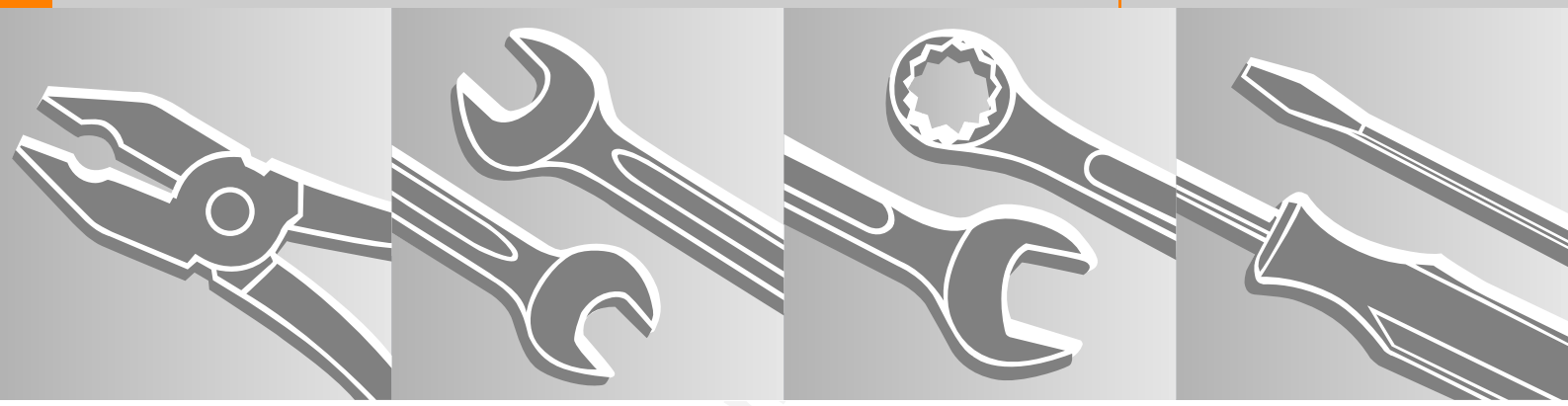
STIHL Series 4137 Powerhead

2004-03



Contents

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

The procedures are the same for all models unless specified otherwise. Only the illustrations may differ, depending on the individual models. The method used is the same in all cases however.

Repair and servicing procedures for engine components and their CombiTools are described in detail in the corresponding service manuals "Series 4137 Components" and "CombiTools".

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

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

Faults in the unit may be due to a number of causes. Refer to the chapter "Troubleshooting" and the "STIHL Service Training System" for all function groups in this context.

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

The special tools mentioned in the text are listed in the chapter "Special servicing tools" in this manual. The tools can be identified in the manual of "STIHL Tools" with the aid of their part numbers. 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 descriptions:

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

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

▮➞ = Situation applies as from serial No.

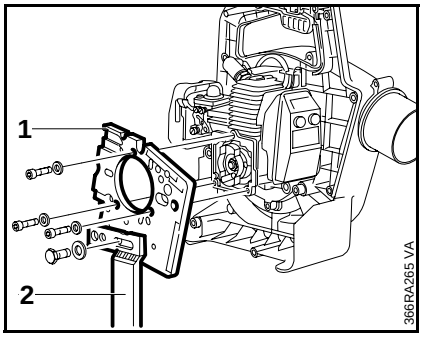
➞▮ = Situation applies up to serial No.

In the illustrations:

➞ Pointer

➞ Direction of movement

Service manuals and all technical information bulletins are intended exclusively for the use of STIHL servicing dealers. They must not be passed on to third parties.



Servicing and repairs are made considerably easier if the powerhead is mounted on assembly stand (2) 5910 893 8800 with the aid of the clamping plate (1) 5910 893 3100.
The powerhead can then be swivelled to the best position for the ongoing repair.

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

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

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

Improper handling may result in burns or other serious injuries.

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

3. Specifications

3.1 Engine

Displacement:	25.4 cm^3
Bore:	34 mm
Stroke:	28 mm
Engine power to ISO 8893:	0.95 kW (1.3 HP)
Max. permissible engine speed without cutting attachment (cut-off speed)	10500 ± 800 rpm
Idle speed:	2800 rpm
Bearings:	Crankshaft supported in heavy-duty deep groove ball bearings, needle cages on small and big ends at piston pin and crankpin
Clutch:	Centrifugal clutch without linings
Clutch engages at:	3700 rpm
Leakage testing of the crankcase	
with excess pressure:	$p_ü$ = 50 kPa (0.5 bar)
with negative pressure:	p_u = 50 kPa (0.5 bar)

3.2 Ignition system

Principle	Electronic magneto ignition with integrated switch gear
Air gap	0.2...0.5 mm
Spark plug (interference suppressed):	Bosch WSR 6F NGK BPMR 7 A Champion RCJ 6Y
Electrode gap:	0.5 mm

3.3 Tightening Torques

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

Fastener	Thread size	For component	Torque
			Nm
Screw	IS-M5x25	Crankcase	9.5
Screw	IS-DG5x24	Cylinder/Crankcase	9.5
Screw	IS-M4x20	Spark plug	4.5
	M14x1.25	Ignition module/Cylinder	20.0

When refitting the DG screws in an existing thread:

– Place the DG screw in the hole and rotate it counterclockwise until it drops down slightly.

– Tighten the screw clockwise to the specified torque.

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

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

4. Troubleshooting
4.1 Engine

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

Refer to the service manuals "Series 4137 Components" with regard to the air filter, fuel supply and carburetor.

Condition	Cause	Remedy
Engine does not start easily, stalls at idle speed, but operates normally at full throttle	Oil seals in crank gear defective	Replace oil seals.
	Crankcase leaking/damaged (cracks)	Seal / replace crankcase
	Muffler leaking [1)]	Seal / replace muffler [1)]
Engine does not deliver full power or runs erratically	Piston rings worn or broken	Replace piston rings
	Muffler/park arresting screen carbonized [1)]	Clean muffler (inlet and exhaust openings), replace spark arresting screen [1)]
	Air filter element dirty [1)]	Replace air filter element [1)]
	Fuel line kinked or cracked	Fit new lines or route lines without kinks [1)]
	Impulse opening in intermediate flange cracked	Replace intermediate flange
Engine overheating	Insufficient cylinder cooling. Air inlets in fan housing blocked or cooling fins on cylinder very dirty.	Thoroughly clean all cooling air passages and cooling fins.

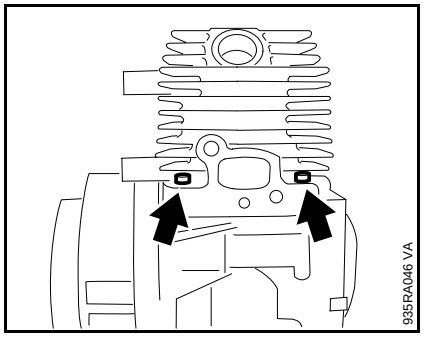
[1)] Refer to the service manuals: "Series 4137 Components"

4.2 Ignition System

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

Condition	Cause	Remedy
Engine runs roughly, misfires, temporary low of power	Spark plug boot is loose	Press boot firmly onto spark plug, and fit a new leg spring if necessary
	Spark covered in soot, smeared with oil	Clean spark plug, replace if necessary
	Weak spark or no spark	Faulty insulation on ignition lead or short circuit wire. Use ohmmeter to check ignition lead for break. If break is detected or resistance is high, fit new ignition lead
	Wrong air gap between ignition coil and flywheel	Reset air gap
	Flywheel cracked or damaged	Install new flywheel
	Check operation of spark plug. Check slide control, ignition coil/ wire for damaged insulation and leakage current	Replace or clean spark plug, replace damaged parts of ignition system
	No spark	Check operation of slide control, ignition module and ignition leads; replace if necessary

5. Cylinder and piston
5.1 Removal



Before looking for faults on the engine, always check and, if necessary, repair the fuel system, carburetor and air filter first; see chapter "Troubleshooting" in the service manuals "Series 4137 Components" and the chapter on troubleshooting, "Ignition system", 🕮 4.2.

– Dismantle the carburetor, muffler and engine,
see service manuals "Series 4137 Components".

● Remove screws (arrows).

The two screws at the rear are not illustrated.

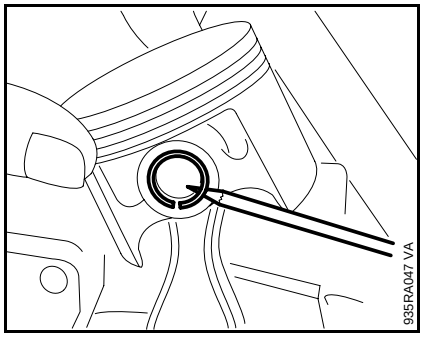
– Draw cylinder off piston.

– Check cylinder, replace if necessary.

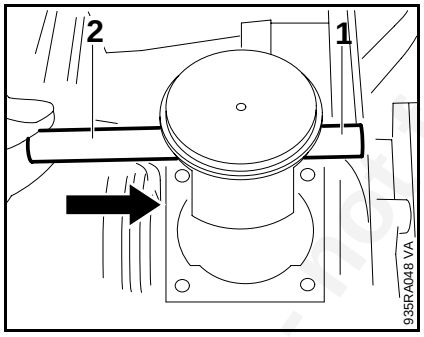
When installing a new cylinder, the corresponding piston must also be replaced. New cylinders are therefore only supplied with piston.

– Before removing the piston decide whether the crankshaft must also be removed. To dismantle the clutch and carrier, block the crankshaft by placing the piston on the wooden assembly block.

– Remove cylinder gasket.



● Ease the hookless snap rings out of the grooves.

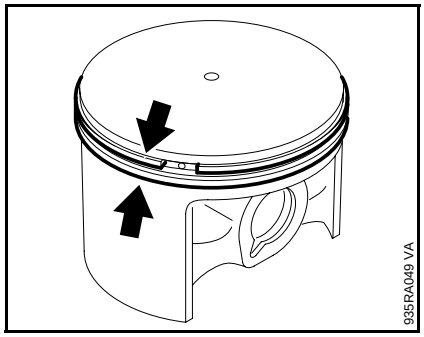


● Use the assembly drift (2) 1114 893 4700 to push the piston pin (1) out of the piston.

