cap (1) so that the notch (arrow) points vertically upwards.

● Push the new limiter cap (1) onto the high speed screw (**H**) as far as the first detent (arrow)
– do not push fully home.



When pushing the limiter cap into position, check that the stop (1) on the limiter cap butts against the right-hand side of the carburetor's stop (2).

The basic setting with the pre-installed limiter cap is carried out with screwdriver 5910 890 2306.

– Reassemble in the reverse sequence.

– Carry out the basic setting, 🕮 12.7.1

12.7 Adjusting the Carburetor

12.7.1 Basic Setting

The basic setting is necessary only if the high speed screw (**H**) or low speed screw (**L**) has to be replaced or after cleaning and adjusting the carburetor from scratch.

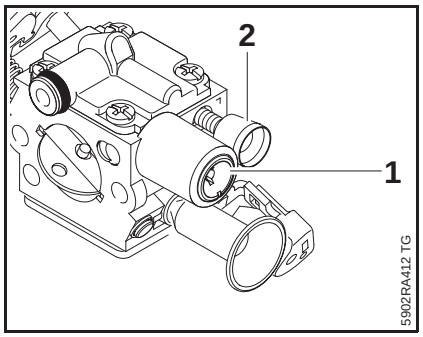
It is necessary to carry out the basic setting after removing the limiter cap.

The carburetor, air filter and grommet are installed, the adjusting screws fitted and the new limiter cap pre-installed.

– Check chain tension and adjust if necessary.

– Inspect the spark arresting screen (if fitted) and clean or replace if necessary, 🕮 3.7 or 🕮 6.1

– Check the air filter and clean or replace if necessary, 🕮 12.1



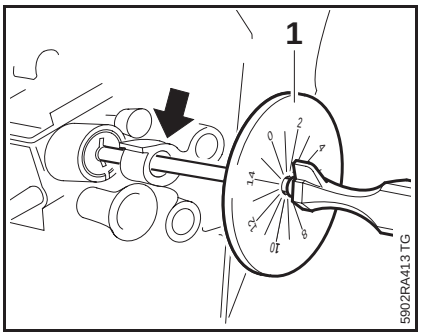
For the sake of clarity the adjusting screws are shown on the exposed carburetor.

● Starting with the high speed screw **H** (1) against its seat, open it **1 1/2 turns** counterclockwise
– this is the basic setting.

● Starting the with low speed screw **L** (2) against its seat, open it **1 full turn** counterclockwise
– this is the basic setting.

– Warm up the engine.

Setting disk 5910 893 6600 may be fitted on the screwdriver 5910 890 2306 to simplify adjustments.



● Insert screwdriver (1) 5910 890 2306 through the opening (arrow) and into the low speed screw **L** and high speed screw **H**
– push the screwdriver through the pre-installed limiter cap on the high speed screw **H**.

Adjust idle speed with a tachometer. Adjust specified engine speeds within a tolerance of ± 200 rpm.

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

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

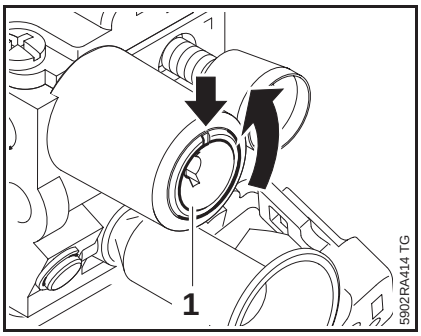
If this speed is higher than 3,700 rpm, abort the procedure and start again with step 1.

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

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

5. Use the high speed screw**(H**) to set the maximum engine speed to 14,000 rpm.

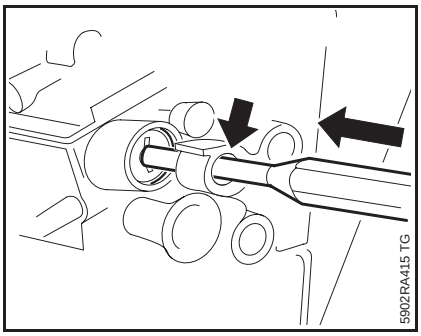
Checking position of limiter cap



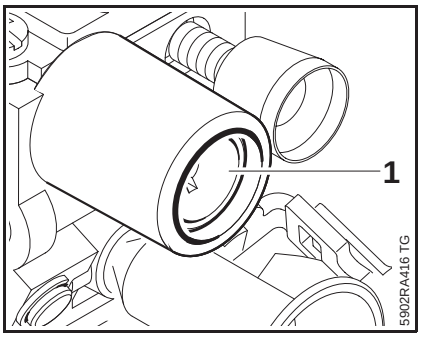
Notch (arrow) in limiter cap (1) must point vertically upwards.

● If necessary, use a suitable screwdriver to rotate the limiter cap (1) clockwise as far as stop
– the notch (arrow) is at the top.

Securing the limiter cap



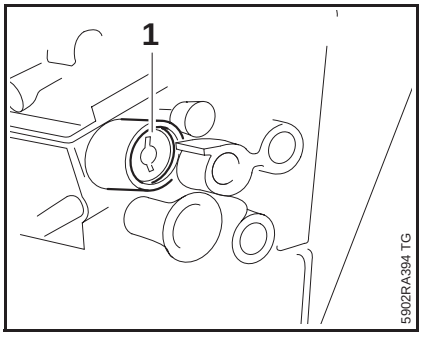
- Insert a drift through the opening (arrow) and then push home the limiter cap until it engages.



This completes the basic setting of the high speed screw (**H**) and the low speed screw (**L**).

The setting of the high speed screw (**H**) is fixed when the limiter cap (1) is recessed 2mm in the carburetor body.

12.7.2 Standard setting



The limiter cap (1) must not be removed for the standard setting.

Always perform the following steps before carrying out any adjustments:

– Troubleshooting, 🕮 3.6

– Check chain tension and adjust if necessary.

– Inspect the spark arresting screen (if fitted) and clean or replace if necessary, 🕮 3.7 or 🕮 6.1

– Check the air filter and clean or replace if necessary, 🕮 12.1

Standard setting

– Shut off the engine.

– Turn the high speed screw (**H**) slowly counterclockwise as far as stop, but not more than a 3/4 turn.

– Turn the low speed screw (**L**) slowly clockwise as far as stop, then turn it back 1 full turn.

Check running behavior:
The engine must idle and accelerate smoothly.

Adjusting engine idle speed

– Carry out standard setting.

– Warm up the engine.

Engine stops while idling

– Turn the idle speed screw (**LA**) clockwise until the chain begins to run, then turn it back 1 full turn.

Saw chain runs while engine is idling

– Turn the idle speed screw (**LA**) counterclockwise until the chain stops running, then turn it back 1 full turn.

Erratic idling behavior, poor acceleration
(although standard setting is correct)

Idle setting too lean.

– Warm up the engine.

– Turn low speed screw (**L**) counterclockwise until the engine runs and accelerates smoothly.

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

Adjustment for operation at high altitude

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

– Check standard setting.

– Warm up the engine.

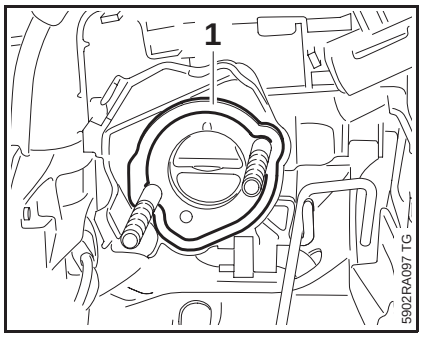
– Turn the high speed screw (**H**) clockwise (leaner) – no further than stop.

Turn the adjusting screws only very slightly. Even minor adjustments can noticeably affect engine running behavior.

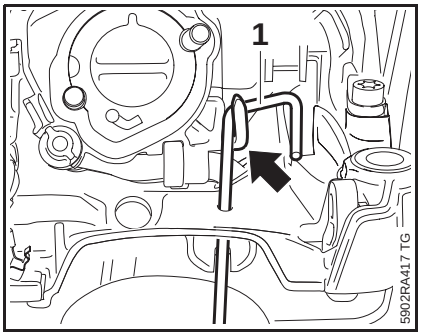
If the setting is made too lean there is a risk of engine damage as a result of lack of lubrication and overheating.

12.8 Carburetor Carrier

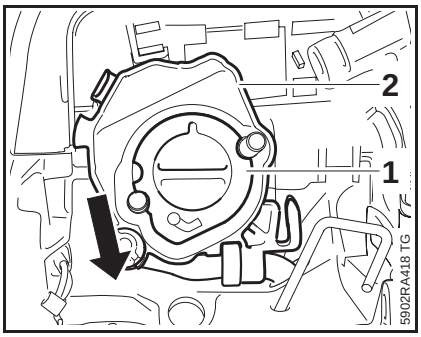
– Remove the carburetor, 🕮 12.5



● Remove the sleeve (1).

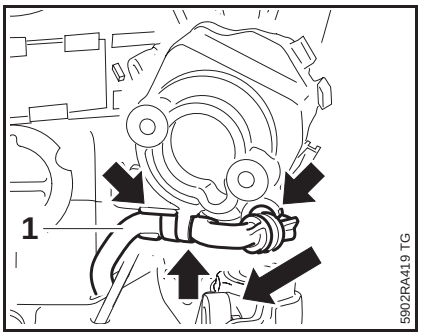


● Pull the throttle rod (1) out of the guide (arrow) and put it to one side.



Take care not to damage the fuel hose when removing the carburetor carrier.

● Push the manifold flange (1) out of the carburetor carrier (2) in the direction of the cylinder, pulling the carburetor carrier away at the same time.

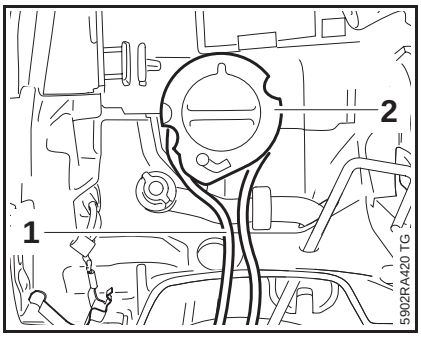


● Remove the fuel hose (1) from the guides (arrows)
– take care not to stretch the hose.

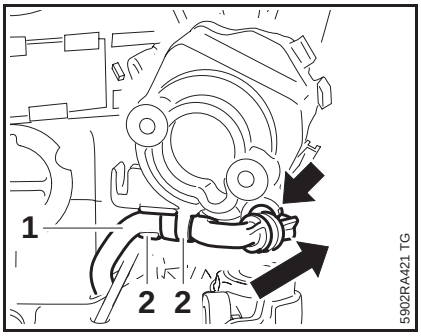
– Remove the carburetor carrier, check it and replace if necessary.

– Check the intake manifold and replace if necessary, 🕮 12.9

Installing



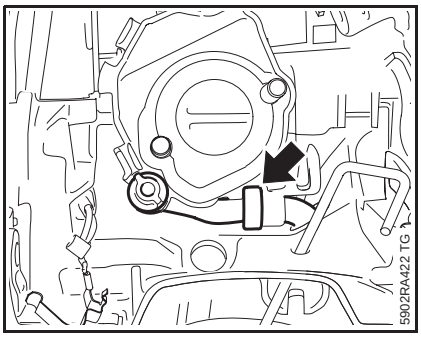
● To fit the manifold (2) through the carburetor carrier's opening, wind a piece of string (1) (about 15 cm long) around the back of manifold flange.



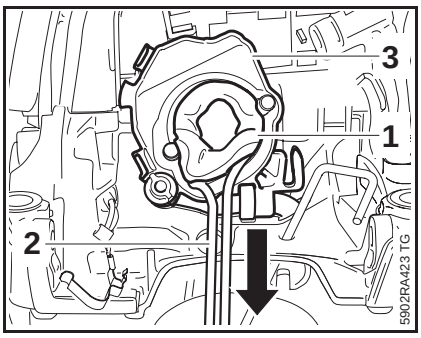
– Place the carburetor carrier in position.

● Fit the fuel hose (1) in the guides (2)
– take care not to stretch the hose.

● Press the groove on the fuel hose (1) fully into its seat (arrow).

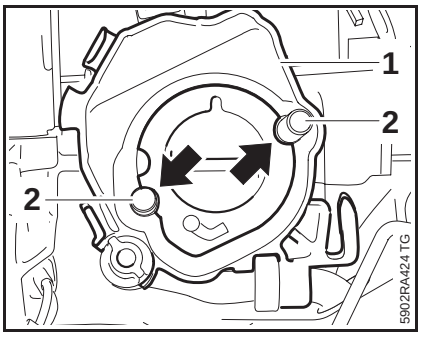


The lug must engage the seat (arrow).

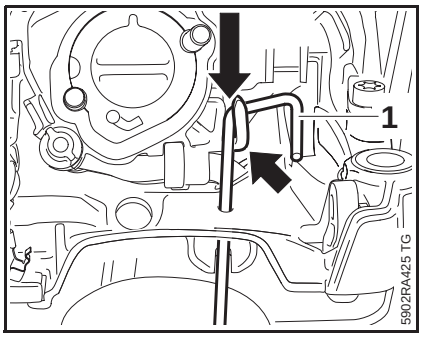


- Use the ends of the string (2) to pull the manifold flange (1) through the intake opening while pushing the carburetor carrier (3) against the manifold flange.

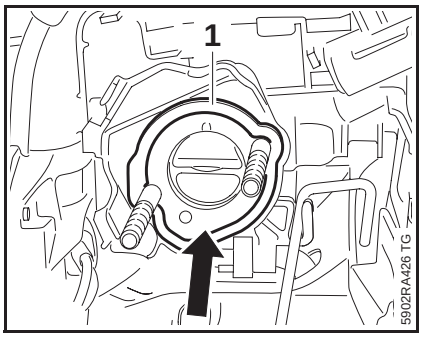
– Remove the string.



- Position the carburetor carrier (1) so that the semi-circles (arrows) locate against the studs (2).



- Push the throttle rod (1) into the guide (arrow) until it snaps into position.



- Push the washer (1) into position.

When reassembling, check that all wires are properly seated in their guides.

When the filter base is installed, the fuel hose must be centered in the opening in the lower air guide shroud. If it touches one side of the opening, install it properly, 🕮 12.11.2, 🕮 12.8.

– Reassemble all other parts in the reverse sequence.

12.9 Intake Manifold

A damaged intake manifold can result in engine running problems.

