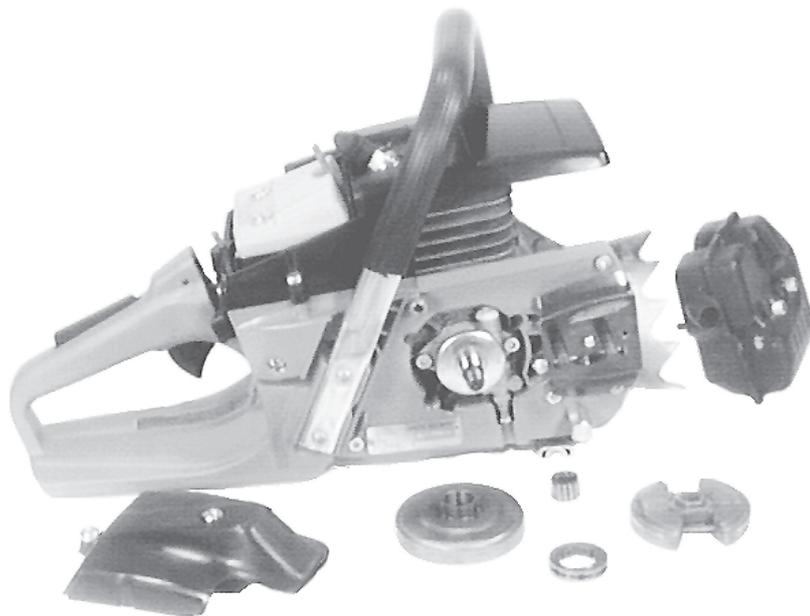


5/01



**116si**  
**120si**

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**DOLMAR**





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## Technical data

Model			116si	120si
Displacement	cm <sup>3</sup>		60	68
Bore	mm		46	49
Stroke	mm		36	36
Rating	kW		3,1	3,7
Idling	1/min		2400	2400
Allowed max. enginespeed with bar and chain (* with speed limitation)	1/min		13000	12500
Gap Flywheel / Coil	mm		0,15	0,15
High tension wire length	mm		140	140
Spark plug	NGK			
	BOSCH		WSR-6F	WSR-6F
	CHAMPION			
Elektrode gap	mm		0,5	0,5
Fuel tank capacity	Ltr.		0,8	0,8
Oil tank capacity	Ltr.		0,4	0,4
Carb. adjustment	L / H		1/1	1/ 1
Starter rope	ø / length		4 / 1000	4/ 1000
Saw chain	Modell		099	099
			Normal Profil	Normal Profil
Cutter type			7 Chisel	7 Chisel
Gauge	inch mm		3/8 (9,52)	.325 (9,52)
Drive link	inch mm		0.58 (1,5)	0.58 (1,5)
Filling angle			25°	25°
Side angle			60°	60°
Cutting angle			60°	60°
File guide angle			90°	90°
Depth gage setting	mm		0,65	0,65
File ø	mm		5,5	5,5
from 1/2 Cutter	mm		4,8	4,8
Kick back reduction			 Bumper Drive Link	 Bumper Drive Link
Sprocket	Typ		Rim (loose)	Rim (loose)
Cutting length	cm		38/45/53/60	38/45/53/60
Drive link	count		56/64/72/80	56/64/72/80
Sprocket	Z		7	7



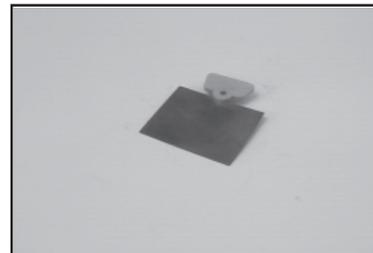
## Special tools



Puller for tension spring  
of chain brake  
950 237 000



Mounting tool for  
clutch hub  
944 500 680



Setting gauge for  
ignition armature  
944 500 890



Puller for flywheel  
957 408 001



Puller for drive worm  
of oil pump  
957 433 000



Special socket wrench  
for rubber buffer  
944 500 621



Radial ring  
extractor  
944 500 900

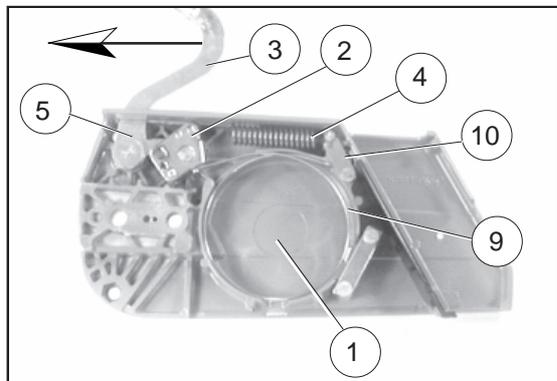


Sealing plates for leakage  
test of crankcase  
944 603 060 / 944 603 070

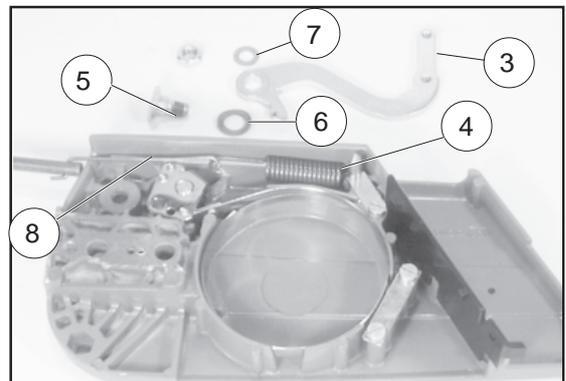


Drift for piston pin  
944 603 270

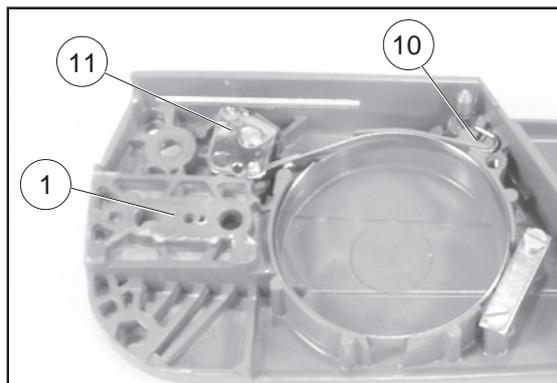
## 01 Chain brake



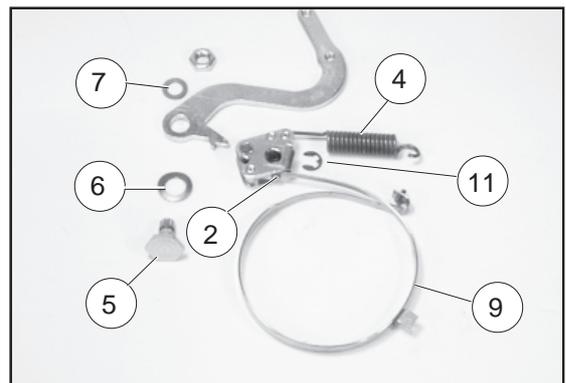
**01-02 Removing the chain brake**  
Remove the sprocket guard (1) with brake band (9) and the brake gate (2). Push the brake lever (3) in the direction of the arrow to relieve the tension spring (4).



