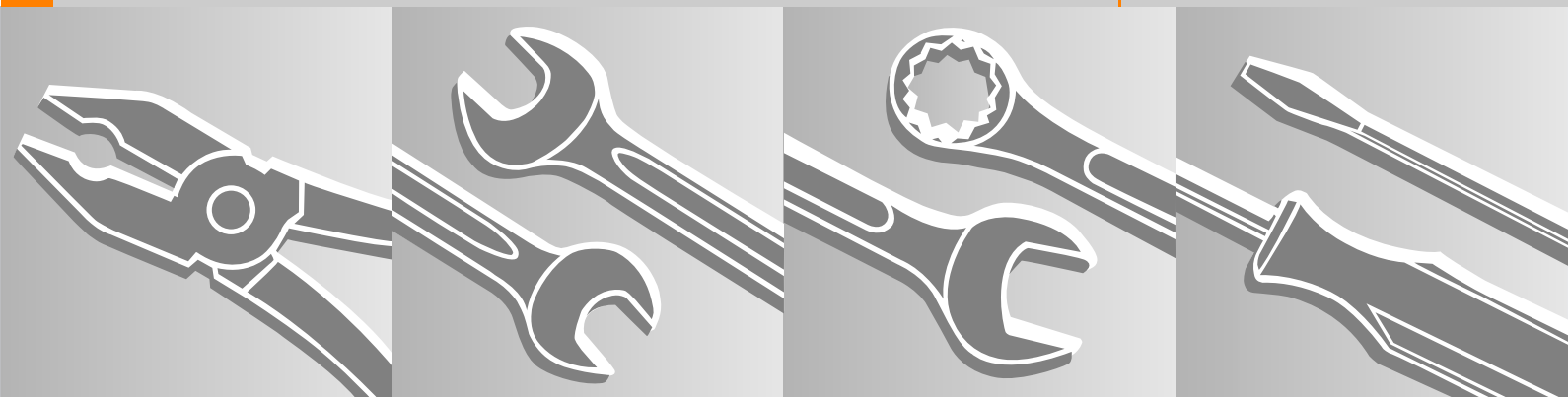


**STIHL TS 500i**

2012-02



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# 1. Introduction and safety precautions

## 1.1 Introduction

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

Refer to the illustrated spare parts lists during all repair work. These lists show the installation position and order in which the individual parts and modules should be assembled.

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

A fault on the machine may be due to several causes. To help locate the fault, consult the chapter on "Troubleshooting" and the "STIHL Service Training System" for all functional groups.

Refer to the "Technical Information" bulletins for engineering changes which have been introduced since publication of this Service Manual. The "Technical information bulletins" also supplement the spare parts list and Service Manual until an updated edition is issued.

The special tools mentioned in the descriptions are listed in the chapter "Special Servicing Tools" of this manual. The tools can be identified according to part number in the "Special Tools Manual". The manual lists all tools supplied by STIHL.

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

In the text:

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

– = Action to be taken but not shown in the illustration above the text

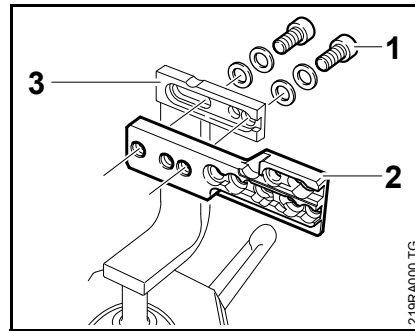
In the illustrations:

➔ Item pointer (short)

➔ Direction of movement (long arrow)

📖 4.2 = Reference to another chapter, in this case to Chapter 4.2

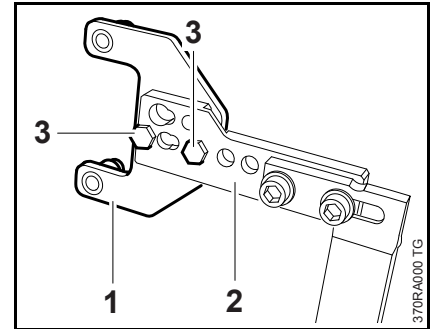
Service Manuals and "Technical information bulletins" are intended exclusively for the use of properly equipped repair shops. They must not be passed on to third parties.



Servicing and repairs are made considerably easier if the machine is mounted on assembly stand (3) 5910 890 3100. For this purpose, secure the mount (2) 5910 850 1650 to the assembly stand with two screws (1).

For the assembly block 5910 890 3101 the abovementioned mounting step is dropped since the mount is already attached.

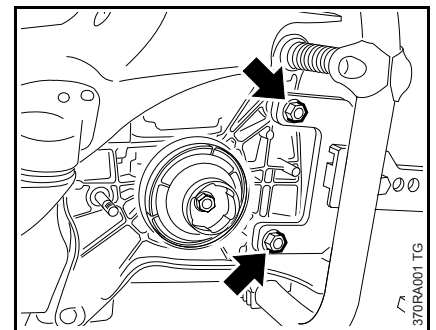
The screws must not protrude, as they may damage the housings when clamping the machine, depending on the model.



The clamping plate (1) 4238 890 2100 is secured to the mount (2) using two screws M8x20 (3) and washers.

### Preparing to make repairs

In order to be able to clamp the machine for the repair work on the assembly stand, the "cast arm with guard" must be removed 📖 4.2.



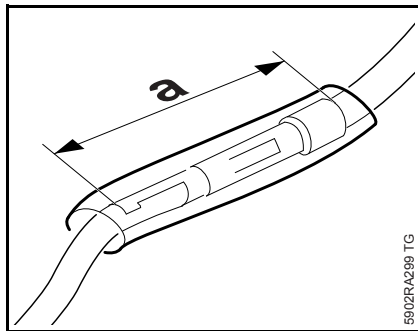
The machine is guided by the two front studs on the crankcase through the bushings of the clamping plate and is secured with the nuts (arrows).

Always use original STIHL replacement parts. They can be identified by the STIHL part number, the logo **STIHL** and the STIHL parts symbol . The symbol may appear alone on small parts.

### Storage or disposal of fuel

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

### Plug connections on electrical leads



The insulating tube must be oriented so that it is centered over the plug connection and completely enclose the plug connection – danger of short-circuiting.

The plug connection is completely plugged together when it has a total length of  $a = \text{max. } 30 \text{ mm}$ .

### Routing the leads

In principle, press all electrical leads into the guides using the wiring tool 5910 890 4000.

## 1.2 Safety precautions

Specific national safety regulations and the safety instructions in the instruction manual must be observed if the machine has to be started up during maintenance or repair work.

Fuel is highly inflammable and can also be explosive under certain conditions.

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

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

Exercise extreme caution while carrying out maintenance and repair work on the electronically controlled injection system – STIHL Injection. The high voltages which occur can cause serious or fatal accidents.

Keep everything clean when working on the electronically controlled injection system STIHL Injection.

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

Improper handling may result in burns and other serious injuries.

Always replace damaged parts. Check dismantled parts for wear and damage before installation, replace if necessary.

Only use the machine with the fan cover mounted – otherwise the rotating flywheel poses a risk of injury and there is a risk of engine damage due to overheating.

Only start engine with built-in throttle shutter housing.

The chapter "Tightening Torques" lists all components of this machine that must be tightened with the specified tightening torques or coated with thread-locking adhesive. These specifications must be observed throughout the Service Manual when tightening screws and nuts as well as other fasteners.

## **Fuel system – barbed connectors**


Pull or push the fuel hoses, by hand whenever possible, in the direction of the connector in order to ensure leakproofness of the fuel system.

Avoid damaging the barbed connectors

– sharp-edged pliers, screwdrivers, etc., may not be used.

Also, do not cut open fuel hoses with a knife or similar aids.

Do not reuse fuel hoses after disassembly, but instead always replace them with new hoses  
– fuel hoses can be overstretched when being detached.

Mount new fuel hoses dry or using STIHL press fluid – apply press fluid to the ends of the hose and the connectors,  13.

Other press fluids are not permitted and may lead to fuel hose damage.

## 2. Specifications

### STIHL Injection

Control unit with load dependent, characteristic-curve-driven ignition timing adjustment and fuel injection.

### Electronic water control

The electronic water control makes it possible to feed the optimum amount of water to the abrasive wheel. No water is fed to the abrasive wheel during idling.

## 2.1 Engine

### TS 500i

Displacement:	72.2 cm <sup>3</sup>
Cylinder bore:	52 mm
Stroke:	34 mm
Engine power to ISO 7293:	3.9 kW (5.3 HP) at 9500 rpm
Cut-off speed:	9800 rpm
Max. spindle speed to ISO 19432:	4780 rpm
Idle speed:	2500 rpm
Clutch:	Centrifugal clutch without linings
Clutch engages at:	4000 rpm
Crankcase leakage test at gauge pressure:	$p_{\bar{u}} = 0.5 \text{ bar}$
under vacuum	$p_{\underline{u}} = 0.5 \text{ bar}$

---

## 2.2 Fuel system

Fuel system leakage test at gauge pressure:	$p_{\bar{u}} = 0.8 \text{ bar}$
Operation of tank vent at gauge pressure:	$p_{\bar{u}} = 0.3 \text{ bar}$
Fuel:	as specified in instruction manual

---

## 2.3 Spark plug

Spark plug (suppressed):	Bosch WSR6F NGK BPMR 7 A
Electrode gap:	0.5 mm

---

## 2.4 Abrasive wheels

Composite and diamond cutting wheels	Diameter	350 mm
	Cutting depth	125 mm

## 2.5 Tightening torquese

P and DG screws are fitted in plastic and light alloy metal parts. These screws form a permanent thread when they are installed for the first time. The material is permanently deformed. Screws can be removed and installed as often as necessary without impairing the strength of the screwed assembly, provided that the specified tightening torque is observed.

For this reason **it is essential to use a torque wrench.**

When inserting DG and P screws into an existing screw thread:

Insert the DG or P screw in the hole and turn counterclockwise until it gently drops into the hole in axial direction and engages the existing threads. 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.

For the microencapsulated screw, before renewed assembly, clean both threads (insert tap in the internal thread by hand and then blow out the threaded hole, brush off the exterior thread), coat the cleaned screw with medium-strength Loctite 242 or 243.

Screwdriver speed when used in plastic material: P and DG screws max. 500 rpm.  
Do not use an impact wrench to release or tighten screw connections.

Screws with and without locking serration must not be confused.

Fastener	Thread size	For component	Tightening torques	Comment
			Nm	
Screw	P4x16	Limit stop / cast arm	1.8	
Screw	M8	Stop pin / cast arm	5.0	
Screw	M6x28	Cast arm / flange	8.0	2)
Collar nut	M8	Cast arm / rewind starter / stud	20.0	
Screw	M5x17	Cover / shroud (service cover)	4.5	
Screw	P6x19	Cap / solenoid valve / tank housing	6.0	
	M10x1	Decompression valve	14.0	
Screw	M4x20	Injection valve / crankcase	3.0	2)
Screw	M5x20	Filter cover / tank housing	6.0	
Screw	M4x9.6	Spark arresting screen / muffler	2.0	
Screw	M5x20	Generator / crankcase	6.0	2)
Screw	P5x16	Handle molding / shroud	4.0	
Screw	D5x20	Rubber buffers / support	6.0	6)
Screw	P5x16	Holder / switch / shroud	4.0	
Screw	P6x19	Shroud / tank housing	6.0	



Fastener	Thread size	For component	Tightening	Comment
			torques Nm	
Screw	M5x17	Cap, spark plug cover / shroud	4.5	
Nut	M10x1 L	V-belt pulley, front	45.0	
Screw	P6x40	Clamp / handlebar / tank housing	6.0	
Screw	P6x26	Clamp / tank housing	6.0	
Screw	D5x45	Clamp / antivibration system / handlebar holder	6.0	2)
Screw	M5x35x22	Manifold / throttle shutter housing / cylinder	6.0	2
Screw	P6x19	Crankcase / bearing plug antivibration system	6.0	
Screw	M5x32x22	Crankcase / cylinder	9.0	2)
Screw	M5x20	Crankcase clutch side / fan side	8.0	2)
Screw	M5x35x22	Crankcase clutch side / fan side	8.0	2)
Screw	P5x16	Bearing plug antivibration system / tank housing	4.0	
Screw	M5x20	Fan cover / crankcase	6.0	2)
Screw	P6x19	Air baffle / tank housing	6.0	
Screw	M5x20	Air guide shroud / crankcase	3.0	2)
Screw	M4x12	Ground wire / cover / crankcase	4.0	3)
	M12x1 L	Carrier	40.0	
Screw	P3x6	Rewind spring / starter cover	0.5	
Screw	M5x20	Muffler / cylinder 1st stage	2.5	2)
Screw	M5x20	Muffler / cylinder 2nd stage	10.0	2)
Screw	M5x20	Muffler / crankcase	10.0	2)
Screw	G 3/8"	Hose connection / solenoid valve	2.0	
Screw	M5x21	Guard / cast arm	6.0	
Nut	M8x1	Flywheel / crankshaft	33.0	5)

Fastener	Thread size	For component	Tightening torques	Comment
			Nm	
Screw	M4x12	Sensor / crankcase	2.0	3)
Screw	M3x20	Hose clamp, manifold / cylinder	0.5	
Screw	D5x24	Clamping lever / cast arm	4.0	2)
Nut	M8x1	Starter cup / crankshaft	33.0	
Screw	M8x53	Stud / crankcase	21.0	4)
Screw	P6x50	Support / clamp / handlebar / tank housing	6.0	
Screw	P6x19	Support / bearing plug antivibration system	6.0	
Screw	P6x40	Support / tank housing	6.0	
Screw	M10x18	Abrasive wheel	30.0	
Screw	M5x30	Adjusting lever / guard	6.0	2)
Screw	M8x24	Adjusting lever / guard / square nut	4.0	
Screw	M8x17	Adjusting lever / guard / square nut	4.0	
	M14x1.25	Spark plug	25.0	
Screw	M4x8	Pan head screw / banjo screw	3.0	

- 
- 1) Loctite 243 medium strength
  - 2) Easy-slide coating with locking serration
  - 3) Microencapsulated with locking serration
  - 4) Microencapsulated
  - 5) Connection between crankshaft and flywheel must be degreased and oil-free
  - 6) Easy-slide coating

### 3. Troubleshooting

#### 3.1 Clutch

Problem	Cause	Remedy
Cutting wheel stops under load at full throttle	Clutch shoes badly worn	Replace clutch
	Clutch drum badly worn	Replace clutch drum
Cutting wheel rotates at idle speed	Clutch springs stretched or fatigued	Replace clutch springs or replace clutch
	Anchor loops of the clutch spring hooks are broken	Replace clutch springs
	Throttle cable is jammed	Check easy movement of throttle cable and replace if necessary
	Throttle trigger is stiff	Check throttle trigger, repair if necessary
	Throttle shutter does not return automatically	Check the throttle shutter stops and replace throttle shutter housing if necessary
Loud noises	Clutch springs stretched or fatigued	Replace all clutch springs
	Grooved ball bearing on poly V-belt pulley / clutch drum damaged	Replace ball bearing
	Clutch shoe retainer broken	Replace holder
	Clutch shoes and carrier worn	Replace clutch

### 3.2 Cast arm with guard

Problem	Cause	Remedy
Cutting wheel does not run smoothly or vibrates	Axial or radial runout	Set axial or radial true running, replace cutting wheel if necessary
	Ribbed poly V-belt is loose	Check and tension ribbed poly V-belt, replace ribbed poly V-belt or tensioner if necessary
	Grooved ball bearing of the front poly V-belt pulley is worn	Replace ball bearing
Cutting wheel stops under load at full throttle	Clutch shoes badly worn	Replace clutch
	Clutch drum badly worn	Replace clutch drum
	Ribbed poly V-belt not properly tensioned	Tension ribbed poly V-belt, replace if necessary
Cutting wheel rotates at idle speed	Clutch springs stretched or fatigued	Replace clutch springs or replace clutch
	Anchor loops of the clutch spring hooks are broken	Replace clutch springs
	Throttle cable is jammed	Check easy movement of throttle cable and replace if necessary
	Throttle trigger is stiff	Check throttle trigger, repair if necessary
	Throttle shutter does not return automatically	Check the throttle shutter stops and replace throttle shutter housing if necessary

### 3.3 Solenoid valve / Water system

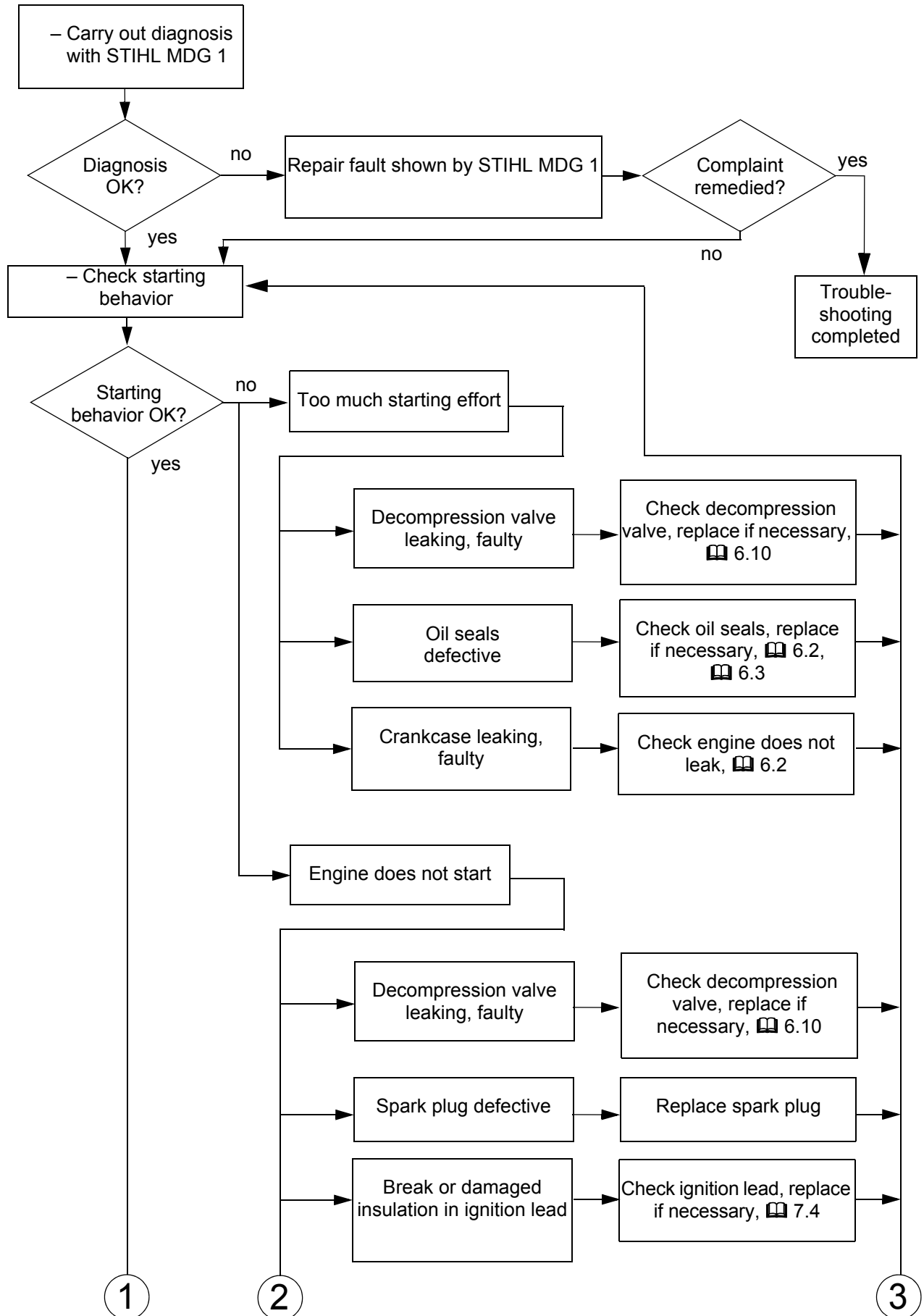
Problem	Cause	Remedy
No water supply	Solenoid valve does not react even though the control panel was actuated	Run test with STIHL MDG 1, replace solenoid valve if necessary
	Banjo screws (water nozzles) are very dirty	Clean the banjo screws, replace if necessary
	Control panel damaged	Run test with STIHL MDG 1, replace control panel if necessary
Water volume too low even though it has been increased via the control panel	Banjo screws (water nozzles) are very dirty	Clean the banjo screws, replace if necessary
	Water hose kinked or damaged – also check water supply hose	Check hose clips, water hose and seals, replace if necessary
	Manifold for hose connection is clogged	Check manifold and clean (rinse screen), replace if necessary
	Control panel damaged	Check control panel with STIHL MDG 1, replace if necessary
Water supply even though machine has been switched off	Solenoid valve is damaged or jams – solenoid valve no longer closes	Check solenoid valve, replace if necessary
Leaks in the water system	O-ring and / or seal on water attachment damaged	Replace O-ring and seal, replace whole water attachment if necessary
	Hose clips open or damaged or hose damaged	Close hose clips, replace if necessary, replace damaged hose

Problem	Cause	Remedy
Abrasive wheel runs dry even though water control has been switched on	Manifold for hose connection is clogged	Check manifold and clean (risen screen), replace if necessary
	Nozzles are clogged	Clean nozzles, replace if necessary
	Control panel damaged	Check control panel with STIHL MDG 1, replace if necessary
	Solenoid valve is damaged or jams	Check solenoid valve with STIHL MDG 1, replace if necessary
	Water hose kinked or damaged – also check water supply hose	Run water hose so that it is free of kinks, replace damaged water hose

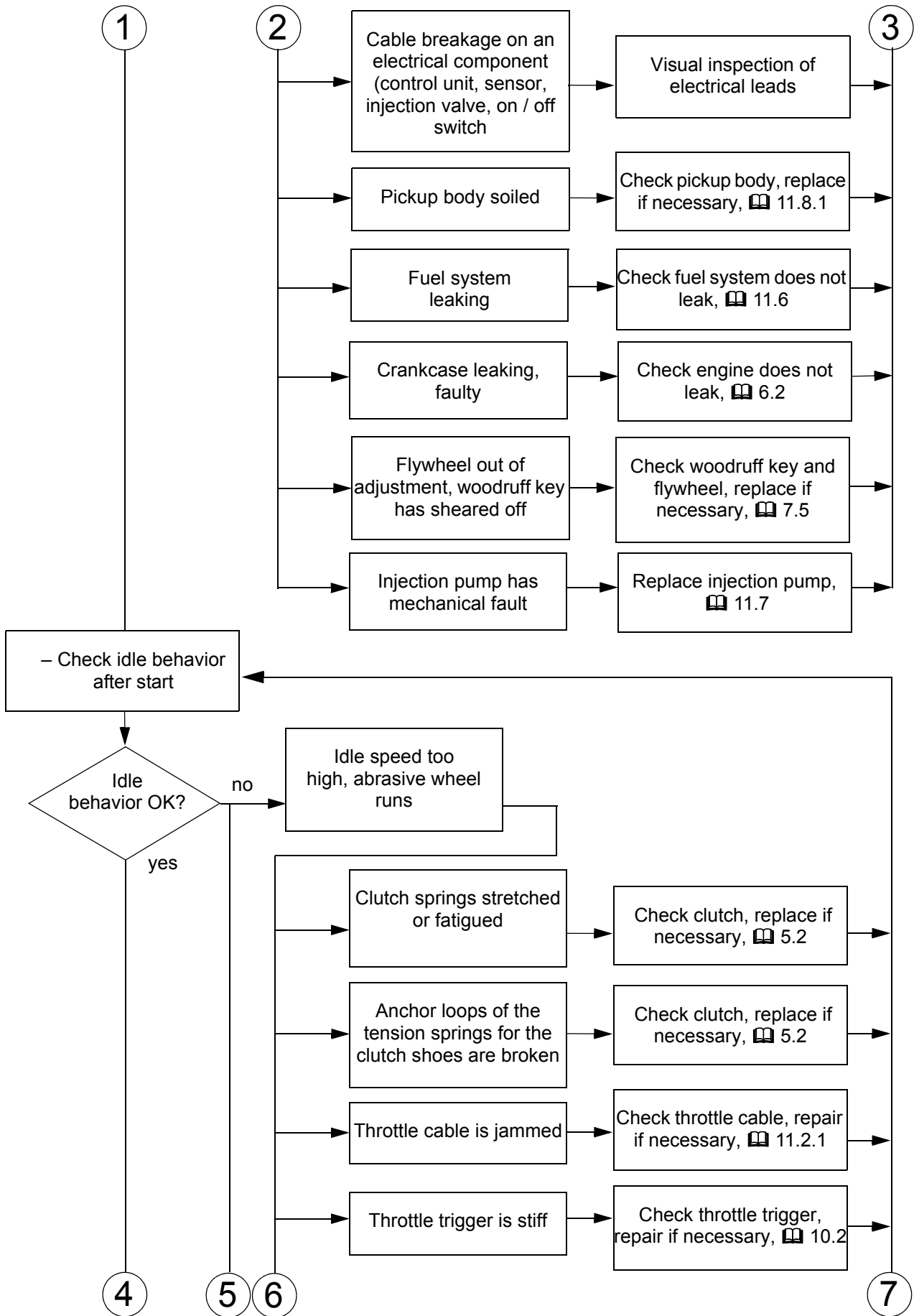
### 3.4 Starter

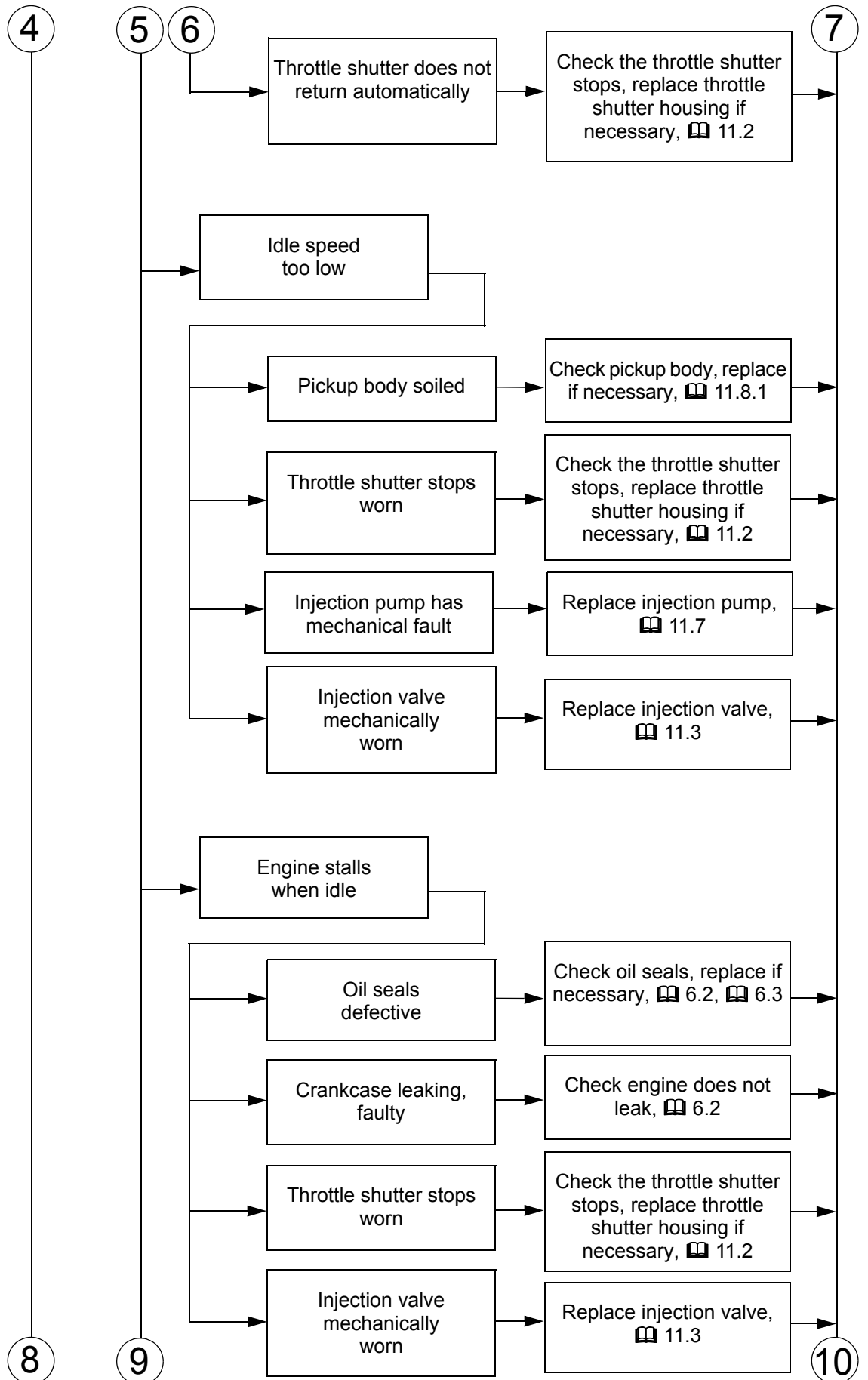
Problem	Cause	Remedy
Starter rope broken	Rope pulled out too vigorously as far as stop or over edge, i.e. not vertically	Replace starter rope
	Normal wear	Replace starter rope
Starter rope does not rewind	Very dirty or corroded	Clean or replace rewind spring
	Spring insufficiently tensioned	Check rewind spring and increase tension
	Rewind spring broken	Replace rewind spring
Starter rope cannot be pulled out far enough	Rewind spring overtensioned	Check rewind spring and reduce tension
Starter rope can be pulled out almost without resistance (crankshaft does not turn)	Guide peg on pawls or pawls themselves are worn	Replace pawls
	Spring clip fatigued	Replace spring clip
	Loose starter cup	Tighten starter cup, replace if necessary
Starter rope is difficult to pull or rewinds very slowly	Starter mechanism is very dirty	Thoroughly clean complete starter mechanism
	Lubricating oil on rewind spring becomes viscous at very low outside temperatures (spring windings stick together)	Coat rewind spring with a little standard solvent-based degreasant (containing no chlorinated or halogenated hydrocarbons), then pull rope carefully several times until normal action is restored

### 3.5 Troubleshooting chart STIHL Injection










8

9

10

Idle speed unstable,  
erratic


Spark plug boot  
is loose on the  
spark plug

Press boot firmly onto  
spark plug, replace torsion  
spring if necessary,  7.4

Spark plug sooted,  
smeared with oil

Clean spark plug, replace  
if necessary


Ignition lead loose on  
control unit

Secure ignition  
lead,  7.4


Fuel / oil mixture  
contains too much oil

Use a fuel mixture with the  
correct mixing ratio

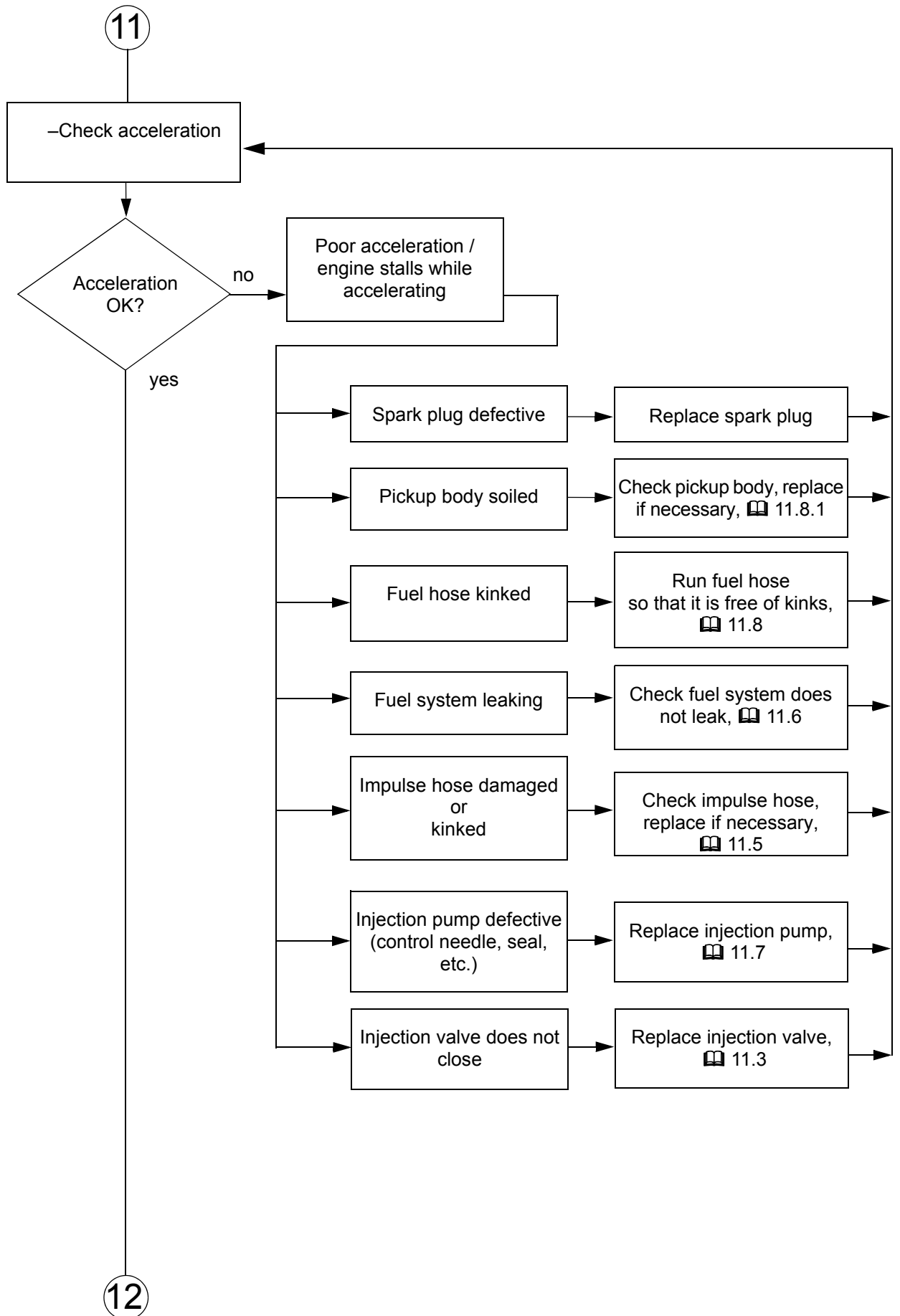
Flywheel is cracked,  
damaged

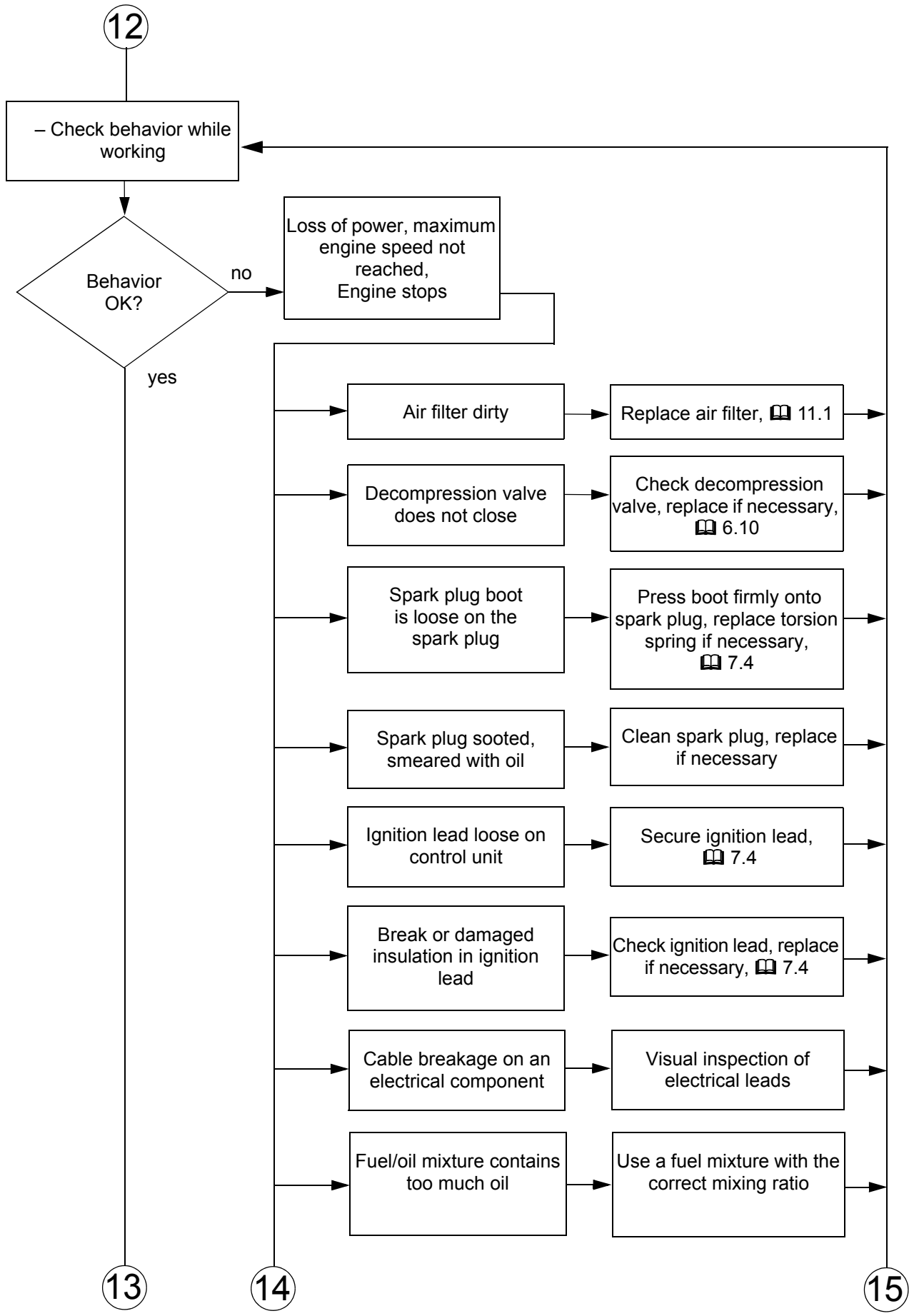
Check flywheel, replace if  
necessary,  7.5

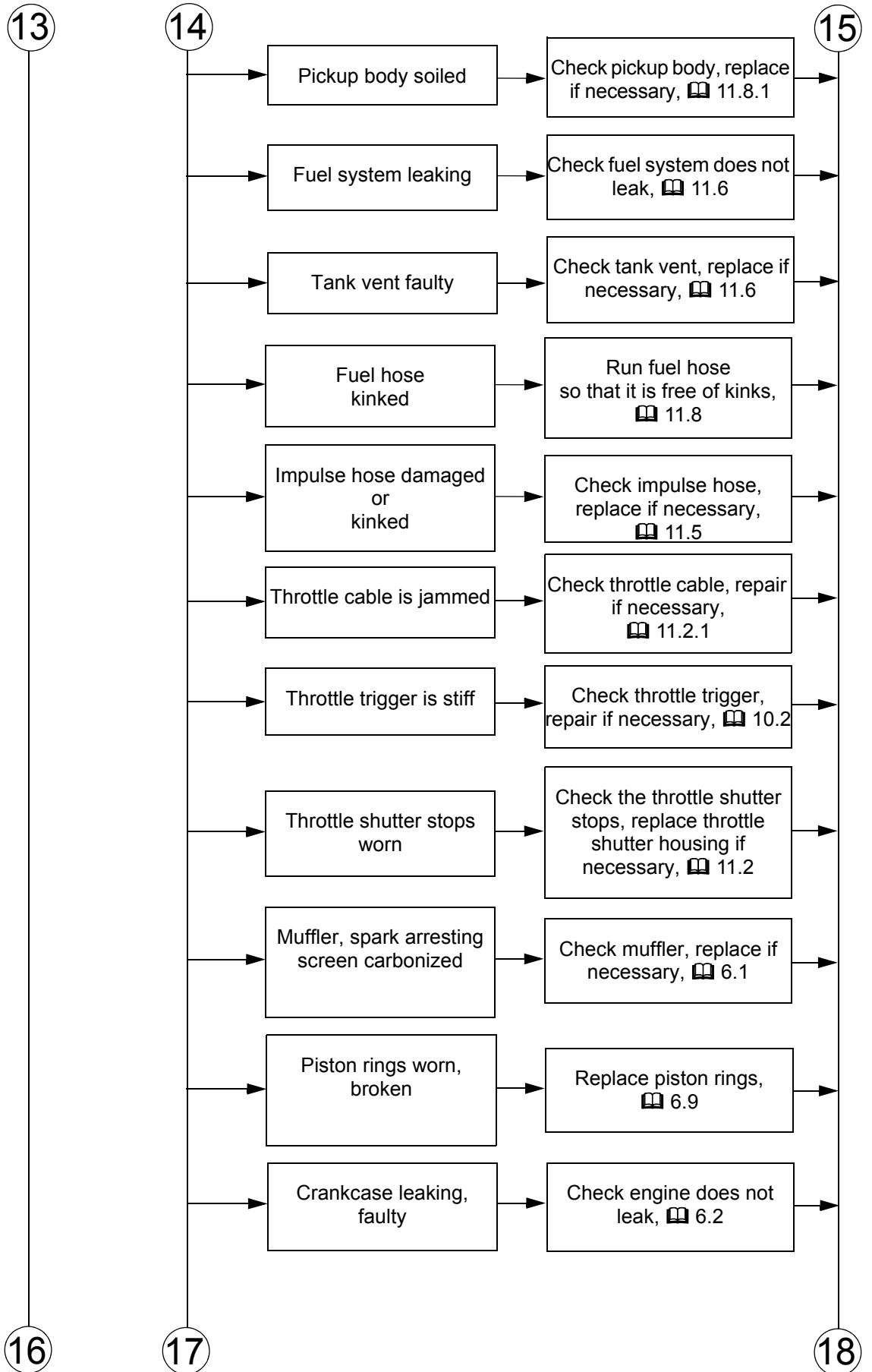
Flywheel out of  
adjustment, woodruff key  
has sheared off

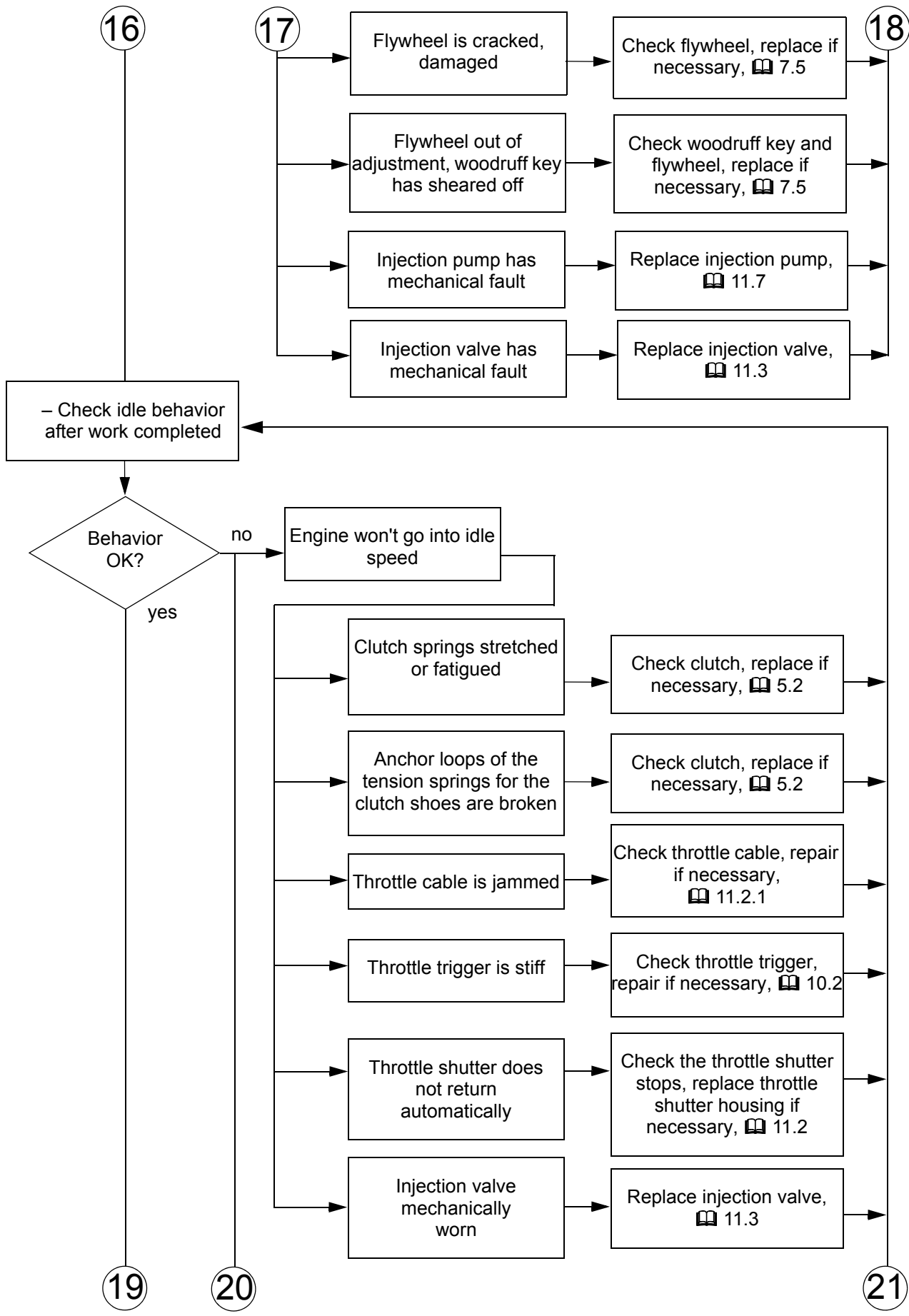
Check woodruff key and  
flywheel, replace if  
necessary,  7.5

11









19

20

21

Engine delays going into idle speed

Throttle cable is jammed

Throttle trigger is stiff

Throttle shutter does not return automatically

Check throttle cable, repair if necessary, 11.2.1

Check throttle trigger, repair if necessary, 10.2

Check the throttle shutter stops, replace throttle shutter housing if necessary, 11.2

Engine speed drops, engine stops

Oil seals defective

Crankcase leaking, faulty

Throttle shutter stops worn

Injection valve mechanically worn

Check oil seals, replace if necessary, 6.2, 6.3

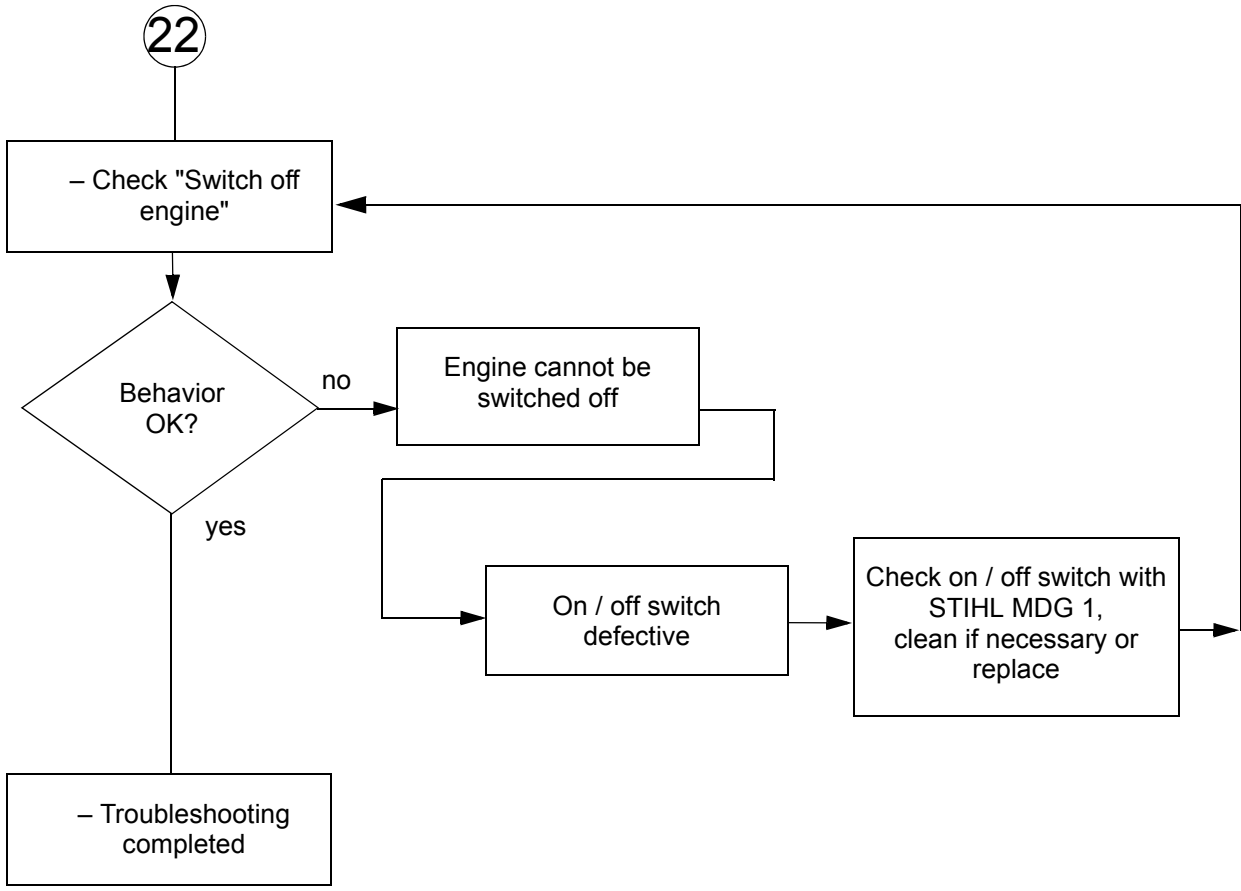
Check engine does not leak, 6.2

Check the throttle shutter stops, replace throttle shutter housing if necessary, 11.2

Replace injection valve, 11.3

22

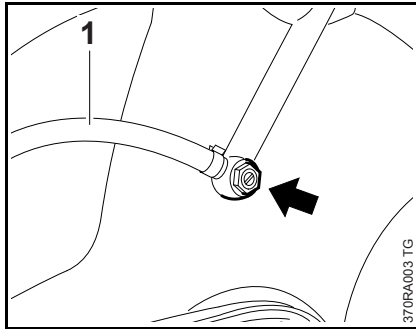




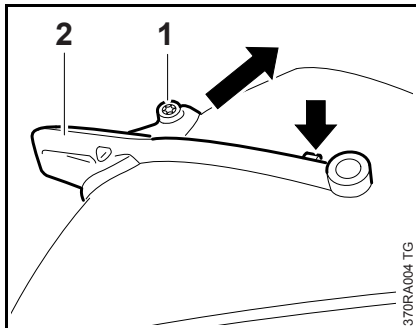
## 4. Cast arm with guard

### 4.1 Water system

#### 4.1.1 Nozzles



- Take out banjo screws (arrow) on both sides – the square nuts inside the guard drop down.
- Take out and examine the water hose (1), replace if necessary
- Check banjo screws, O-rings and seal, replace if necessary

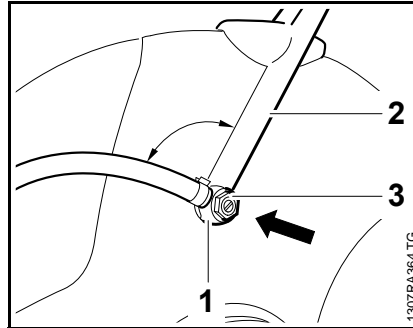



- Remove screw (1)
- Guide the adjusting lever (2) over the lift-off lugs (arrow) with a gentle turning movement and remove it.