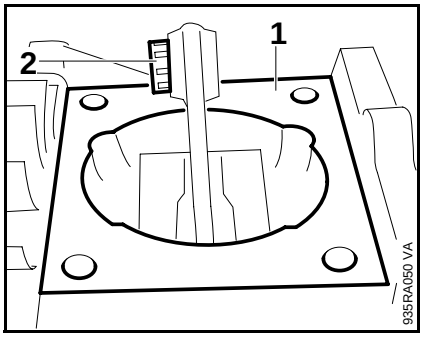
If the piston pin is stuck, tap the end of the drift **lightly** with a hammer if necessary. The piston **must be steadied** to ensure that no jolts are transmitted to the connecting rod.

Important!
If the piston only has one snap ring, the piston pin may only be forced out in the direction of the snap ring. Ensure that the stop is not damaged.

– Remove piston from connecting rod and pull needle cage out of connecting rod eye.

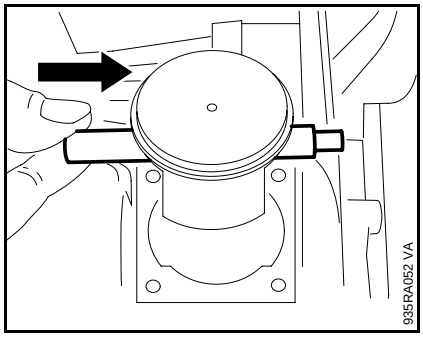


● Inspect piston rings and replace if necessary, 🕮 5.3.

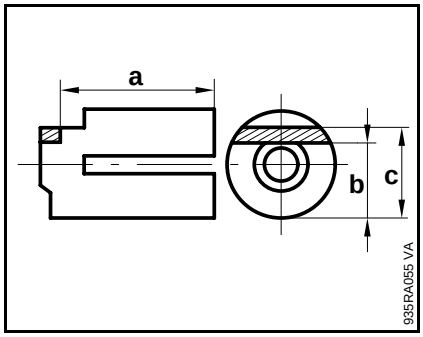


Remove and refit intermediate flange when replacing piston and cylinder, see service manuals "Series 4137 Components".

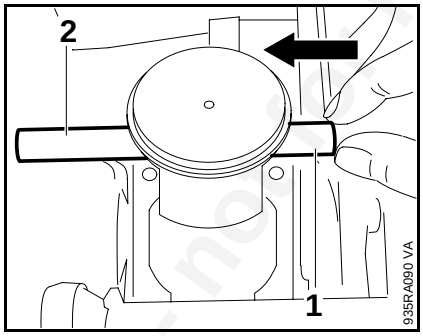
- Thoroughly clean sealing surface (1).
- Wet needle cage (2) with oil and insert in connecting rod eye.



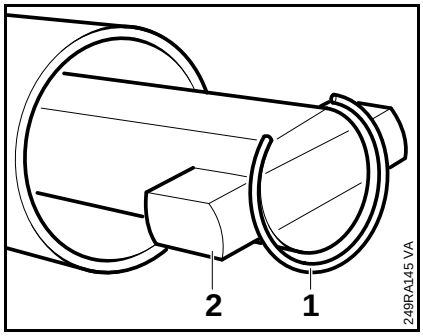
- Push the assembly drift 1114 893 4700, with stub end first, through the piston and connecting rod eye with needle cage and align the piston.



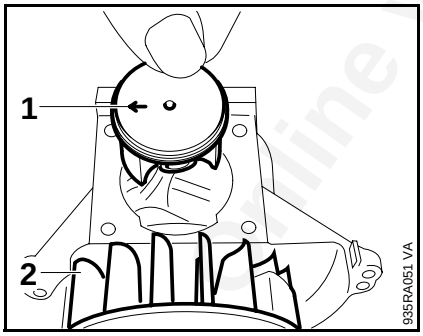
- Modify sleeve of installing tool 5910 890 2208 as illustrated:
  a = 35.5 mm
  b = 17.3 mm
  c = 21.0 mm



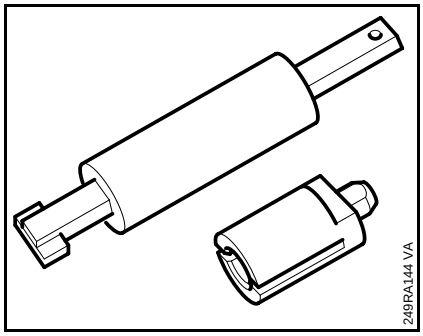
- Slide piston pin (1) onto the stub of assembly drift (2) 1114 893 4700 and push it into the piston (this is easier if the piston has been warmed slightly).



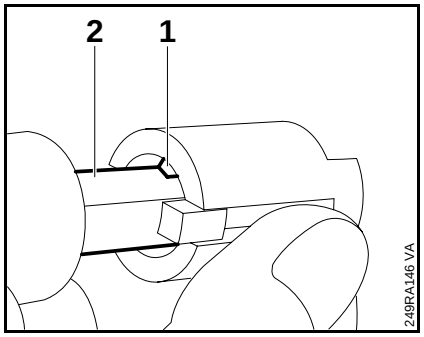
- Attach the snap ring (1) to the magnet (2) at the face end so that the snap ring gap is on the flat side of the tool's shank.



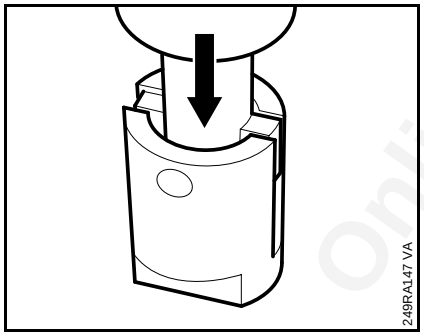
- To make assembly easier, warm the piston slightly and slide it over the connecting rod.
- Installed position of the piston:
  1 = Mark
  2 = Flywheel



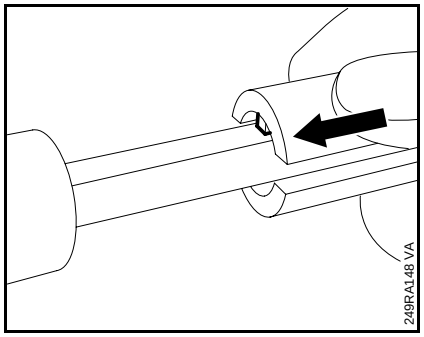
- Remove sleeve from installing tool 5910 890 2208.



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

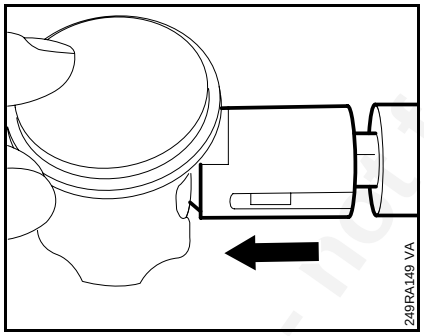


- Stand the installing tool, sleeve downward, on a flat surface (wooden board) and press vertically downwards until the sleeve butts against the tool's shoulder.

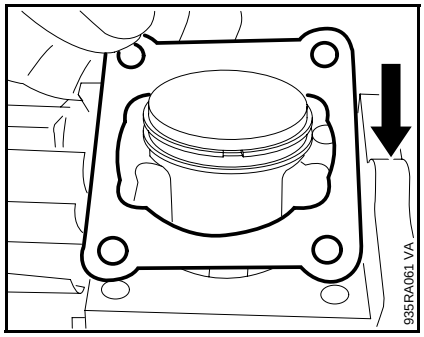


- Remove the sleeve and slip it onto the other end of the shank.

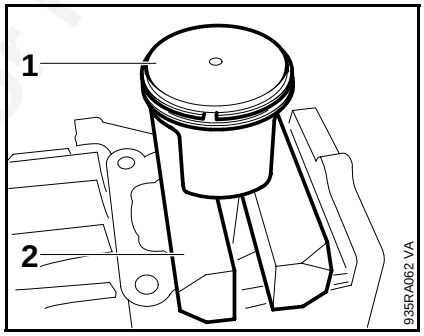
Inner pin must point towards flat face.



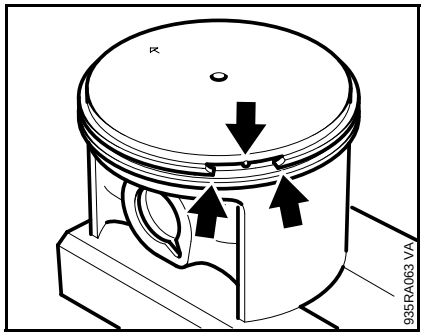
- Apply the installing tool 5910 890 2208 to the piston boss, hold the piston steady, centre the tool shank exactly and press home until the snap ring slips into the groove.



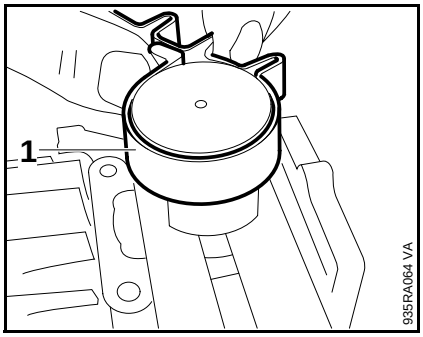
- Fit a new cylinder gasket.



- Wet piston and piston rings with oil and place piston (1) on wooden assembly block (2) 1108 893 4800.



- Align piston rings: the bevelled edges at the gap must locate the fixing pin in the ring groove.

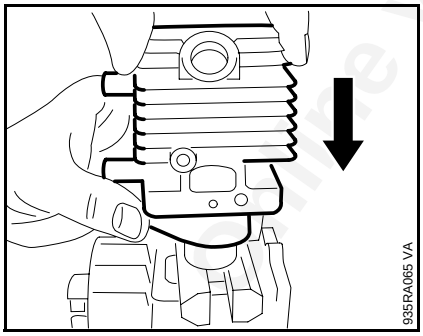


- Fit collar clamp (1) 0000 893 2600 around piston and piston rings.

