

FS 75
Contents

1.	Introduction	2	6.	Rewind starter	27	9.	AV system	41
2.	Specifications	3	6.1	General	27	9.1	Repair	41
2.1	Engine	3	6.2	Starter cover	27			
2.2	Fuel system	3	6.3	Rewind spring	28			
2.3	Ignition system	4	6.3.1	Replacement	28	10.	Shaft	43
2.4	Gearbox	4	6.3.2	Tensioning	28			
2.5	Cutting attachment	5	6.4	Starter rope (ElastoStart)	29	10.1	Cowhorn handle	43
2.6	Special accessories	6	6.5	Starter grip (ElastoStart)	30	10.2	Looped handle	43
2.6.1	For the user	6	6.6	Starter carrier/pawl	30	10.3	Drive shaft/insulating tube	45
2.6.2	For service	6				10.4	Protective tube	46
2.7	Tightening torques	7						
			7.	Throttle control	31	11.	Cutting tool drive	47
3.	Clutch	9	7.1	Throttle trigger/interlock lever (throttle cable with one short-circuit wire)	31	11.1	Bearing housing (FS 75)	47
3.1	Disassembly	9	7.2	Throttle cable with one short-circuit wire	32	11.2	Gearbox (FS 80, 85)	47
3.2	Assembly	10	7.3	Contact spring/detent spring in control handle (throttle cable with one short-circuit wire)	33	11.3	Gearbox (FC 75)	48
			7.4	Throttle trigger/interlock lever (throttle cable with two short-circuit wires)	33	11.4	Clutch drum	50
4.	Engine	11	7.5	Throttle cable with two short-circuit wires	34	12.	Cutting device (HL 75)	51
4.1	Muffler / spark arresting screen	11	7.6	Adjusting the throttle cable	34	12.1	Gearbox	51
4.2	Leakage testing	11				12.2	Cutting blade	51
4.2.1	Preparations	12				12.3	Gearwheel	53
4.2.2	Pressure test	12						
4.2.3	Vacuum test	13						
4.3	Oil seals	14				13.	Special service tools and aids	55
4.4	Exposing the cylinder/ spacer flange	15				13.1	Special tools	55
4.5	Cylinder and piston	16	8.	Fuel system	35	13.2	Servicing aids	57
4.5.1	Removal	16	8.1	Air filter	35			
4.5.2	Installation	16	8.2	Carburetor	35			
4.6	Piston rings	18	8.2.1	Leakage testing	35			
4.7	Crankcase	18	8.2.2	Removal and installation	36			
4.7.1	Removing the crank- shaft	18	8.2.3	Adjustment (two adjusting screws)	37			
4.7.2	Installing the crankshaft	20	8.2.4	Adjustment (one adjusting screw)	38			
			8.3	Tank vent	39			
5.	Ignition system	23	8.4	Pickup body	39			
5.1	Spark plug terminal	23	8.5	Fuel tank/hoses	40			
5.2	Ignition module	24						
5.2.1	Ignition timing	24						
5.2.2	Removal and installa- tion	25						
5.3	Flywheel	26						

STIHL®

© 1996, Andreas Stihl AG & Co., Waiblingen

1. Introduction

This Repair Manual contains a detailed description of all the typical repair work required for these series of power tools.

Repairs to be undertaken on standard parts and assemblies which are used in several STIHL power tool series are described in separate repair manuals.

Attention is drawn to these instructions at the relevant points in this manual.

Since the brushcutters FS 75, FS 80, FS 85, FC 75 and the hedge trimmer HL 75 are almost identical, the descriptions and servicing procedures in this manual generally apply to all five models. Differences are described in detail.

The illustrated spare parts lists should also be consulted when carrying out repairs, for they show the installed position and sequence of assembly for the individual parts.

The latest edition of the respective parts lists should always be used when determining the part numbers of the required replacement parts. Microfilms are more up-to-date than printed spare parts lists!

Faults in the machine may be due to several causes.

Note the "Summary of faults" for all function groups in the manual "Troubleshooting, standard repairs".

Note the "Technical Information" sheets, for they describe technical changes implemented after publication of this Repair Manual. The Technical Information sheets supplement the parts list until a new edition is published.

The special tools mentioned in the text are listed in the last chapter of this manual. The tools can also be identified in the manual of "STIHL tools" on the basis of their part number.

The manual lists all the tools supplied by STIHL.

The following graphic symbols are used in the text and illustrations in order to make this manual easier to use and understand:

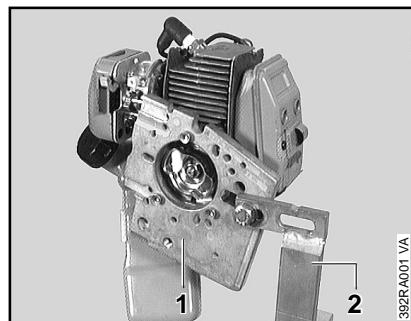
In the text:

- = Activity to be carried out; corresponds to the activity in the picture above the text.
- = Activity to be carried out, but is not shown in the picture above the text.

In the illustrations:

- = Short arrow indicating: Note
- = Long arrow indicating: Go to

Repair Manuals and Technical Information sheets should always be on hand wherever repairs are carried out. They must not be passed on to third parties.



Repairs can be carried out more easily by mounting the power unit on the assembly stand (2) 5910 890 3100 with the clamping plate (1) 5910 890 2100.

The power unit can then be swivelled into the most suitable working position, leaving both hands free for the work itself.

Secured with M5 x 30 screws after disassembling the protective tube, shroud, starter cover and removing the fuel tank.

Always use original STIHL replacement parts.

Original STIHL parts can be identified by the STIHL part number, the **STIHL** logo and the STIHL parts symbol

The symbol may appear alone on small parts.

2. Specifications

2.1 Engine	STIHL single-cylinder two-stroke engine with special impregnated cylinder bore
Displacement:	25.4 ccm
Bore:	34 mm
Piston stroke:	28 mm
Power output to ISO 8893:	0.9 kW (1.2 HP) at 8000 rpm
Max. permissible engine speed without cutting blades (cut-off speed):	10500 rpm (\pm 000 rpm)
Max. speed of the output shaft (nominal value, gear head):	8500 rpm (FS 75, FC 75) 7500 rpm (FS 80, 85)
Idle speed:	2800 rpm
Bearings:	Heavy-duty deep groove ball bearings for crankshaft; needle cages on small and big ends
Big end diameter:	8 mm
Conrod length:	52.5 mm
Rewind starter:	ElastoStart
Pawls:	Single pawl system
Reserve pull on rope rotor:	At least turn
Starter rope:	Dia. 3.0 mm, 800 mm long
Clutch:	Centrifugal clutch without linings
Diameter:	66.5 mm
Clutch engages at:	3700 rpm
Crankcase leakage test at gauge pressure:	0.5 bar
under vacuum:	0.5 bar
2.2 Fuel system	Diaphragm carburetor with one or two adjusting screws
Carburetor:	
Standard setting for carburetors with two adjusting screws	
High speed adjusting screw H:	Back off approx. 1 turn
Low speed adjusting screw L:	Back off approx. 1 turn (standard setting)
Carburetor leakage test at gauge pressure:	0.8 bar
Function of tank vent	
at gauge pressure:	0.5 bar
under vacuum:	0.1 bar
Fuel tank capacity:	0.44 l (440 ccm)
Octane number:	At least 90 RON
Fuel mixture:	Regular brandname petrol
Mix ratio:	Brandname two-stroke engine oil 1:50 when using STIHL 1:50 two-stroke engine oil 1:25 when using all other brandname two-stroke engine oils
Air filter:	Foam and felt elements

2.3	Ignition system	Type:	Transistorized (breakerless) magneto ignition with integrated ballast
		Air gap:	0.2 ... 0.5 mm
		Ignition timing:	1.55 ... 2.25 mm before TDC at $n = 8000$ rpm
		Spark plug (suppressed):	Bosch WSR 6F, NGK BPMR 7 A or Champion RCJ 6Y
		Electrode gap:	0.5 mm
		Spark plug thread:	M14 x 1.25
		Length of thread:	9.5 mm
2.4	Gearbox *	Type:	Helical-toothed bevel gears
		Gear ratio:	1.4 ** 1.24 ***
		Bearing:	Deep groove ball bearing
		Lubrication:	STIHL gear lubricant

* FS 75 only has a bearing housing

** FS 80, 85

*** FC 75

2.5 Cutting attachment *

FS 75	FS 80	FS 85	FC 75
-------	-------	-------	-------

STIHL "Supercut 10-1"
mowing head

STIHL "Supercut 20-2" mowing head	STIHL "Supercut 20-2" mowing head
--------------------------------------	--------------------------------------

STIHL "Autocut 11-2"
mowing head

STIHL "Autocut 21-2" mowing head	STIHL "Autocut 30-2" mowing head
-------------------------------------	-------------------------------------

STIHL "Autocut 30-2" mowing head	STIHL "Polymatic 30-2" mowing head
-------------------------------------	---------------------------------------

STIHL "Polymatic 30-2" mowing head	STIHL "Polymatic 30-2" mowing head
---------------------------------------	---------------------------------------

STIHL "Polycut 10-3"
mowing head

STIHL "Polycut 20-3" mowing head	STIHL "Polycut 20-3" mowing head
-------------------------------------	-------------------------------------

Grass cutting blade 230-4 **	Grass cutting blade 230-4 **
---------------------------------	---------------------------------

Grass cutting blade 230-8 **	Grass cutting blade 230-8 **
---------------------------------	---------------------------------

Brush knife 250-3 **

Circular saw blade 200 *** (scratcher-tooth)

Circular saw blade 200 *** (chisel-tooth)
--

Blade

* Some cutting attachments may not be available in some countries on account of the different conditions prevailing in each country.

** Only approved for brushcutters with cowhorn handle or looped handle **with** U-bar, together with the guard 4119 713 4500.

*** Only approved for brushcutters with cowhorn handle.

2.6 Special accessories

2.6.1 For the user

Safety harness	
Safety goggles	
Bar scabbard for metal cutting tools	
STIHL multi-purpose grease (80 g tube)	0781 120 1109
STIHL gear lubricant (80 g tube)	0781 120 1117

2.6.2 For service

Carburetor parts kit for Walbro carburetor WT 447	4133 007 1060
Carburetor parts kit for Zama carburetor C1Q-S28A	4227 007 1060
Gasket panel (DIN A3)	0457 281 4003

2.7 Tightening torques

DG and P-type (Plastoform) screws are used in thermoplastic and alloyed materials. These screws cut a thread in the material when they are screwed in for the first time. The material is permanently deformed. The screws can be removed and refitted as often as desired. The strength of the screw connection is not impaired if the specified tightening torque is maintained.

It is therefore **essential to use a torque wrench**.

Fastener	Thread size	For component	Tightening torque (Nm)	Remarks
Spline screw	IS-M5x25	Crankcase	9.5	
Spline screw	IS-M5x25	Spacer flange/cylinder	5.5	1)
Spline screw	IS-DG 5x24	Cylinder/crankcase	9.5	
Spline screw	IS-M5x16	Muffler/cylinder	9.5	
Spline screw	IS-M5x16	Muffler/crankcase	9.5	
Spline screw	IS-M5x16	Tensioner/spacer flange	3.5	
Spline screw	IS-M5x16	Fan housing/crankcase	5.5	
Spline screw	IS-M5x16	Starter/crankcase	5.5	
Spline screw	IS-M4x20	Ignition module/cylinder	4.5	
Spline screw	IS-M5x16	Shroud/fan housing	3.5	
Spline screw	IS-M5x16	Shroud/starter cover	3.5	
	M8	Clutch	21.0	
	M8	Starter carrier	20.0	
	M14x1.25	Spark plug	20.0	
Plastoform screw	IS-P5.5x12	Rope rotor in starter cover	3.5	
Spline screw	IS-M5x16	AV sleeve (clamping screw)	5.5	
Spline screw	IS-DG5x12	AV sleeve/protective tube	2.5	
Nut	M5	Filter housing/carburetor	4.0	
Spline screw	IS-M5x18	Clamping collar/bearing housing	6.5	2)
Self-tapping screw	IS-B3.5x9.5	Bearing housing/protective tube	3.0	2)
Spline screw	IS-M5x33	Clamping collar/guard	4.5	2)
Stud bolt		Detent spring/slide control	1.0	
Spline screw	IS-M5x16	Control handle, clamping collar/protective tube (looped handle)	3.5	2)
Spline screw	IS-M6x50	Looped handle/protective tube	3.5	2) 4)
Spline screw	IS-DG5x16	Looped handle/handle hose	2.5	2) 4)
Spline screw	IS-M6x25	Bracket, looped handle/protective tube	4.5	3)
Spline screw	IS-M4x19	Control handle/handle mouldings (looped handle)	1.0	
Spline screw	IS-M5x16	Control handle, clamping collars/protective tube	3.5	
Plastoform screw	IS-P6x14	Line limiter blade/guard	2.5	2)
Spline screw	IS-DG5x24	Gear housing/protective tube	9.0	3)
Spline screw	IS-M6x20	Gear housing/protective tube	7.5	4)
Screw plug	M11x10	Gearbox	10.0	

Fastener	Thread size	For component	Tightening torque (Nm)	Remarks
Spline screw	IS-M5x18	Deflector shield	4.3	3)
Lock nut	M10x1L	Cutting tool	25.0	3)
Plastoform screw	IS-P4x16	Control handle/handle mouldings (cowhorn)	1.03)	
Spline screw	IS-M5x30	Control handle (cowhorn)	2.0	3)
Spline screw	IS-M6x35	Clamp, tensioner/protective tube	4.5	3)
Spline screw	IS-DG5x12	Clamp/guard	5.5	4)
Spline screw	IS-DG5x12	Apron/guard	5.5	1) 4)
Spline screw	IS-DG6x25	Guard/gear housing/tensioner	7.5	4)
Lock nut	M8x1.25L	Blade	25.0	4)
Bearing bolt	IS-M10x63	Wheel/guard	19.0	1) 4)
Nuts, bolts	M4	All others	2.5	
Nuts, bolts	M5	All others	4.5	
Spline screw	IS-M4x16	Gearbox cover/gear housing	3.5	5)
Spline screw	IS-M5x20	Blade guide/gear housing	9.5	5)
Spline screw	IS-M5x20	Gearbox/gear housing	9.5	5)
Nut	M5	Blade	9.5	5)
Screw plug	M11x10	Gearbox cover	5.5	5)

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

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

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

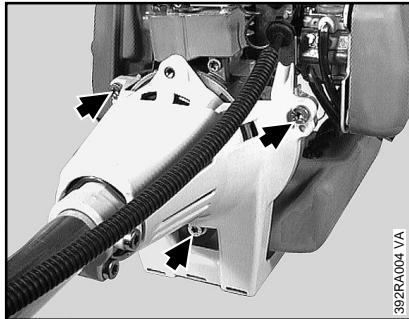
- 1) With washer
- 2) FS 75
- 3) FS 80, 85
- 4) FC 75
- 5) HL 75

Note: Screwdriver speed when working in plastic: Plastoform screws max. 600 rpm,
DG screws max. 500 rpm.

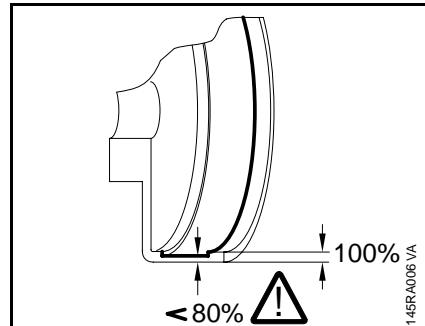
3. Clutch Disassembly

3.1 Clutch Disassembly

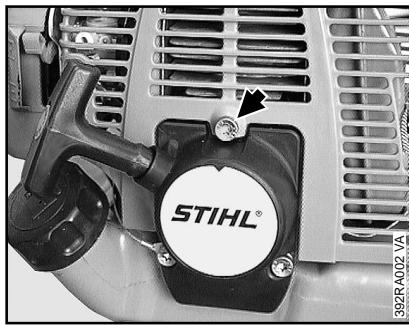
Refer to manual "Troubleshooting, standard repairs" for troubleshooting procedures..



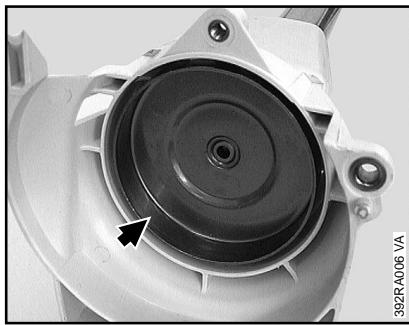
- Remove screws.
- Pull off fan housing with protective tube and set it aside.



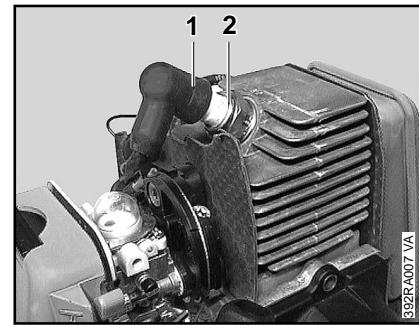
Important! The remaining wall thickness must be measured if the inside diameter is distinctly worn. A new clutch drum must be fitted - see 11.4 - if the wall thickness has declined to less than 80% of the original value.



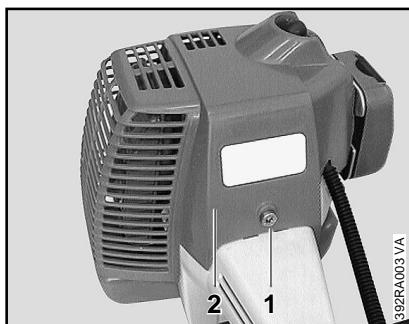
- Remove screw on starter cover.



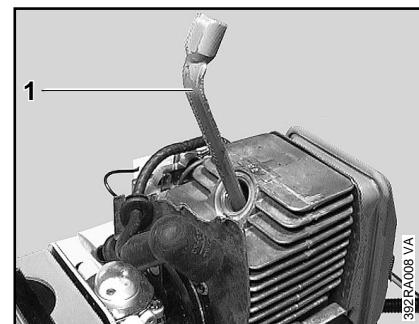
- Examine clutch drum: it must not be scored or show signs of excessive wear.



- Disconnect spark plug terminal (1).
- Remove spark plug (2).

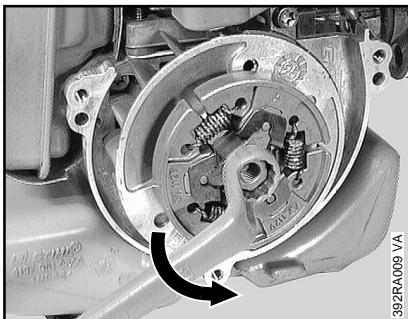


- Remove screw (1) on fan housing.
- Lift off shroud (2).

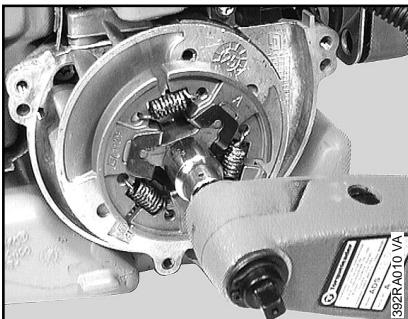


- Insert the locking strip (1) 0000 893 5903 in the cylinder.

3.2 Installation



- Unscrew clutch from crankshaft stub, turning it in the direction of the arrow.
- Disassemble and reassemble clutch, see manual "Trouble-shooting, standard repairs".



- Screw clutch onto crankshaft with the smaller hexagon facing outwards and torque down to 21 Nm.

- Insert screws in fan housing and torque down to 5.5 Nm.

- Remove locking strip from cylinder.

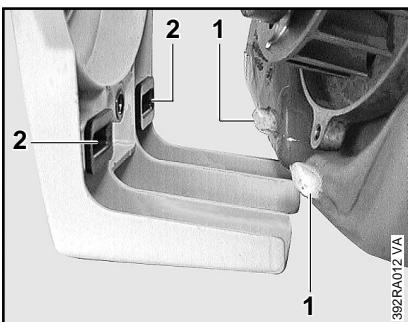
- Screw in spark plug and torque down to 20 Nm.

Important! Check that the separate connecting nut is securely located on the screw thread of spark plugs with separate nut and tighten the nut if necessary.

- Reconnect spark plug terminal to spark plug.
- Fit shroud.

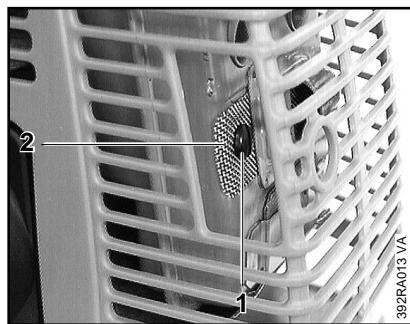


- Ensure that inlays are present in fan housing; insert them if necessary.



- Position motor on fan housing, ensuring that stubs (1) engage in inlays (2).

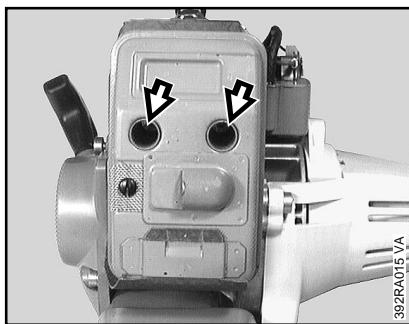
4. Engine 4.1 Muffler/spark arrester screen



See manual "Troubleshooting, standard repairs" for troubleshooting procedures.

Spark arrester screen

- Remove screw (1).
- Pull out spark arrester screen (2).
 - Clean spark arrester screen, fit new screen if necessary.



- Remove inner screws.
 - Lift off muffler.