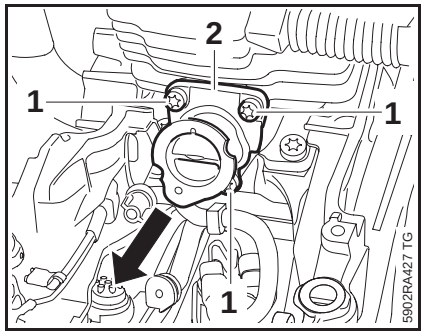
– Troubleshooting, 🕮 3.6 or 🕮 3.7

– Remove the shroud, 🕮 6.4

– Remove the carburetor, 🕮 12.5

– Remove the carburetor carrier, 🕮 12.8

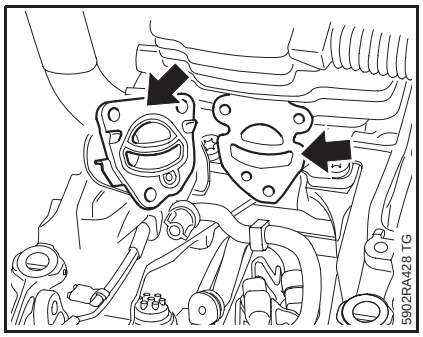
– Remove the air guide shrouds, 🕮 12.4
Models with heating, 🕮 12.4.2
Models with manual fuel pump, 🕮 12.4.1



- Take out the screws (1).

- Remove the intake manifold (2).

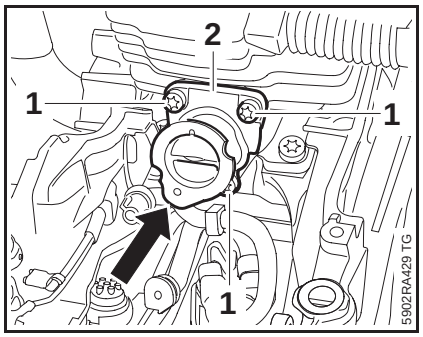
– Inspect the intake manifold (2) and replace it if necessary – even very minor damage can result in engine running problems, 🕮 3.7



- Inspect and clean the sealing faces (arrows), 🕮 15

The sealing faces must be in perfect condition. Always replace components with damaged sealing faces.

Installing



- Position the manifold (2) on the cylinder.
- Insert and tighten down the screws (1) firmly.

– Install the air guide shrouds, 🕮 12.4
Models with heating, 🕮 12.4.2
Models with manual fuel pump, 🕮 12.4.1

– Install the carburetor carrier, 🕮 12.8

– Reassemble all other parts in the reverse sequence.

12.10 Tank Vent

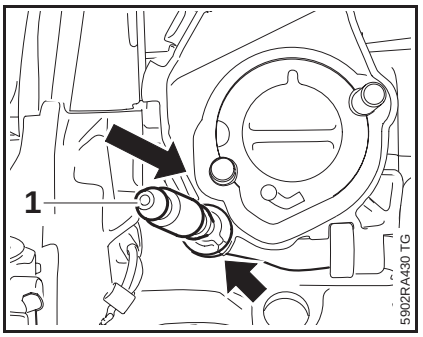
12.10.1 Testing

If problems occur on the carburetor or the fuel supply system, also check and clean the tank vent and replace it if necessary. Check function by performing pressure and vacuum tests on the tank via the fuel hose.

– Open the fuel tank cap and drain the fuel tank, 🕮 1.

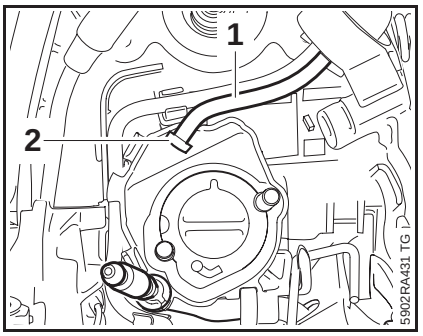
– Close the tank cap.

– Remove the carburetor, 🕮 12.5



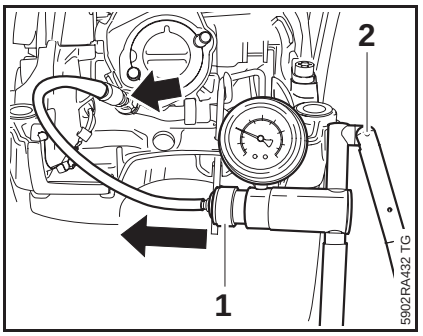
- Push the nipple (1) 0000 855 9200 into the fuel hose (arrow).

Models with manual fuel pump



- Use a suitable plug (2) to seal the fuel suction hose (1).

Vacuum test



- Push the ring (1) to the left and connect the pump (2) 0000 850 1300 to the nipple (arrow)
– create a vacuum in the fuel tank.

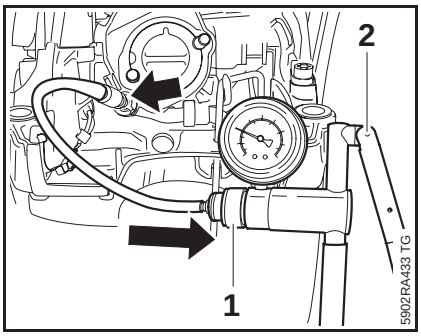
Equalization of pressure takes place via the tank vent. There must be no buildup of vacuum in the tank.

– Clean the area around the tank vent.

– Always install a new fuel hose.

– If necessary, install a new tank vent or tank, 🕮 12.10 or 🕮 12.11.5.

Pressure test



- Push the ring (1) to the right and connect the pump (2) 0000 850 1300 to the nipple (arrow)
  – pressurize the fuel tank.

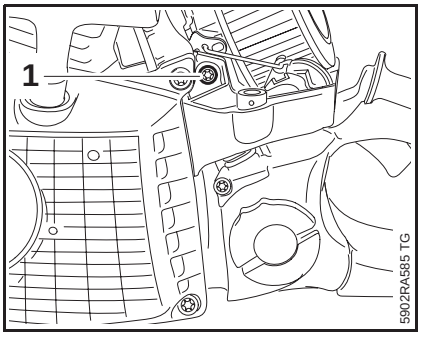
– Operate the pump until the pressure gauge indicates a pressure of 0.5 bar. If this pressure remains constant for at least 20 seconds, the tank, including the tank vent, is airtight. If the pressure drops, the leak must be located and the faulty part replaced.

– Always install a new fuel hose.

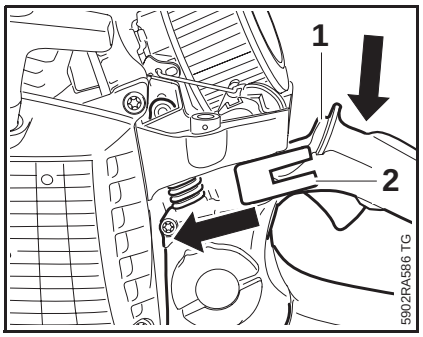
– Reassemble in the reverse sequence.

12.10.2 Removing and Installing

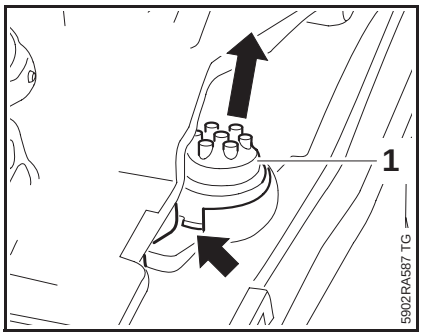
– Remove the shroud, 🕮 6.4



- Take out the screw (1).



- Press the tank housing (1) downwards and use wooden block (2) 1108 893 4800 to maintain the gap.



The air guide shroud is not shown in the illustration.

- Pry the tank vent (1) out of its seat using the rib (arrow) for leverage.

Always install a new tank vent.

– Coat sealing ring of new tank vent with STIHL press fluid, 🕮 15

– Push home the tank vent by hand until it snaps into position.

– Reassemble all other parts in the reverse sequence.

12.11 Fuel Intake

12.11.1 Pickup Body

Any impurities mixed with the fuel are retained by the pickup body (filter). The fine pores of the filter eventually become clogged with minute particles of dirt. This restricts the passage of fuel and results in fuel starvation.

In the event of problems with the fuel supply system, always check the fuel tank and the pickup body first.

– Troubleshooting, 🕮 3.6 or 🕮 3.7

Clean the fuel tank if necessary.

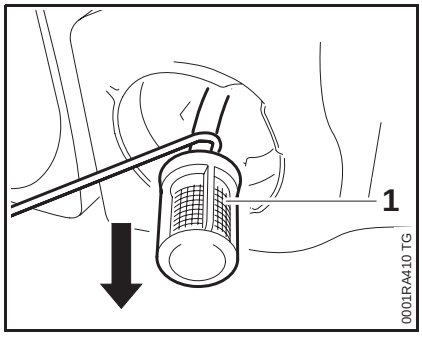
– Open the tank cap and drain the tank.

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

– Open the tank again and drain it.

– Dispose of fuel properly in accordance with environmental requirements, 🕮 1

– Open the tank cap.



● Use hook 5910 893 8800 to remove the pickup body (1) from the fuel tank.

Do not overstretch the fuel hose.

● Pull off the pickup body (1), check it and replace if necessary.

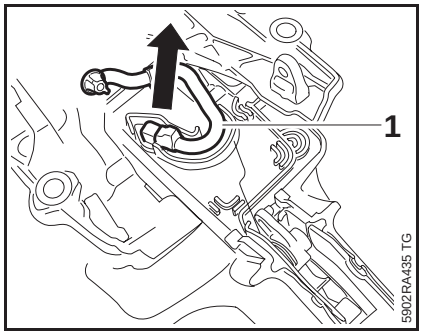
– Reassemble in the reverse sequence.

12.11.2 Fuel Hose

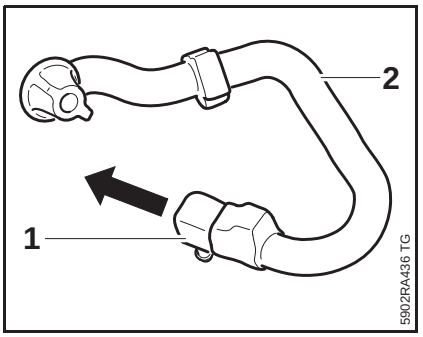
– Open the tank cap.

– Remove the carburetor carrier, 🕮 12.8

– Remove the air guide shrouds, 🕮 12.4
Models with heating, 🕮 12.4.2

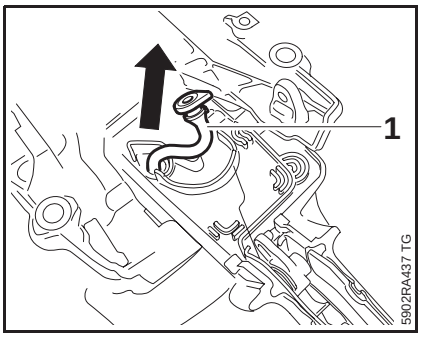


● Pull out the fuel hose (1) with connector.

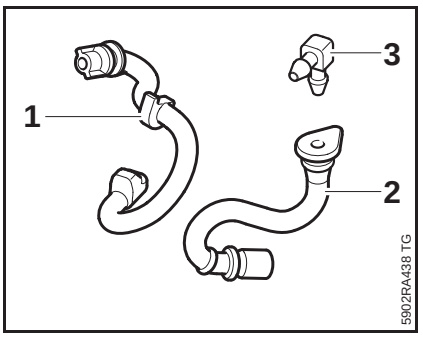


● Pull the connector (1) off the fuel hose (2).

– Remove the pickup body, 🕮 12.11.1

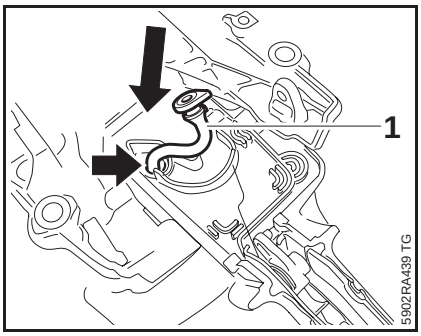


● Pull the fuel suction hose (1) out of the fuel tank.

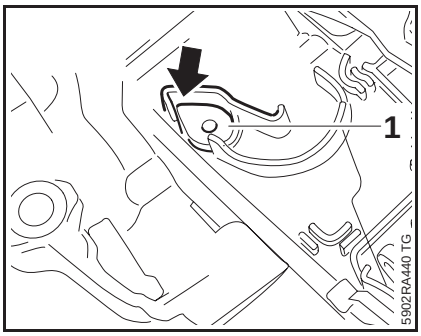


● Install a new fuel hose (1) and new fuel suction hose (2), inspect the connector (3) and replace if necessary.

Installing

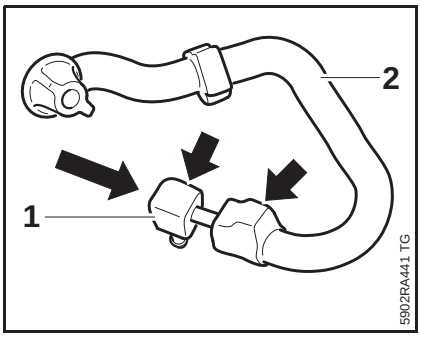


● Push the fuel hose (1) through the bore (arrow) in the fuel tank.



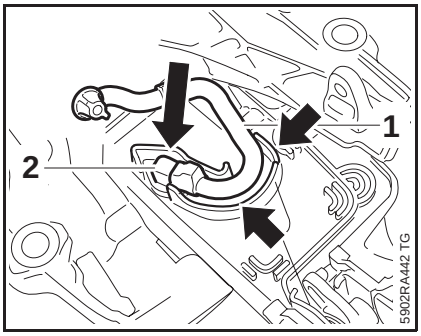
– Use STIHL press fluid to simplify assembly, 🕮 15

● Line up the fuel suction hose (1) and push it into the housing bore as far as stop – the flange must engage the guide (arrow).



– Line up straight face of connector (1) with hump on fuel hose (2) (see arrows).

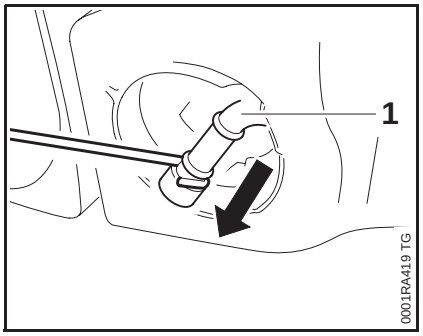
● Push the connector (1) into the fuel hose (2) as far as stop.



● Push the connector (2) into the fuel suction hose.

● Line up the fuel hose (1) and connector with the channel (arrows).

● Fit the fuel hose (1) in the channel (arrows).



● Use hook 5910 893 8800 to remove the fuel suction hose (1) from the fuel tank.

Do not overstretch the fuel suction hose.

– Fit the pickup body, 🕮 12.11.1

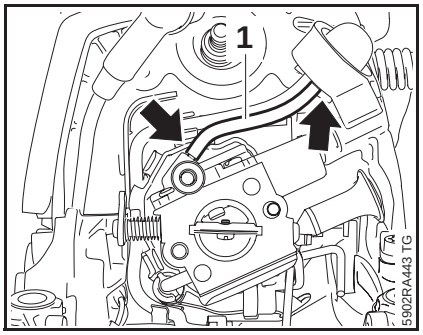
– Close the tank cap.