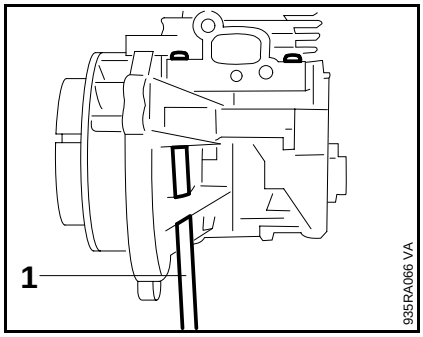
– Ensure that the piston rings are correctly positioned.

– Wet inside of cylinder with oil and align it in accordance with its subsequent installed position.

The piston rings may break if they are not installed in the correct position!



- Slide cylinder over piston, pushing the collar clamp downwards and the piston rings slide into the cylinder.



– Remove collar clamp and wooden assembly block.

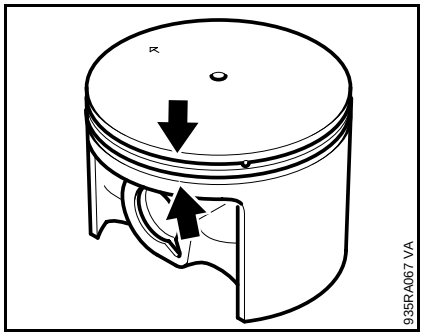
– Align cylinder and cylinder gasket.

- Tighten screws with bit (1) 0812 542 2104, 🕮 3.3.

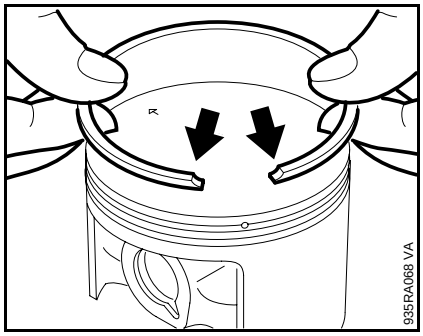
The remaining parts are installed in reverse order of steps, see service manuals "Series 4137 Components".

– Remove piston, 🕮 5.1.

– Remove piston rings from piston.



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

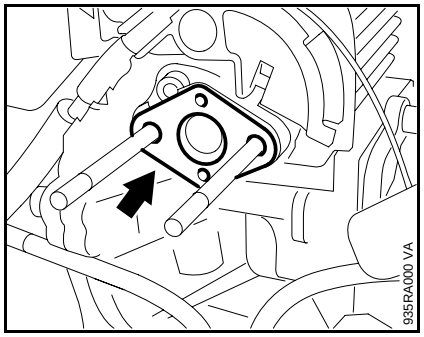


- Insert new piston rings in the grooves so that the bevelled edges point towards the piston shaft.

– Install piston, 🕮 5.2.

5.4 Leakage test

5.4.1 Preparatory steps

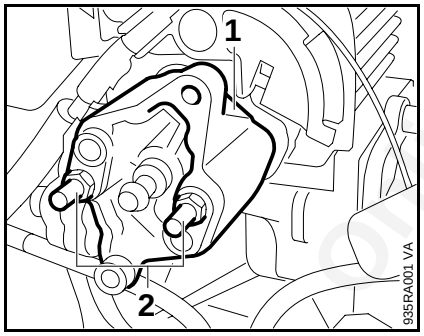


– Remove carburetor, see service manuals "Series 4137 Components".

● Slide gasket (arrow) into place before the intermediate flange.

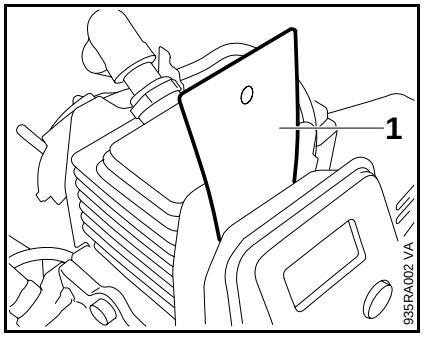
– Move piston to top dead centre (can be seen through the inlet bore).

– Check that the spark plug is securely seated.



● Slide test flange (1) 1128 850 4200 into place.

● Tightly screw on nuts (2).



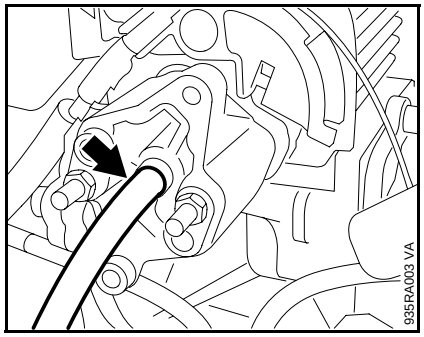
– Remove lower crankcase screw from muffler, see service manuals "Series 4137 Components".

– Unscrew the two upper screws on the muffler half-way.

● Slide sealing plate (1) 0000 855 8106 between gasket and cylinder exhaust and lightly retighten the two upper screws on the muffler.

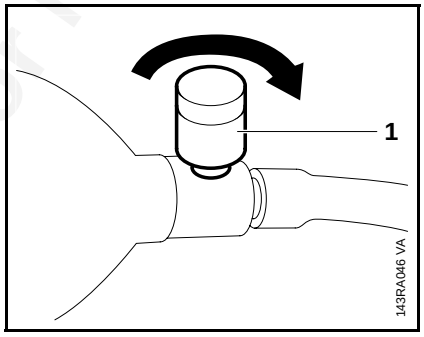
The sealing plate must fill the full width between the screws.

5.4.2 Testing with excess pressure



– Prepare for testing, 🕮 5.4.1.

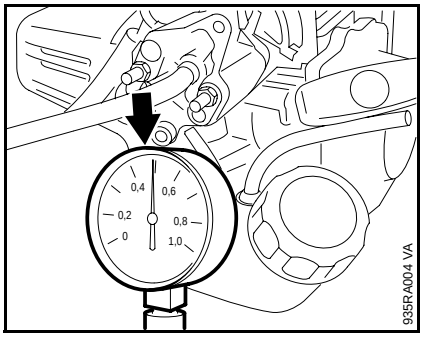
● Slide the pressure hose of the tester 1106 850 2905 over the nipple (arrow) on the test flange.



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

– Pump air into the engine housing with the rubber bulb until the pressure gauge shows a reading of approx 50 kPa (0.5 bar). If this pressure remains constant for at least 20 seconds, the engine housing is airtight.

5.4.3 Testing with negative pressure



- If the pressure drops, the leak must be located and the defective part replaced.

Wet the area where the leak is suspected with oil and build up pressure in the crankcase again. The position of the leak is revealed by bubbles in the oil-coated area.

– Then test with negative pressure, 🕮 5.4.3.

– After testing, open the vent screw and remove the hose.

– Remove the test flange.

– Undo the muffler screws, see service manuals "Series 4137 Components".

– Pull out the sealing plate and retighten the muffler screws.

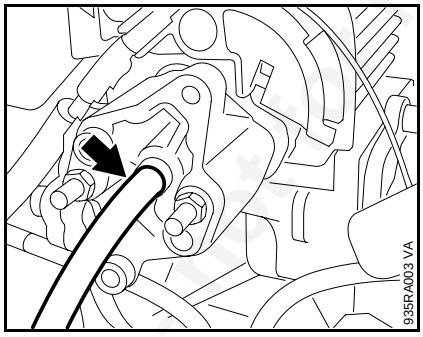
– Insert and tighten down the outer screw on the muffler.

– Install the carburetor, see service manuals "Series 4137 Components".

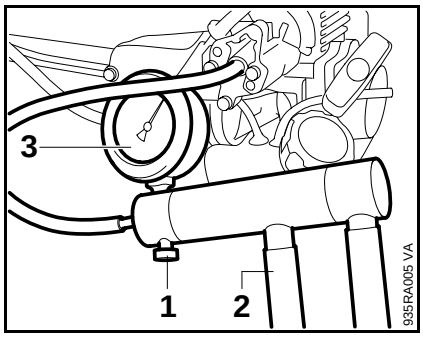
Reassemble all other parts in the reverse sequence.

The oil seals usually fail in the presence of a negative pressure. Due to the absence of internal counterpressure, the sealing lip lifts off the crankshaft during the piston's intake stroke.

This damage can be detected by testing with a vacuum pump. The preparations required are the same as for testing with excess pressure, 🕮 5.4.2.



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



- Connect vent screw (1) to the pump cylinder.
- Actuate lever (2) until the reading on the pressure gauge (3) shows a negative pressure of 50 kPa (0.5 bar).

The oil seals are in perfect working order if the indicated vacuum remains constant or if the pressure does not rise to more than 30 kPa (0.3 bar) within 20 seconds.
If the vacuum in the crankcase decreases further, the oil seals must be replaced.

– After testing, open the vent screw and remove the hose.

– Remove the test flange.

– Unscrew the muffler screws, see service manuals "Series 4137 Components".

– Pull out the sealing plate and retighten the two upper screws on the muffler.

– Insert and tighten the lower crankcase screw on the muffler.

– Install the carburetor, see service manuals "Series 4137 Components".

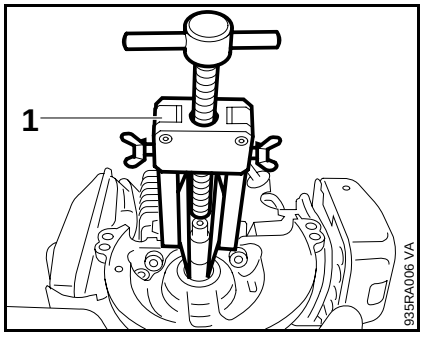
Reassemble all other parts in the reverse sequence.

The engine need not be dismantled if only the oil seals have to be replaced.

Clutch side

– Remove the flywheel, 🕮 6.3.

– Tap the oil seal lightly with a suitable tube or punch to force it out of its seat.