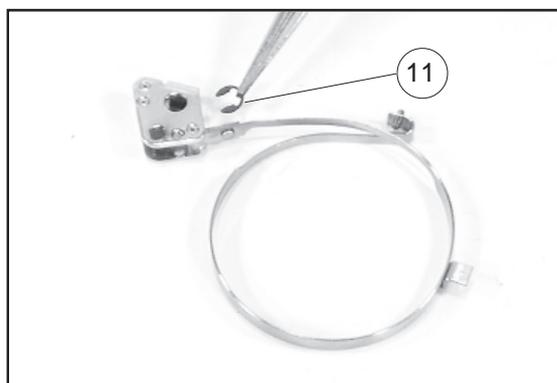
**01-02 Removing the disengaging lever and tension spring**  
Unscrew the screw (5) and remove the disengaging lever. Observe the mounting position of the washer (6) and of the distance washer (7). Using hook no. 950.237.000 (8) withdraw the tension spring (4) from the brake gate.



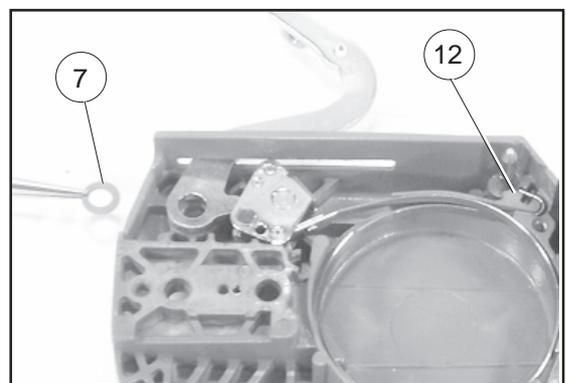
**01-02 Replacing the brake band**  
Remove the retaining ring (11) from the brake gate. Unscrew the lug (10) and remove the brake band (9) together with the brake gate from the sprocket guard (1).



**01-02 Chain brake spare parts**  
As a spare part, the brake band (9) is supplied only together with the brake gate (2).



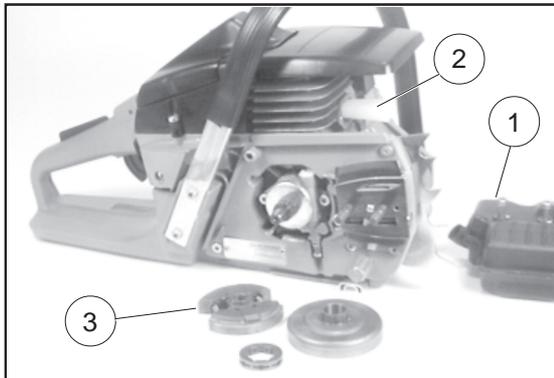
**01-02 Installing the brake band**  
Fit the brake band to the housing and secure the brake gate by means of the retaining ring (11).



**01-02 Installing the disengaging lever**  
Fit the distance washer (7) between the lever and the housing and secure in place by means of screw (5). Pass the tension spring (4) over the peg (12) and engage in the brake gate using hook (8).



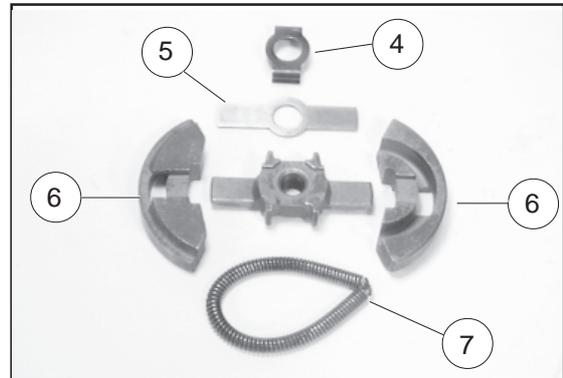
## 02 Clutch, clutch drum



### 02-01 Removing the clutch

Immobilise the cylinder unit. Unscrew the muffler (1) and insert the piston stopper wedge (2), no. 944.602.000, into the exhaust duct. Unscrew the clutch (3) using a spanner ( 17 mm ).

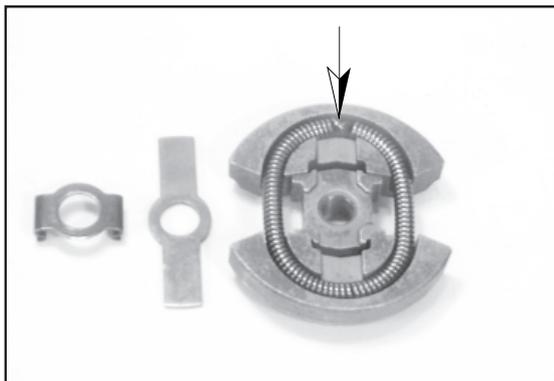
**CAUTION:** Left-hand thread.



### 02-02 Reconditioning the clutch

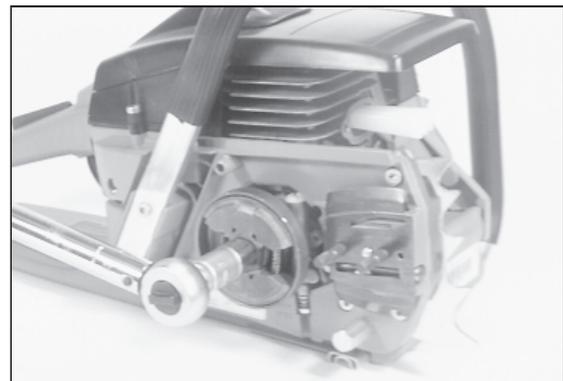
Withdraw the clamp (4) from the thrust plate (5). Carefully remove the spring (7) from the guide groove of the flyweights.

**NOTE:** Always replace the flyweights (6) as a complete set.



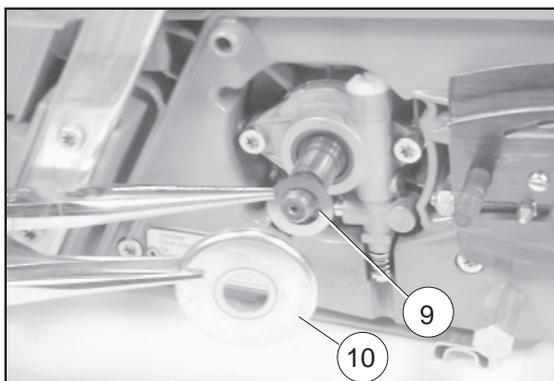
### 02-02 Assembling the clutch

When assembling the clutch, align the tension spring so that the spring lock rests in the middle of the guide groove of a flyweight (arrow).



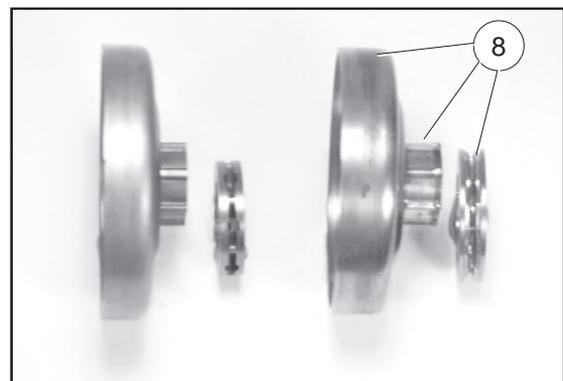
### 02-02 Mounting the clutch

Screw on the clutch and tighten using a torque of 55.0 +/-2.5 Nm.



### 02-04 Mounting the clutch and clutch drum

Prior to mounting the clutch, fit the buffer disks (9 and 10) to the crankshaft observing the correct order.



