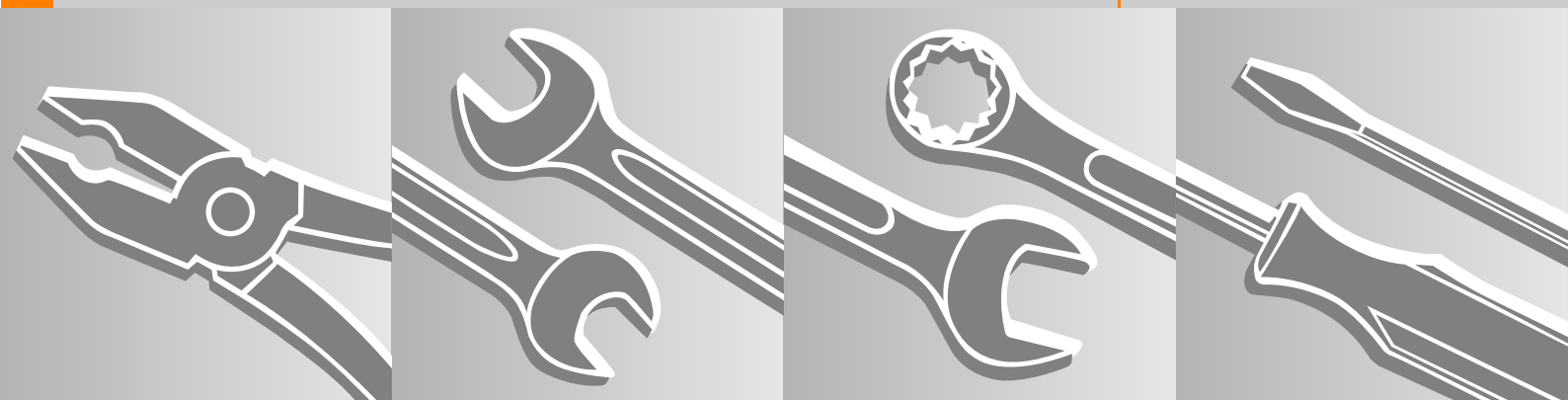


**STIHL TS 510, 760**

2003-04



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## 1. Introduction

This Repair Manual contains a detailed description of all the typical repair work required for this series of cut-off saws.

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.

The cut-off saws TS 510 and TS 760 are largely identical and the repairs described normally apply to both machines. Divergent features are described separately.

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 and CD-ROMs are more up-to-date than printed replacement parts lists!

Faults in the cut-off saw 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 replacement 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 be identified in the manual of "STIHL Tools" on the basis of this part number. The manual lists all tools available from 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.

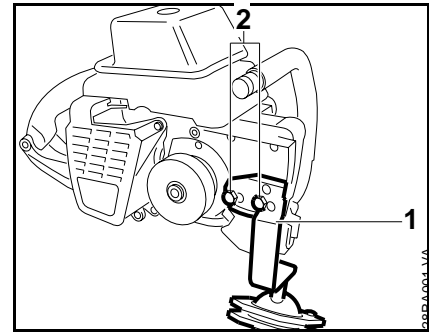
- = Activity to be carried out, but is not shown in the picture above the text.

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 cut-off saw on an assembly stand (1) 5910 890 3100. It is attached by means of the two hex bolts (2) after removing the cast arm.

The cut-off saw can then be swivelled into the most suitable working position, leaving both hands free for the work itself.

**Always use original STIHL replacement parts.**

Original STIHL parts can be identified by the STIHL part number,

the STIHL logo **STIHL**<sup>®</sup>

and the STIHL parts symbol . The symbol may appear alone on small parts.

## 2. Technical Specifications

### 2.1 Power unit

STIHL single-cylinder two-stroke engine with specially impregnated cylinder bore

	<b>TS 510</b>	<b>TS 760</b>
Displacement:	89.2 cm <sup>3</sup>	111 cm <sup>3</sup>
Cylinder bore:	52 mm	58 mm
Piston stroke:	42 mm	42 mm
Power output:	4.0 kW (5.4 PS)	4.8 kW (6.5 PS)
Rated spindle speed:	4900 rpm 4470 rpm* (for dia. 350)	4900 rpm 4470 rpm* (for dia. 350) 3870 rpm (for dia. 400)
Max. engine speed (cutoff speed)	8400 rpm	
Idle speed:	1800 rpm	
Bearing:	Heavy-duty deep groove ball bearings for crankshaft, needle cage for big-end bearing on crankpin and piston pin	
Piston pin:	Dia. 13 mm	
Starter:	ElastoStart	
Pawls:	Single-pawl system	
Reserve pull in rope rotor:	At least 1 turn	
Starter rope:	Dia. 4.5 mm, 1000 mm long	
Clutch:	Centrifugal clutch with impressed liners	
Clutch engages at:	2600 rpm	
Leakage testing on crankcase:		
Pressure test:	p <sub>excess</sub> = 0.5 bar	
Vacuum test:	p <sub>vacuum</sub> = 0.5 bar	