### Installation

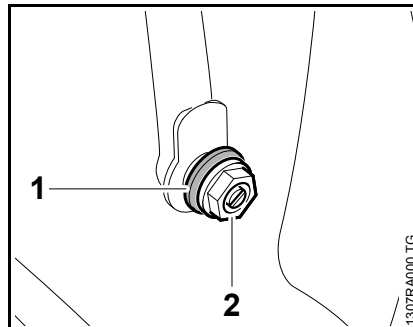
When fitting the adjusting lever, it is simply pushed into place until it engages.


- Insert and tighten the screw

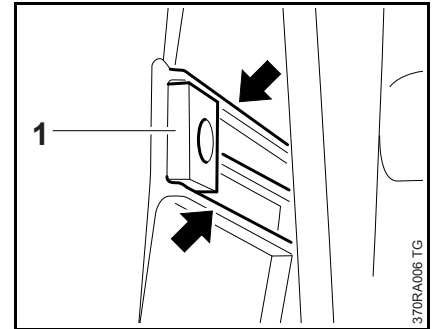


- Fit the connector (1) with water hose and align it at a right angle to the adjusting lever (2).
- Coat O-ring with STIHL press fluid,  13
- Insert banjo screw (3)
  - Do not damage O-ring

### Opposite side

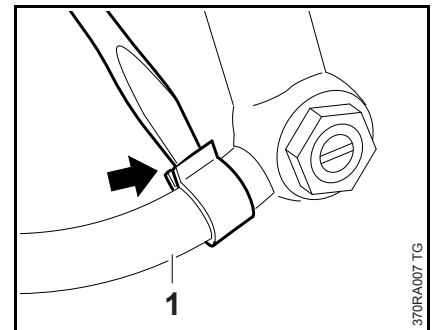


- Push gasket (1) onto banjo screw (2)
- Coat O-ring with STIHL press fluid,  13
- Insert banjo screw (2)
  - Do not damage gasket or O-ring

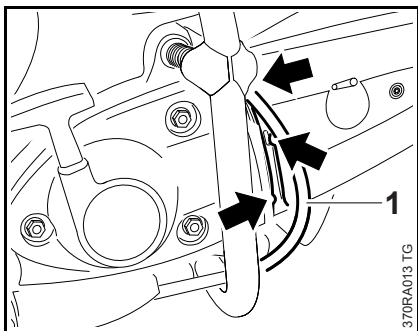


- Fit the square nuts (1) in the guides (arrows) inside the guard on both sides and hold it.
- Hold the square nuts (1) in place and screw in and tighten banjo screws on both sides

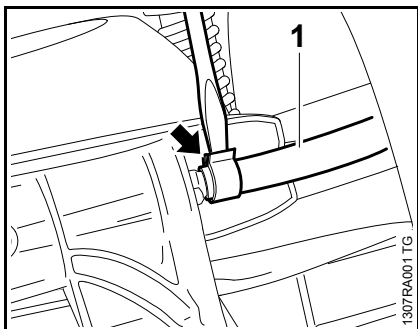
#### 4.1.2 Water hose



- Apply a screwdriver to the hose clip (arrow) and turn slightly to open the clip.
- Remove water hose (1)



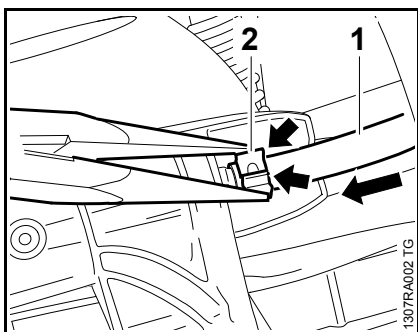
- Pull the water hose (1) out of the guides (arrows).



- Apply a screwdriver to the hose clip (arrow) and turn slightly to open the clip.

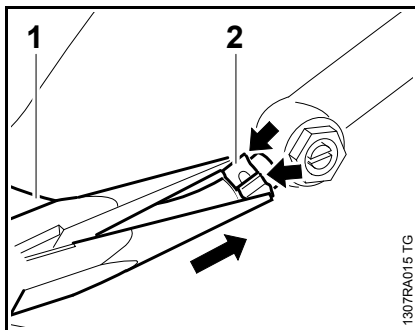
- Pull off the hose (1).

### Installation



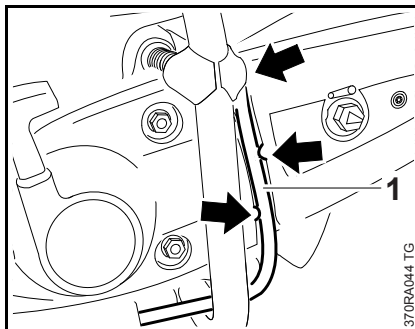
- Push hose clip onto water hose

- Push water hose (1) as far as possible onto the support of the solenoid valve, then align the hose clip (2)
- Press the tabs (arrows) on the hose clip (2) together until they engage



- Push hose clip onto water hose

- Push water hose (1) as far as possible onto the support of the nozzle, then align the hose clip (2)
- Press the tabs (arrows) on the hose clip (2) together until they engage

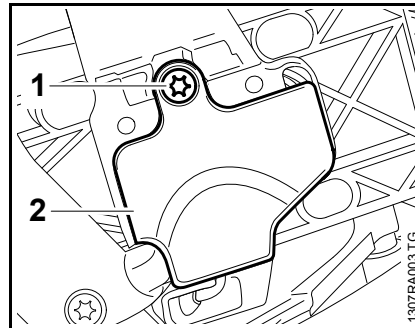


- Starting from the solenoid valve, route the water hose (1) without any tight bends or kinks.

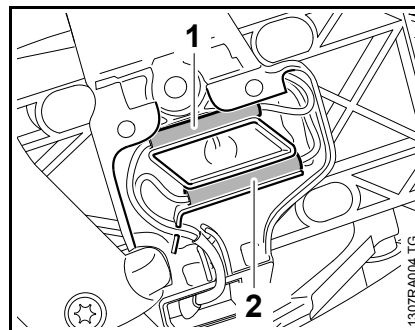
- Press the water hose (1) into the guides (arrows)

### 4.1.3 Solenoid valve

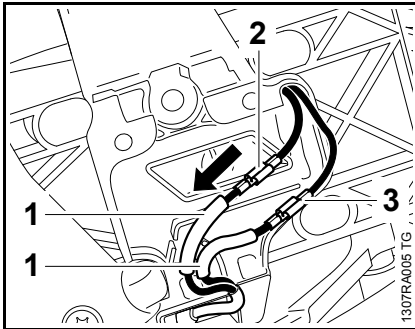
- Troubleshooting, 3.3
- Disconnect the water hose from the solenoid valve, 4.1.2



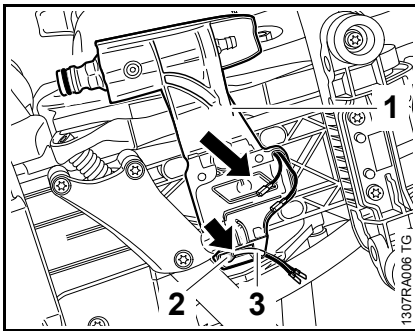
- Remove screw (1) on the bottom of the machine and remove the cover (2)



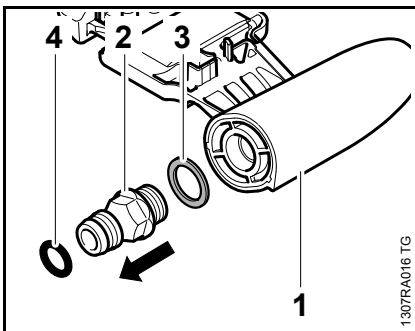
- Pull insulating tubes with plug connections (1, 2) out of the guides



- Push insulating tubes (1) off the plug connections (2, 3)
- Disconnect plug connections (2, 3)
- Pull insulating tubes off the wiring harness

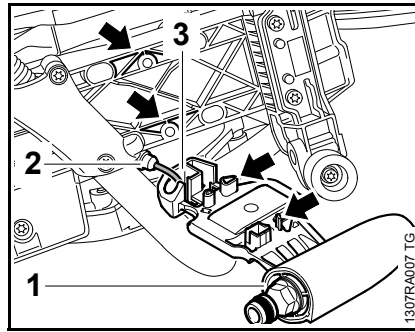


- Pull solenoid valve (1) from the bushing (2) and remove, pull wiring harness (3) through the opening (arrow)

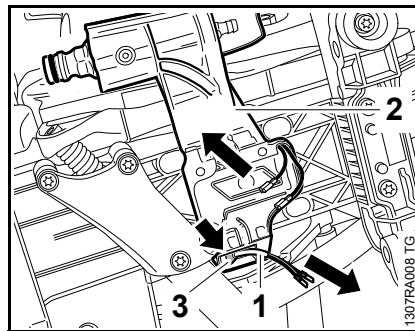


- Check solenoid valve (1), unscrew hose connection (2) if necessary, replace sealing ring (3) and O-ring (4)

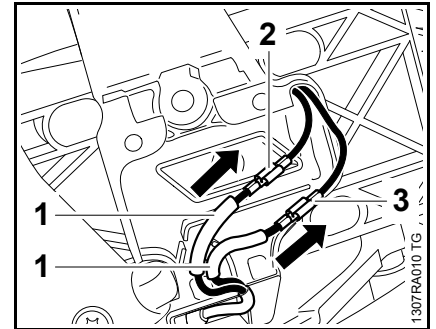
## Installation




- Orient solenoid valve (1) so that the raised parts (arrows) engage in the profiles (arrows)
- Push wiring harness (2) into the opening (3)

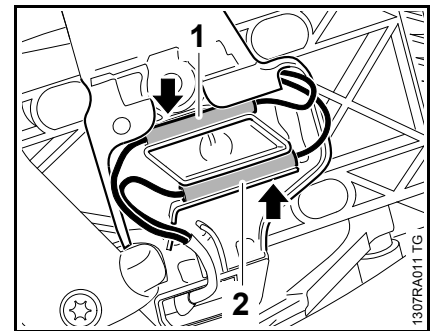


- Pull wiring harness (1) through the opening and fit solenoid valve (2), pushing the bushing (3) into the mount (arrow) – the bushing (3) must be completely seated in the mount

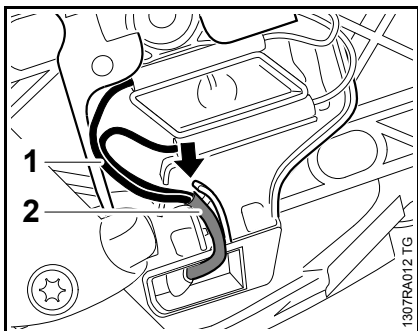


- Push insulating tubes (1) into place and completely push together the plug connections (2, 3)  
– Leads can be interchanged

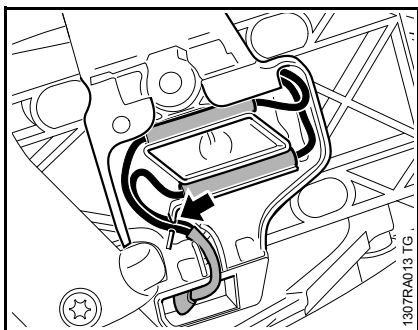
- Slide insulating tubes (1) over the plug connections,  1.1



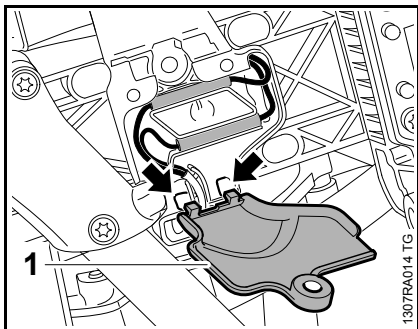
- Press insulating tubes with plug connections (1, 2) completely into the guides (arrows)  
– Align insulating tubes with plug connections in the middle of the guides



- Press the wiring harness (1) into the guide so that the protective tube (2) is flush with the edge (arrow)



- Press leads into the guide (arrow)

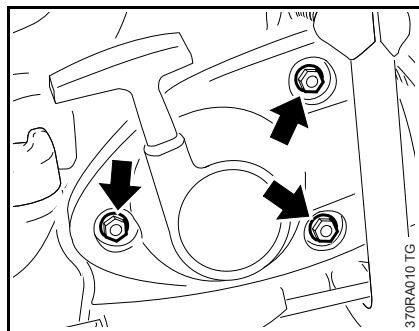


- Fit cover (1) so that the tabs engage in the mounts (arrows) – do not pinch the leads when fitting the cover

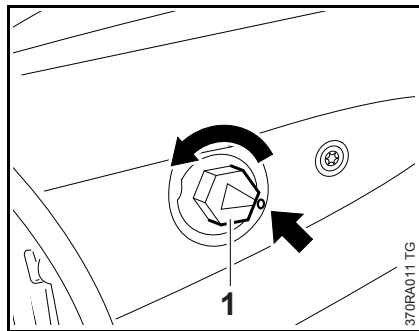
- Insert and tighten the screw
- Fit the water hose to the solenoid valve, [☞ 4.1.2](#)

#### 4.2 Cast arm with guard

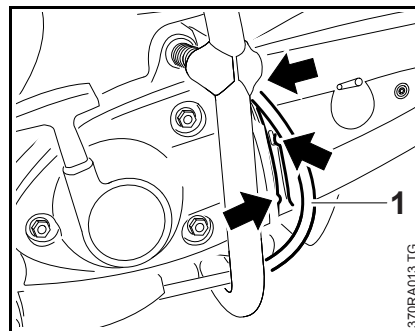
- Unscrew the banjo screw on the adjusting lever and remove the connector with water hose, [☞ 4.1.1](#)



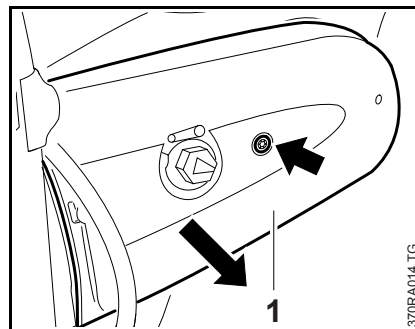
- Unscrew collar nuts (arrows).



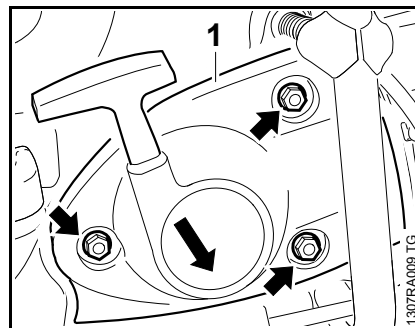
- Relax the ribbed poly V-belt by turning the hexagon (1) on the tensioner counterclockwise until the arrow points to "0" (arrow).



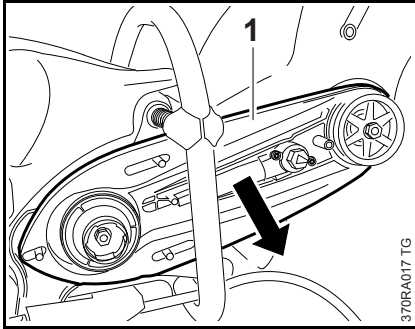
- Pull the hose (1) out of the guides (arrows).



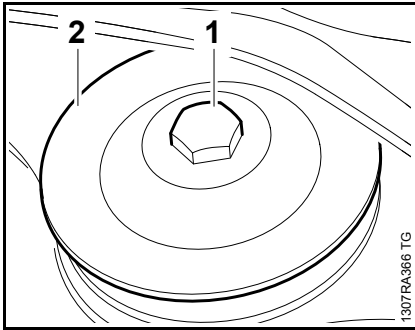
- Remove the screw (arrow).
- Remove the belt guard (1).



- Take out the collar nuts (arrows).
- Remove starter (1)
- Remove ribbed poly V-belt, [☞ 4.5](#)

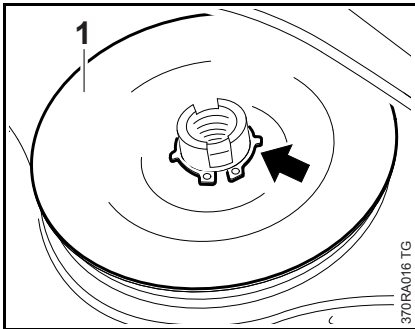


- Remove "cast arm with guard" (1)

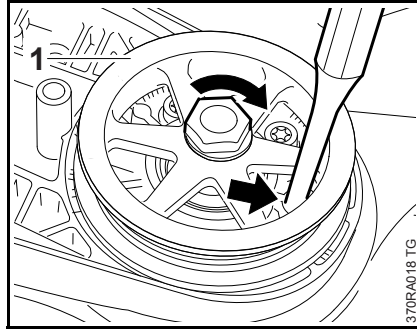


– Block the belt pulley.

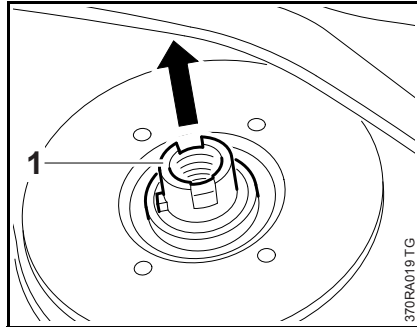
- Remove screw (1)
- Remove thrust washer (2).



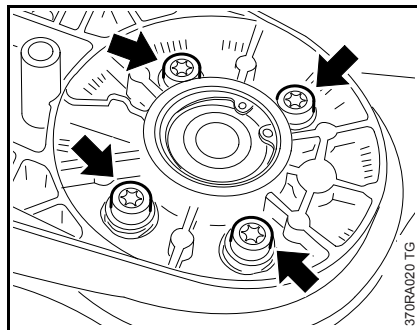
- Remove the axial clamping ring (arrow).
- Remove the other thrust washer (1).



- Block the belt pulley (arrow).
  - Unscrew the nut (left-hand thread) and remove the washer.
- Pull off the belt pulley (1)

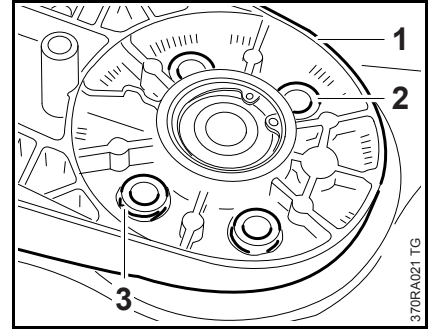


- Draw the shaft (1) out on the other side

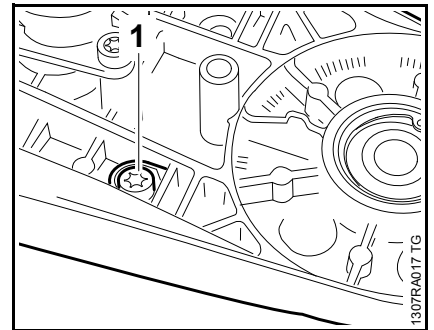


- Carefully take out the screws (arrows) – compression springs are tensioned.

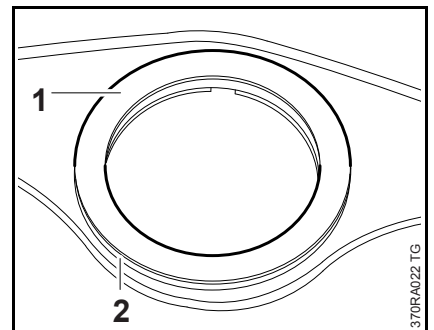
The flange drops down on the other side.



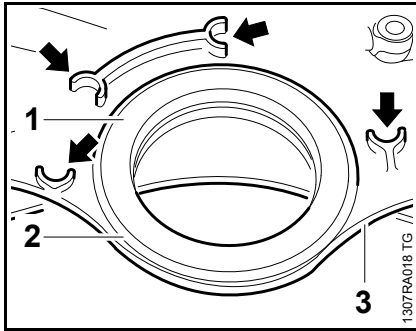
- Remove the cast arm (1)
- Remove the sleeves (2) and compression springs (3)



- Check the stop pin (1), unscrew and replace if necessary
- Reassemble parts in reverse order

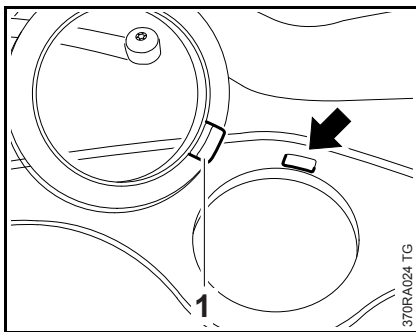


- Remove the washer (1) and rubber ring (2)

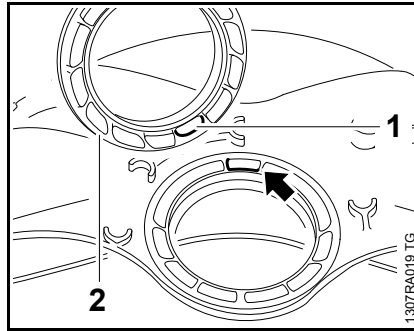


- Remove the washer (1) and rubber ring (2) on the other side
- Examine guard (3), replace if necessary
  - also check the stops (arrows)
- Examine the individual parts, replace if necessary

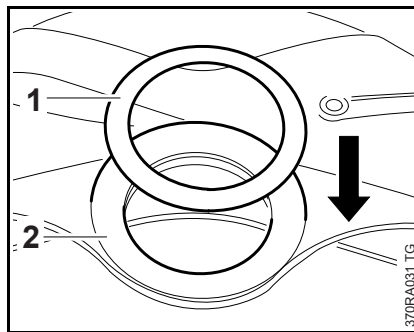
### Installation



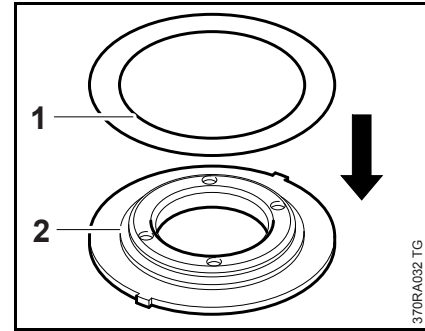
- Align the rubber ring so that the lug (1) engages in the opening (arrow)
- Press the rubber ring (1) into the hole in the guard until it lies flush



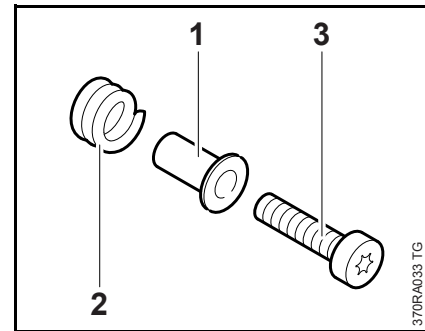
- Rotate guard
- Align the rubber ring (2) so that the lug (1) engages in the opening (arrow)
- Press the rubber ring (2) into the hole in the guard until it lies flush. The profile of the rubber ring must engage in the mount of the guard



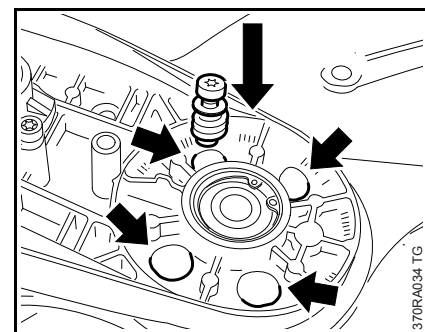
- Place washer (1) on the outside of the guard on the rubber ring (2)
- Slide the cast arm into the rubber bearing.



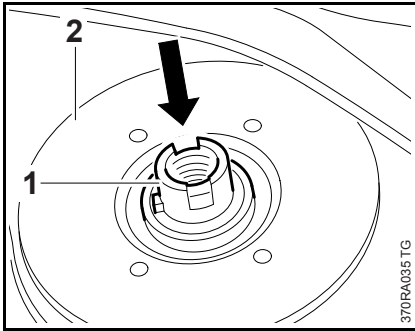
- Place washer (1) on the flange (2)
- Fit flange (2) on the opposite side and align so that the threaded holes in the flange (2) line up with the holes in the cast arm



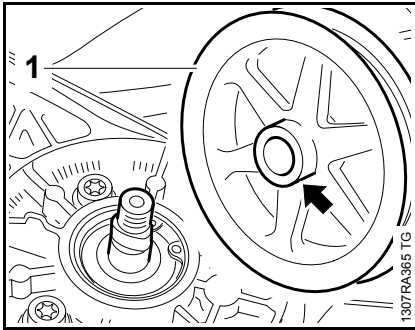
- Fit sleeves (1) and springs (2) over the screws (3)



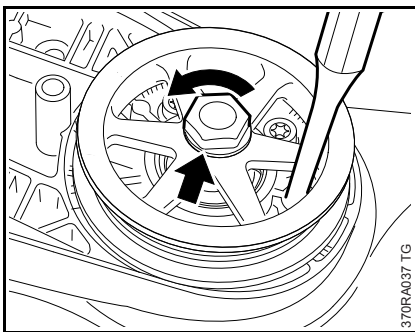
- Insert the screws with sleeves and springs in the holes (arrows)
- Insert and tighten the screws



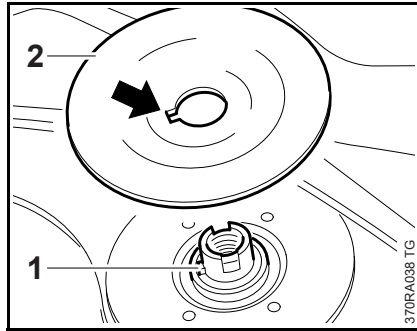
- Slide the shaft (1) into the ball bearings from the flange side (2)



- Turn the "cast arm with guard" and hold the shaft
- Slide the belt pulley (1) onto the shaft with the longer collar (arrow) first so that the polygonal profile is aligned

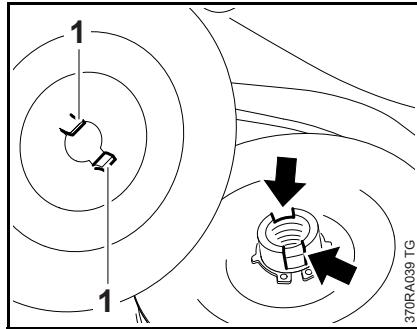


- Block the belt pulley
- Fit the washer, screw on the nut (arrow) and tighten it down
  - Left-hand thread



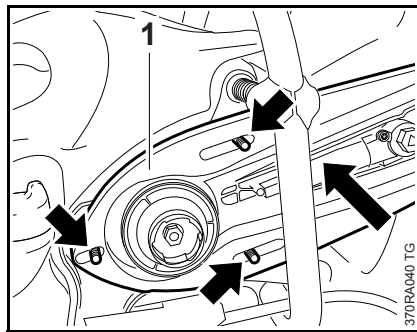
- Fit the thrust washer (2) so that the groove (arrow) engages the lug (1) on the shaft

- Fit the axial clamping ring



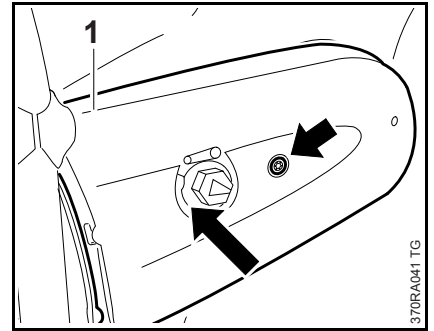
- Fit the thrust washer so that the lugs (1) engage the grooves (arrows) in the shaft

- Fit screw



- Slide the "cast arm with guard" (1) onto the studs (arrows)

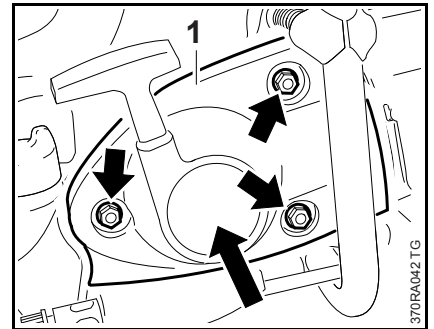
The tensioner must point to "0".



- Fit the ribbed poly V-belt, 4.5

- Position the guard (1)

- Insert and tighten the screw (arrow)



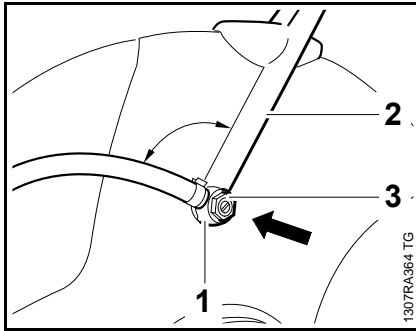
- Slide the starter (1) onto the studs

- Screw in the collar nuts (arrows)
  - do not tighten

- Tension the ribbed poly V-belt, 4.5

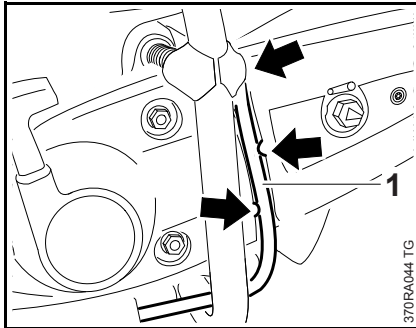
- Screw all three collar nuts tight





– Fit the connector (1) with water hose and align it at a right angle to the adjusting lever (2).

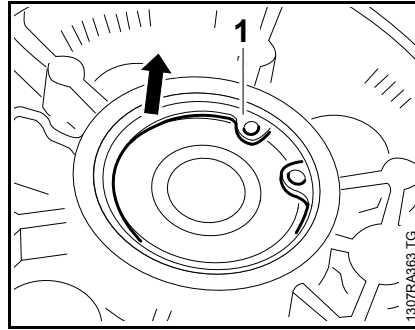
- Insert square nut on the inside, screw in banjo screw (3) and tighten



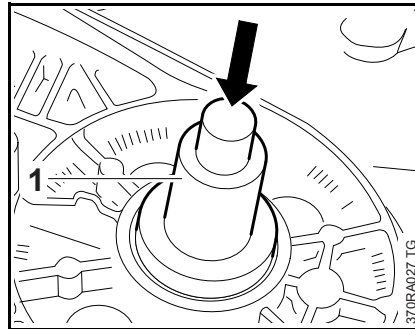
- Starting from the solenoid valve, route the water hose (1) so that there are no tight bends or kinks
- Press the water hose (1) into the guides (arrows)

#### 4.2.1 Ball bearing

- Remove the "cast arm with guard", 4.2
- Remove the guard on the cast arm, 4.2



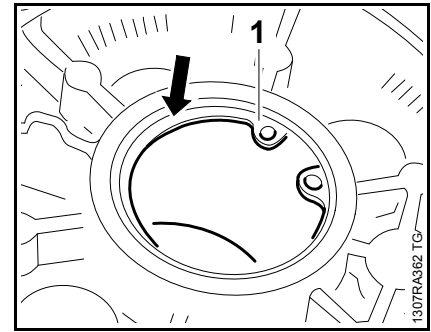
- Remove the circlips (1) on both sides



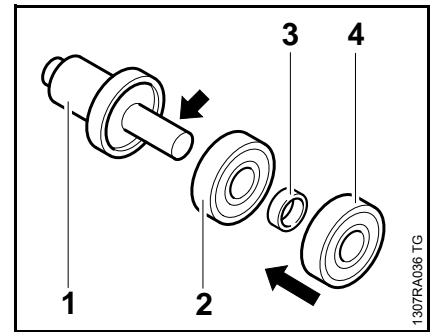
- Drive the ball bearing out of the cast arm with press arbor (1) 4224 893 7200

Always use new grooved ball bearings.

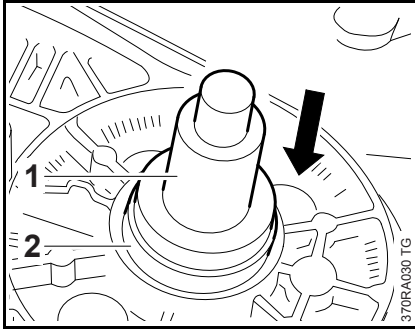
#### Installation



- Fit a circlip (1) as stop in the cast arm



- Align the press arbor (1) 4224 893 7200 – the ball bearing and ring are pushed onto the long peg (arrow)
- Slide the first grooved ball bearing (2), ring (3) and second grooved ball bearing (4) onto the peg (arrow)





- Position the grooved ball bearing (2) with press arbor (1) 4224 893 7200 and press it as far as possible against the circlip

Do not press too hard, otherwise the circlip which has been fitted as a stop will be jammed.

- Take out the press arbor
- Fit the second circlip in the groove in the cast arm


The seal on the deep groove ball bearing must not be damaged.

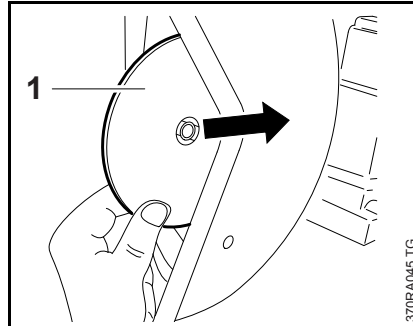
- Fit the guard on the cast arm,  4.2
- Fit the "cast arm with guard",  4.2

### 4.3 Testing radial and axial truth of running

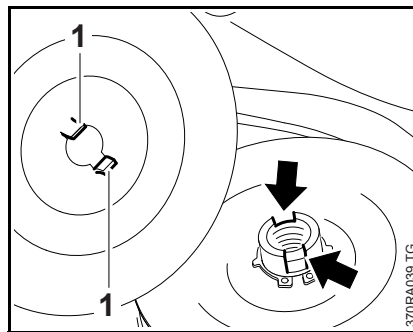
Since the radial truth of running of the cutting wheel changes if the shaft diameter changes (due to scoring, etc.), it is sufficient to carefully inspect the shaft around the mount for the cutting wheel.

The axial truth of running, on the other hand, depends on the condition of several parts and should therefore be determined by measurement.

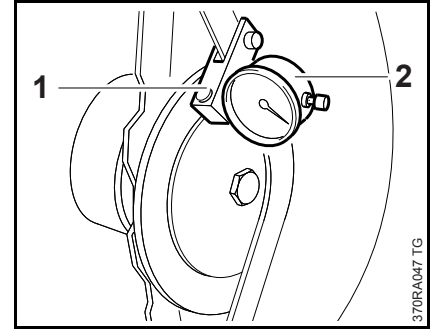
- Undo the screw and remove the thrust washer, see  4.2



- Position test wheel (1) 5910 851 6100



- Fit the thrust washer so that the lugs (1) engage the grooves (arrows) in the shaft

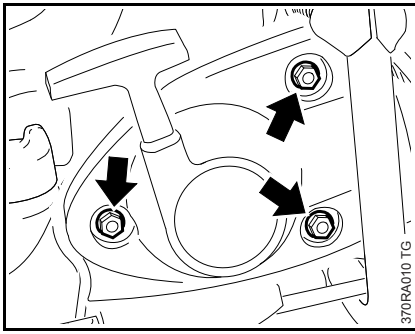


- Insert and tighten the screw
- Secure a dial gauge holder (1) 5910 850 6000 with fitted dial gauge (2) 0000 890 9100 on the guard so that the axial truth of running can be determined for a diameter of approx. 130 mm over one full revolution of the wheel, see test table.
- Remove the test equipment after testing.

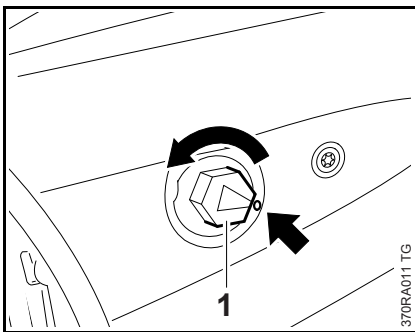
#### 4.4 Test sequence data

Test sequence	Actual condition	Possible causes	Activities
<b>Radial truth of running:</b>			
Visual inspection Spindle (shaft)	Wear marks or scoring around the mount for the cutting wheel	Operation with loose fastening screw, use of the wrong cutting wheels (mount dia. > 20mm)	Replace spindle (shaft), use correct cutting wheel
<b>Axial truth of running:</b>			
Axial truth of running is tested with a STIHL test wheel or diamond abrasive wheel (on 130 mm diameter)	Axial runout $\leq 0.15$ mm =		none
	> 0.15 mm Damage or unevenness in the mating faces of the thrust washers (particularly the inner thrust washer), mating faces are not plane, use of parts which are not original STIHL parts	Dirt, incorrectly fitted thrust washers or cutting wheel, use of force when cutting or during transport	Replace the thrust washers
	Spindle (shaft) damaged	Incorrect handling, use of force	Replace spindle (shaft)
	Tangible radial backlash in the bearing seat → spindle bearing faulty	Grooved ball bearings damaged by dust and/or bearing seat worn at the spindle	Replace spindle and grooved ball bearings

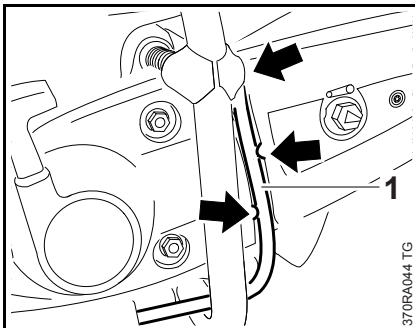
#### 4.5 Ribbed poly V-belt



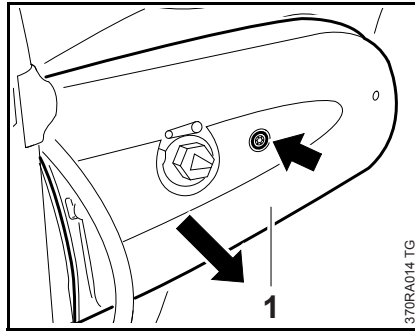
- Unscrew collar nuts (arrows).



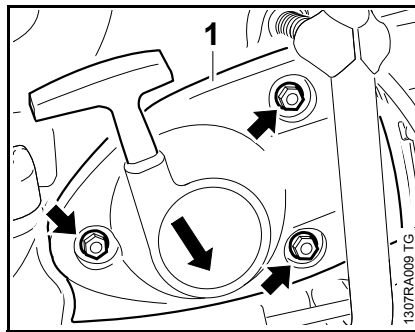
- Relax the ribbed poly V-belt by turning the hexagon (1) on the tensioner counterclockwise until the arrow points to "0" (arrow).



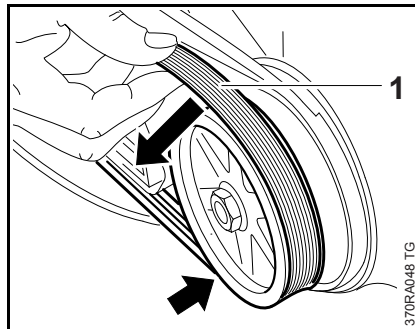
- Pull the hose (1) out of the guides (arrows).



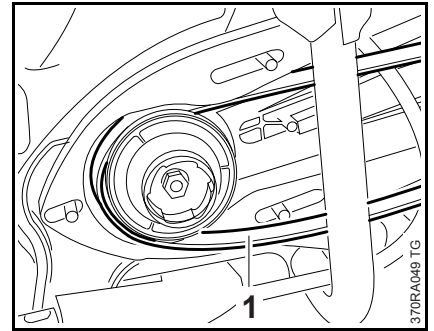
- Remove the screw (arrow)
- Remove the belt guard (1).



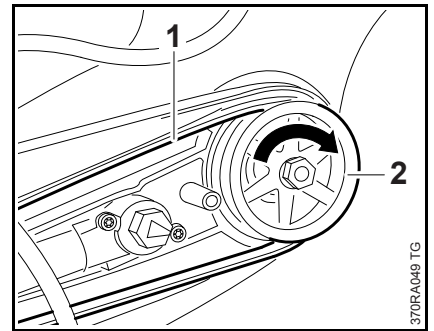
- Take out the collar nuts (arrows).
- Remove starter (1)



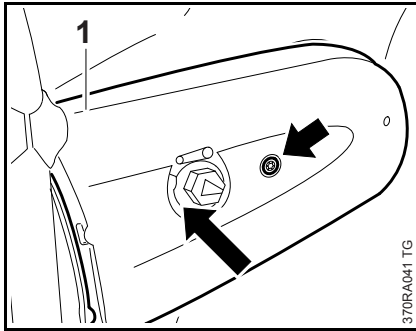
- Take the ribbed poly V-belt (1) off the front belt pulley (arrow)



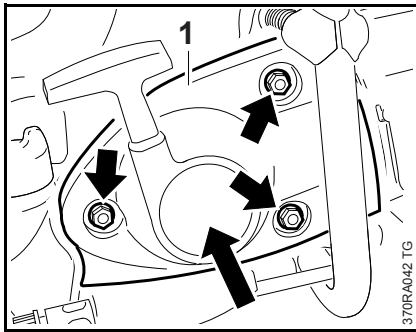
- Take the ribbed poly V-belt (1) off the belt pulley on the clutch side
- Check the ribbed poly V-belt, replace if necessary



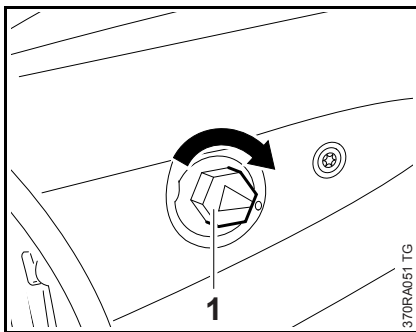
- Insert ribbed poly V-belt (1) first onto rear belt pulley (clutch)
- Then fit the ribbed poly V-belt (1) over the front belt pulley (2) and turn the pulley (2) to draw the belt onto the pulley.



- Fit the belt guard (1)
- Insert and tighten the screw (arrow)



- Slide the starter (1) onto the studs
- Screw in the collar nuts (arrows) – do not tighten



- Turn the hexagon (1) on the tensioner clockwise

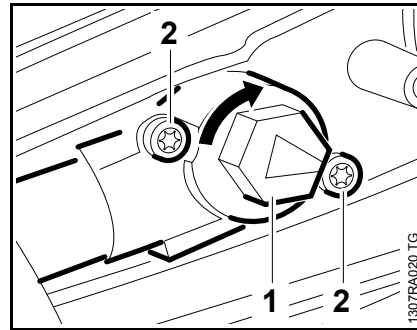
– After roughly 1/8 of a turn, the tensioner is caught by the force of the spring. The hexagon is now turned further by the spring tension until the ribbed poly V-belt is tensioned.