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

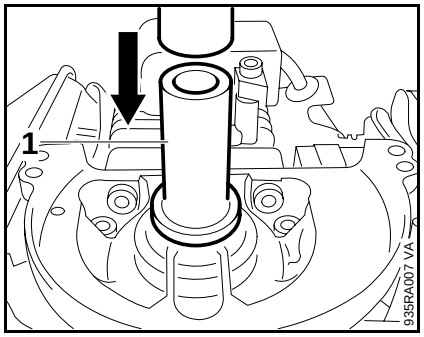
– Clamp the arms.

– Pull out the oil seal.

The crankshaft stub must not be damaged!

– Clean the sealing surface with STIHL degreasant, 🕮 8.

– Grease the sealing lips of the oil seal, 🕮 8.

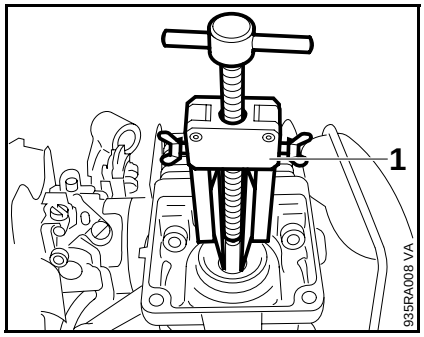


– Slide the oil seal over the crankshaft stub with the open side facing the crankcase.

● Press the oil seal towards the outside of the crankcase with press sleeve (1) 4112 893 2401.

● Fit the flywheel, 🕮 6.3.

Reassemble all other parts in the reverse sequence.



Starter side

– Remove the carrier, see service manuals "Series 4137 Components".

– Tap the oil seal lightly with a suitable tube or punch to force it out of its seat.

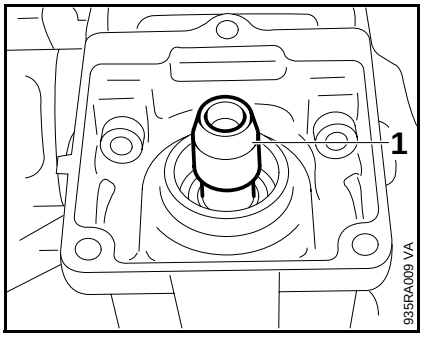
● Apply puller (1) 5910 890 4400 (jaws 0000 893 3706 with profile No. 3.1).

– Clamp the arms.

– Pull out the oil seal.

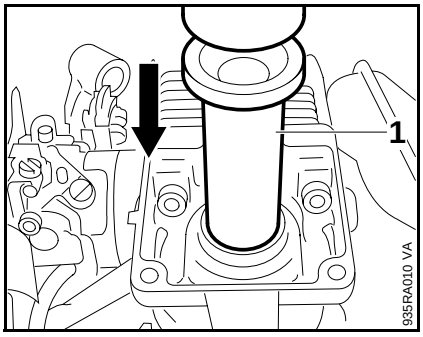
The crankshaft stub must not be damaged!

– Clean the sealing surface with STIHL degreasant, 🕮 8.



– Grease the sealing lips of the oil seal, 🕮 8.

● Slip installing sleeve (1) 4112 893 2400 over the end of the crankshaft.



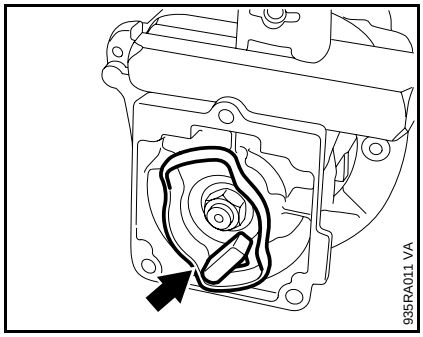
– Slide the oil seal over the installing sleeve with the open side facing the crankcase.

● Press the oil seal towards the outside of the crankcase with press sleeve (1) 1115 893 4600.

– Remove the installing sleeve.

– Fit the carrier, see service manuals "Series 4137 Components".

Reassemble all other parts in the reverse sequence.

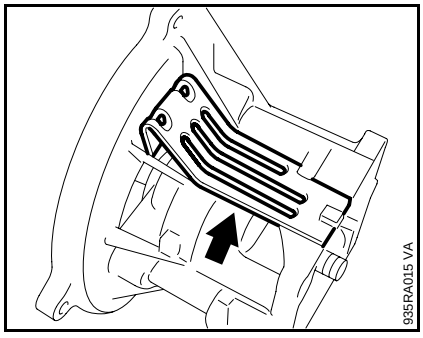


● Unscrew the carrier (arrow) from the crankshaft stub, see service manuals "Series 4137 Components".

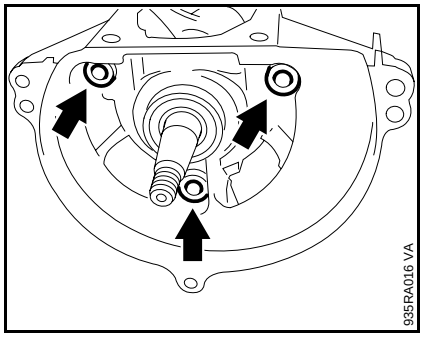
– Remove the flywheel, 🕮 6.3.

– Remove the cylinder, 🕮 5.1.

– Remove the piston, 🕮 5.1.



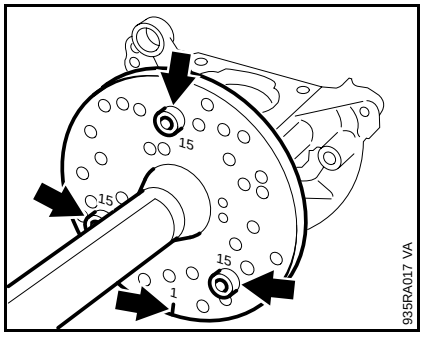
● Unhook the guard (arrow) from the housing.



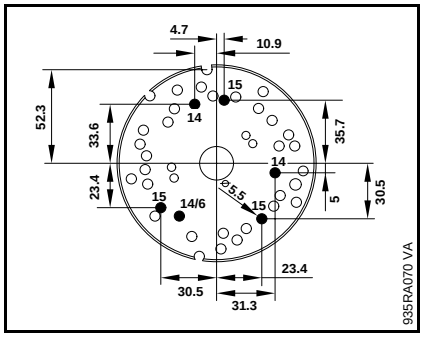
● Take out the screws holding the two halves of the crankcase (arrows).

– Partly unscrew the spindle of installing tool ZS 5910 007 2220 (left-hand thread).

– Hold installing tool ZS against the housing half on the starter side so that the notch marked "1" is at the bottom.

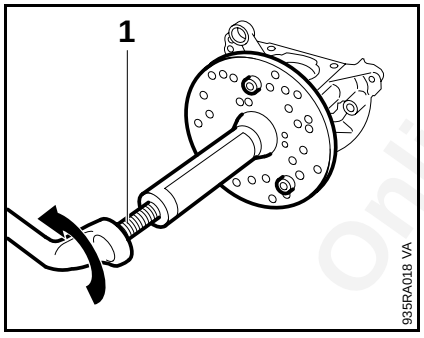


● Insert screws (arrows) for the starter cover in the holes marked "15" and screw them in until they rest against the perforated disk.

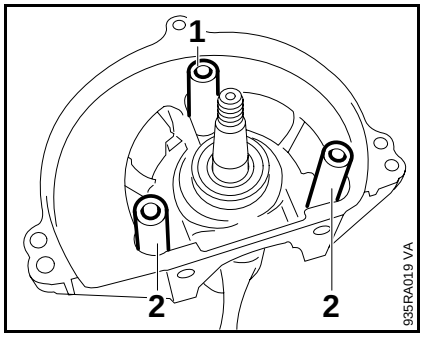


Installing devices without holes "14" and "15" can be modified as illustrated above.

The diagram shows the perforated disk from below.

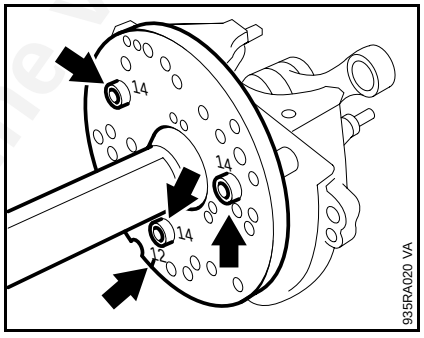


- Turn the spindle (1) counterclockwise until the crankshaft is forced out of the deep groove ball bearing. This also separates the two housing halves.



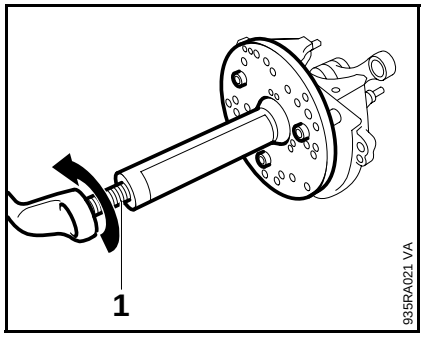
- Place sleeve (1) 5910 893 1701 (30 mm) and sleeves (2) 5910 893 1702 (35 mm) over the holes on the clutch side of the housing halves.

– Position installing tool ZS over the sleeves so that the notch marked "12" is at the bottom.

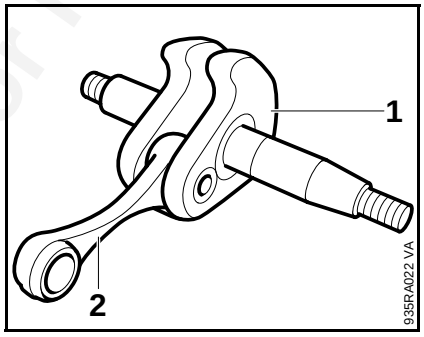


- Insert three screws M5x72 in the holes marked "14" (arrows).

– Slide washers onto the screws and screw on nuts.

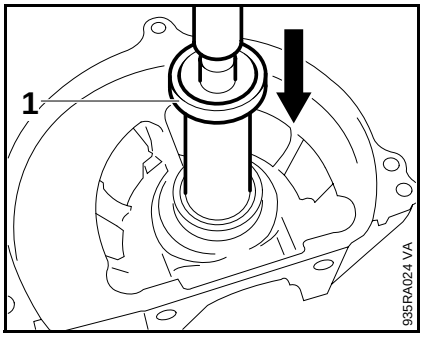


- Turn the spindle (1) counterclockwise until the crankshaft has been forced out of the deep groove ball bearing.