---

### 2.2 Fuel system

Carburetor:	Diaphragm carburetor
Setting of	
high speed adjusting screw H:	Backed off approx. 1 turn
low speed adjusting screw L:	Backed off approx. 1 turn (standard setting)
Leakage testing on carburetor	
with pressure test:	p <sub>excess</sub> = 0.8 bar
Fuel tank capacity:	1.2 l (1200 cm <sup>3</sup> )
Octane number:	At least 90 RON
Fuel mix:	Brandname regular petrol Brandname two-stroke engine oil
Mixing ratio:	<b>1:50</b> for STIHL two-stroke engine oil 1:50 <b>1:25</b> for all other brandname two-stroke engine oils
Air filter:	Prefilter Large-area main filter (filter paper cartridge) with flock-coated auxiliary filter

---

\* From serial No. X 24 097 471 onwards

<b>2.3 Ignition system</b>	Principle:	Transistorized (contactless)
	Air gap:	magneto-ignition system with integrated switching device and electronic speed limitation
	Spark plug (suppressed):	0.15 ... 0.3 mm Bosch WSR 6F, NGK BPMR 7A or Champion RCJ 6Y
	Electrode gap:	0.5 mm
	Spark plug thread:	M14x1.25
	Thread length:	9.5 mm
	Length of ignition lead:	320 mm 290 mm*

---

<b>2.4 Cutting wheels</b>	Composite cutting wheels for steel, stone, asphalt, ductile cast piping and plastics*** Diamond cutting wheels for stone and asphalt:	Dia. 300 mm Dia. 350 mm Dia. 400 mm**
	Cutting depth with flange dia. 103 mm:	98.5 mm (for dia. 300 mm) 123.5 mm (for dia. 350 mm) 143.5 mm (for dia. 400 mm)**
	Cutting depth with flange dia. 118 mm:	91 mm (for dia. 300 mm) 116 mm (for dia. 350 mm)

---

## 2.5 Special accessories

<b>2.5.1 For the user</b>	STIHL cut-off saw cart Cut-off saw cart attachment Mudguard attachment Cutting depth limiter attachment Water tank attachment	4201 710 1403 4205 007 1008 4201 007 1033 4201 007 1041 4201 007 1048 4223 670 6000
	Water attachment for wet cutting, dia. 350 Water attachment for wet cutting, dia. 400 Mudguard attachment	4205 007 1026 4205 007 1027 4201 007 1033
<b>2.5.2 For the service engineer</b>	Set of gaskets  Set of carburetor parts Sealing panel STIHL Repair Kit	1111 007 1050 1111 007 1051 1115 007 1060 0457 281 6202 1111 900 5001

---

\* for ignition module

\*\* May only be mounted on special version of TS 760

\*\*\* Not available in all countries

## 2.6 Tightening torques

Connecting element	Thread size	for component	Tightening torque (Nm)	Remarks
Socket head screw	M3x4	Cable / switching device	1.3	1)
Countersunk screw	M4x10	Cover plate	2.3	
Oval head screw	M4x8.2x10	Starter lever	3.3	
Flat head screw	M4x12	Guard / flange	3.3	
Socket head screw	IS-M4x16	Fan cover	2.3	
Lock nut	M5	Carburetor	4.3	
Socket head screw	IS-M5x12	Adjusting lever / guard	4.0	
Socket head screw	IS-M5x12	Filter port / filter housing	4.0	
Socket head screw	IS-M5x18	Crankcase	5.5	
Socket head screw	IS-M5x18	Support / handle	5.5	
Socket head screw	IS-M5x18	Handle / handle frame	5.5	
Socket head screw	IS-M5x20	Muffler / cylinder	7.5	
Socket head screw	IS-M5x20	Cylinder / crankcase	7.5	2)
Nut	M6	Cylinder / crankcase	9.5	3)
Socket head screw	IS-M5x20	Muffler - guard	7.5	
Socket head screw	IS-M5x20	Shroud / crankcase / cylinder	7.5	
Socket head screw	IS-M5x20	Front handle / handle frame	7.5	
Socket head screw	IS-M5x20	Ignition armature (ignition module) / crankcase	7.5	4)
Socket head screw	IS-M5x20	Bracket / filter housing	5.5	
Socket head screw	IS-M5x25	Fan housing / crankcase	7.5	
Socket head screw	IS-M5x30	Carburetor flange / cylinder	7.5	
Socket head screw	IS-M5x40x25	Rubber buffer / front handle holder	5.5	
Lock nut	M6	Rubber buffer / crankcase	3.0	
Lock nut	M6	Rubber buffer / handle	3.0	
Socket head screw	M6x8	Stop / rubber buffer	7.0	5)
Socket head screw	M6x12	Stop / bearing	7.0	5)
Flat head screw	M6x20	Bearing / flange	5.0	6)
Set screw	M6x30	Filter port	4.0	
Socket head screw	M6x30	Bearing / flange, aluminium	8.0	
Socket head screw	IS-M6x50x24	Cast arm / crankcase	8.5	
Socket head screw	M8x1	Flywheel	33.0	