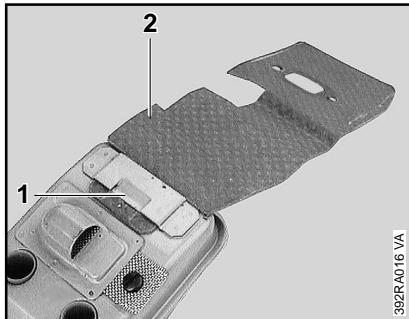
4.2 Leakage testing

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

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

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

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

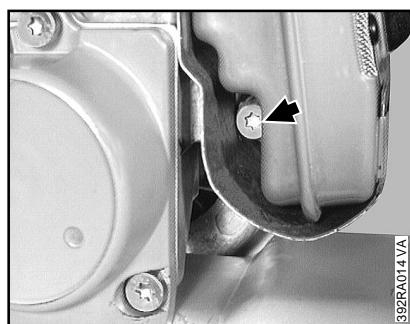


- Raise tongue (1) on retainer.
- Pull out seal (2).

The parts are installed in reverse order.

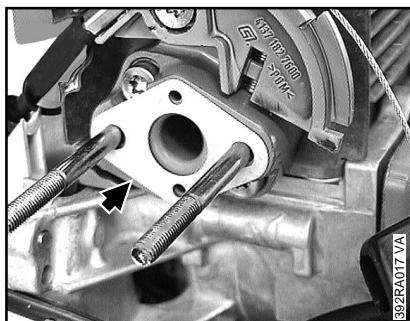
- Press tongue down again after inserting seal.
- Tighten muffler screws to a torque of 9.5 Nm.
- Refit shroud.

Muffler



- Remove shroud, **see 3.1**.
- Remove outer screw.

4.2.1 Preparations



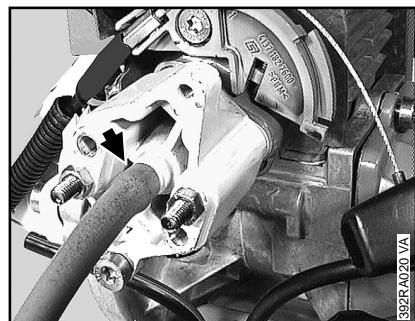
- Remove carburetor, [see 8.2.2.](#)
- Fit gasket in front of spacer flange.
- Set piston to top dead centre (TDC) (can be seen through the inlet port).
- Check that spark plug is seated securely.



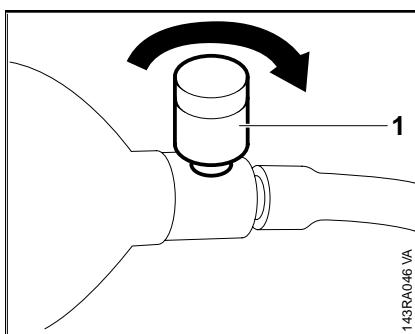
- Remove outer screw on muffler.
- Back off inner screws half-way.
- Slide sealing plate (1) 0000 855 8106 between gasket and cylinder exhaust port and lightly retighten inner screws.

Note: The sealing plate must fill the space between the mounting screws completely.

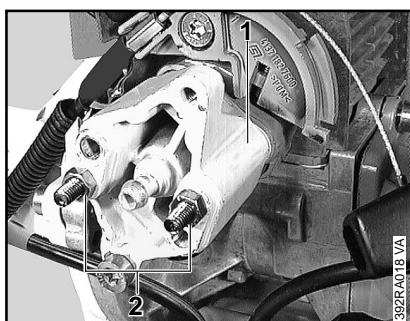
4.2.2 Pressure test



- Carry out preparatory steps, [see 4.2.1.](#)
- Slide pressure hose of tester 1106 850 2905 over nipple on test flange.

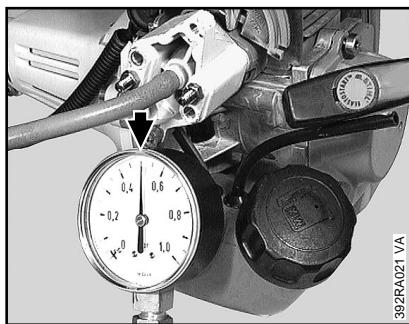


- Close vent screw (1) on rubber bulb.
- Pump air into crankcase with rubber bulb until pressure gauge indicates a pressure of 0.5 bar. The crankcase is airtight if this pressure remains constant for at least 20 seconds.



- Fit test flange (1) 1128 850 4200.
- Fit and tighten nuts (2).

4.2.3 Vacuum test



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

Faults of this kind can be detected with the aid of a vacuum pump. The preparations are the same as for the pressure test, [see 4.2.2](#).

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

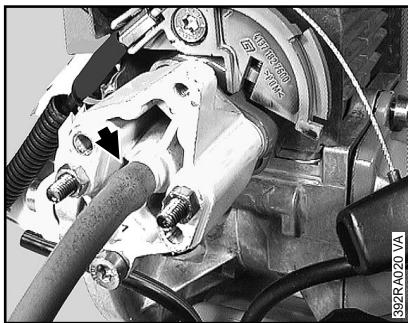
Note: To locate the leak, coat the suspect area with oil and pressurize the crankcase again. Bubbles will appear at the oil-coated area if a leak exists.

- Then carry out vacuum test, [see 4.2.3](#).
- Open vent screw and disconnect hose when test is complete.
- Remove test flange.
- Loosen the muffler screws.
- Draw out the sealing plate and tighten the muffler screws with 9.5 Nm.
- Fit outer screw of muffler and tighten with 9.5 Nm.
- Install carburetor, [see 8.2.2](#).

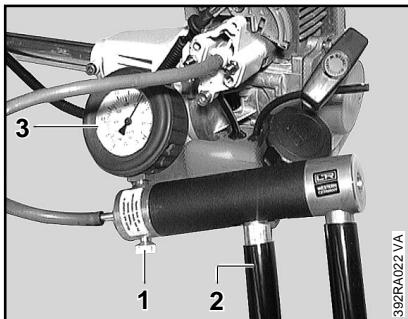
Note: The oil seals are in good condition if the indicated vacuum is maintained or if the pressure rises to no more than 0.3 bar within 20 seconds.

The oil seals must be replaced if the pressure in the crankcase continues to rise.

- Open vent screw and disconnect hose when test is complete.
- Remove test flange.
- Loosen muffler screws.
- Remove sealing plate and tighten screws to a torque of 9.5 Nm.
- Fit outer screw in muffler and tighten to a torque of 9.5 Nm.
- Install carburetor, [see 8.2.2](#).



- Connect suction hose of vacuum pump 0000 850 3501 to nipple of test flange.



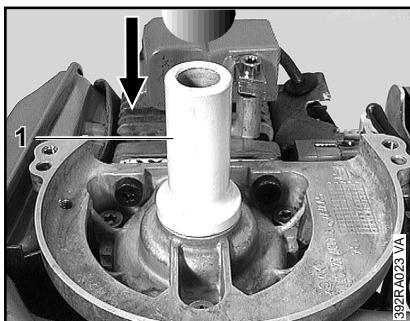
- Close vent screw (1) on pump cylinder.
- Actuate lever (2) until pressure gauge (3) indicates a vacuum of 0.5 bar.

4.3 Oil seals

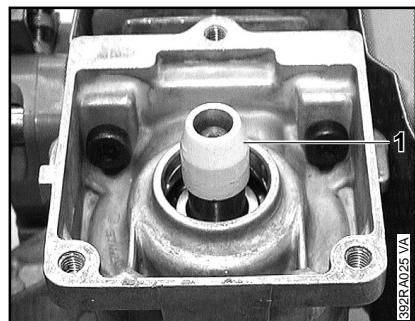
It is not necessary to disassemble the complete engine if only the oil seals have to be replaced.

Clutch side:

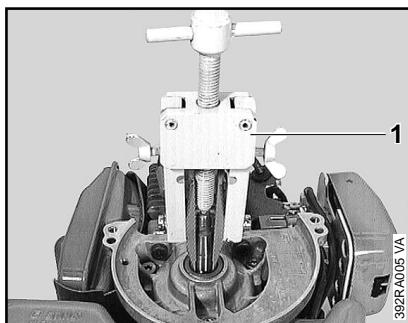
- Remove flywheel, [see 5.3](#).
- Lightly tap the oil seal with a suitable tube or punch to knock it out of its seat.



- Press it fully home with the press sleeve (1) 4112 893 2401.
- Fit flywheel, [see 5.3](#).



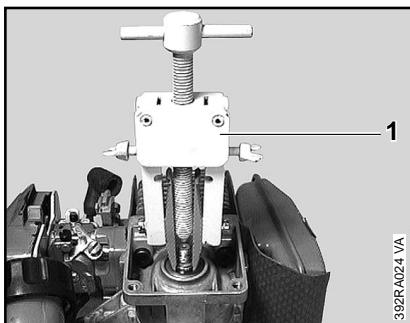
- Grease sealing lips of oil seal, [see 13.2](#).
- Slide assembly sleeve (1) 4112 893 2400 over crankshaft stub.



- Fit puller (1) 5910 890 4400 (jaws 0000 893 3706 with profile No. 3.1).
- Tension legs.
- Pull out oil seal.

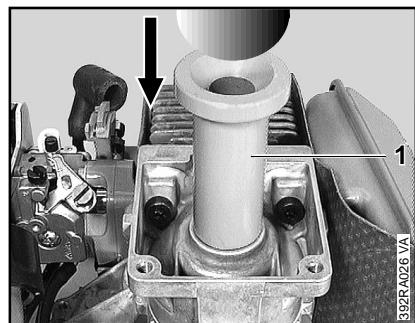
Important! The crankshaft stub must not be damaged.

- Clean the sealing area with commercially available solvent-based degreasing agent not containing CFCs or halocarbons, [see 13.2](#).
- Grease sealing lips of oil seal, [see 13.2](#).
- Slide oil seal over crankshaft stub with open side facing crankcase.



Starter side:

- Remove starter carrier, [see 6.6](#).
- Lightly tap the oil seal with a suitable tube or punch to knock it out of its seat.
- Fit puller (1) 5910 890 4400 (jaws 0000 893 3706 with profile No. 3.1).
- Tension legs.
- Pull out oil seal.



- Slide oil seal over assembly sleeve with open side facing crankcase.
- Press it fully home with the press sleeve (1) 1115 893 4600.
- Remove assembly sleeve.
- Fit starter carrier, [see 6.6](#).

Important! The crankshaft stub must not be damaged.

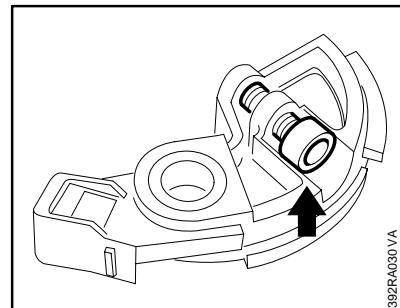
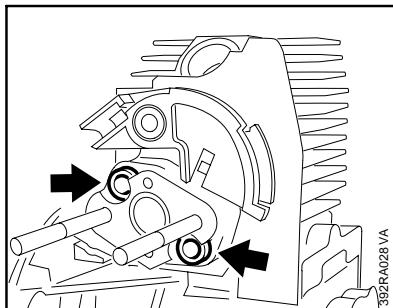
- Clean the sealing area with commercially available solvent-based degreasing agent not containing CFCs or halocarbons, [see 13.2](#).

4.4 Exposing the cylinder/ spacer flange

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

Refer to manual "Troubleshooting, standard repairs" for troubleshooting procedures.

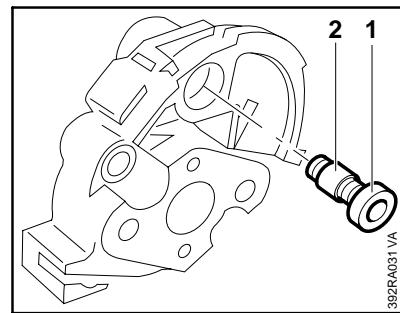
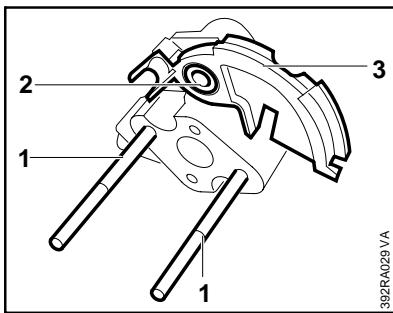
- Remove fan housing with protective tube, [see 3.1](#).
- Remove muffler, [see 4.1](#).
- Remove carburetor, [see 8.2.2](#).
- Remove ignition module, [see 5.2](#).



- Remove screws.
- Remove spacer flange and gasket.

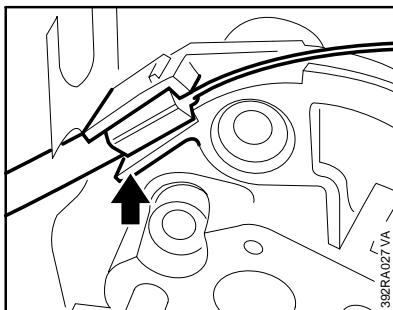
- Remove adjusting screw from tensioner.

The parts are assembled in reverse order.

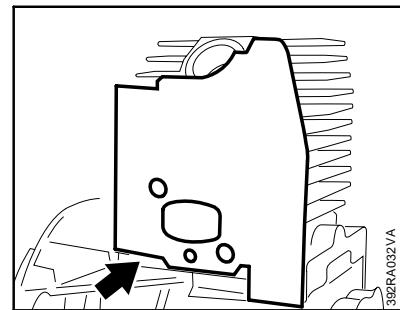


- Pull screws (1) out of spacer flange if necessary.
- Loosen screw (2) and remove with bushing.
- Draw tensioner (3) off spacer flange.

- Insert screw (1) with bushing (2).
- Use a new self-locking nut for the screw.



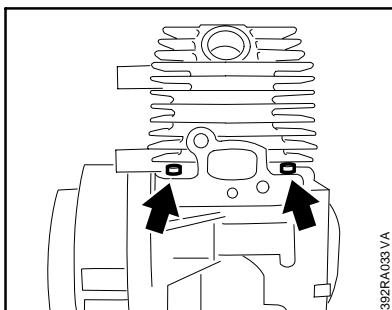
- Remove throttle cable from tensioner.



- Use a new gasket.
- Tighten down the screws of the spacer flange to a torque of 5.5 Nm.

4.5 Cylinder and piston

4.5.1 Removal

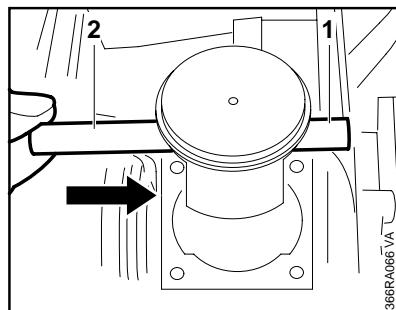


392RA033 V/A

- Preparations, [see 4.4](#).
- Unscrew cylinder base screws.

Note: The two screws at the back are not visible.

- Draw cylinder off piston.
- Examine cylinder and replace if necessary.
- The matching piston must always be fitted when installing a new cylinder. New cylinders are therefore only supplied with piston.
- Before removing the piston, decide whether the crankshaft must also be removed. The crankshaft must be blocked by sliding the wooden assembly block between the piston and crankcase in order to remove the clutch and starter carrier.
- Remove cylinder gasket.

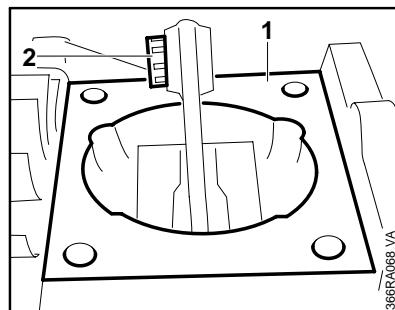


366RA066 V/A

- Push piston pin (1) out of the piston with assembly drift (2) 1114 893 4700.

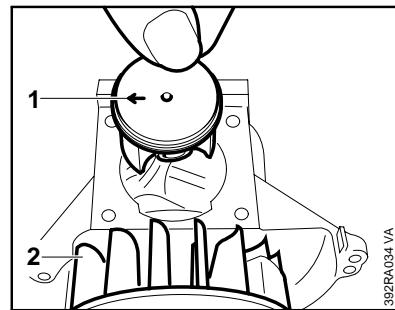
Note: If the piston pin is stuck, it can be loosened by **lightly** tapping the assembly drift with a hammer. The piston **must** be held steady during this process to ensure that no jolts are transmitted to the conrod.

- Remove piston from conrod and draw needle cage out of small end.



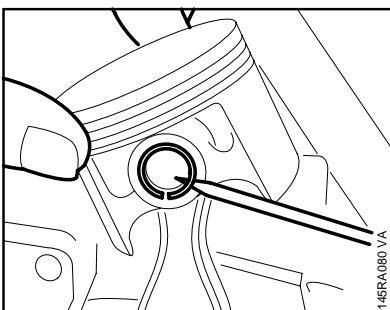
366RA068 V/A

- Thoroughly clean sealing area (1).
- Wet needle cage (2) with oil and fit it in the small end.



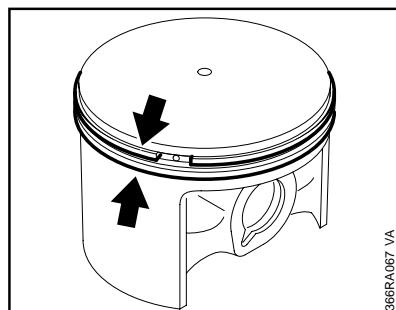
392RA034 V/A

- Lightly heat piston to facilitate installation and slip it over the conrod.
- Note installed position of piston:
1 = Marking
2 = Flywheel



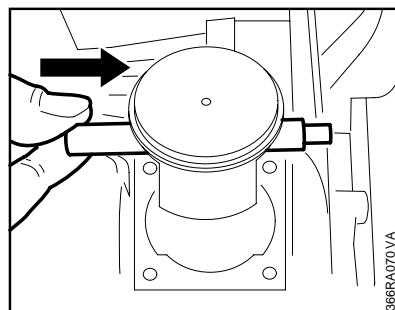
145RA080 V/A

- Prise the hookless snap rings out of the annular grooves.



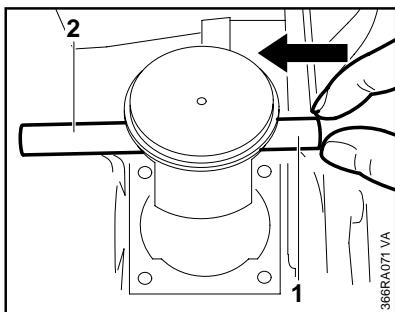
366RA067 V/A

- Check piston rings and replace if necessary, [see 4.6](#).



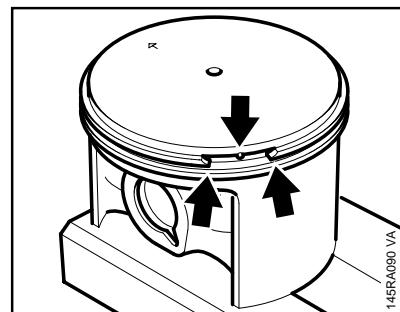
366RA070 V/A

- Push assembly drift through piston and small end (needle cage) with the small diameter first and line up the piston.

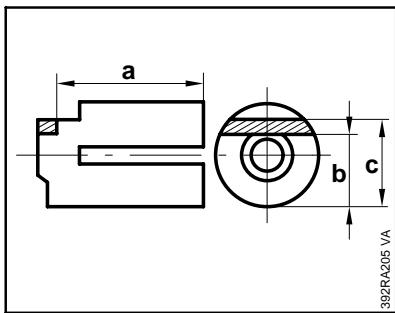


- Fit piston pin (1) on stub of assembly drift (2) and slide it into the piston (the pin slides home easily if the piston is hot).

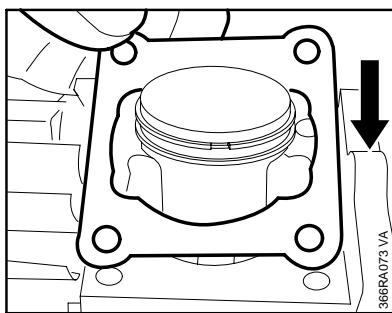
Note: Refer to manual "Trouble-shooting, standard repairs" for information on using the assembly tool.



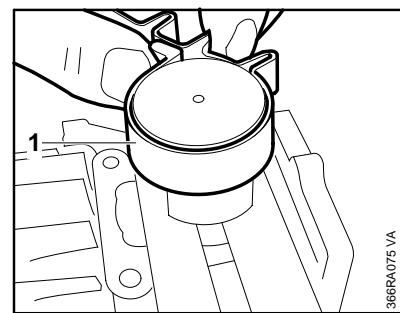
- Line up the piston rings so that the radii at the ring gap meet at the fixing pin in the piston groove.



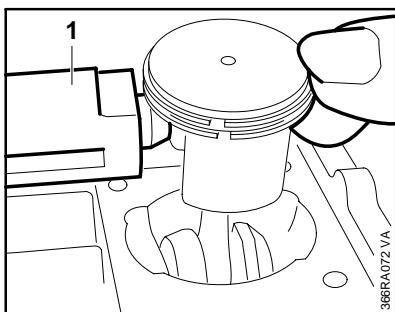
- Modify sleeve of assembly tool 5910 890 2208 as shown above.
a = 35.5 mm
b = 17.3 mm
c = 21.0 mm



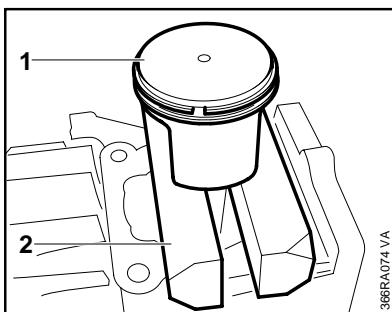
- Fit new cylinder gasket.