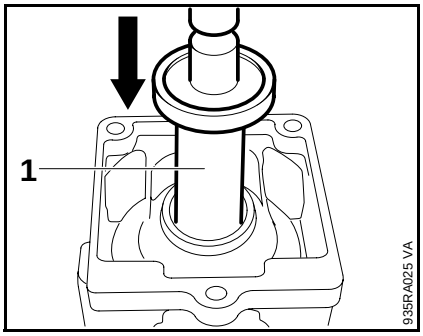


- The crankshaft (1), connecting rod (2) and needle bearing form an inseparable unit which must always be replaced as a complete part.

When replacing the crankshaft, the deep groove ball bearings and oil seals must also be replaced. If necessary, the oil seals must be driven out of the housing with a punch for this purpose.



- Force the deep groove ball bearing on the flywheel side out towards the inside of the crankcase with press arbor (1) 4119 893 7200.



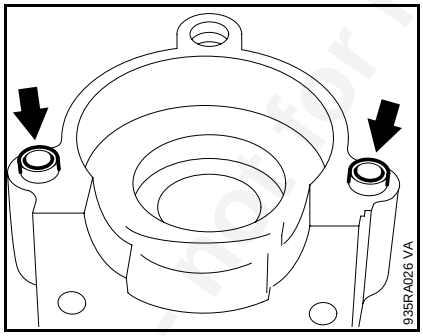
- Force the deep groove ball bearing on the starter side out towards the inside of the crankcase with press arbor (1) 4119 893 7200.

– Examine the crankcase halves for cracks and fractures; replace if necessary.

If the crankcase is damaged, each half of the crankcase can be replaced separately.

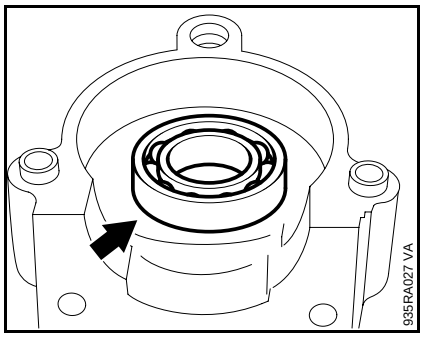
New crankcase halves are supplied with built-in deep groove ball bearings.

If the old crankcase is reused, any remaining pieces of old seals must be removed and the sealing surfaces cleaned. The sealing surfaces must be absolutely clean in order to ensure a perfect seal.



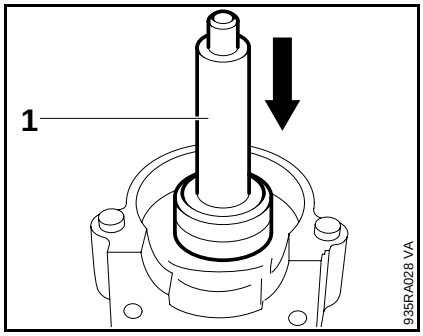
- Centering sleeves (arrows) must be present. If not, they must be driven into the housing half.

– Heat the housing half on the starter side to approx. 120 °C around the deep groove ball bearing seat.



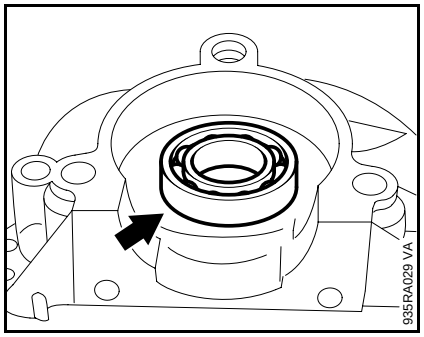
- Press the deep groove ball bearing as far as possible (arrow) into the housing half by hand, towards the outside of the crankcase.

Do not waste time here, for the deep groove ball bearing heats up immediately and expands.



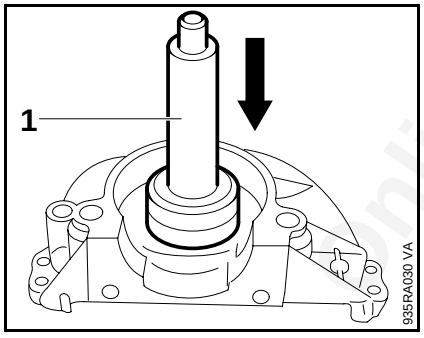
- If the housing half on the starter side cannot be heated up, press the deep groove ball bearing in as far as possible towards the outside of the crankcase with press arbor (1) 4119 893 7200.

– Heat the housing half on the flywheel side to approx. 120 °C around the deep groove ball bearing seat.

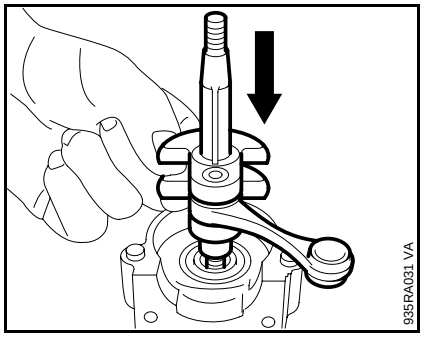


- Press the deep groove ball bearing as far as possible (arrow) into the housing half by hand, towards the outside of the crankcase.

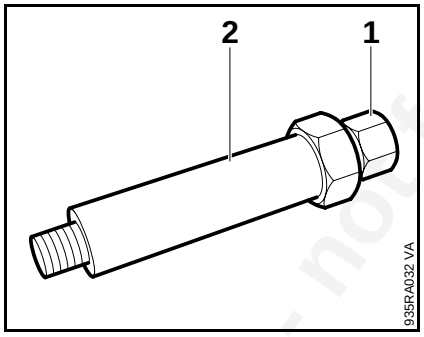
Do not waste time here, for the deep groove ball bearing heats up immediately and expands.



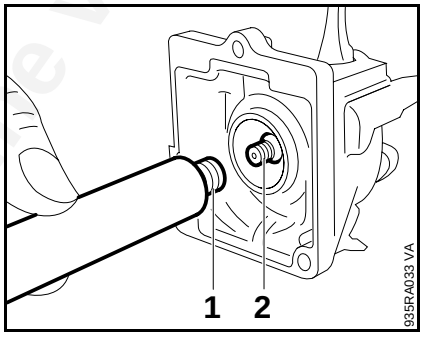
- If the housing half on the clutch side cannot be heated up, press the deep groove ball bearing in as far as possible towards the outside of the crankcase with press arbor (1) 4119 893 7200.



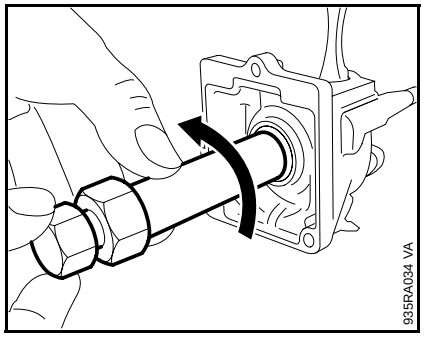
- Insert the shorter stub end of the crankshaft in the deep groove ball bearing on the starter side.



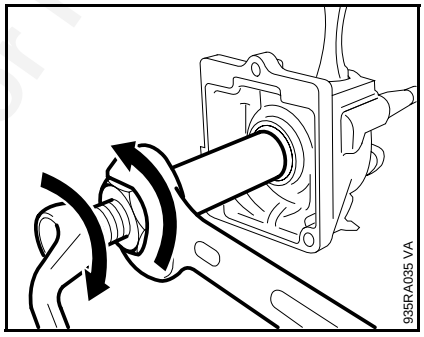
- Screw the spindle (1) of installing tool 5910 890 2202 into the sleeve (2) completely (left-hand thread).



- Screw the spindle (1) of the installing tool clockwise onto the crankshaft stub (2) as far as possible.



- Steady the spindle of the installing tool and turn the sleeve counterclockwise until it rests against the deep groove ball bearing.



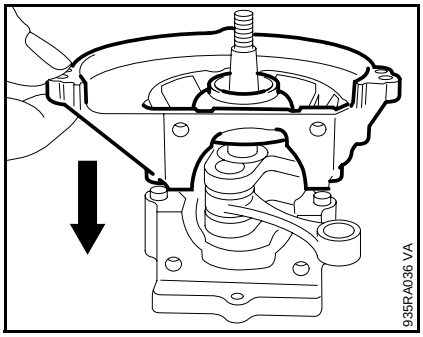
- Steady the sleeve and turn the spindle of the installing tool clockwise until the crankshaft rests against the deep groove ball bearing.

The connecting rod (without piston) must point towards the cylinder flange while pulling in the crankshaft.

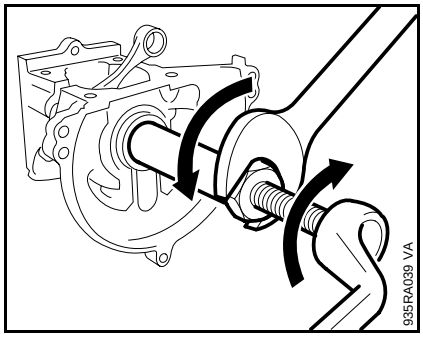
– Steady the crankshaft and turn the spindle counterclockwise to unscrew it from the end of the crankshaft.

– Apply a thin film of sealant to the sealing surface of the crankcase half, 🕮 8.

Important!
Note the manufacturer's directions.



- Guide the housing half on the flywheel side over the end of the crankshaft.

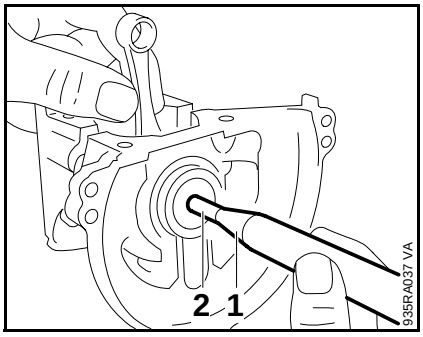


- Steady the sleeve and turn the spindle clockwise until the two housing halves meet.