– Reassemble all other parts in the reverse sequence.

12.11.3 Fuel Hose – Models with Manual Fuel Pump

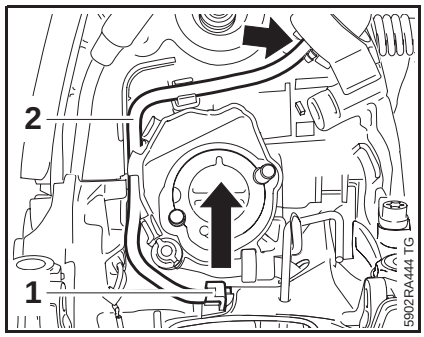
– Remove the filter base, 🕮 12.3

– Open the tank cap.



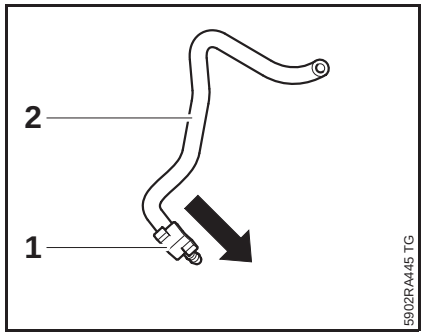
● Pull the furl suction hose (1) off the nipples (arrows).

– Remove the carburetor, 🕮 12.5

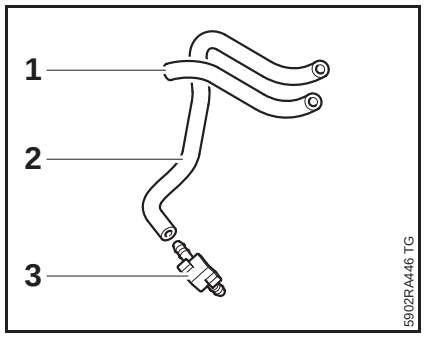


● Pull out the connector (1) with fuel return hose (2).

● Pull the fuel return hose (2) off the nipple on the fuel pump (arrow).



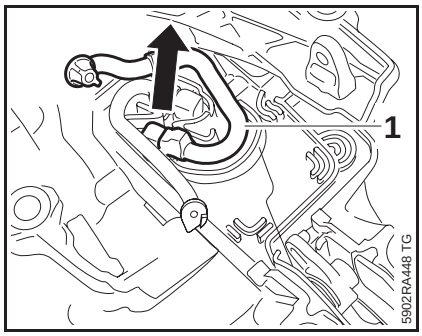
● Pull the connector (1) off the fuel return hose (2).



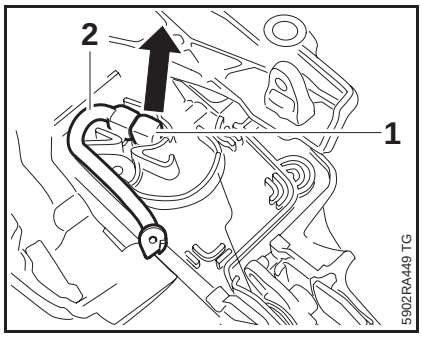
● Install a new fuel return hose (2) and new fuel suction hose (1), inspect the connector (3) and replace if necessary.

– Remove the carburetor carrier, 🕮 12.8

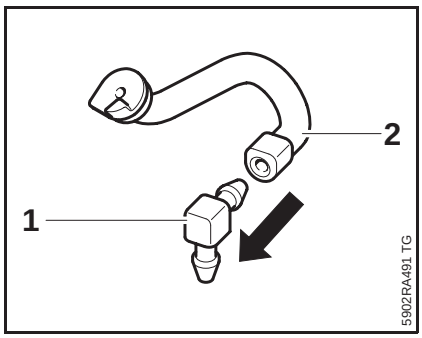
– Remove the air guide shrouds, 🕮 12.4.1



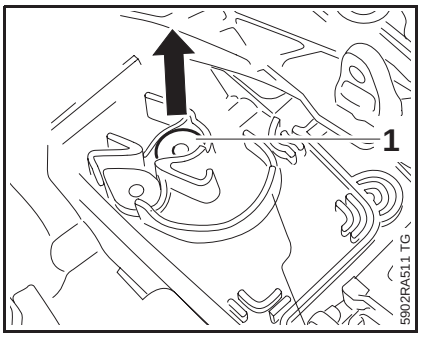
● Remove the fuel hose (1), 🕮 12.11.2.



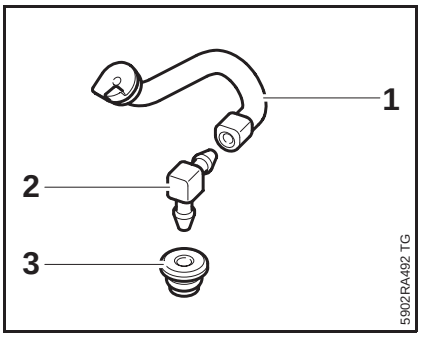
● Pull out the connector (1) with fuel return hose (2).



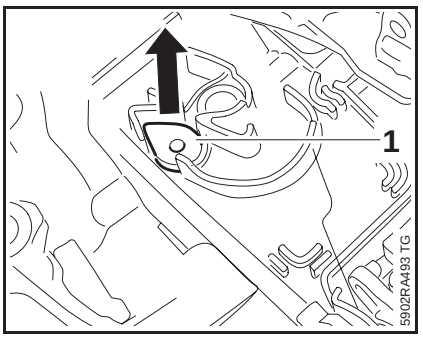
● Pull the connector (1) off the fuel return hose (2).



● Pry out the grommet (1).

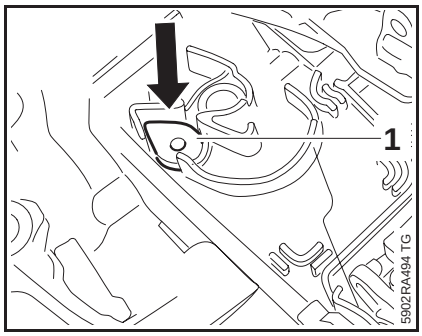


● Install a new fuel return hose (1), inspect the connector (2) and grommet (3) and replace as necessary.

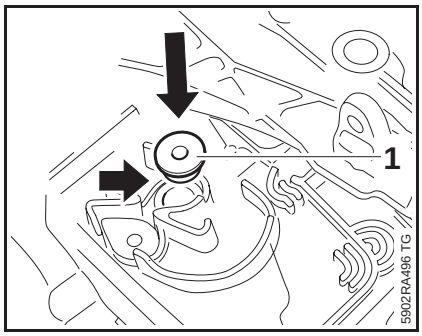


● Remove the fuel suction hose (1), 🕮 12.11.2

Installing

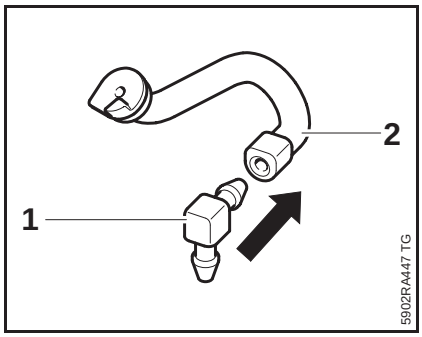


● Install the fuel suction hose (1), 🕮 12.11.2

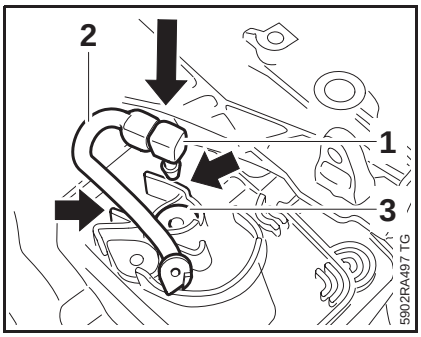


– Use STIHL press fluid to simplify assembly, 🕮 15

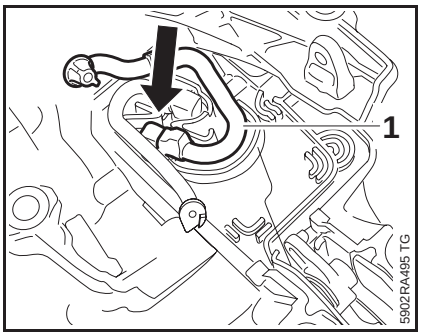
● Fit the grommet (1) in the hole (arrow) in the fuel tank and make sure it is properly seated.



● Push the connector (1) into the fuel return hose (2) as far as stop.



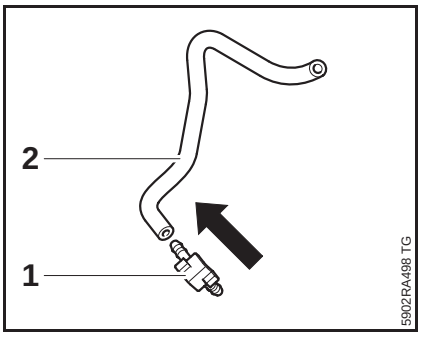
- Fit the connector (1) with fuel return hose (2) between the positioning ribs (arrows) and push it into the grommet (3).



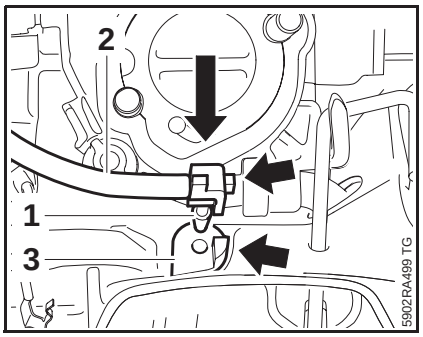
- Install the fuel hose (1), 🕮 12.11.2

– Install the air guide shrouds, 🕮 12.4.2

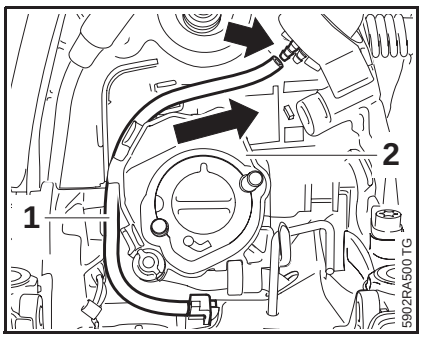
– Install the carburetor carrier, 🕮 12.8



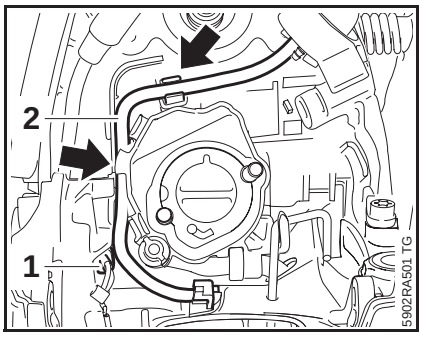
- Push the connector (1) into the fuel return hose (2) as far as stop.



- Push the connector (1) with fuel return hose (2) into the fuel return hose (3) so that the contours (arrows) are in alignment.



- Fit the fuel return hose (1) behind the carburetor carrier (2) and push it onto the fuel pump's nipple (arrow) as far as stop.

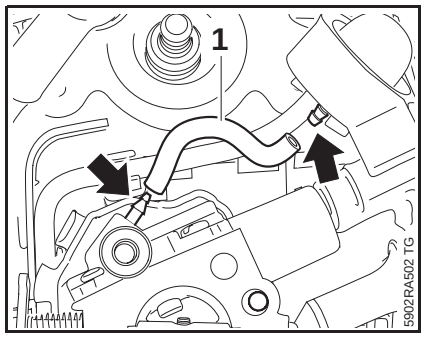


- Position the fuel return hose (2) so that it is next to the short circuit wire's grommet (1).

- Push the fuel return hose (2) into the guides (arrows).

– Install the carburetor, 🕮 12.5

– Close the tank cap.



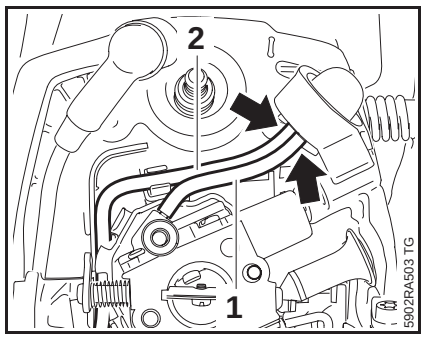
- Push the fuel suction hose (1) onto the nipples (arrows) as far as stop.

– Check operation with manual fuel pump, 🕮 12.11.4

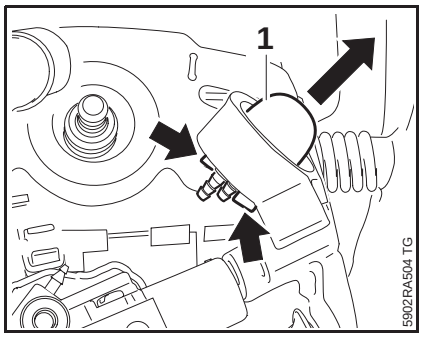
– Reassemble all other parts in the reverse sequence.

12.11.4 Manual Fuel Pump

– Remove the filter base, 🕮 12.3

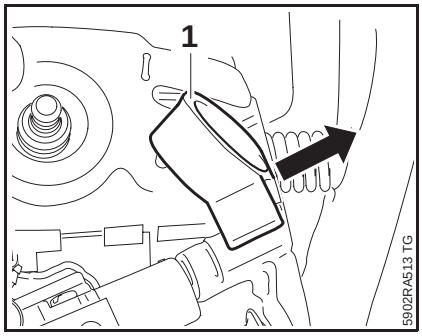


- Disconnect the fuel suction hose (1) and fuel return hose (2) from the nipples (arrows).



- Squeeze the tabs (arrows) together and pull out the manual fuel pump (1).

– Check the fuel pump (1) and replace it if necessary

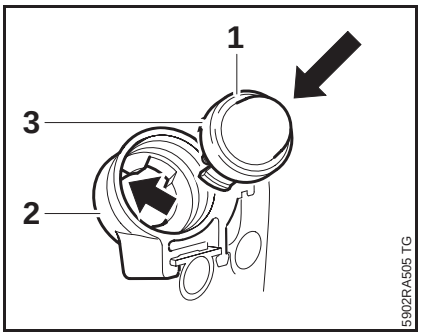


- Check the retainer (1), push it out of its seat and replace if necessary.

– Reassemble in the reverse sequence.