- Use clamping strap (1) 0000 893 2600 to enclose piston and piston rings.
 - Ensure that piston rings are positioned correctly.
 - Coat inside of cylinder with oil and line it up in accordance with its subsequent installed position. The piston rings may break if this is not done.

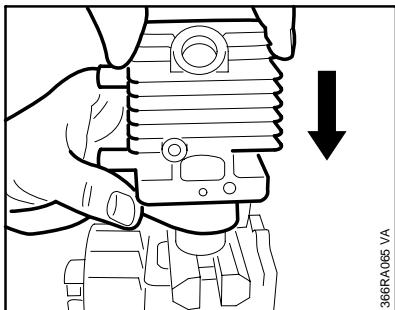


- Insert hookless snap rings with assembly tool (1) 5910 890 2208.

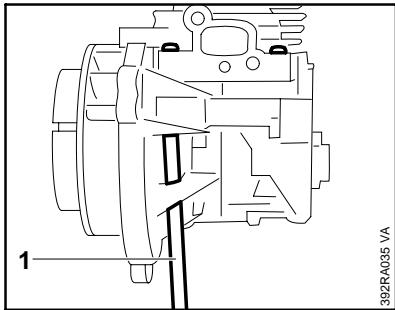


- Lightly oil the piston and piston rings and rest the piston (1) on the wooden assembly block (2) 1108 893 4800.

4.6 Piston rings/Crankcase



- Slide cylinder over piston; the clamping strap slips downward and the piston rings slip into the cylinder.



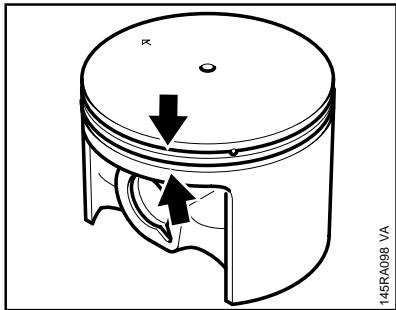
- Remove clamping strap and assembly block.
- Line up cylinder and cylinder gasket.
- Tighten cylinder base screws to a torque of 9.5 Nm with socket (1) 0812 542 2104.

See 4.4 for further assembly steps.

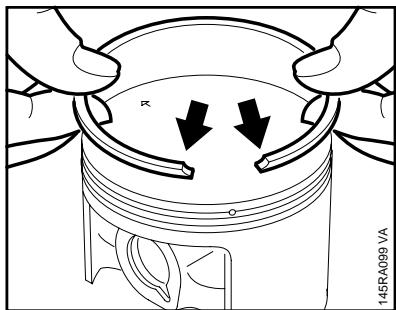
- Remove piston, see 4.5.1.

Note: Coking residues must not be allowed to enter the crankcase when fitting the piston rings and/or cleaning the grooves.

- Remove piston rings from piston.

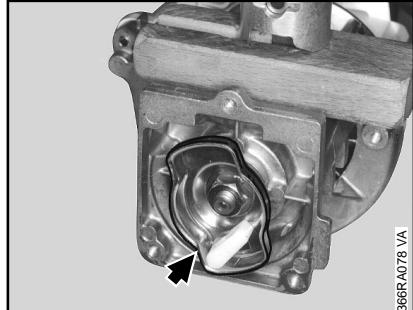


- Scrape the grooves clean with a piece of old piston ring.



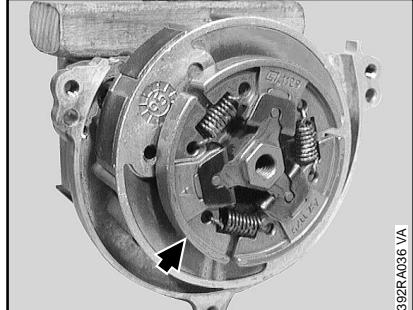
- Fit the new piston rings in the grooves so that the radii face upwards.
- Install piston, see 4.5.2.

4.7.1 Removing the crankshaft

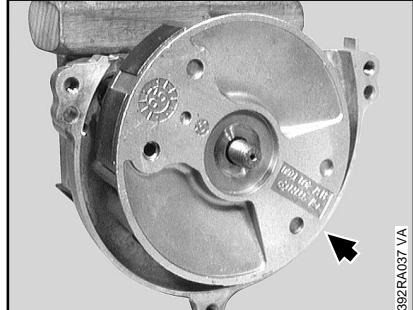


- Remove cylinder, see 4.5.1

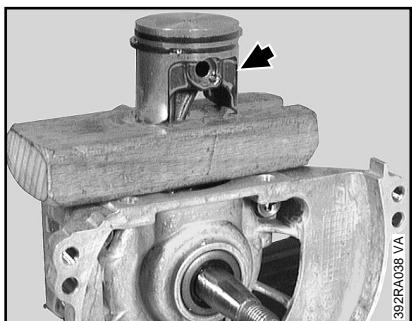
- Unscrew starter carrier from crankshaft stub.



- Unscrew clutch from crankshaft stub.



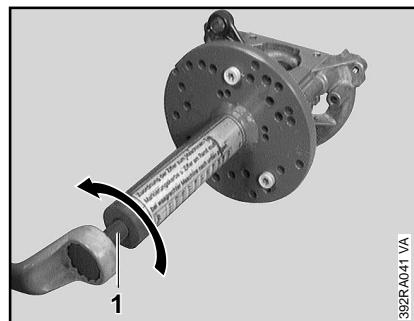
- Pull flywheel off crankshaft stub, see 5.3.



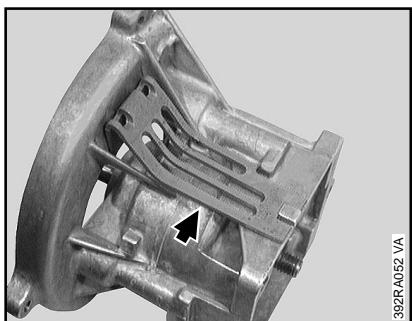
- Remove piston, see 4.5.1.

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

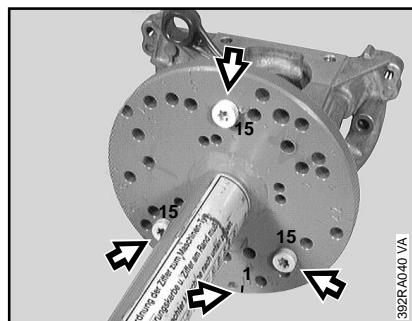
- Hold assembly tool ZS against housing half on starter side so that the notch marked "1" is at the bottom.



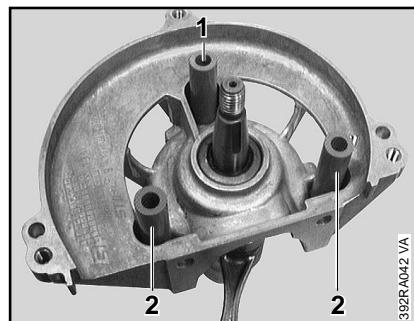
- Turn spindle (1) anticlockwise until the crankshaft has been forced out of the deep groove ball bearing. This also causes the two halves of the housing to come apart.



- Unhook guard from housing.

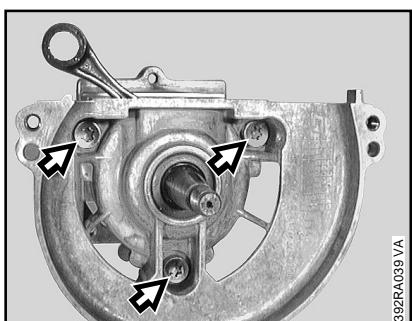


- Insert screws for the starter cover in the holes marked "15" and tighten them down until they rest against the perforated plate.

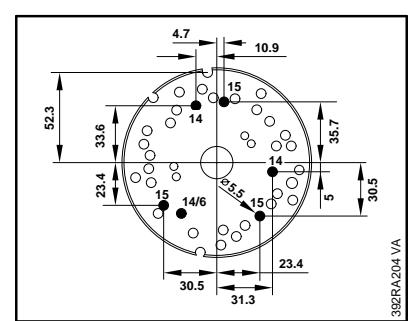


- Place sleeve (1) 5910 893 170 (30 mm) and sleeves (2) 5910 893 1702 (35 mm) over the holes on the clutch-side half of the housing.

- Position assembly tool ZS against the sleeves so that the notch marked "12" is at the bottom.



- Remove the screws securing the two halves of the crankcase.



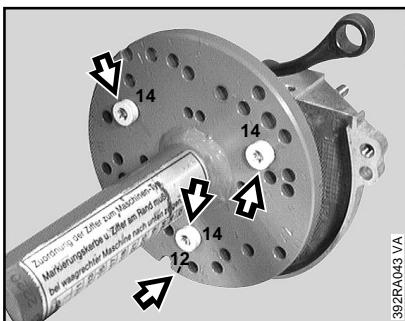
Note: Assembly fixtures without holes "14" and "15" can be modified as illustrated above.

The diagram shows the perforated disk as seen from below.

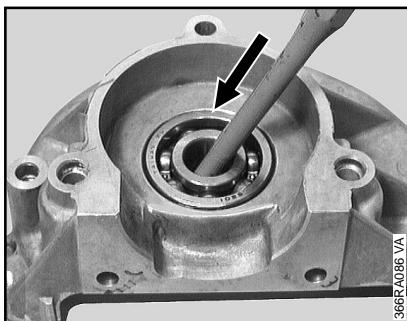
392RA038 VA
392RA041 VA

392RA052 VA
392RA040 VA
392RA042 VA

4.7.2 Installing the crankshaft



- Insert three M5 x 72 bolts in the holes marked "14".
- Slide washers onto the bolts and screw on the nuts.

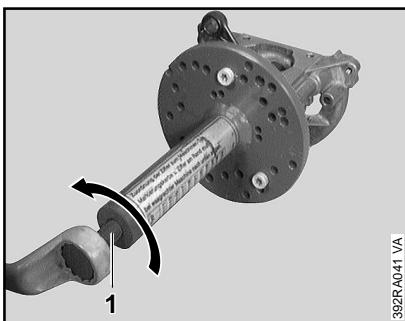


- New deep groove ball bearings and oil seals must also be fitted when replacing the crankshaft.
- Carefully drive the oil seals out of the crankcase.

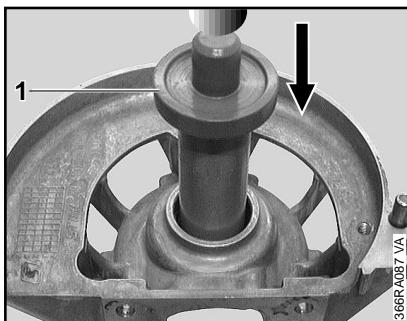
Both halves of the crankcase can be replaced if the crankcase is damaged.

Each half of the crankcase is supplied with fitted deep groove ball bearing.

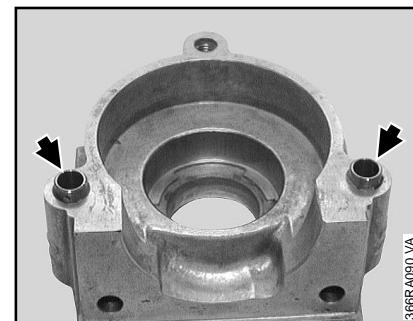
If the original crankcase is used again, remove the gasket residues and clean the mating surfaces. The mating surfaces must be absolutely clean to ensure a perfect seal.



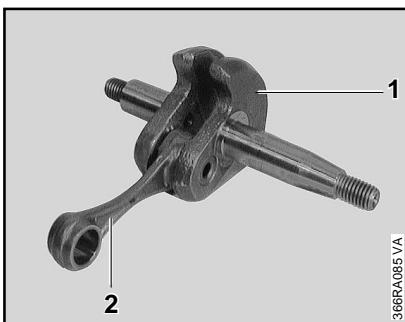
- Turn spindle (1) anticlockwise until the crankshaft has been forced out of the deep groove ball bearing.



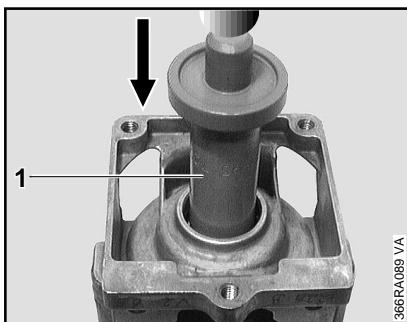
- Press the deep groove ball bearing out of its seat with press arbor (1) 4119 893 7200.



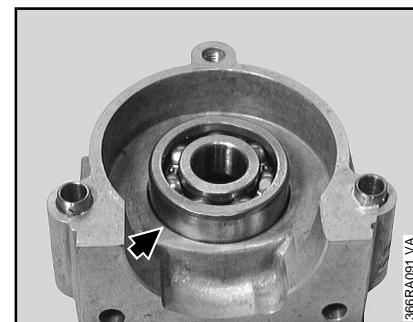
- Bushings must be present. New bushings must be driven into the crankcase if necessary.
- Heat area of bearing seat on starter side of crankcase to approx. 120 ° C.



- Crankshaft (1), conrod (2) and needle bearing form an inseparable unit and must always be replaced as a complete unit.

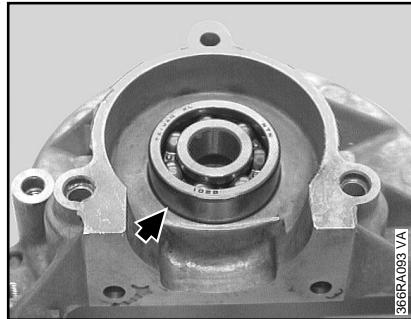


- Press the deep groove ball bearing out of its seat with press arbor (1) 4119 893 7200.
- Examine both halves of the crankcase for cracks and replace them.



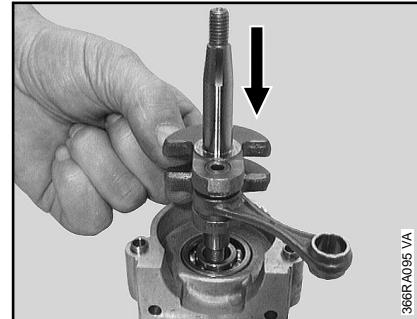
- Press deep groove ball bearing into crankcase by hand as far as possible.

Note: The bearing must be pressed in very quickly, as it immediately absorbs heat and begins to expand.

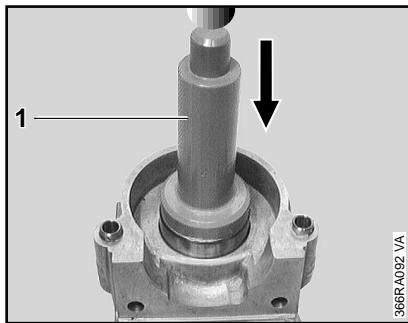


- Press deep groove ball bearing into crankcase by hand as far as possible.

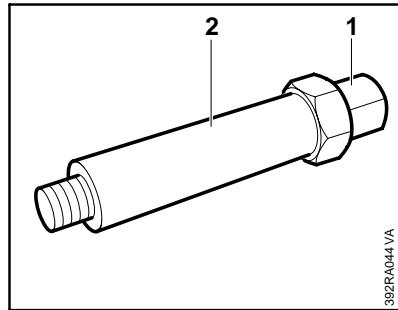
Note: The bearing must be pressed in very quickly, as it immediately absorbs heat and begins to expand.



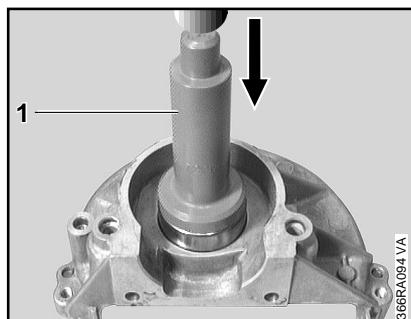
- Insert the shorter stub of the crankshaft into the deep groove ball bearing on the starter side of the crankcase.



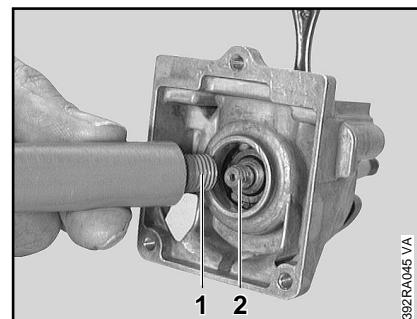
- If the starter side of the crankcase cannot be heated, press the deep groove ball bearing in as far as possible with press arbor (1) 4119 893 7200.
- Heat area of bearing seat on clutch side of crankcase to approx. 120 ° C.



- Completely screw spindle (1) of assembly tool 5910 890 2202 into sleeve (2) (left-hand thread).



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

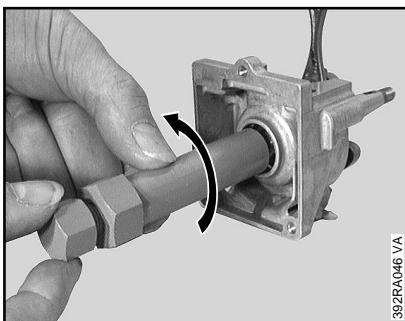


- Screw spindle (1) onto crankshaft stub (2) turning clockwise as far as possible.

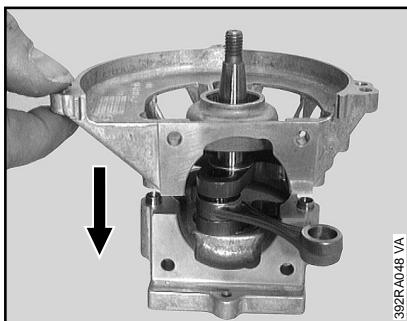
366RA093 VA

366RA092 VA

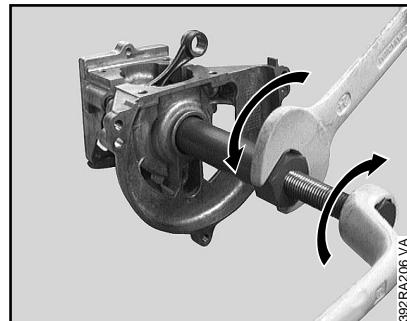
392RA044 VA



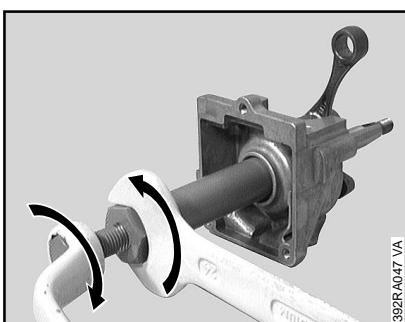
- Hold spindle and turn sleeve anticlockwise until it rests against the deep groove ball bearing.



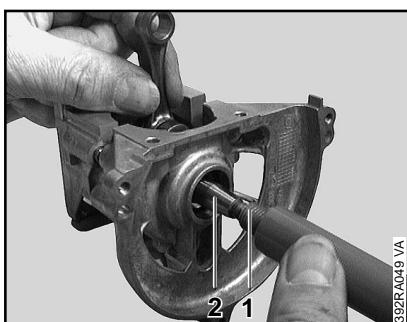
- Slide the clutch-side half of the housing over crankshaft stub.



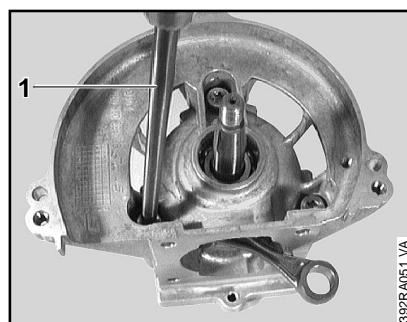
- Hold sleeve and turn spindle clockwise until the two halves of the housing have come together.
- Remove the assembly tool.



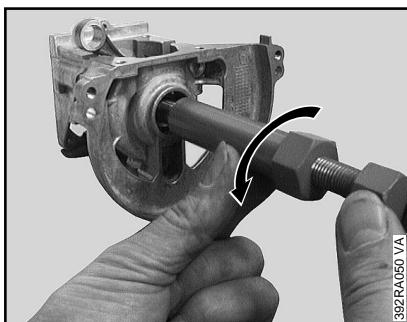
- Hold sleeve and turn spindle clockwise until the crankshaft rests against the deep groove ball bearing.



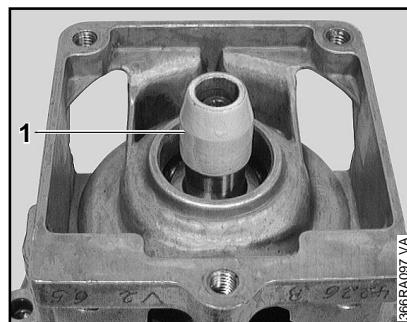
- Hold crankshaft and screw spindle (1) onto crankshaft stub (2), turning clockwise as far as possible.



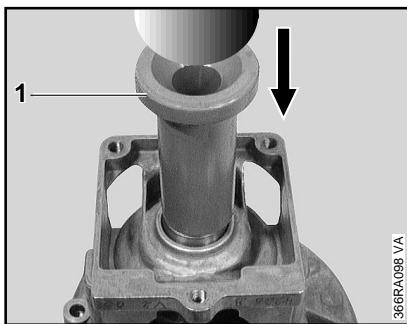
- Turn in screws and tighten to a torque of 9.5 Nm with socket (1) 0812 542 2104.
- Grease sealing lips of oil seals, [see 13.2](#).



- Hold spindle and turn sleeve anticlockwise until it rests against the deep groove ball bearing.



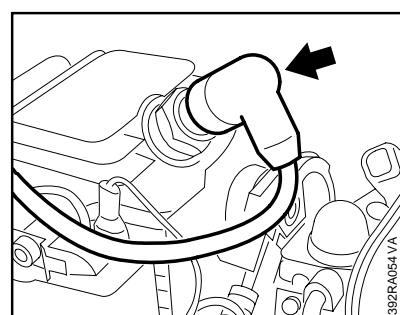
- Slide assembly sleeve (1) 4112 893 2400 over crankshaft stub on starter side.
- Fit oil seal with open side facing crankcase.