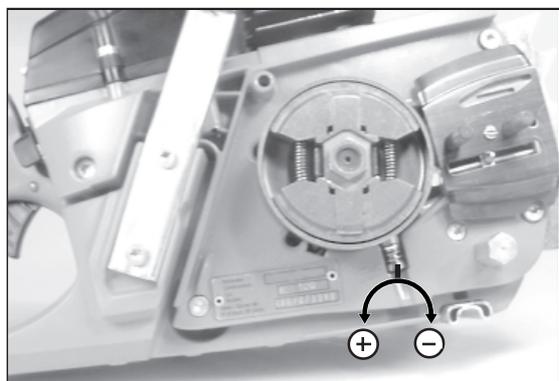
### 02-04 Replacing the clutch drums/sprockets

Worn out clutch drums/sprockets (8) must be replaced.

**NOTE:** Lightly grease the needle bearing prior to installation.



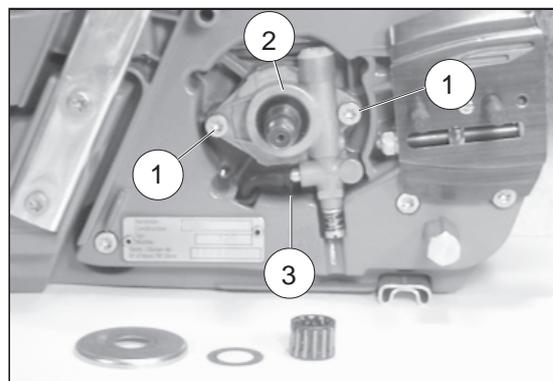
## 03 Oil pump



### 03-02 Adjusting the oil pump delivery

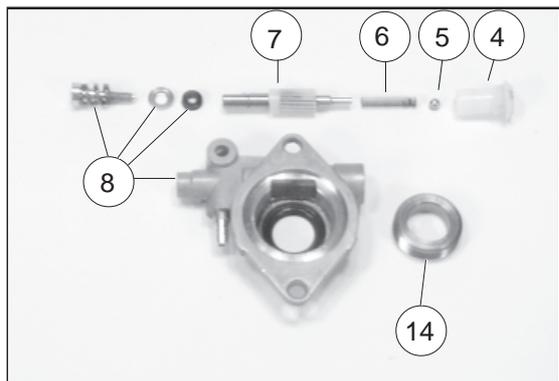
Turn the screw:

clockwise = for less chain oil  
anti-clockwise = for more chain oil.



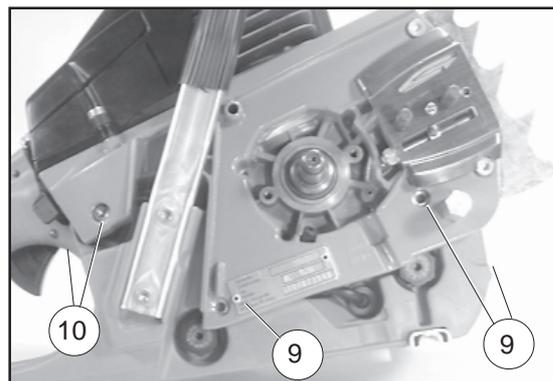
### 03-02 Removing the oil pump

Immobilise the cylinder unit and unscrew the clutch (02-01). Unscrew screws (1) and remove the oil pump housing (2). Separate the intake pipe (3) from the connection nipple.



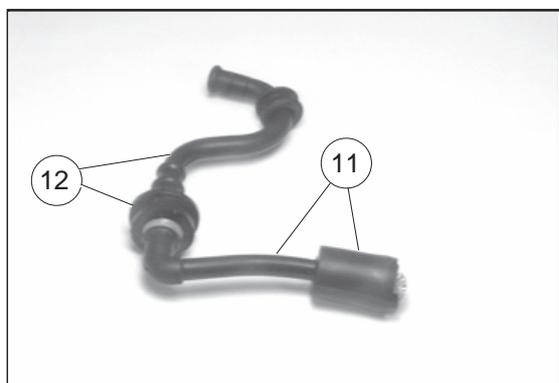
### 03-03 Checking the oil pump

Unscrew the screw plug (4) with ball (5) and spring (6). Withdraw the pump plunger (7). Unscrew the setscrew together with the spring and seal (8) from the housing.



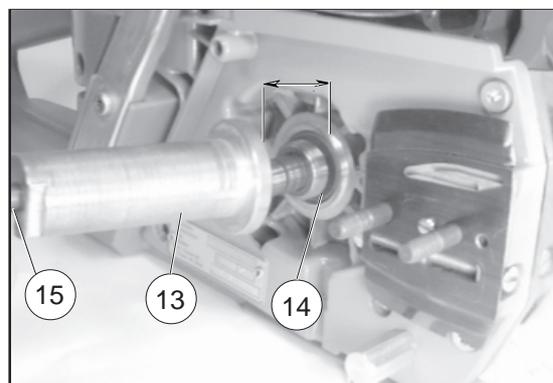
### 03-04 Removing the intake pipe

For this purpose remove the three forward screws of the vibration dampers (9). Slacken the rear two screws (10). Swivel the engine away from the tank.



### 03-04 Checking the intake pipe

Following removal, the intake pipe with the filter (11), sealing ring and admission pipe (12) can be inspected.

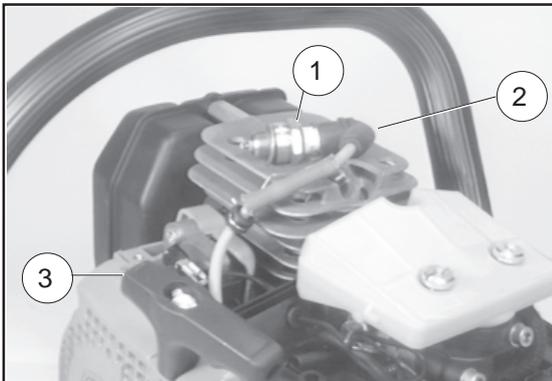


### 03-05 Removing and fitting the drive worm

Screw tool (13), no. 957.433.000, over the worm (14) and withdraw the worm from the crankshaft by means of spindle (15). When fitting the worm, screw the worm into the tool and heat to 80-100°C. Push the tool over the crankshaft against the housing.



## 04 Ignition system



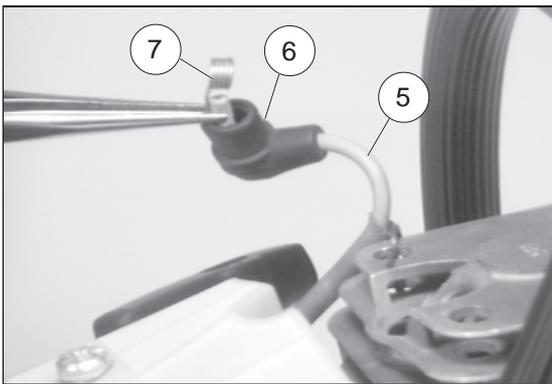
### 04-01 Checking the spark plug

Unscrew the spark plug (1) and connect it to the spark plug terminal (2). Hold the spark plug against cylinder ground and withdraw the starter rope (3). If no spark is generated, repeat using new spark plug.