The hexagon must not be forced, as the belt tension is obtained through the spring tension.

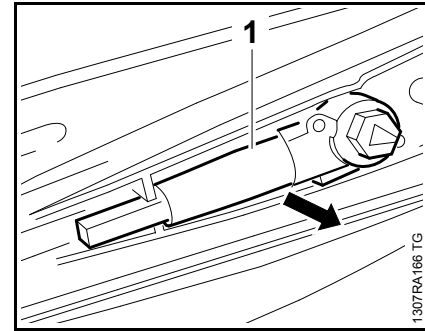
- Screw all three collar nuts tight
- Insert the water hose in the guides, starting from the solenoid valve

#### 4.6 Tensioner

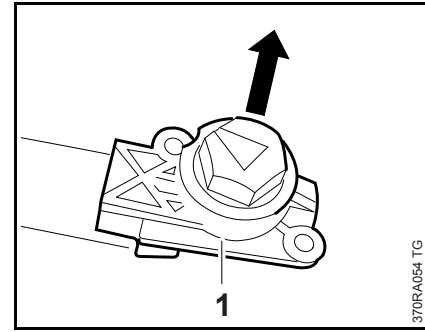
- Remove the "cast arm with guard", 4.2



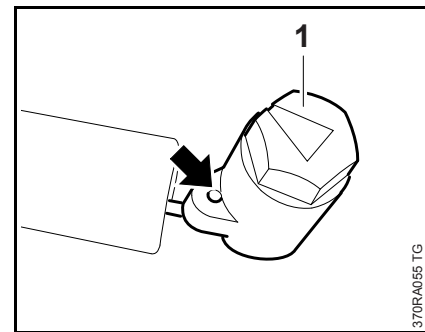
- Turn the hexagon (1) 1/2 turn clockwise to relax the tensioner
- Remove screws (2)



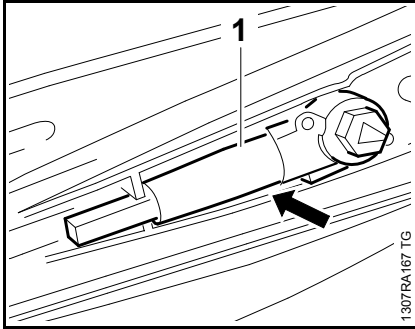
- Remove the complete tensioner (1)



- Remove the cover (1)
- Unhook the tensioner spring from the clamping lever
- Examine the parts and replace them if necessary



- Hook the tensioner spring into the hole (arrow) of the lever (1)
- Fit the cover



- Fit the complete tensioner (1)
- Insert and tighten the screws


The tensioner must be set to the pre-tensioned position before installing the "cast arm with guard".

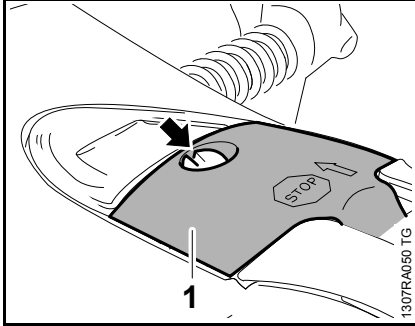
Turn the hexagon of the tensioner as far as possible counterclockwise to pre-tension the tensioner.

- Reassemble remaining parts in reverse order

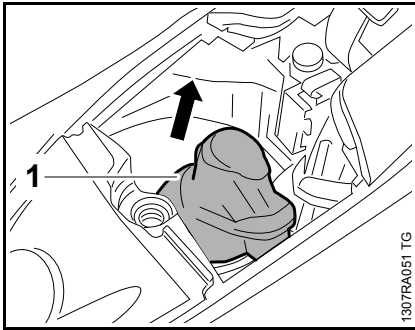
## 5. Starter cup / clutch

### 5.1 Starter cup

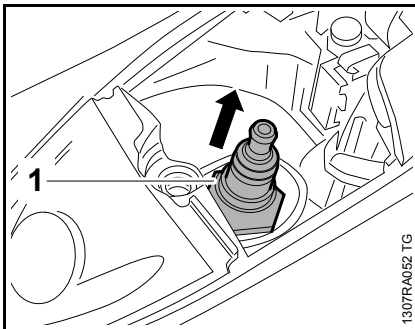
- Remove the "cast arm with guard",  4.2



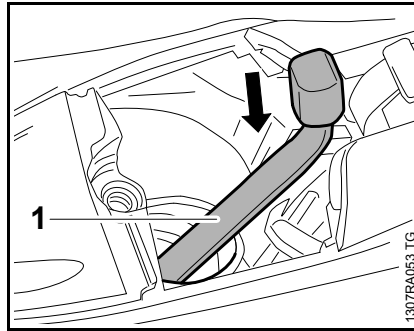
- Remove the screw (arrow)
  - Screw remains in cap
- Remove the cap (1) with screw



- Remove the spark plug boot (1)

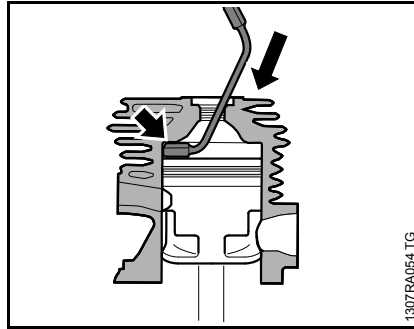


- Unscrew the spark plug (1)

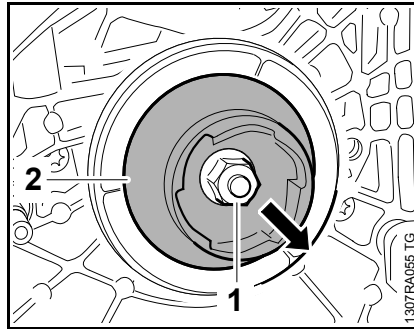


Decompression valve must be relieved.

- Insert locking strip (1)  
0000 893 5903 in the cylinder

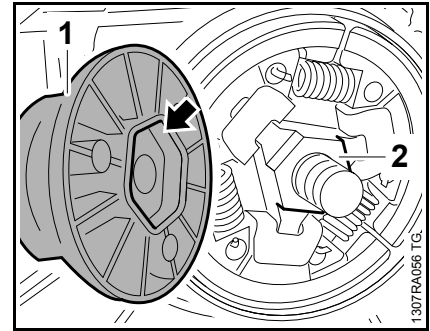


Locking strip (1) 0000 893 5903 must rest against the cylinder wall (arrow) – Position as shown.



- Unscrew nut (1) and pull off starter cup (2)

- Examine the starter cup, replace if necessary





- Align the starter cup (1) so that the hexagon (arrow) engages hexagon (2) of the clutch

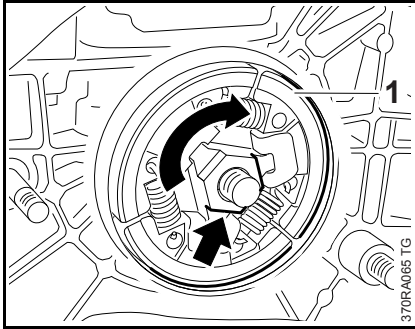
- Slide the starter cup into place and screw on the nut


- Block the piston and screw the nut tight

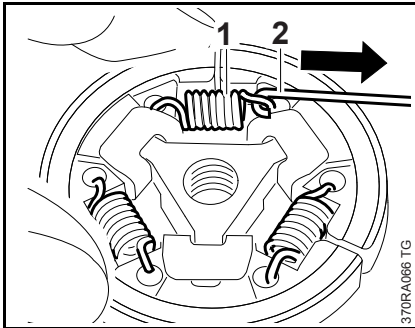
- Reassemble remaining parts in reverse order

## 5.2 Clutch

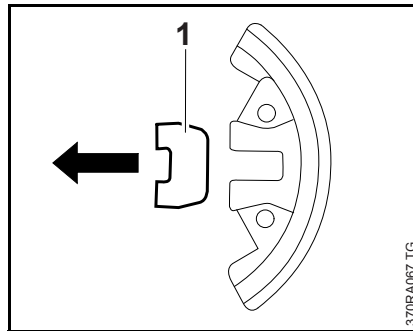
- Troubleshooting,  3.1
- Remove starter cup,  5.1



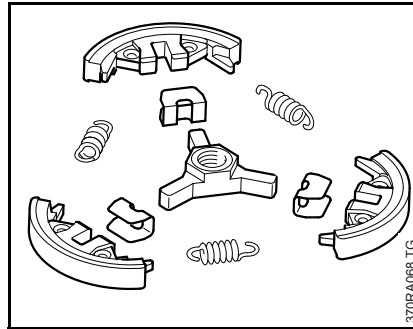
- Block the piston,  5.1
- Unscrew the clutch (1) with hexagon (arrow)
  - Left-hand thread




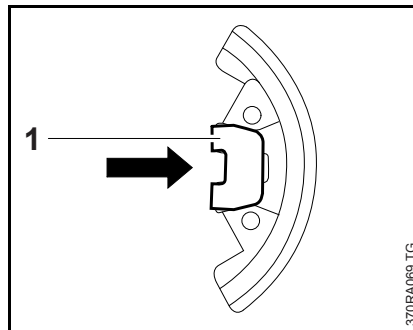
- Use hook (2) 5910 890 2800 to remove the clutch springs (1)



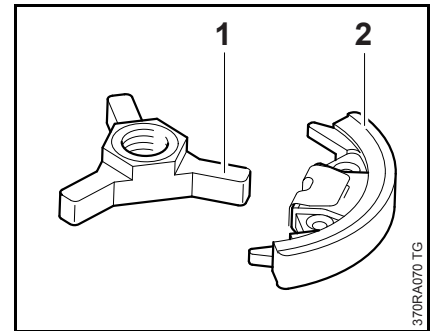
- Pull the clutch shoes off the carrier
- Pull the retainers (1) off the clutch shoes



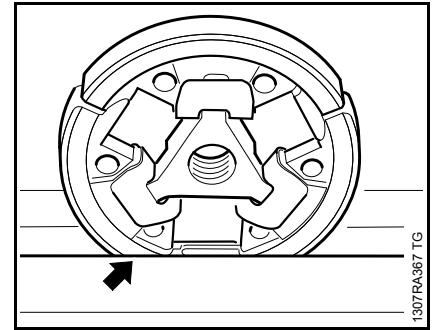
- Clean the individual parts,  13
- replace any damaged parts
  - Always replace clutch shoes in sets



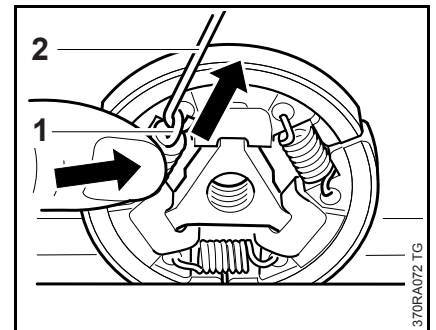
- Slip the retainers (1) onto the clutch shoes



- Slide the clutch shoes (2) over the legs (1)



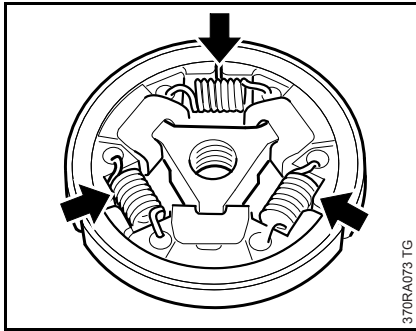
- Clamp the clutch in a vise (arrow)



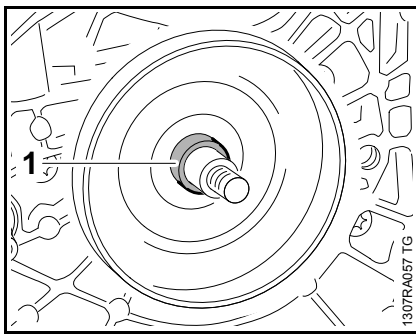
Hook the springs into the opposite side of the raised hexagon.

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

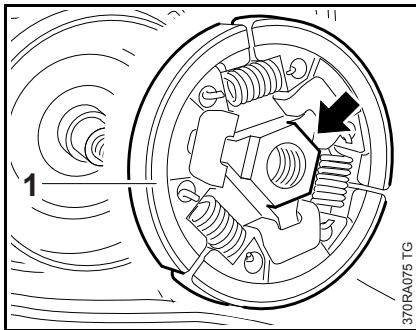




- Examine the clutch – all springs (arrows) must be hooked in properly

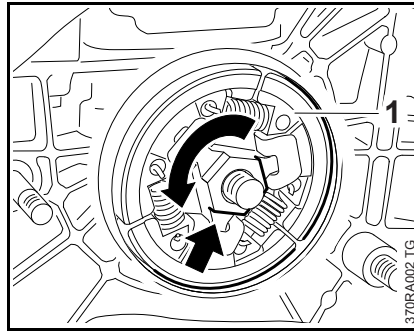


Ring (1) must be in place.



- Fit the clutch (1) on the crankshaft stub so that the raised hexagon (arrow) can be seen

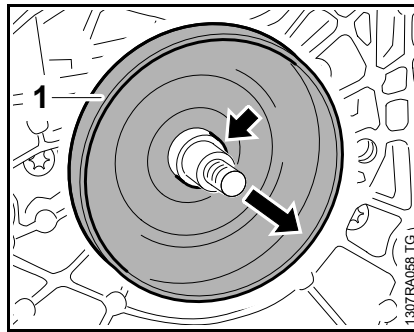
– Block the piston, 5.1



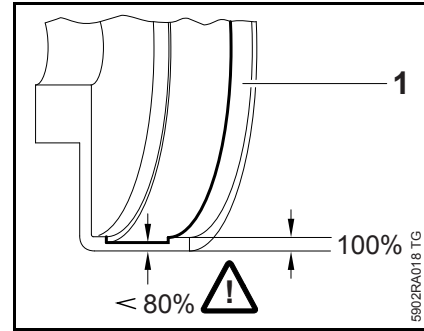
- Turn the clutch (1) with hexagon (arrow) onto the crankshaft stub and screw it tight – left-hand thread
- Pull the locking strip out of the cylinder
- Reassemble remaining parts in reverse order

### 5.3 Belt pulley / clutch drum

- Remove the clutch, 5.2

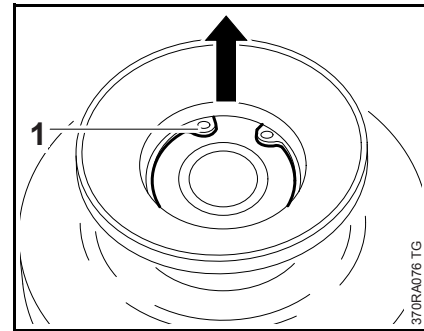


- Remove the ring (arrow)
- Remove the clutch drum (1)

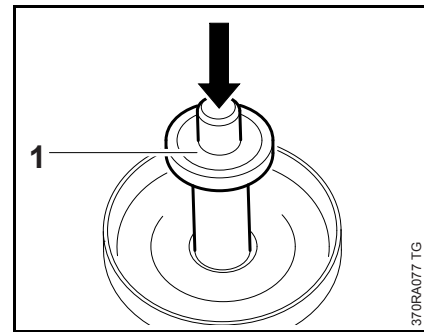


- Examine the clutch drum (1) for signs of wear

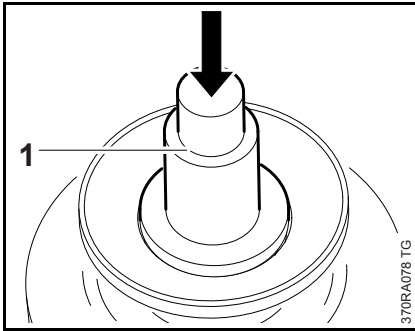
The remaining thickness must be measured if there are distinct signs of wear on the inside diameter of the clutch drum (1). The clutch drum must be replaced if the remaining thickness is less than approx. 80 % of the original thickness.



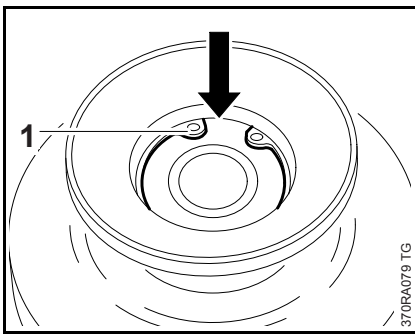
- Remove the circlip (1)



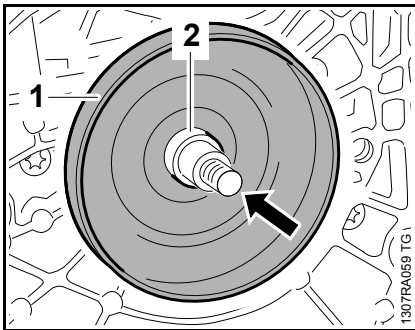
- Drive out the ball bearing with the drift pin (1) 4119 893 7200



- Press the ball bearing fully home with press arbor (1)  
4224 893 7200

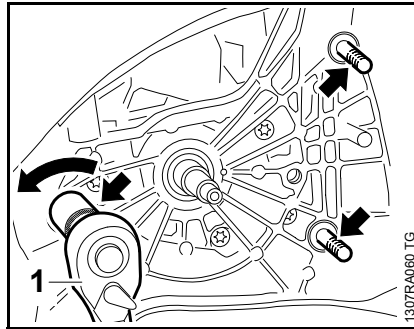


- Fit the circlip (1)



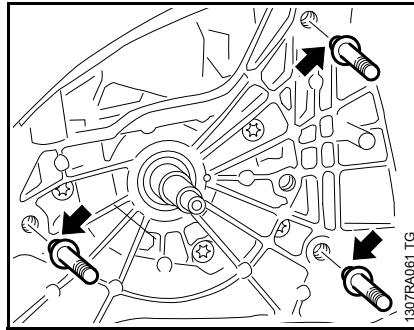
- Slide the clutch drum (1) into place
- Slide on the ring (2)
- Reassemble remaining parts in reverse order

#### 5.4 Studs for securing the "cast arm with guard"



- Remove the "cast arm with guard", ☞ 4.2

- Fit the stud puller (1)  
5910 893 0501 over the studs (arrows) as far as possible and unscrew



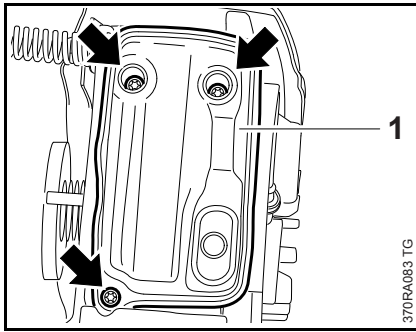
- Coat the thread (arrows) of the studs with Loctite before fitting them, ☞ 13
- Use the stud driver  
5910 890 3000 to screw in and tighten the studs
- Reassemble remaining parts in reverse order

## 6. Engine

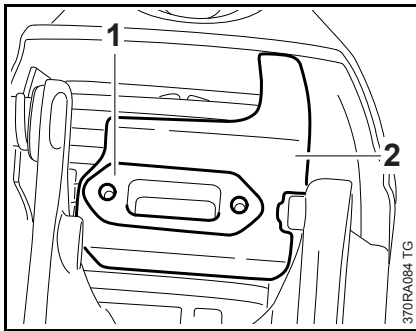
### 6.1 Muffler / spark arresting screen

- Refer also to troubleshooting chart, 3.5
- Remove the "cast arm with guard", 4.2

To keep dirt particles from entering the cylinder, move piston to top dead center before removing the muffler.

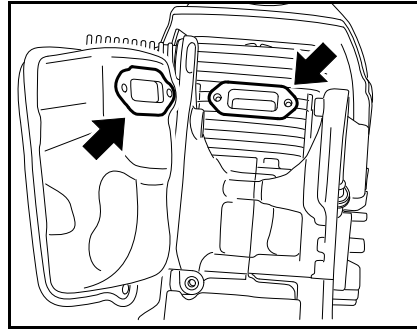


- Take out the screws (arrows)
- Take out and examine the muffler (1), replace if necessary



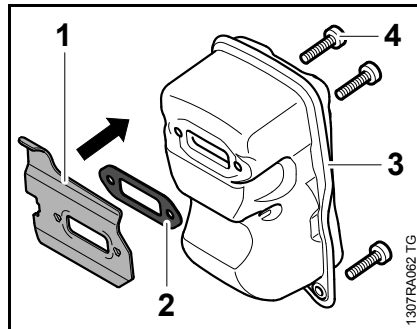
- Remove the muffler gasket (1) and cooling plate (2)

- Installing and removing the spark arresting screen, see Instruction Manual

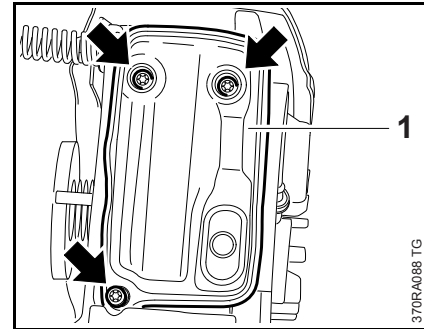


- Cover exhaust bore and remove any fouling on the cylinder and exhaust bore
- Examine and clean the mating surfaces (arrows) on the exhaust bore, cooling plate and muffler, remove any gasket residues if necessary – there must not be any gasket residues or dirt particles in the exhaust bore, 13

Parts with damaged mating faces must be replaced.



- Fit cooling plate (1) and muffler gasket (2) to muffler (3) and insert screws (4) into cooling plate
  - Muffler gasket and cooling plate are held in place on the muffler



- Carefully fit muffler (1) with muffler gasket and cooling plate
- Fit the screws (arrows) and check that the cooling plate and gasket are correctly positioned
- Insert the screws (arrows) and tighten them according to specifications, 2.5

### 6.2 Leak testing

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

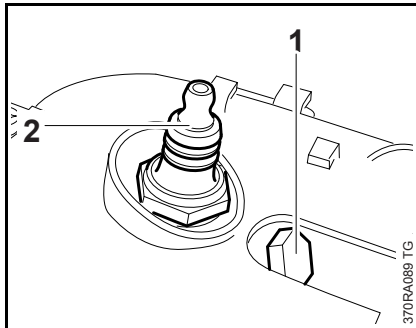
This can above all affect the idle speed. Moreover, it is possible that the transition from idle speed to part or full throttle is not smooth.

Always start with the vacuum test and then continue with the pressure test.

The engine can be thoroughly checked for leaks under vacuum and at gauge pressure using the pump 0000 850 1300.

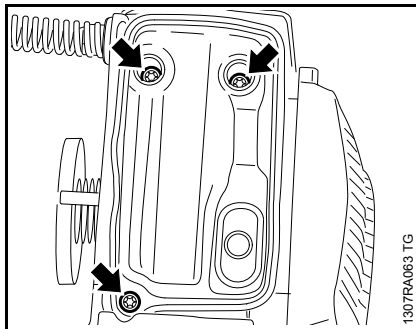
## 6.2.1 Preparations

- Remove shroud, 6.4

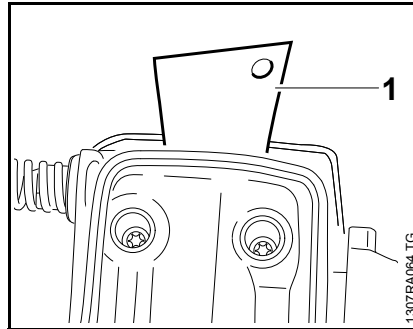


The spark plug (2) must be screwed tight.

- Remove the decompression valve, 6.10
- Fit the stopper (1) 4221 025 2200 and screw it tight



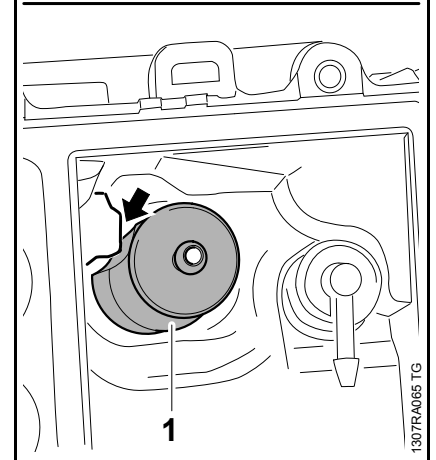
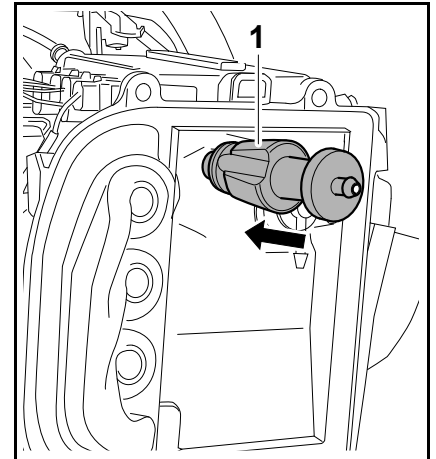
- Undo the screws (arrows)



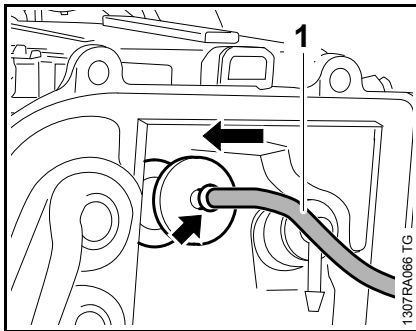
- Fit a sealing plate (1) 0000 855 8106 between the cylinder exhaust port and cooling plate, then tighten the screws gently

The sealing plate must fill the full width between the screws.

- Remove the air filter, 11.1



- Coat O-ring on the plug of the pressure testing tool 5910 890 4100 with STIHL press fluid, 13
- Press the plug (1) of the pressure testing tool 5910 890 4100 into the intake duct so that the recess is on the raised part (arrow)
- Push the plug (1) 5910 890 4100 as far as possible into the intake duct



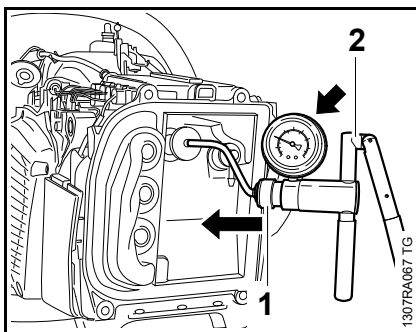
- Push the suction hose (1) of pump 0000 850 1300 onto the connector (arrow)

### 6.2.2 Testing with negative pressure

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

This kind of fault can be detected by testing with pump 0000 850 1300.

During this test procedure, the oil seals in the crankcase and in the throttle shutter housing are checked.



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

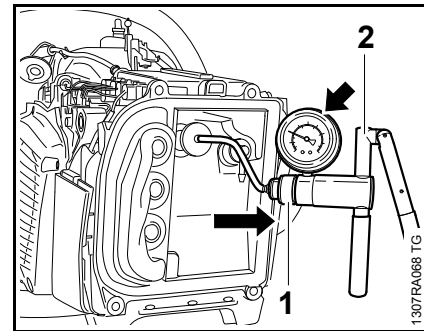
If the vacuum reading remains constant, or does not decrease by more than 0.3 bar within 20 seconds, it may be assumed that the oil seals are in good condition. If the negative pressure continues to drop, the leak must be located and the faulty part replaced.

- If the oil seals in the crankcase are defective, replace the oil seals, [📖 6.3](#)
- If the oil seals in the throttle shutter housing are defective, replace the throttle shutter housing, [📖 11.2](#)
- After testing, slide the ring on the pump back to the right to vent the pump
- Continue with pressure test, [📖 6.2.3](#)

### 6.2.3 Pressure test

The same preparatory steps are required as for the vacuum test, [📖 6.2.1](#).

- Before testing with gauge pressure
  - Complete testing with negative pressure [📖 6.2.2](#)



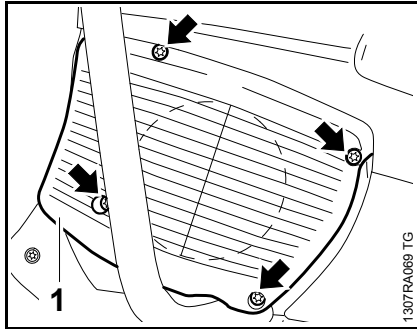
- Slide ring (1) to the right
- Actuate the lever (2) until the pressure gauge (arrow) shows a pressure of 0.5 bar. If this pressure remains constant for at least 20 seconds, the crankcase is airtight.
- If the pressure drops, the leak must be located and the faulty part replaced.

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

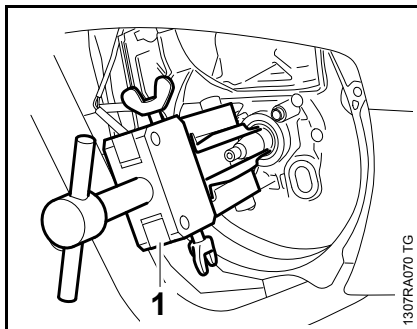
- After testing, slide the ring on the pump to the left to vent the pump
  - disconnect the hose.
- Remove pressure testing tool
- Fit air filter, [📖 11.1](#)
- Release the muffler and pull out the sealing plate
- Tighten muffler according to specifications, [📖 2.5](#)
- Reassemble remaining parts in reverse order

### 6.3 Oil seals

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



- Take out the screws (arrows)
- Remove fan cover (1)
- Remove the flywheel, 7.5
- Remove the generator, 7.5.1

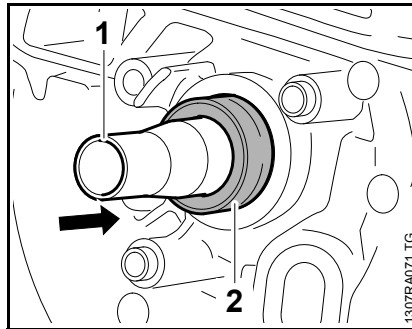


- Free the oil seal in its seat by tapping it with a suitable tube or a punch.
- Apply the puller (1) 5910 890 4400 with jaws (profile no. 6) 0000 893 3711
- Clamp the puller arms
- Pull out the oil seal

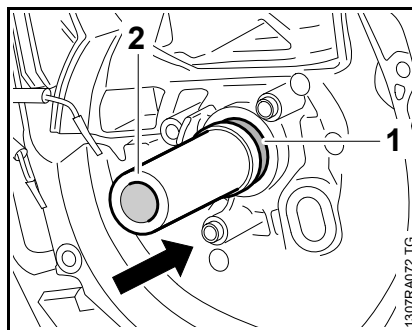
Avoid damage to the crankshaft stub.

### Installation

- Clean the mating surface, 13
- Grease the sealing lips of the new oil seal, 13



- Fit the assembly sleeve (1) 1141 893 4600
- Slide the oil seal (2) over the assembly sleeve with the sealing lip facing the crankcase
- Remove the assembly sleeve



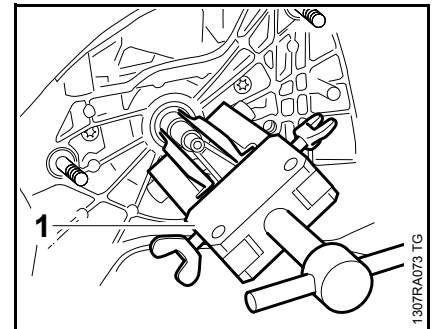
- Align press sleeve (2) so that the shoulder faces the oil seal (1)
- Press the new oil seal (1) fully home with press sleeve (2) 1122 893 2405

The seating face must be flat and free from burrs.

- Clean the cone of the crankshaft to ensure it is completely grease-free, 13
- Reassemble remaining parts in reverse order

### Clutch side



- Remove the "cast arm with guard", 4.2
- Remove the clutch, 5.2
- Remove the clutch drum, 5.3

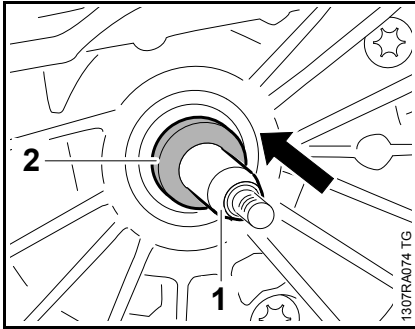


- Free the oil seal in its seat by tapping it with a suitable tube or a punch.
- Apply the puller (1) 5910 890 4400 with jaws (profile no. 3.1) 0000 893 3706
- Clamp the puller arms
- Pull out the oil seal

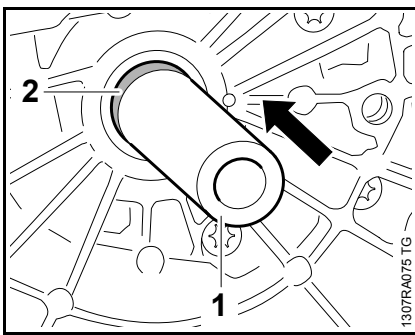
Avoid damage to the crankshaft stub.

## Installation

- Clean the mating surface,  13
- Grease the sealing lips of the new oil seal,  13



- Fit the assembly sleeve (1)  
1118 893 4602.
- Slide the oil seal (2) over the assembly sleeve with the sealing lip facing the crankcase
- Remove the assembly sleeve

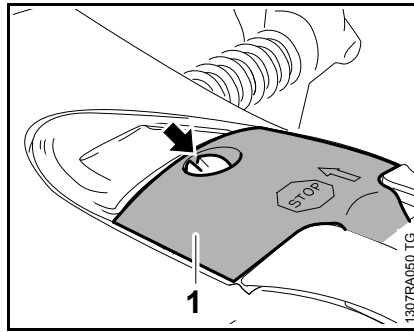


- Use the press sleeve (1)  
4238 893 2400 to install the oil seal (2)

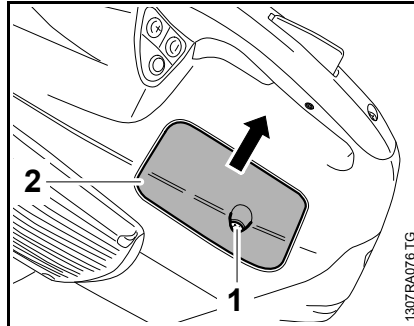
The seating face must be flat and free from burrs.

- Reassemble remaining parts in reverse order

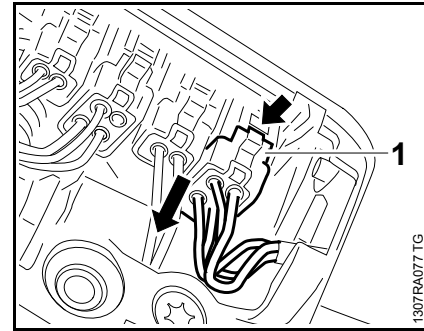
## 6.4 Shroud



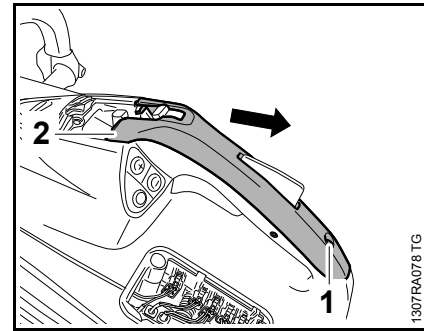
- Remove the screw (arrow)  
– Screw remains in cap (1)
- Remove the cap (1) with screw



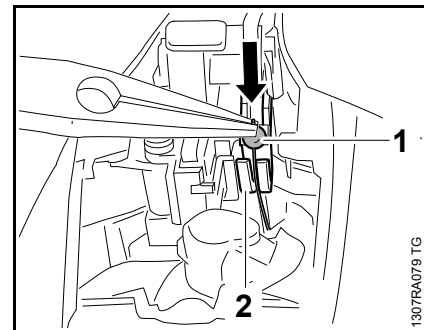
- Unscrew screw (1) and remove cover (2)  
– Screw remains in cover (2)



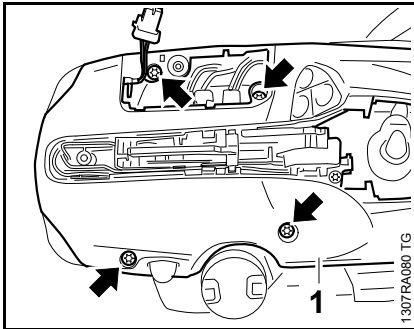
- Remove dirt from around the plug on the control unit before removing it
- Press lock (arrow) downwards by hand and push out plug (1)  
– Do not pull out the plug (1) by the wires, do not use tools



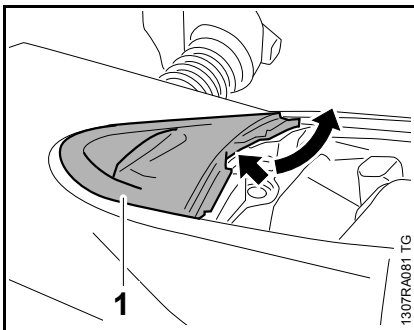
- Unscrew screw (1) and remove handle molding (2)



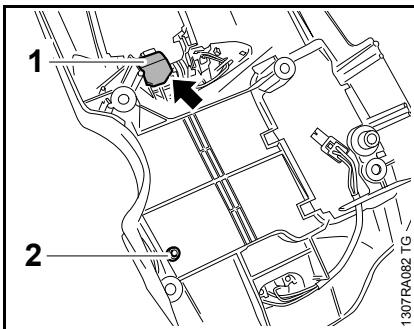
- Unhook the throttle cable (1) from the throttle trigger (2), holding the throttle trigger (2) in place



- Take out the screws (arrows)
- Remove the shroud (1)



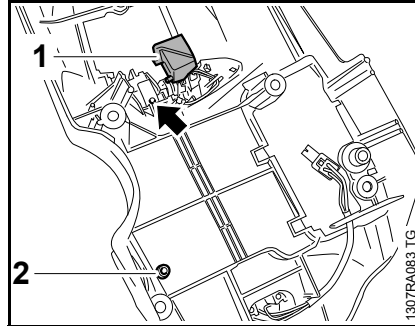
- Check bushing (1), pull out of mount (arrow) if necessary and replace



- Check rubber buffer (1), pull out of mount (arrow) if necessary and replace
  - Check the piece of hose (2), remove and replace if necessary
- Examine the throttle trigger and trigger interlock, replace if necessary, 10.2

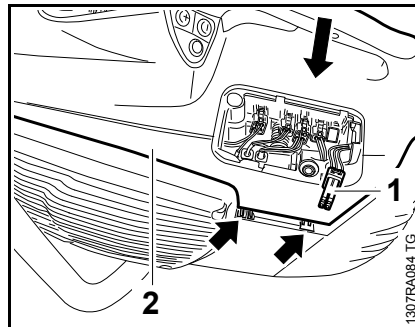
– Check short circuit wire, control panel and switch, replace if necessary, 7.6, 7.7

### Installation

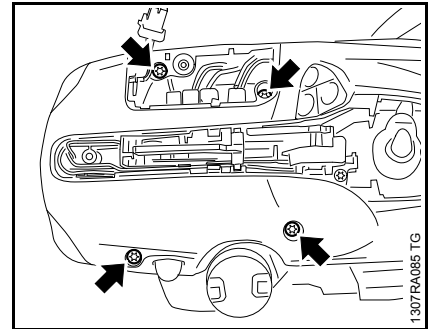


- Push rubber buffer (1) with lug into the hole (arrow) as far as it will go

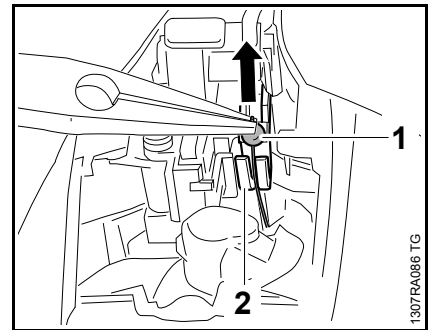
Piece of hose (2) must be pushed on  
 – Piece of hose (2) acts as hold down for the injection pump.



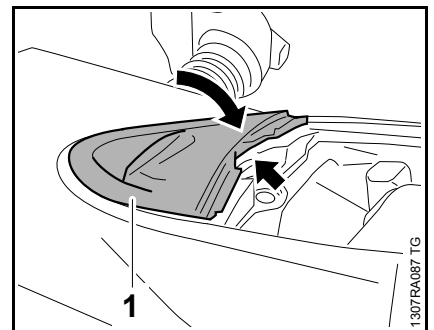
- Lift plug (1) out of opening
- Guide the shroud (2) over the injection pump and position so that the lugs (arrows) engage in the mounts – Do not pinch the plug (1)



- Insert and tighten the screws (arrows)

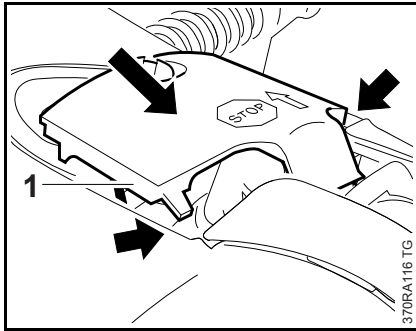


- Hook the throttle cable (1) into the throttle trigger (2)
- Move throttle cable (2) towards full-throttle until the nipple of the throttle cable engages in the throttle trigger



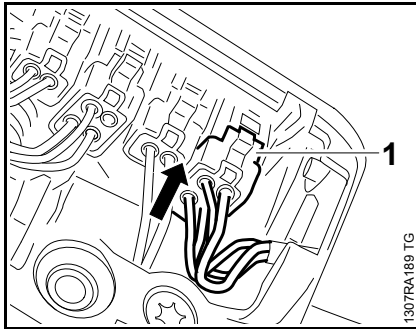
- Press the grommet (1) into the mount (arrow) until it is fully home





- First slide the pegs (arrows) on the cap (1) into the mount, then press it home

- Insert and tighten the screw



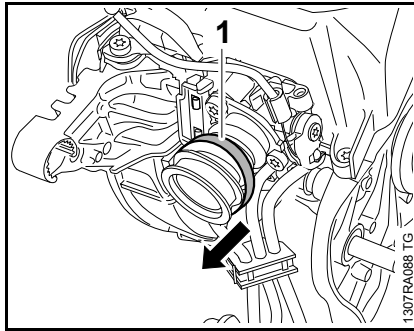
- Push the plug (1) into the socket on the control unit until it snaps into place

- Fit cover

## 6.5 Engine

### Removal

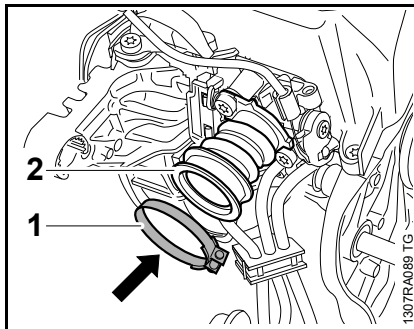
- Remove the "cast arm with guard", [11.9](#)
- Empty the fuel tank, [1](#)
- Remove shroud, [6.4](#)
- Remove control unit, [7.3](#)
- Remove handlebar, [9.5](#)
- Remove tank housing, [11.9](#)



To remove the engine, you do not need to disconnect the fuel hoses.

- Remove hose clip (1)

### Installation



- Push the hose clip (1) onto the manifold (2) so that the screw head is facing the clutch
- Apply press fluid to the inside of the manifold, [13](#)
- Install the tank housing, [11.9](#)
- Reassemble remaining parts in reverse order

## 6.6 Cylinder

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

With the cylinder in place:  
The piston must be blocked to prevent the crankshaft turning in order to remove the clutch, [5.2](#)

With the cylinder removed:  
To dismantle the clutch, block the crankshaft by placing the piston on the wooden assembly block.