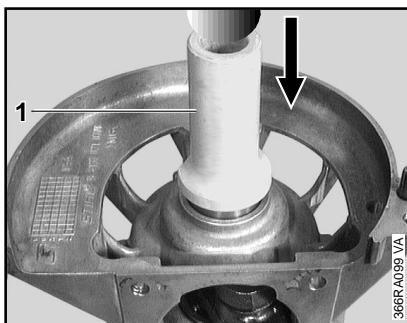
- Press home with press sleeve (1) 1115 893 4600.
- Remove assembly sleeve.

Important! Great care must be taken when carrying out maintenance and repair work or troubleshooting on the ignition system. The high voltages can cause serious or even fatal accidents!

Troubleshooting on the ignition system should always start with the spark plug. Refer to the manual "Troubleshooting, standard repairs".

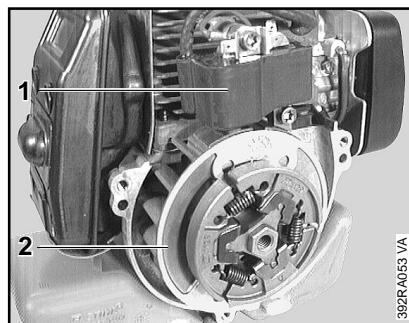


- Remove shroud, see 3.1.
- Pull terminal off spark plug.

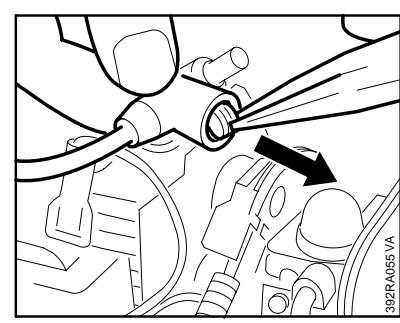


- Slide oil seal with open side facing crankcase over crankshaft stub on clutch side.
- Press home with press sleeve (1) 4112 893 2401.

The remaining parts are assembled in reverse order.



Note: The transistorized (breakerless) ignition system essentially comprises the ignition module (1) and flywheel (2).



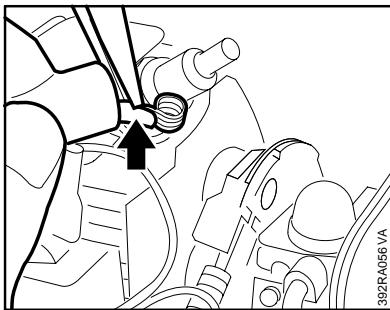
- Grip leg spring with pliers and pull it out of the spark plug terminal.
- Unhook leg spring from ignition lead.
- Slip spark plug terminal off lead.
- Coat end of ignition lead (approx. 20 mm) with oil.
- Fit spark plug terminal over ignition lead.
- Grip end of ignition lead with pliers and pull it out of spark plug terminal.

5.2 Ignition module

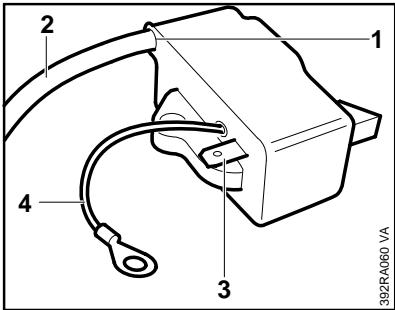
5.2.1 Ignition timing

The ignition timing is fixed and cannot be adjusted.

Since there is no mechanical wear in these systems, the ignition timing cannot become maladjusted. An internal fault in the circuit can, however, alter the switching point in such a way that a spark test will still show the system to be in order although timing is outside the permissible tolerance. This will impair engine starting and running behaviour.



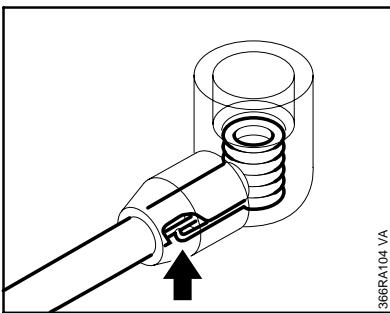
- Pinch hook of leg spring into centre of lead approx. 5 mm from end of lead.



The ignition module accommodates all the components required to control the ignition timing. Only three electrical connections emerge from the coil body:

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

Accurate testing of the ignition module is only possible with test equipment. Only a spark test should therefore be carried out in the workshop. The complete ignition module must be replaced if an ignition spark is not obtained (although wiring and stop switch are intact).

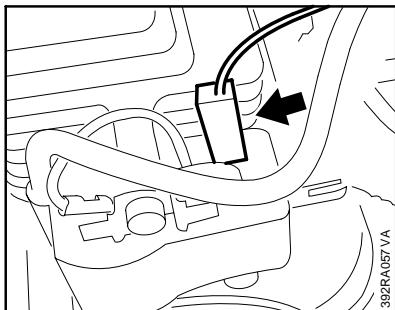


- Pull lead back into terminal so that leg spring is properly located inside it.

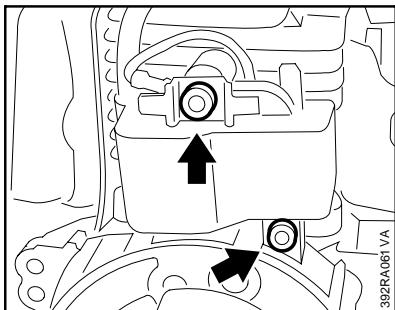
Important! Check that the separate connecting nut is securely located on the screw thread of spark plugs with separate nut and tighten the nut if necessary.

- Fit spark plug terminal on spark plug.
- Refit shroud.

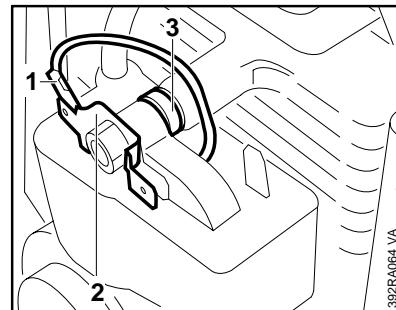
5.2.2 Removal and installation



- Remove fan housing with protective tube, **see 3.1.**
- Disconnect short-circuit wire from socket on ignition module.

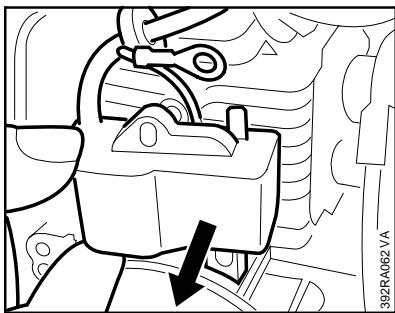
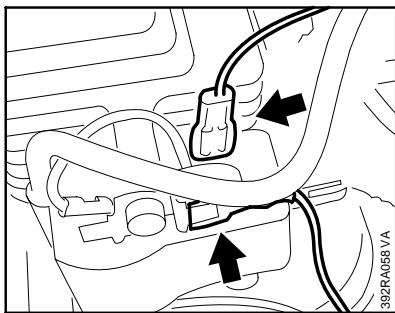


- Remove screws.

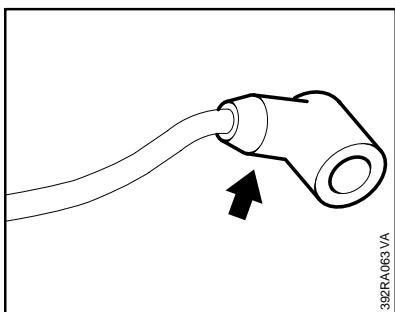
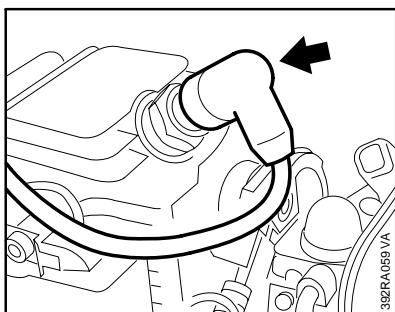


- Position ignition module and insert screws, but do not tighten them yet.
- Secure ground wire (1) and connector tab (2) for short-circuit wire to upper screw.

Important! One plastic washer (3) must be fitted on the upper and lower screw between cylinder and ignition module.



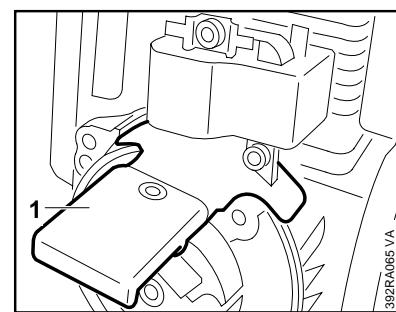
- Remove ignition module.



- Pull terminal off spark plug.

- Remove spark plug terminal, **see 5.1.**

Note: The ignition lead is embedded in the ignition module.

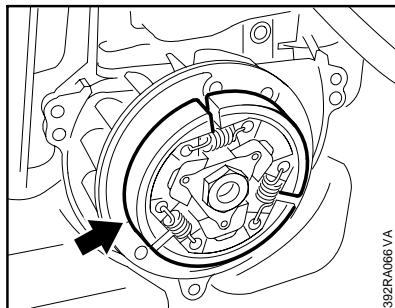


- Slide setting gauge (1) 4118 890 6401 between arms of ignition module and flywheel magnets.

5.3 Flywheel

- Press ignition module against setting gauge and tighten screws to a torque of 4.5 Nm.

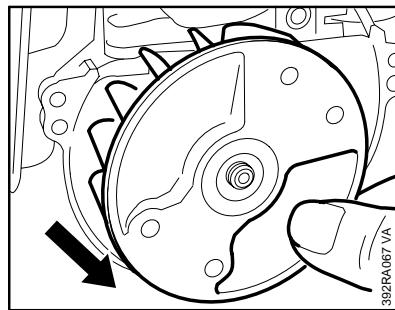
Remaining parts are installed in reverse order.



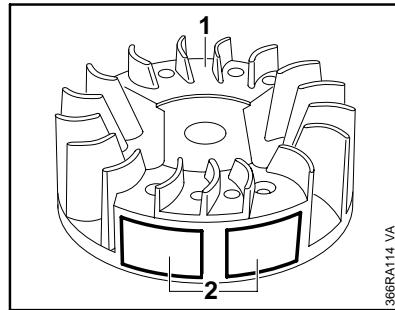
Unscrew the puller when the flywheel has loosened.

Removing the flywheel:

- Remove clutch, [see 3.1](#).



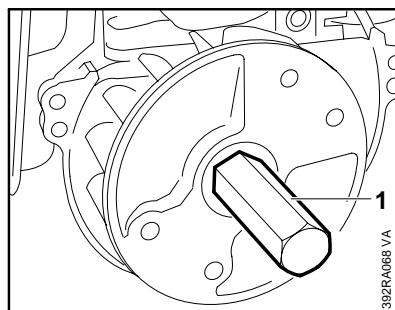
- Remove flywheel.



Flywheel (1) and magnet poles (2) must not be cracked or damaged, otherwise a new flywheel must be fitted.

Installing the flywheel:

Important! Degrease the crank-shaft stub and bore of the flywheel hub with commercially available solvent-based degreasing agent not containing CFCs or halocarbons, [see 13.2](#).



- Fit flywheel.

- Install clutch, [see 3.2](#).

Note: If the flywheel cannot be removed by hand, screw puller (1) 4133 893 0800 onto crankshaft stub and lightly tap the end of the puller with a hammer.

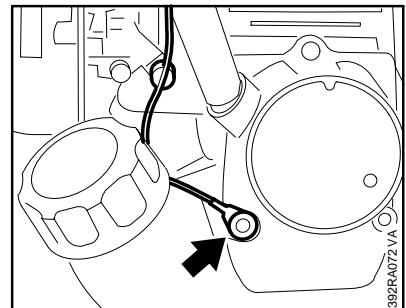
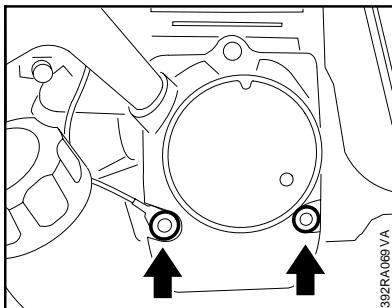
If the starter rope can be pulled out but then rewinds very slowly or incompletely, the starter mechanism is OK but clogged with dirt. At very low outside temperatures, the lubricating oil on the rewind spring may thicken and cause the spring windings to stick together. This has a detrimental effect on the function of the starter mechanism. It is sufficient in such cases to apply a few drops of paraffin to the rewind spring.

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

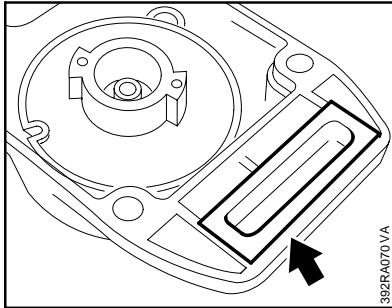
The entire starter mechanism including rewind spring must be removed and disassembled if clogged with dirt or pitch. Special care must be exercised when removing the spring!

All parts must be washed in paraffin or white spirit.

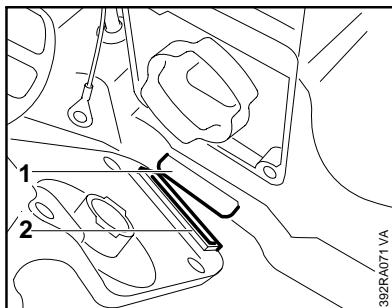
The rewind spring and starter post must be lubricated with STIHL special lubricant, [see 13.2](#), before being installed.



- Remove shroud, [see 3.1](#).
- Remove screws.
- Remove starter cover.
- Secure eyelet on throttle cable to lower screw on machines with one short-circuit wire.
- Tighten screws to a torque of 5.5 Nm.
- Refit shroud.



- Replace insert in starter cover if necessary.



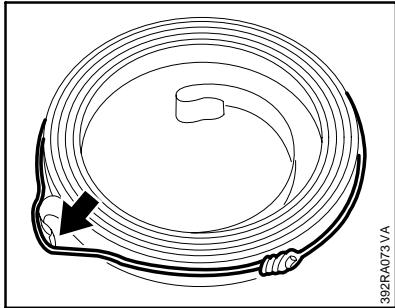
- Position starter cover so that lug (1) engages in insert (2).

6.3 Rewind spring

6.3.1 Replacement

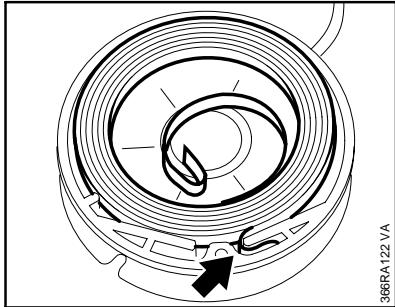
Refer to manual "Troubleshooting, standard repairs" for troubleshooting procedures.

- Remove starter cover, [see 6.2](#).
- After removing the rope rotor, see manual "Troubleshooting, standard repairs", remove the remaining pieces of spring from the rope rotor and starter cover.



Note: The replacement spring is supplied ready for installation and is secured by a wire retainer.

- It should be lubricated with a few drops of STIHL special lubricant - [see 13.2](#) - before being installed.

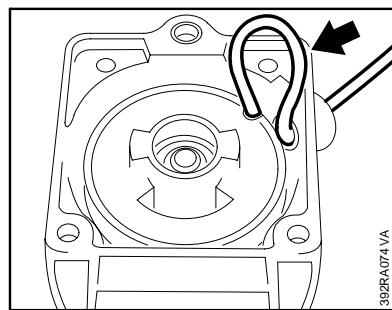


- Insert the rewind spring so that the outer loop locates in the right-hand recess (when looking down onto the recesses). The loop slips off when the spring is installed.

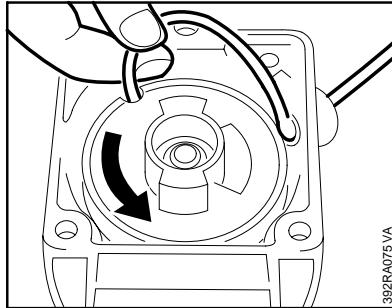
6.3.2 Tensioning

Important! The rewind spring may pop out if not installed correctly.

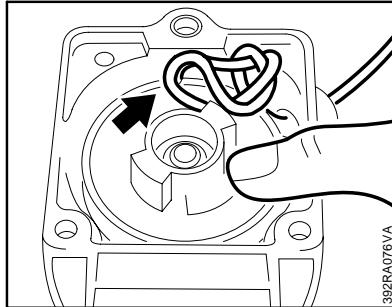
- Refer to the manual "Troubleshooting, standard repairs" if the rewind spring pops out.
- Install rope rotor, see manual "Troubleshooting, standard repairs".
- Tension rewind spring, [see 6.3.2](#).
- Install starter cover, [see 6.2](#).



- Form the starter rope into a loop.
- Press starter rope into notch on rope rotor.



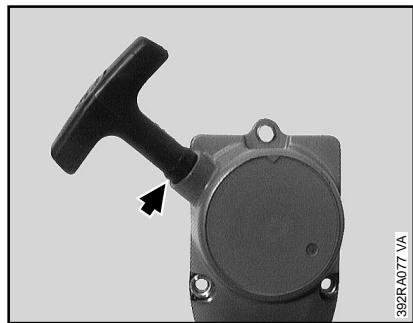
- Grip the rope **close** to the rotor and use it to turn the rope rotor six full turns counterclockwise.



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

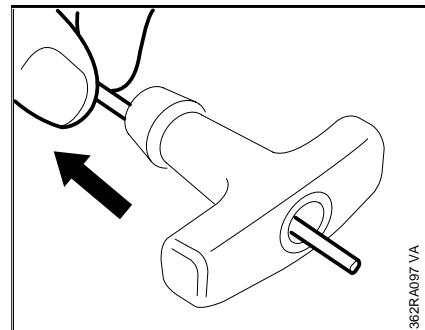
6.4 Starter rope (ElastoStart)

- Hold starter grip firmly to keep rope tensioned.
- Release rope rotor and let starter rope rewind slowly.



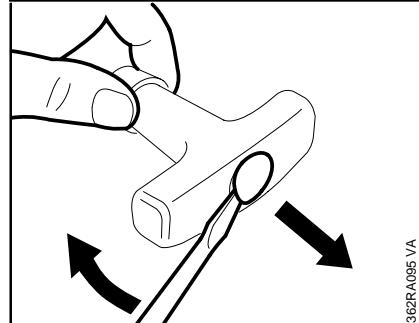
392RA077 VA

- Remove starter cover, **see 6.2**.
- Remove starter rope from rope rotor, see manual "Troubleshooting, standard repairs".



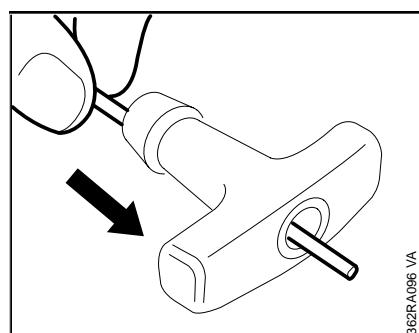
362RA097 VA

- Pull rope back until knot is inside starter grip.
- Press cap onto starter grip.
- Install starter rope on rope rotor, see manual "Troubleshooting, standard repairs".



362RA095 VA

- Prise cap out of starter grip.
- Pull rope out of starter grip.



362RA096 VA

- Guide end of new rope through starter grip from below.
- Secure end of rope with a simple knot.

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

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

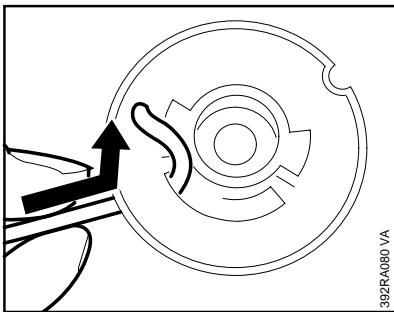
The rewind spring may break if overtensioned.

- Install starter cover, **see 6.2**.

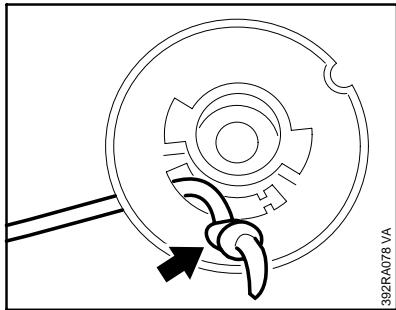
6.5 Starter grip (ElastoStart)

The starter grip is supplied with starter rope.

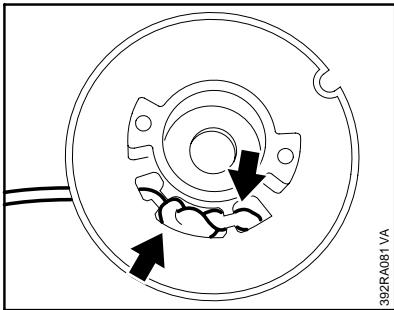
- Remove starter cover, [see 6.2](#).
- Remove rope rotor, see manual "Troubleshooting, standard repairs".



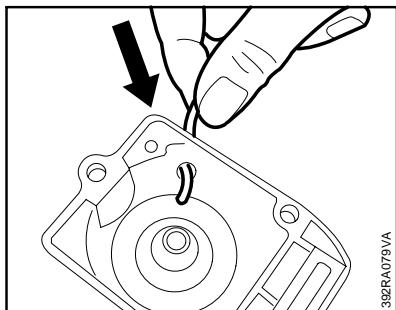
- Thread starter rope into hole in side of rope rotor.
- Secure starter rope with a simple knot.



- Pull knot out of compartment in rope rotor.
- Undo knot and pull starter rope out of rope rotor and starter cover.