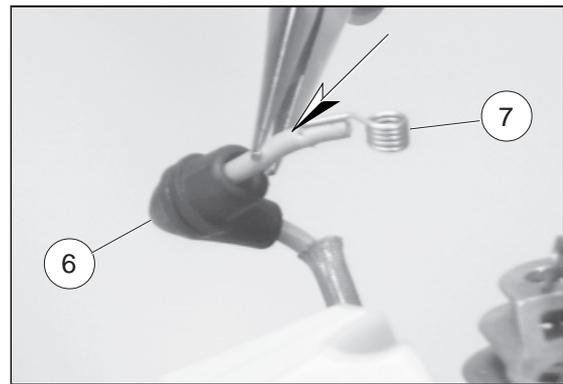
### 04-01 Checking the spark plug

Clean or renew contaminated or defective spark plugs.



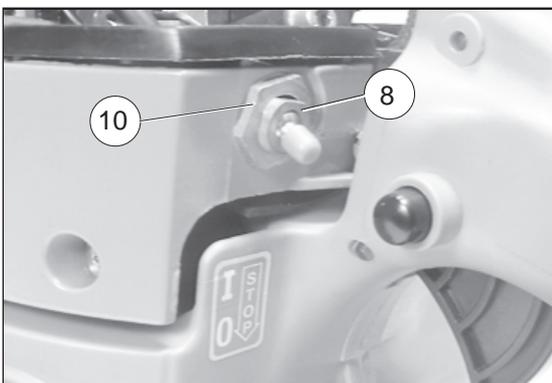
### 04-02 Replacing the spark plug terminal

Remove the hood (07-01) for removing the spark plug terminal. Using a pair of pointed pliers hold the spring (7) of the plug connector and pass the rubber cap (6) towards the rear over the ignition cable (5).



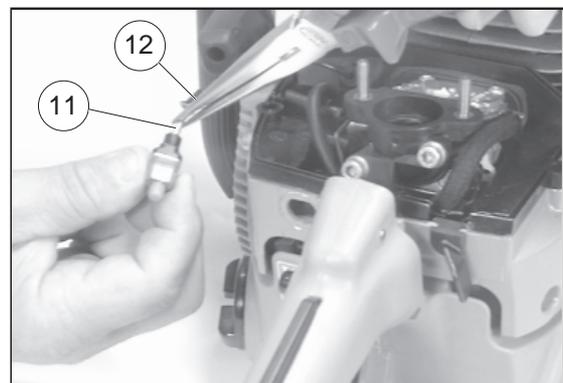
### 04-02 Installing the spark plug terminal

First pass the rubber cap (6) over the ignition cable. Then engage the spring (7) in the existing hole of the ignition cable. In the case of new ignition cables, press in the tip of the spring (refer to arrow).



### 04-03 Replacing the short-circuiting switch

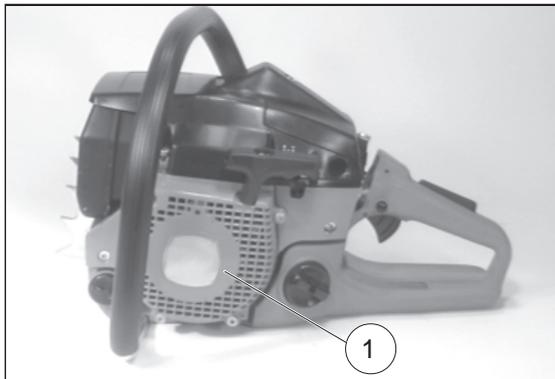
To remove the short-circuiting switch (8) first remove the filter hood, carburettor and bottom part (07-06). Unscrew the nut (10) and withdraw the switch from the short-circuiting cable.



### 04-03 Installing the short-circuiting switch

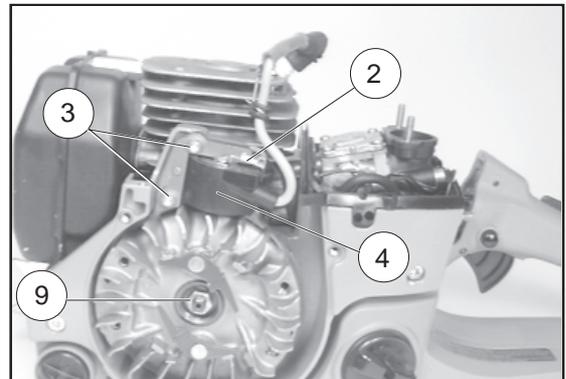
Push the short-circuiting cable (11) into the switch and install the rubber cap (12) in place. Install the switch in the crankcase ensuring that the flat side faces upwards. Screw on nut (10) with the toothed side facing the housing.

## 04 Ignition system



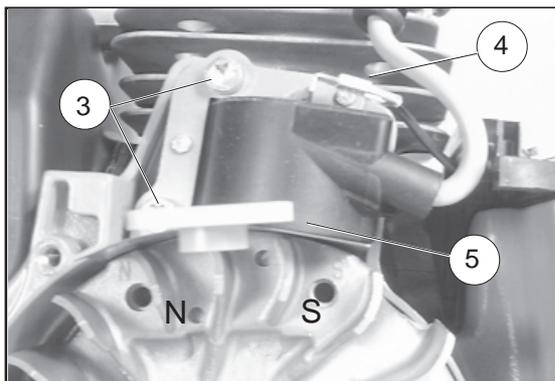
### 04-04 Removing the ignition armature and the flywheel

For the removal of the ignition armature unscrew the cover (07-01) and the starter assembly (1).



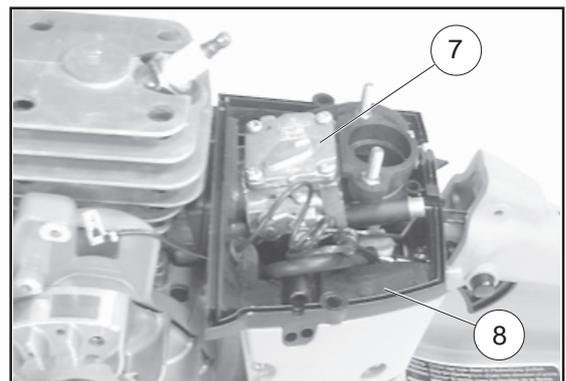
### 04-04 Removing the ignition armature and the flywheel

Withdraw the short-circuiting cable (2) from the ignition armature and unscrew screws (3). When replacing the ignition cable, remove it from the ignition armature (4). Screw the new ignition cable forcefully into the ignition armature.



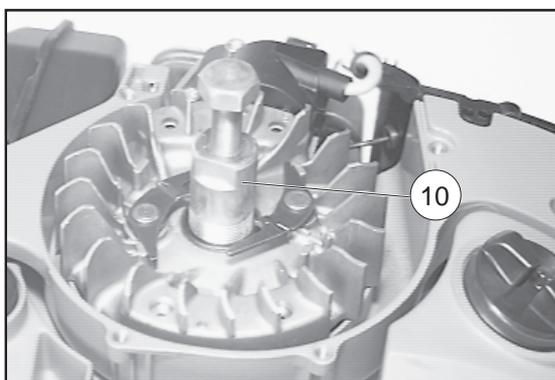
### 04-04 Installing the ignition armature

Install the ignition armature and secure in place using screws (3). For setting the air gap, fit the gauge (5), no. 944.500.890, between the flywheel and the ignition armature. Turn the N/S marking of the flywheel towards the ignition armature.