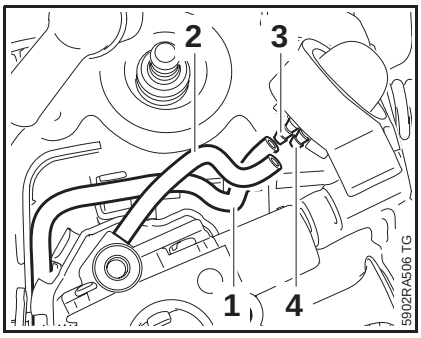
– Install new fuel suction hose and new fuel return hose, 🕮 12.11.3

Installing



- Position the fuel pump (1) so that the lug (3) points towards the recess (arrow).

- Push the fuel pump (1) into the retainer (2) until the tabs engage.



- Push the fuel return hose (1) onto the long nipple (3) and the fuel suction hose (2) onto the short nipple (4) on the fuel pump.

– Check operation
– fuel must flow when the fuel pump is operated.

– Reassemble all other parts in the reverse sequence.

12.11.5 Tank Housing

– Drain the fuel tank, 🕮 1

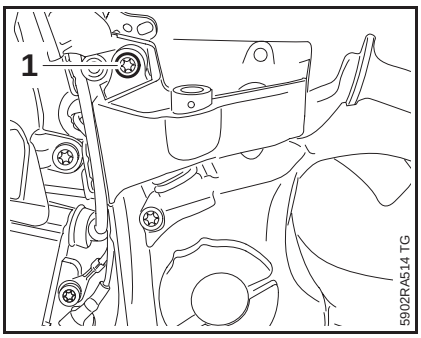
– Remove the handlebar, 🕮 9.6
Machines with handle and carburetor heating, 🕮 9.6.1

– Remove the air guide shrouds, 🕮 12.4
Models with heating, 🕮 12.4.1, models with manual fuel pump, 🕮 12.4.2

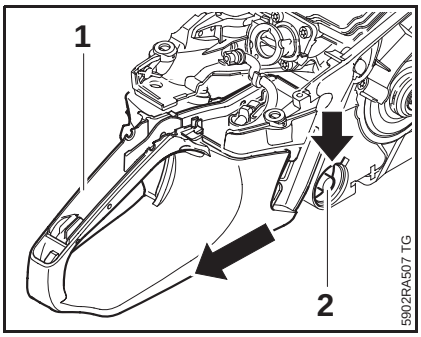
– Remove brake cable on models with QuickStop Super, 🕮 5.4.2.

– Remove the stop buffer, 🕮 9.5

– Remove the control levers, 🕮 10



- Take out the screw (1).

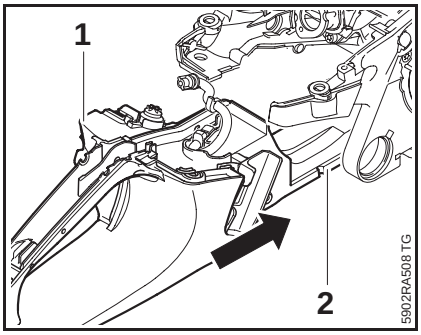


- Push the tank housing (1) towards the ignition side and turn it towards the clutch side until the peg (2) is clear of the bore (arrow).

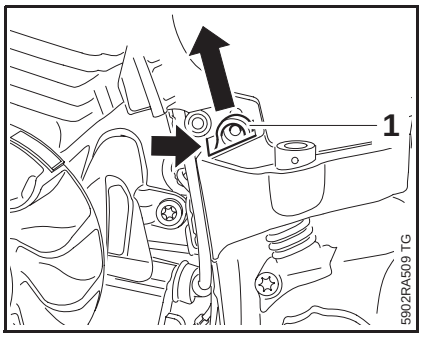
– Pull out the tank housing, check it and replace if necessary.

Only transfer those parts from the old tank housing that are not included with the replacement – see parts list.

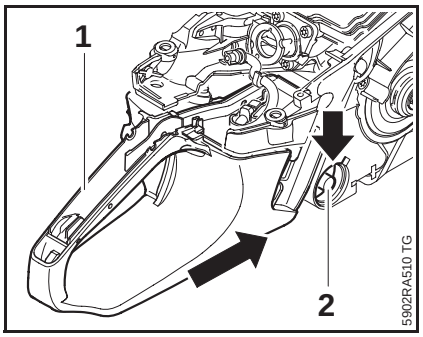
Installing



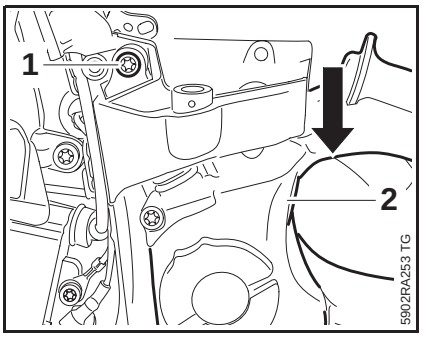
- Slide the tank housing (1), narrow part (2) first, between the two halves of the crankcase.



- Fit the antivibration spring (1) in the recess (arrow) in the crankcase.



- Push the tank housing (1) towards the ignition side and turn it until the peg (2) is inside the bore (arrow).



- Lift the tank housing (2).

- Tighten down the screw (1) firmly.

– Install the stop buffer, 🕮 9.5

– Reassemble all other parts in the reverse sequence.

13.1 Carburetor Heating

The heating element is installed between the filter base and carburetor. Current is supplied via wires to the heating element.

The heating element is controlled by a thermostatic switch on the underside of the carburetor.

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

Idling problems with a hot engine are also an indication of a fault in the heating element or thermostatic switch.

13.1.1 Testing the Complete System

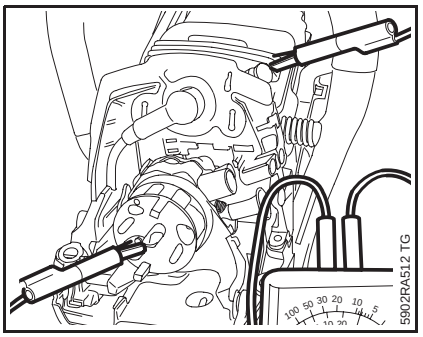
The generator and heating element are checked in the following test which should be performed at an ambient temperature of at least + 20°C (68°F).

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

– Test the heating system as specified in the carburetor heating troubleshooting chart, 🕮 13.2

– Remove the air filter, 🕮 12.1

– Set the ohmmeter to measuring range "Ω".



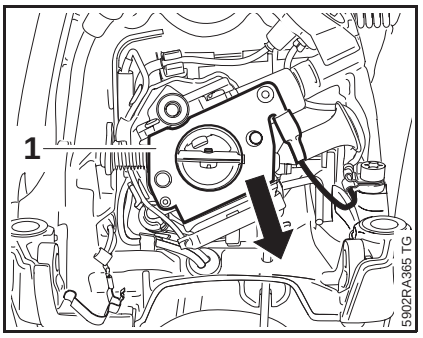
● Clip one of the two test leads to a nut on the baffle and the other to a cylinder fin.

– If the system is in good condition the ohmmeter will indicate a value of about 12 Ω in measuring range "Ω".

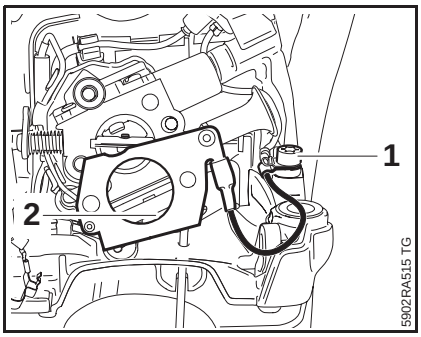
If the reading obtained is outside this tolerance, test each component separately.

13.1.2 Testing the Heating Element

– Remove the filter base, 🕮 12.3

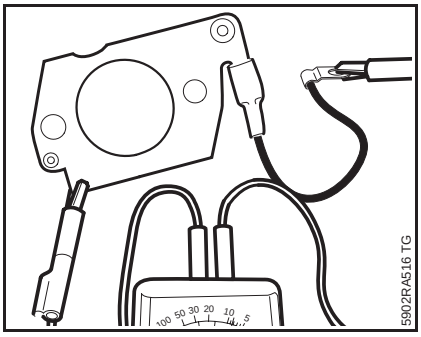


● Remove the heating element (1).



● Take out the screw (1).

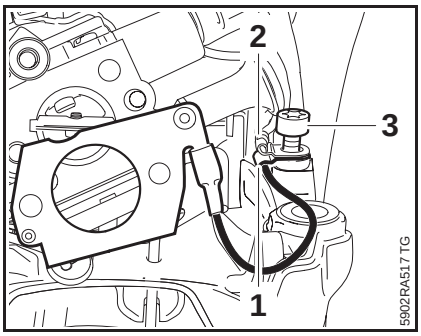
● Remove the heating element (2).



● Clip one test lead to the heating element and the other to the ring terminal.

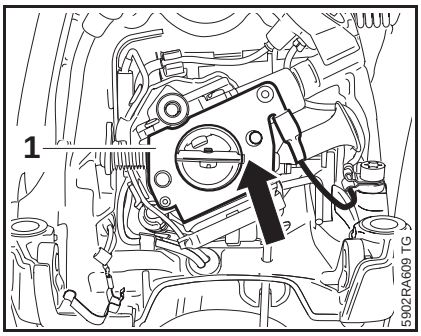
If the heating element is in good condition the ohmmeter will indicate a value of about 12 Ω in measuring range "Ω".

Installing



- Position the wire (1) of the carburetor's heating element so that the crimped side of the terminal faces down.
- Position the ground wire (2) so that the crimped side of the terminal faces up.
- Insert and tighten down the screw (3) firmly.

Do not twist the terminals.



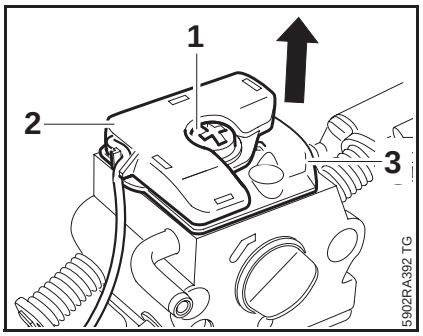
- Fit the heating element (1).

– Reassemble all other parts in the reverse sequence.

13.1.3 Thermostatic Switch

The thermostatic switch is an electronic component that cannot be tested directly. Its operation can be checked with the aid of the troubleshooting chart, 🕮 13.2

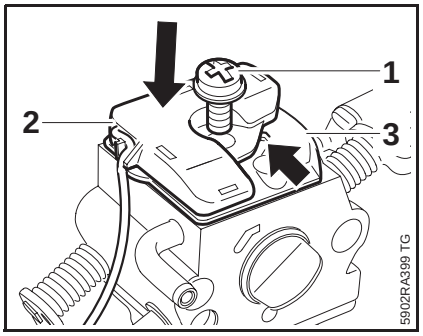
– Remove the carburetor, 🕮 12.5



- Take out the screw (1) with washers.
- Remove the thermostatic switch (2).

– Hold the end cover (3) so that the pump diaphragm and gasket remain in position.

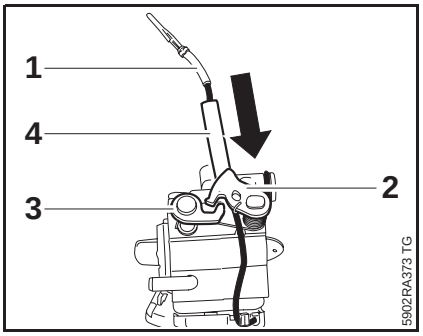
Installing



– Check that the pump diaphragm and gasket are properly seated.

– Hold the end cover (3) so that the pump diaphragm and gasket remain in position.

- Position the thermostatic switch (2) so that it butts against the hump (arrow).
- Fit the screw (1) with washers and tighten it down firmly.



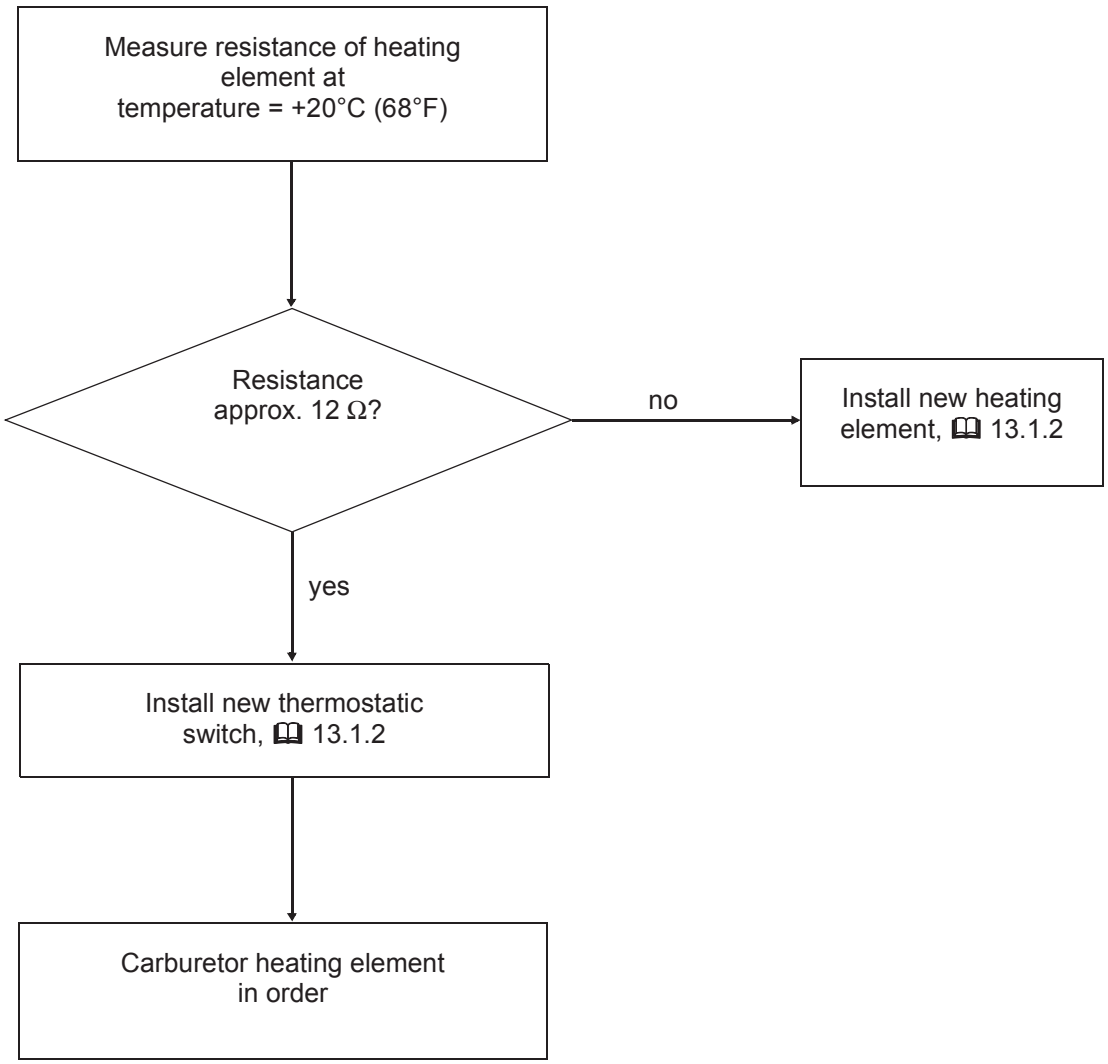
- Fit the wire (1) behind the levers (2) and (3).
- Fit the insulating tube (4).