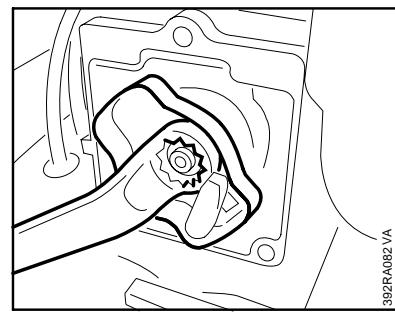


- Pull starter rope back until knot lies in compartment in rope rotor.
- Press end of rope into locating slot.
- Install rope rotor, see manual "Troubleshooting, standard repairs".
- Tension rewind spring, [see 6.3.2](#).
- Install starter cover, [see 6.2](#).



- Thread new starter rope through rope guide bush from the outside.

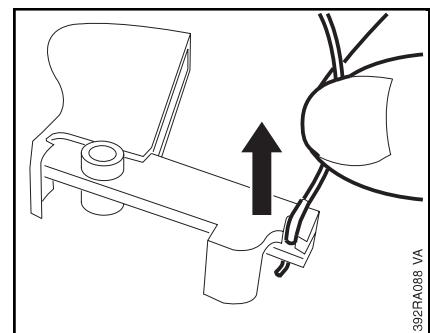
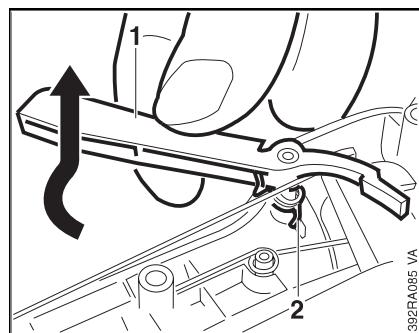
6.6 Starter carrier/pawl



- Block piston with the aid of the locking strip, [see 3.1](#).
- Remove starter cover, [see 6.2](#).
- Unscrew starter carrier from crankshaft stub.
- Remove pawl, see manual "Troubleshooting, standard repairs".
- Screw on starter carrier and tighten to a torque of 20 Nm.
- Install starter cover, [see 6.2](#).
- Pull out locking strip.
- Screw in spark plug and tighten to a torque of 20 Nm.
- Reconnect spark plug terminal.
- Refit shroud.

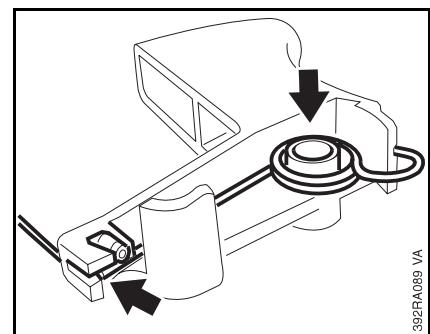
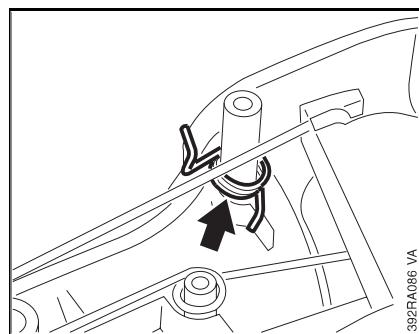
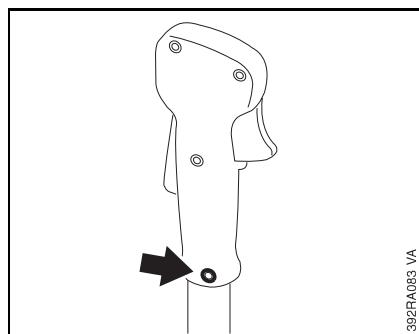
7. Throttlecontrol 7.1 Throttle trigger / interlock lever

Throttle cable with one short-circuit wire



- Slightly pull up interlock lever (1) and turn it aside until torsion spring (2) is relaxed.
- Draw interlock lever off its pivot pin.

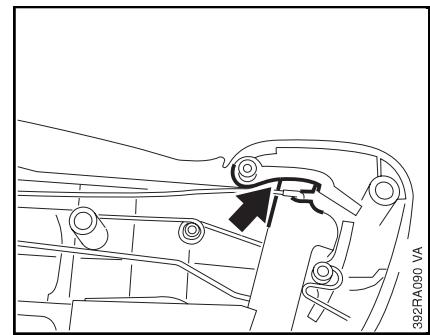
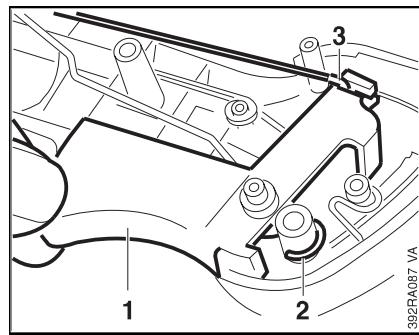
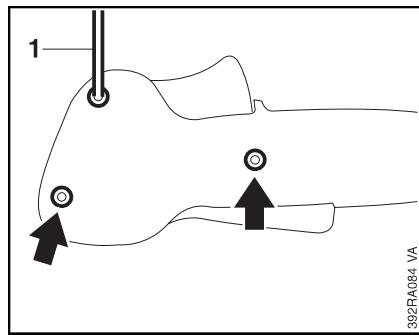
- Unhook throttle cable from throttle trigger.
- The parts are assembled in reverse order.



- Remove screw.
- Pull off handle.

- Unhook torsion spring.

- After hooking in the throttle cable, slip torsion spring over pivot pin and slide the long leg of the spring into the slot.

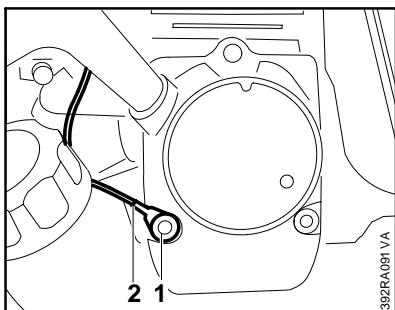


- Remove screws with screw-driver (1) 5910 890 2301.
- Separate the two halves of the handle.

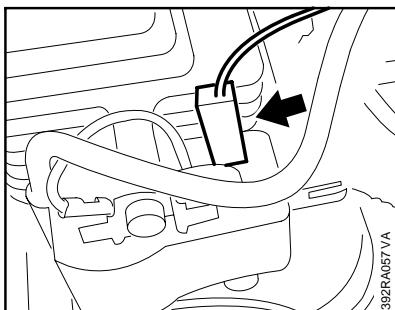
- Pull throttle trigger (1) with torsion spring (2) and fitted throttle cable (3) off its pivot pin.

- The interlock lever must lie behind the throttle trigger.
- Screw both halves of the handle together with a torque of 2.5 Nm.

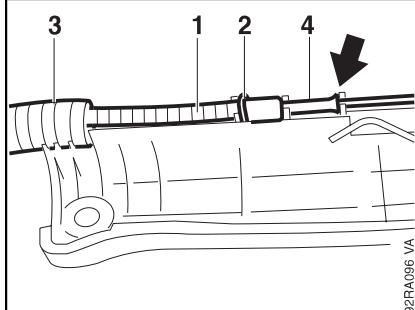
7.2 Throttle cable with one short-circuit wire



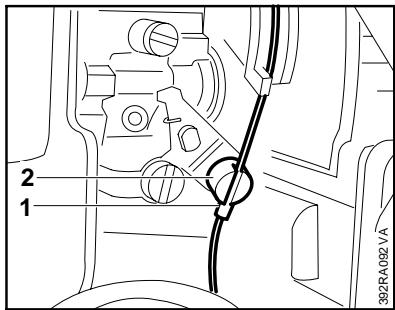
- Remove shroud, [see 3.1.](#)
- Remove screw (1).
- Remove throttle cable extension (2).



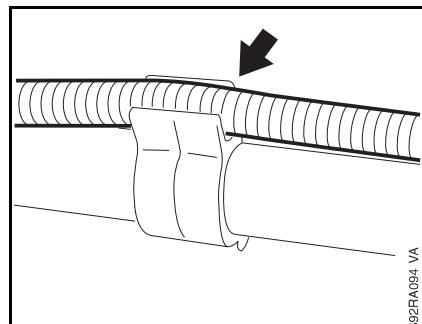
- Disconnect plug of short-circuit wire from socket on ignition module.



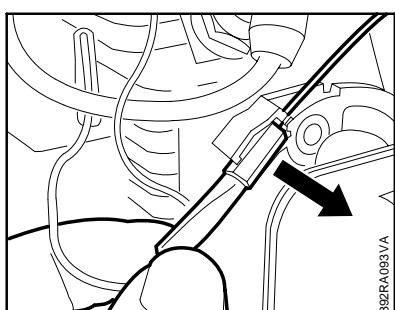
- Ensure that throttle cable (1), contact spring (2), protective tube (3) and insulating element (4) are correctly seated.
- Ensure that short-circuit wire makes contact correctly.



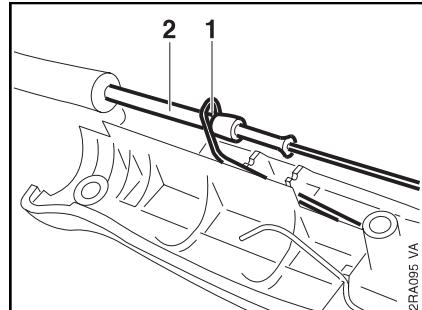
- Unhook nipple of throttle cable from slotted pin (2) on throttle lever.



- Remove protective tube on throttle cable from throttle cable holder.
- Remove throttle trigger, [see 7.1.](#)



- Pull throttle cable out of tensioner.

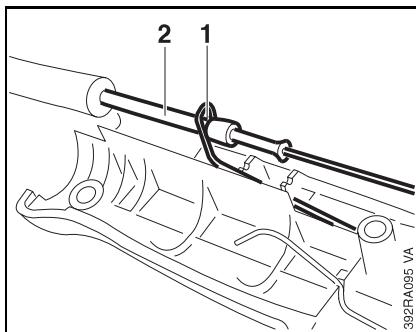


- Slightly pull up contact spring (1) and remove throttle cable (2).

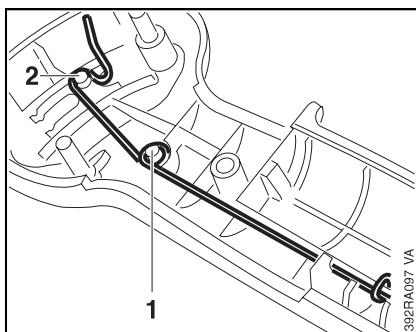
The parts are assembled in reverse order.

7.3 Contact spring/detent spring in control handle

Throttle cable with one short-circuit wire



- Remove throttle trigger, [see 7.1.](#)
- Lift contact spring (1) up slightly and remove throttle cable (2).

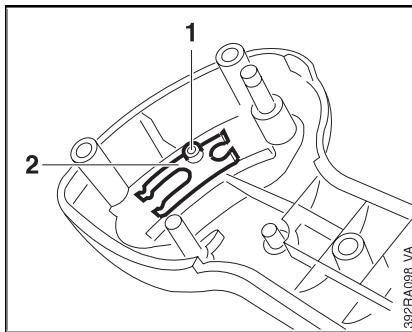


- Unhook contact spring from pivot pin (1) and stud bolt (2).

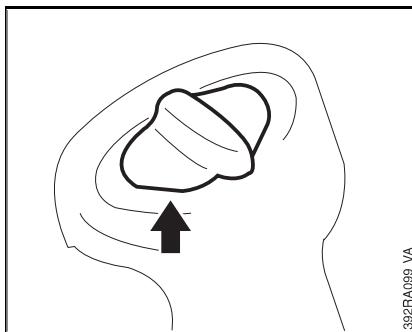
7.4 Throttle trigger / interlock lever

Throttle cable with two short-circuit wires

- Refer to the manual "Trouble-shooting, standard repairs" with regard to changing the throttle trigger, interlock lever, contact spring and detent spring.

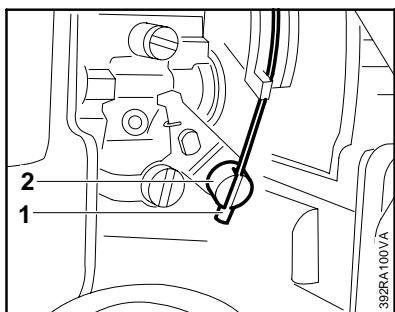


- Unscrew stud bolt (1) on slide control.
- Remove detent spring (2).



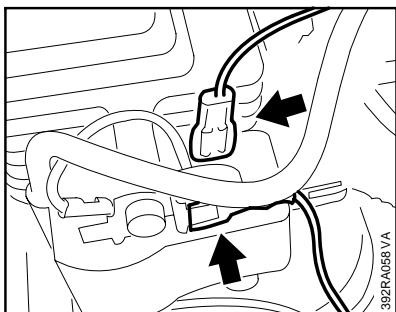
- Pull slide control out of handle moulding.
- The parts are assembled in reverse order.
- The contact spring must be inserted correctly in the outer groove around the stud bolt.

7.5 Throttle cable with two short-circuit wires

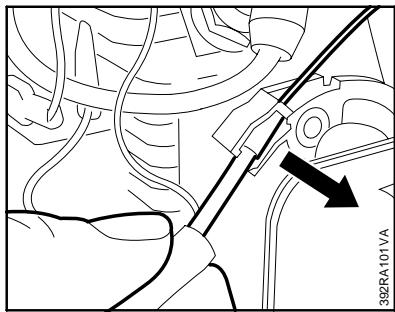


- Remove shroud, [see 3.1.](#)
- Unhook nipple (1) on throttle cable from slotted pin (2) on throttle lever.

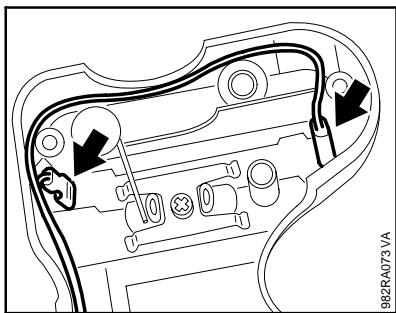
Note: See 7.2 in the case of machines with **one** short-circuit wire.



- Unplug short-circuit wires from sockets on ignition module.
- Remove throttle trigger, [see 7.4.](#)

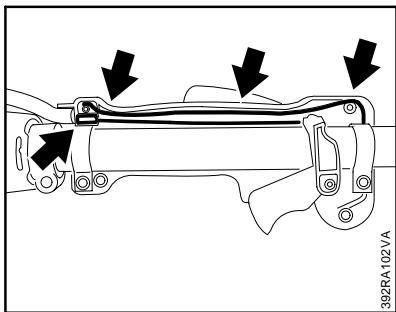


- Pull throttle cable out of tensioner.



- Disconnect short-circuit wires from connector lugs.

The parts are installed in reverse order.



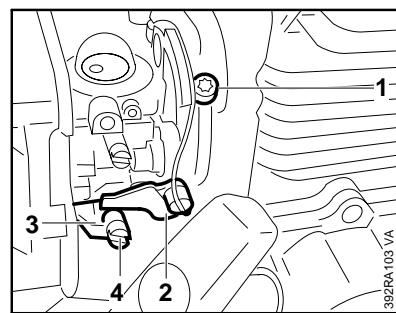
- Short-circuit wires, throttle cable and tubing for throttle cable must be correctly routed inside the handle moulding.

7.6 Adjusting the throttle cable

Note: The throttle lever must butt against the stop on the carburetor body when the throttle trigger is in the full throttle position and against the idle speed adjusting screw when the trigger is in the idle position.

The throttle cable is adjusted by moving the tensioner.

- Remove shroud, [see 3.1.](#)
- Check correct setting of idle speed adjusting screw.



Important! Note adjusting range of idle speed adjusting screw.

- To make the adjustment, press the throttle trigger to the full throttle position.
- Turn adjusting screw (1) clockwise until throttle lever (2) butts against stop (3) on carburetor body.
- Release throttle trigger (idle position). The throttle lever must butt against the idle speed adjusting screw (4).
- Refit shroud.

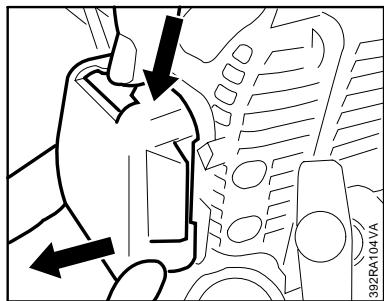
8. Fuel System

8.1 Air filter

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

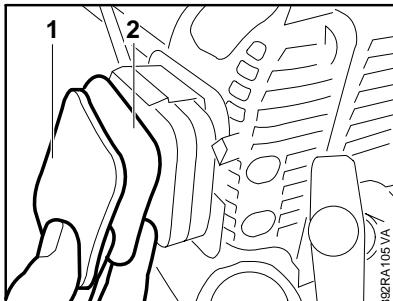
The air filter must be cleaned whenever engine power begins to drop.

- Close choke shutter.



- Press tab on filter housing backwards.
- Remove filter cover.

- Clean away all loose dirt around air filter.



- Remove foam filter (1) and felt filter (2).

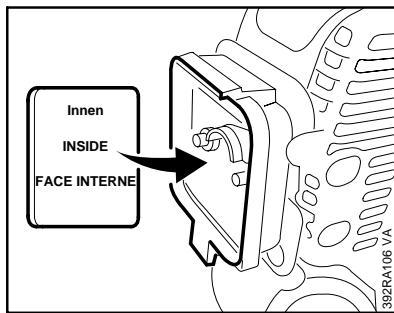
- Wash foam filter in dry, non-flammable liquid (e.g. warm soapy water) and dry it.

- The felt filter must be replaced! It can also be cleaned by tapping or blowing - it must **not** be washed.

Note: Damaged parts must be replaced immediately.

The parts are installed in reverse order.

- Place foam filter in filter cover.



- Place felt filter (with marking inside and tab outside) in filter housing.

8.2 Carburetor

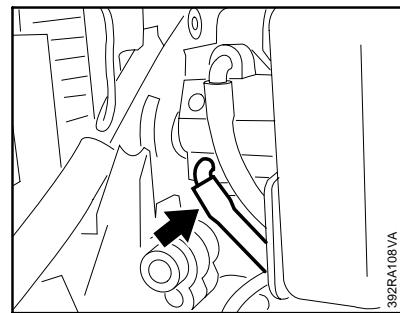
8.2.1 Leakage testing

Refer to the manual "Trouble-shooting, standard repairs" for troubleshooting procedures.

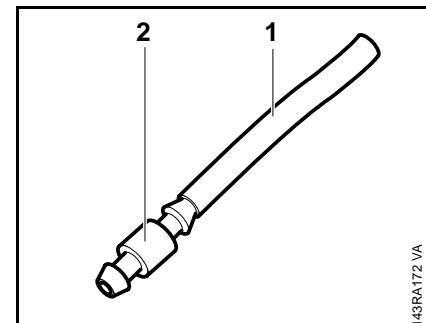
Important! The tank vent must also be checked and cleaned - **see 8.3** - if faults develop in the carburetor or fuel supply.

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

- Remove shroud, **see 3.1**.

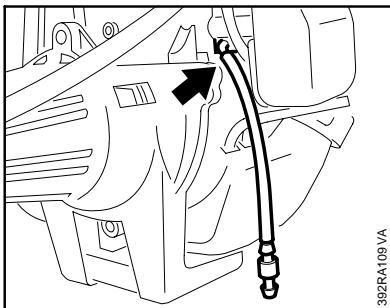


- Pull fuel hose off elbow connector.

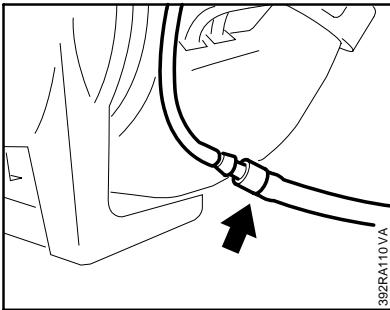


- Connect fuel line (1) 1110 141 8600 onto socket (2) 0000 855 9200.

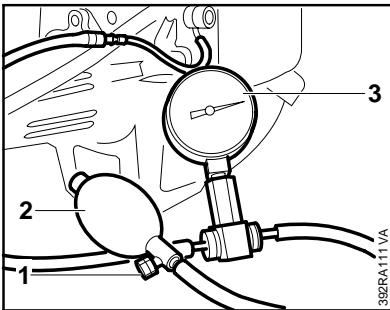
8.2.2 Removal and installation



- Connect fuel line with socket to elbow connector of carburetor.



- Connect pressure hose from tester to socket.



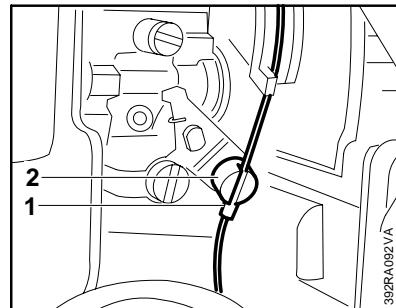
- Close venting screw (1) on pump ball (2) and pump air into the carburetor until pressure gauge (3) shows a pressure of approx. 0.8 bar.

The carburetor is airtight if this value remains constant. If it drops, however, this may be due to two main reasons:

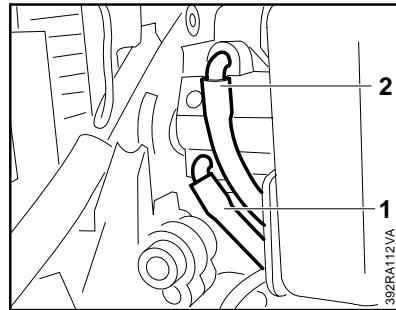
1. Inlet needle does not seal properly (impurities in valve seat or sealing cone of inlet needle damaged or inlet control lever jammed).
2. Metering diaphragm damaged.

The carburetor must be repaired in both cases; refer to the "Carburetor" manual.