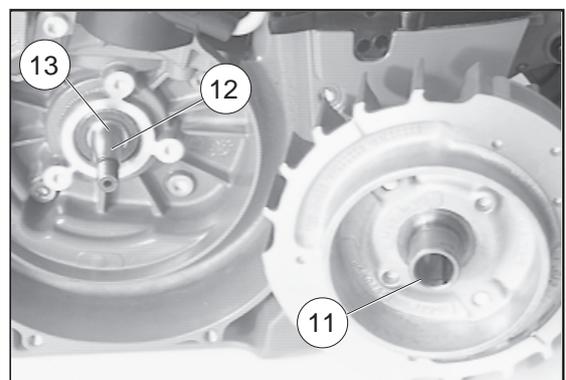
### 04-04 Replacing the short-circuiting cable

For the removal of the short-circuiting cable (2) it is necessary to remove the carburettor (7) and the bottom part (8). When installing the cable, ensure that it is not caught when fitting the bottom part.



### 04-04 Withdrawing the flywheel

Unscrew nut (9). Using extractor (10), no. 957.408.001, withdraw the flywheel from the crankshaft.

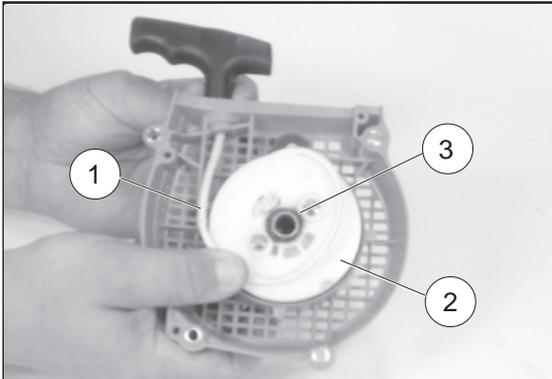


### 04-04 Installing the flywheel

Before commencing with the installation ensure that the cone of the flywheel (11) and of the crankshaft (12) are clean and free from grease. Tighten the flywheel using a torque of 30 Nm (refer to table 995.709.180). Check that the plate spring (13) is seated correctly.

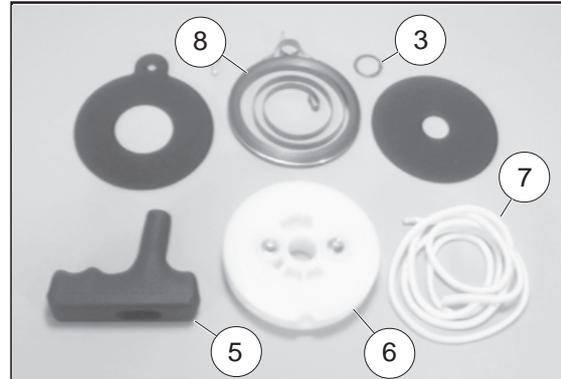


## 05 Starter assembly



### 05-02 Removing the starter assembly

Relieve the return spring before removing the starter assembly. For this purpose slightly withdraw the starter rope (1) while holding the rope drum (2). Remove the rope from the drum and allow the drum to rewind slowly.



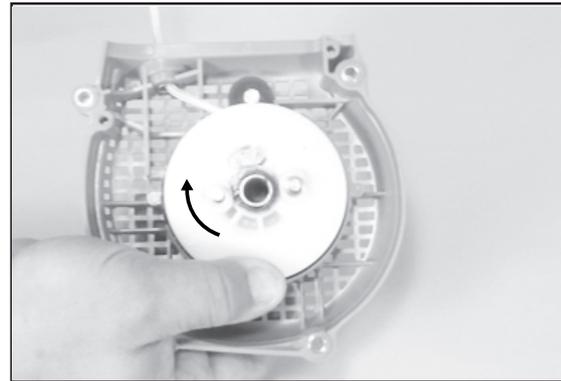
### 05-02 Removing the return spring

Remove the retaining ring (3). Separate the handle (5) from the rope (7) and lift the rope drum (6) from the housing. Carefully remove the return spring (8) from the ventilator housing.



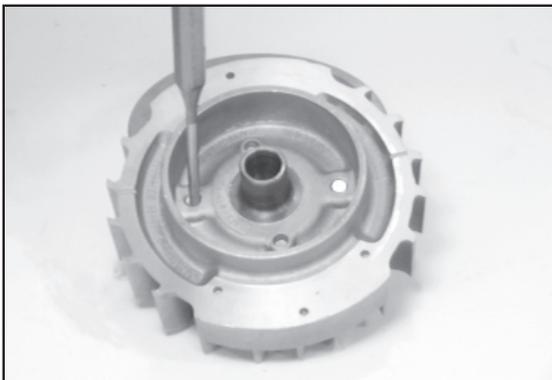
### 05-02 Attachment of the starter rope in the rope drum

In the case of this rope drum a knot prevents the starter rope from being withdrawn.



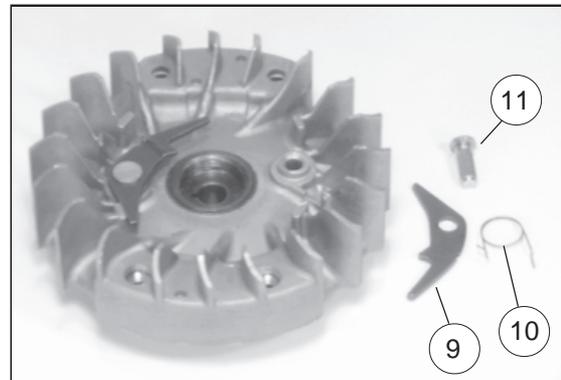
### 05-02 Pretensioning the return spring

After fitting the starting assembly, completely withdraw the starter rope and hold it in this position. It must now be possible to turn the rope drum by another 1/2 turn in the direction of the arrow. Reduce the pretensioning force, when this is not possible.



### 05-03 Replacing the starter ratchets

Using a punch, remove the locating pin of the starter ratchet from the flywheel.

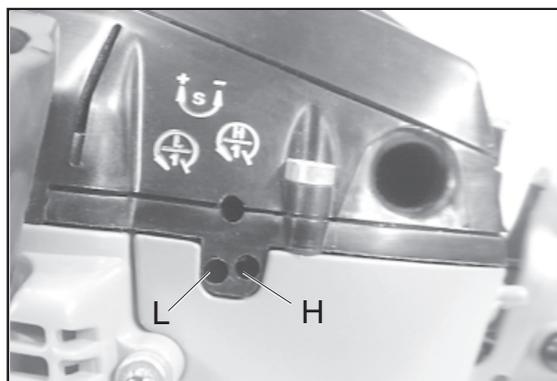


### 05-03 Replacing the starter ratchets

The starter ratchet (9) with spring (10) and pin (11) must be replaced as a complete assembly only. Push the pin into the flywheel until it is flush with the inner edge. Before installing the pin, apply locking agent 980.009.000.