Connecting element	Thread size	for component	Tightening torque (Nm)	Remarks
Socket head screw	M8x12	Rubber buffer / support	15.0	
Hex bolt	M8x45	Support / front handle	15.0	
Nut	M10x1 L	V-belt pulley, front	38.0	
Hex bolt	M10x40	Cast arm / crankcase	48.0	
Screw plug	M12x1.5	Oil tank	7.5	
	M12x1.5	Decompression valve	15.0	
	M12x1.5 L	Driver	78.0	
Nut	M12x1.5 L	Cover plate - driver	50.0	
	M14x1.25	Spark plug	28.0	

- 1) Insulating material
- 2) Only TS 510
- 3) Only TS 760
- 4) A washer must be fitted under the screw head
- 5) Only U.S. models
- 6) Screw must be secured with adhesive 0786 111 1101 (Loctite 242)

**Note:** Screws secured with adhesive must be heated with a hot-air fan in order to be unscrewed.

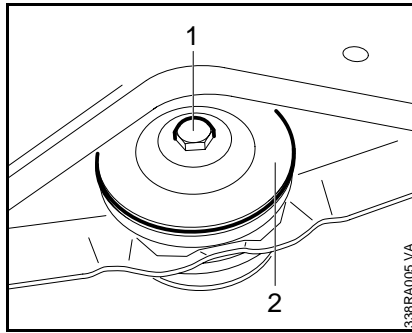
### 3. Cuttingwheeldriveassembly 3.1 Bearing with guard (aluminium)

Check axial and radial runout,  
see 3.3.

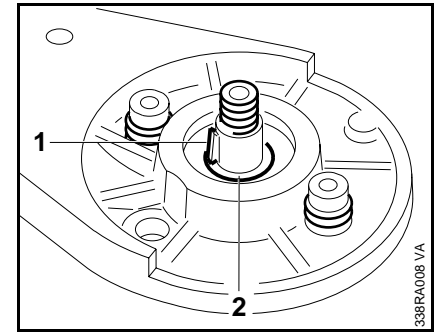
The bearing with guard  
dia. 300 mm or dia. 350 mm may  
be attached.

A special version of the TS 560 is  
also available from the manufactu-  
rer with the bearing with guard dia.  
400 mm (see notes in 3.4 and 6.4).

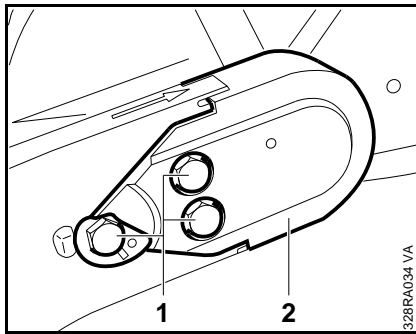
The drawings show the bearing  
with guard dia. 300 mm.



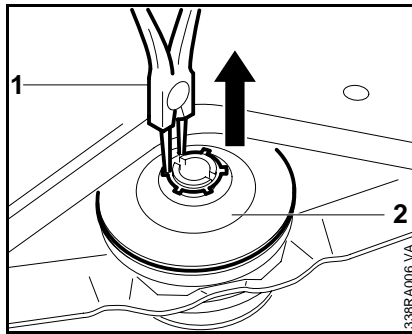
- Undo screw (1).
- Remove flange (2).



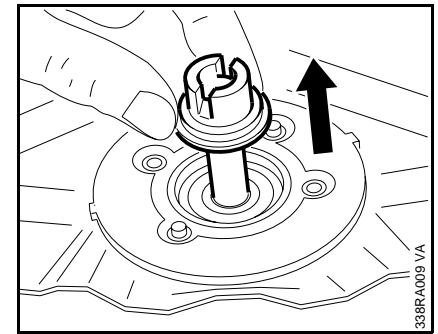
- Remove spring washer (1) from groove in shaft.
- Remove washer (2) from shaft.



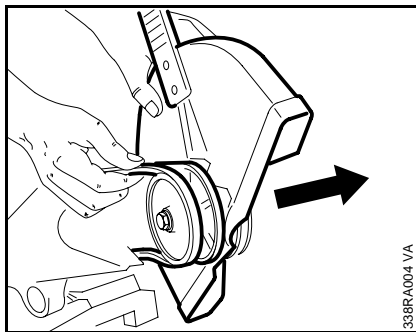
- Undo bearing screws (1).
- Remove guard (2).



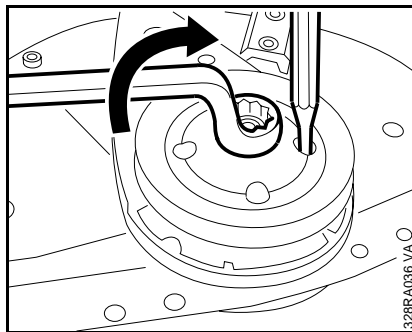
- Draw axial clamping ring off shaft with pliers (1) 0811 611 8200.
- Remove flange (2).