- Remove the "cast arm with guard", [4.2](#)

- Empty the fuel tank, [1](#)

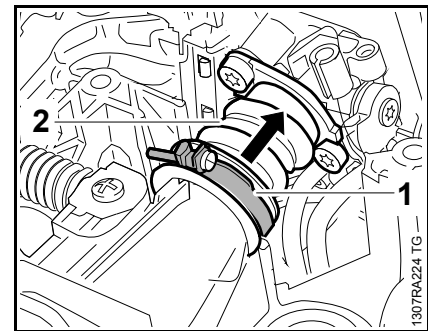
- Remove shroud, [6.4](#)

- Remove control unit, [7.3](#)

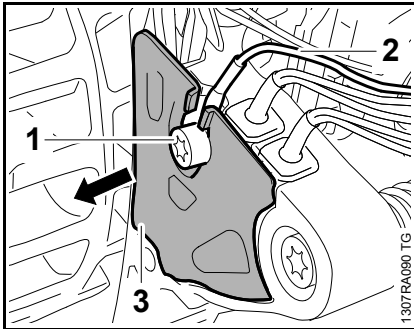
- Remove muffler, [6.1](#)

- Remove air baffle, [11.2.1](#)

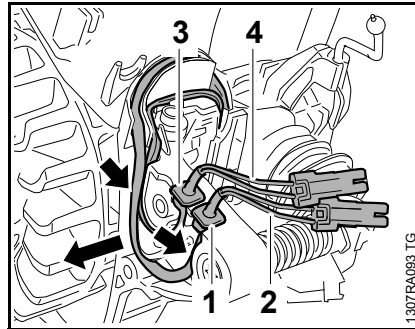
- Remove fan cover, [6.3](#)



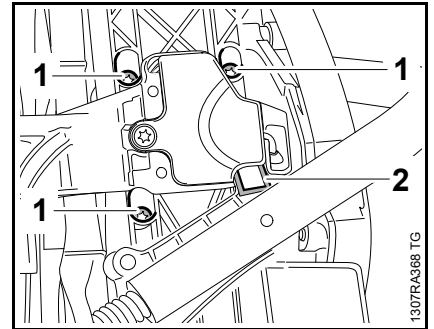
- Loosen the screw and push the hose clip (1) in the direction of the throttle shutter housing
- Push down the manifold (2) from the tank housing support



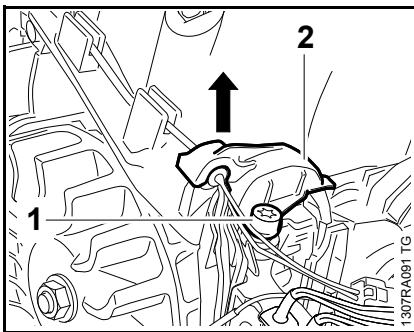
- Unscrew the screw (1)
- Remove the ground wire (2) and cover (3)



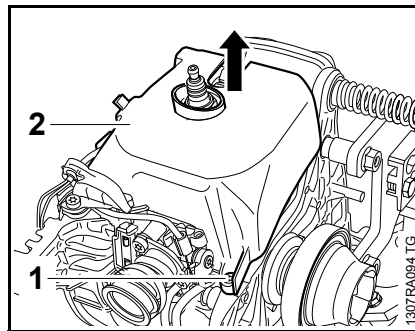
- Pull bushing (1) with wiring harness (2) of the sensors and bushing (3) with wiring harness (4) of the injection valve from the guides (arrows)



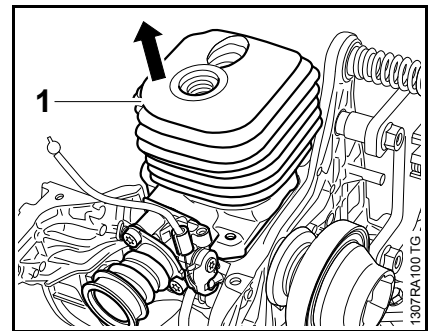
- For a pan head screw on the bottom, guide the tool through the hose (2) and unscrew the pan head screw – the pan head screw stays in the hose (2)
- Unscrew the other three pan head screws (1)



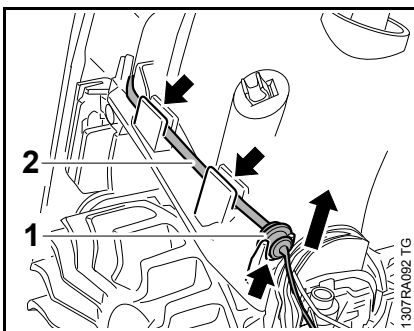
- Unscrew the screw (1) and remove the cable holder (2)



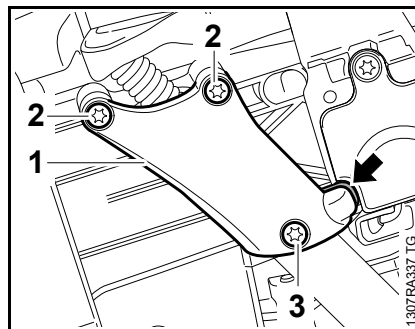
- Unscrew the screw (1) and remove the air guide shroud (2)



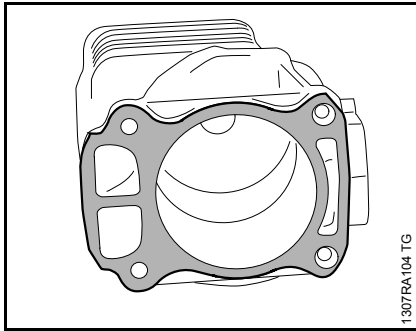
- Carefully pull off the cylinder (1)



- Pull the bushing (1) and generator lead (2) from the guides (arrows)



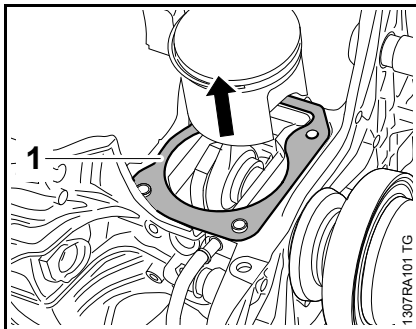
- Unscrew the screws (2) on the bottom and remove long screw (3)
- Remove the clamp (1)



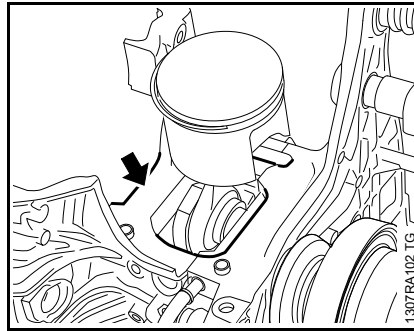
- Examine and clean the mating surface, remove any gasket residues if necessary
- Also check the mating surface on the cylinder exhaust port and intake port

The mating surfaces must be in perfect condition and without any damage whatsoever. A new cylinder must be used if the mating surfaces are damaged.

- For a new cylinder, check "throttle shutter housing / intake manifold", spark plug and decompression valve and reconfigure if OK, [11.2](#), [6.10](#)



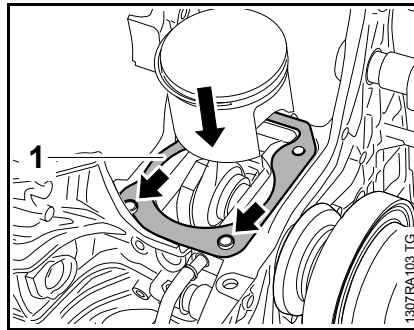
- Remove the cylinder gasket (1)



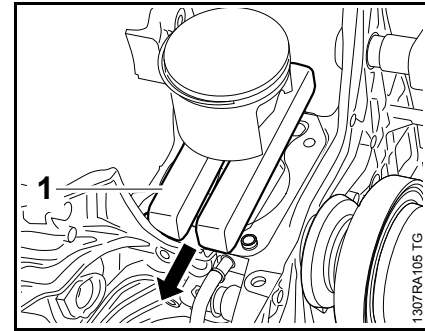
- Examine and clean the mating surface (arrow).

The mating surface must be in perfect condition and without any damage whatsoever. Parts with damaged mating faces must be replaced.

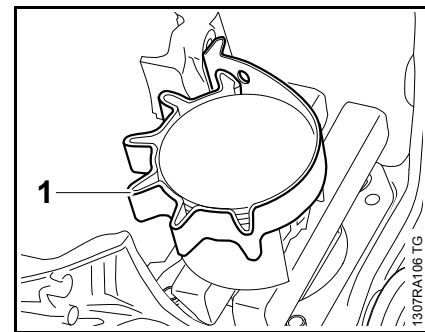
Always use a new cylinder gasket after removing the cylinder.



- Position the cylinder gasket (1) so that the holes engage in the centering sleeves (arrows)
- Fit the cylinder gasket (1)



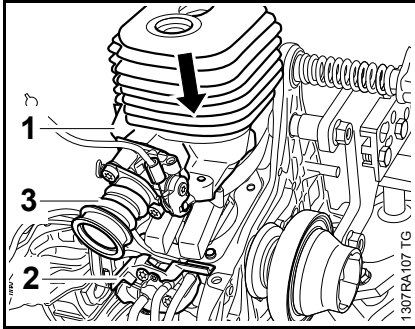
- Place wooden assembly block (1) 1108 893 4800 between piston and crankcase



- Coat piston, piston rings and inside of cylinder with oil, [13](#)
- Ensure that piston rings are correctly positioned, [6.9](#)

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

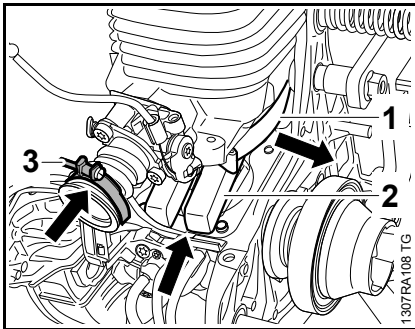
The clamping strap (1) must be fitted in such a way that the piston rings do not protrude beyond the piston sides.



- Position cylinder (1) so that the manifold (3) is facing the injection valve (2)

When fitting the cylinder over the piston, ensure that the clamping strap securely encloses the piston and that none of the piston rings protrudes – danger of breakage.

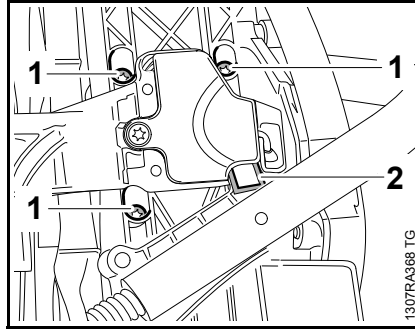
- Slide the cylinder (1) over the piston; the clamping strap is pushed downwards at the same time



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

Ensure that the cylinder gasket is correctly positioned.

- Push the hose clip (3) onto the manifold so that the screw head is facing the clutch



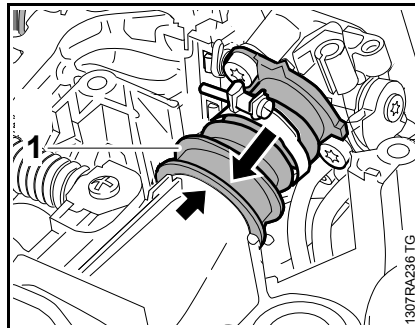
- Push cylinder as far as possible over the centering sleeves and hold

For the pan head screw in the hose (2), the tool is guided through the hose to screw in the pan head screw.

- Screw in all pan head screws (1) from the bottom – do not tighten

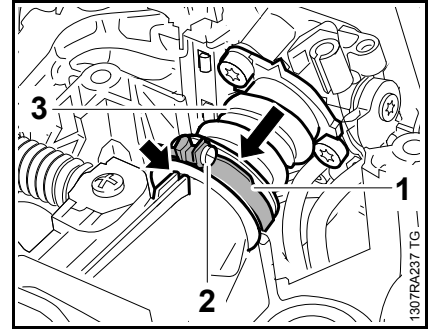
- Check the position of the cylinder gasket

- Tighten all pan head screws (1) crosswise



- Push the manifold (1) completely and evenly onto the supports (arrow) of the tank housing until it is in the groove on the circumference

- Push the hose clip over the shoulder of the manifold



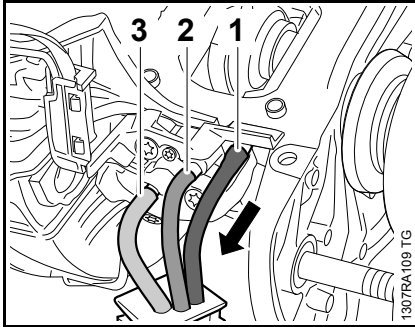
- Align the hose clip (1) on the manifold (3) so that the clamping gap lines up with the fin (arrow)

- Screw in the screw (2) and tighten it

- Reassemble remaining parts in reverse order

## 6.7 Crankshaft

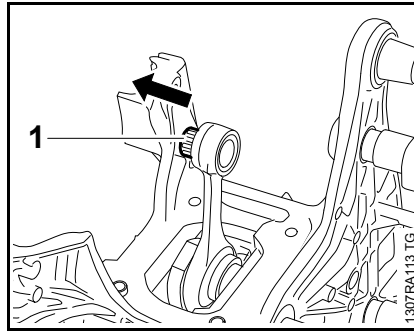
- Remove the engine, 6.5
- Remove the clutch drum, 5.3
- Remove the cylinder, 6.6
- Remove the piston, 6.8



If one of the fuel hoses is disconnected, the fuel hose unit must be replaced, 11.7.

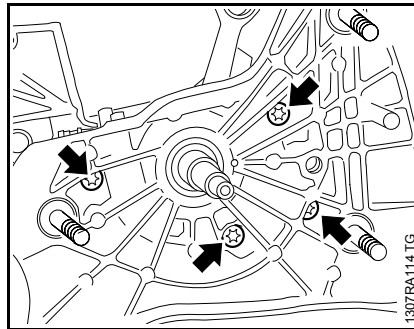
- Disconnect the impulse hose (1), fuel return line (2) and fuel hose (3)
- Remove the injection valve, 11.3
- Remove the sensor, 11.4

Always replace ball bearings and oil seals when removing the crankshaft.

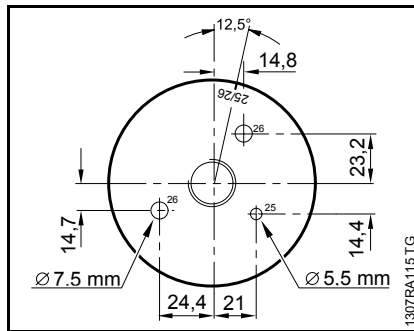


- Take out the needle bearing (1), examine and clean it, replace if necessary

### Fan-side half of the housing



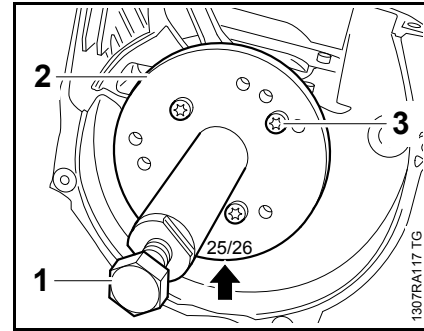
- Unscrew the screws (arrows)



Washer 5910 893 2103 without holes "25 / 26" can be reworked as illustrated with the 5.5 mm hole or with the holes 7.5 mm.

The drilled plate is shown from above in the illustration.

Dimensions are given in millimeters.



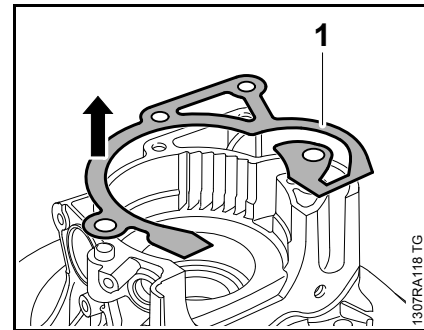
- Unscrew spindle (1) of the service tool kit 5910 007 2201 until the washer rests against the half of the housing
  - Left-hand thread

- Align the assembly tool with the washer (2) 5910 893 2103 against the fan-side half of the housing so that the edge number "25 / 26" (arrow) is at the bottom

- Insert three M5x30 screws (3) through the holes marked "25" and "26" and screw them as far as possible into the crankcase half

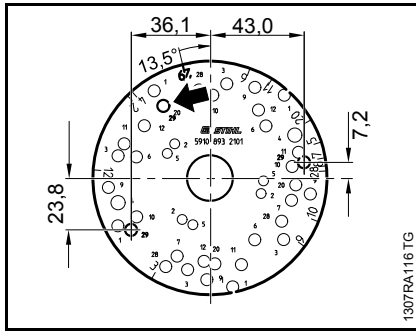
- Turn spindle anticlockwise until the fan-side half of the crankcase is pulled off

- Replace ball bearings and oil seals, 6.7.1



- Remove the gasket (1)

## Clutch side half of crankcase

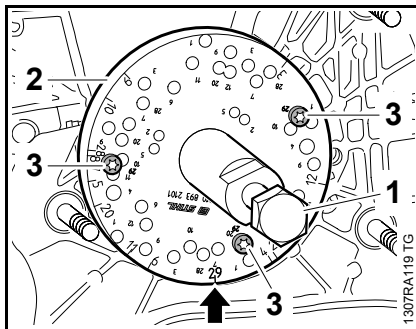


Washer 5910 893 2101 without holes "29" can be reworked as illustrated with 5.5 mm holes.

The hole 20 (arrow) is also part of hole circle 29, therefore only add the number 29. The two other holes 29 must be drilled.

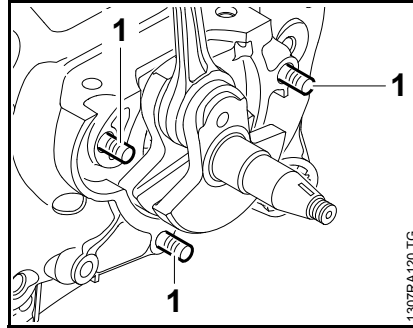
The drilled plate is shown from above in the illustration.

Dimensions are given in millimeters.

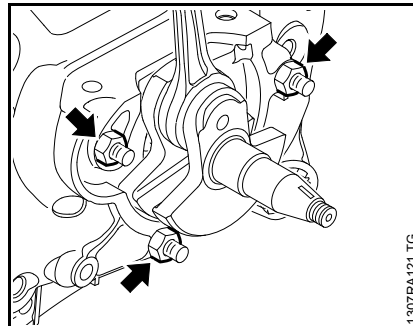


- Unscrew spindle (1) of the service tool kit 5910 007 2201 until the washer rests against the half of the housing
  - Left-hand thread
- Align the assembly tool with the washer (2) 5910 893 2101 against the clutch-side half of the housing so that the edge number "29" (arrow) is at the bottom

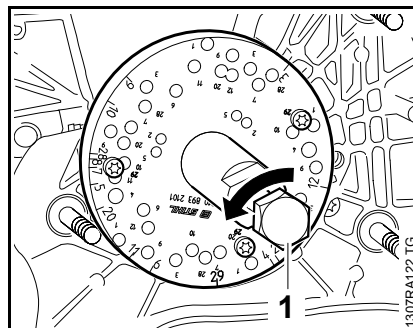
- Insert three M5x55 screws (3) through the holes marked "29"



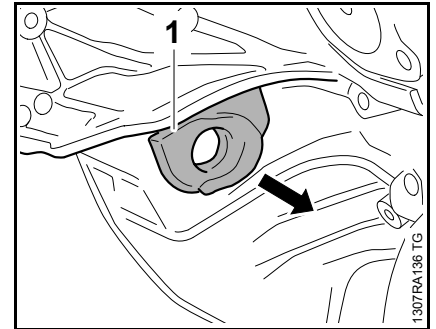
- Push the screws (1) through the holes in the crankcase half



- Fit washers and nuts (arrows)
- Tighten the nuts (arrows)



- Turn the spindle (1) counterclockwise until the crankshaft has been forced out of the clutch-side half of the crankcase



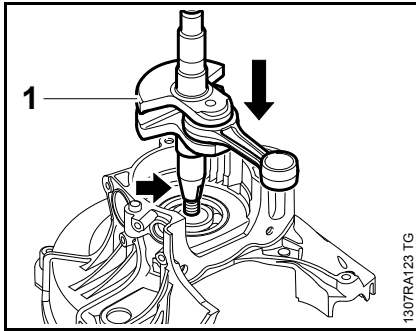
- Pry out bushing (1)
  - Check the crankcase halves, replace if necessary
  - Replace oil seals and ball bearings, 6.3, 6.7.1
  - Before installation, clean the crankshaft, 13

## Installation

### Fan-side half of the housing

Avoid damage to the crankshaft stub.

Examine and clean the mating surfaces of the fan-side half of the crankcase (including the cylinder sealing surface) – The mating surfaces must be without any damage whatsoever.

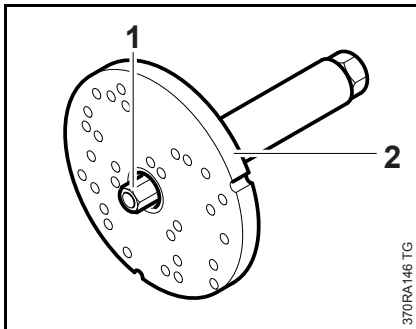


- Orient the crankshaft (1) with the conical crankshaft stub (arrow) facing the fan-side ball bearing

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

Push the crankshaft home until the crankshaft stub makes contact.

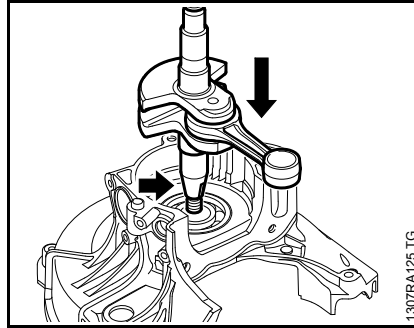
The crankshaft must be fitted rapidly, as the heat is transmitted to the crankshaft stub and the inner bearing race contracts.



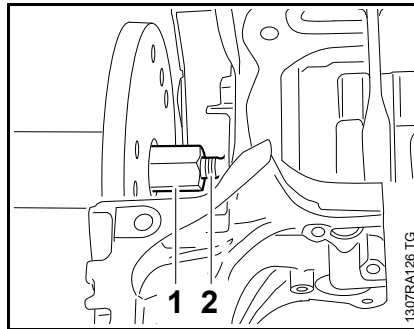
If the inner race cannot be heated, the crankshaft can be drawn into the crankcase with the assembly tool 5910 007 2201.

- Fit the screw sleeve (1) 5910 893 2420 as far as possible over the fully retracted spindle of the assembly tool (2) 5910 007 2201.

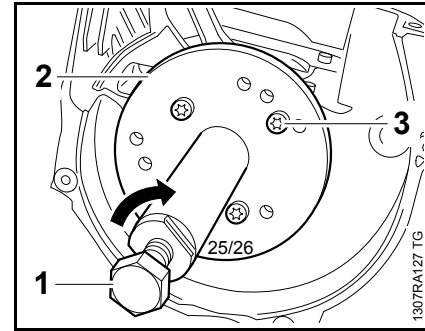
- Coat the conical crankshaft stub with oil



- Align the crankshaft with the conical crankshaft stub (arrow) facing the fan-side ball bearing and push it home



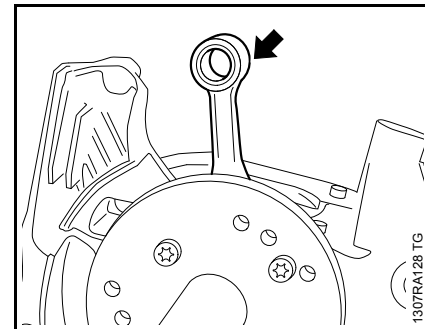
- Fit the screw sleeve (1) over the thread of the conical crankshaft stub (2) and screw it on



- By turning the spindle screw (1), fit the washer (2) to the fan-side half of the crankcase

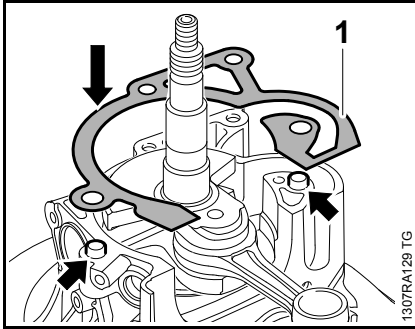
- Fit the assembly tool with three M5x30 screws (3) through the holes marked "25" and "26" on the washer (2) and secure it to prevent it twisting; screw in the spindle screw (1) clockwise

- Pull the crankshaft as far as possible into the fan-side half of the crankcase



The crankshaft also turns when it is drawn in with the assembly tool. For this reason, ensure that the rod eye (arrow) always faces upwards towards the cylinder.

- Remove the assembly tool

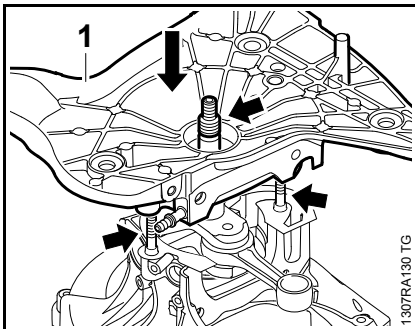


- Fit a new gasket (1) and secure it with the centering sleeves (arrows)

### Clutch side half of crankcase

Avoid damage to the crankshaft stub.

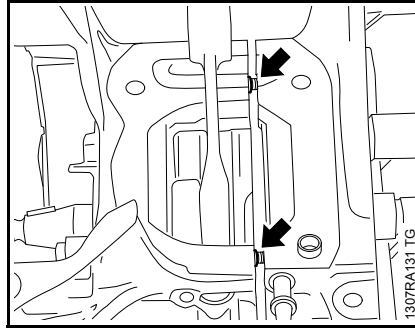
Examine and clean the mating surfaces of the clutch-side half of the crankcase (including the cylinder sealing surface) – The mating surfaces must be without any damage whatsoever.



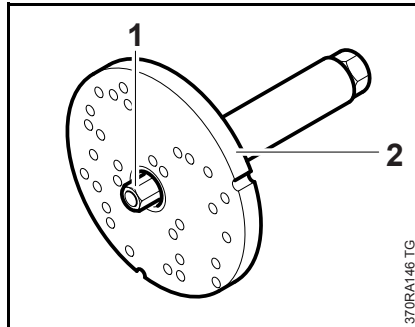
- Coat the cylindrical crankshaft stub with oil
- Heat the inner race of the ball bearing to approx. 150 °C (300 °F)
- Align clutch side half of crankcase (1), press 2 screws M 5x72 (arrows) to act as a guide through the clutch-side half of the crankcase and screw slightly into the threads of the centering sleeves (arrows) – do not tighten

- Push in clutch-side half of the crankcase (1) as far as it will go

The clutch-side half of the crankcase must be fitted rapidly, as the heat is transmitted to the crankshaft stub and the inner bearing race contracts.

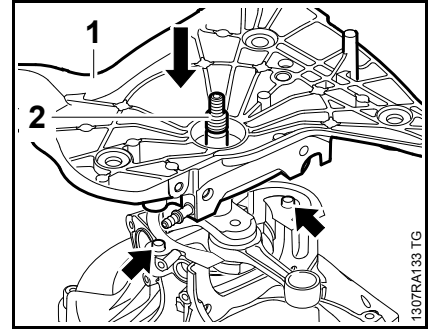


Ensure that the sleeves (arrows) enter the holes and that the housing gasket is not jammed or buckled.



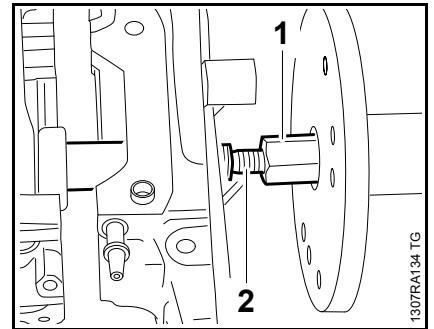
If the inner race cannot be heated, the crankshaft can be drawn into the crankcase with the assembly tool 5910 007 2201.

- Fit the screw sleeve (1) 5910 893 2420 as far as possible over the fully retracted spindle of the assembly tool kit (2) 5910 007 2201.



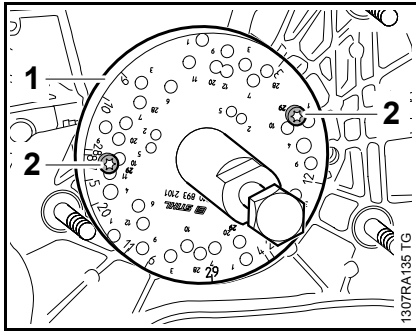
- Coat the cylindrical crankshaft stub with oil

- Push the clutch-side half of crankcase (1) over the cylindrical crankshaft stub and align so that the holes line up with the centering sleeves (arrows)

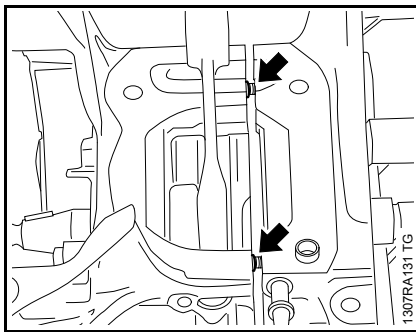


- Place the threaded sleeve (1) over the thread (2) of the cylindrical crankshaft stub and screw it on

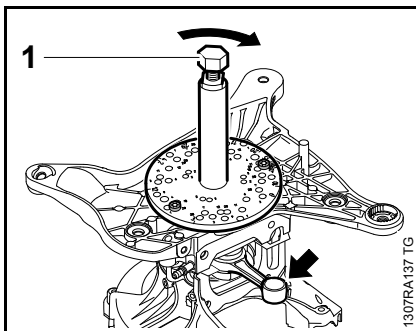




- Fit the washer (1) onto the crankcase half
- Push the 2 screws M5x72 (2) in the top holes "29" through the washer and crankcase half and screw slightly into the threads of the centering sleeves – do not tighten



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

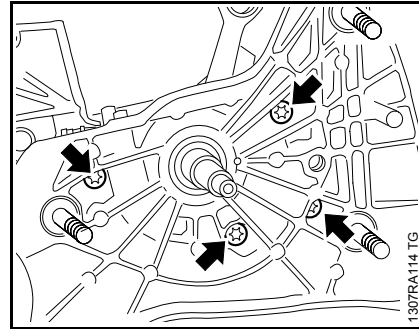


- Turn the spindle screw (1) clockwise

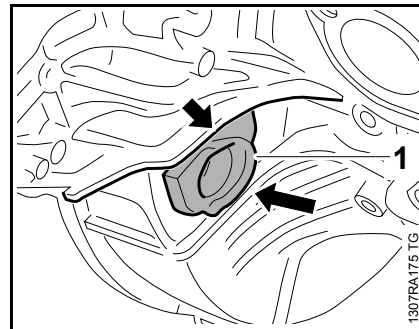
- Draw the clutch-side half of the crankcase in as far as possible

The crankshaft also turns when it is drawn in with the assembly tool. For this reason, ensure that the rod eye (arrow) always faces towards the cylinder.

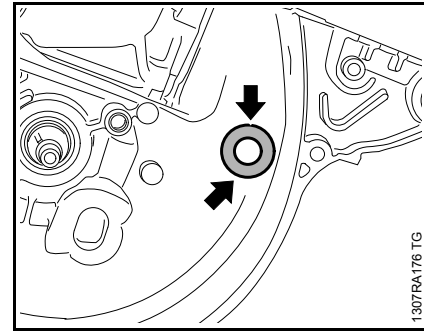
- Remove the assembly tool



- Insert the screws (arrows) and tighten them crosswise
- Cut off the protruding gasket – Do not damage the mating surface

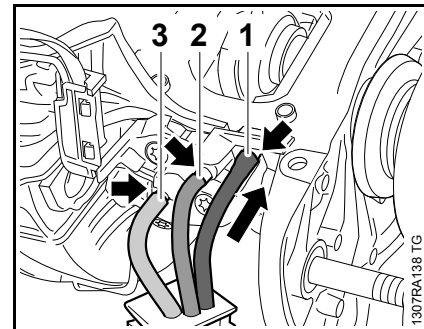


- Coat bushing on the rubber lip with STIHL press fluid, 13
- Align bushing (1) so that the straight side is flush with the fin (arrow)
- Press bushing (1) completely into the opening

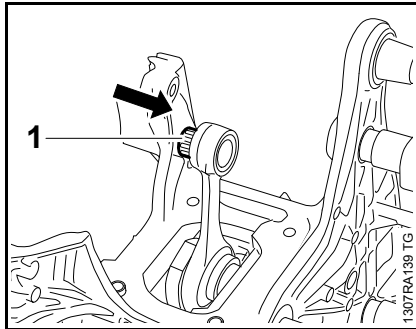


The bushing must enclose the opening (arrows) completely on the fan side.

- Install injection valve, 11.3
- Install sensor, 11.4
- Replace fuel hoses, 11.7



- Push impulse hose (1), fuel return line (2) and fuel hose (3) completely onto the connectors (arrows)



- Coat the needle cage (1) with oil
- Push the needle cage (1) into the rod eye
- Examine and install the piston, 6.8
- Examine and install the cylinder, 6.6
- Install the clutch drum, 5.3
- Install the engine, 6.5
- Reassemble remaining parts in reverse order

### 6.7.1 Ball bearing / crankcase

The two halves of the crankcase can be replaced individually if they are defective.

New crankcases are delivered with the relevant components pre-assembled – see spare parts list. Those parts which are not supplied with the new crankcase must be removed from the old crankcase halves, examined and replaced if necessary.

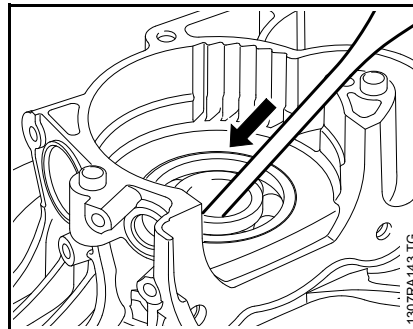
When fitting a new crankcase, the machine's serial number must be stamped on the crankcase with 2.5 mm figure stamps.

If the old crankcase is reused, the oil seals and ball bearings must be replaced, all gasket residues removed and the mating surfaces cleaned thoroughly. The mating surfaces must be absolutely clean to guarantee a perfect seal.

Examine both halves of the crankcase for cracks and check all mating surfaces for signs of damage.

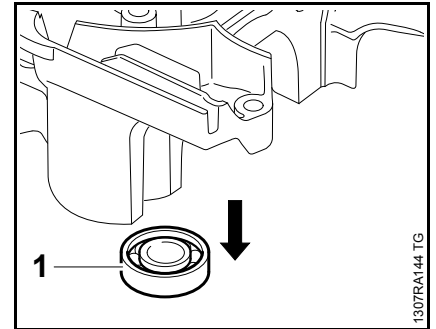
- Refer also to troubleshooting chart, 3.5
- Remove crankshaft, 6.7

### Fan-side half of the housing



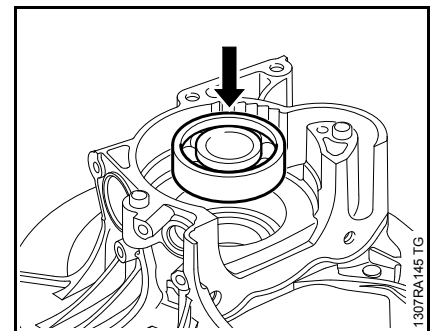
- Carefully drive the oil seal out with a suitable punch
- Examine and clean the crankcase half, replace if necessary

Replace the ball bearings if the crankcase half is in good condition.



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

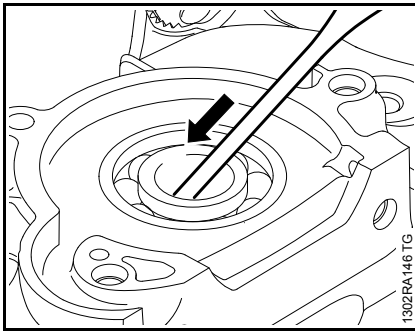
The bearing (1) drops out of its own accord when this temperature is reached.



- Heat the area around the bearing seat to approx. 150 °C (300 °F)
- Press the ball bearing home as far as possible

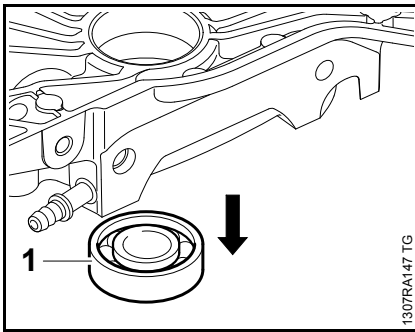
The ball bearing must be fitted rapidly, as it absorbs heat and expands.

## Clutch side half of crankcase



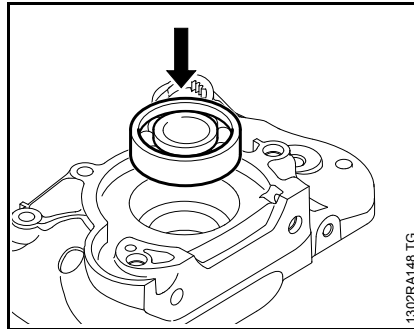
- Carefully drive the oil seal out with a suitable punch
- Examine and clean the crankcase half, replace if necessary

Replace the ball bearings if the crankcase half is in good condition.



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

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



- Heat the area around the bearing seat to approx. 150 °C (300 °F)
- Press the ball bearing home as far as possible

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

- Install crankshaft, 6.7
- Install oil seals, 6.3
- Reassemble remaining parts in reverse order

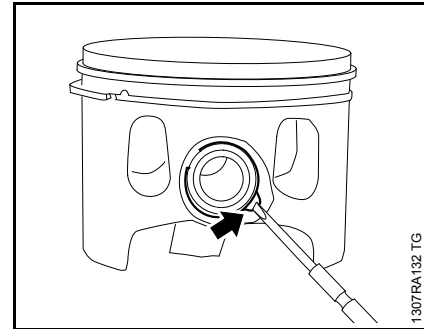
## 6.8 Piston

Before removing the cylinder, decide whether the crankshaft is to be removed, 6.7

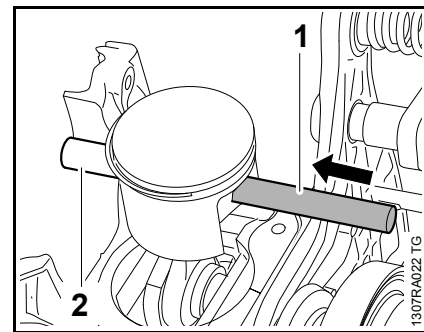
- Remove the cylinder, 6.6

Two snap rings are fitted, but only one need be removed in order to remove the piston pin

- Their installation is the same on both sides.



- Pry the hookless snap ring out of the recess (arrow) on the fan side with a suitable tool



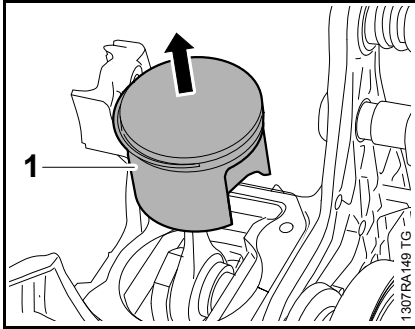
- Fit the assembly drift (1) 0000 893 4700 on the clutch side

The assembly drift can be inserted through the fitted snap ring.

- Drive the piston pin (2) out of the piston with the assembly drift (1) 0000 893 4700

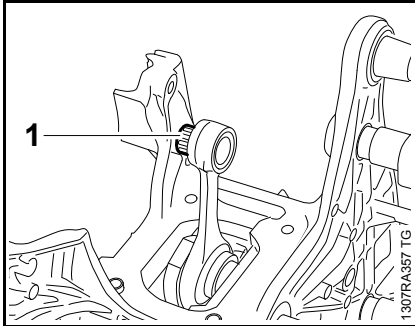
If the piston pin is stuck, tap the end of the drift gently with a hammer to loosen it.

The piston must be held steady during this process to ensure that jolts are not transmitted to the connecting rod.

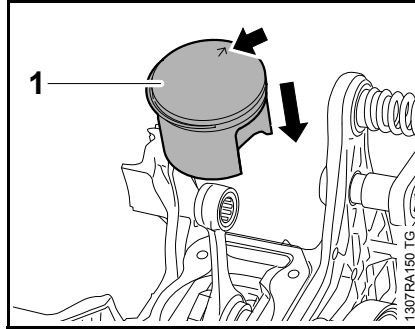


- Remove the piston (1) from the connecting rod
- Examine the piston rings and replace if necessary, 6.9

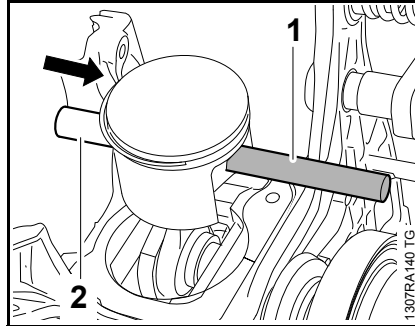
### Installation



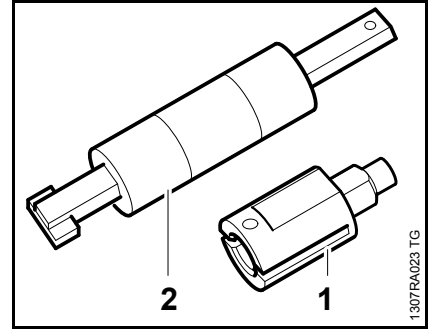
- Take out the needle cage (1), examine and clean it, replace if necessary
- Coat the needle cage (1) with oil and insert it in the rod eye



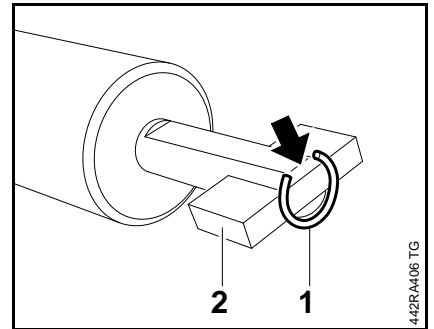
- Line up the piston (1) so that the arrow (arrow) in the piston base points towards the abrasive wheel or cylinder exhaust port
- Position the piston (1) on the rod eye



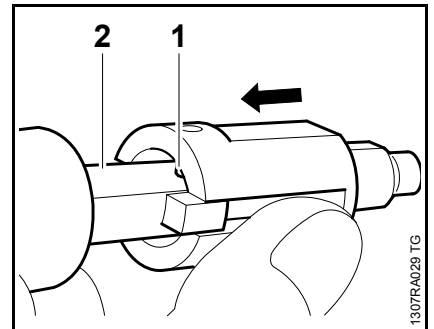
- Push assembly drift (1) 0000 893 4700 with the stub end first through piston hole and rod eye (needle cage) and secure the piston
- Coat the piston pin with oil
- Fit the piston pin (2) on the stub of the assembly drift (1) and slide it into the piston



- Remove the sleeve (1) 5910 893 1706 from the assembly tool (2) 5910 890 2212

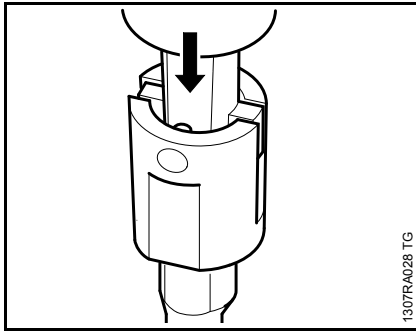


- Attach the snap ring (1) to the magnet (2) and align it so that the snap ring gap is on the flat side (arrow)



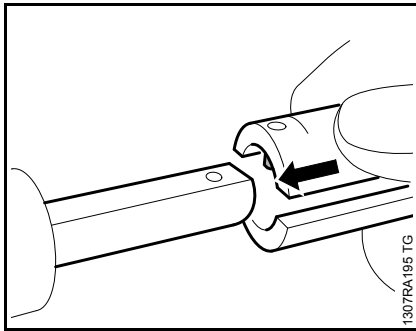
- Push the slotted diameter of the sleeve over the magnet (2) and snap ring

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

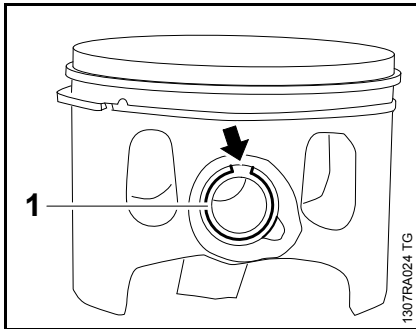


- Press the assembly tool down in the sleeve until the magnet is at the end of the guide slits

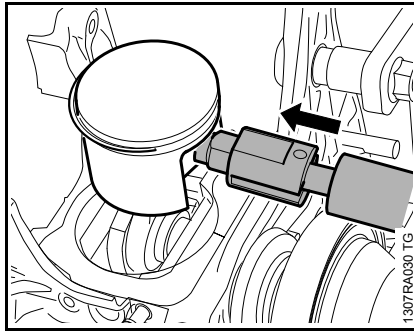
Stand the tool on a suitable surface.



- Remove the sleeve and push it over the opposite end of the assembly tool's shank. The inner pin (arrow) must point towards the flat face.



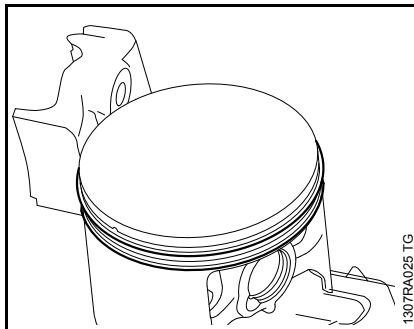
The snap ring (1) must be fitted so that the gap in the ring (arrow) points upwards.



Align the assembly tool so that the gap in the snap ring faces upwards.

- Fit the assembly tool 5910 890 2212 with the taper sleeve on the piston boss, hold the piston steady and press the tool shank home until the snap ring slips into the groove

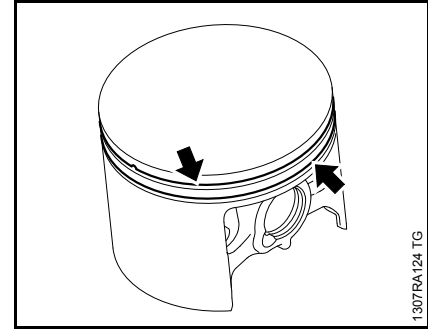
The tool must be precisely aligned in axial direction of the piston pin.



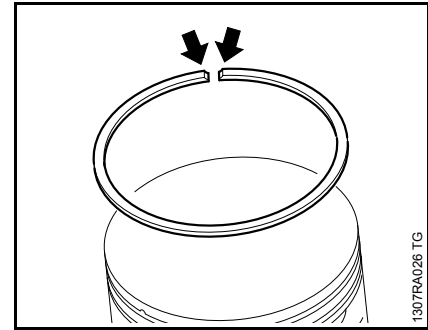
- Examine the piston rings and replace if necessary, 6.9
- Install the cylinder, 6.6
- Reassemble remaining parts in reverse order

## 6.9 Piston rings

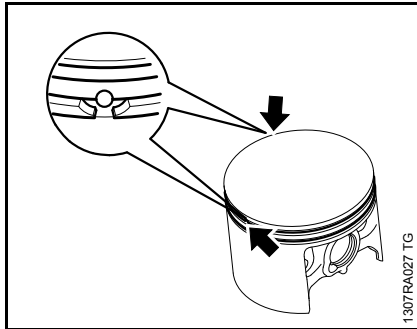
- Remove the piston, 6.8
- Remove piston rings from piston



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



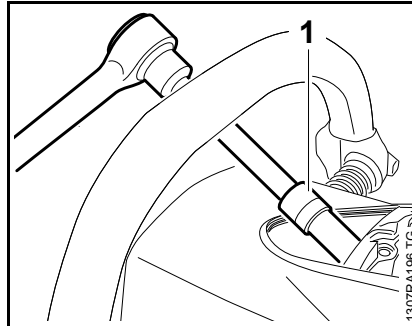
- Align the new piston rings so that the radii at the ends of the ring (arrows) face upwards



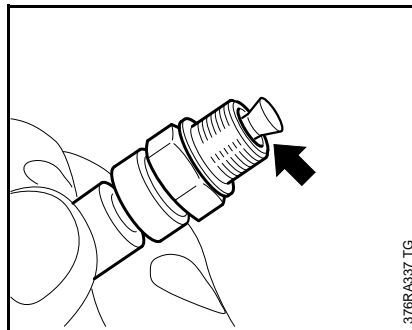
- Install the piston rings so that the radii at the ring gaps meet at the fixing pins (arrows) in the piston groove
- Check the correct installed position of the piston rings again (arrows)
- Install the piston, 6.8
- Reassemble remaining parts in reverse order

## 6.10 Decompression valve

- Remove cap and bushing, 6.4



- Unscrew the decompression valve (1) with socket, 13 mm, long reach, 5910 893 2804



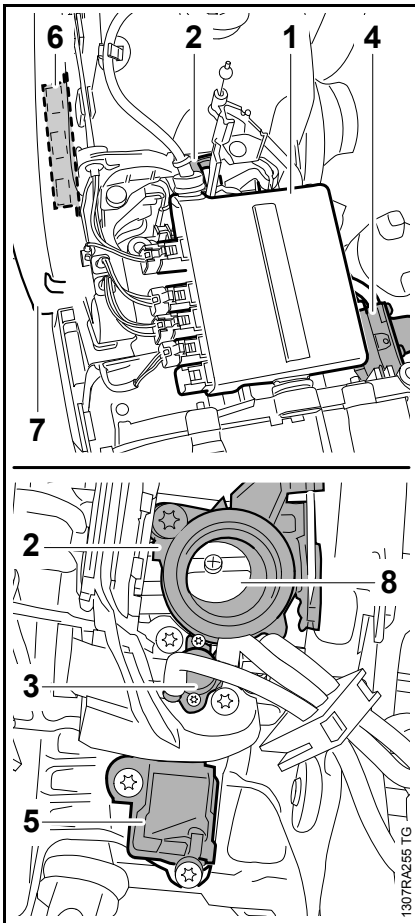
- Examine the sealing cone (arrow) on the decompression valve for signs of damage

Use a new decompression valve if the sealing cone on the decompression valve does not seal tightly or is damaged.