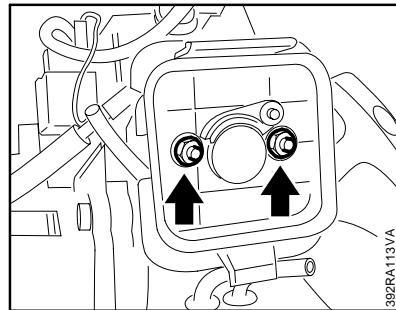
- After the test, open venting screw and disconnect fuel line from elbow connector.
- Connect fuel hose to elbow connector.
- Refit shroud.



- Remove shroud, see 3.1.
- Disconnect throttle cable nipple (1) from slotted pin (2) on throttle lever.

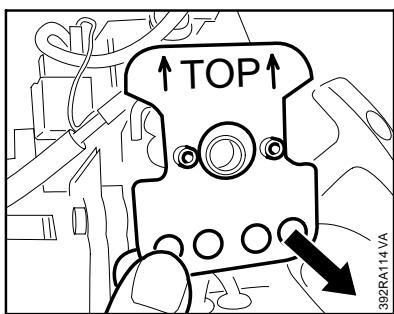


- Pull fuel hose (1) off connecting socket on fuel pump flange.
- Disconnect fuel hose (2) from elbow connector on carburetor.



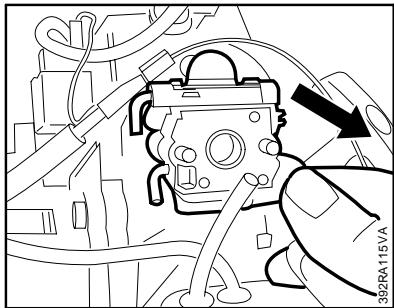
- Remove air filter, see 8.1.
- Unscrew nuts.
- Remove filter housing.

8.2.3 Adjustment (two adjusting screws)

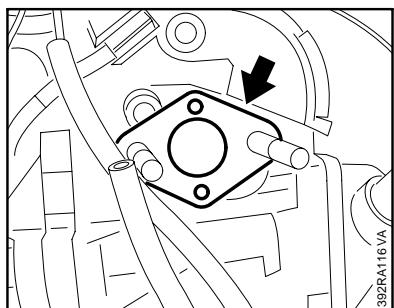


- Remove heat shield.

Important: Note installed position.



- Remove carburetor.



- Remove gasket.

The parts are fitted in reverse order.

- Tighten nuts to a torque of 4.0 Nm.

The maximum speed of the carburetors is mechanically limited by a cut-off valve. Unlike the case in machines without cut-off valve, the maximum speed cannot be set to a value higher than that specified when adjusting the carburetor.

The machine similarly cannot be tuned to "top performance" on the basis of its speed. The only thing that is achieved by using an excessively lean carburetor setting is that it increases the risk of engine damage without increasing either the speed or the performance.

Minor corrections **may** be necessary at great altitudes (mountain regions), at sea level or when changing the cutting attachment - fitting a mowing head instead of the metal cutting tool and vice versa.

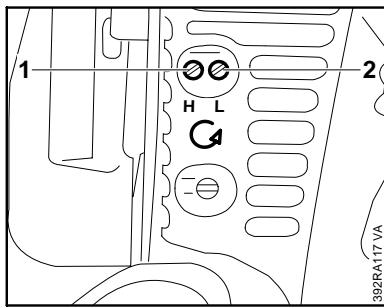
When correcting the setting of the **H** = high-speed adjusting screw:
Use a tachometer!

Note: If a tachometer is not available, the high-speed and low-speed adjusting screws must not be turned beyond the standard setting to make the mixture leaner.

- Fit an approved cutting tool.

The following must additionally be noted when changing the mowing head:

- Set correct line length: **every** nylon line must extend as far as the blade on the deflector shield!
- Check and clean air filter if necessary.
- Start engine and let it warm up.



Standard setting

The standard setting must be made first when adjusting the carburetor for the first time.

- Carefully turn both adjusting screws clockwise as far as possible.

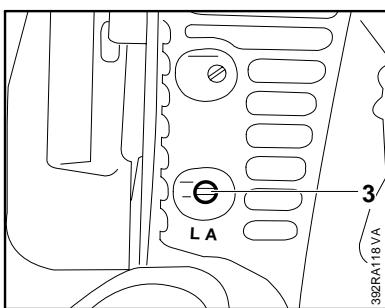
Then adjust as follows:

- H** = Back off high-speed adjusting screw (1) one turn
L = Back off low-speed adjusting screw (2) one turn

H = Turn high-speed adjusting screw clockwise in mountain regions (leaner mixture) and counterclockwise at sea level (richer mixture).

The screw should only be turned very little and slowly, as engine performance changes noticeably with the slightest adjustment.

8.2.4 Adjustment (one adjusting screw)



Set idle speed

Engine stops while idling

- Adjust to standard setting!

LA = Turn idle speed adjusting screw (3) clockwise until the cutting tool begins to move, then back off one half-turn.

Cutting tool rotates while engine is idling:

- Adjust to standard setting!

LA = Turn idle speed adjusting screw (3) counterclockwise until cutting tool no longer rotates when engine idles, then turn another half-turn in same direction.

The carburetor does not have an adjusting screw for the maximum speed (H).

The carburetor is tuned to ensure that the engine is supplied with an optimum fuel/air mixture in **all** operating conditions.

Setting a maximum limit for the idle speed mixture also limits the emissions at idle speed and part-throttle operation.

Set idle speed

Engine stops when idling:

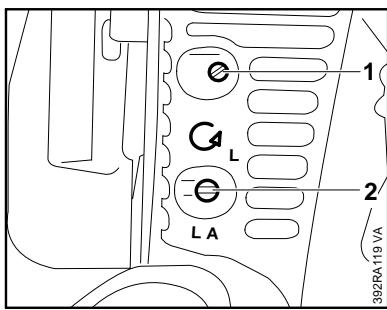
- Adjust to standard setting!

LA = Turn idle speed adjusting screw (2) clockwise until the cutting tool begins to move, then back off one half-turn.

Mowing head rotates while engine is idling:

- Adjust to standard setting!

LA = Turn idle speed adjusting screw (2) counterclockwise until mowing head no longer rotates when engine idles, then turn another half-turn in same direction.



Standard setting

The standard setting must be obtained first when adjusting the carburetor for the first time.

L = Carefully turn the low-speed adjusting screw (1) clockwise as far as possible, then back off one turn counterclockwise (**L** = one turn open).

- Fit an approved cutting tool.

The following must additionally be noted when changing the mowing head:

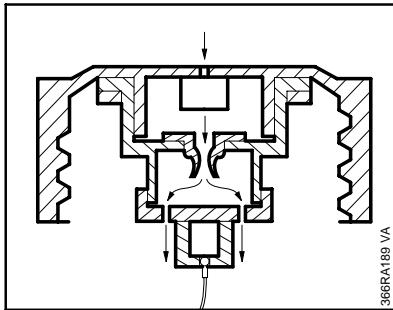
- Set correct line length: **every** nylon line must extend as far as the blade on the deflector shield!
- Check and clean air filter if necessary.
- Start engine and let it warm up.

8.3 Tank vent

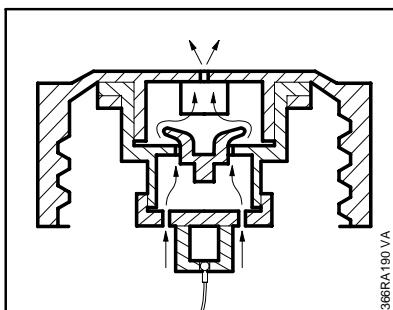
Correct operation of the carburetor is only possible if atmospheric pressure and internal fuel tank pressure are equal at all times. This is ensured by the tank vent.

Important! The tank vent must always be checked and cleaned as well if any faults develop in the carburetor or fuel supply.

Both functions are checked by performing pressure and vacuum tests on the tank via the fuel hose.



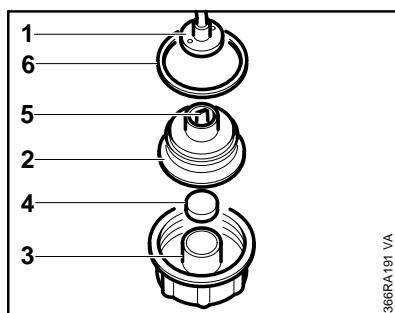
Equalization of tank pressures from the outside inwards takes place through the bore in the fuel filler cap, the sintered filter, the valve and the bores in the cap.



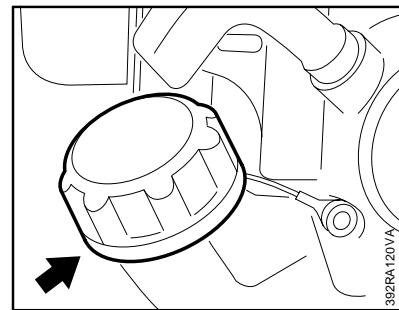
Equalization of tank pressures from the inside outwards takes place through the bores in the cap and valve body, the sintered filter and the bore in the fuel filler cap.

8.4 Pickup body

The diaphragm pump draws fuel out of the tank and into the carburetor via the fuel hose. Any impurities in the fuel are retained by the pickup body (filter). The fine pores of the filter eventually become clogged with minute particles of dirt. This restricts the passage of fuel and results in fuel starvation.



Important! The fuel tank and pickup body must always be checked first if any faults develop in the fuel supply system. Clean the fuel tank if necessary.

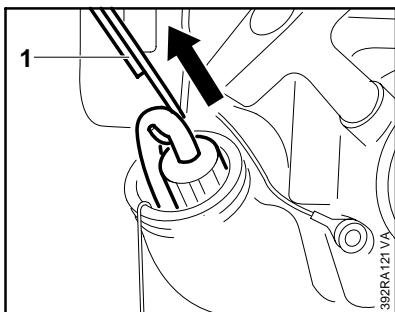


Cleaning the fuel tank

- Unscrew fuel filler cap and drain fuel tank.
- Fill with a little fresh petrol.
- Tightly close fuel filler cap and vigorously shake brushcutter.
- Unscrew fuel filler cap again and drain tank.

Note: Ensure that the fuel is disposed of in accordance with regulations!

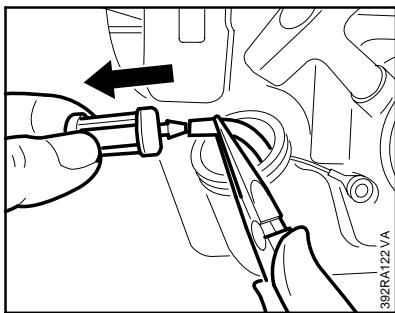
8.5 Fuel tank/ hoses



Pickup body

- Draw pickup body out of fuel tank with assembly hook (1) 5910 893 8800.

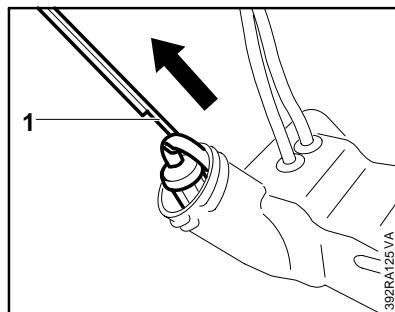
Note: Ensure that the fuel hose is not overextended.



- Pull pickup body off fuel hose.
- Replace pickup body.

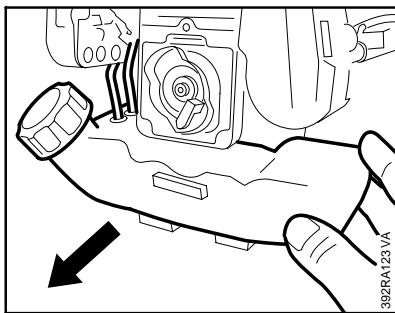
The parts are installed in reverse order.

- Drain fuel tank.
- Remove starter cover, **see 6.2.**
- Pull fuel hoses off elbow connectors on carburetor, **see 8.2.2.**



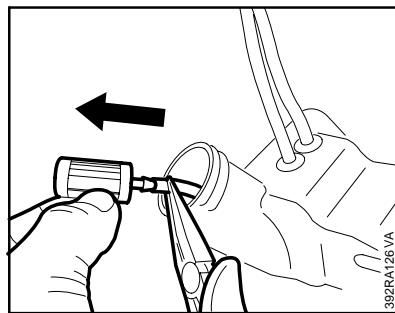
Fuel hoses

- Unscrew fuel filler plug and remove with chain.
- Draw pickup body out of fuel tank with assembly hook (1) 5910 893 8800.

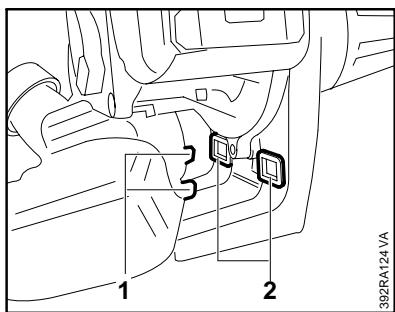


- Remove fuel tank.
- Remove fuel hoses if necessary.

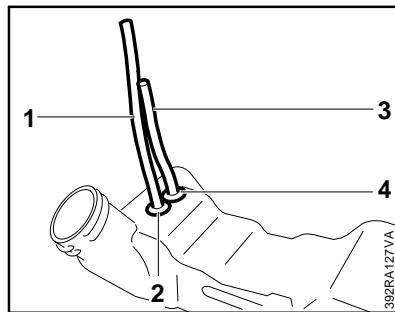
The parts are installed in reverse order.



- Pull pickup body off fuel hose.



- Pegs (1) must engage in inserts (2).

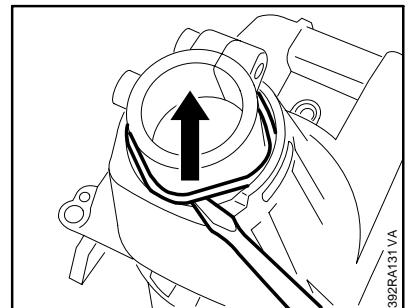
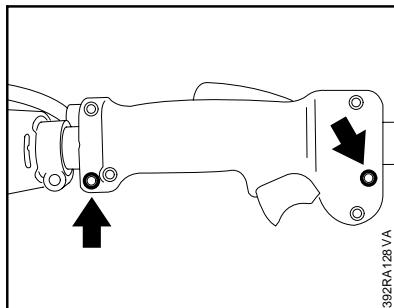


- Pull out venting hose (1) with grommet (2).
- Pull out fuel hose (3) with grommet (4).

9. AV system 9.1 Repair

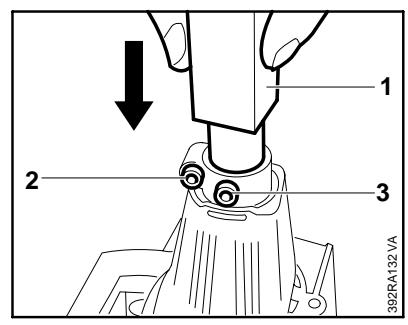
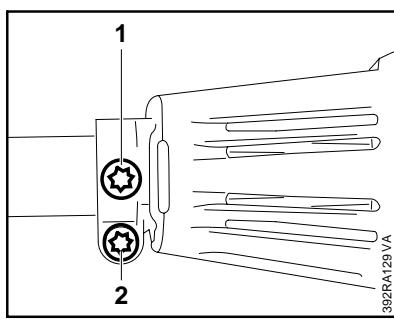
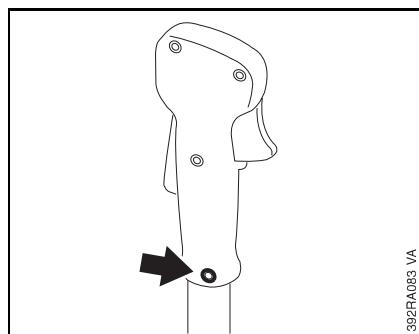
The vibration damping connection between engine and protective tube is effected by a rubber buffer (AV system) in the fan housing.

- Remove shroud, see 3.1.



- Release screws securing the clamping collars of the control handle on machines with looped handle.

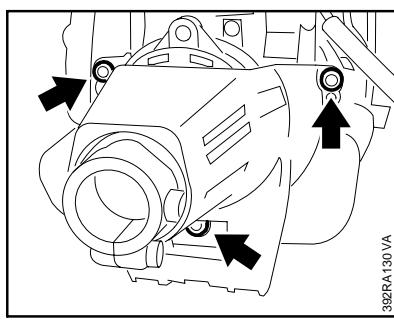
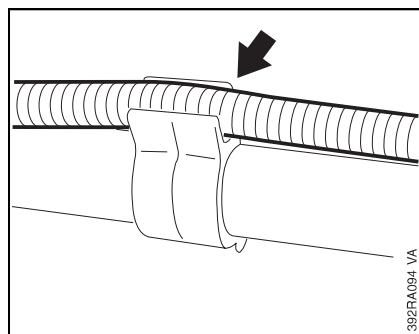
- Prise circlip out of fan housing.
- Remove circlip above AV sleeve.



- Remove screw on machines with cowhorn handle.
- Remove control handle.

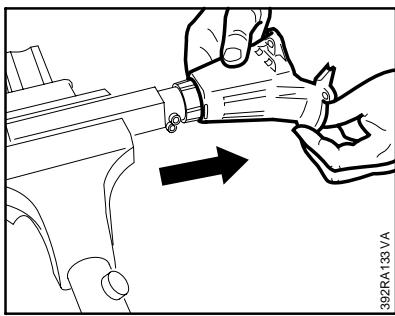
- Remove screw (1) securing the AV sleeve.
- Undo clamping screw (1).
- Pull out protective tube.

- Slide assembly tool (1) 4126 893 4900 into AV sleeve as far as possible.
- Tighten clamping screw (2).
- Gently tighten locating screw (3) if necessary.

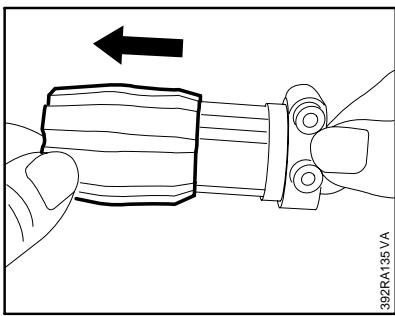


- Pull protective tube on throttle cable out of cable holder.

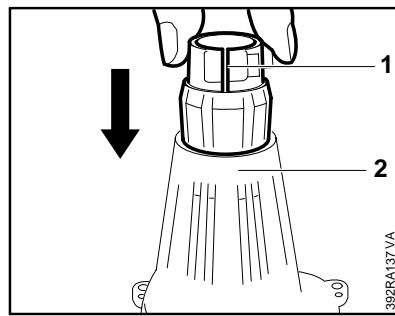
- Remove screws.
- Remove fan housing.



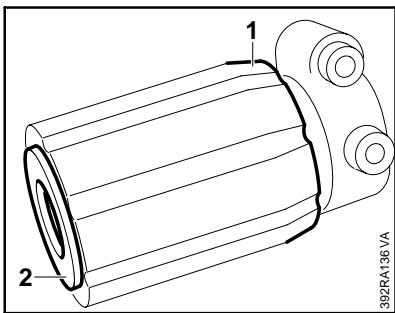
- Apply a few drops of lubricant (e.g. washing-up liquid) between fan housing and rubber buffer.
- Fit assembly tool.
- Pull fan housing off rubber buffer.



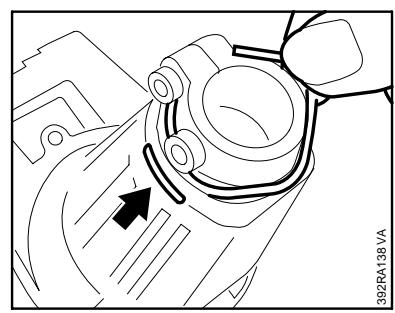
- Pull rubber buffer off AV sleeve.



- Press rubber buffer into fan housing as far as possible so that the slit (1) is on the round side (2) of the housing.

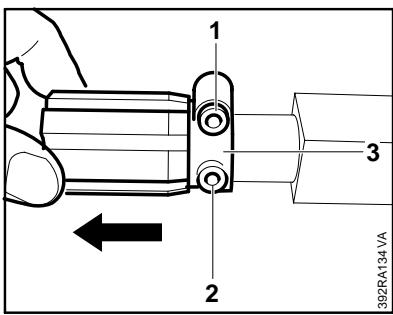


- Slide rubber buffer onto sleeve with the tapered end (1) first until the collar (2) is behind the rubber buffer.
- Rub a little lubricant (e.g. washing-up liquid) onto the rubber buffer.

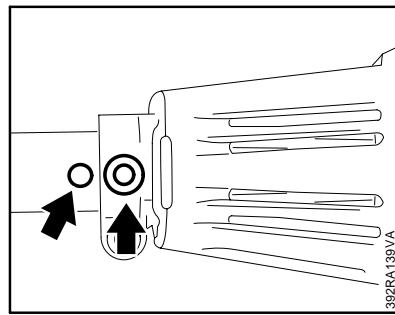


- Insert circlip with the opening facing the clamping screw so that it rests in the slots in the fan housing.

The remaining parts are installed in reverse order.

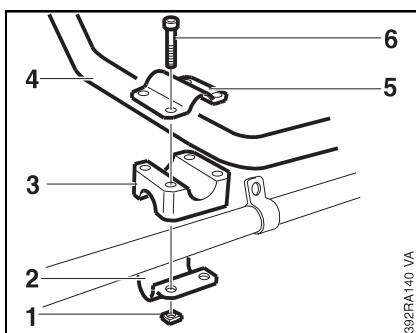


- Undo clamping screw (1) and possibly also locating screw (2).
- Pull AV sleeve (3) off assembly tool.