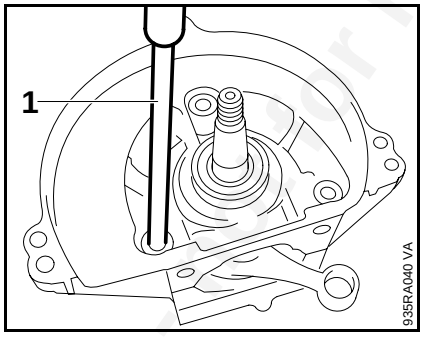
– Remove the installing tool.

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

Troubleshooting on the ignition system should always begin at the spark plug, 🕮 4.2.



- Steady the crankshaft and screw the spindle (1) of the installing tool clockwise as far as possible onto the end of the crankshaft (2).



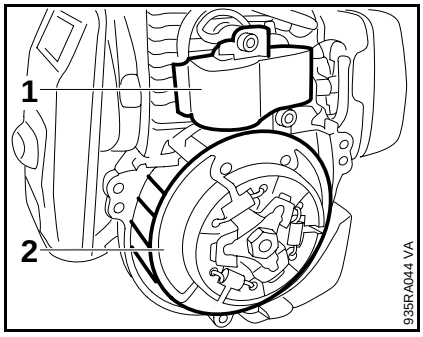
- Insert the screws in the crankcase and tighten them down with bit (1) 0812 542 2104, 🕮 3.3.

– Lubricate the sealing lips of the oil seal with grease, 🕮 8.

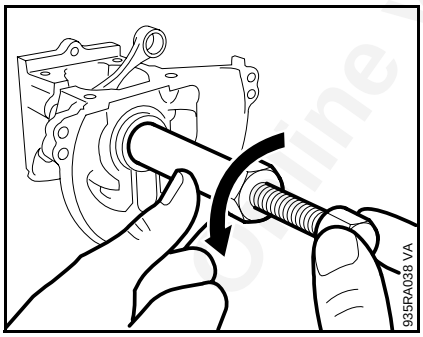
– Install the oil seals, 🕮 5.5.

Important!
The crankshaft must turn easily, without resistance. If necessary, repeat the installation procedure and ensure that the parts are installed without tension.

Reassemble all other parts in the reverse sequence.

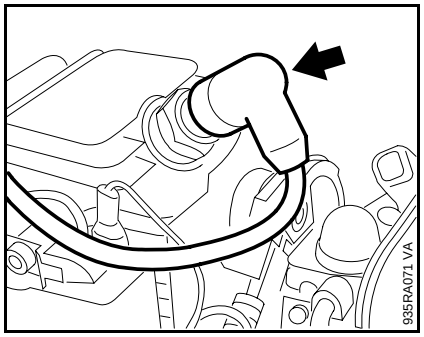


The capacitive (breakerless) ignition system essentially consists of an ignition module (1) and flywheel (2).



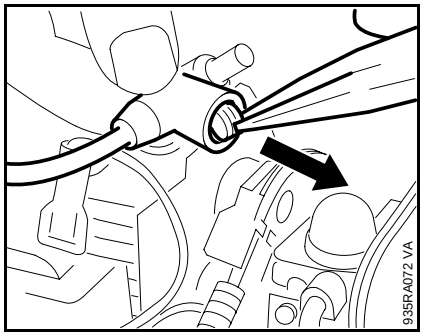
- Steady the spindle and turn the sleeve counterclockwise until it rests against the deep groove ball bearing.

6.1 Spark Plug Boot



– Remove the shroud, see service manuals "Series 4137 Components".

● Unplug the spark plug boot (arrow).



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

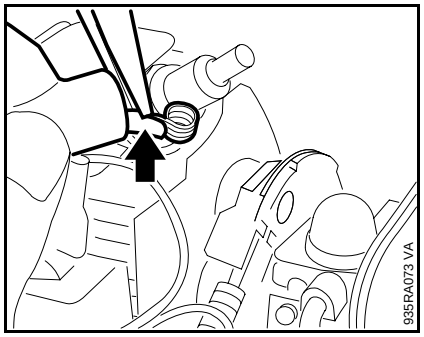
– Unhook the leg spring from the ignition lead.

– Pull the spark plug boot off the ignition lead.

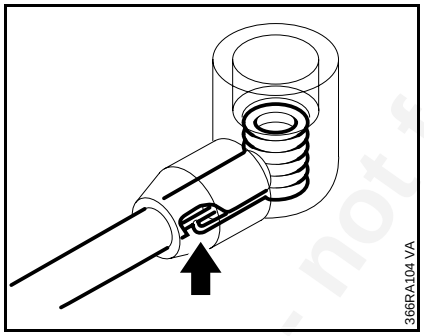
– Coat the end of the ignition lead with oil (approx. 20 mm).

– Refit the spark plug boot.

– Grasp the ignition lead with pliers and pull it out of the spark plug boot.



● Pinch the hook of the leg spring (arrow) into the centre of the lead, i.e. about 5 mm from the end of the lead.



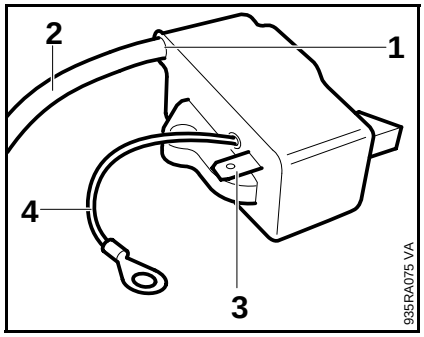
● Pull the lead back into the boot so that the leg spring locates properly inside it.

Check if spark plug has a detachable adapter nut (arrow). If so, make sure it is properly fitted and firmly tightened.

– Plug the spark plug boot onto the spark plug.

– Refit the shroud, see service manuals "Series 4137 Components".

6.2 Ignition Module



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

1. High voltage output (1) with ignition lead (2)
2. Connector tab (3) for the short-circuit wire
3. Ground wire (4) if installed

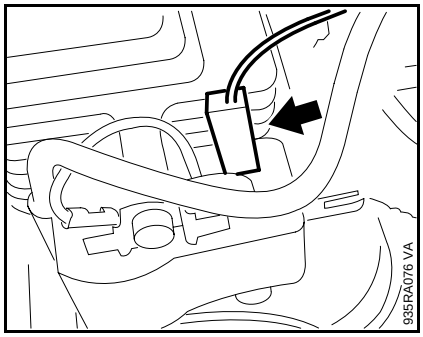
Accurate testing of the ignition module is only possible with special test equipment. For this reason it is only necessary to carry out a spark test in the workshop. A new ignition module must be installed if no ignition spark is obtained (after checking that wiring and stop switch are in good condition).

6.2.1 Ignition Timing

Ignition timing is not adjustable.

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

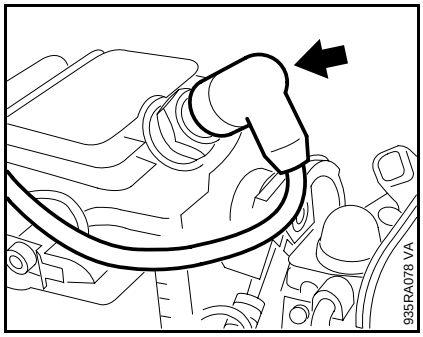
6.2.2 Removing and Installing



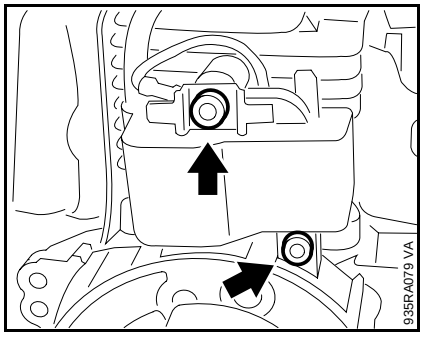
– Remove starter mechanism or fan housing with starter mechanism, see service manuals "Series 4137 Components".

- Unplug (arrow) short-circuit wire from ignition module.

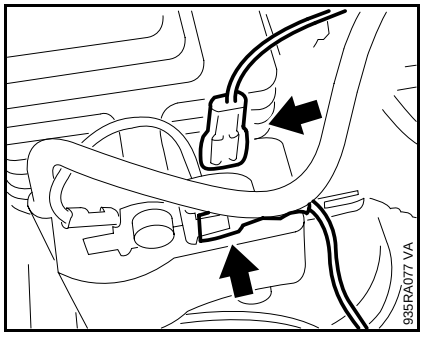
.



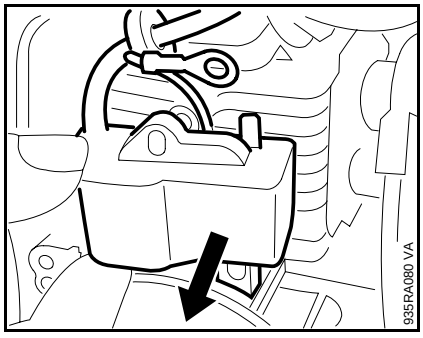
- Disconnect the spark plug boot (arrow).



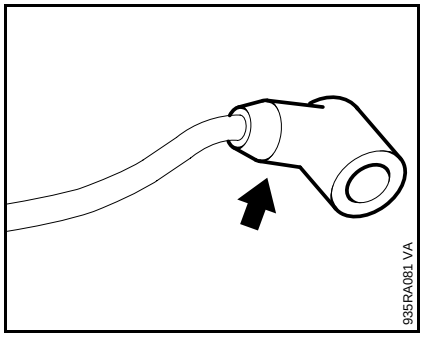
- Remove screws with washers (arrows).



- On units with two short-circuit wires, unplug both (arrows) from the ignition module and from the terminal socket.

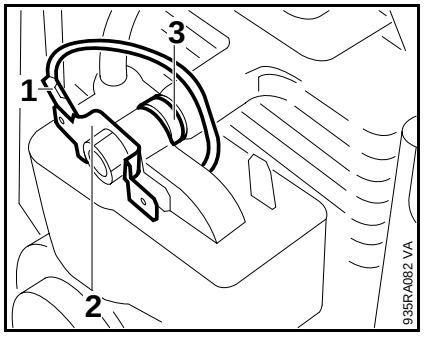


- Remove the ignition module.