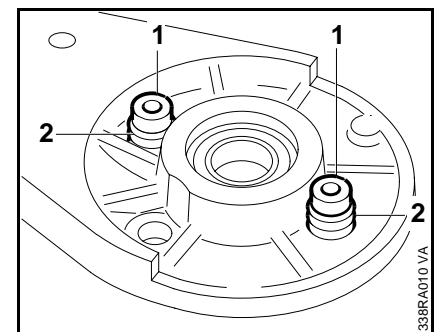
- Draw shaft out of deep groove ball bearings.



- Remove bearing with guard from V-belt.

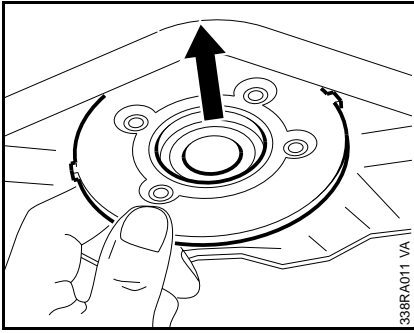


- Block V-belt pulley.
- Unscrew nut in direction of arrow (left-hand thread).
- Remove V-belt pulley.

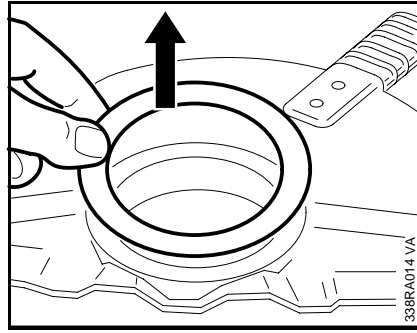


- Undo screws (1) and remove with compression springs (2) and sleeves.

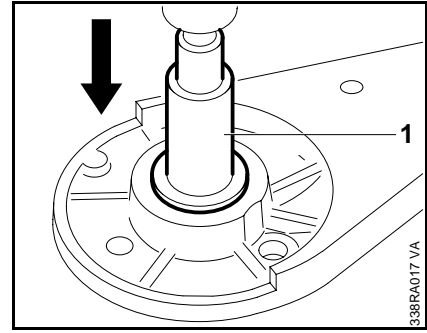




- Remove flange.

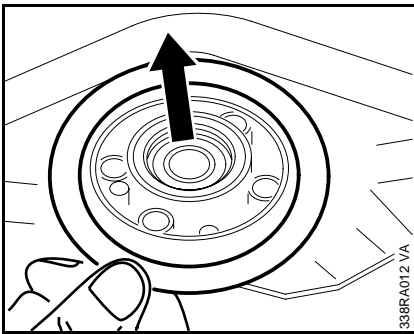


- Remove washer (1) and rubber ring (2).

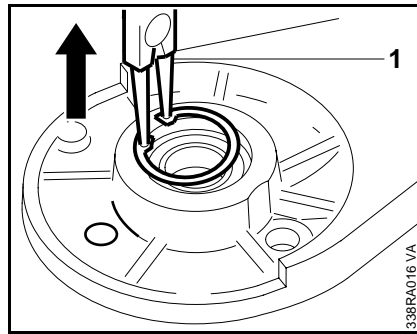


- Force both deep groove ball bearings and ring out of bearing with drift pin (1) 4119 893 7200.

Assemble parts in reverse order.

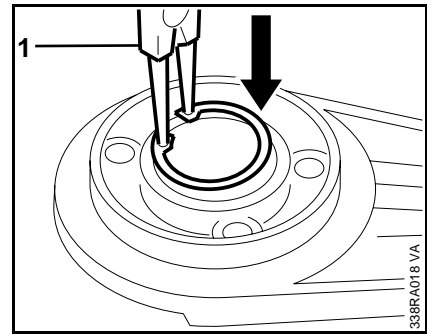


- Remove washer with rubber ring.

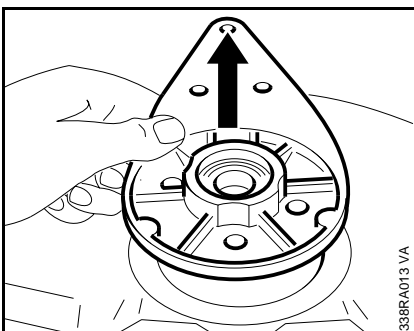


- Remove circlips from grooves in front of deep groove ball bearings with pliers (1) 0811 641 8380.

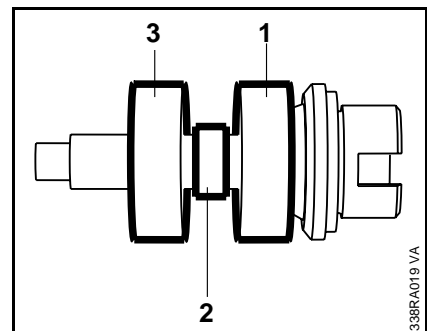
**Important!** Use pliers with short, rounded ends.



- Insert circlip in groove of bearing with pliers (1) 0811 641 8380.