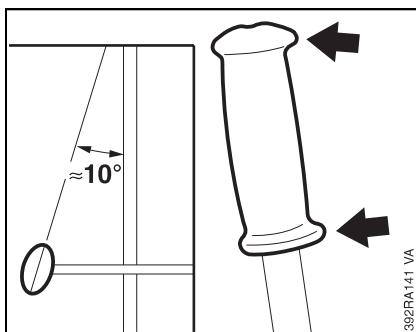
- Slide protective tube on until the holes line up.
- Torque locating screw down to 2.5 Nm and clamping screw to 5.5 Nm.

10. Shaft Cowhorn handle



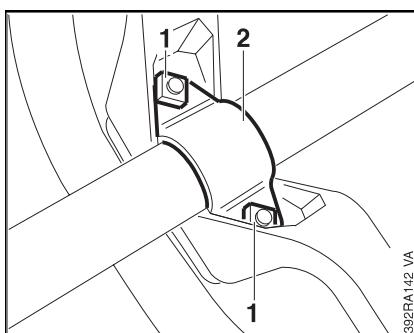
- Remove control handle, [see 9.1.](#)
- Unscrew nuts (1).
- Remove lower clamping element (2), clamping element (3), cowhorn handle (4) and upper clamping element (5) with bolts (6).
- Carefully slice open left-hand handle and pull it off.
- Clamp cowhorn handle in vice with protective jaws (vee jaws).
- Coat interior of handle with a little lubricant (e.g. washing-up liquid) around the opening.

Note: The handle can subsequently be rotated on the handlebar if too much lubricant is used. It must therefore be allowed to dry for some time after installation.



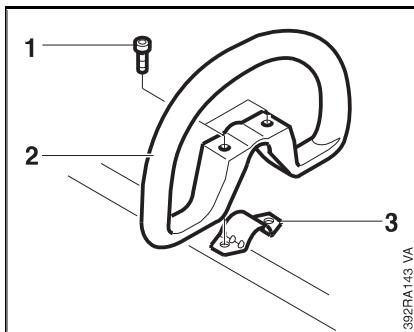
- Slide handle onto handlebar so that the longer ends point towards the gearbox and are at an angle of approx. 10 ... 15 degrees in relation to the protective tube.

10.2 Looped handle



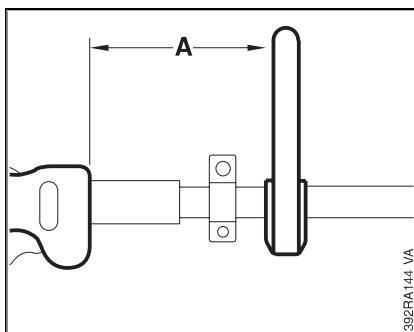
Looped handle without U-bar

- Unscrew nuts (1).
- Remove lower bracket (2).

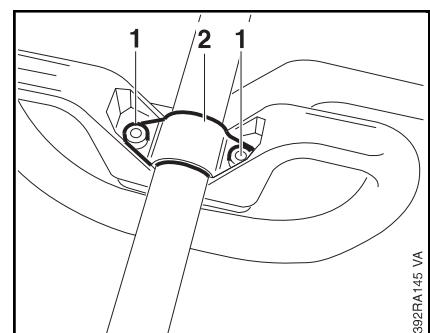


- Pull out bolts (1).
- Remove looped handle (2) and upper bracket (3).

The parts are fitted in reverse order.

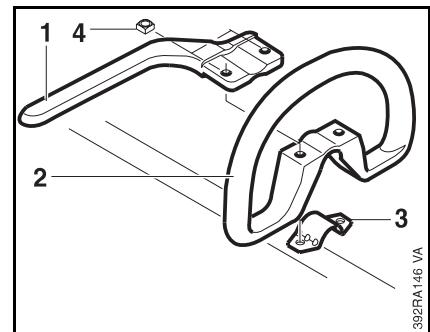


- Line looped handle up at a distance A = 20 cm in front of control handle and secure it in position.



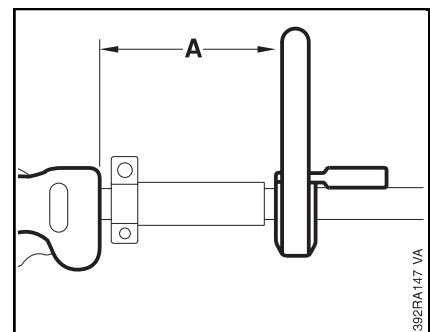
Looped handle with U-bar

- Remove screws (1).
- Remove lower bracket (2).

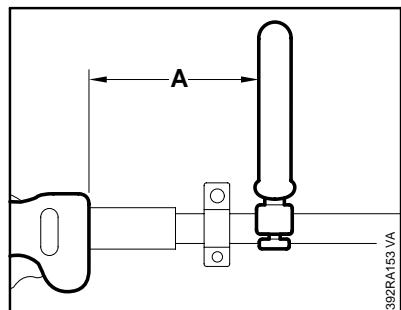
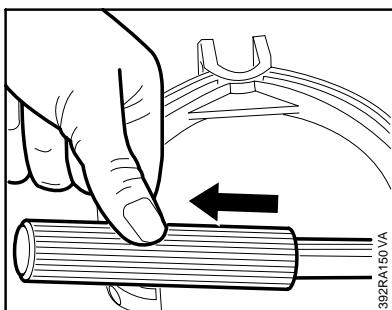
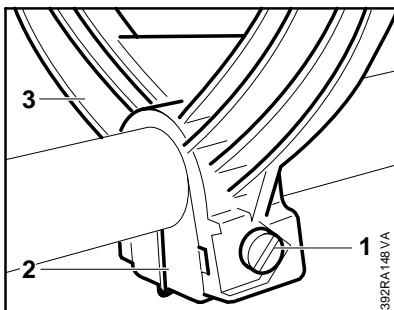


- Remove U-bar (1), looped handle (2) and upper bracket (3).
- Remove square nuts (4) from U-bar.

The parts are fitted in reverse order.



- Line looped handle up at a distance A = 20 cm in front of control handle and secure it in position.

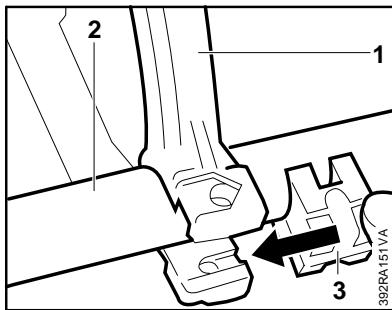


Looped handle with handle hose

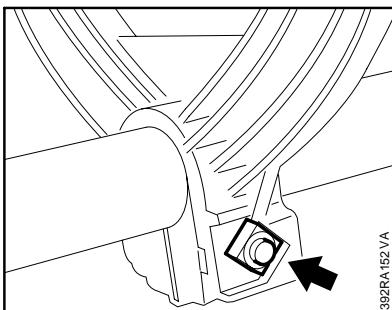
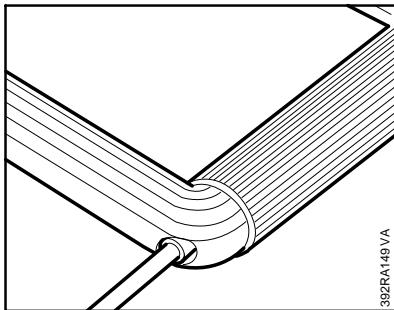
- Remove screw (1).
- Pull out clamping element (2).
- Remove looped handle (3) from protective tube.

- Turn upper part of looped handle a little to the side and pull off handle hose.

- Line looped handle up at a distance $A = 15$ cm in front of control handle and secure it in position.



- Position looped handle (1) on protective tube (2).
- Position clamping element (3) on protective tube and slide it into the looped handle.



- Remove screw to replace handle hose.

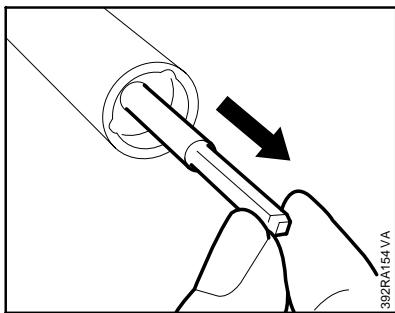
- Insert square nut.
 - Introduce bolt and tighten slightly.

10.3 Drive shaft / insulating tube

The drive shaft is contained in an insulating tube inside the protective tube. The ends of the protective tube are sealed by plugs.

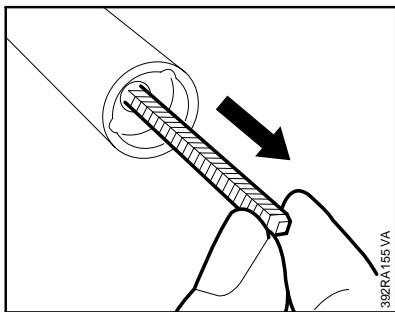
- Remove bearing housing / gearbox, **see 11.1, 11.2 and 11.3.**

Drive shaft



FS 85

- Pull rigid drive shaft out of protective tube.



FS 75, 80, FC 75

- Pull flexible drive shaft out of protective tube.

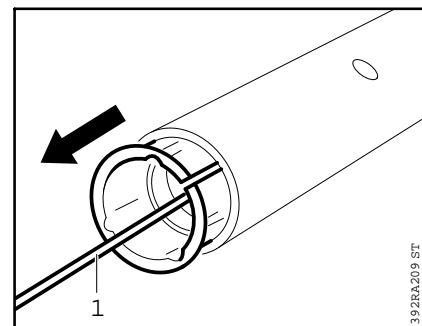
All series

Note: The shaft must be replaced if it has turned blue.

- Coat the drive shaft with STIHL multi-purpose grease - **see 13.2** - before inserting it in the protective tube.

Important! The grease must be applied to the drive shaft uniformly. It must never be forced directly into the protective tube.

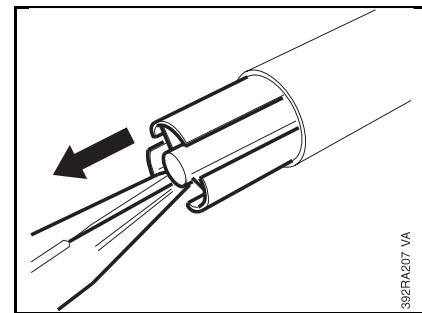
- Push drive shaft into protective tube.



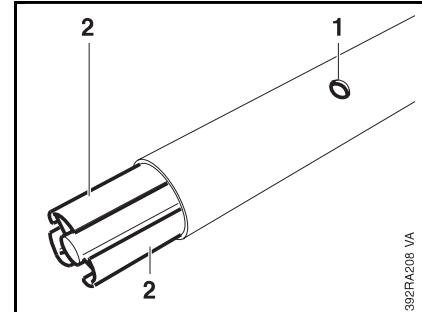
Insulating tube

- Remove drive shaft.

- Remove plug with assembly hook (1) 5910 890 2800.



- Pull out insulating tube.

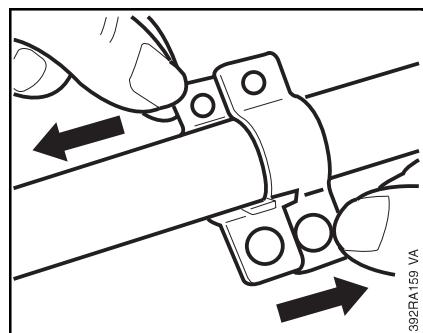
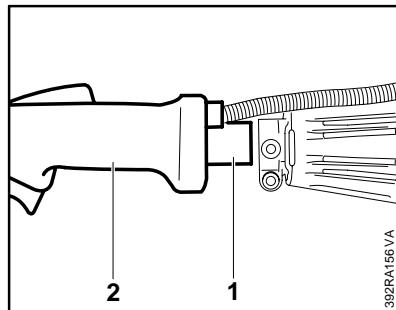


- The hole (1) must be located between the webs (2).

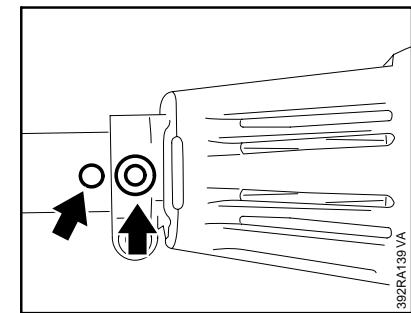
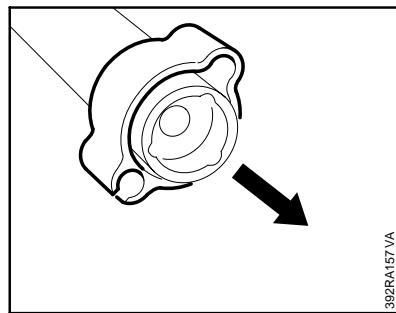
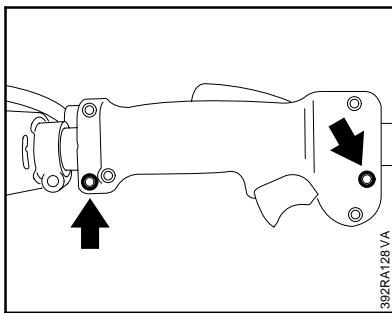
- Fit plug and install drive shaft.

10.4 Protective tube

- Remove drive shaft, see 10.3.
- Remove cowhorn handle or looped handle, see 10.1 or 10.2.



- Pull out protective tube.
- On machines with looped handle, pull protective tube (1) out of control handle (2) at the same time.

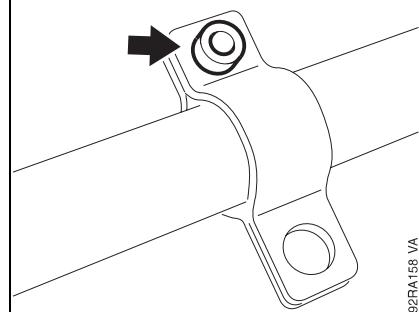
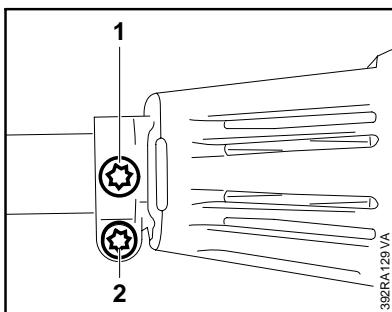


- Undo clamping screws on control handle of machines with looped handle.

- Remove throttle cable holder, if fitted.

- Push protective tube in until the holes line up.

- Torque locating screw down to 2.5 Nm and clamping screw to 5.5 Nm.



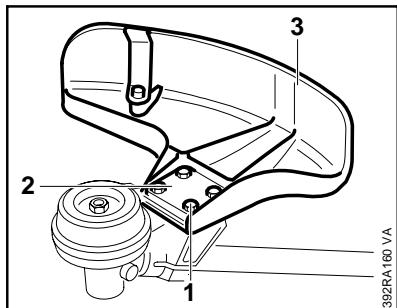
- Remove locating screw (1) from AV sleeve.
- Undo clamping screw (2).

- Remove bolts from carrying ring.

11. Cuttingtooldrive 11.1 Bearing housing (FS 75)

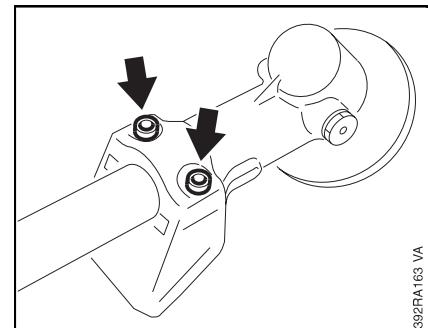
Refer to manual "Troubleshooting, standard repairs" for troubleshooting procedures.

11.2 Gearbox (FS 80, 85)



Deflector for mowing heads

- Remove screws (1).
- Remove base (2) and deflector (3).



• Undo clamping screws on gearbox.

- Pull gearbox off protective tube.

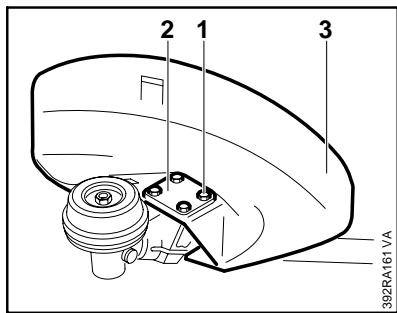
- Refer to manual "Troubleshooting, standard repairs" for further details on disassembly and assembly.

- Slide gearbox onto protective tube, turning the output shaft of the gear back and forth at the same time so that the square on the input shaft can engage the square socket in the drive pinion.

- Push gearbox on as far as possible and align it.

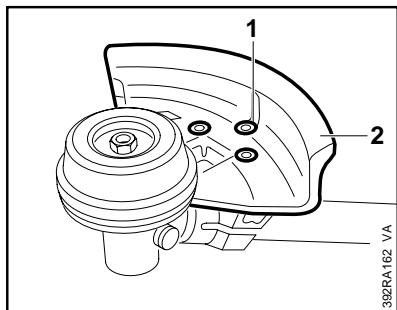
- Torque clamping screws down to 9.0 Nm.

- Refit deflector or stop if removed.



Deflector for all cutting tools

- Remove screws (1).
- Remove base (2) and deflector (3).

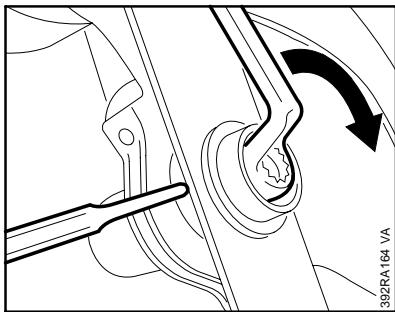


Stop for circular saw blades

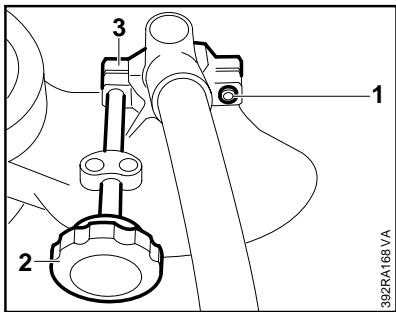
- Remove screws (1).
- Remove stop (2).

392RA160 VA
392RA163 VA
392RA161 VA
392RA162 VA

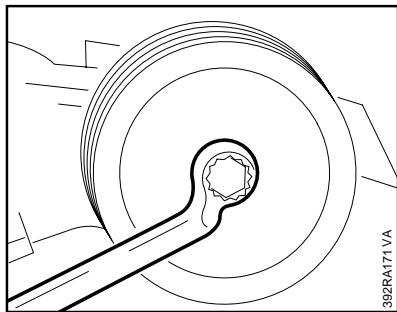
11.3 Gearbox (FC 75)



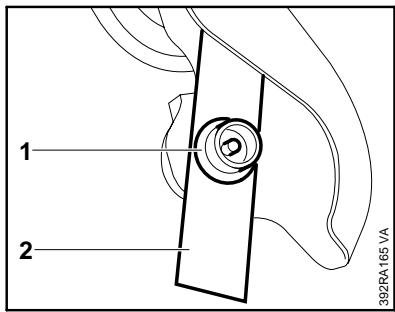
- Lock output shaft with pin, dia. 5 mm.
- Unscrew collar nut in the direction of the arrow (left-hand thread).



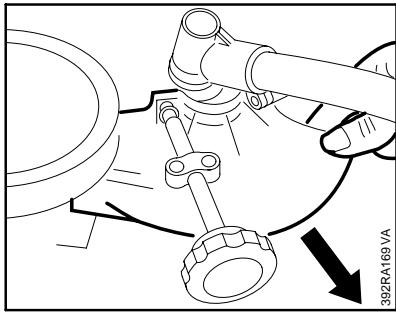
- Unscrew clamping screw (1) and knurled screw (2).
- Remove clamping element (3).



- Unscrew bearing bolt.
- Remove wheel.

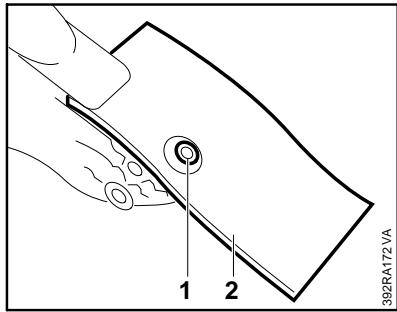


- Remove outer thrust plate (1) and blade (2).

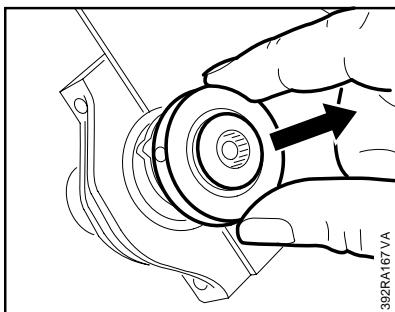


- Pull deflector off gearbox.

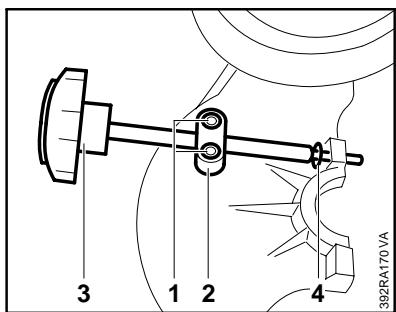
Note: The following three actions are required to replace the deflector.



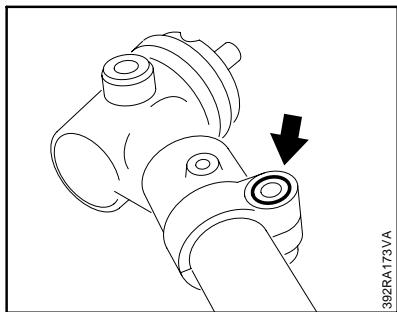
- Remove screw (1).
- Remove rubber guard (2).



- Remove inner thrust plate.