● Dismantle the spark plug boot (arrow), 🕮 6.1.

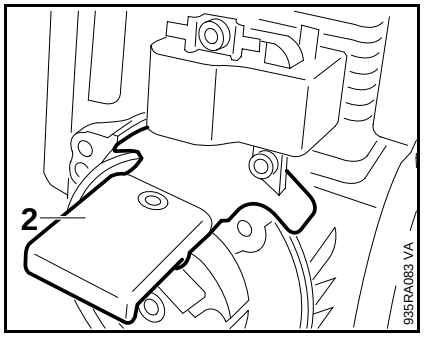
The ignition lead is integrally moulded into the ignition module.



– Position the ignition module and loosely turn in the screws.

● Secure the ground wire (1) and the connector tab (2) for the short-circuit wire to the upper screw as well, if installed.

In older models, a plastic disk (3) may have been installed on the upper and lower screws between cylinder and ignition module. This disk must be refitted if necessary when reassembling the parts.



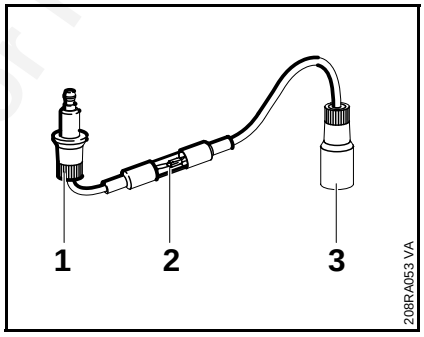
● Slide the setting gauge (1) 4118 890 6401 between the arms of the ignition module and the magnetic poles of the flywheel.

– Press the ignition module against the setting gauge and tighten the screws, 🕮 3.3.

Reassemble all other parts in the reverse sequence.

Use the ZAT 4 ignition tester 5910 850 4503 or ZAT 3 ignition tester 5910 850 4520 to test correct functioning of the ignition module.

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



Using the ZAT 4 ignition tester 5910 850 4503

– Before starting the test, install a new spark plug in the cylinder and tighten it down firmly, 🕮 3.3.

● Pull the boot off the spark plug and connect it the input terminal (1). Push the tester's output terminal (3) onto the spark plug.

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

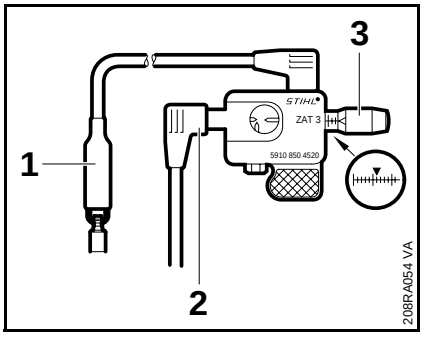
The ignition system is OK if a spark is seen. If the result is not clear, repeat the test with ZAT 3 or proceed in accordance with troubleshooting chart, 🕮 6.4.

If no spark if visible in the window (2), proceed as follows:

– Inspect cable harness and start-stop switch for signs of damage, see service manuals "Series 4137 Components".

– Examine leg spring, 🕮 6.1.

– Test ignition module in accordance with troubleshooting chart, 🕮 6.4.



Using ZAT 3 ignition system tester 5910 850 4520

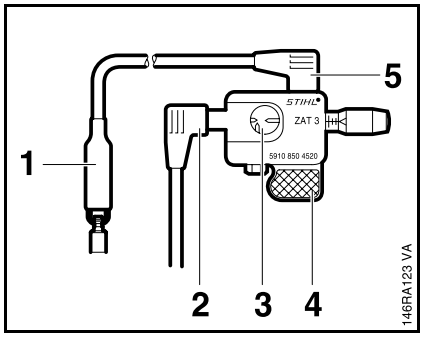
The ZAT 3 ignition tester 5910 850 4520 must used to test the series spark gap.

– Before starting the test, install a new spark plug in the cylinder and tighten it down firmly, 🕮 3.3

- Pull the boot off the spark plug and connect it to terminal (2).

- Attach ground terminal (1) to spark plug.

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



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

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

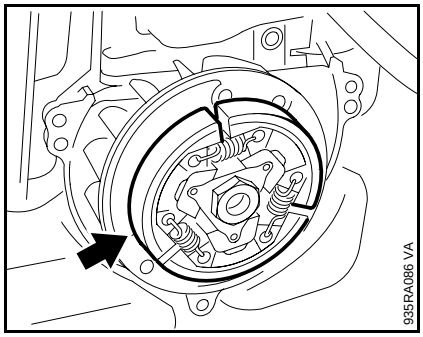
If a spark is visible, the ignition system is in order.

If no spark if visible in the window (3), proceed as follows:

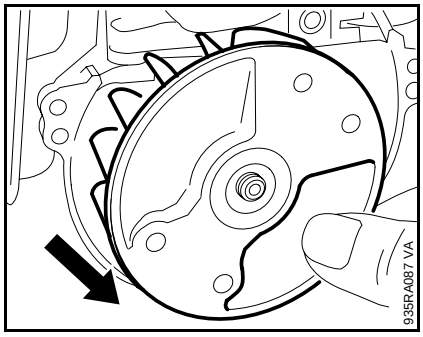
– Inspect cable harness and slide control for signs of damage, see service manuals "Series 4137 Components".

– Examine leg spring, 🕮 6.1.

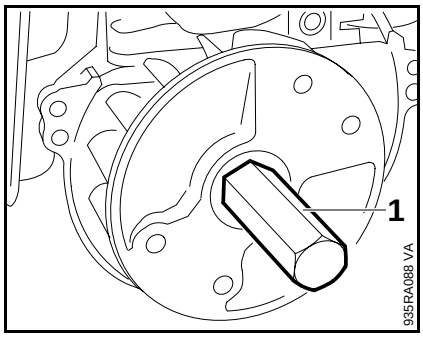
– Test ignition module in accordance with troubleshooting chart, 🕮 6.4.



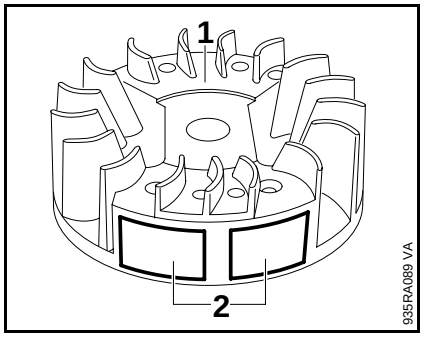
- Dismantle clutch, see service manuals "Series 4137 Components".



- Pull off the flywheel.



If the flywheel cannot be removed by hand, screw on the puller (1) 4133 893 0800, tap the face of the puller lightly and remove the flywheel.



There must not be any sign of damage on the flywheel (1) and magnetic poles (2), otherwise the flywheel must be replaced.

Assemble parts in the reverse sequence.

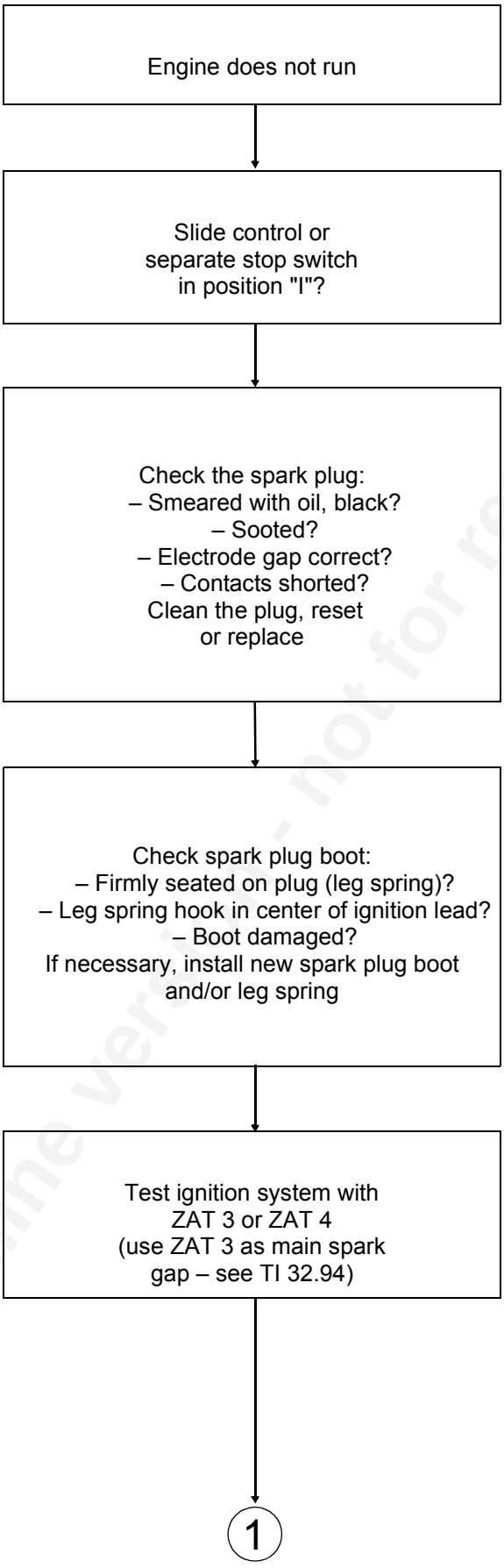
Degrease the crankshaft stub and bore of the flywheel hub with STIHL degreasant, 🕮 8.