- Fit the decompression valve by hand and screw it in
- Screw the decompression valve tight
- Reassemble remaining parts in reverse order

## 7. STIHL Injection

In this chapter the components are shown without the shroud and tank housing for a better view.

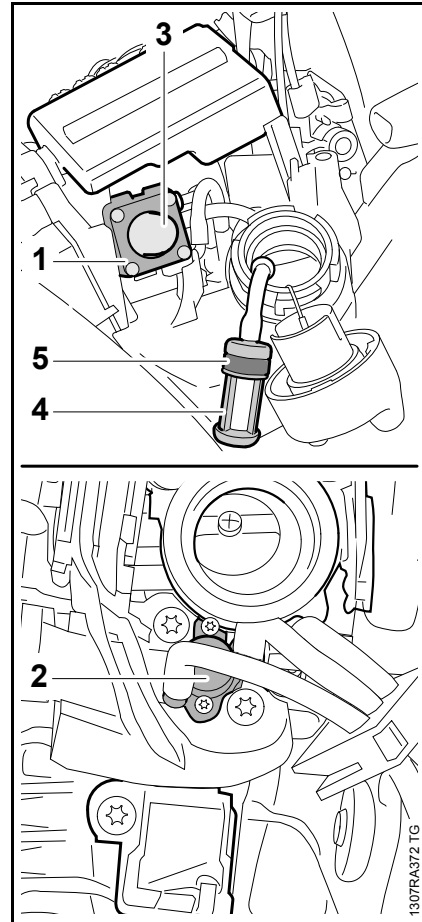


STIHL Injection basically consists of a control unit (1), throttle shutter housing (2), injection valve (3), injection pump (4), sensor (5), generator (6) and flywheel (7).

The control unit (1) is responsible for central control of all engine functions and contains an ignition module with high ignition energy.



The control unit (1) is powered with voltage generated by the magnet ring on the flywheel (7) and the generator (6). In addition, the generator (6) provides the speed signal and the position of the crankshaft to the control unit (1). This information is required to determine the ignition timing and the injection timing.

The throttle shutter (8) in the throttle shutter housing (2) is actuated via the throttle cable, thus regulating the inflow of air. The sensor (5) provides the pressure and temperature in the crankcase to the control unit (1), which, on this basis, determines the air mass introduced and ultimately the required amount of fuel from the characteristic curve. This amount of fuel is injected into the crankcase via the injection valve (3).



The injection pump (1) maintains a constant pressure for the injection valve (2) and ensures the necessary fuel delivery (impulse). In addition, the manual fuel pump (3) is integrated in the injection pump (1).


The pickup body (4) with magnetic separator (5) eliminates tiny metallic particles and protects the injection valve (2).

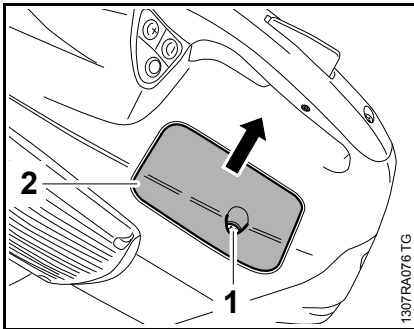
Troubleshooting and test procedures are described in the following chapters, Testing,  7.1, Troubleshooting,  7.6.

## 7.1 Testing

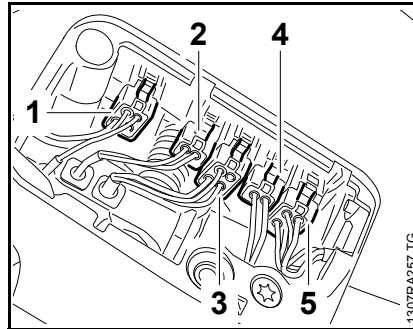
### 7.1.1 Checking the screw connection and plug

There must be a reliable connection for communication between control unit, injection valve and sensor. If communication between control unit, injection valve and sensor is interrupted or faulty, the control unit does not initiate an ignition spark.


- In the event of a malfunction or if there is no ignition spark, first check the firm seat of the plugs on the control unit, then the screw connection of the ground wire and the seat of the spark plug boot,  7.4

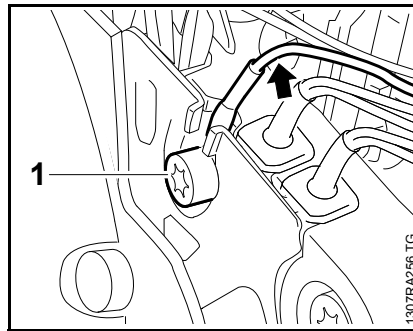


- Unscrew screw (1) and remove cover (2)
  - Screw remains in cover



The plugs (1, 2, 3, 4, 5) must be seated completely in the bushings of the control unit and must be snapped into place.

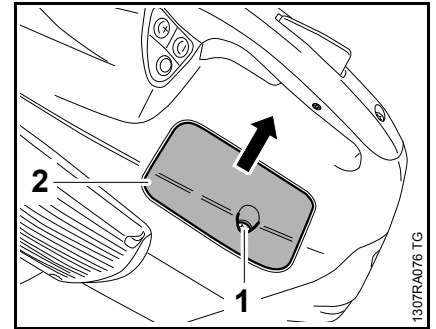
- Remove shroud,  6.4



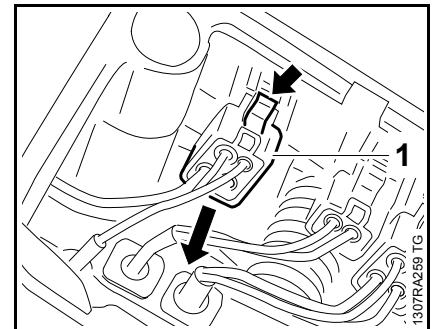
- Screw (1) must be tight.

The ground wire (arrow) must be seated completely and firmly in the cable lug.

### 7.1.2 Connect the injection system diagnostic cable

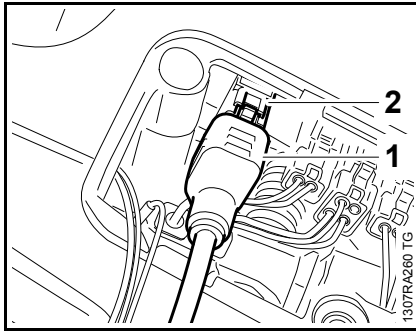


- Unscrew screw (1) and remove cover (2)
  - Screw remains in cover

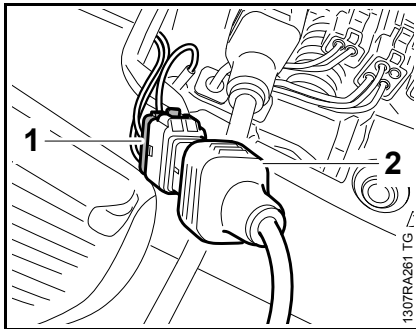


- Remove dirt from around the plug on the control unit before removing it
- Press lock (arrow) downwards by hand and push out plug (1)
  - Do not pull out the plug (1) by the wires, do not use tools

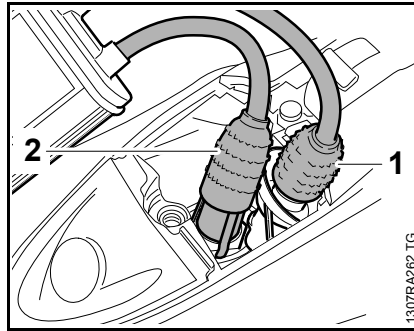





- Press plug (1) of the "Injection system control unit diagnostic cable" 5910 840 0403 into the socket (2) on the control unit until it snaps into place



- Press plug (1) of the generator into the socket (2) of the "Injection system control unit generator" 5910 840 0402 until it snaps into place

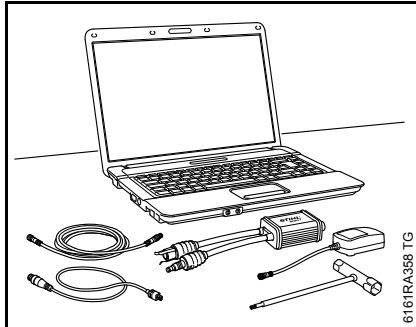


STIHL MDG 1 must be installed between the spark plug boot and the spark plug.

- Unplug the spark plug boot
- Push plug (1) in spark plug boot and socket (2) onto the spark plug
- Run test,  7.2

## 7.2 Testing with STIHL MDG 1

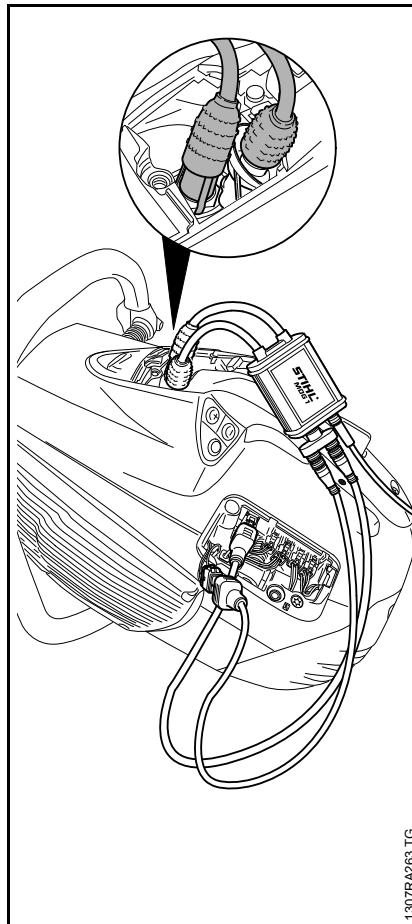
Run tests with **STIHL engine analyzer MDG 1**.



The STIHL engine analyzer MDG 1 can be used in conjunction with a computer to test the STIHL Injection system.

A program must be installed on the computer for the analyzer. A "Bluetooth" device must be plugged into the USB port of the computer. The "Bluetooth" device ensures the data transmission between STIHL MDG 1 and the computer.

When used, the diagnostic program runs step by step and interactively through the whole test run. Faults and error sources of the STIHL Injection system are taken into account and displayed by the program during the test run.



The STIHL engine analyzer MDG 1 is now switched to the ignition circuit and connected to the control unit and generator via the test lead.

A power adaptor is supplied with the STIHL MDG 1 to power it and it too is connected with the STIHL MDG 1.

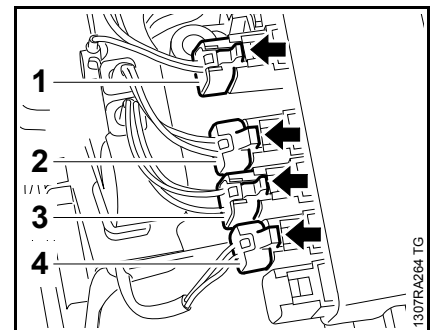
There is an electronic unit in the STIHL MDG 1 that ensures the data transmission to the "Bluetooth" device on the computer. The engine analyzer is supplied together with the diagnostic program for the computer on a data carrier from the factory. A database is part of the diagnostic program in which the data of different devices and machines is stored for the test run.

It is possible, depending on the series status of the STIHL MDG 1 and the device to be tested, that the database in the diagnostic program is not yet up-to-date for the device to be tested. In this case, it is possible to download the latest version of the program from the Internet.

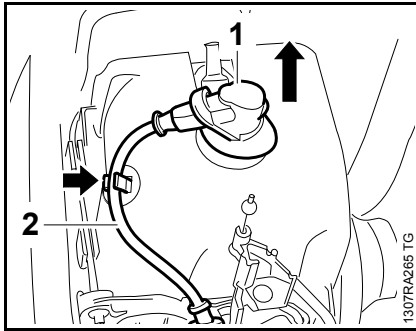
Additional and detailed information about the STIHL MDG 1 can be found in the instruction manual for the STIHL MDG 1 and in the "Technical Information" for the introduction of the STIHL MDG 1.

## 7.3 Control unit

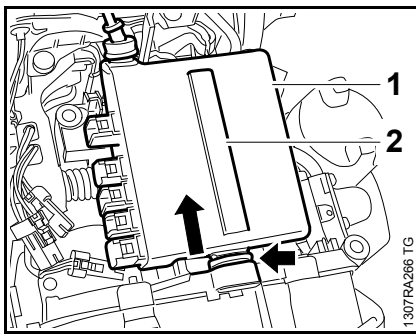
- Check control unit with STIHL MDG 1, [6.1](#), [6.2](#)
- Refer also to troubleshooting chart, [3.5](#)
- Remove shroud, [6.4](#)



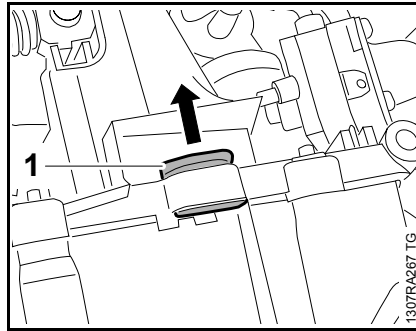
- Remove dirt from around the plug on the control unit before removing it
- Press locks (arrow) downwards by hand and push out plug (1, 2, 3, 4)
  - Do not pull out the plug (1, 2, 3, 4) by the wires, do not use tools



- Unplug spark plug boot (1) and pull ignition lead (2) from cable guide (arrow)

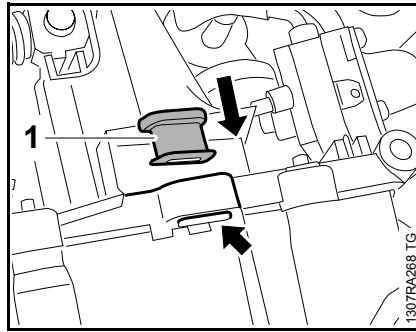


- Lift control unit (1) slightly on the cylinder and pull out of mount (arrow)
- Check the thrust piece (2), replace if necessary
- Check the control unit, replace if necessary

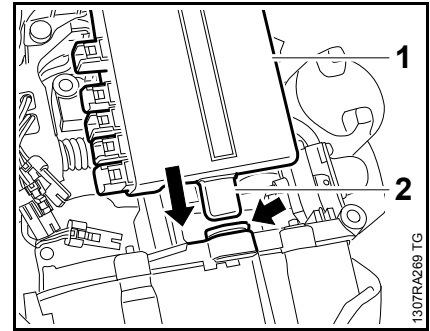


- Pry out grommet (1) in the direction of the cylinder
- Check ignition lead, replace if necessary, [7.4.1](#)
- Examine the spark plug boot and replace it if necessary, [7.4](#)

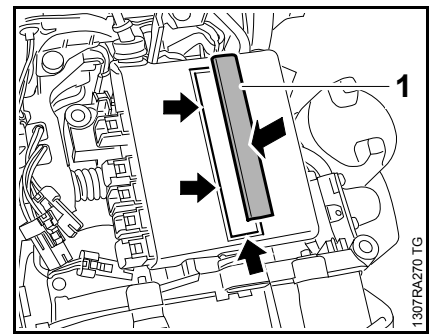
### Installation



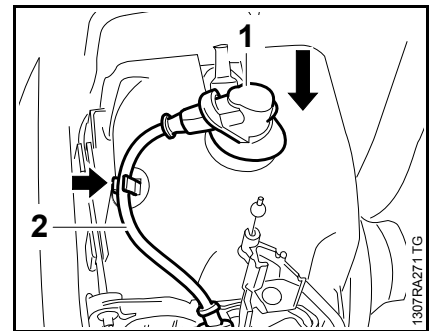
- Coat outside of grommet with STIHL press fluid,
- Press the grommet (1) with the thin lip completely into the opening (arrow) in the direction of the air filter – the lip must enclose the opening completely on the opposite side



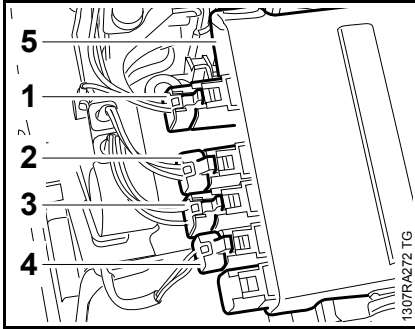
- Slide the control unit (1) with the lug (2) into the grommet (arrow) and position



- Place the thrust piece (1) in the frame (arrows) and press



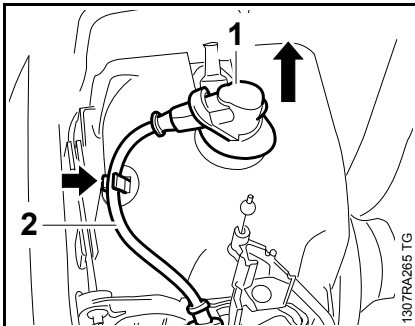
- Push the spark plug boot (1) onto the spark plug so that it is facing the flywheel and press the ignition lead (2) into the cable guide (arrow)



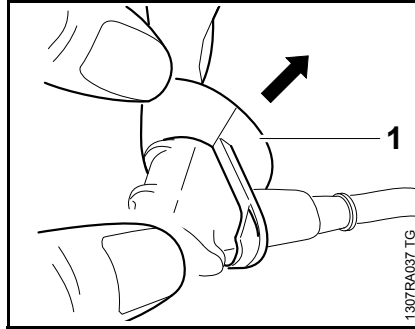
- Push the plugs (1), (2), (3) and (4) into the sockets of the control unit (5) until they engage
  - The shape and color of the plugs and sockets ensures that they cannot be mixed up
- Reassemble remaining parts in reverse order

#### 7.4 Spark plug boot

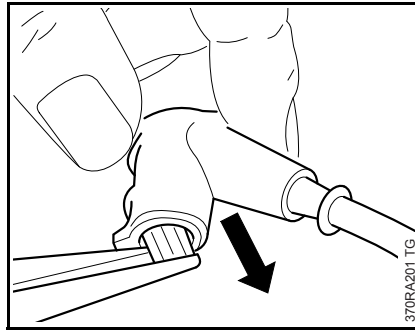
- Remove shroud, 6.4



- Unplug spark plug boot (1) and pull ignition lead (2) from cable guide (arrow)

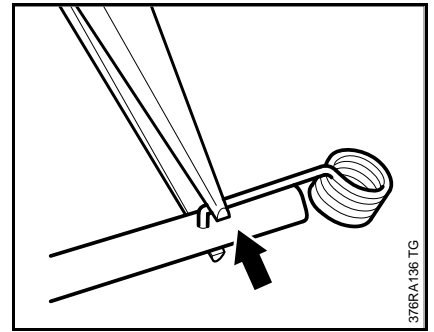


- Remove the cover (1) from the spark plug boot



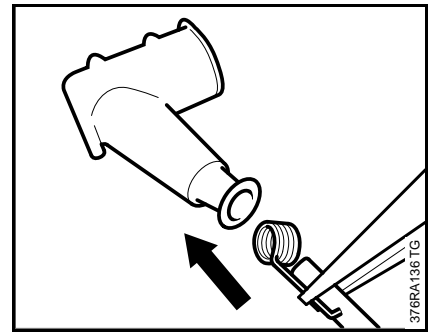
- Use suitable pliers to pull the torsion spring out of the spark plug boot
  - Unhook the torsion spring from the ignition lead
  - Pull the boot off the ignition lead

#### Installation



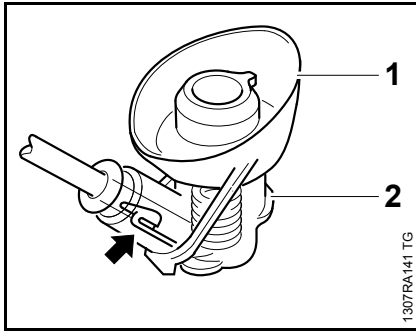
- With a new ignition module, use a pointed tool to pierce the center of the new lead's insulation approx. 15 mm from the end of the ignition lead

- Pinch the hook of the torsion spring into the center of the ignition lead (arrow)



- Coat the inside of the spark plug boot with STIHL press fluid, 13

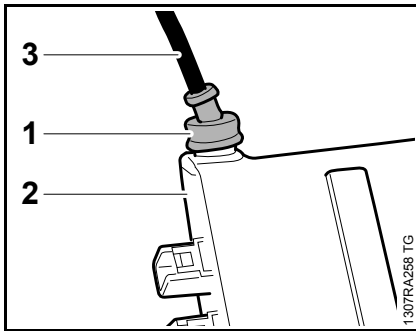
- Push the ignition lead and torsion spring into the spark plug boot



- Slide the cover (1) over the spark plug boot (2) and align
- Ensure that the torsion spring (arrow) is located in the recess
- Reassemble remaining parts in reverse order

#### 7.4.1 Ignition lead

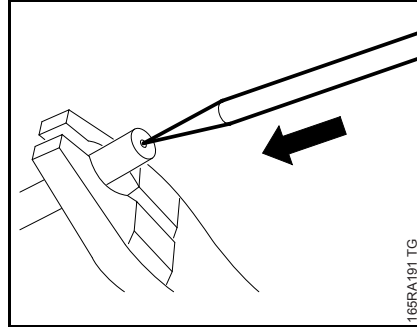
- Remove control unit, 7.3



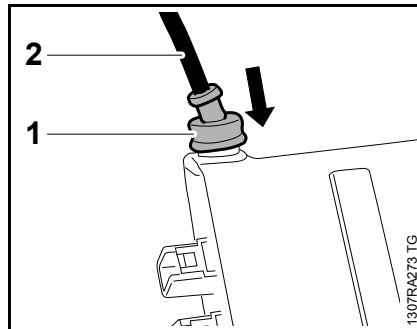
- Push the grommet (1) off the control unit (2)
- Unscrew the ignition lead (3) from the control unit (2)
- Check the control unit and ignition lead, replace if necessary

- Examine the spark plug boot and replace it if necessary, 7.4

#### Installation



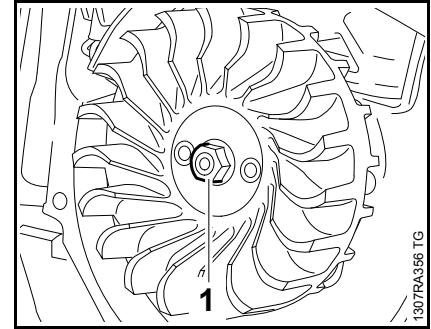
- Use a pointed tool to pierce the center of the end of the new ignition lead, which is to be twisted into the control unit.
- Before twisting in the ignition lead, fill the coil tower with STIHL multi-purpose grease, 13



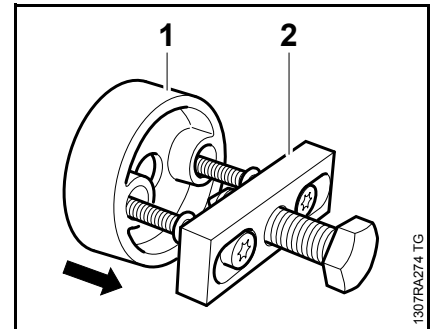
- Push grommet (1) onto ignition lead
- Twist ignition lead (2) completely into the control unit
- Push on the grommet (1)
- Install control unit, 7.3
- Reassemble remaining parts in reverse order

#### 7.5 Flywheel

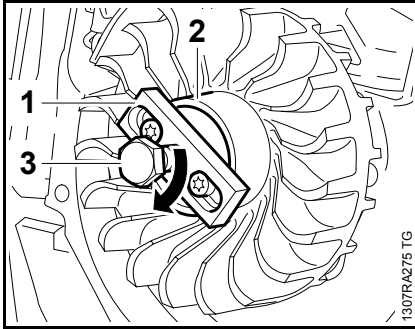
- Remove fan cover, 6.3
- Block piston, 5.1



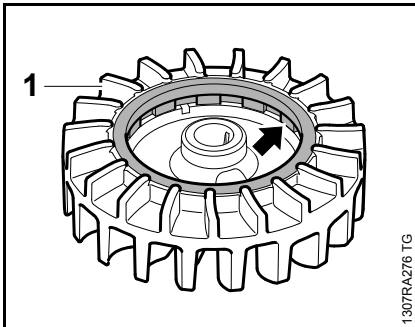
- Unscrew the flywheel nut (1)



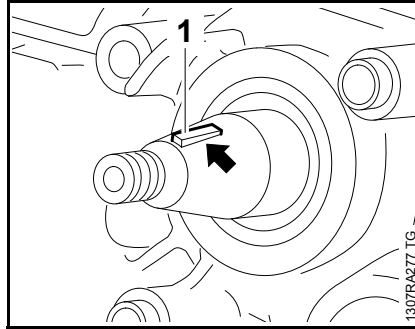
- Push the spacer (1) 4238 894 1100 onto the screws of the puller (2) 5910 890 4504 so that the larger diameters of the holes face the puller



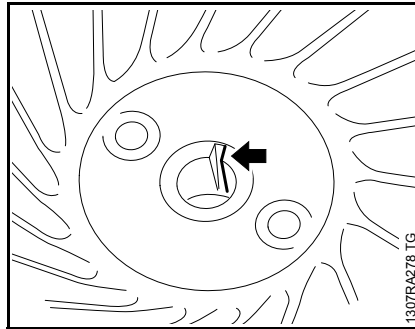
- Fit puller (1) 5910 890 4504 with spacer (2) 4238 894 1100 and screw in the screws uniformly in the threaded holes of the flywheel
- Turn screw (3) clockwise until the flywheel comes off the crankshaft stub
- Take out the screws and remove the puller and spacer from the flywheel



Check the magnet ring (arrow) in the flywheel (1) for cracks or other damage. Replace flywheel if necessary.



- Check the woodruff key (1), replace if necessary
- Make sure that the woodruff key (1) is properly seated (arrow)

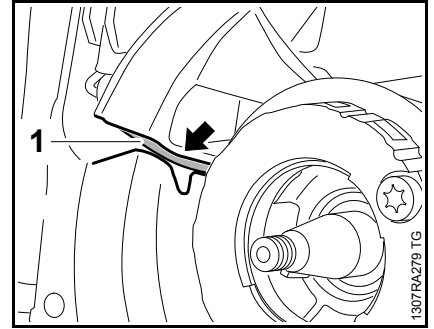


- Check groove (arrow), replace flywheel if necessary – if the groove is worn, replace the flywheel

Ensure that the woodruff key engages in the groove (arrow).

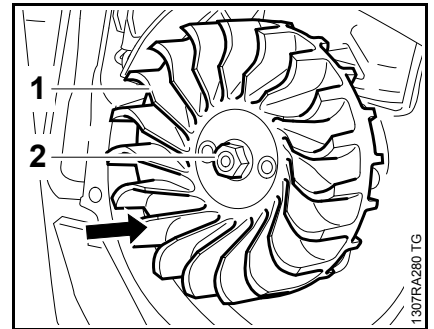
## Installation

The hole in the flywheel hub and crankshaft stub must be completely grease-free, clean if necessary before installing the flywheel, 13.



The generator lead (1) must be seated completely in the guide (arrow).

The flywheel must not touch the generator lead  
– power supply can be interrupted.







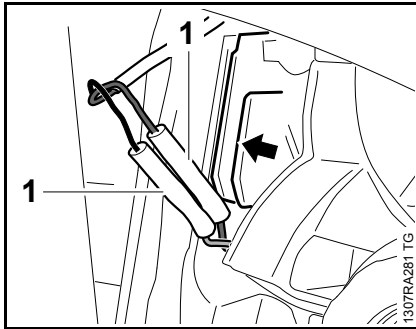
- Fit the flywheel (1) so that the woodruff key on the crankshaft stub engages in the groove of the flywheel

Flywheel must not touch the generator.

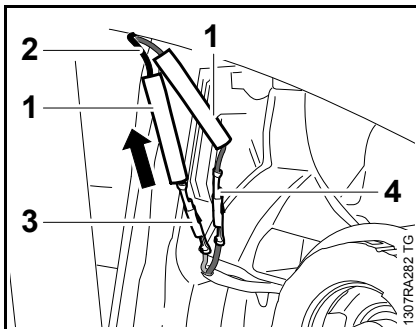
- Screw on and tighten the collar nut (2)
- Reassemble remaining parts in reverse order

## 7.5.1 Generator

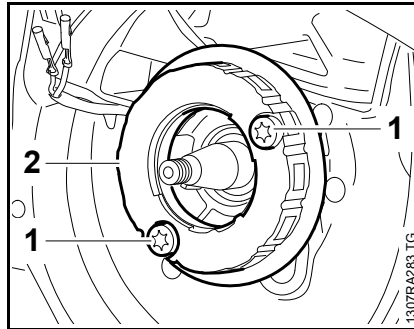
- Check generator with STIHL MDG 1,  7.1,  7.2
- Refer also to troubleshooting chart,  3.5
- Remove the flywheel,  7.5



- Remove the insulating tubes (1) with plug connections from the guide (arrow)




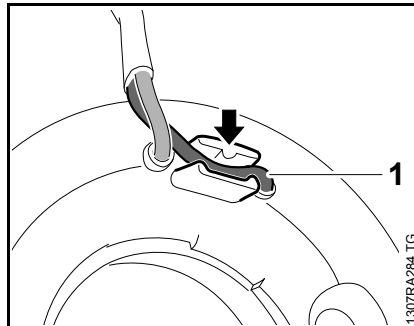
- Push the insulating tubes (1) towards the wiring harness (2) and disconnect the plug connections (3) and (4)



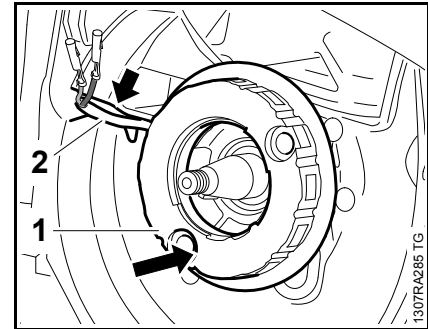
- Unscrew the screws (1) and remove the generator (2)
- Examine the generator, replace if necessary

### Installation

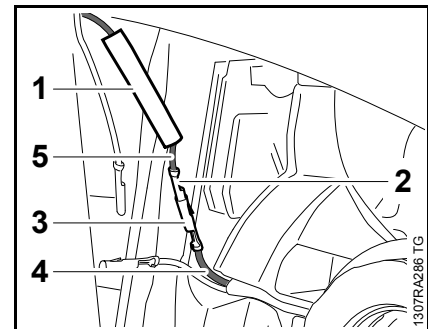
Use the wiring tool 5910 890 4000 to press the leads completely into the guides,  1.1.



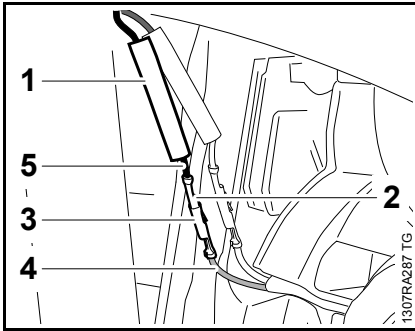
- Press the blue lead (1) completely into the guide (arrow)



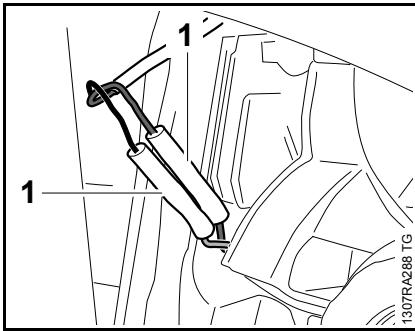
- Push the generator (1) onto the centering sleeves with the lead connection facing the crankcase, placing the generator lead (2) into the guide (arrow)
- Do not pinch the generator lead
- Insert and tighten the screws



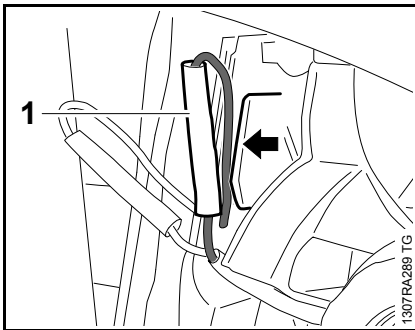
- Push the insulating tube (1) onto the blue lead (5) of the wiring harness
- Take the plug (2) and terminal socket (3) of the blue leads (4) and (5) completely push together



- Push the insulating tube (1) onto the black lead (5) of the wiring harness
- Take the plug (2) and terminal socket (3) of the black lead (5) and yellow lead (4) and completely push together



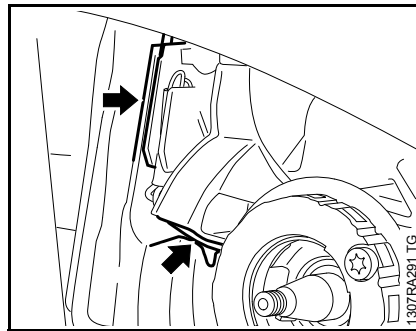
- Slide insulating tubes (1) over the middle of the plug connections, 1.1



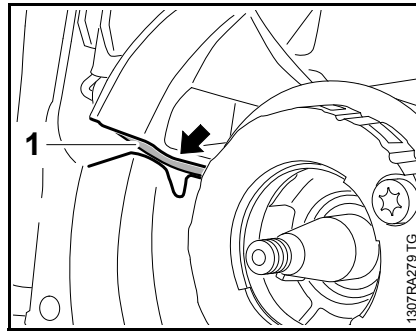
- Guide the blue lead behind the insulating tube (1) and press the plug connection into the middle of the guide (arrow) – the blue lead must run underneath the insulating tube



- Guide the black lead behind the insulating tube (1) and press the plug connection into the middle of the guide (arrow) – the black lead must run underneath the insulating tube



- Press the leads completely into the guides (arrows)



The lead (1) must be seated completely in the guide (arrow).

The flywheel must not touch the generator lead  
– power supply can be interrupted.

- Reassemble remaining parts in reverse order

## 7.6 Short circuit wire / switch

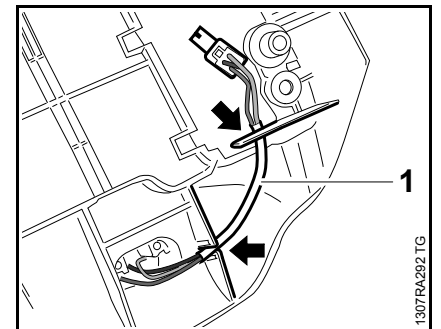
### 7.6.1 Testing

- Test the short circuit wire / switch with STIHL MDG 1, 7.1, 7.2
- Refer also to troubleshooting chart, 3.5

### 7.6.2 Removal and installation

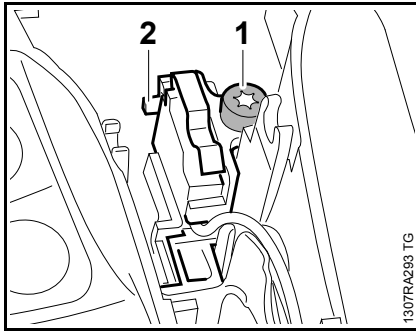
The switch, short circuit wire and ground wire form a single unit. The complete switch must be replaced if there is any sign of damage.

- Remove shroud, 6.4
- Remove switch shaft, 10.1
- Remove interlock lever and throttle trigger, 10.2

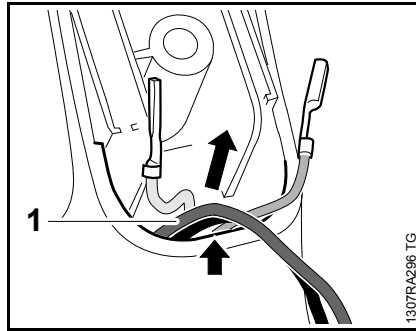


- Pull the wiring harness (1) of the switch on the inside out of the guides (arrows)

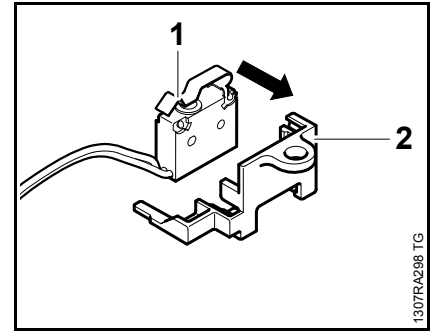




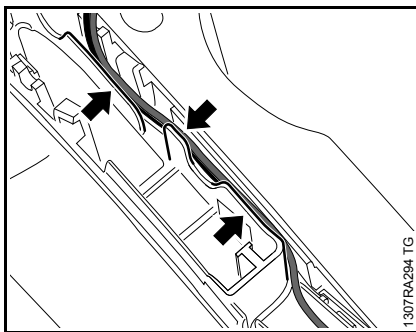
- Unscrew the screw (1) and lift the holder (2) and switch out of the mount



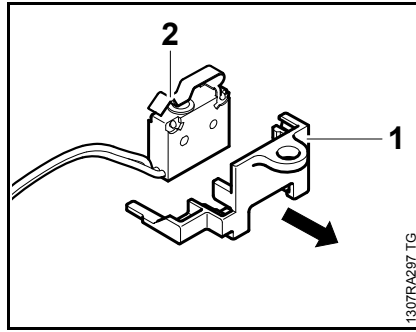
- Pull the wiring harness (1) of the switch out of the opening (arrow)



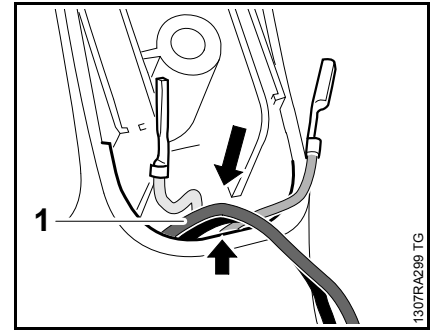
- Press the switch (1) into the holder (2) until it engages



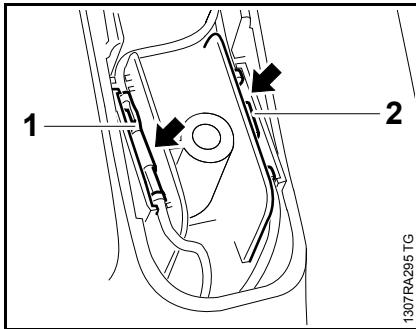
- Pull the blue and black lead out of the guides (arrows)



- Remove the retainer (1)
- Check the switch (2), replace if necessary
- Check the control panel, replace if necessary, [1.1](#)



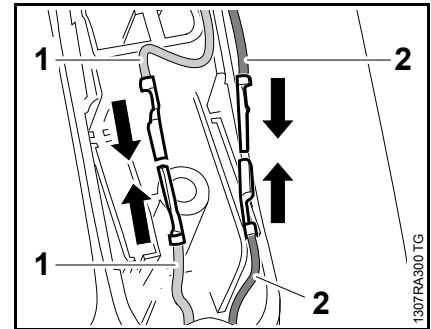
- Push the wiring harness (1) of the switch with the plug through the opening (arrow)



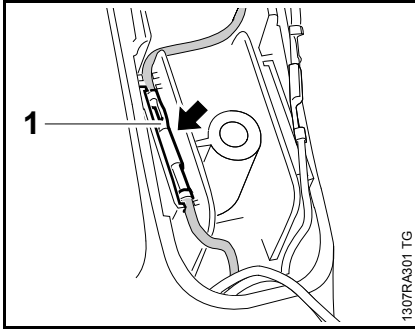
- Pull the plug connections (1) and (2) out of the guides (arrows)
- Disconnect the plug connections

### Installation

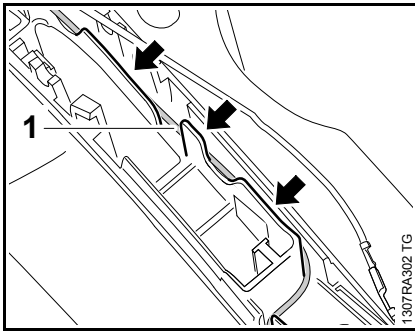
Use the wiring tool 5910 890 4000 to press the leads completely into the guides, [1.1](#).



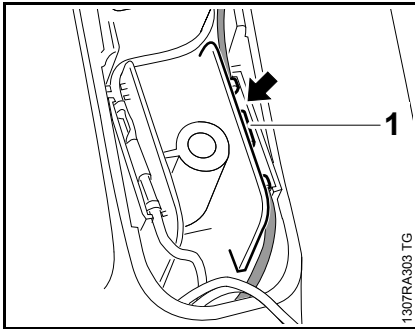
- Connect the yellow leads (1) and green leads (2) completely



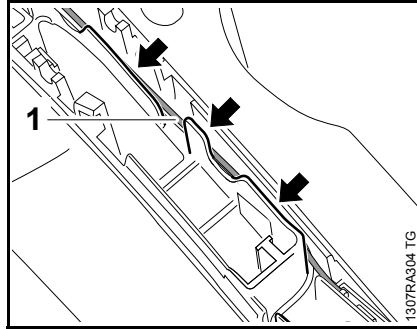
- Press the plug connection (1) of the yellow lead into the guide (arrow)



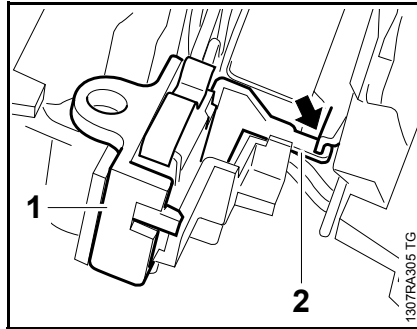
- Press the yellow lead (1) into the guides (arrows) – the yellow lead must be placed underneath the green lead



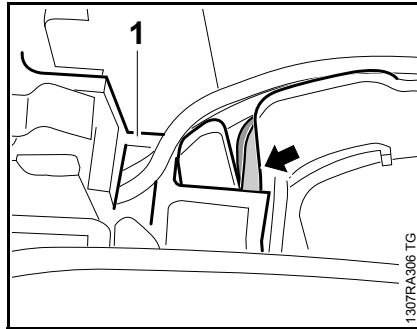
- Press the plug connection (1) of the green lead into the guide (arrow)



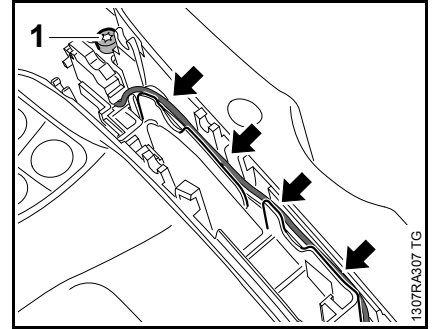
- Press the green lead (1) into the guides (arrows) – the yellow lead must run underneath the green lead



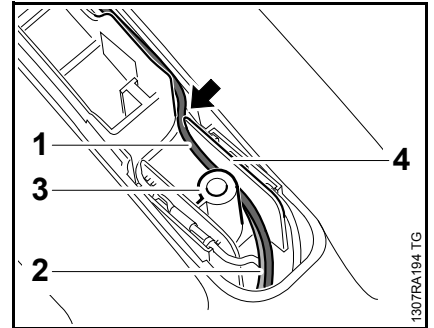
- Fit the holder (1) into the mount so that the tab (2) engages in the fin (arrow)



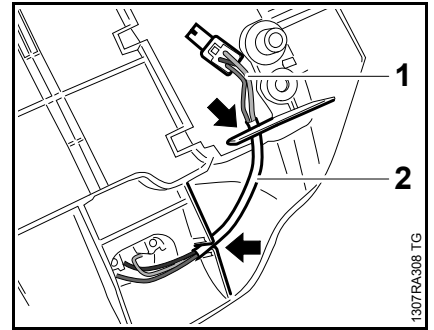
The yellow and green lead of the control panel must be in the guide (arrow) and must be placed underneath the holder (1).



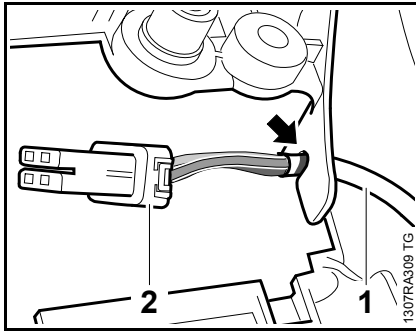
- Screw in the screw (1) and tighten it
- Push the black and blue lead in this order into the guides (arrows) – the black lead must run underneath the blue lead



- Push the black lead (1) and blue lead (2) into the guide (arrow) and place between dome (3) and fin (4)



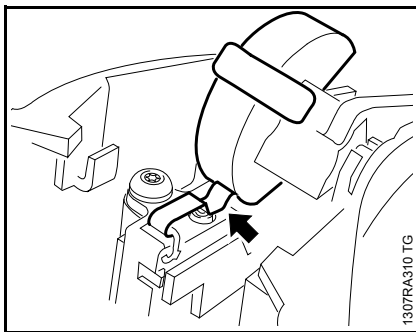
- Press the wiring harness (1) of the switch on the inside with the protective tube (2) into the guides (arrows)



- Align the wiring harness (1) of the switch so that the mark on the protective tube lines up with the guide (arrow) and the plug (2) is outside of the opening

– Install interlock lever and throttle trigger, 10.2

– Install switch shaft, 10.1



- Check correct functioning
  - The stop switch must actuate the contact springs (arrow) of the switch when in position "STOP" or "0" and close the contact – this can be heard as a clicking noise from the micro switch

The switch shaft can only be set to position "I" if the trigger interlock and throttle trigger are pressed.