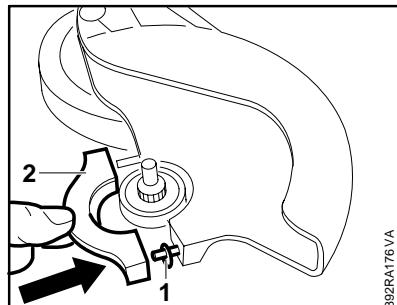
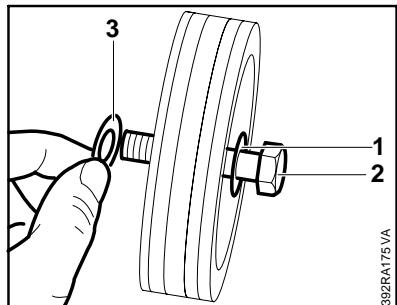
- Remove screws (1) on holder (2).
- Pull knurled screw (3) out and remove washer (4).



- Undo clamping screw.
- Pull gearbox off protective tube.

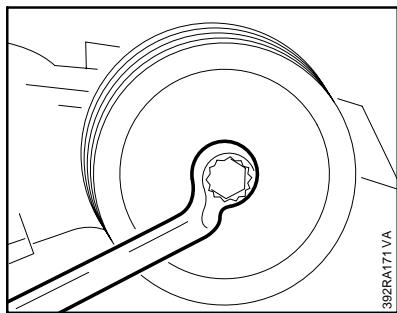
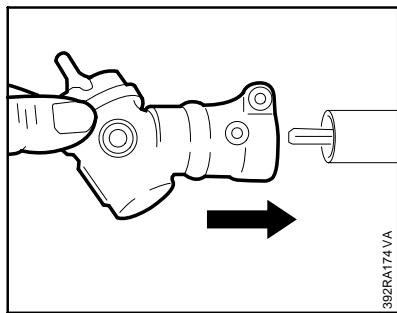
- Refer to manual "Troubleshooting, standard repairs" for further details on disassembly and assembly.

- Slide gearbox onto protective tube, turning the output shaft of the gear back and forth at the same time so that the square on the flexible input shaft can engage the inner square of the drive pinion.



- Slide washer (1) onto bearing bolt (2).
- Insert bearing bolt in wheel.
- Fit washer (3).

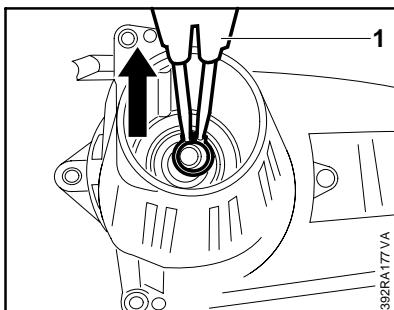
- Slide a washer (1) over clamping screw.
- Position clamping element (2).
- Screw on new self-locking nuts and torque down to 7.5 Nm.
- Refit blade if removed, reversing the sequence of steps for disassembly.
- Tighten collar nut to a torque of 25.0 Nm.



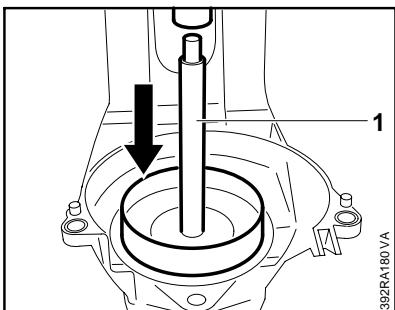
- Slide gearbox on as far as possible and line it up.
- Torque clamping screw down to 7.5 Nm.
- Refit rubber guard on deflector if removed.

- Position wheel on deflector.
- Screw in bearing bolt and tighten to a torque of 19.0 Nm.
- Refit knurled screw on deflector if removed.
- Position deflector on gearbox.

11.4 Clutch drum

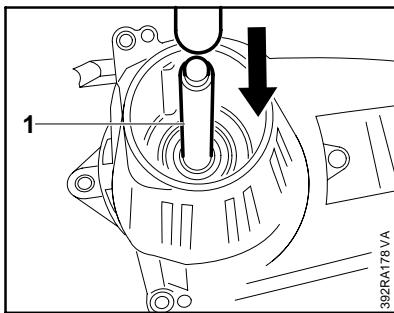


- Remove rubber buffer (AV system) from fan housing, **see 9.1.**
- Remove circlip for output stub of clutch drum with pliers (1) 0816 610 1495.

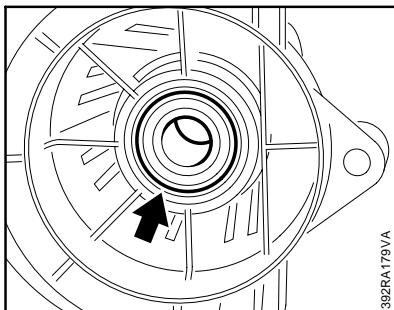


- Press clutch drum in as far as possible with assembly drift (1) 1108 893 4700.

The remaining parts are installed in reverse order.

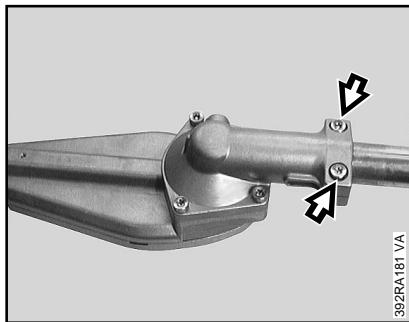


- Press clutch drum out of deep groove ball bearing with assembly drift (1) 1108 893 4700.

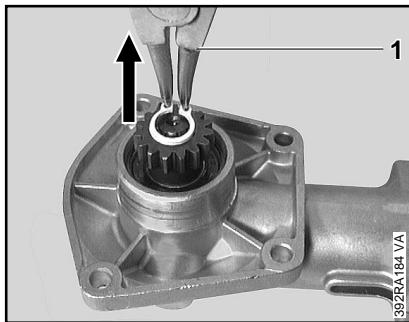


- Examine ball bearing and replace fan housing if found to be defective.

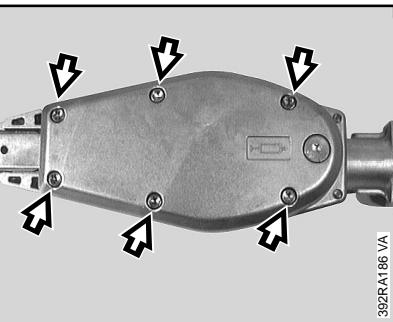
**12.1 Cuttingdevice(H L 75)
Gearbox**



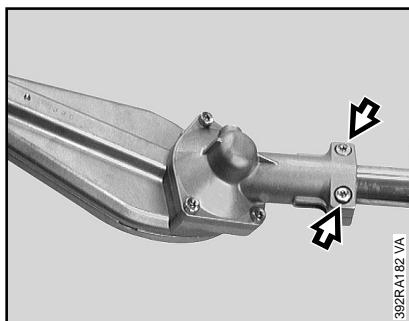
- Undo clamping screws on straight gearbox.
- Pull gearbox with cutting blade off protective tube.



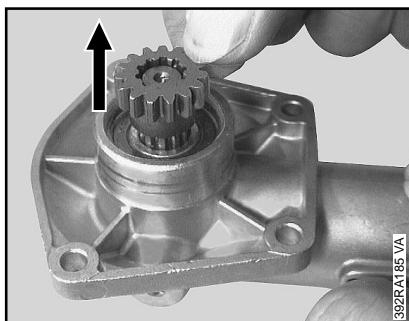
- Remove circlip with pliers (1) 0811 611 8200.



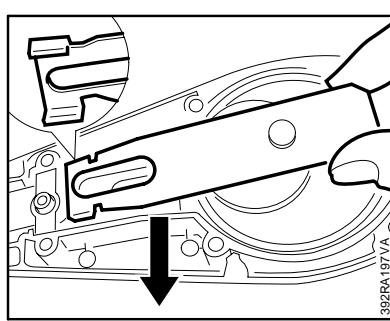
- Remove gearbox, see 12.1.
- Remove screws.
- Remove gearbox cover.



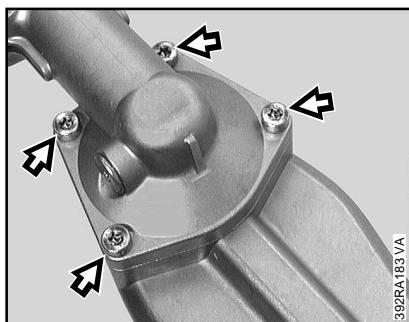
- Undo clamping screws of oblique gearbox.
- Pull gearbox with cutting blade off protective tube.



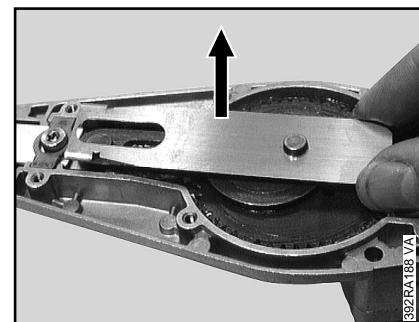
- Remove pinion.
- Refer to manual "Troubleshooting, standard repairs" for further details on disassembly and assembly.



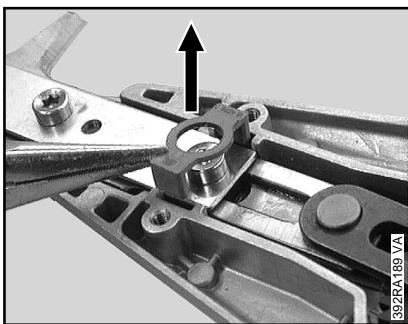
- Remove gasket.



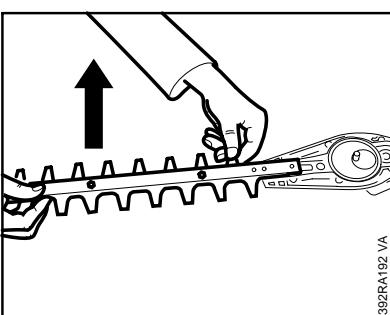
- Remove screws.
- Remove gearbox.



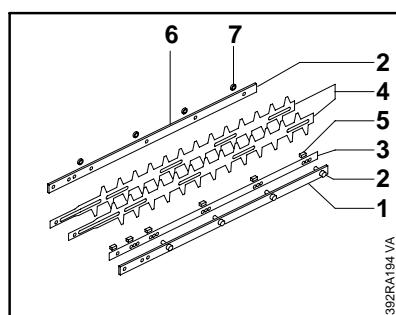
- Remove thrust plate from shaft.



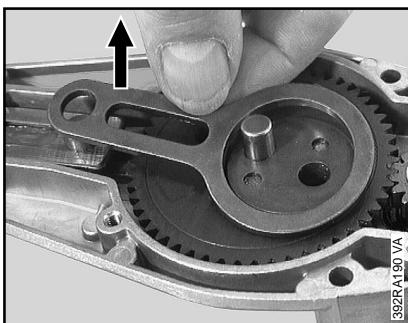
- Remove gasket.



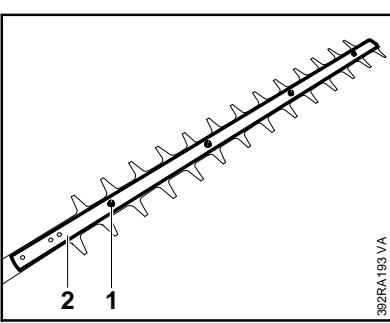
- Remove cutting device.



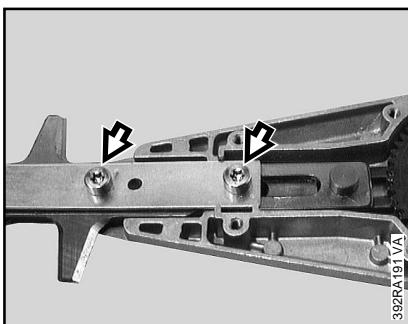
- Place guide (1) on workbench with screw heads (2) facing downwards.
- Slip band spring (3) onto the screws with the pockets facing upwards.
- Secure both blades (4) on the pockets with cutting edges working against one another.
- Place sliders (5) in the pockets of the band spring.
- Then add the second guide (6).
- Screw on new locking nuts (7) and torque down to 9.5 Nm.



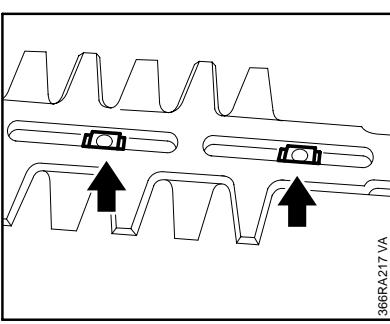
- Draw conrod off gear wheel and off pin on blade.



- Unscrew nuts (1).
- Remove guides (2) and band spring.

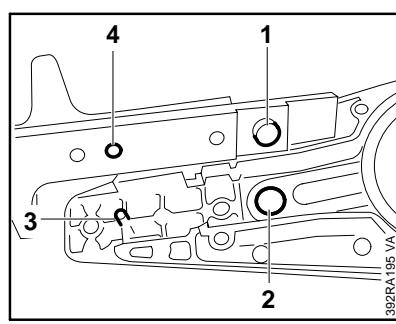


- Remove screws from gear housing.



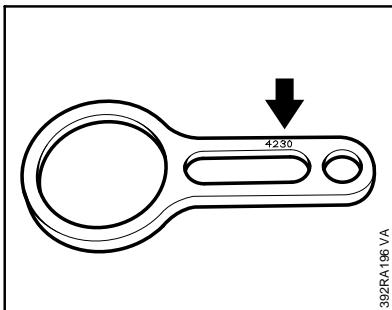
- Remove sliders.
 - Separate blades.

The parts are assembled in reverse order.

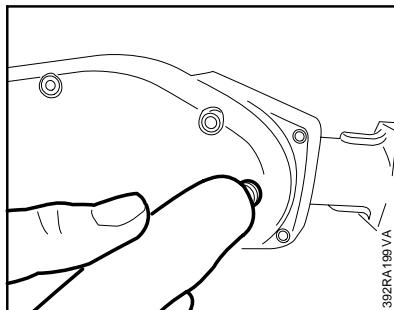


- Pin (1) must engage hole (2) in conrod.
- Stub (3) must engage hole (4).

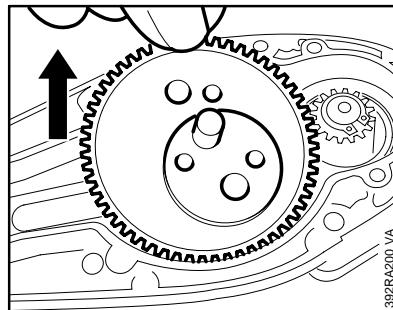
12.3 Gear wheel



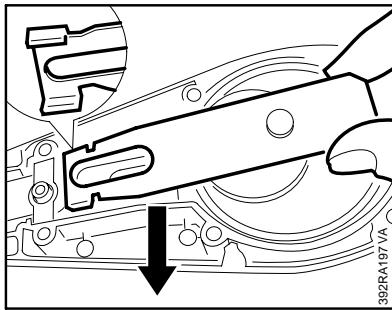
- Position conrod with marking facing gear wheel.



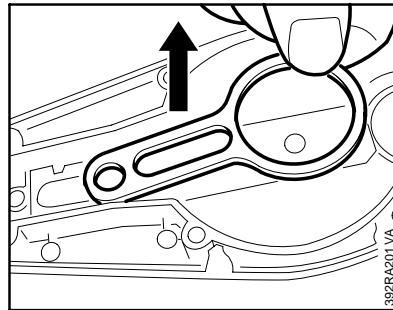
- Screw in tube of grease and roll it up to the next gradation on the tube scale. This forces approx. 20 g of grease into the gearbox.



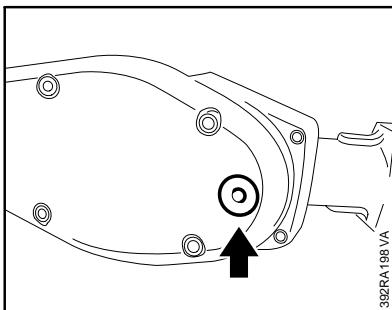
- Remove cutting blades, [see 12.2.](#)
- Remove gear wheel from gear housing.



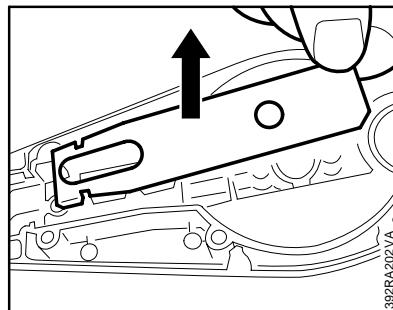
- Fit thrust plate with folded corners pointing towards conrod.
- Use a new gasket.



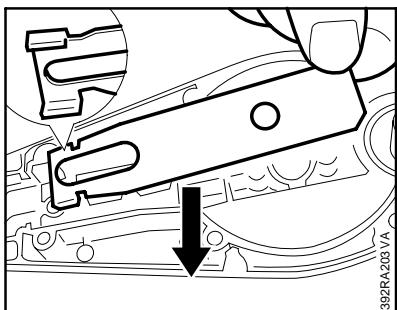
- Remove conrod from gear housing.



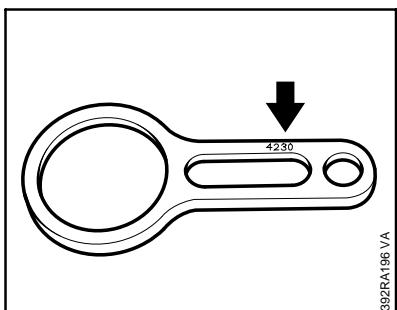
- Torque screws in gearbox cover down to 3.5 Nm.
- Remove screw plug from gearbox cover.



- Remove thrust plate from gear housing.
- The parts are fitted in reverse order.



- Fit thrust plate with bent corners pointing towards gear housing.



- Fit conrod with marking upwards.
 - Fit gear wheel with bevelled side of teeth pointing towards conrod.

13. Special service tools and aids
13.1 Special tools

No.	Designation	Part No.	Use	Remarks
1	Locking strip for piston	0000 893 5903	Blocking crankshaft	
2	Press sleeve	4112 893 2401	Fitting oil seal (clutch side)	
3	Press sleeve	1115 893 4600	Fitting oil seal (starter side)	
4	Assembly sleeve	4112 893 2400	Protecting oil seal (starter side)	
5	Puller	5910 890 4400	Removing oil seals	1)
6	- Jaws (with No. 3.1 + 4 profile)	0000 893 3706		
7	Puller	4133 893 0800	Removing flywheel	
8	Crimping tool	5910 890 8210	Attaching connectors to electric wires	
9	Assembly drift	1114 893 4700	Fitting and removing piston pin	
10	Clamping strap	0000 893 2600	Compressing piston rings	
11	Wooden assembly block	1108 893 4800	Fitting piston	
12	Carburetor and crankcase tester	1106 850 2905	Testing carburetor and crankcase for leaks	
13	Vacuum pump	0000 850 3501	Testing crankcase for leaks	
14	- Nipple	0000 855 9200		
15	- Fuel line	1110 141 8600		
16	Sealing plate	0000 855 8106	Sealing exhaust port for leakage test	
17	Test flange	1128 850 4200	For leakage test	
18	Setting gauge	4118 890 6401	Setting air gap between ignition module and flywheel	
19	Socket, 13 mm	5910 893 5608	Unscrewing clutch and starter carrier	
20	Torque wrench	5910 890 0301	Screw connections (0.5 to 18 Nm)	2)
		5910 890 0302		3)
21	Torque wrench	5910 890 0311	Screw connections (6 to 80 Nm)	2)
		5910 890 0312		3)
22	Screwdriver bit T27x125	0812 542 2104	Tightening down socket head screws	
23	Assembly hook	5910 893 8800	Extracting pickup body	
24	Assembly tool	5910 890 2208	Fitting hookless snap rings in piston	
25	Press arbor	4119 893 7200	Removing and installing deep groove ball bearings	
26	Assembly tool ZS	5910 007 2220	Removing crankshaft	
27	- Sleeve	5910 893 1701		
28	- Sleeve	5910 893 1702		
29	Assembly tool	5910 890 2202	Installing crankshaft	
30	Pliers A10	0811 611 8200	Removing external circlip on gearbox	4)

No.	Designation	Part No.	Use	Remarks
31	Assembly tool	4126 893 4900	Removing rubber buffer in AV sleeve	
32	Pliers A19	0816 610 1495	Removing external circlip from clutch drum	
33	Screwdriver QI-T27x150	5910 890 2400	For all socket head screws	5)
34	Press arbor	1108 893 4700	Removing and installing clutch drum	
35	Assembly stand	5910 890 3100	Mounting power unit for repairs	
36	- Clamping plate	5910 890 2100		
37	Screwdriver T20	5910 890 2301	Separating the handle mouldings	
38	Assembly hook	5910 890 2800	Pulling plug out of protective tube	

Remarks:

- 1) Corresponds to puller 0000 890 4400, but with longer spindle 5910 890 8400.
- 2) DG/P screws may only be tightened down with a torque wrench.
- 3) The machine version features an optical/acoustic signalling system.
- 4) HL 75
- 5) May only be used to loosen DG/P screws.

13.2 Servicing aids

No.	Designation	Part No.	Use
1	Lubricating grease (370 g tube)	0781 120 1111	Oil seals
2	Commercially available solvent-based degreasing agent without CFCs and halocarbons		Cleaning crankshaft stub
3	STIHL special lubricant	0781 417 1315	Bearing bore in rope rotor, rewind spring in rope rotor
4	Ignition lead HTR (10 m)	0000 930 2251	
5	Dirko sealant (100 g tube)	0783 830 2120	Crankcase sealing faces
6	STIHL multi-purpose grease - 80 g tube: - 225 g tube:	0781 120 1109 0781 120 1110	Lubricating drive shaft in protective tube
7	STIHL gear lubricant - 80 g tube: - 225 g tube:	0781 120 1117 0781 120 1119	Gear lubrication