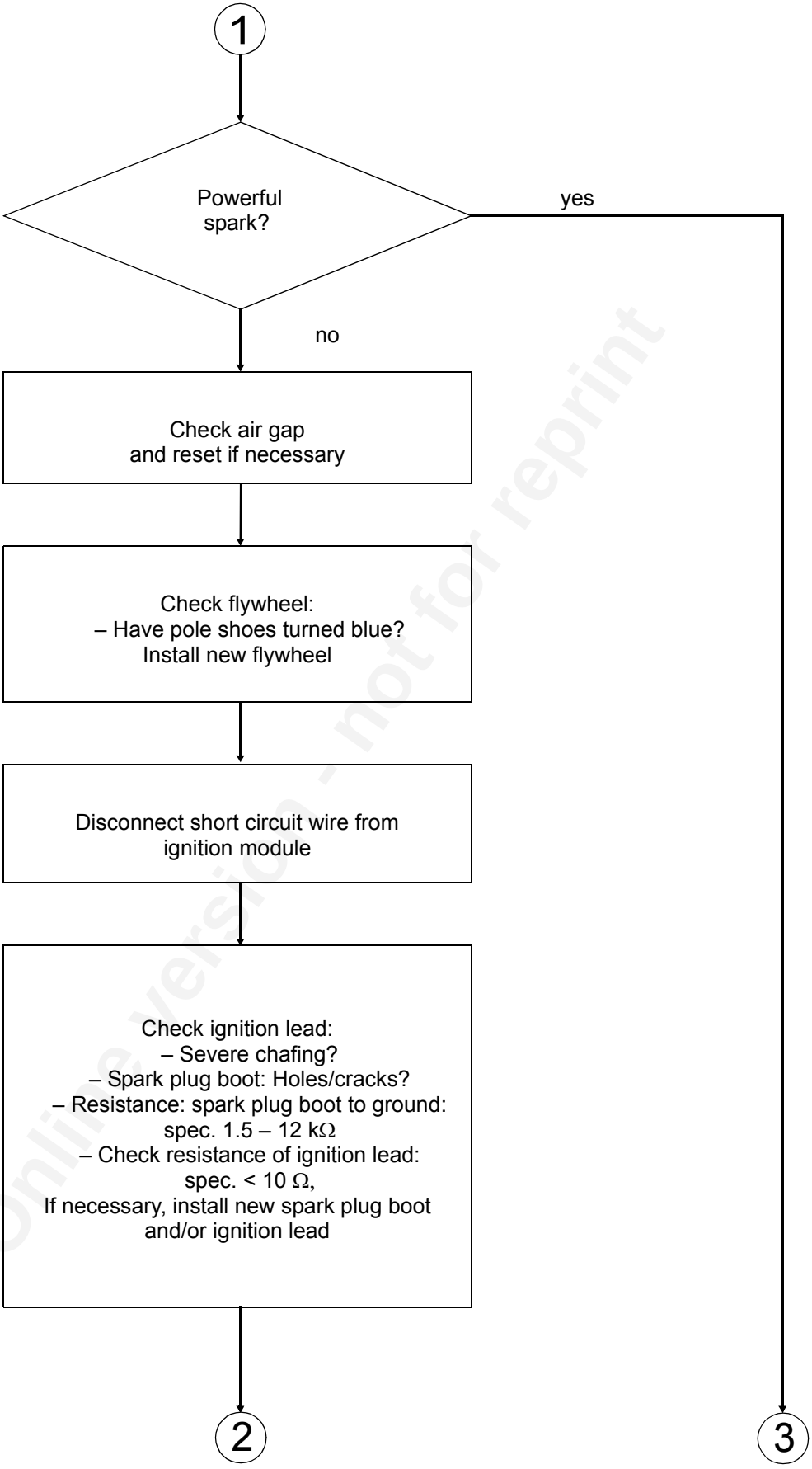
– Position the flywheel.

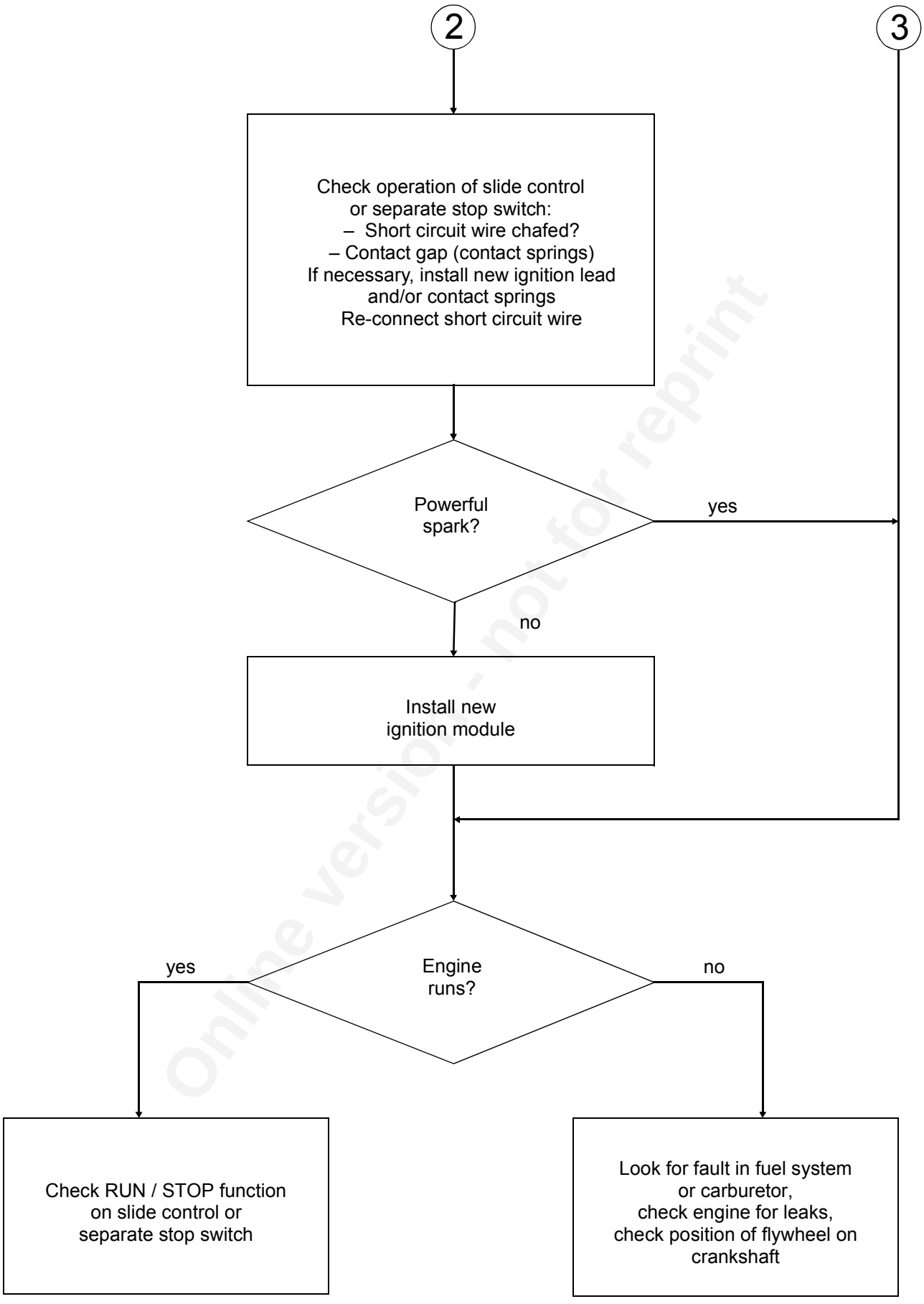
Note the position of the groove.

– Install the clutch,
see service manuals
"Series 4137 Components".

Reassemble all other parts in the reverse sequence.







7. Special Servicing Tools

No.	Part Name	Part No.	Application	Remarks
1	Puller	5910 890 4400	Removing oil seals	
2	Jaws (with profile No. 3.1 + 4)	0000 893 3706	Extracting oil seal(s)	
3	Carburetor and crankcase tester	1106 850 2905	Testing crankcase and carburetor for leaks	
4	Vacuum pump	0000 850 3501	Testing crankcase for leaks, testing the tank vent	
5	Sealing plate	0000 850 8106	Sealing exhaust port	
6	Flange	1128 850 4200	Leakage test	
7	Installing sleeve	4112 893 2400	Protecting oil seal (starter side)	
8	Installing sleeve	1115 893 4600	Installing oil seal (starter side)	
9	Press sleeve	4112 893 2401	Installing oil seal (clutch side)	
10	Setting gauge	4118 890 6401	Adjusting air gap between ignition module and flywheel	
11	Screwdriver Q - T 27 x 150	5910 890 2400	For all IS screws	1)
12	Torque wrench	5910 890 0301	Screw connections (0.5 to 18 Nm)	2) 3)
13	Torque wrench	5910 890 0311	Screw connections (6 to 80 Nm)	2) 4)
14	Assembly stand	5910 890 3100	For mounting FS and FR models	
15	Clamp	5910 890 8800	Clamp for power tools with shaft (for installation on chainsaw assembly block 5910 890 3100)	
16	Assembly drift	1114 893 4700	Installing piston pin	
17	Wooden assembly block	1108 893 4800	Mounting piston	
18	Collar clamp	0000 893 2600	Tensioning piston rings	
19	Installing tool 8	5910 890 2208	Fitting hookless snap rings in piston	
20	Bit T 27 x 125	0812 542 2104	Screwing internal star screws in or out with electric or pneumatically driven screwdrivers, tightening with torque wrench	
21	Sleeve	5910 893 1701		
22	Sleeve	5910 893 1702		

Remarks:

1) May only be used to unscrew DG and P screws.
2) DG and P screws must be tightened with a torque wrench.
3) Torque wrench 5910 890 0302 with visual / acoustic signalling device may be used instead.
4) Torque wrench 5910 890 0312 with visual / acoustic signalling device may be used instead.

No.	Part Name	Part No.	Application	Remarks
23	Press arbor	4119 893 7200	Pressing deep groove ball bearings in and out	
24	Installing tool	5910 890 2202	Installing crankshaft	
25	Set of ZS installing tools	5910 007 2220	Separating the two crankcase halves	
26	ZAT 4 ignition tester	5910 850 4503	Testing the ignition system	
27	ZAT 3 ignition tester	5910 850 4520	Testing the series spark gap	
28	Puller	4133 893 0800	Removing flywheel	

8. Servicing accessories

No.	Part Name	Part No.	Application
1	Grease (370 g tube)	0781 120 1111	Oil seals
2	STIHL degreasant		Cleaning the crankshaft stub, cleaning the flywheel hub
4	Dirko sealant	0783 830 2120	For sealing the engine pan/cylinder

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