– Reassemble remaining parts in reverse order

## 7.7 Control panel

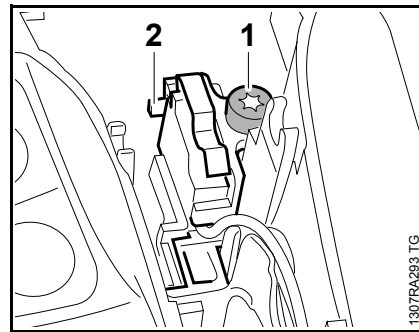
– Check the control panel with STIHL MDG 1, 7.1, 7.2

– Refer also to troubleshooting chart, 3.5

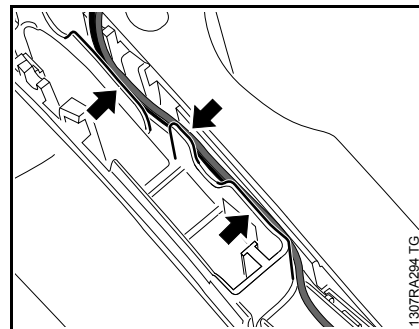
– Remove shroud, 6.4

– Remove switch shaft, 10.1

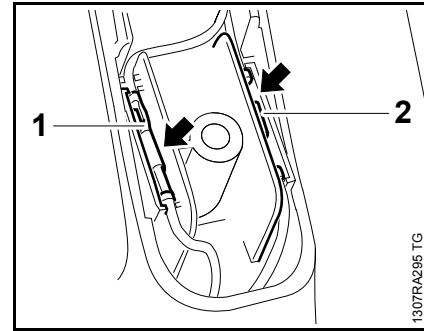
– Remove interlock lever and throttle trigger, 10.2



- Unscrew the screw (1) and lift the holder (2) and switch out of the mount

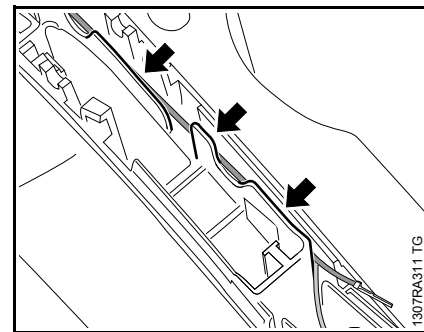


- Pull the blue and black lead out of the guides (arrows) and set aside the switch

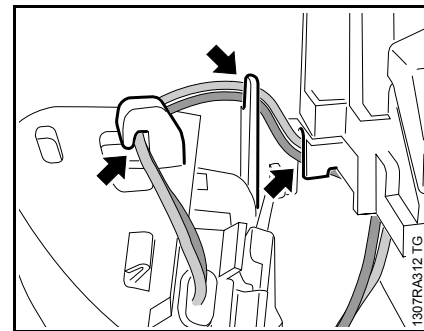


- Pull the plug connections (1) and (2) out of the guides (arrows)

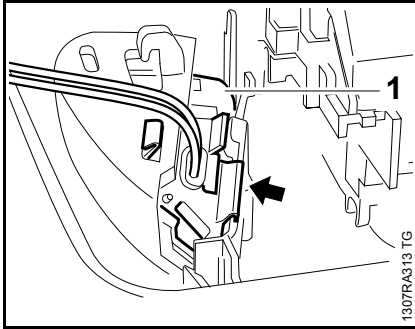
– Disconnect the plug connections



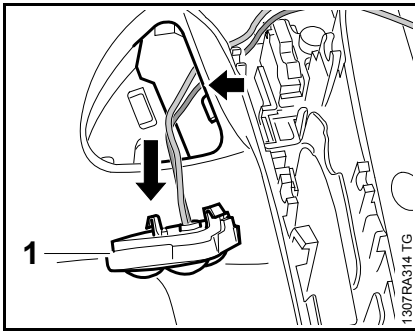
- Pull the green and yellow lead out of the guides (arrows)



- Unhook the yellow and green lead out of the guides (arrows) on the inside




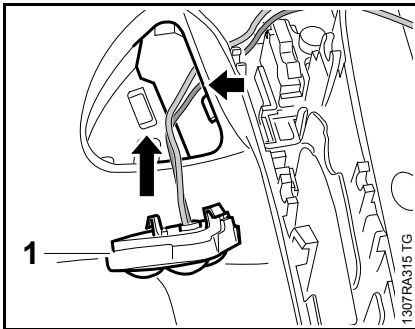
- Unlock the control panel (1) on the wide tab (arrow) and remove it



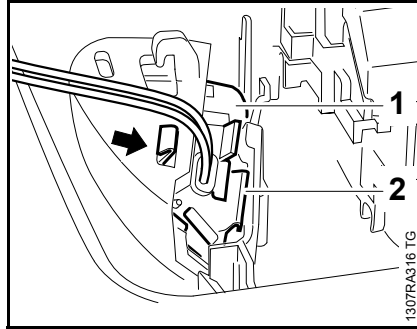
- Pull the control panel (1) with the leads out of the opening (arrow) and examine it, replace if necessary

### Installation

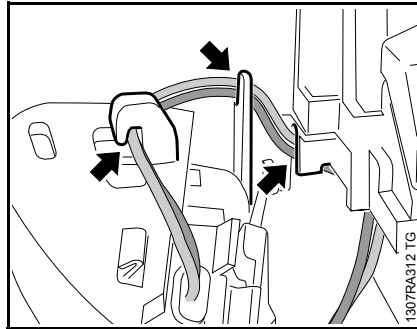
Use the wiring tool 5910 890 4000 to press the leads completely into the guides,  1.1.



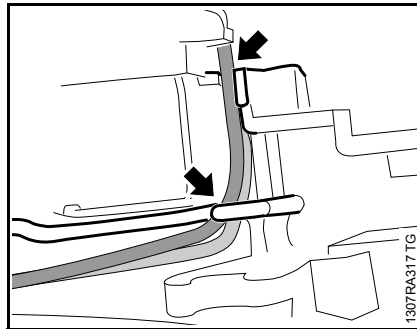
- Guide the leads into the opening (arrow) and carefully fit the control panel (1)



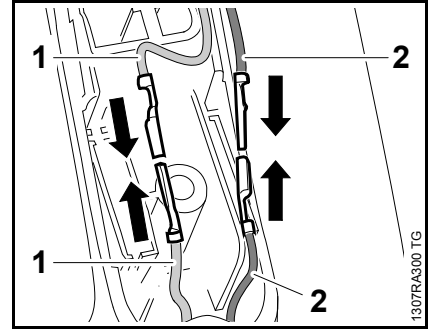
- Press in the control panel (1) until the wide tab (2) engages – narrow tab (arrow) engages in the opening



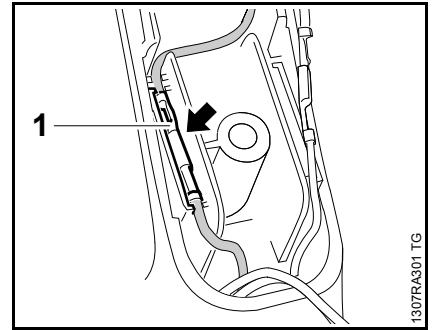
- Hook the green and yellow lead into the guides (arrows) – green lead underneath yellow lead



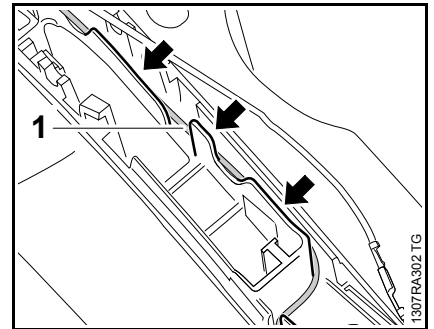
- Place the green and yellow lead into the guides (arrows) – yellow lead underneath green lead



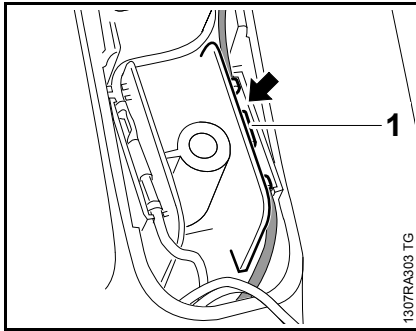
- Connect the yellow leads (1) and green leads (2) completely



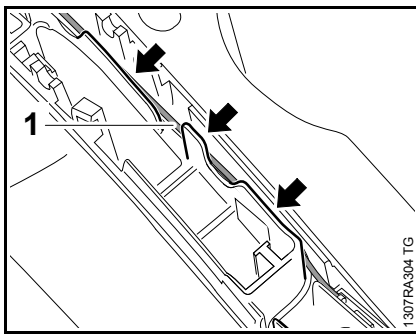
- Press the plug connection (1) of the yellow lead into the guide (arrow)




- Press the yellow lead (1) into the guides (arrows) – the yellow lead must be placed underneath the green lead



- Press the plug connection (1) of the green lead into the guide (arrow)



- Press the green lead (1) into the guides (arrows)
  - the yellow lead must run underneath the green lead
- Install the switch,  7.6
- Reassemble remaining parts in reverse order

## 8. Starter

### 8.1 General


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

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

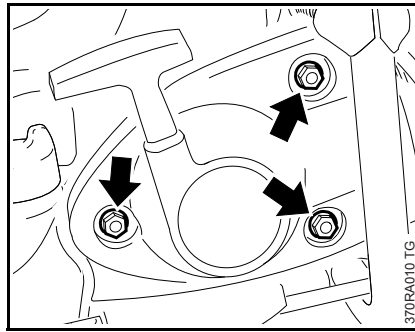
Carefully pull out the starter rope several times and allow it to rewind until its normal smooth action is restored.

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

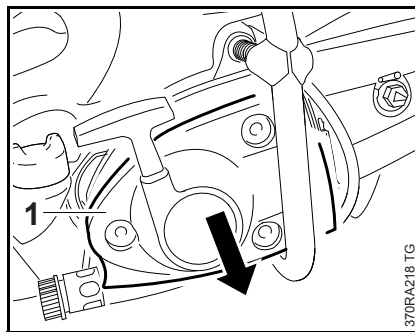
If clogged with dirt or pitch, the entire starter mechanism, including the rewind spring, must be removed and disassembled. Take particular care when removing the spring.

- Clean all parts,  13

### 8.2 Removal and installation

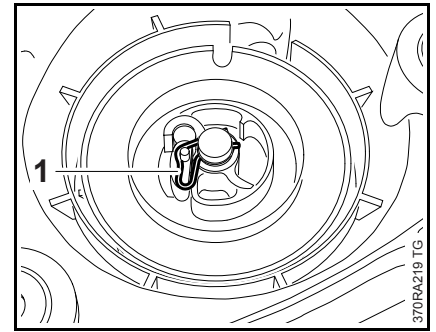



- Take out the collar nuts (arrows).



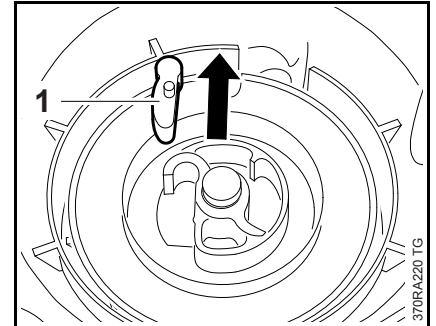
- Remove starter (1)
- Reassemble parts in reverse order

### 8.3 Pawl



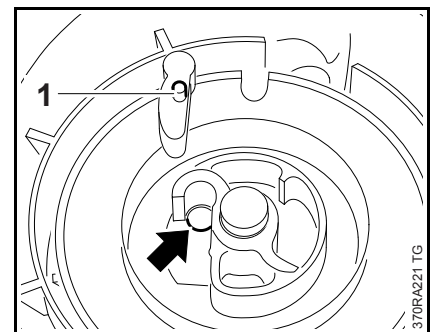
- Remove starter,  8.2


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

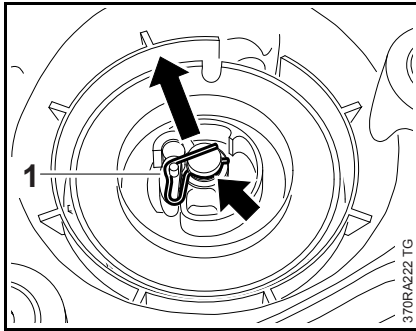


- Pull out the pawl (1)

#### Installation



- Slide a new pawl into the hole (arrow) and grease the peg (1),  13



- Position the spring (1) so that the loop of the spring encloses the peg of the pawl and the curved part of the spring (arrow) is located in the groove in the starter post.

- Then slide the straight part of the spring over the starter post until it engages in the groove

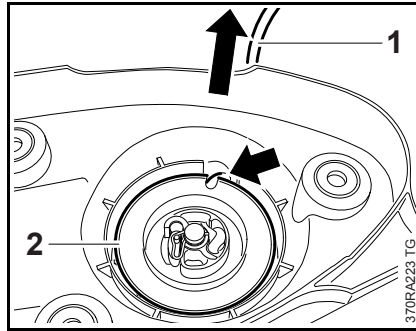
- Reassemble remaining parts in reverse order

#### 8.4 Rope rotor

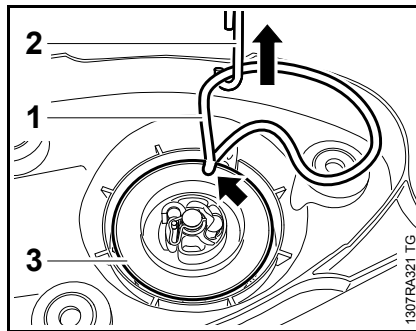
##### Relieve tension of rewind spring

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

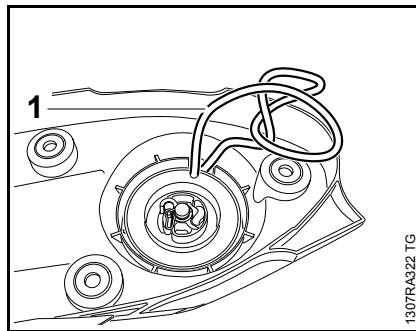
- Remove starter, 8.2



- Pull out the starter rope (1) approx. 30 cm, then hold the rope rotor (2) steady. The recess (arrow) must point towards the rope guide.

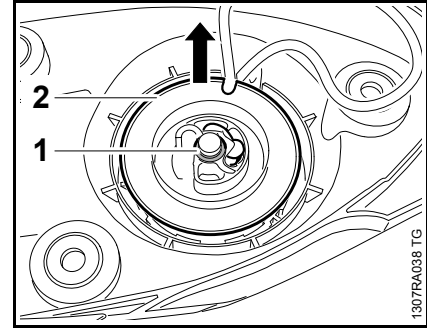


- Pull the starter rope (1) out between the recess and rope guide (arrow) with assembly hook (2) 5910 893 8800.
- Hold the rope rotor (3) so that it turns slowly until the tension of the rewind spring has been relieved.



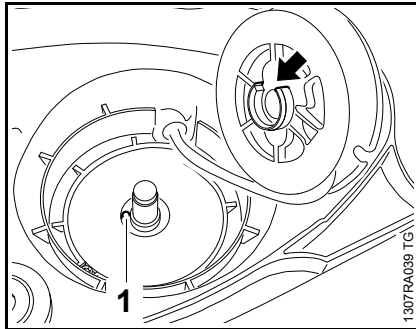
- Pull out the twisted rope (1) with the starter grip and straighten it out.

- Remove the spring and pull out the pawl, 8.3



The rewind spring must be relieved.

- Remove washer (1)
- Carefully pull off the rope rotor (2)
- Remove starter rope on the rope rotor, 8.5
- Examine the rope rotor and replace it if necessary
- Coat the hole in the rope rotor with STIHL special lubricant, 13



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

The recess (arrow) in the hub of the rope rotor acts as carrier for the anchor loop.

- Fit the washer.
- Install the pawl and spring, 8.3
- Install starter rope, 8.5
- Tension the rewind spring, 8.6
- Grease the pegs on the pawl, 13
- Reassemble remaining parts in reverse order

### 8.5 Starter rope / starter grip

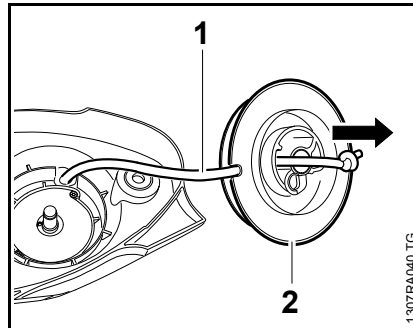
- Remove starter, 8.2
- Relieve the tension of the rewind spring, 8.4

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

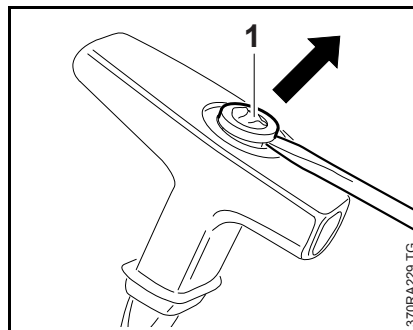
- Remove any remaining scraps of rope from the rope rotor and starter grip.

The starter rope must not be shortened.

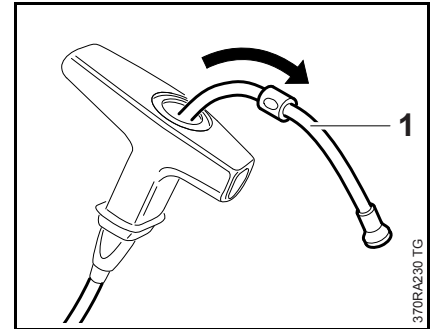
- Remove the rope rotor, 8.4



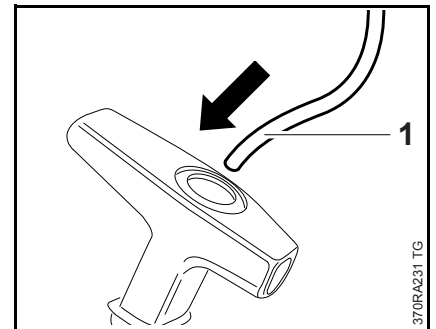
- Pull out starter rope (1) on the rope rotor (2) and undo the knot
- Pull starter rope from rope rotor and starter cover



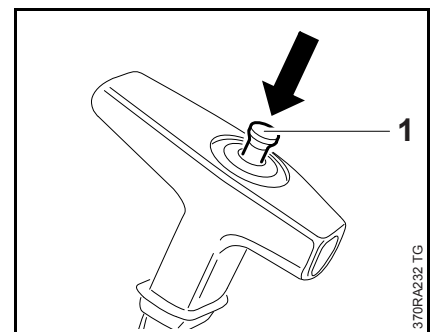
- Pry the nipple on the rope (1) out with a suitable tool



- Pull the rope (1) or remaining rope out of the starter grip, examine the various parts, replace if necessary.
- Remove any remaining rope from the rope rotor if necessary

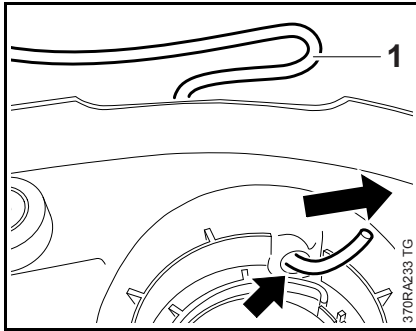


- Thread the new starter rope (1) into the starter grip from above

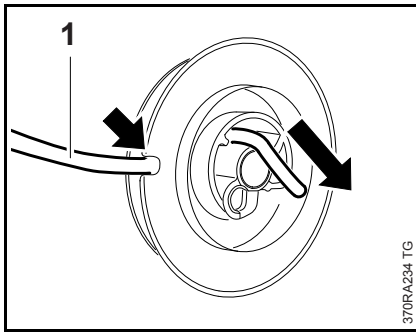


- Press the nipple (1) of the starter rope into the starter grip until it engages there

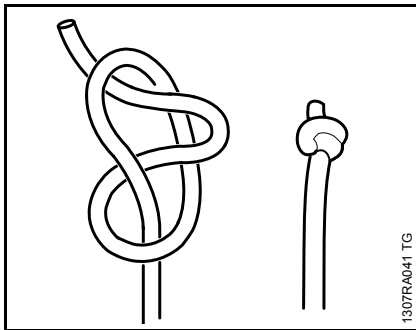




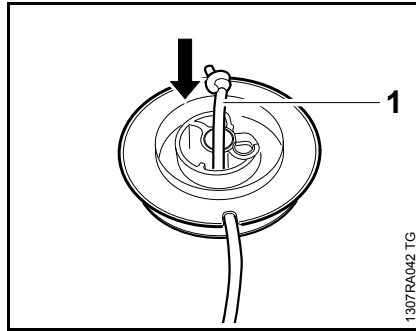
- Then thread the starter rope (1) through the rope guide (arrow)



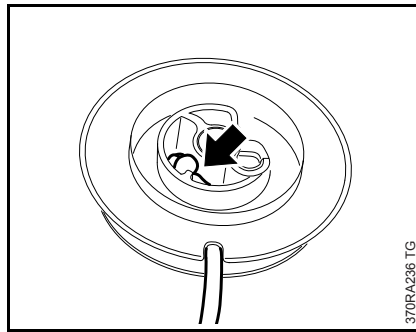
- Slide the starter rope (1) into the rope rotor (arrow)



- Make the special knot illustrated in the end of the rope at the starter grip



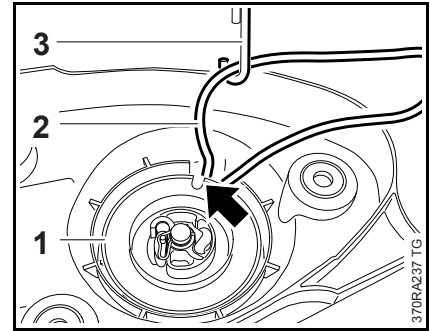
- Thread starter rope (1) into rope rotor



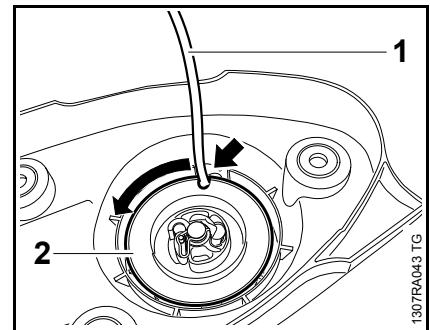
- Press the knot into the mount (arrow) of the rope rotor.
- Install the rope rotor and tension the rewind spring, [8.4](#), [8.6](#)
- Fit starter, [8.2](#)

### 8.6 Tensioning the rewind spring

Pawl and spring must be installed.



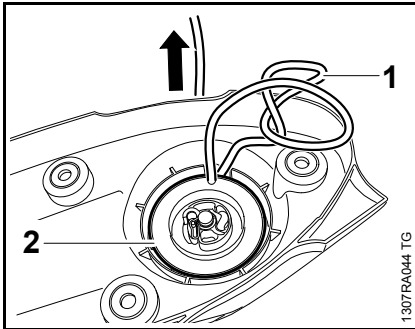
- Hold the rope rotor (1) so that the recess (arrow) faces towards the rope guide.
- Pull the starter rope (2) out between the recess and rope guide (arrow) with assembly hook (3) 5910 893 8800.
  - Do not damage the starter rope



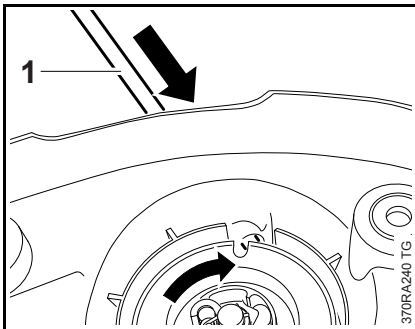
- Secure the starter rope (1) in the recess (arrow) and give the rope rotor (2) six turns counterclockwise.

The starter rope twists as the rope rotor and starter rope are turned – the rewind spring is now tensioned.

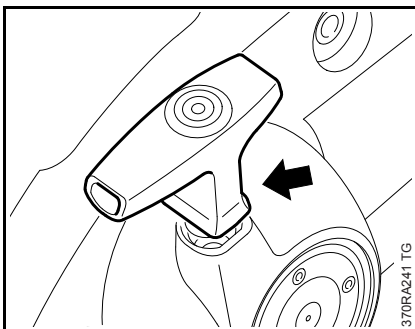
Hold the tensioned rope rotor firmly, as the rewind spring will be damaged if it jumps back suddenly.



- Hold the rope rotor (2) steady
- Pull out the twisted rope (1) with the starter grip and straighten it out.



- Hold the starter grip firmly to keep the starter rope (1) tensioned
- Let the rope rotor go and slowly rewind the starter rope (1) on the rope rotor.



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

When the rope is fully extended, it must still be possible to rotate the rope rotor at least another half turn before the maximum spring tension is reached. If not, the spring tension must be reduced, otherwise it will break.

### Reduce spring tension

- Pull out the starter rope and turn the rope rotor with starter rope back one turn.
- Pull the twisted rope out with the starter grip and tidy it.
- Keep the starter rope tensioned with the starter grip.
- Let go of the rope rotor and let the starter rope rewind slowly on to the rope rotor
- Fit starter, [8.2](#)

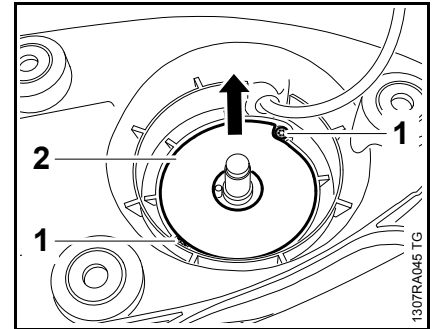
### 8.7 Replacing the rewind spring

- Troubleshooting, [3.4](#)

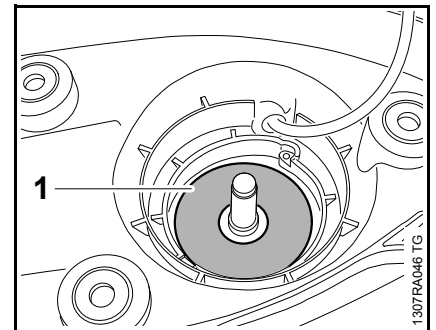
The replacement spring is supplied ready for installation and secured in a spring housing.

Wear a face shield and protective gloves.

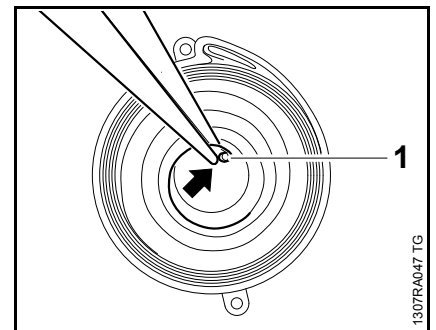
- Remove starter, [8.2](#)
- Relieve the rewind spring if necessary, remove the rope rotor and set it aside along with the starter rope, [8.4](#)



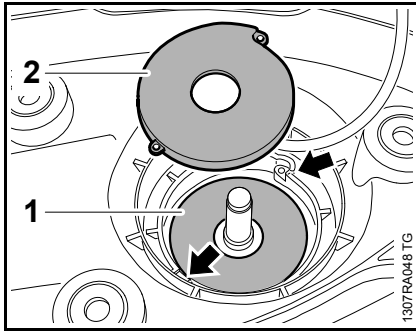
- Unscrew screws (1) and carefully remove spring housing (2), if necessary remove any fragments of the spring



- Examine the washer (1) and clean or replace it if necessary
- Before installation, coat the rewind spring and washer with a few drops of STIHL special lubricant, [13](#)

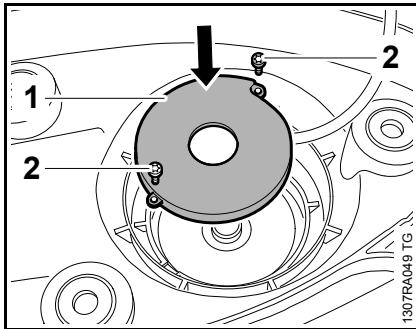


Ensure that the inner spring loop (1) can be seen through the hole (arrow) so that it can subsequently be aligned.



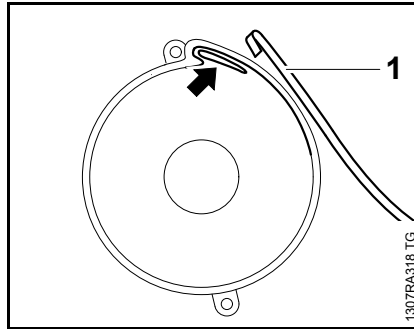
Washer (1) must be fitted.

- Align spring housing (2) with replacement spring so that it lines up with the mounts (arrow)

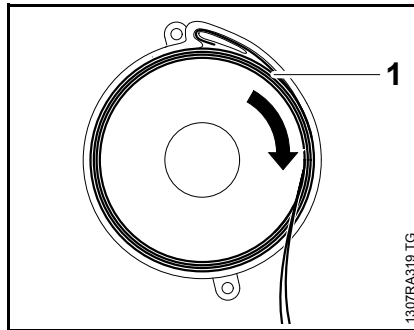


- Press spring housing (1) as far as it will go into the mount of the starter cover
- Insert and tighten the screws (2)
  - Install the rope rotor, [1307RA048 TG 8.4](#)
  - Install the pawl, [1307RA049 TG 8.3](#)
  - Grease the pegs on the pawl, [1307RA049 TG 13](#)
  - Tension the rewind spring, [1307RA049 TG 8.6](#)
  - Reassemble remaining parts in reverse order

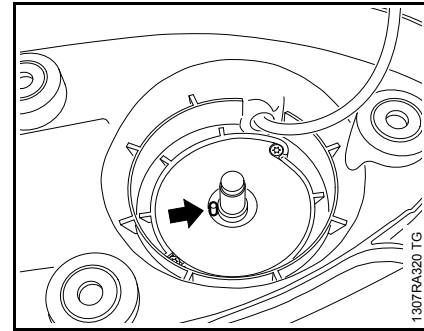
If the rewind spring pops out during installation, fit it in the spring housing as follows:



- Arrange the spring (1) as shown in the illustration
- Position the spring loop in the fixture (arrow) in the spring housing



- Fit the rewind spring (1) completely in a circular fashion, working in clockwise direction
  - Secure the spring so that it cannot pop out
  - Push spring housing as far as it will go into the mount of the starter cover



- Secure the rewind spring so that it cannot pop out
- If necessary, align the inner spring loop (arrow) with suitable pliers so that it rests against the starter post at a slight angle
  - Install the rope rotor, [1307RA320 TG 8.4](#)
  - Install the pawl, [1307RA320 TG 8.3](#)
  - Grease the pegs on the pawl, [1307RA320 TG 13](#)
  - Tension the rewind spring, [1307RA320 TG 8.6](#)
  - Reassemble remaining parts in reverse order


## 9. Antivibration elements

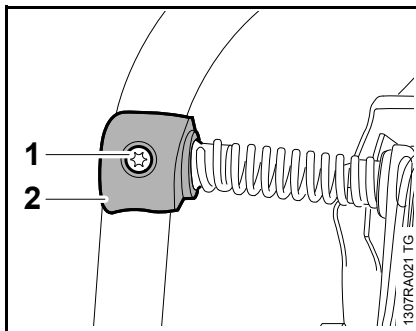
The handle frame, tank housing and engine housing are connected by vibration-damping springs.

Damaged springs must be replaced as a matter of principle.

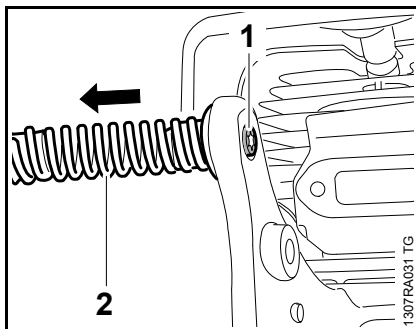
### 9.1 Antivibration spring on handlebar

The antivibration spring is located between handlebar and crankcase on the clutch side and must be replaced if defective.

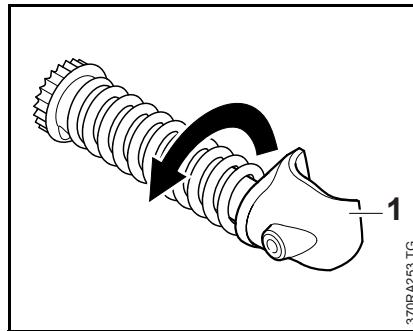
- Remove the muffler,  6.1



- Unscrew screw (1) and remove clamp (2)

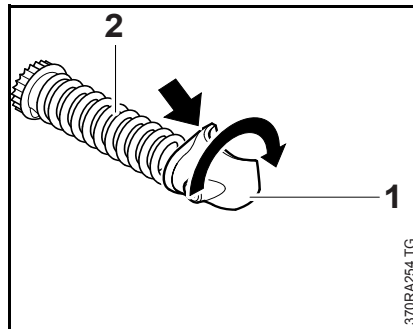


- Unscrew screw (1) and remove antivibration spring (2)

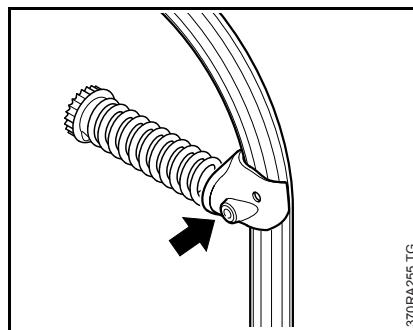


- Unscrew handlebar support (1)
- Examine the spring, handlebar support and clamp, replace if necessary

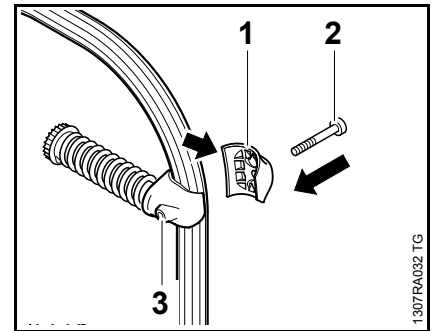
#### Installation



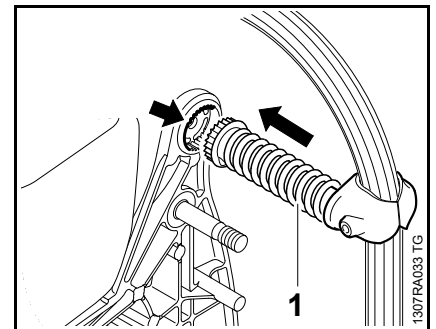
- Screw the handlebar support (1) into the antivibration spring (2) as far as possible (arrow)



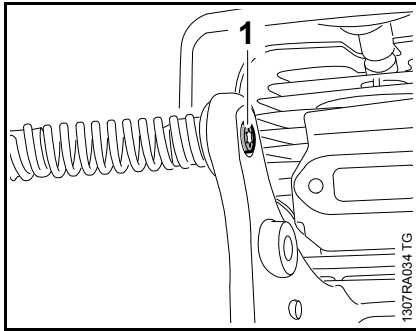
- Fit the antivibration spring with handlebar support (arrow) on the handlebar and hold it in position



- Fit the clamp (1) on the opposite side so that the guide (arrow) is on the inside of the handlebar
- Insert a screw (2) through the clamp and handlebar, and screw it tightly into the opposite handlebar support (3)



- Push antivibration spring (1) into the mount (arrow) with the serration of the bearing plug



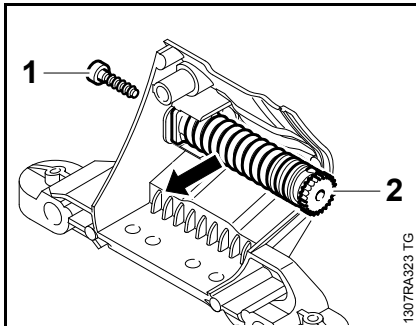
- Screw in the screw (1) and tighten it

– Fit the muffler, 6.1

## 9.2 Antivibration spring in the support

The antivibration spring is located between support and crankcase and must be replaced if defective.

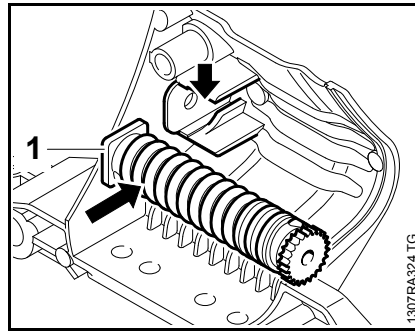
– Remove the support, 9.6



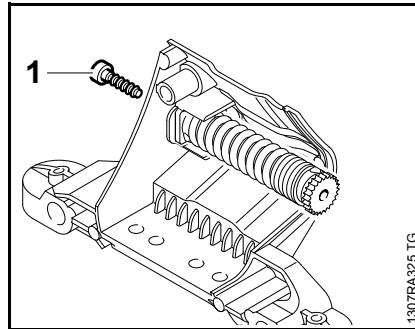
- Unscrew screw (1) and remove antivibration spring (2)

– Examine the antivibration spring and replace it if necessary

## Installation



- Push antivibration spring (1) as far as possible into the mount (arrow) and hold it in position
  - antivibration spring is secured against twisting

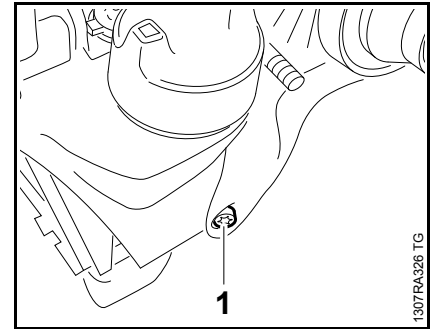


- Screw in the screw (1) and tighten it

– Install the support, 9.6

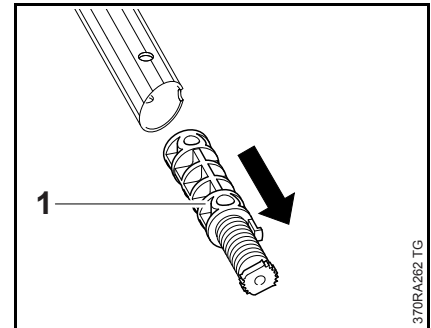
## 9.3 Antivibration spring at the bottom of the crankcase

The antivibration spring is secured underneath the machine and must be replaced if defective.



- Remove screw (1)

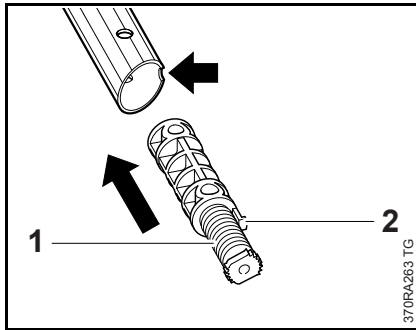
– Remove front handlebar, 9.5



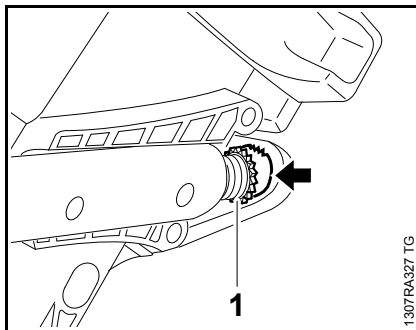
- Pull the antivibration spring (1) out of the handlebar

– Examine the antivibration spring and replace it if necessary

## Installation

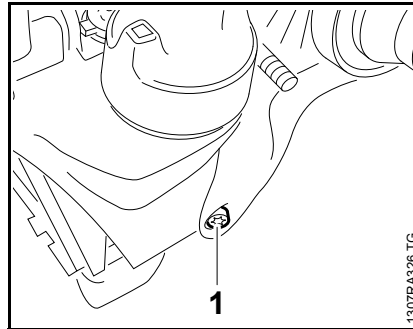


- Push the antivibration spring (1) into the handlebar so that the tab (2) engages in the notch (arrow)
- Mount the handlebar on the machine, [📖 9.5](#)



Bearing plug (1) must be twisted into the antivibration spring as far as it will go.

- Push the bearing plug (1) into the mount (arrow) and hold it in position

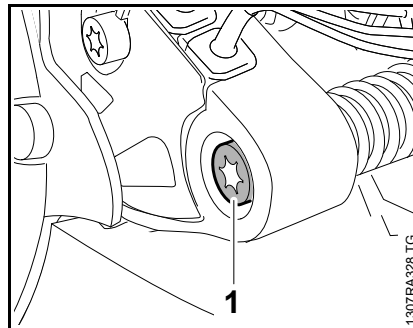


- Screw in the screw (1) and tighten it
- Install handlebar, [📖 9.5](#)

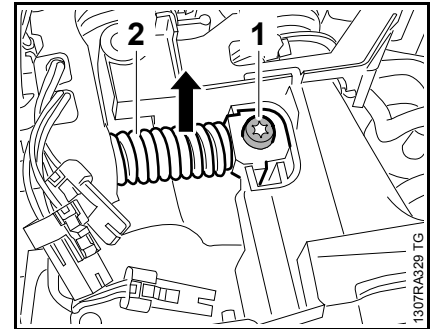
## 9.4 Antivibration spring on throttle shutter housing

The antivibration spring is located near the throttle shutter housing between tank housing and crankcase, and must be replaced if defective.

- Remove shroud, [📖 6.4](#)
- Remove control unit, [📖 7.3](#)

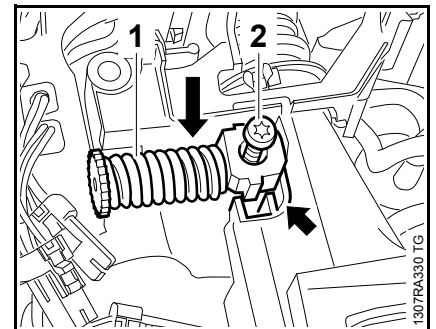


- Unscrew the screw (1)

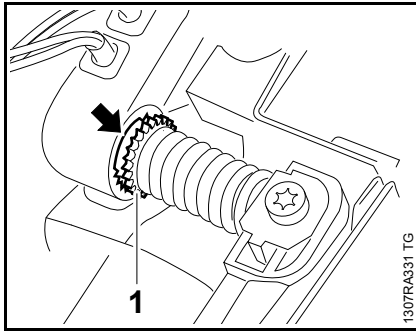


- Unscrew the screw (1)
- Remove the antivibration spring (2) and examine it, replace if necessary

## Installation

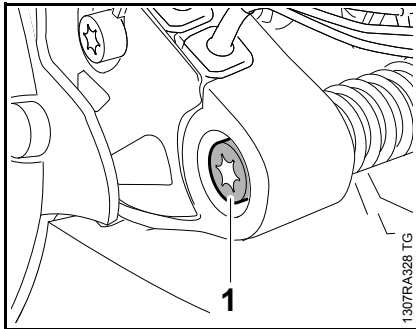


- Push the antivibration spring (1) into the mount (arrow)
- Screw in the screw (2) and tighten it



Bearing plug (1) must be twisted into the antivibration spring as far as it will go.

- Push the bearing plug (1) into the mount (arrow) and hold it in position

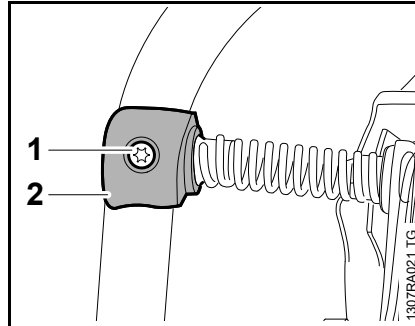


- Screw in the screw (1) and tighten it

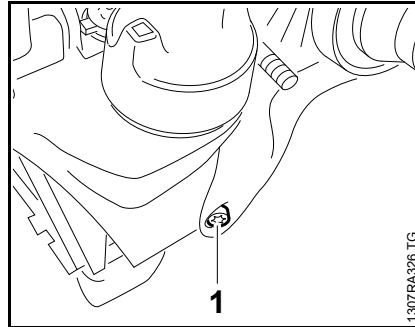
– Reassemble remaining parts in reverse order

## 9.5 Handlebar

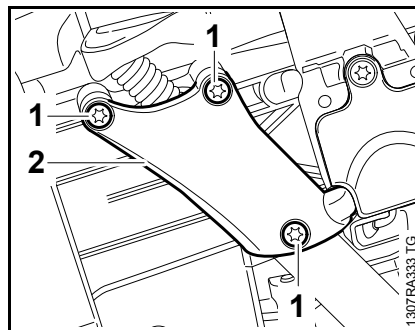
– Remove the support, 9.6



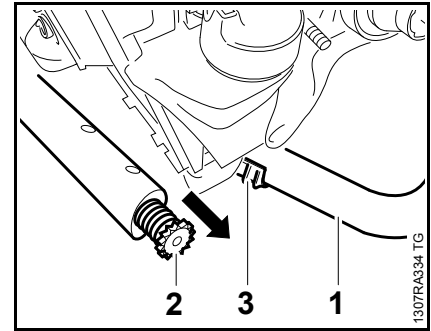
- Unscrew screw (1) and remove clamp (2)



- Unscrew the screw (1)



- Unscrew the screw (1) on the bottom and remove clamp (2)

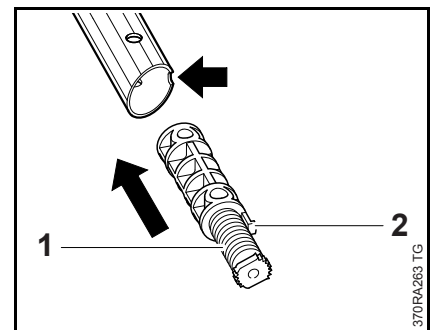


- Remove handlebar (1) and pull out antivibration spring (2)

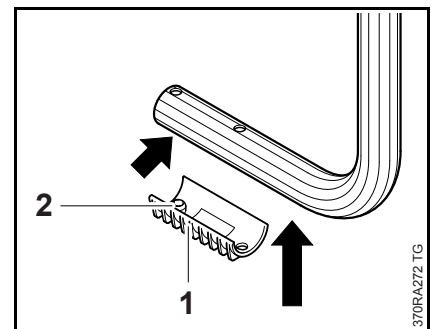
- Remove the clamp (3)

– Examine the individual parts, replace if necessary

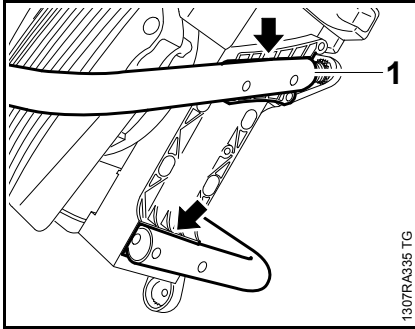
## Installation



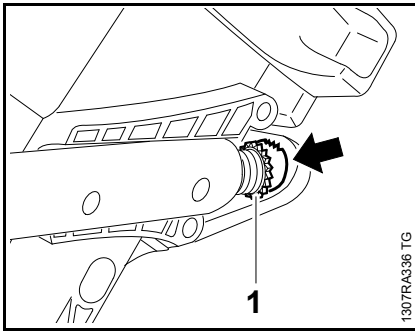
- Push the antivibration spring (1) into the handlebar so that the tab (2) engages in the notch (arrow)



- Fit the clamp (1) onto the handlebar so that the lug (2) engages in the hole (arrow).

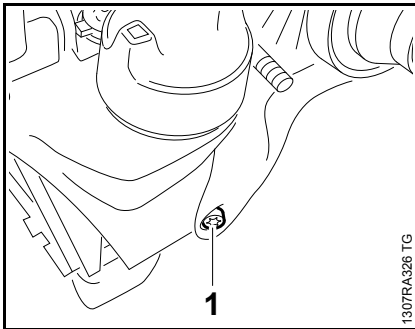


- Position the handlebar (1) over the machine and push into the mounts (arrows)

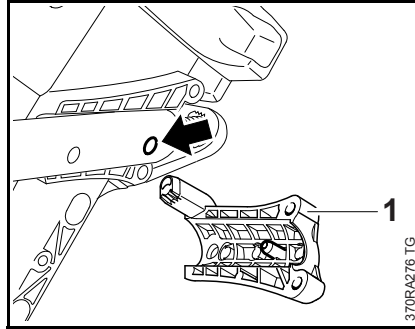


Bearing plug (1) must be twisted into the antivibration spring as far as it will go.