– Install the carburetor, 🕮 12.5

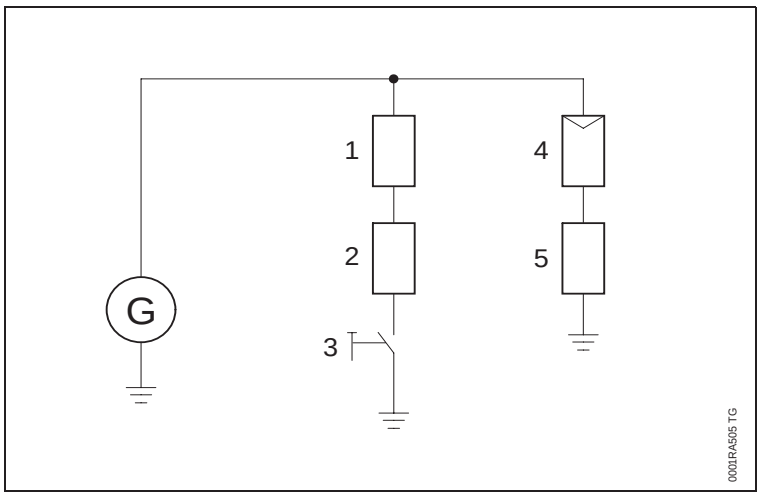
– Reassemble all other parts in the reverse sequence.

– Check operation

13.2 Carburetor Heating System Troubleshooting Chart



Circuit Diagram



G Generator
1 Rear handle
2 Handlebar
3 Heater switch
4 Thermostatic switch
5 Heating element (carburetor)

13.3 Handle Heating System

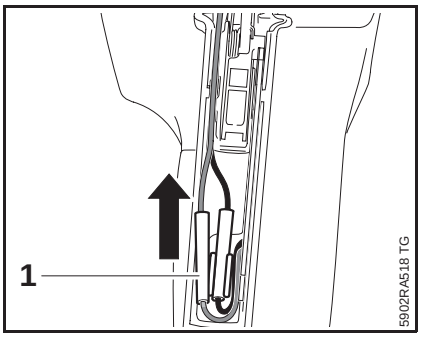
13.3.1 Troubleshooting

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

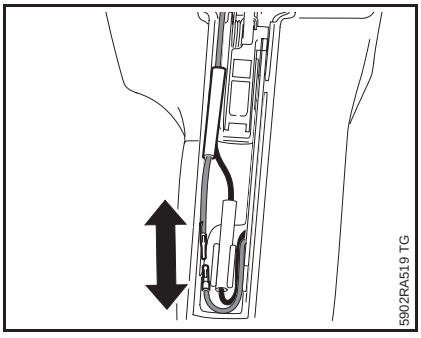
There are two reasons for failures in the heating system:

1. A break in the circuit due to a faulty wire or component.
2. A short circuit resulting from damage to the insulation.

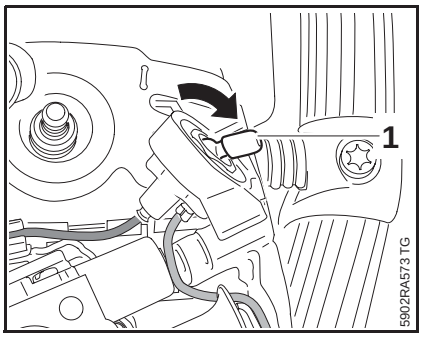
– Remove the handle molding, 🕮 10.2



● Pull one of the connectors out of the guide and push the insulating tube (1) in the direction of the wiring harness.

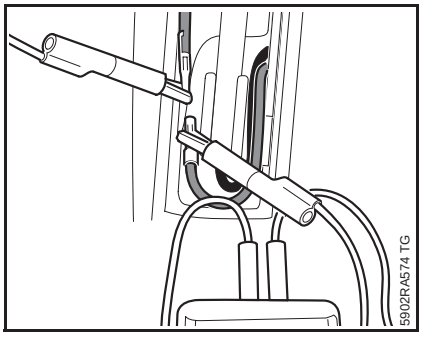


● Separate the pin and socket connector.



● Set the heater switch (1) to "**I**".

– Set the ohmmeter to "Ω".



– Set the Master Control lever to "**0**".

● Clip the test leads to the wire from the wiring harness and the rear handle heating element wire.

Carburetor Heating

– Separate the pin and socket connector to the thermostatic switch, 🕮 13.1.3

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

If the system is in order, the ohmmeter will indicate a value of about 10 Ω in measuring range "Ω".

If no reading is obtained, there is a break in the circuit.

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

In either case it is necessary to check each component separately. The generator wire remains disconnected from the thermostatic switch during this check.

– Use handle heating and generator troubleshooting chart to check the system, 🕮 13.7.1

– Check resistance on handlebar, 🕮 13.6

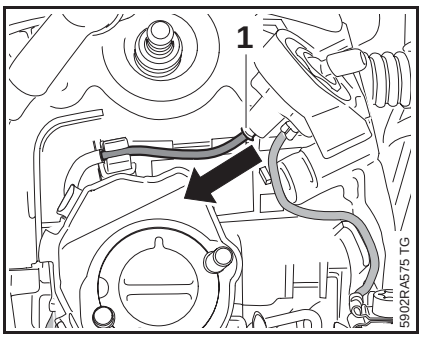
– Check resistance on rear handle, 🕮 13.5

– After completing the test, reconnect the wires and push the insulating tube over the pin and socket connector.

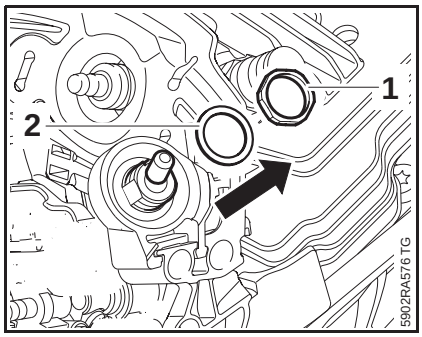
– Reassemble in the reverse sequence.

13.4 Heater Switch

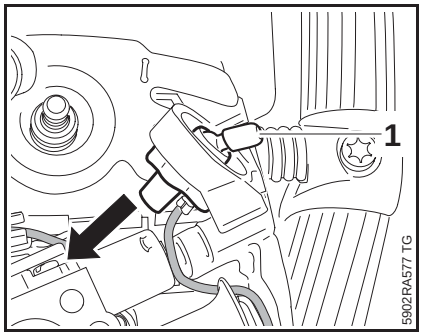
– Remove the carburetor, 🕮 12.5



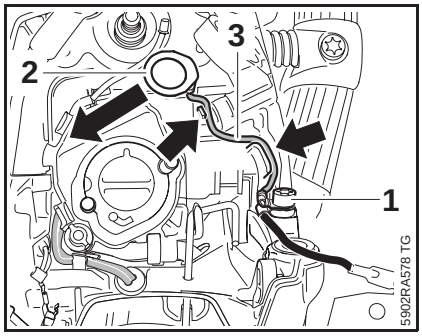
● Pull off the connector sleeve (1).



- Unscrew the nut (1).
- Remove the shim (2).

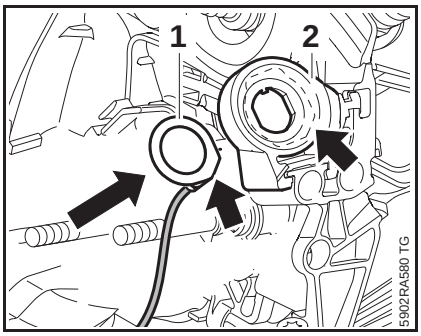


- Pull the heater switch (1) inwards and out, check it and replace if necessary.

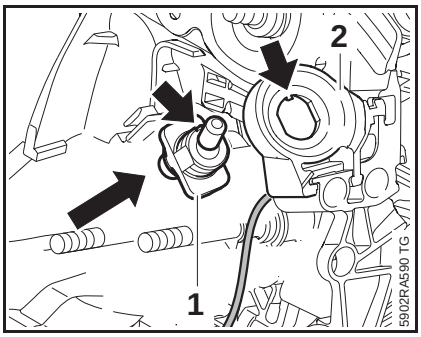


- Take out the screw (1).
- Take the contact ring (2) out of its seat and pull the ground wire (3) out of the guides (arrows).

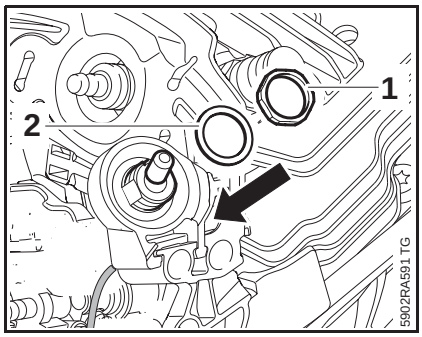
Installing



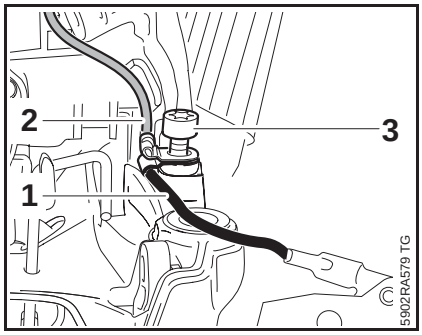
- Position the ground wire's contact ring (1) so that the crimping points towards the carburetor and the contours (arrow) are in alignment.
- Fit the contact ring (1) in the retainer (2).



- Position the heater switch (1) so that its slot lines up with the lug (arrows).
- Push the heater switch (1) through the ground wire's contact ring and into the retainer (2).



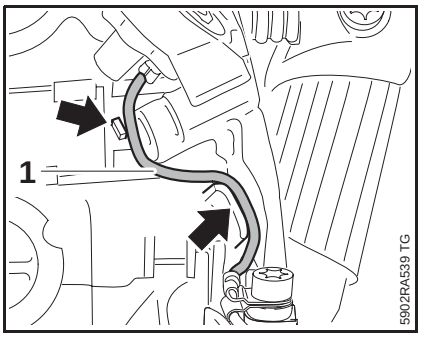
- Fit the washer (2).
- Fit the nut (1) and tighten it down firmly.



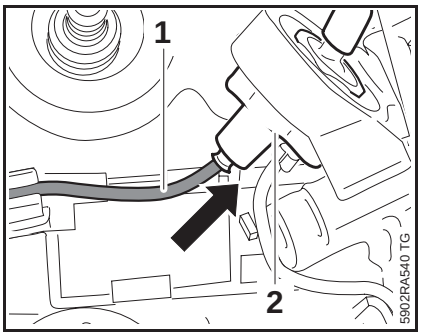
- Position the wire (1) of the carburetor's heating element so that the crimped side of the terminal faces down.
- Position the ground wire (2) so that the crimped side of the terminal faces up.
- Insert and tighten down the screw (3) firmly.

Do not twist the terminals.

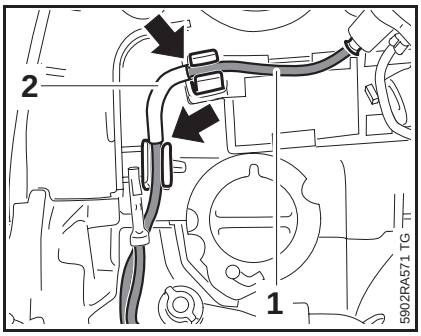
– Check operation.



● Push the ground wire (1) into the guides (arrows).



● Push the connector (1) into the heater switch (2) as far as stop.



The carburetor carrier is not shown in the illustration.

The wire (1) must be seated in the guides so that the protective tube (2) butts against the guides (arrows).

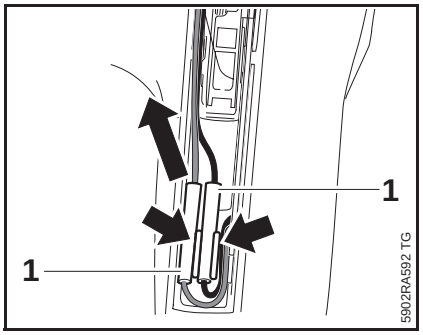
– Reassemble all other parts in the reverse sequence.

13.5 Heating Element in Rear Handle

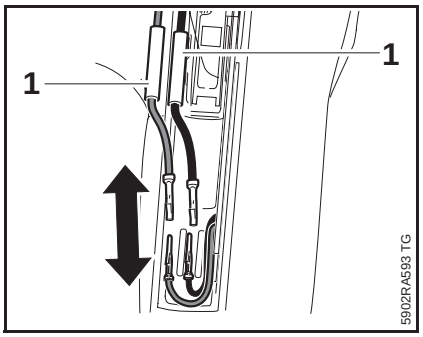
The ambient temperature during removal and installation should not be less than + 15°C.

– Remove the handle molding, 🕮 10.2

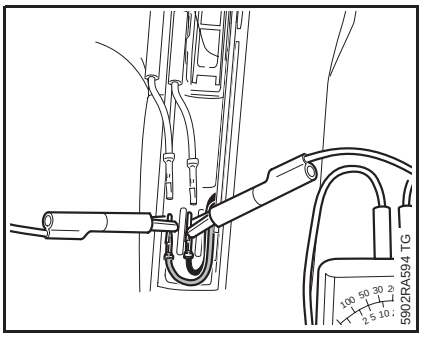
– Remove the lockout lever, 🕮 10.2



● Pull the insulating tubes (1) with connectors out of the guides (arrows).



● Push back the insulating tubes (1) in the direction of the wiring harness and separate the pin and socket connectors.



● Check the heating element and replace if necessary.

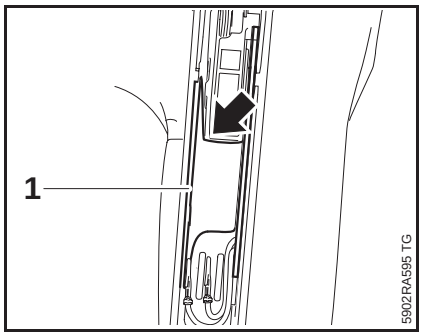
If the heating element is in good condition the ohmmeter will indicate a value of about 2 Ω in measuring range "Ω".

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

Heating element does not operate even though resistance measurement is ok?