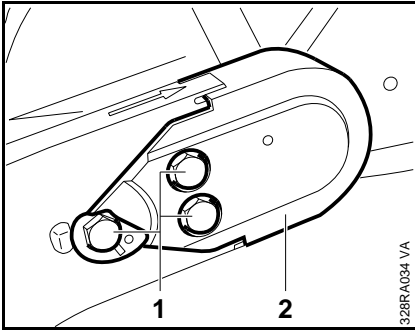


- Draw bearing out of rubber ring.



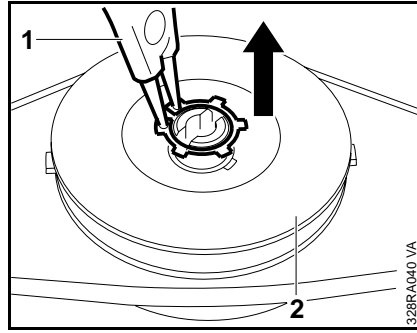
- Slide first deep groove ball bearing (1), ring (2) and second deep groove ball bearing (3) onto shaft.

### 3.2 Bearing with guard (steel)

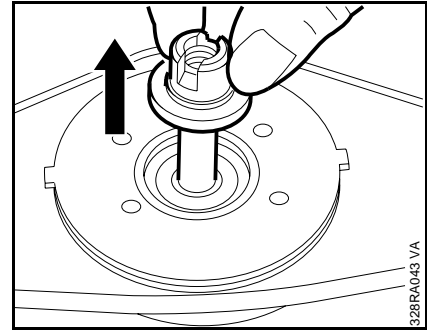


Check axial and radial runout, see 3.3.

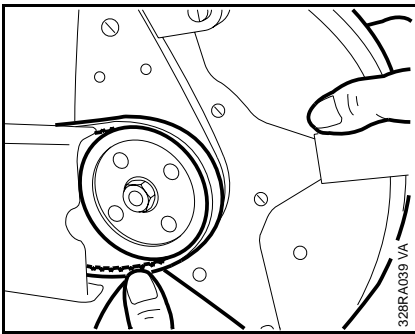
- Undo bearing screws (1).
- Remove guard (2).



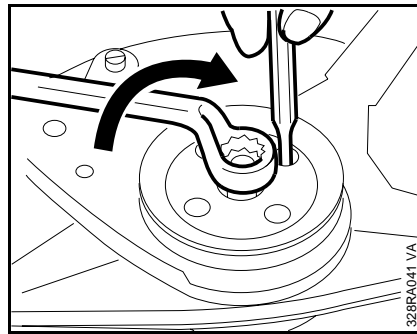
- Remove axial clamping ring from shaft with pliers (1) 0811 611 8200.
- Remove flange (2).



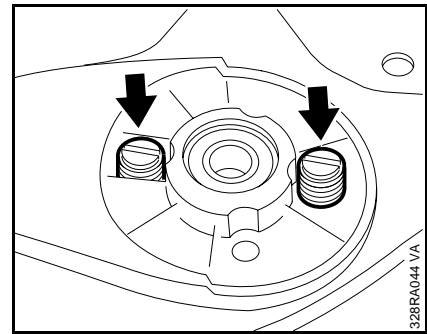
- Draw shaft out of deep groove ball bearings.



- Draw bearing with guard off V-belt.

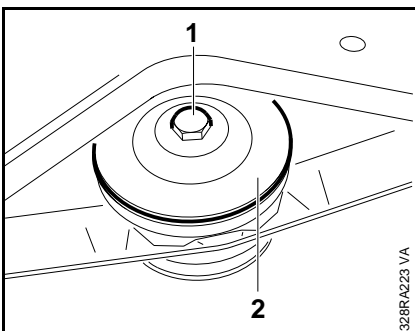


- Block V-belt pulley.
- Unscrew nut in direction of arrow (left-hand thread).
- Remove V-belt pulley.

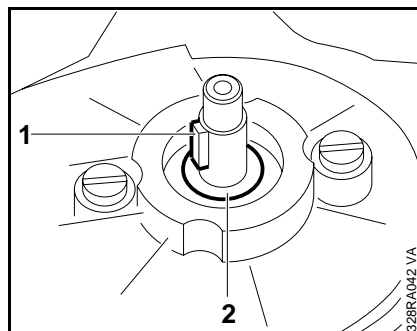


- Undo flat head screws and remove with spring washers.

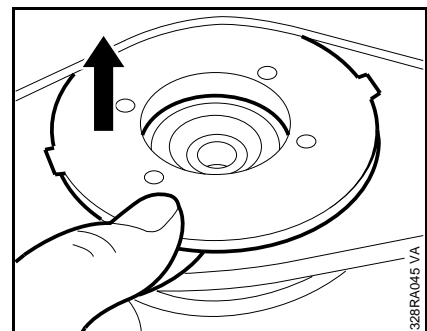
**Note:** Note the number of spring washers.