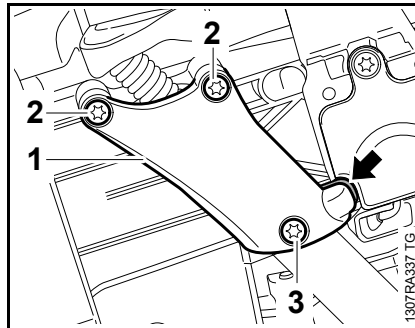
- Push the bearing plug (1) into the mount (arrow) and hold it in position



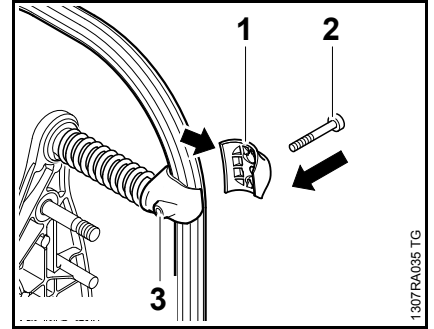
- Screw in the screw (1) and tighten it



- Mount the support, 9.6
- Fit the clamp (1) so that the peg engages in the hole (arrow). This secures the antivibration spring in the handlebar.



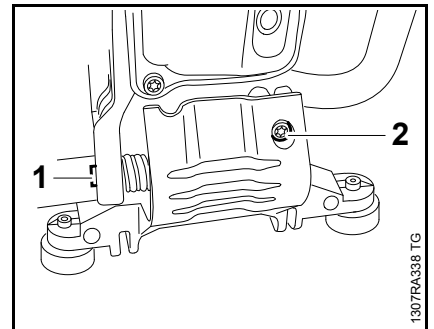
- Coat inside of hose with STIHL press fluid, 13
- Fit clamp (1), the peg must engage in the hose (arrow)
- Insert and tighten the screws (2)
- Insert and tighten the long screw (3)



- Fit the clamp (1) on the opposite side so that the guide (arrow) is on the inside of the handlebar
- Insert screw (2) through the clamp and handlebar, and screw it tightly into the opposite clamp (3)

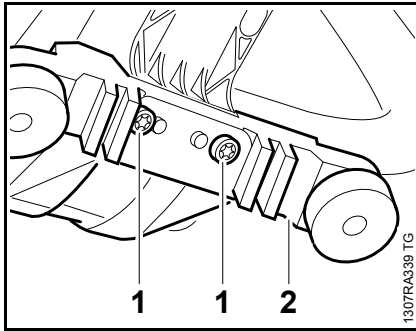
## 9.6 Rubber buffers / support

### 9.6.1 Support

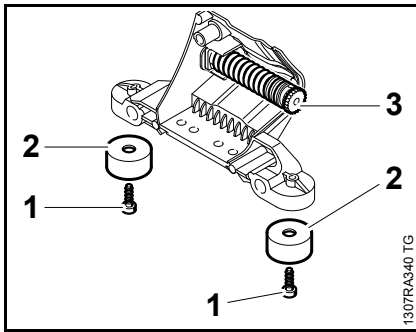


- Remove screws (1) and (2)



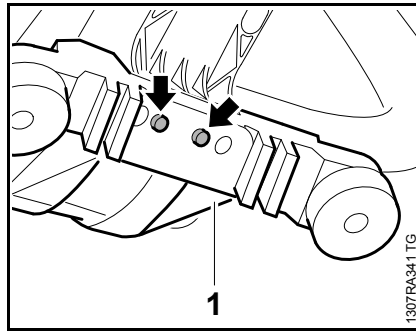


- Unscrew screws (1) and remove support (2)

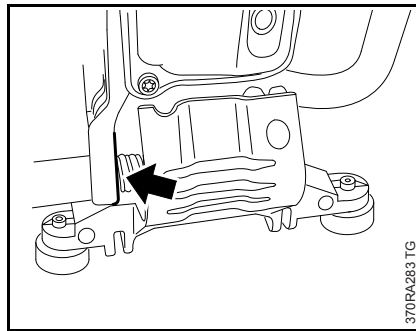


- Unscrew screws (1) and remove rubber buffers (2)
  - The rubber buffers on the support must be replaced in pairs
- Remove antivibration spring (3), 9.2
- Examine the individual parts, replace if necessary
- Reassemble the parts in reverse order

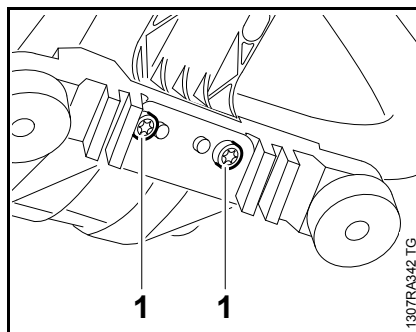
## Installation



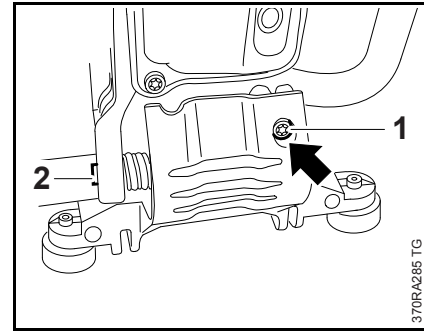
- Position the pre-assembled support (1) underneath the machine so that it engages in the pegs (arrows).



- Push the bearing plug of the antivibration spring into the mount (arrow)



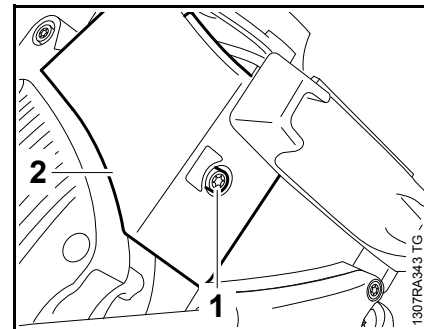
- Insert and tighten the screws (1)



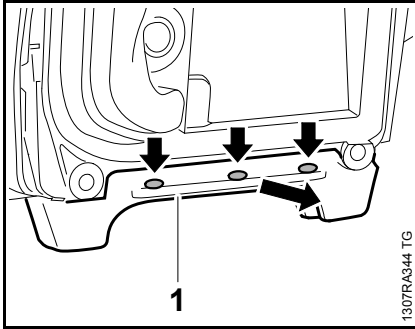
- Insert the long screw (1) in the hole (arrow) and tighten it
- Screw in the screw (2) and tighten it

### 9.6.2 Support foot

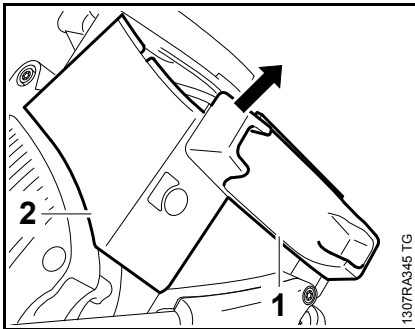
- Remove filter cover and air filter, 11.1



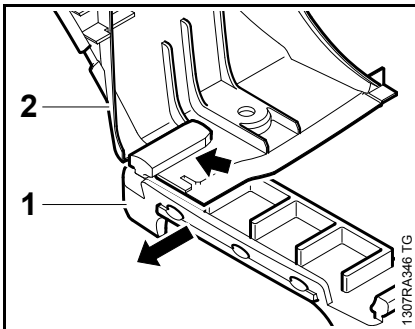
- Unscrew screw (1) and raise air baffle (2)



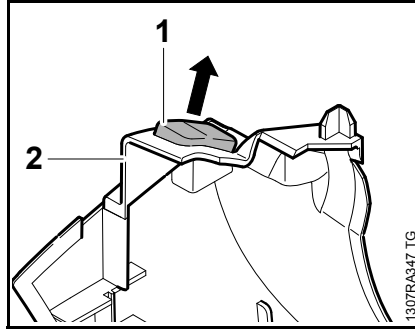
- Remove the support foot (1) from the retainers (arrows) and pull it out of the guide on the tank housing on the side of the tank filler port



- Remove support foot (1) with air baffle (2)

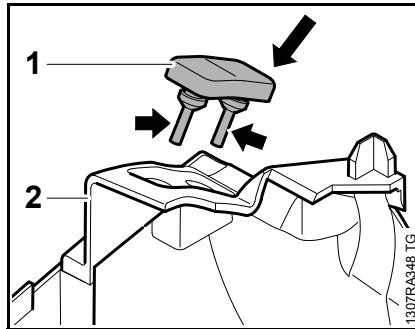


- Pull support foot (1) out of the guide (arrow) of the air baffle (2) and examine it, replace if necessary

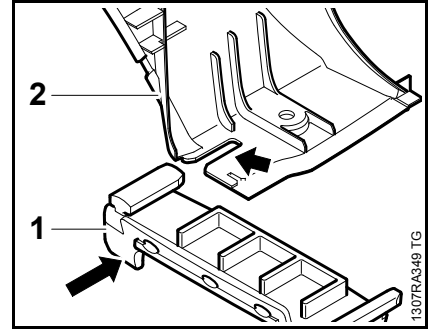


- Pry the stop buffer (1) out of the holes of the air baffle (2)
- Check the wiring harness of the solenoid valve, replace if necessary, [13](#) 9.6.3

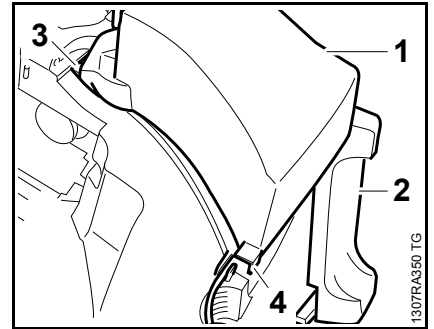
### Installation



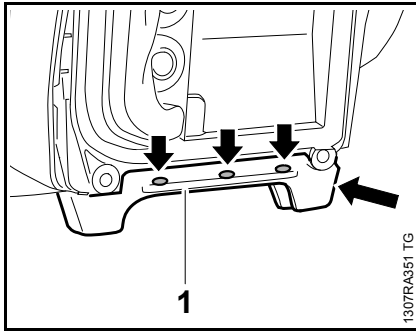
- Apply STIHL press fluid to the peg of the stop buffer, [13](#)
- Push stop buffer (1) into the holes of the air baffle (2) and drawing in on the pegs (arrows) until they enclose the holes completely



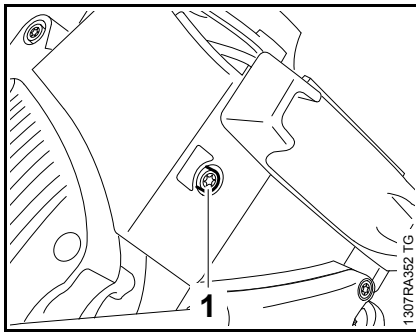
- Apply STIHL press fluid to the guide of the support foot, [13](#)
- Push the support foot (1) into the guide (arrow) of the air baffle (2)



- Position the air baffle (1) and support foot (2) so that the peg (3) engages behind the opening and the tab (4) is over the guide of the wiring harness
- Do not pinch wiring harness



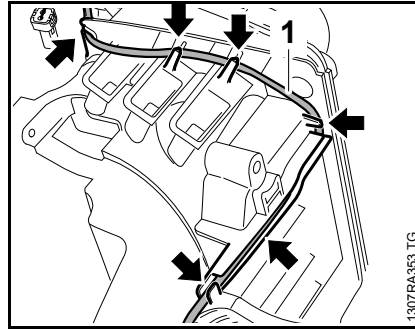
- Apply STIHL press fluid to the guide of the support foot, 13
- Push the support foot (1) into the guide on the tank housing on the side of the tank filler port
- Then press the support foot (1) into the retainers (arrows)



- Screw in the screw (1) and tighten it
- Reassemble remaining parts in reverse order

### 9.6.3 Wiring harness solenoid valve (water connection)

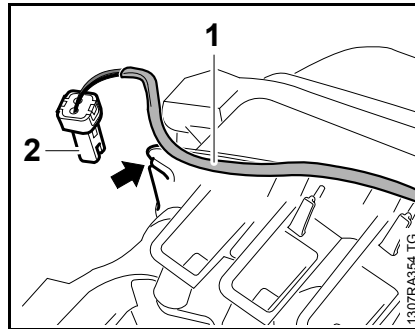
- Remove the air baffle, 9.6.2
- Remove the solenoid valve, 4.1.3



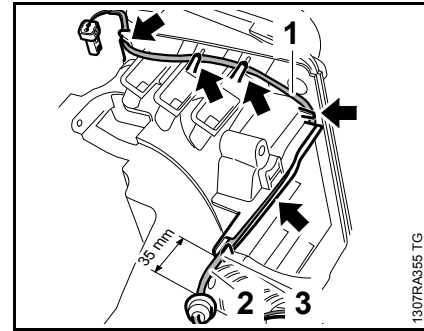
- Pull the wiring harness (1) out of the guides (arrows)

#### Installation

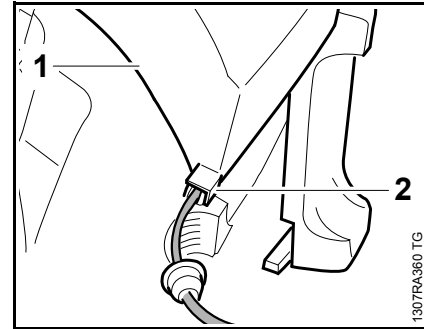
Using the wiring tool 5910 890 4000, press the leads completely into the guides, 1.1.



- Orient the wiring harness (1) so that the plug (2) is located at the top guide (arrow)
- Install the solenoid valve, 4.1.3



- Place the wiring harness (1) into the guides (arrows) so that the protective tube (2) protrudes on the bottom guide (3) 35 mm



The air baffle (1) must engage with the tab (2) via the guide of the wiring harness – Do not pinch the wiring harness.

- Fit the air baffle, 9.6.2
- Reassemble remaining parts in reverse order

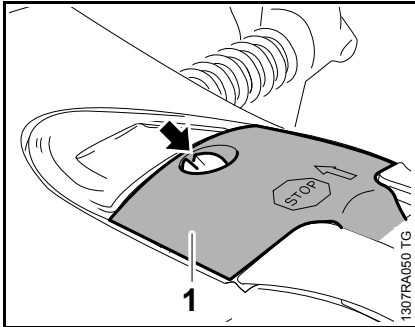
## 10. Actuating lever

### 10.1 Switch shaft

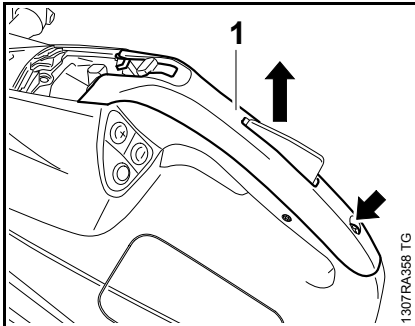
The following operating conditions are set with the switch shaft:

- Position **"STOP"** or **"0"** = Engine off – ignition off
- Position **"I"** = Starting position
  - Engine is running or can start

#### Removal

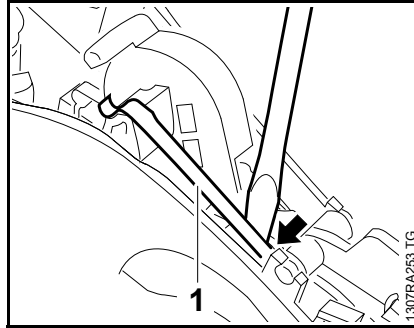


- Remove the screw (arrow)
  - Screw remains in cap
- Remove the cap (1) with screw

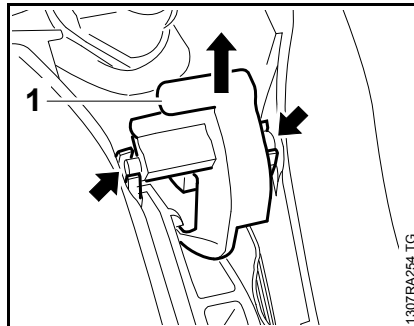


- Set the switch shaft to position **"STOP"** or **"0"**
- Remove the screw (arrow)
- Remove handle molding (1)

- Unhook the torsion spring on the trigger interlock

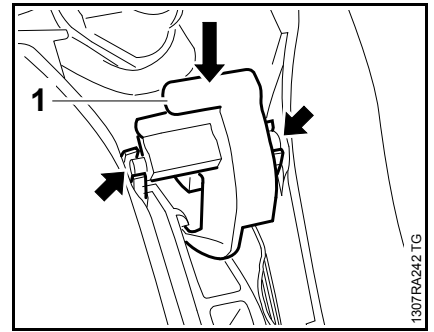


- Pry the leaf spring (1) out of the mount (arrow)

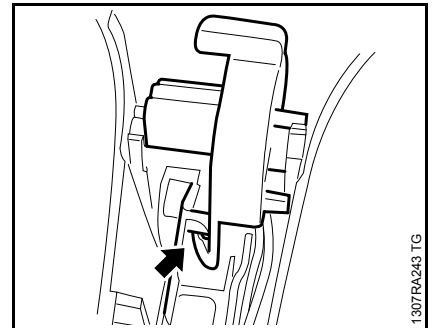


- Pull the switch shaft (1) out of the bearing points (arrows)
- Examine the individual parts, replace if necessary

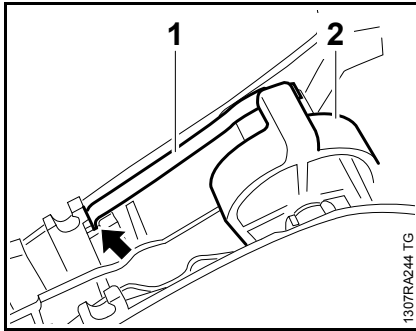
#### Installation



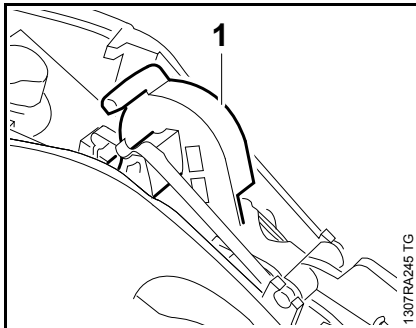
- Align the switch shaft (1) – the larger bearing journal must be on the side of the switch
- Press the switch shaft (1) into the bearing points (arrows) until it clicks into place



The peg (arrow) must engage in the throttle trigger.

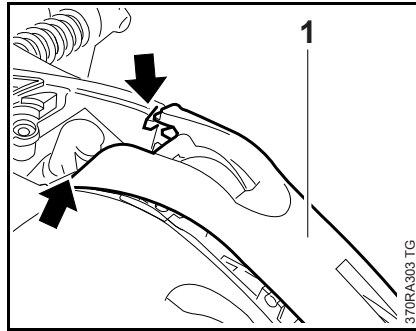


- Lay the leaf spring (1) on the cams of the switch shaft (2) and press it into the mount (arrow)
- Hook the torsion spring into the trigger interlock




- Set the switch shaft (1) to position "STOP" or "0".
- Checking correct functioning
  - in position "STOP" or "0" the switch shaft must actuate the switch

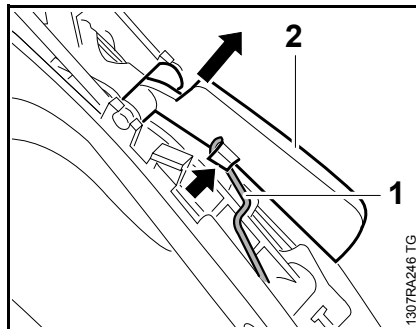
The switch shaft can only be set to position "I" if the trigger interlock and throttle trigger are pressed.



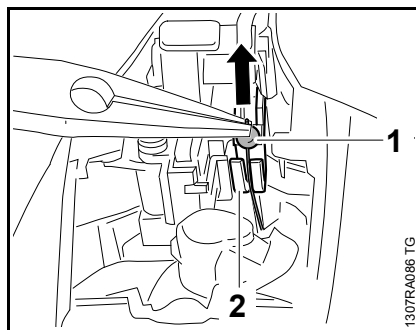
- Guide the handle molding (1) into position under the pegs (arrows)
- Insert and tighten the screw

## 10.2 Throttle trigger / trigger interlock

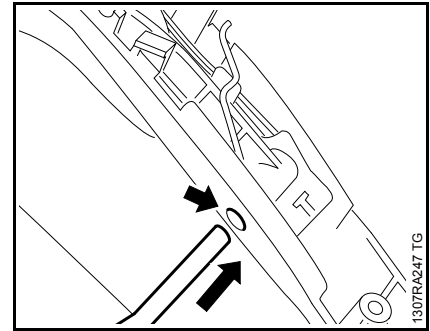
- Remove the handle molding,  10.1



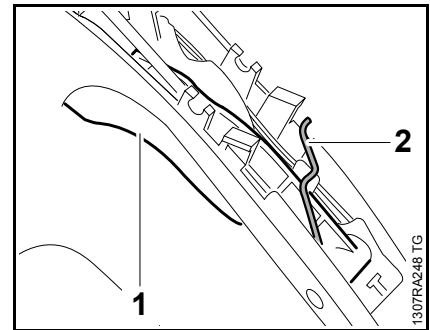
- Unhook the torsion spring (1) from the trigger interlock (arrow) and remove the trigger interlock (2)



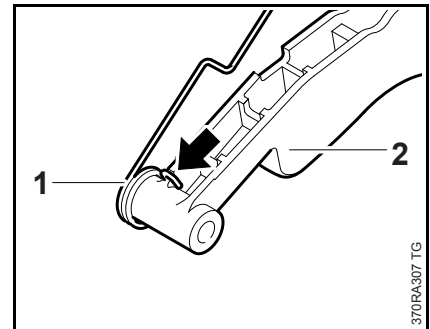
- Unhook the throttle cable (1) from the throttle trigger (2)



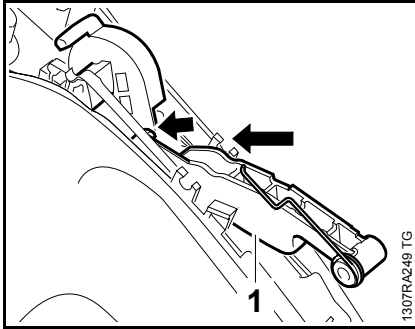
- Drive the pin (arrow) out with a drift



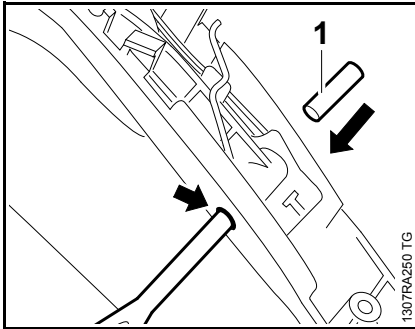
- Take out the throttle trigger (1) and torsion spring (2)
- Examine the individual parts, replace if necessary



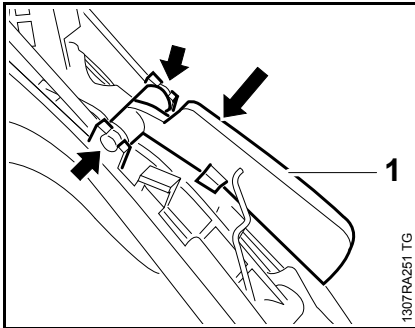
- Hook the torsion spring (1) into the throttle trigger (2)
  - Note the installed position (arrow)



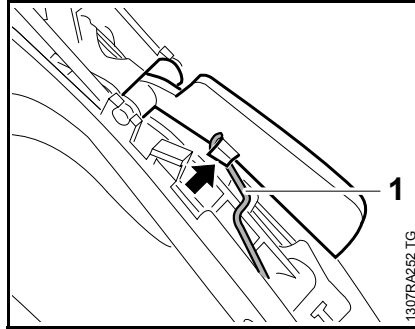
- Guide the throttle trigger (1) past the switch shaft (arrow) and place it in the shroud with the torsion spring




- Insert the drift in the hole (arrow) to secure the throttle trigger with torsion spring
- Fit the pin (1) and drive it in until it is at the same distance on both sides



- Press the trigger interlock (1) into the bearing points (arrows) until it clicks into place




- Hook the torsion spring (1) into the trigger interlock (arrow)
- Install the handle molding,  10.1
- Checking correct functioning
  - in position "STOP" or "0" the switch shaft must actuate the switch

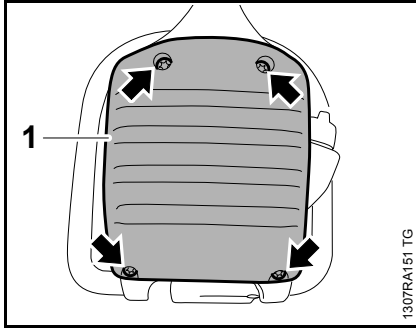
The switch shaft can only be set to position "I" if the trigger interlock and throttle trigger are pressed.

## 11. Fuel system

### 11.1 Air filter

Only replace the air filter if engine performance deteriorates.

- Refer also to troubleshooting chart,  3.5




- Unscrew the screws (arrows) and remove the filter cover (1)
- Replace the air filter and auxiliary filter – see Instruction manual
- Reassemble parts in reverse order


### 11.2 Throttle shutter housing / Intake manifold

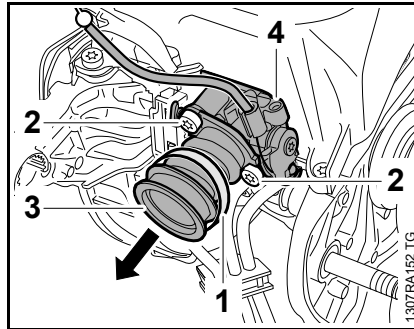
Only start engine with built-in throttle shutter housing.

Oil seals are built into the throttle shutter housing.

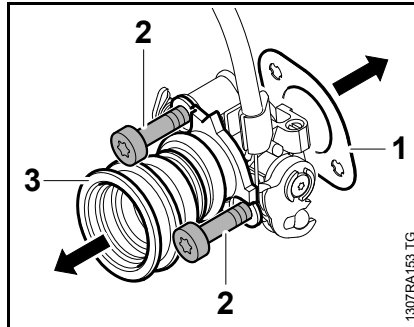
- Check for leaks,  6.2

If the oil seals in the throttle shutter housing are defective, the throttle shutter housing must be replaced.

- Remove the engine,  6.5

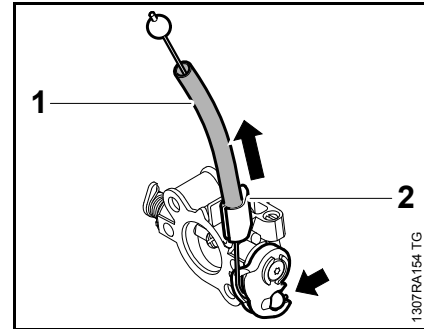


- Remove the hose clip (1)
- Unscrew the screws (2) and remove the manifold (3) with throttle shutter housing (4)



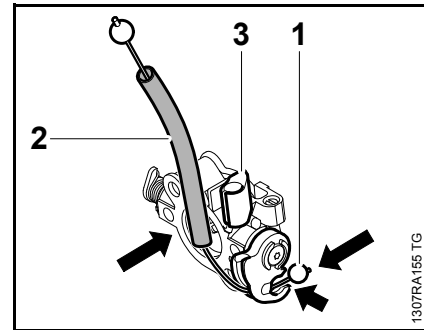
- Remove gasket (1) – always insert a new gasket
- Unscrew the screws (2) and remove the manifold (3)
- Examine the manifold, replace if necessary
  - Engine operation may be impaired even by the slightest damage
- Clean the mating surface, remove any gasket residues if necessary

The mating surfaces on the manifold, throttle shutter housing and cylinder must be in perfect condition and without any damage whatsoever. Parts with damaged mating surfaces.

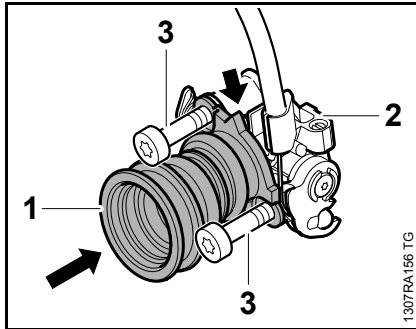


- Pull bushing (1) out of the mount (2) and unhook the throttle cable from the throttle shutter lever (arrow)
- Check the throttle shutter housing, clean or replace if necessary

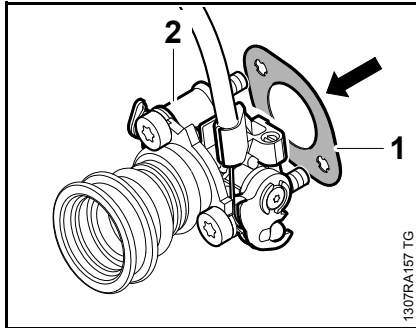
### Installation



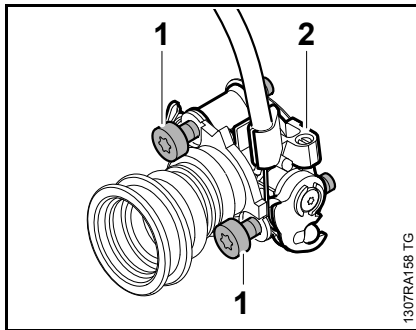
- Hook brass ball of the throttle cable (1) into the throttle shutter lever (arrow) and pull it until it clicks into place
- Push the bushing (2) into the mount (3)



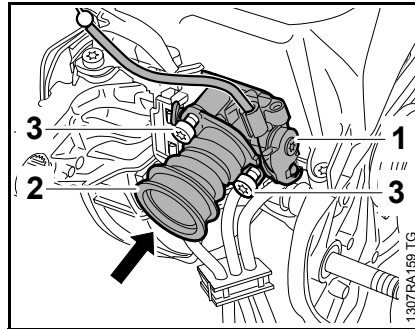
- Position the manifold (1) so that the lug (arrow) lines up with the throttle shutter housing (2)
- Insert screws (3)
  - Manifold is secured to the throttle shutter housing



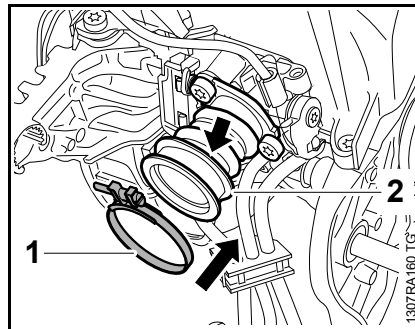
- Push the new gasket (1) on the opposite side of the throttle shutter housing (2) over the screws



- Align the screws (1) so that they only protrude slightly on the throttle shutter housing (2)



- Fit throttle shutter housing (1) with gasket and manifold (2) and insert screws (3)
  - Check and adjust the position of the gasket if necessary
- Insert and tighten the screws (3)



- Push the hose clip (1) onto the manifold (2) so that the screw head is on the clutch side
- Slide the hose clip (1) over the shoulder (arrow)
  - only push the hose clip onto the shoulder once the tank housing is installed

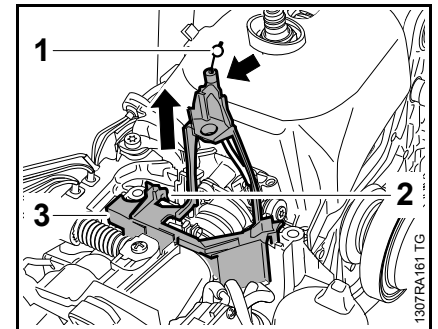
Apply STIHL press fluid to the inside of the manifold

- Install the tank housing, [11.9](#)
- Install the handlebar, [9.5](#)
- Install the control unit, [7.3](#)

- Fit the shroud, [6.4](#)
- Check correct functioning
  - the throttle cable must move easily and when the throttle trigger is in the full throttle position, the throttle shutter must be open all the way
- Reassemble remaining parts in reverse order

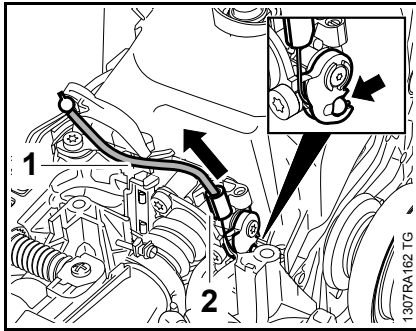
### 11.2.1 Air baffle / throttle cable

- Remove shroud, [6.4](#)
- Remove control unit, [7.3](#)



- Unhook the throttle cable (1) from the mount (arrow)
- Raise the retaining tab (2) slightly and pull out air baffle (3)

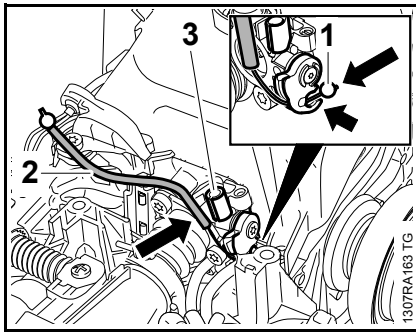




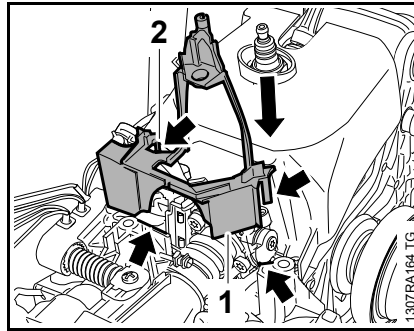
- Pull bushing (1) of the throttle cable out of the mount (2) and unhook the ball of the throttle cable from the throttle shutter lever (arrow)

– Examine the throttle cable, replace if necessary

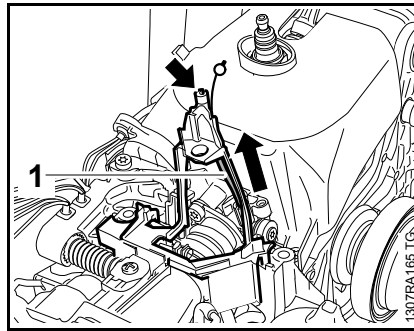
### Installation



- Hook ball of the throttle cable (1) into the throttle shutter lever (arrow) and pull it until it clicks into place
- Push the bushing (2) into the mount (3)



- Align the air baffle (1) so that the pegs (arrows) engage in the profile of the tank housing
- Press the air baffle (1) until the tab (2) snaps into place



- Push the bushing (1) into the mount (arrow)

– Install the control unit, [6.3](#)

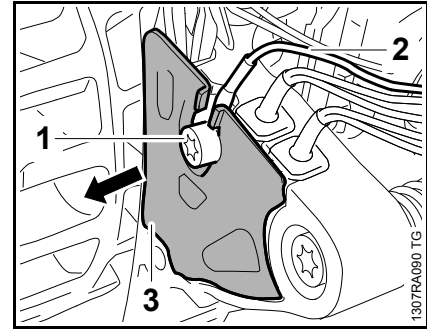
– Fit the shroud, [6.4](#)

– Check correct functioning  
– the throttle cable must move easily and when the throttle trigger is in the full throttle position, the throttle shutter must be open all the way

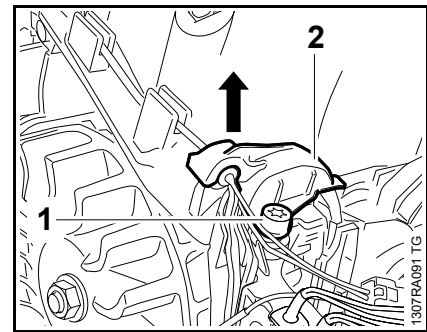
– Reassemble remaining parts in reverse order

### 11.3 Injection valve

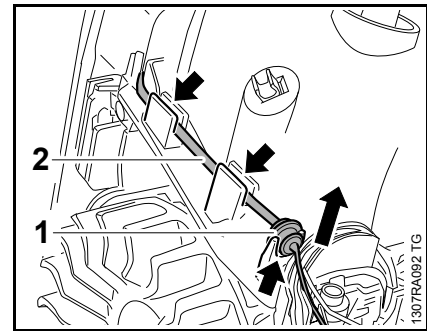
– Remove the engine, [6.5](#)



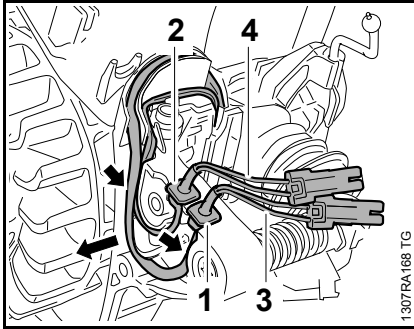
- Unscrew the screw (1)
- Remove the ground wire (2) and cover (3)



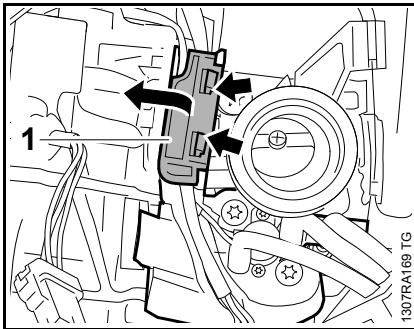
- Unscrew the screw (1) and remove the cable holder (2)



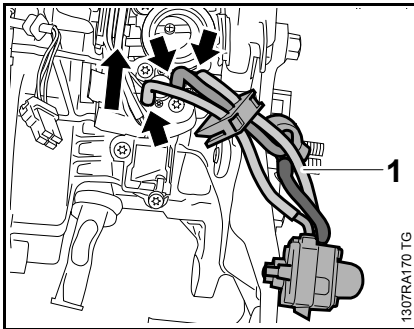
- Pull the bushing (1) and wiring harness (2) out of the guides (arrows) and set them aside



- Pull out bushing (1) and (2) and pull wiring harnesses (3) and (4) out of the guides (arrows)

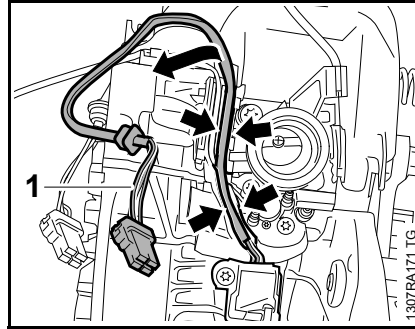


- Press the snap fittings (arrows) and open the cover (1)

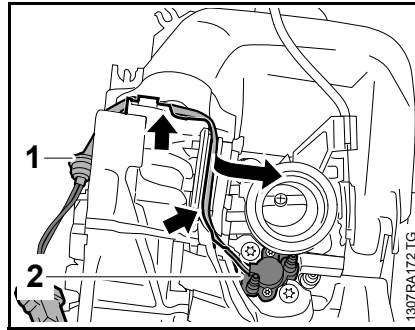


- Disconnect the fuel hoses (1) from the connectors (arrows) and remove injection pump with connecting element

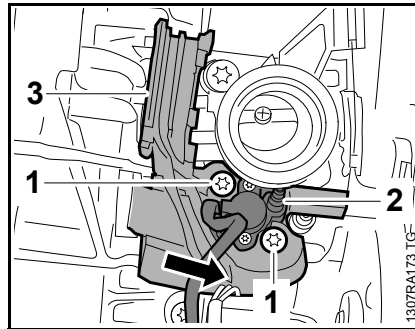
Replace fuel hose unit which has been removed.



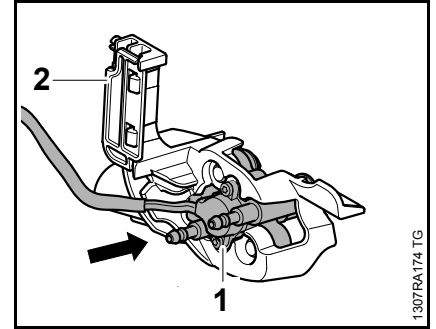
- Pull the wiring harness (1) of the sensor out of the guides (arrows)



- Pull the wiring harness (1) of the injection valve (2) out of the guides (arrows)



- Unscrew the screws (1) and remove the injection valve (2) with air baffle (3)

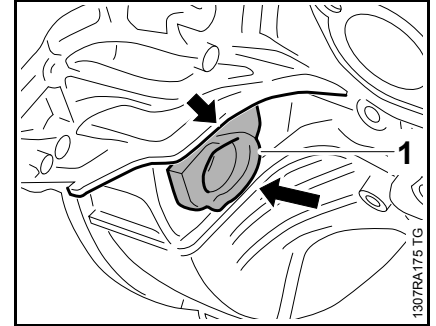


- Press injection valve (1) out of the air baffle (2) and remove – do not disassemble the injection valve any further

– Check air baffle, injection valve or O-ring, replace damaged component if necessary

### Installation

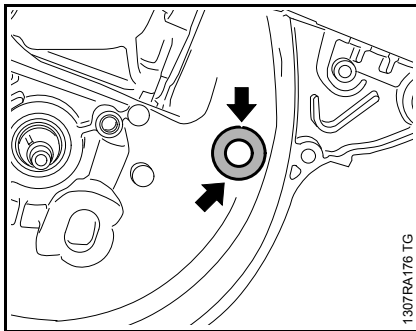
Using the wiring tool 5910 890 4000, press the leads completely into the guides, 1.1.



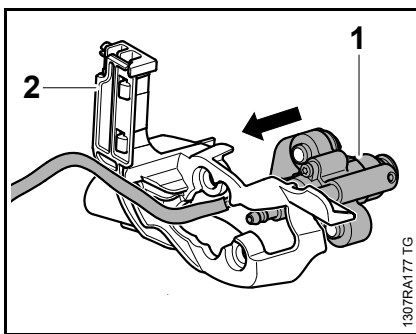
- Check bushing (1) and remove if necessary

– Coat bushing with STIHL press fluid, 13

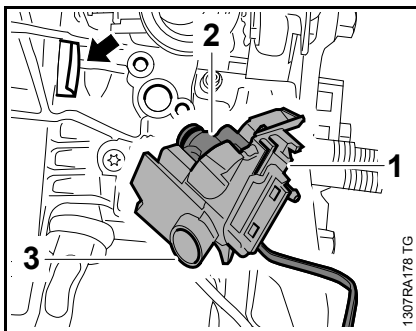
- Press new bushing (1) into the hole so that the straight edge is flush with the fin (arrow)




On the fan side, the bushing (arrows) must enclose the hole completely.