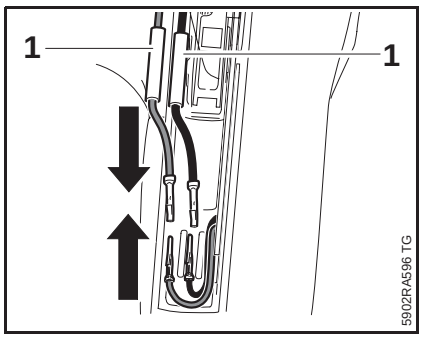
– Test the generator and heater switch, 🕮 13.3

Installing



- Position the new heating element (1) so that it butts against the edge (arrow) of the rear handle – make sure it is completely flat.

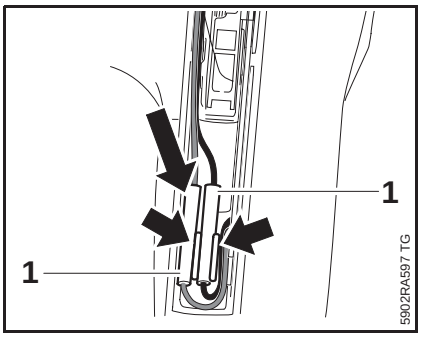
If the heating element is not fitted perfectly flat, heat transfer to the handle will be interrupted and the element may fail as a result of overheating.



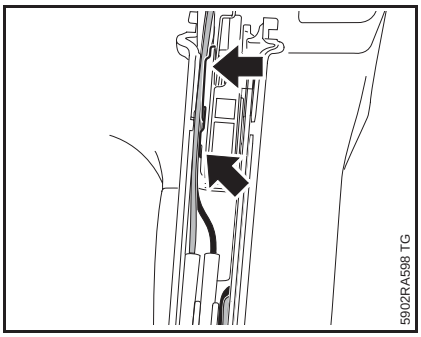
- Reconnect the pin and socket connectors.

- Push the insulating tubes (1) over the connectors.

– The insulating tubes (1) must completely cover the connectors to avoid the risk of a short circuit.



- Push the insulating tubes (1) with connectors into the guides (arrows).



The black wire of the front handle heating element must be under the gray wire of the wiring harness.

- Push the wires of the front handle heating element and wiring harness into the guide (arrows).

– Reassemble all other parts in the reverse sequence.

13.6 Heating Element in Handlebar

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

Testing the heating element

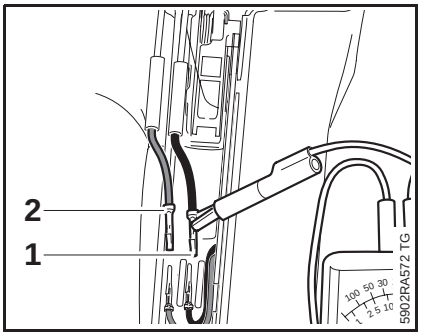
– Remove the handle molding, 🕮 10.2

Carry out the following test to find the wire to the handlebar heating element.

– Separate the connectors of the heating element on the rear handle.

Carry out measurement between the two terminal sockets and the heater switch connector sleeve.

– Set the heater switch to I, 🕮 9.6.1.



- Reading between terminal socket (1) and heater switch connector sleeve approx. 1 Ω = generator wire.

- Reading between terminal socket (2) and heater switch connector sleeve approx. 6.4 Ω = wire to handlebar heating element.

If the heating element is in good condition the ohmmeter will indicate a value of about 6.4 Ω in measuring range "Ω".

If the reading is outside this range, install a new handlebar with heating element, 🕮 9.6.1.

Heating element does not operate even though resistance measurement is ok?

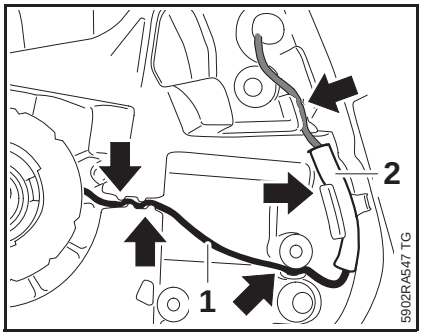
– Test the generator and heater switch, 🕮 13.3

– Reassemble in the reverse sequence.

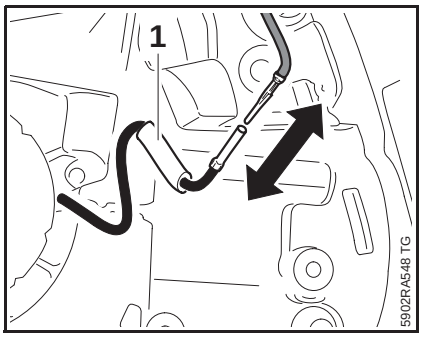
13.7 Generator

– Remove the ignition module, 🕮 7.3

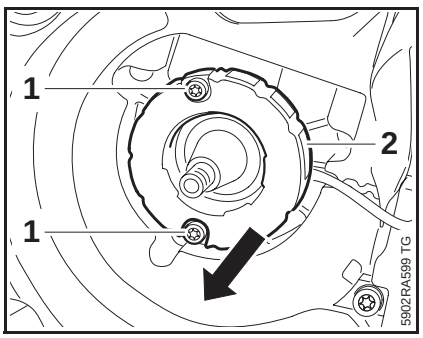
– Remove the flywheel, 🕮 7.6



- Pull the connector (2) and wire (1) out of the guides (arrows).

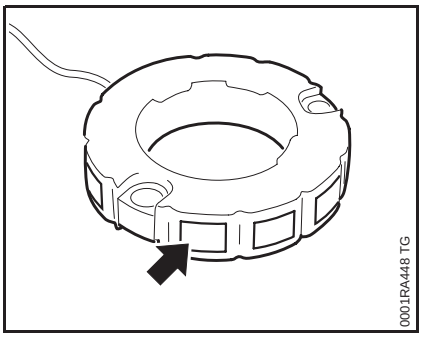


- Push back the insulating tube (1) in the direction of the wiring harness and separate the pin and socket connector.

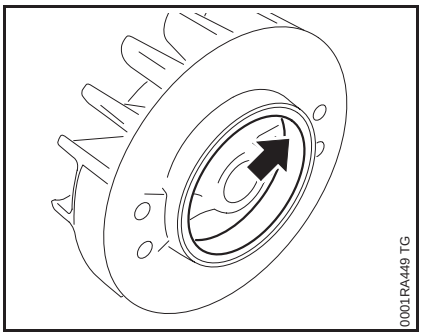


- Take out the screws (1).

- Remove the generator (2).

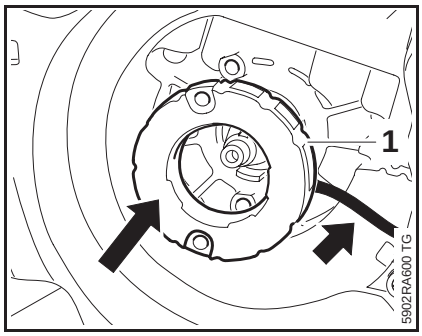


- Inspect the generator and poles (arrow) for cracks or other damage. If damage is found, replace the generator.



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

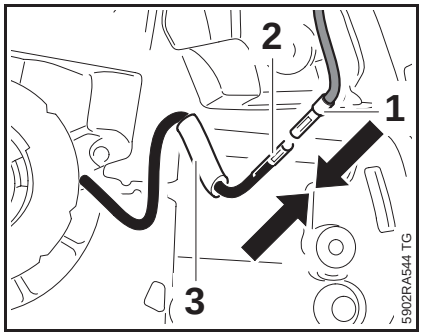
Installing



- Position the generator (1) with the wire (arrow) facing the crankcase.

– Insert the screws and tighten them down firmly.

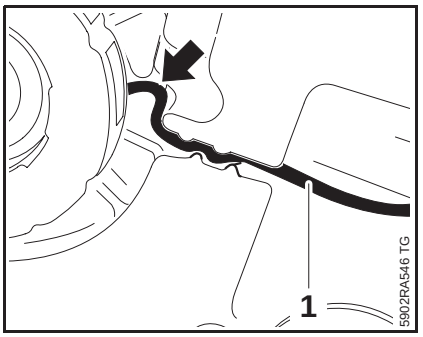
– Check that the generator is properly seated.



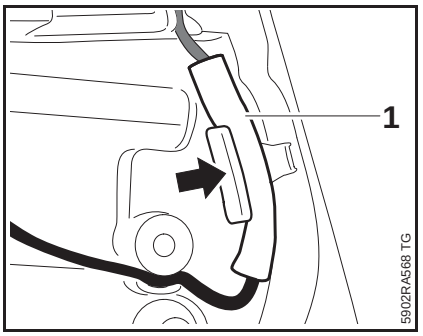
- Connect the pin (1) and socket (2).

– Push the insulating tube (3) over the connector.

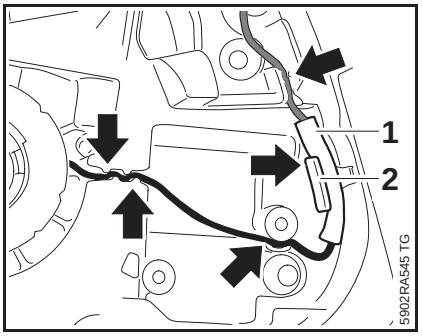
To reduce the risk of a short circuit, make sure the insulating tube completely covers the connector.



- Push the generator wire (1) to the bottom of the recess (arrow).

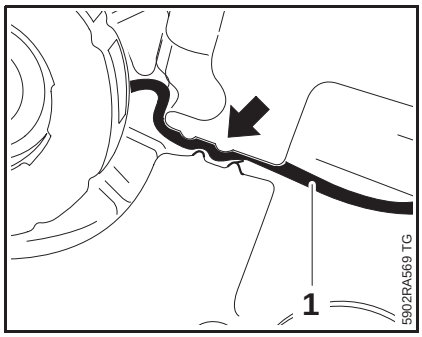


- Center the connector and insulating tube (1) in the guide (arrow).



- Press the generator wire and wiring harness into the guides (arrows).

- Push the pin and socket connector with insulating tube (1) into the guide (2).