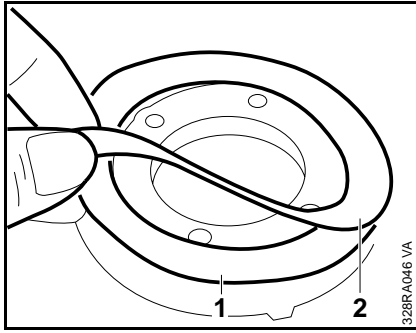
- Undo screw (1).
- Remove flange (2).



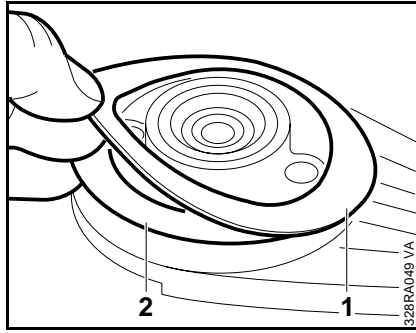
- Remove spring washer (1) from groove in shaft.
- Remove washer (2) from shaft.



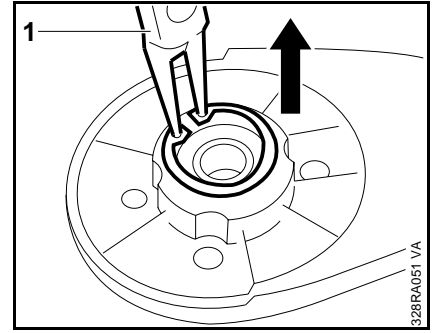
- Remove flange.



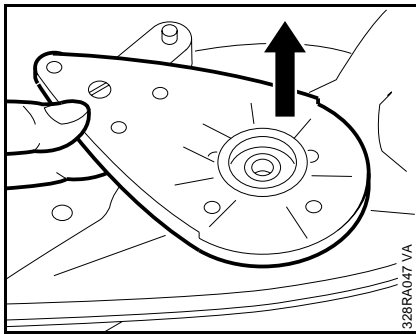
- Remove washer (1) and rubber washer (2) from flange and guard.



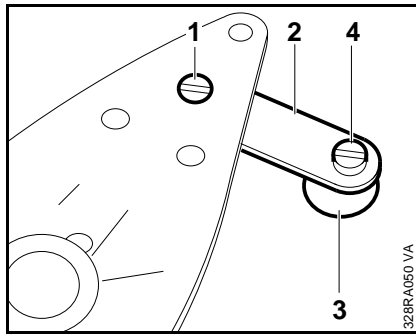
- Remove rubber washer (1) and washer (2).



- Remove circlips in front of deep groove ball bearings with pliers (1) 0811 641 8380.

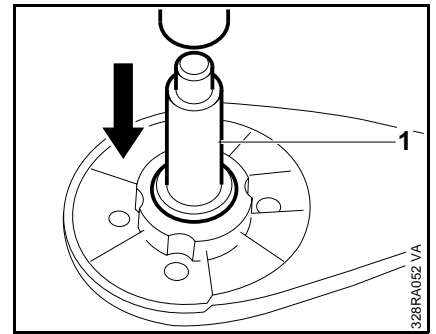


- Remove bearing.

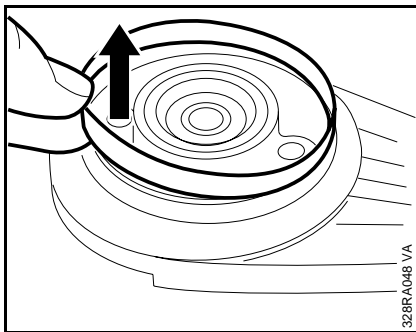


- Undo countersunk screw (1).
- Remove stop (2).
- Undo socket head screw (4) to replace rubber vibration buffer (3).

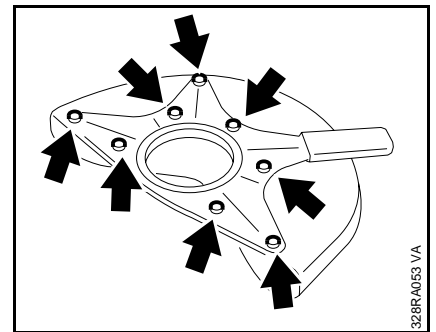
**Note:** Stop and rubber vibration buffer are only required on U.S. models.



- Force both deep groove ball bearings and ring out of bearing with drift pin (1) 4119 893 7200.

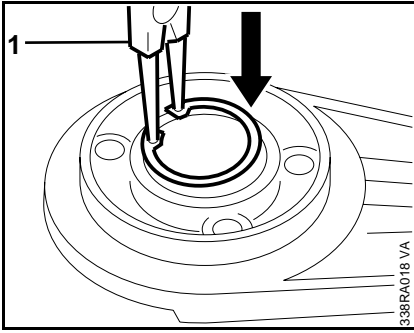


- Remove rubber ring.



- Undo screws.
- Remove flange from guard.

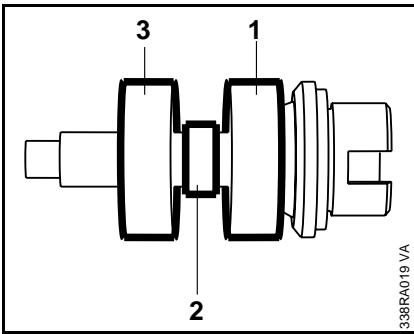
Assemble parts in reverse order.