## 06 Carburettor

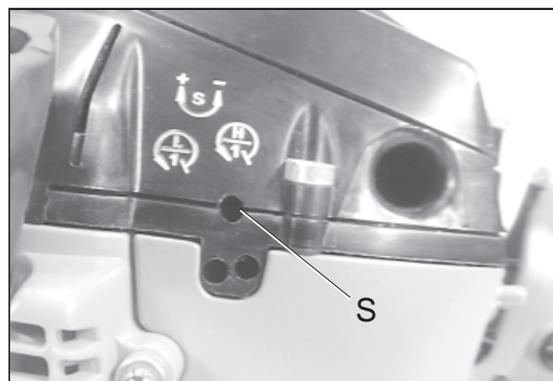


### 06-01 Adjusting the carburettor

To perform the basic adjustment, carefully screw in screws L and H against the stop. Then back off:

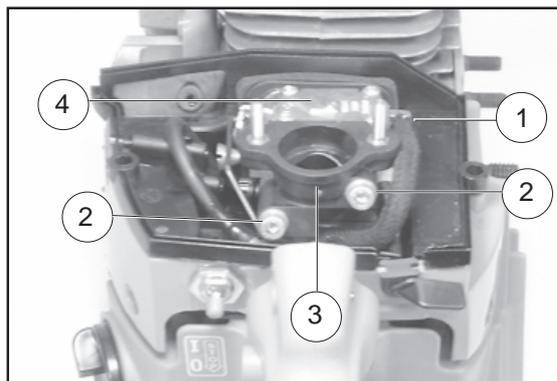
Idle adj. screw (L) = 1 turn (max. +1/4 turn)

Main adj. screw (H) = 1 turn (max. - 1/4 turn)



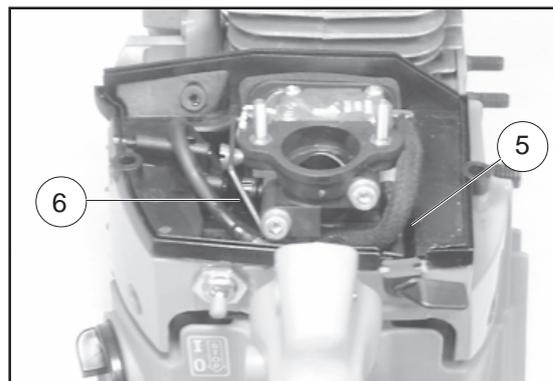
### 06-01 Adjusting the carburettor

Adjustment of the engine speed during idling is by means of the idling adjustment screw (S). If the engine speed is excessive (moving chain) or too low (engine stalls) correct accordingly by means of the idling adjustment screw.



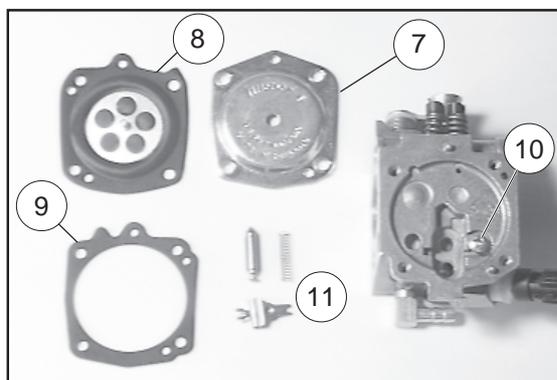
### 06-02 Removing the carburettor

Remove the filter cover and the hood (07-01). Separate the fuel pipe (1) from the connection nipple. Unscrew the screws (2). Remove the intake elbow (3) and the carburettor (4).



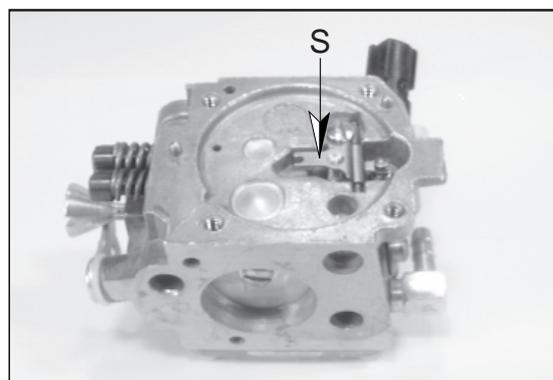
### 06-02 Removing the carburettor

Following the removal of the carburettor, disassemble the choke lever (5) and the throttle linkage (6).



### 06-03 Carburettor, control side

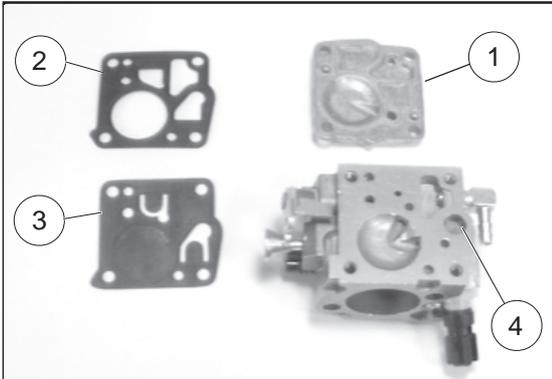
Remove the cover (7), the control diaphragm (8) and the gasket (9). Unscrew the screw (10). The control assembly (11) comprises the inlet needle, rocker arm, spring and shaft.



### 06-03 Adjusting the control lever

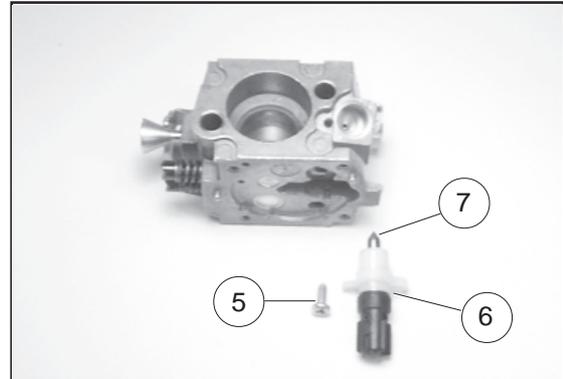
The control lever (S) must be aligned so that its surface is parallel with the carburettor body (refer to arrow).

## 06 Carburettor



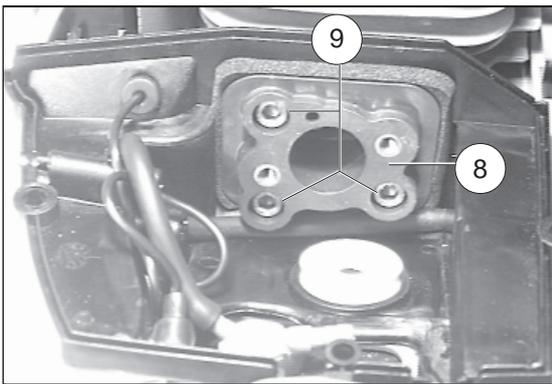
### 06-04 Carburettor, pump side

Unscrew the cover (1). Remove the gasket (2) and the diaphragm (3). Carefully remove the fuel filter (4) for cleaning.



### 06-05 Removing the injection valve

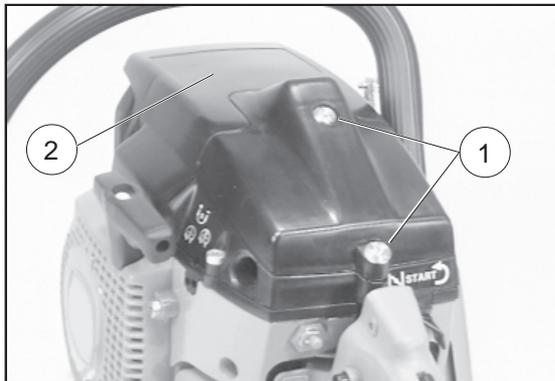
Unscrew attachment screw (5) and remove the valve assembly (6) from the carburettor body. Use new valve, if the needle tip (7) is worn.



### 06-08 Removing the intermediate flange

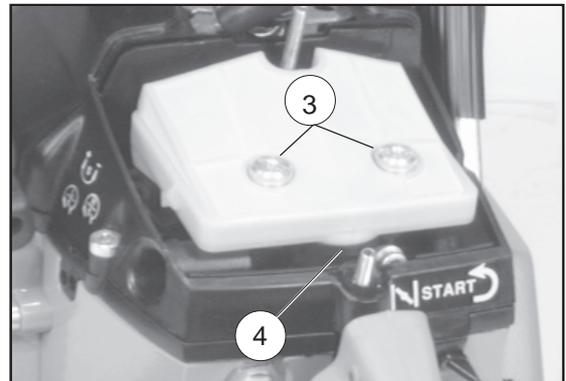
Unscrew the three attachment screws (9) for the removal of the intermediate flange (8).