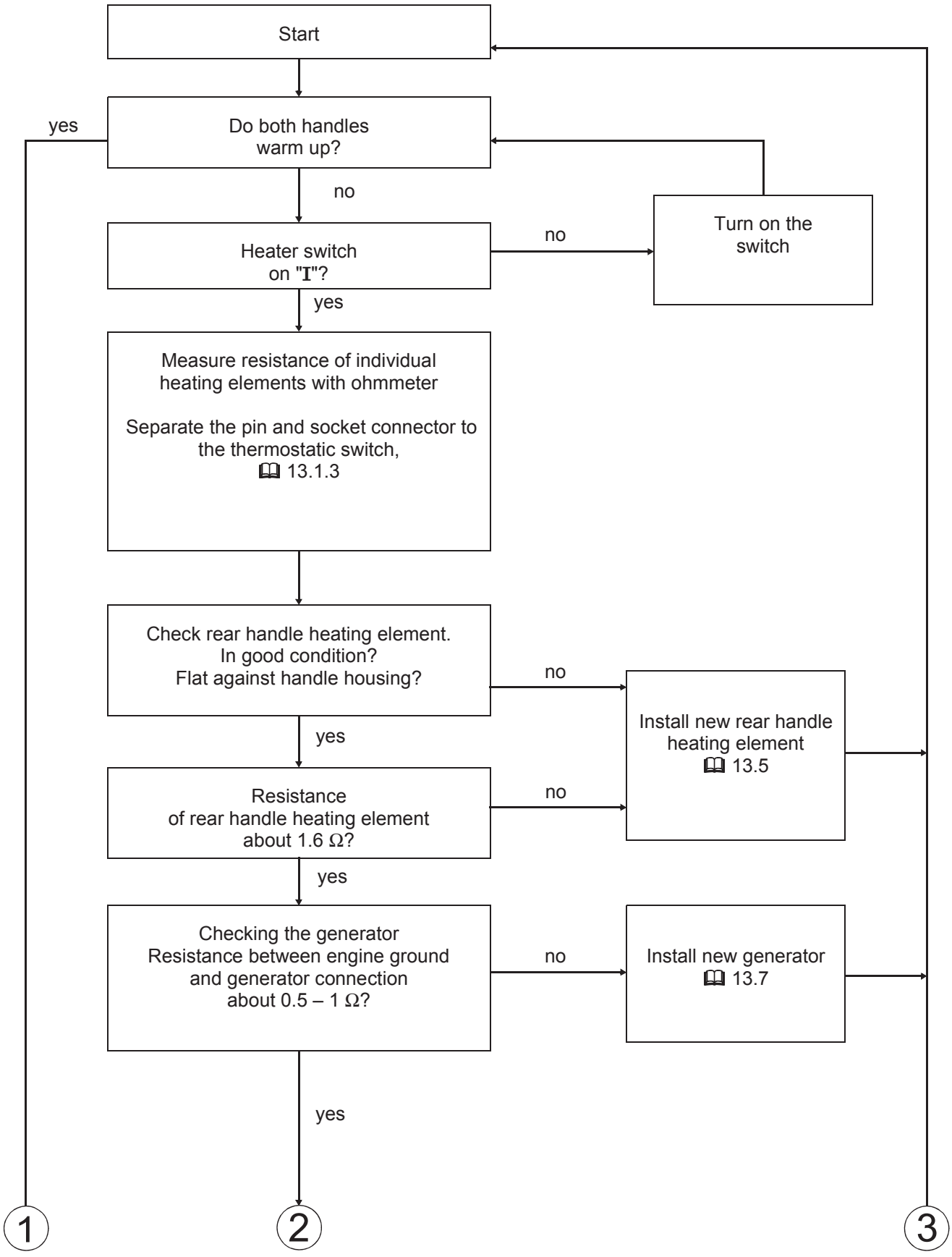


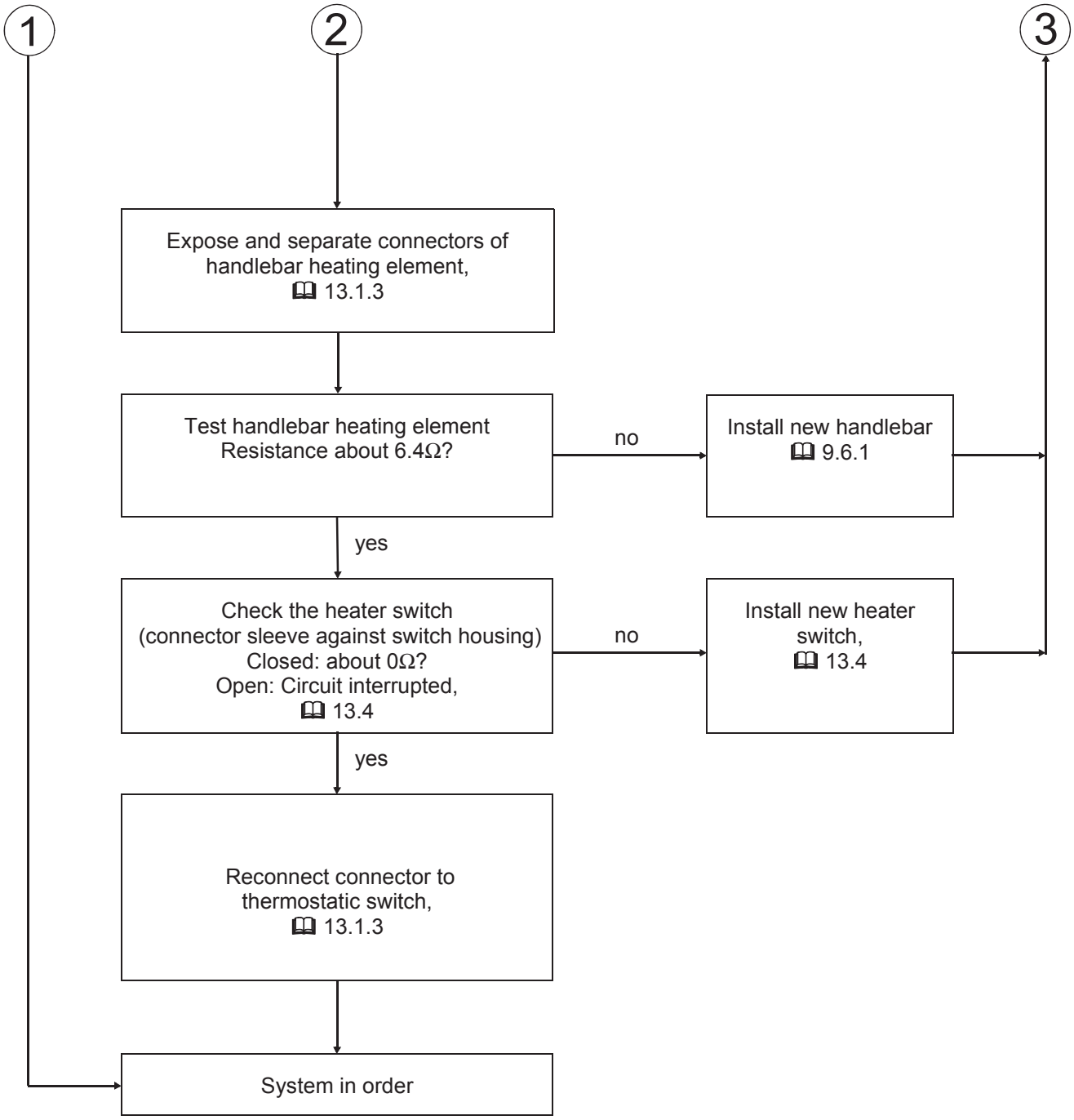
The wire (1) must be properly seated in the guide (arrow) and not project.

The flywheel must not touch the generator wire
– this could cause a break in power supply.

– Reassemble all other parts in the reverse sequence.

13.7.1 Handle Heating and Generator Troubleshooting Chart




1
2
3
Expose and separate connectors of handlebar heating element, 13.1.3
Test handlebar heating element Resistance about 6.4Ω?
no
Install new handlebar 9.6.1
yes
Check the heater switch (connector sleeve against switch housing) Closed: about 0Ω? Open: Circuit interrupted, 13.4
no
Install new heater switch, 13.4
yes
Reconnect connector to thermostatic switch, 13.1.3
System in order

13.7.2 Test Connections and Test Values

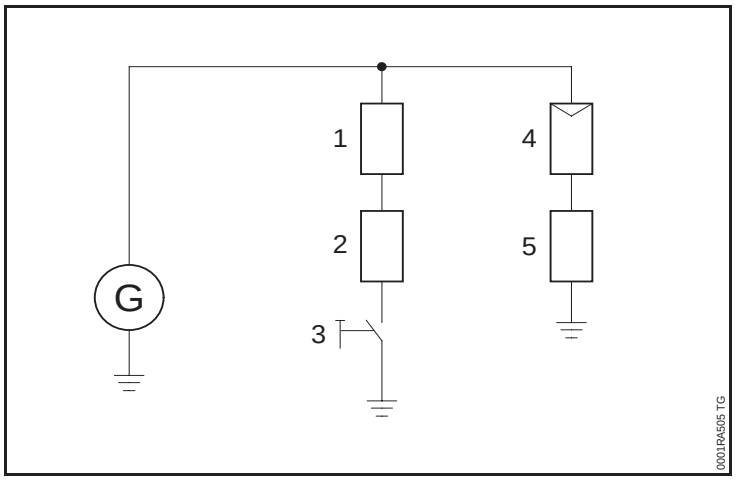
– The pin and socket connections of the wires in the rear handle must be disconnected to test the individual components.

Component	Ohmmeter connection (use either test lead)		Resistance Ω		If faulty	
	Lead 1	Lead 2	Spec.	Actual	Cause	Remedy
Switch	Switch terminal [1)]	Switch housing	< 0.5	-	Switch faulty	Replace switch
Heating element in rear handle	Connector on wire from heating element	Connector on wire from heating element	1.6	1.5 - 2.0	Heating element OK	
				-	Break in wire, heating element damaged	Install new heating element or repair insulation
				0	Short circuit – damaged insulation	
Heating element in handlebar	Connector on wire from handlebar heating element	Connector on wire from handlebar heating element	6.4	6.0...8.0	Heating element OK	
				-	Break in wire, heating element damaged	Install new handlebar
				0	Short circuit – damaged insulation	Repair insulation

[1)] Pull out wire for this purpose

Component	Ohmmeter connection (use either test lead)		Resistance Ω		If faulty	
	Lead 1	Lead 2	Spec.	Actual	Cause	Remedy
Generator	Connector on generator wire	Ground	0.6	0.5 - 1	Generator OK	
				-	Break in wire, generator damaged	Install new generator
				0	Short circuit – damaged insulation	Repair insulation

Circuit Diagram



G Generator
1 Rear handle
2 Handlebar
3 Heater switch
4 Thermostatic switch
5 Heating element (carburetor)

13.8 Wiring Harness

If there is a fault in the wiring harness, replace the wiring harness.

– Remove the shroud, 🕮 6.4

– Remove the ignition module, 🕮 7.3

– Remove the flywheel, 🕮 7.6

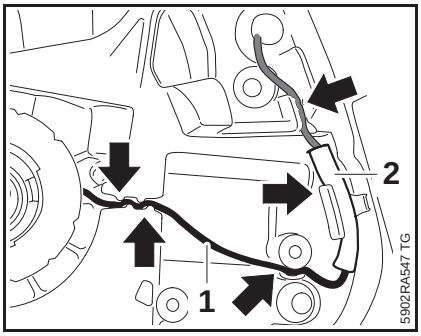
– Remove the carburetor, 🕮 12.5

– Remove the short circuit wire, 🕮 7.7

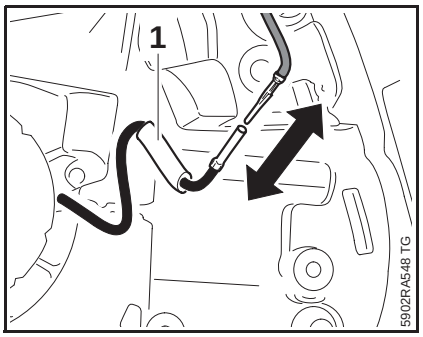
– Remove the carburetor carrier, 🕮 12.8

– Remove the interlock lever, 🕮 10.2, 🕮 10.3

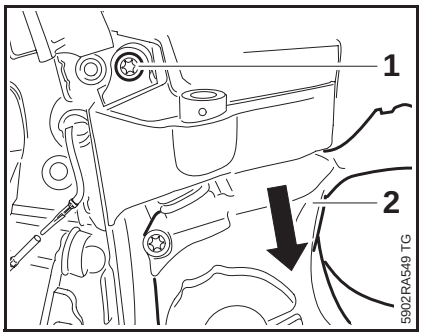
– Remove the air guide shrouds, 🕮 12.4.1



● Pull the generator wire (1) and connector with insulating tube (2) out of the guides (arrows).

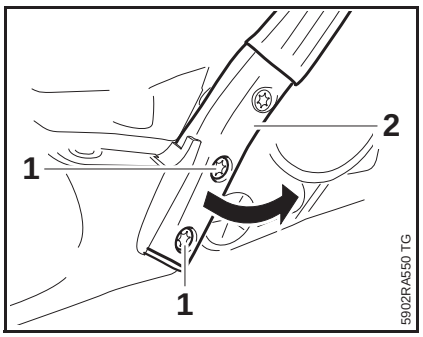


● Push back the insulating tube (1) in the direction of the generator wire and separate the pin and socket connector.



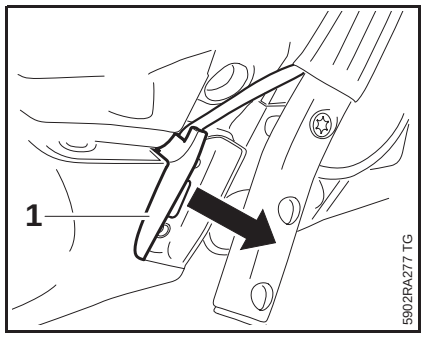
● Take out the screw (1).

– Lower the tank housing (2).

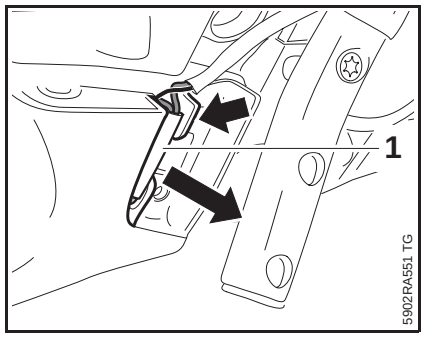


● Take out the screws (1).

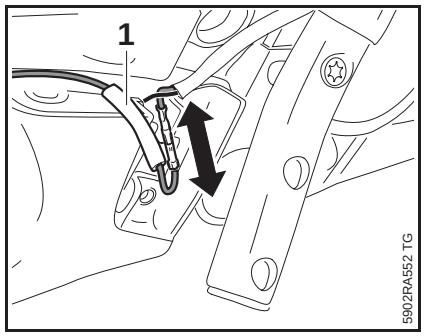
● Lift the handlebar (2) a little and ease it to the side.



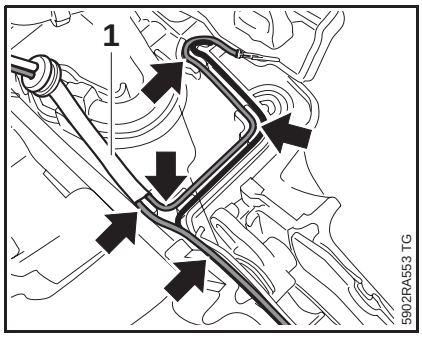
● Pull out the cover (1).



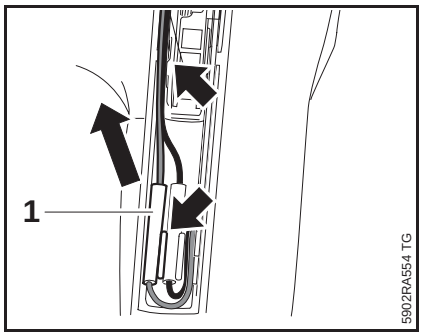
● Pull the pin and connector with insulating tube (1) out of the guide (arrow).



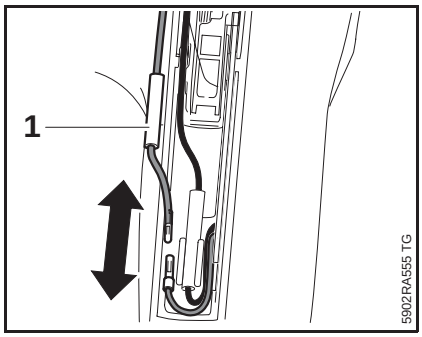
● Push back the insulating tube (1) in the direction of the wiring harness and separate the pin and socket connector.



- Pull the wiring harness (1) out of the guides (arrows).

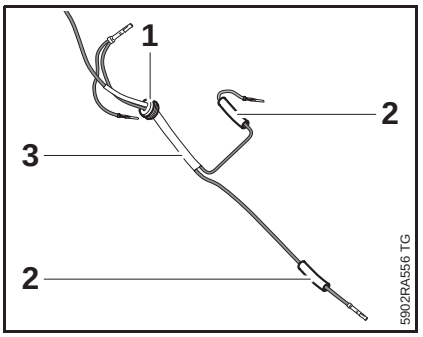


- Take the wiring harness (gray wire) connector with insulating tube (1) out of the guides (arrows).



- Push back the insulating tube (1) in the direction of the wiring harness and separate the pin and socket connector.

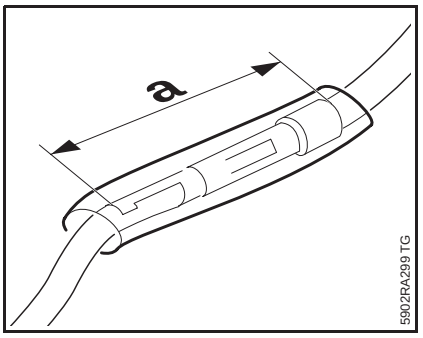
– Remove the wiring harness.



- Pull the insulating tubes (2) off the wiring harness.

- Check the wiring harness (3) and grommet (1) and replace if necessary.

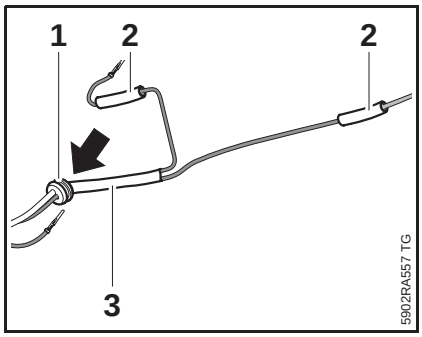
Installing



In all the following procedures:

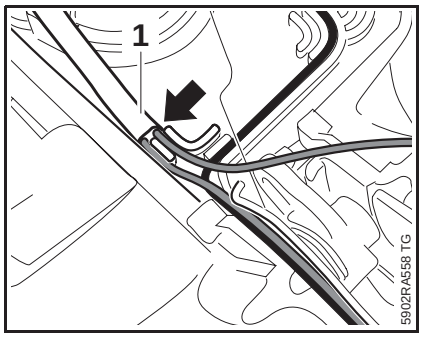
- Insulating tubes must be centered on the pin and socket connectors and cover them completely to avoid the risk of a short circuit.

- Push the pin and socket connector together – total length of pin and socket connector a = max. 30 mm.