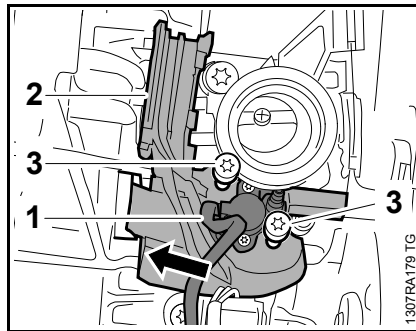


● Push the injection valve (1) into the mount of the air baffle (2) as far as it will go



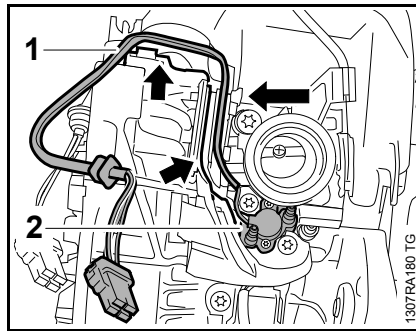
– Coat the O-ring with STIHL press fluid,  13

● Position the air baffle (1) with injection valve (2) so that the connector (3) engages in the bushing (arrow)

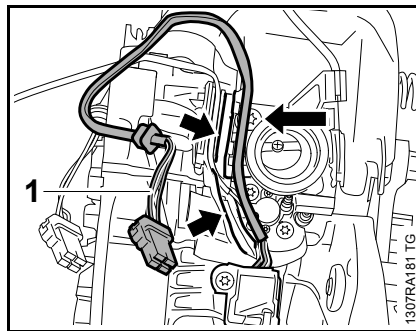


● Push the injection valve (1) with air baffle (2) as far as possible into the crankcase


● Insert and tighten the screws (3)

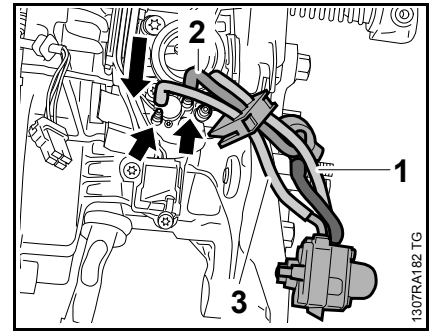



● Place the wiring harness (1) of the injection valve (2) into the guides (arrows)



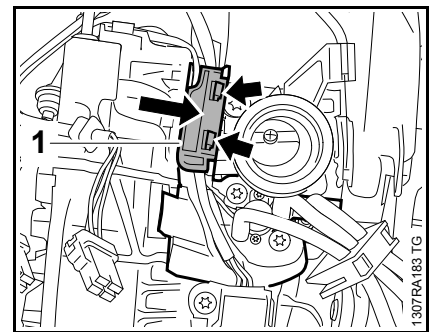
● Place the wiring harness (1) of the sensor into the guides (arrows) – the wiring harness of the injection valve must be underneath

– Push the new fuel hose unit onto the connectors of the injection pump,  11.7.2

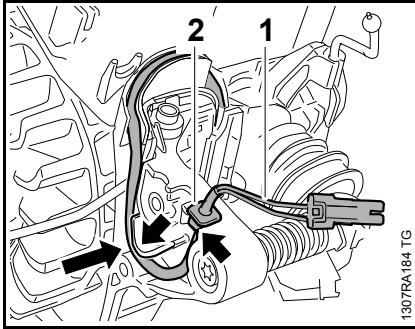


– Use STIHL press fluid to simplify assembly,  13

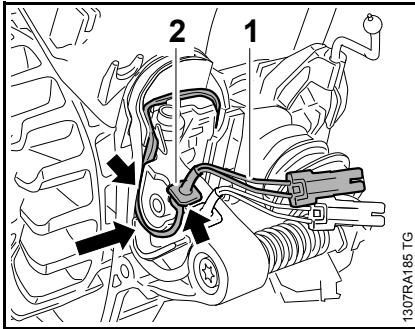
● Push impulse hose (1), fuel return line (2) and fuel hose (3) onto the connectors (arrows)



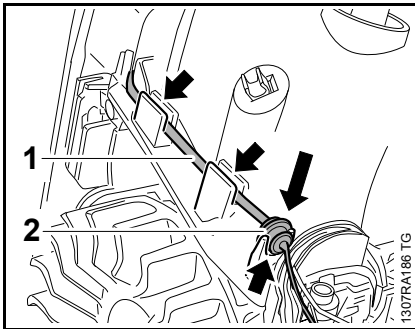
● Close the cover (1) and press into the snap fittings (arrows) until they snap into place



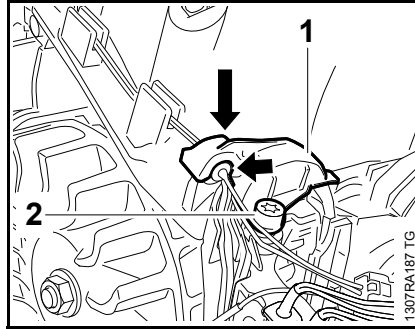
- Place the wiring harness (1) and bushing (2) of the sensor completely into the guides (arrows)



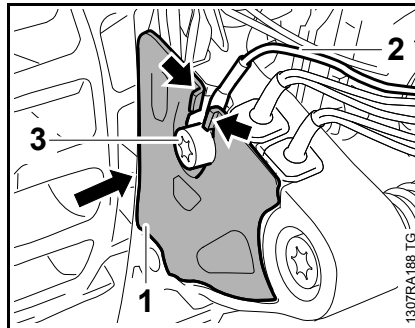
- Place the wiring harness (1) and bushing (2) of the injection valve completely into the guides (arrows)



- Push the wiring harness (1) and bushing (2) into the guides (arrows) – start with the bushing



- Position cable holder (1) so that it engages over the bushing (arrow) – do not pinch the leads
- Screw in the screw (2) and tighten it



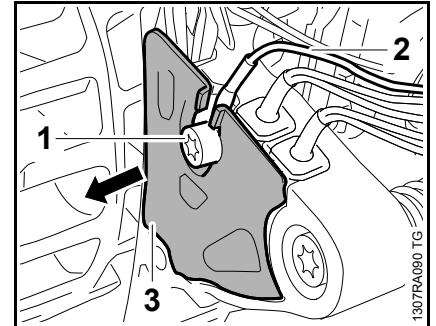
- Fit the cover (1) and guide the cable lug of the ground wire (2) between the tabs (arrows)
- Screw in the screw (3) and tighten it

– Install the engine, 6.5

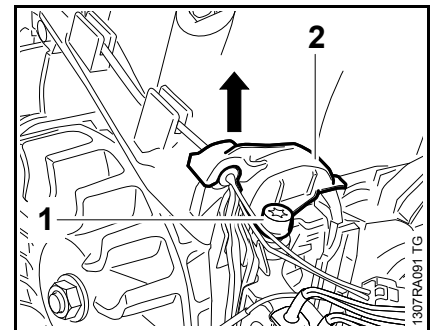
– Reassemble remaining parts in reverse order

## 11.4 Sensor

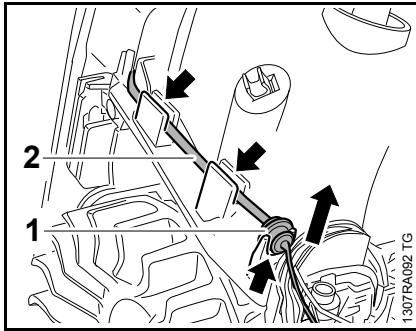
– Remove the engine, 6.5



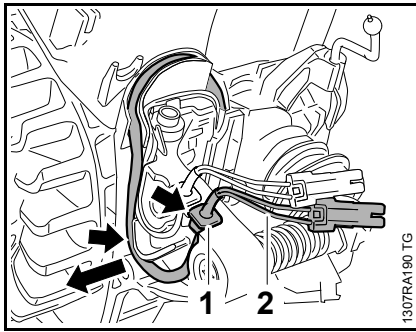
- Unscrew the screw (1)
- Remove the ground wire (2) and cover (3)



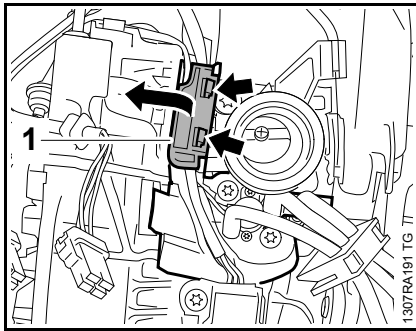
- Unscrew the screw (1) and remove the cable holder (2)



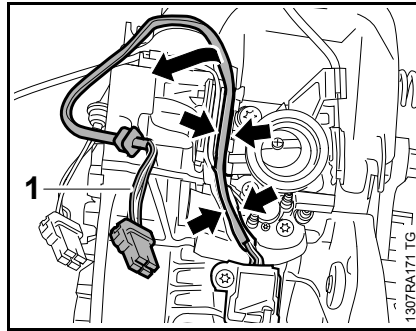
- Pull the bushing (1) and wiring harness (2) out of the guides (arrows) and set them aside



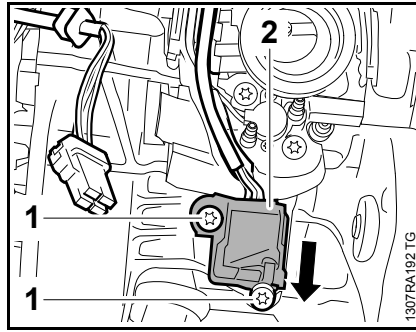
- Pull the bushing (1) and wiring harness (2) from the guides (arrows)



- Press the snap fittings (arrows) and open the cover (1)



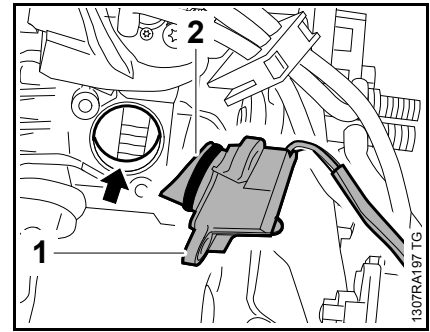
- Pull the wiring harness (1) of the sensor out of the guides (arrows)




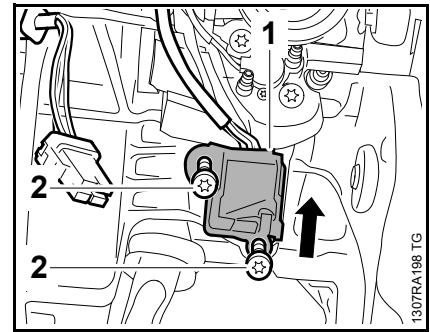
- Unscrew the screws (1) and pull out the sensor (2)
- Examine the sensor and O-ring, replace if necessary

Do not clean the sensor using cold cleaner, compressed air or sharp-edged tools.

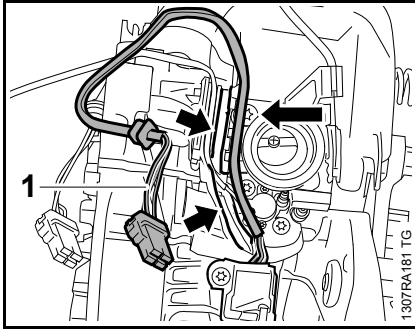
## Installation



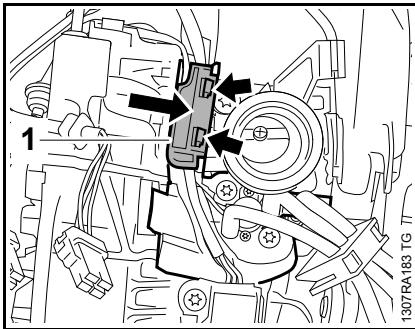
- Coat the O-ring with STIHL press fluid,  13
- Position the sensor (1) so that the support (2) engages in the hole (arrow) of the crankcase with the nose facing down
  - Do not damage the O-ring



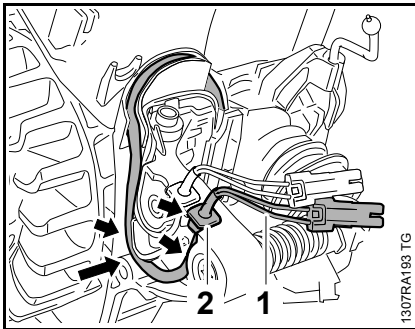
- Push the sensor (1) as far as it will go – the sensor housing must rest against the crankcase
- Insert and tighten the screws (2)



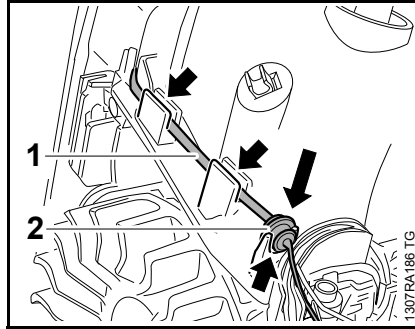
- Place the wiring harness (1) of the sensor into the guides (arrows) – the wiring harness of the injection valve must be underneath



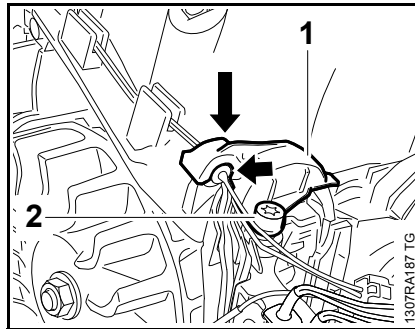
- Close the cover (1) and press into the snap fittings (arrows) until they snap into place



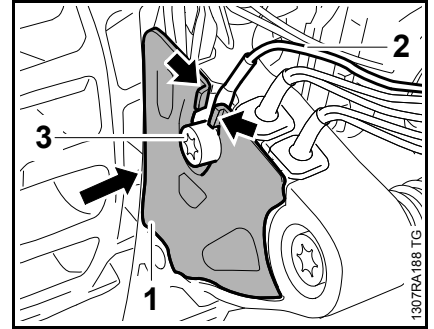
- Push the wiring harness (1) and bushing (2) of the sensor completely into the guides (arrows)



- Place the wiring harness (1) and bushing (2) in the guides (arrows) – start with the bushing



- Position the cable holder (1) so that it engages over the bushing (arrow) – do not pinch the leads
- Screw in the screw (2) and tighten it



- Fit the cover (1) and guide the cable lug of the ground wire (2) between the tabs (arrows)
- Screw in the screw (3) and tighten it
- Install the engine, 6.5
- Reassemble remaining parts in reverse order






## 11.5 Impulse hose

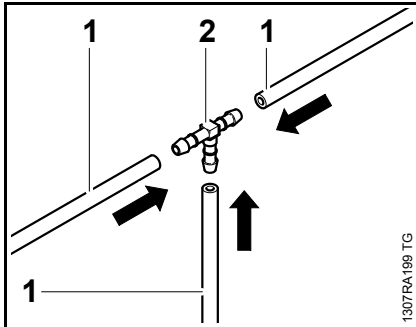
The impulse hose forms one unit with the fuel hoses. Installation and removal is described in the chapter "Injection pump", 11.7.2

## 11.6 Leak testing

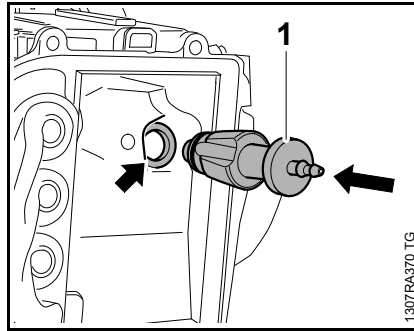
### 11.6.1 Checking the fuel tank / fuel system


On testing the fuel system under pressure using the pressure testing tool 5910 890 4100, a quick first test can be carried out.

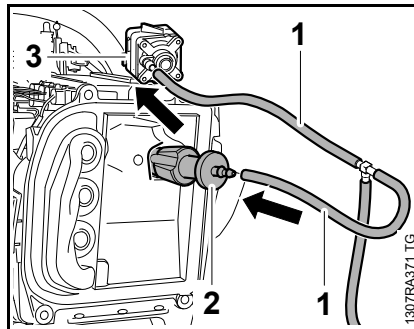
- Open the filler cap and drain the fuel tank in accordance with regulations,  1
- Close the filler cap
- Remove the shroud,  6.4
- Remove the control unit,  7.3
- Remove the air filter,  11.1
- Remove the tank vent,  11.6.3



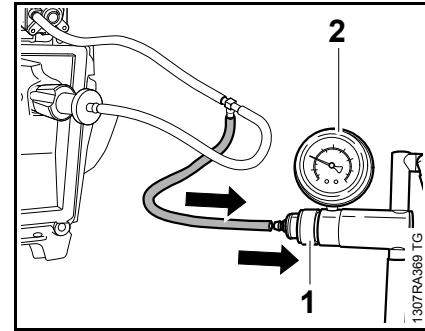
- Push the hoses (1) 1127 358 7600 onto connecting element (2) 5910 895 0200



- Coat O-ring on the plug with STIHL press fluid,  13
- Press the plug (1) of the pressure testing tool 5910 890 4100 as far as it will go into the hole (arrow)
- Pull injection pump from the guide





- Push hoses (1) 1127 358 7600 onto the plug (2) of the pressure testing tool 5910 890 4100 and injection pump (3)



- Slide ring (1) to the right and connect the pump (2) 0000 850 1300 to the hose
  - Build up gauge pressure in the fuel tank

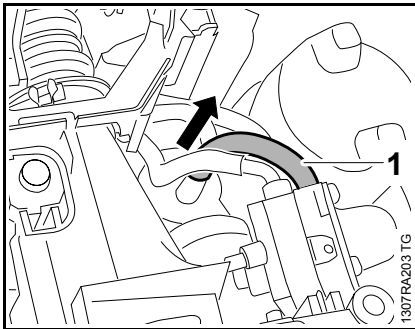
Actuate the pump until the pressure gauge shows a pressure of 0.8 bar. If this pressure remains constant for at least 20 seconds, the tank is airtight. If the pressure drops, the leak must be located and the faulty part replaced.

- After testing, slide the ring on the pump to the left to vent the pump
  - disconnect the hose.
- Remove pressure testing tool
- If the fuel tank is airtight, continue with tank vent test,  11.6.2
- Fit air filter,  11.1
- Reassemble remaining parts in reverse order

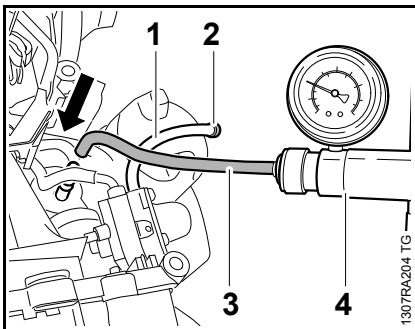
## 11.6.2 Checking the tank vent

### Test preparations

- Open the filler cap and drain the fuel tank in accordance with regulations, [1](#)
- Close the filler cap
- Remove the shroud, [6.4](#)
- Remove the control unit, [7.3](#)
- Remove the air filter, [11.1](#)

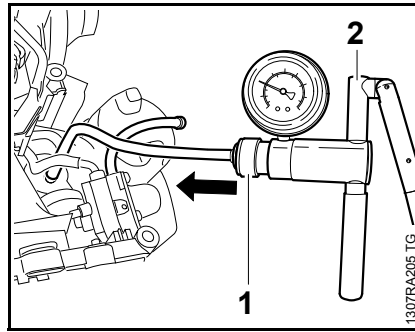


- Pull off the fuel suction hose (1) at the connector (arrow)



- Close the fuel suction hose (1) with the plug (2) and push the hose (3) of the pump (4) 0000 850 1300 onto the support of the fuel intake

### Testing with negative pressure



- Slide ring (1) to the left and connect the pump (2) 0000 850 1300 to the fuel tank with negative pressure

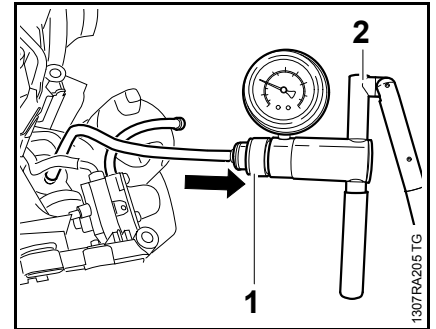
Pressure is equalized via the tank vent. A negative pressure must not build up inside the tank.

- Clean the area around the tank vent
- Replace tank vent if necessary, [11.6.3](#)
- Continue with "Testing with gauge pressure"

### Testing with gauge pressure

The same preparatory steps are required as for the testing with negative pressure.

- Before testing with gauge pressure – Complete testing with negative pressure



- Slide ring (1) to the right and connect the pump (2) 0000 850 1300 to the fuel tank with overpressure

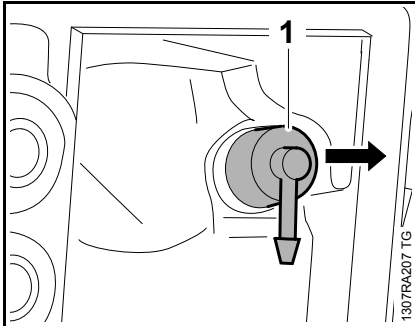
Actuate the pump until the pressure gauge shows a pressure of 0.3 bar. If this pressure remains constant for at least 20 seconds, the tank vent and tank are airtight. If the pressure drops, replace the tank vent.

- After testing, slide the ring on the pump to the left to vent the pump and disconnect the hose from the support of the connecting element.
- Replace the fuel suction hose between the injection pump and connecting element, [11.7.2](#)
- Fit air filter, [11.1](#)
- Reassemble remaining parts in reverse order



### 11.6.3 Tank vent Removal and installation

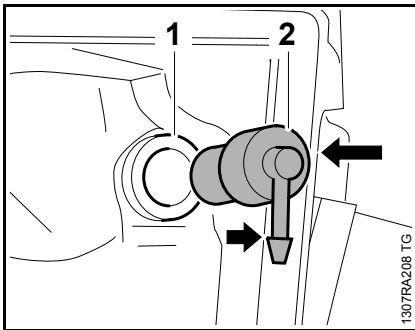
- Remove the air filter, 11.1



- Pry out the tank vent (1)

Always fit a new tank vent.

#### Installation



- Use STIHL press fluid to simplify assembly, 13
- Examine the bushing (1), pry it out and replace if necessary
- Install the bushing (1) so that the rubber lip encloses the hole completely
- Align the new tank vent (2) so that the connector (arrow) points downwards
- Push the new tank vent (2) as far as possible into the bushing

- Reassemble remaining parts in reverse order

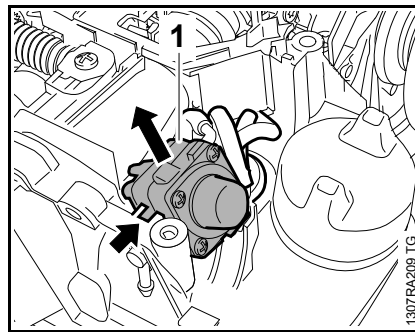
### 11.7 Injection pump

#### 11.7.1 Manual fuel pump

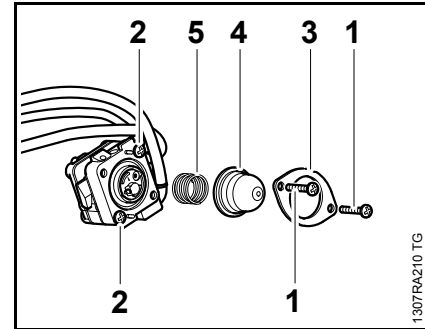
After the injection pump has been removed, replace the fuel hose unit. First, check if only the manual fuel pump needs to be replaced.

The manual fuel pump can be repaired with the fuel hoses still attached.

- Remove the shroud, 6.4
- Remove the control unit, 7.3

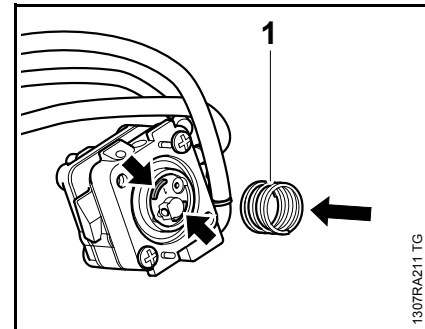


- Pull the injection pump (1) from the guide (arrow)

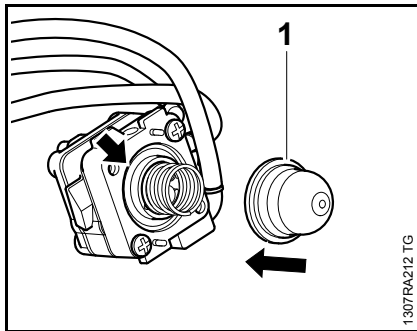


- Remove screws (1)
  - The two other screws (2) guarantee the function preset at the factory and must therefore not be loosened or unscrewed
- Remove flange (3), cap (4) and compression spring (5)
- Examine the individual parts, replace if necessary

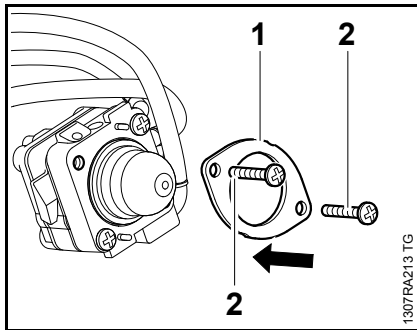
#### Installation



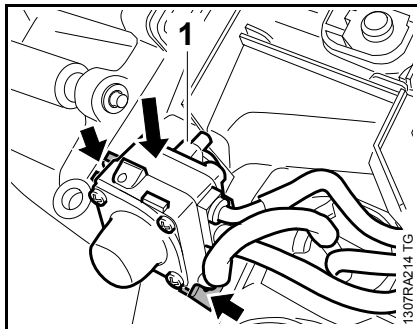
- Insert the compression spring (1) into the mount (arrows)



- Press the cap (1) into the groove on the circumference (arrow)



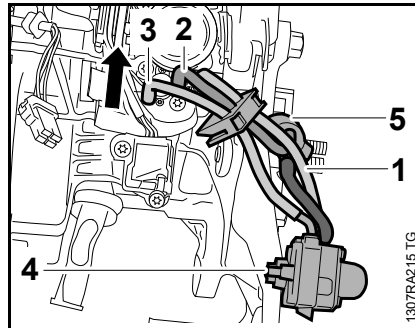
- Fit flange (1)
- Insert and tighten the screws (2)



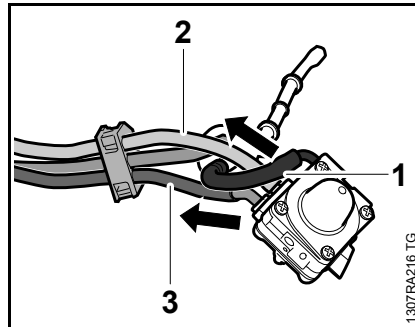
- Push the injection pump (1) with the lug and support into the guides (arrows)
- Reassemble remaining parts in reverse order

## 11.7.2 Injection pump

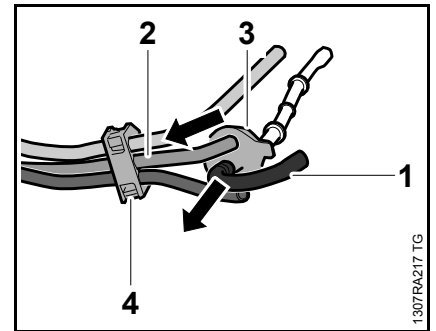
– Remove the engine, 6.5



- Pull the impulse hose (1), fuel return line (2) and fuel hose (3) from the connectors
- Remove the injection pump (4) with the fuel hoses and connecting element (5)

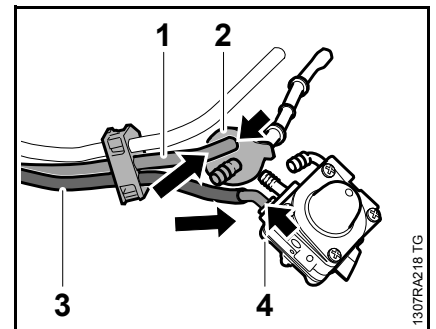


- Pull the fuel suction hose (1), impulse hose (2) and fuel hose (3) from the connectors on the injection pump

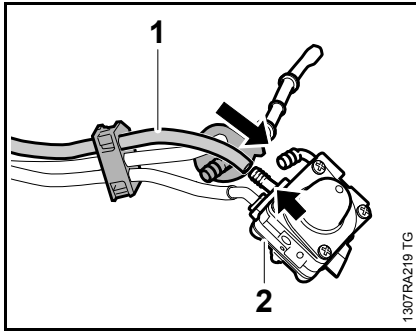


- Disconnect the fuel suction hose (1) and fuel return line (2) from the connectors of the connecting element (3)
- Examine the connecting element (3), replace if necessary
- Replace the fuel suction hose (1)
- Replace the fuel hose unit (4)

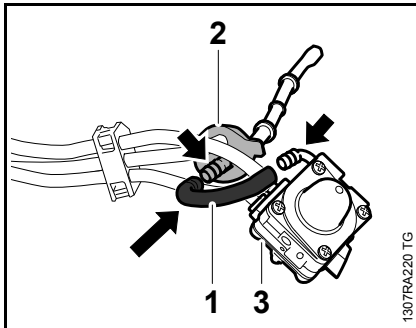
## Installation



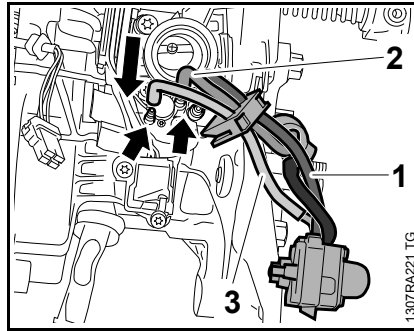
- Use STIHL press fluid to simplify assembly, 13
- Slide the fuel return line (1) onto the short connectors (arrow) of the connecting element (2) and slide the fuel hose (3) onto the connectors (arrow) of the injection pump (4)



- Use STIHL press fluid to simplify assembly, 13
- Push the impulse hose (1) onto the connectors (arrow) of the injection pump (2)



- Use STIHL press fluid to simplify assembly, 13
- Slide the fuel suction hose (1) onto the connectors (arrow) of the connecting element (2) and onto the connectors (arrow) of the injection pump (3)



- Use STIHL press fluid to simplify assembly, 13
- Push impulse hose (1), fuel return line (2) and fuel hose (3) onto the connectors (arrows)
- Install the engine, 11.9
- Reassemble remaining parts in reverse order

## 11.8 Fuel intake

### 11.8.1 Pickup body

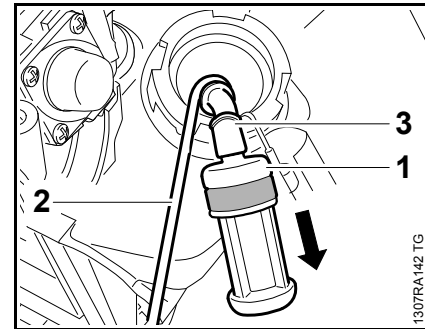
Impurities which are entrained into the fuel tank with the fuel are trapped by the pickup body. With time, the fine pores in the pickup body become clogged with very fine dirt particles. This reduces the intake diameter and fuel can no longer be delivered in sufficient quantities.

Always check the fuel tank and pickup body first if problems develop in the fuel supply.

- Refer also to troubleshooting chart, 3.5

Clean the fuel tank if necessary.

- Open the filler cap and drain the tank.
- Fill a little clean gasoline into the tank, close the tank and shake it thoroughly.
- Reopen the tank and empty it
- Dispose of fuel in accordance with regulations, 1



- Open the filler cap
- Pull the pickup body (1) out of the fuel tank with assembly hook (2) 5910 893 8800
- Take care not to overextend the fuel hose (3).
- Pull the pickup body (1) off the fuel hose (3), examine it and clean or replace it if necessary
- Reassemble parts in reverse order







### 11.8.2 Fuel hoses

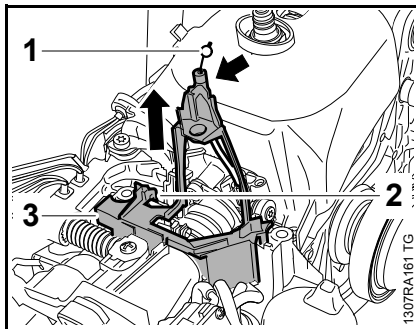
- The installation or removal of the fuel hoses is described in the chapter "Injection pump", 11.7.2

### 11.8.3 Fuel tank filler cap

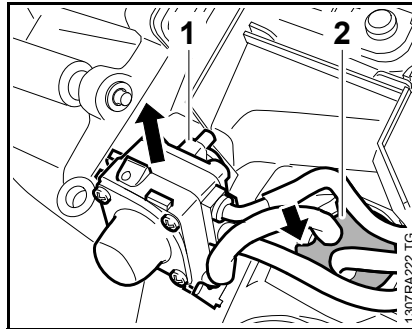
- See Instruction Manual.

### 11.9 Tank housing

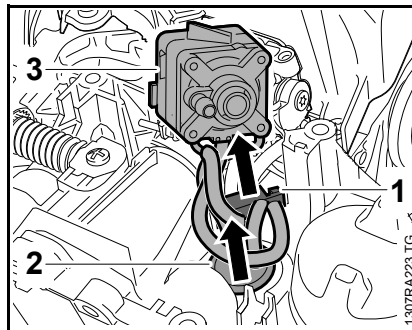
- Empty the fuel tank
- Dispose of the fuel,  1
- Remove the shroud,  6.4
- Remove the control unit,  7.3
- Remove the solenoid valve (water connection),  4.1.3
- Remove the handlebar,  9.5
- Remove the pickup body,  11.8.1



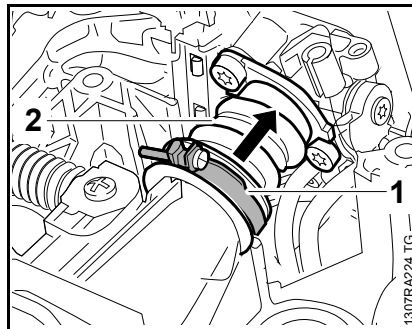
- Unhook the throttle cable (1) from the mount (arrow)
- Raise the retaining tab (2) slightly and pull out the air baffle (3)



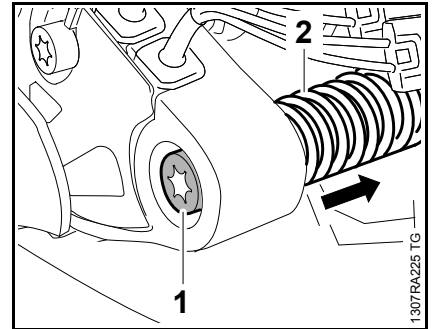
- Pull the injection pump (1) from the guides and pry out the connecting element (2) using the tab (arrow)



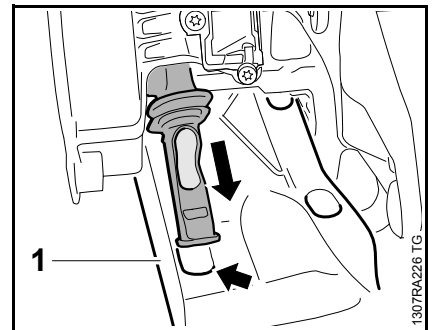
- Pull out the hose holder (1) and connecting element (2) and set aside with the injection pump (3)



- Loosen the screw and push the hose clip (1) in the direction of the throttle shutter housing
- Push down the manifold (2) from the tank housing support





- Unscrew the screw (1) and pull the bearing plug of the antivibration spring (2) out of the mount





- Pull the tank housing (1) downwards at the opening (arrow) out of the hose and remove

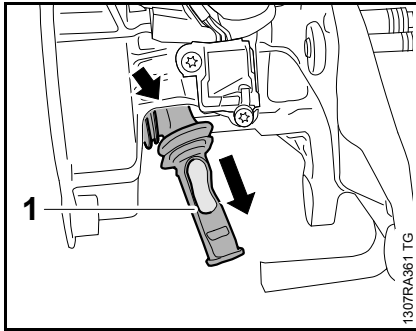
- Examine the tank housing, replace if necessary

Those parts of the old tank housing which are not supplied with the new tank housing must be reused – see spare parts list.

- Check the air baffle, wiring harness solenoid valve and support foot, replace or reconfigure if necessary,  9.6.2,  9.6.3

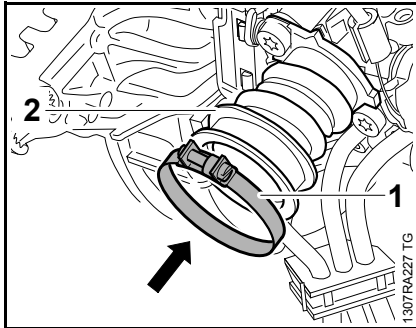
If the tank housing is installed again, check the bushing for the connecting element, replace if necessary.

- Remove the flywheel,  7.5
- Remove the generator,  7.5.1

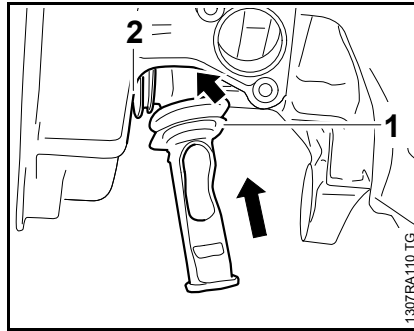


- Pull the hose (1) out of the crankcase (arrow)
- Check the hose, replace if necessary

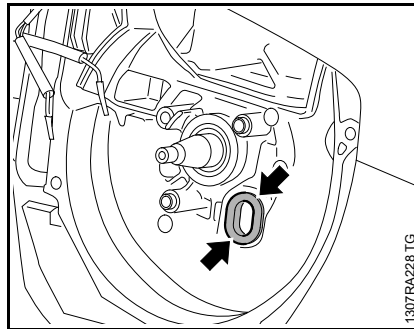
### Installation



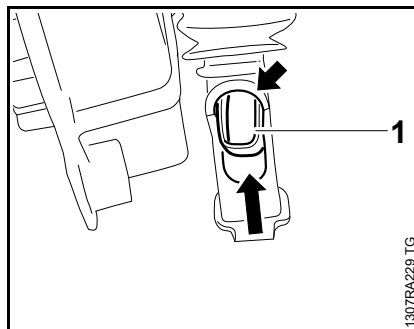
- Push the hose clip (1) over the shoulder of the manifold (2) in the direction of the throttle shutter housing so that the screw head faces the clutch side
- Apply STIHL press fluid to the inside of the manifold, 13



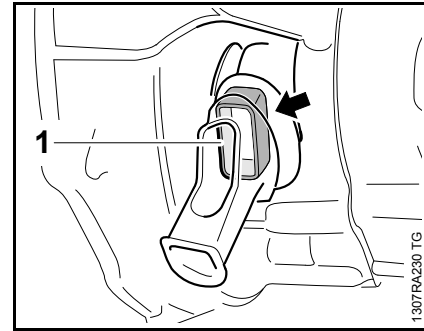
- Use STIHL press fluid to simplify assembly, 13
- Slide the hose (1) into the recess (arrow) in the crankcase and then push it into the opening (2) in the side of the fan-side half of the crankcase.



- Check that the hose is correctly seated
  - On the fan side, the hose (arrows) must enclose the opening completely

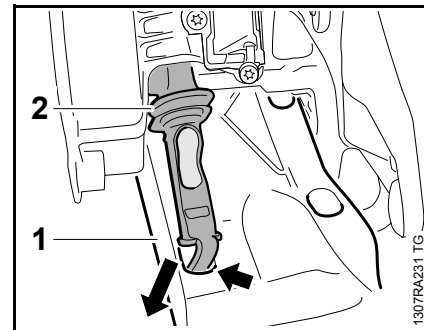


- Slide the sleeve (1) into the opening (arrow) in the hose until it lies flush

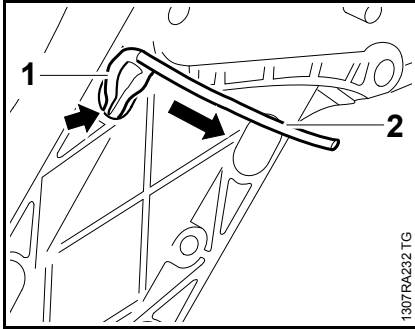


- Note the position (arrow) of the sleeve (1)

### Fitting a new hose



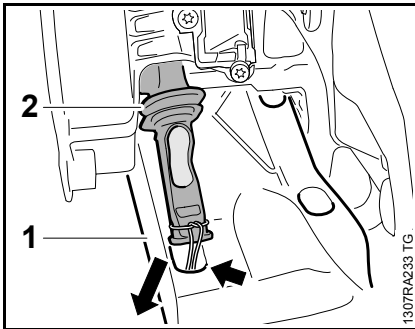
- Use STIHL press fluid to simplify assembly, 13
- Position the tank housing (1) on the crankcase from below
- Guide the hose (2) through the opening (arrow) in the tank housing with the tab
- Hold the tank housing in place




- Pull the hose (1) into the tank housing with the tab (2) until the hose completely encloses the opening (arrow)

– Cut off the tab (2)

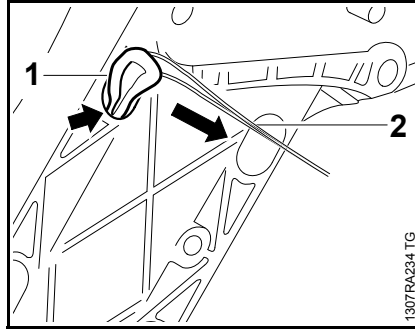
### Fitting an existing hose



– Use STIHL press fluid to simplify assembly,  13

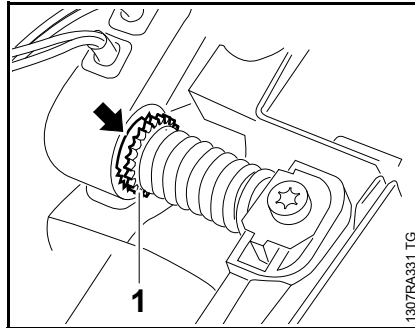
- Position the tank housing (1) on the crankcase from below
- Lay a piece of string (approx. 30 cm) around the hose (2) (single loop) and guide the ends of the string through the opening (arrow) in the tank housing (1)

– Hold the tank housing in place



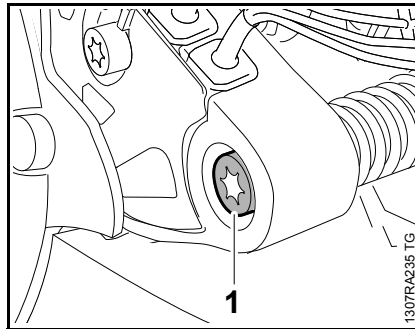
- Pull the hose (1) into the tank housing with the ends of the string (2) until the hose completely encloses the opening (arrow)

– Remove the string

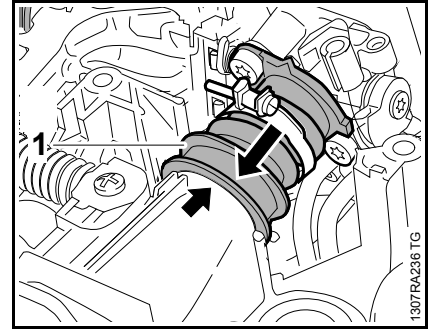


Bearing plug (1) must be twisted into the antivibration spring as far as it will go.

- Push the tank housing with bearing plug (1) into the mount (arrow) and hold it in position

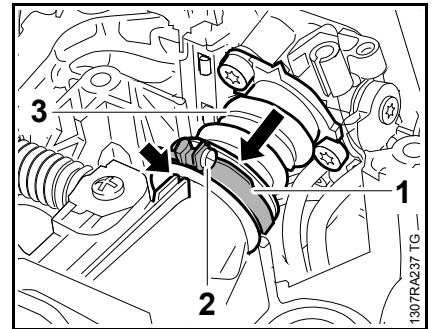


- Screw in the screw (1) and tighten it



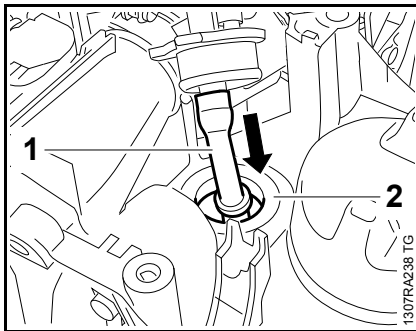
- Push the manifold (1) completely and evenly onto the supports (arrow) of the tank housing until it is in the groove on the circumference

– Push the hose clip over the shoulder of the manifold

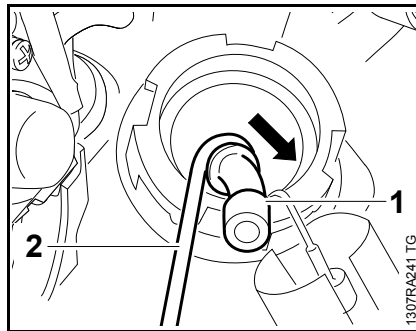


- Align the hose clip (1) on the manifold (3) so that the clamping gap lines up with the fin (arrow)

- Screw in the screw (2) and tighten it



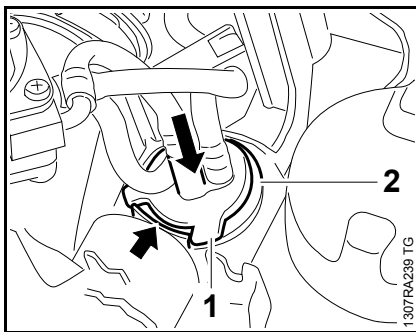
- Push the fuel suction hose (1) through the bushing (2) into the fuel tank



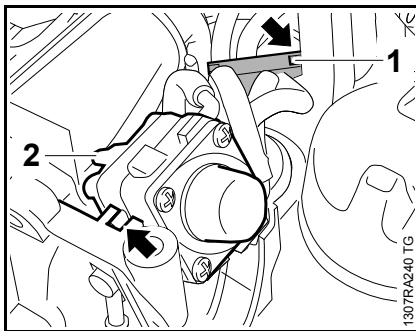
- Pull the fuel suction hose (1) out of the fuel tank with assembly hook (2) 5910 893 8800

Take care not to overextend the fuel hose.

- Fit the pickup body, 11.8.1
- Close the filler cap
- Reassemble remaining parts in reverse order



- Press the connecting element (1) into the bushing (2) so that the fin (arrow) is between the two tabs



- Push the hose holder (1) of the fuel hoses and injection pump (2) into the guides (arrows)

- Install the handlebar, 9.5

## 12. Special tools

### New special tools

No.	Designation	Part No.	Use	Re- marks
1	Engine analyzer STIHL MDG 1	5910 840 0200	Check STHIL Injection – Engine analyzer complete with case	
2	"Injection system diagnostic cable"	5910 840 0401	Check STHIL Injection – Connect machine to computer	
	- Injection system generator diagnostic cable	5910 840 0402	Included in the kit "Injection system diagnostic cable"	
	- Injection system control unit diagnostic cable	5910 840 0403	Included in the kit "Injection system diagnostic cable"	
	- Terminal socket	5910 842 1500	Included in the kit "Injection system diagnostic cable"	
3	Pressure testing tools	5910 890 4100	Engine and fuel system leak test	
	- Hose 210 mm	1127 358 7600	Engine and fuel system leak test	
	- Plug	5910 890 3800	Engine and fuel system leak test	
	- Connector	5910 895 0200	Engine and fuel system leak test	

### Existing special tools

No.	Designation	Part No.	Use	Re- marks
1	Pump	0000 850 1300	Testing engine and fuel system for leaks	
2	Sealing plate	0000 855 8106	Seal exhaust bore	
3	Dial gauge	0000 890 9100	Test axial truth of running	
	- Dial gauge holder	5910 850 6000	Test axial truth of running	
4	Clamping strap	0000 893 2600	Stretching piston rings on piston	
5	Assembly drift	0000 893 4700	Removing and installing piston pins	
6	Locking strip	0000 893 5903	Blocking crankshaft	
7	Pliers DIN 5254-A 10	0811 611 8200	Remove and install external retaining rings	
8	Pliers DIN 5254-C 19	0811 641 8380	Remove and install internal retaining rings	



No.	Designation	Part No.	Use	Re- marks
9	Bit T 27 x 125	0812 542 2104	Removing and installing spline socket head screws with electric or pneumatic screwdrivers; tightening down screws with torque wrench	
10	Wooden assembly block	1108 893 4800	Positioning piston	
11	Assembly sleeve	1118 893 4602	Protect oil seal on clutch side	
12	Press sleeve	1122 893 2405	Press in oil seal on fan side	
13	Assembly sleeve	1141 893 4600	Protect oil seal on fan side	
14	Press arbor	4119 893 7200	Drive grooved ball bearing out of poly V-belt pulley	
15	Plug	4221 025 2200	Leakage testing (on decompression valve)	
16	Press arbor	4224 893 7200	Press ball bearing in spindle bearing and belt pulley	
17	Clamping plate for cut-off machine	4238 890 2100	Mount cut-off machine on assembly stand	
18	Press sleeve	4238 893 2400	Install oil seal on clutch side	
19	Spacer	4238 894 1100	Release flywheel in combination with extractor 5910 890 4504 to protect the generator	
20	Service tool ZS	5910 007 2201	Remove and install crankshaft	
	– Washer	5910 893 2103	Remove crankshaft / fan side	
	– Washer	5910 893 2101	Remove crankshaft / clutch side	
21	Mount for assembly stand	5910 850 1650	Fit mount on assembly stand	
22	Test disk	5910 851 6100	Test axial truth of running of the cutting wheel mount	
23	Torque wrench	5910 890 0302	Screw connections (0.5 to 18 Nm) (with visual and acoustic signaling)	
24	Torque wrench	5910 890 0312	Screw connections (6 to 80 Nm) (with visual and acoustic signaling)	
25	Assembly tool 12	5910 890 2212	Fit hookless snap rings in piston	
	- Sleeve	5910 893 1706	For assembly tool, 12	
26	Screwdriver T 27 x 150	5910 890 2400		1)

No.	Designation	Part No.	Use	Re- marks
27	Assembly hook	5910 890 2800	Detach springs from clutch shoes	
28	Stud driver M8 - 7.5	5910 890 3000	Screw in studs for attaching the "cast arm with guard"	
29	Assembly stand	5910 890 3101	Mount machine for repair (support 5910 850 1650 mounted)	
30	Wiring tool	5910 890 4000	Install electrical leads	
31	Puller	5910 890 4400	Remove oil seals	
	- Jaws (No. 3.1)	0000 893 3706	Remove oil seal on clutch side	
	- Jaws (No. 6)	0000 893 3711	Remove oil seal on fan side	
32	Puller	5910 890 4504	Removing flywheel	
33	Stud puller, M8	5910 893 0501	Unscrew studs for attaching the "cast arm with guard"	
34	Screw sleeve	5910 893 2420	Installing the crankshaft	
35	Socket, 13 mm, long reach	5910 893 2804	Remove and install decompression valve	
36	Bit DIN 3124, size 13	5910 893 5608	Unscrew flywheel nut	
37	Socket, DIN 3124-S19 x12.5L	5910 893 5613	Removing and installing the clutch	
38	Assembly hook	5910 893 8800	Remove pickup body	

**Remarks:**

- 1) Use only for releasing.

### 13. Service accessories

No.	Designation	Part No.	Use
1	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 starter cover
3	STIHL press fluid OH 723	0781 957 9000	Rubber elements antivibration elements
4	STIHL multi-purpose grease	0781 120 1109	High-voltage output on control unit
5	Medium-strength thread-locking adhesive (Loctite 242)	0786 111 2101	
8	Standard solvent-based degreasant not containing any chlorinated or halogenated hydrocarbons		Cleaning mating surfaces and the carburetor, cleaning the crankshaft stub and tapers in flywheel





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