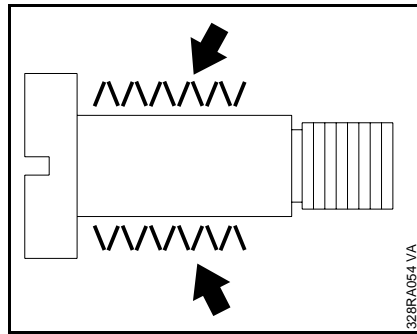
- Insert circlip in one of the bearing grooves with pliers (1) 0811 641 8380.

- Draw shaft out of deep groove ball bearings.
- Insert second circlip in bearing groove.

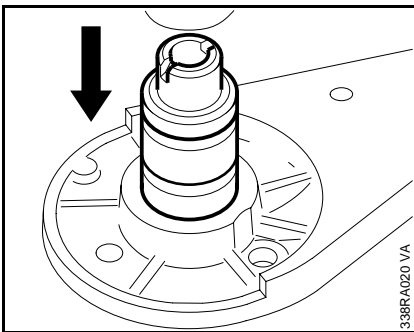
**Important!** The seal on the ball bearing must not be damaged.



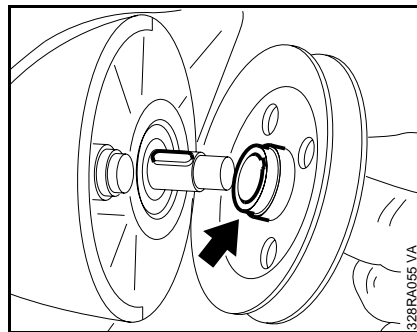
- Slide first deep groove ball bearing (1), ring (2) and second deep groove ball bearing (3) onto shaft.



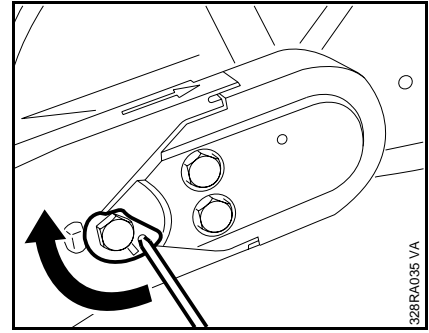
- Slide the same number of spring washers onto the flat head screws as were removed during disassembly, as illustrated above.



- Position deep groove ball bearings and press in with shaft until they make contact with the circlip.



- Slide V-belt pulley onto shaft with the longer collar first and tighten nut to 38 Nm.



- Position bearing with guard and lightly tighten the screws.

**Note:** Fit segment below rear screw.

- Turn segment clockwise until V-belt is correctly tensioned.

**Note:** The V-belt is correctly tensioned when it can be marginally depressed (5 ... 10 mm) by hand under slight pressure half-way between the two V-belt pulleys.

**Important!** An excessively tensioned V-belt results in increased wear.

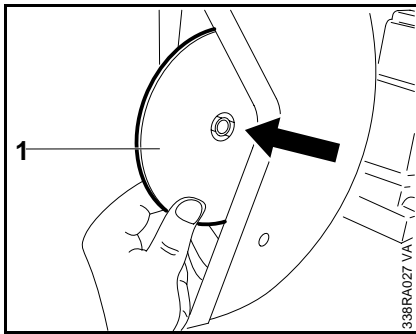
- Then securely tighten all three fastening screws, starting with the rear screw (with segment).

### 3.3 Checking axial and radial runout

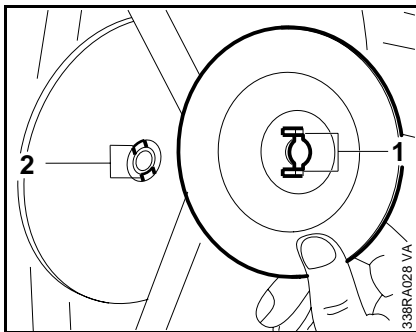
Since changes in the shaft diameter (due to scoring, etc.) affect the true running of a cut-off saw, it is sufficient to closely inspect the shaft near the cutting wheel mount.

The axial runout on the other hand depends on the condition of several components and should therefore be determined by measurement.

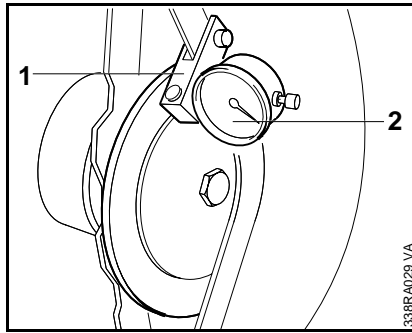
- Undo screw and remove flange.



• Fit test wheel (1) 5910 851 6100.



• Fit flange so that catches (1) engage in grooves (2) on shaft.