## 07 Cover system, air filter



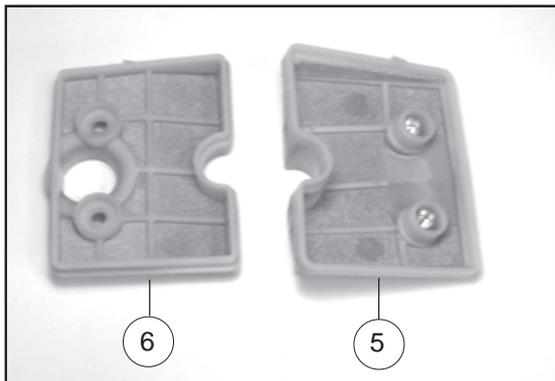
### 07-01 Removing the air filter cover/cover

Unscrew cover (1) for cleaning the air filter. Remove cover (2), if more extensive servicing operations are to be performed.



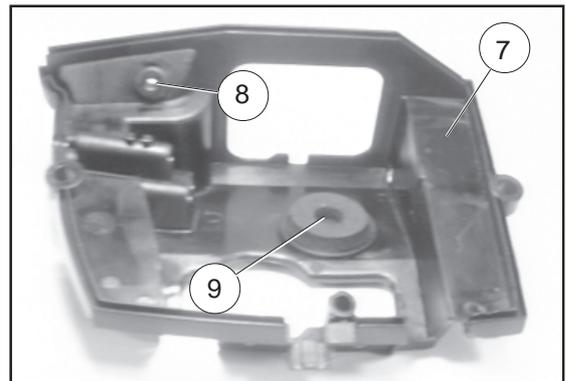
### 07-03 Removing the air filter

For the removal of the air filter unscrew the two screws (3). Carefully remove the air filter from its guide in the intake elbow (4).



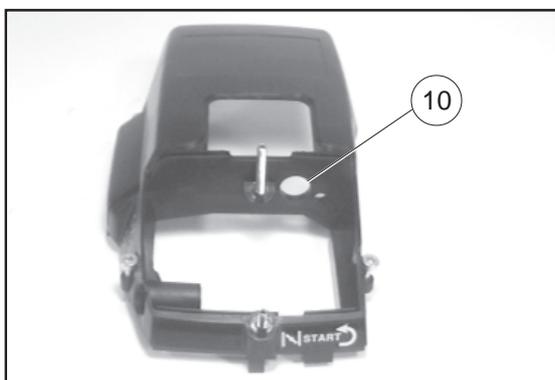
### 07-03 Cleaning the air filter

Dismantle the air filter separating the upper part (5) from the lower part (6).



### 07-06 Removing the bottom

Following the removal of the carburettor, it is possible to remove the bottom (7). Arranged in the bottom part are: the short-circuiting cable penetration (8) and the ventilation bore with seal for the carburettor (9).

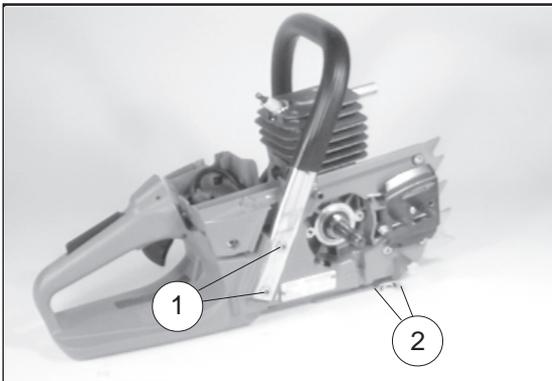


### 07-06 Slide plate for carburettor heating system/winter operation

A slide plate (10) for the carburettor heating system is provided at the partitioning wall between the cylinder and the carburettor compartment. The slide plate must close the orifice, when the temperature rises above 0°C.

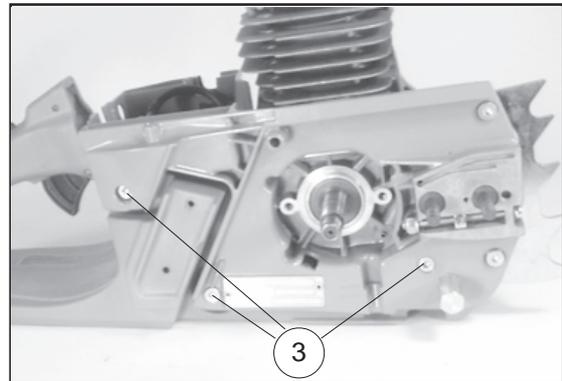


## 08 Handle, vibration dampers



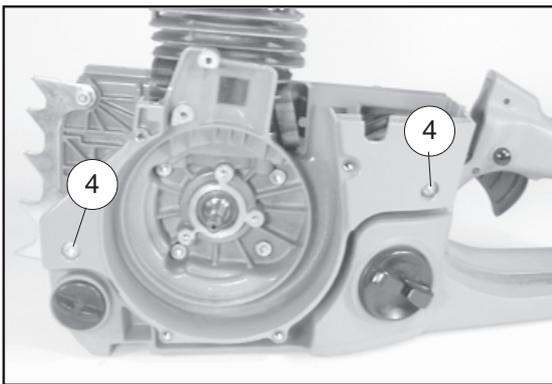
### 08-01 Removing the handle

Unscrew four screws to remove the handle. Two screws (1) are located at the side, and the other two screws (2) are located at the bottom of the tank housing.



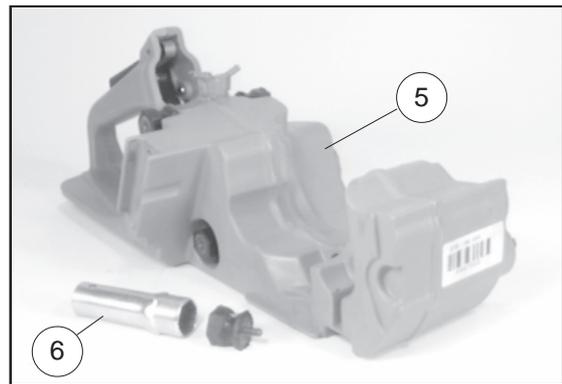
### 08-02 Replacing the vibration damper

Three vibration dampers (3) are provided on the clutch side of the engine.



### 08-02 Replacing the vibration damper

Two vibration dampers (4) are provided on the magnet side (MS) of the engine.



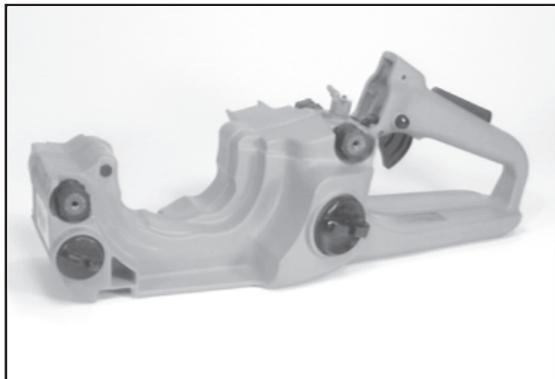
### 08-02 Replacing the vibration damper

Following the removal of the five attachment screws for the vibration damper, the tank (5) can be separated from the engine.