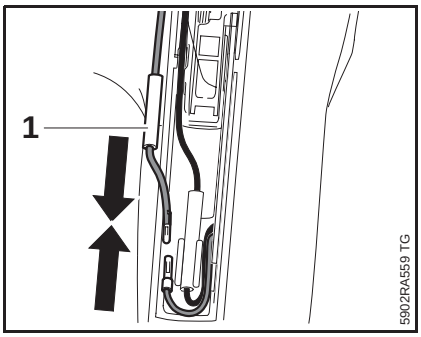
- Fit the insulating tube (2).

- Position the grommet (1) so that the recess (arrow) points towards the heat shrink tube (3).

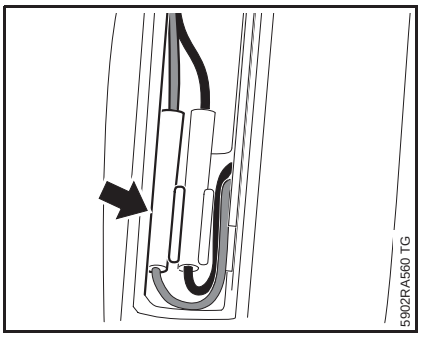


The black wire of the front handle heating element must be seated in the guides.

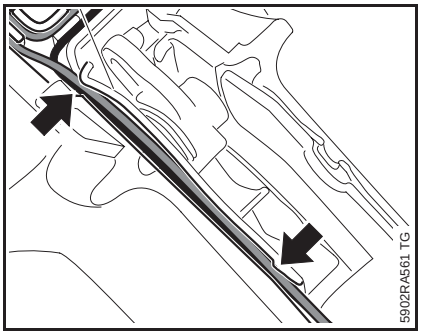
- Position the wiring harness (1) with heat shrink tube against the guide (arrow).



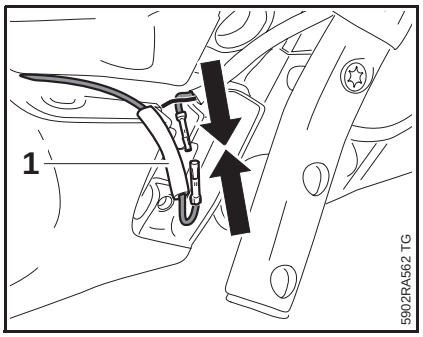
- Push the pin and socket together until they lock.
- Push the insulating tube (1) over the connector.



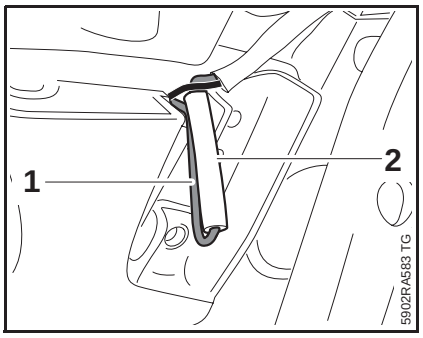
- The insulating tube must be seated in the guide (arrow).



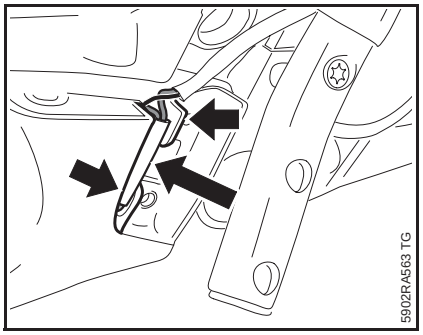
- Push the wire fully into the guide (arrows).



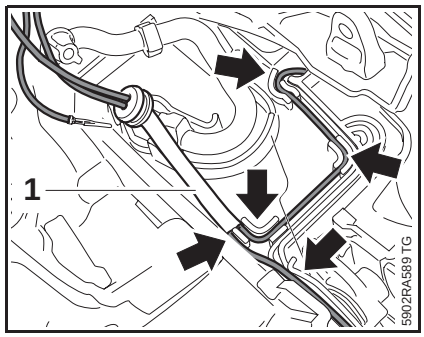
- Push the pin and socket together until they lock.
- Push the insulating tube (1) over the connector.



- Position the wire (1) so that it is behind the insulating tube (2).

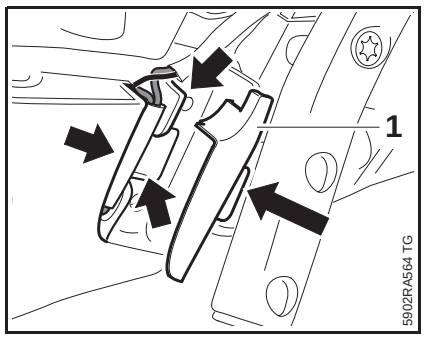


- Press the insulating tube into the guide (arrows).



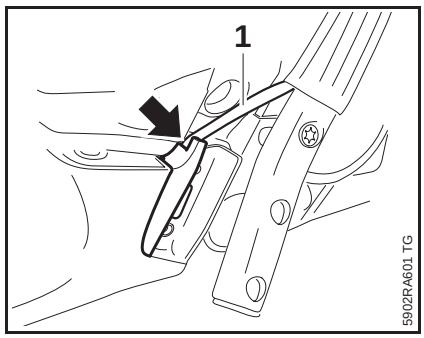
- Push the wiring harness (1) into the guides (arrows).

Make sure the wires are laid neatly and straight (no loops).

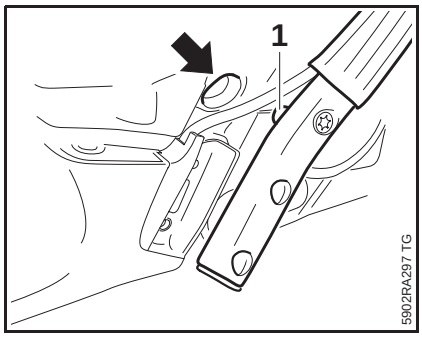


- Push the cover (1) into its seat (arrows).

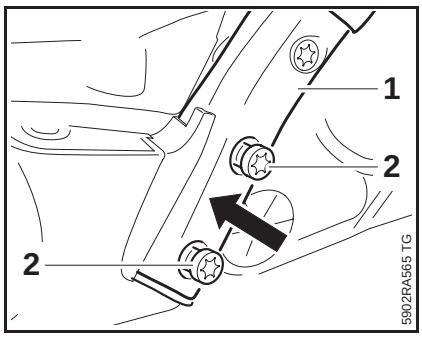
Make sure that the wires are not pinched.



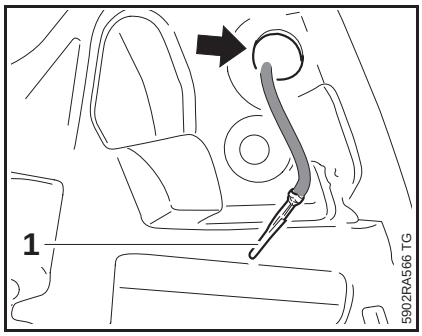
The wires with protective tube (1) must be properly seated (arrow).



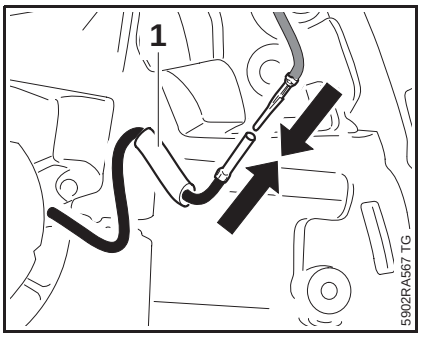
The peg (1) must engage the seat (arrow).



- Place the handlebar (1) in the support.
- Insert and tighten down the screws (2) firmly.

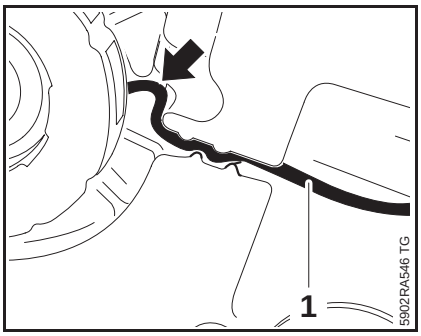


- Fit the terminal (1) through the bore (arrow).

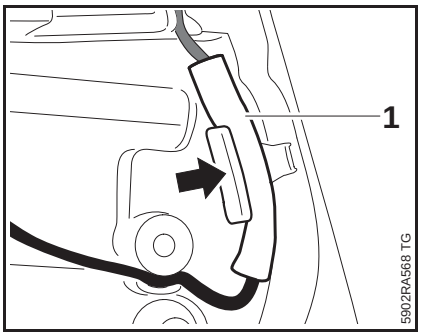


- Fit the insulating tube (1).
- Push the pin and socket together until they lock.

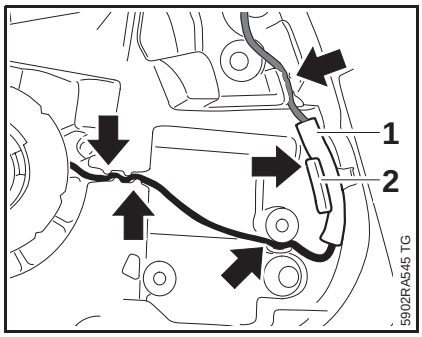
– Push the insulating tube (1) over the connector.



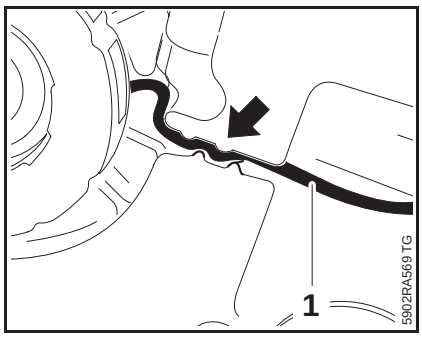
- Position the generator wire at the bottom of the recess (arrow).



- Center the connector and insulating tube (1) in the guide (arrow).



- Press the generator wire and wiring harness into the guides (arrows).
- Push the pin and socket connector with insulating tube (1) into the guide (2).



The wire (1) must be properly seated in the guide (arrow) and not project.

The flywheel must not touch the generator wire
– this could cause a break in power supply.

– Reassemble all other parts in the reverse sequence.

– Install the air guide shroud, 🕮 12.4

– Reassemble all other parts in the reverse sequence.

14. Special Servicing Tools

New Special Tools

No.	Description	Part No.	Application	Rem.
1	Press sleeve	1141 893 2400	Installing oil seal (ignition side)	
2	Installing sleeve	1141 893 4600	Protecting the oil seal (clutch and ignition sides)	
3	Screwdriver	5910 890 2306	Adjusting the carburetor	
4	Puller	5910 890 4502	Pull off the limiter cap.	
5	Puller	5910 890 4504	Removing flywheel	
6	Installing tool	5910 893 9600	Removing and installing collar nuts in sprocket cover	

Existing Special Tools

No.	Description	Part No.	Application	Rem.
1	Carburetor and engine tester	0000 850 1300	Testing engine and carburetor for leaks	
	- Nipple	0000 855 9200	Testing carburetor for leaks	
	- Hose for leakage test	1110 141 8600	Testing carburetor for leaks	
	- Plug for leakage test	1122 025 2200	Leakage testing decompression valve	
2	Sealing plate	0000 855 8106	Testing crankcase for leaks	
3	Installing tool	0000 890 2201	Installing rope guide bushing	
4	Clamping strap	0000 893 2600	Compressing the piston rings	
5	Locking strip	0000 893 5903	Blocking the crankshaft	
6	Pliers DIN 5254-A 19	0811 611 8380	Removing and installing external circlips	
7	Screwdriver bit, T 27 x 125	0812 542 2104	Removing and installing spline socket screws with electric or pneumatic screwdrivers; tightening down screws with torque wrench	
8	Wooden assembly block	1108 893 4800	Supporting the piston	
9	Assembly drift	1110 893 4700	Removing and installing piston pin	
10	Setting gauge	1111 890 6400	Adjusting air gap between the ignition module and flywheel	
11	Installing tool	1116 893 4800	Installing rewind spring	
12	Assembly tube	1117 890 0900	Attaching springs	
13	Press sleeve	1118 893 2401	Installing oil seal (clutch side)	
14	Press arbor	1118 893 7200	Installing ball bearings	
15	Test flange	1119 850 4201	Leakage Test	
	- Sleeve	5910 893 1701	Spacer sleeves for test flange	
16	Combination wrench	1129 890 3401	Spark plug	1)

No.	Description	Part No.	Application	Rem.
17	Service tool ZS (set) including drilled plate 5910 893 2103	5910 007 2201	Removing and installing crankshaft (ignition side)	
	- Drilled plate to supplement service tool ZS (set) 5910 007 2200	5910 893 2103	Pulling two halves of crankcase together	
	- Screw sleeve	5910 893 2420	Installing crankshaft	
18	Service tool AS (set)	5910 007 2205	Removing and installing crankshaft (clutch side)	
	- Screw sleeve	5910 893 2409	Pulling two halves of crankcase together	
19	Clamping strap for assembly stand	5910 850 1650	Clamping machine to assembly stand	
20	Ignition system tester, ZAT 4	5910 850 4503	Testing ignition system	
21	Ignition system tester, ZAT 3	5910 850 4520	Testing ignition system	
22	Torque wrench	5910 890 0302	0.5 to 18 Nm	
23	Torque wrench	5910 890 0312	6 to 80 Nm	
24	Installing tool 10	5910 890 2210	Installing hookless snap rings in piston	
25	Screwdriver bit, T 27 x 150	5910 890 2400	IS-P screws	
26	Hook	5910 890 2800	Detaching springs on clutch shoes	
27	Assembly stand	5910 890 3100	Holding saw for repairs	
28	Puller	5910 890 4400	Removing oil seals	
	- Jaws (No. 3.1)	0000 893 3706	Removing oil seal(s)	
29	Stud puller M8	5910 893 0501	Removing bar mounting studs	
30	Socket, 13 mm, long	5910 893 2804	Removing and installing decompression valve	
31	Setting disk	5910 893 6600	Add-on for screwdriver (adjusting carburetor)	
32	Hook	5910 893 8800	Removing pickup body	

Remarks:

1) Use for releasing only.

15. Servicing Aids

No.	Description	Part No.	Application
1	Lubricating grease (225 g tube)	0781 120 1111	Oil seals, sliding and bearing points
2	STIHL special lubricant	0781 417 1315	Bearing bore in rope rotor, rewind spring in fan housing
3	STIHL press fluid OH 723	0781 957 9000	Rubber components, AV buffers
4	STIHL multipurpose grease	0781 120 1109	High voltage output on ignition module
5	Medium-strength threadlocking adhesive (Loctite 242)	0786 111 2101	
6	High-strength threadlocking adhesive (Loctite 270)	0786 111 2109	
7	Standard commercial solvent-based degreasant containing no chlorinated or halogenated hydrocarbons		Cleaning sealing faces and carburetor, crankshaft stubs and flywheel taper

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0455 573 0123. M0. E10. xxx. Printed in Germany