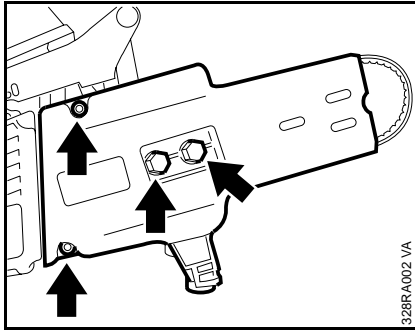
- Fit and tighten screw.

• Secure dial gauge holder (1) 5910 850 6000 with dial gauge (2) 0000 890 9100 to guard cover so that the axial runout over a diameter of approx. 130 mm can be determined over a complete rotation of the wheel; see table for test sequence.

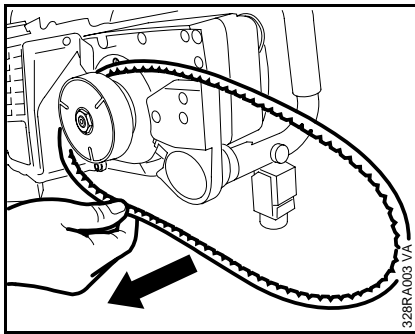
- Disassemble test equipment after testing.

Test sequence	ACTUAL condition	Possible cause	Remedy
<b>True running:</b> Visual inspection of spindle (shaft)	Wear marks or scoring around the cutting wheel mount	Operation with loose fastening screw, use of wrong cutting wheels (mount dia. > 20 mm or > 25.4 mm $\hat{=}$ 1")	Replace spindle (shaft)
<b>Axial runout:</b> Check axial runout with STIHL test wheel or diamond cutting wheel (over dia. 130 mm)	Axial runout $\leq$ 0.15 mm		None
	> 0.15 mm Mating faces of flanges (especially inner flange) damaged or uneven, mating faces not plane, not original STIHL parts	Dirt, flanges or cutting wheel fitted incorrectly, use of force when cutting or during transport	Replace flanges
	Spindle (shaft) damaged	Incorrect handling, use of force	Replace spindle (shaft)
	Tangible radial backlash in bearing seat $\rightarrow$ spindle bearing defective	Deep groove ball bearings damaged by dirt and/or bearing seat on spindle worn out	Replace spindle and deep groove ball bearing

### 3.4 V-belt



- Remove bearing with guard, see 3.1 or 3.2.
- Undo screws.
- Remove cast arm.



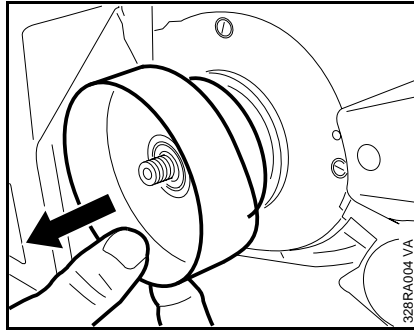
- Remove V-belt.

It is fitted in reverse order.

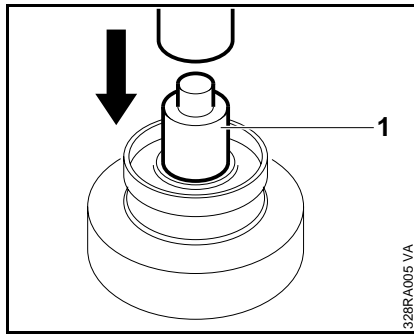
**Note:** In the special model of the TS 760 (with guard dia. 400 mm), there is a clamping pin dia. 5 mm between the holes with dia. 10 mm in the cast arm and a hole with dia. 7 mm between the M10 screw holes in the crankcase.

- Before tightening screws, check position and easy movement of V-belt.
- Tighten M6x50 screws to 8.5 Nm and M10x40 screws to 48 Nm.

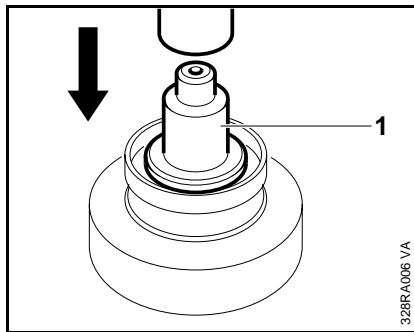
### 3.5 V-belt pulley / clutch drum



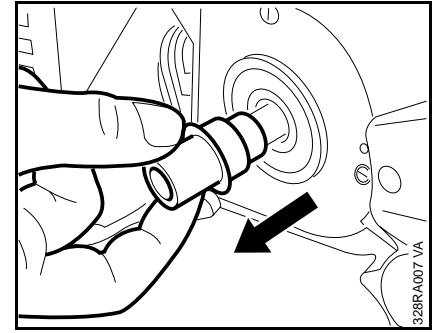
- Remove clutch, see 4.1.
- Remove V-belt pulley.



- Force needle sleeve out with drift pin (1) 1120 893 7200.



- Drive in new needle sleeve with drift pin (1) 1117 893 7200.



- Draw bushing off crankshaft stub.

Assemble parts in reverse order.

- Slide bushing onto stub with shouldered end first



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