**NOTE:** Always use the special tool (6), no. 944.500.621, for the removal and installation of the vibration damper.

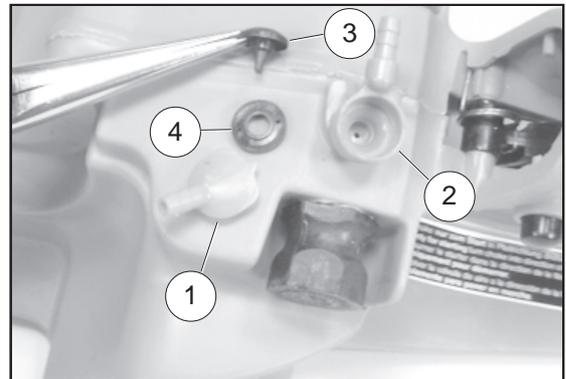


## 09 Fuel tank



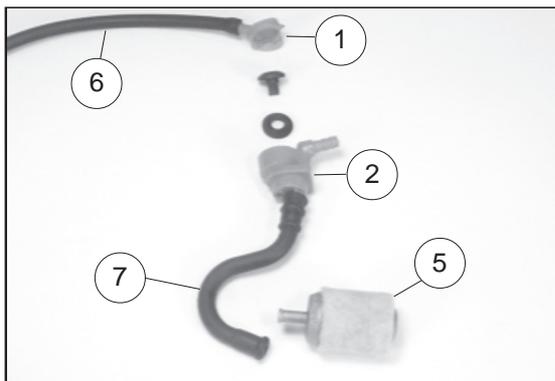
### 09-01 Removing the fuel tank

Unscrew the attachment screws of the vibration dampers. Separate the fuel line from the carburettor (06-02) and separate the intake pipe from the connection nipple (03-02) of the oil pump.



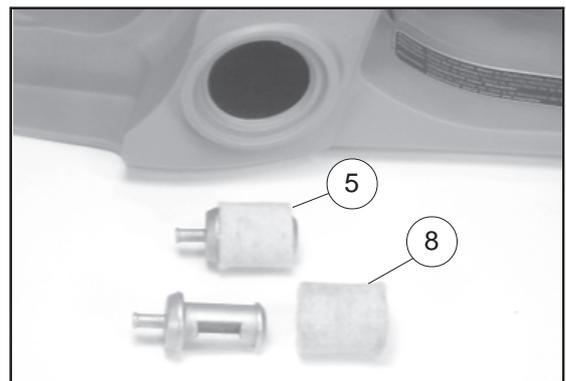
### 09-02 Replacing the ventilation valve

Remove the carburettor (06-02). Remove the cover (1) from the housing (2) of the ventilation system. Withdraw the ventilation valve (3). The plate with collar (4) is arranged between the housing and the valve and prevents any pressure build-up in the fuel tank.



### 09-03 Removing the fuel line

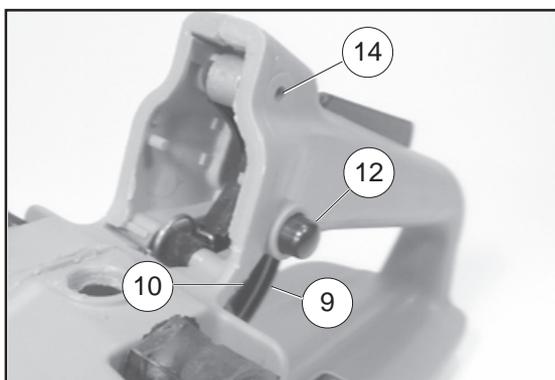
Remove the suction head (5). Remove the cover (1) together with the ventilation line (6) from the housing. Push the housing (2) together with the fuel intake pipe (7) from the tank. **NOTE:** For assembling, fix the housing in the tank by using a slight amount of adhesive.



### 09-04 Replacing the suction head

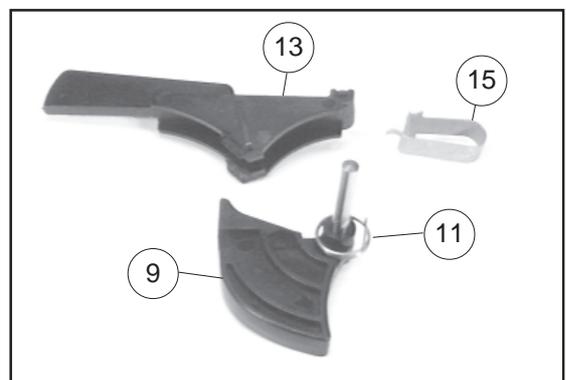
Remove the suction head assembly (5) from the fuel line.

**NOTE:** The felt part (8) can be replaced as an individual part.



### 09-05 Removing the throttle lever and the half-throttle lock

To remove the throttle lever (9), push out the pin (10). Withdraw the throttle lever together with the spring (11). Using a pair of pliers, withdraw the button (12) of the half-throttle lock from the guide pin.

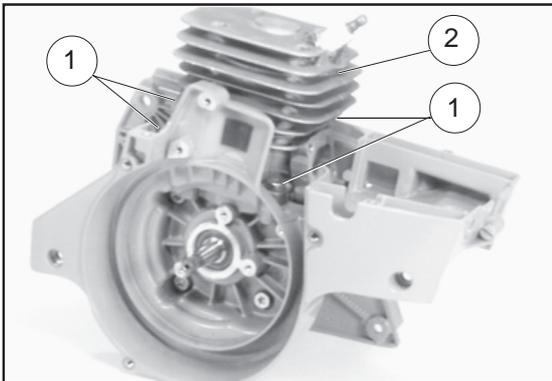


### 09-05 Removing the throttle lever lock

For removing the throttle lever lock (13), push out pin (14). Withdraw the lock together with the spring (15).

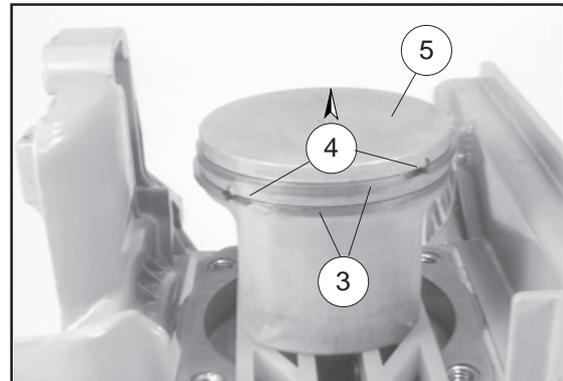


## 10 Cylinder, piston



### 10-01 Removing the cylinder

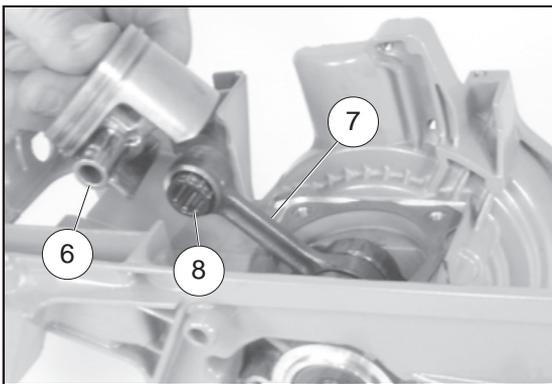
To remove the cylinder (2), unscrew the four cylinder attachment screws (1). Lift off the cylinder from the housing and piston.



### 10-01 Replacing the piston rings

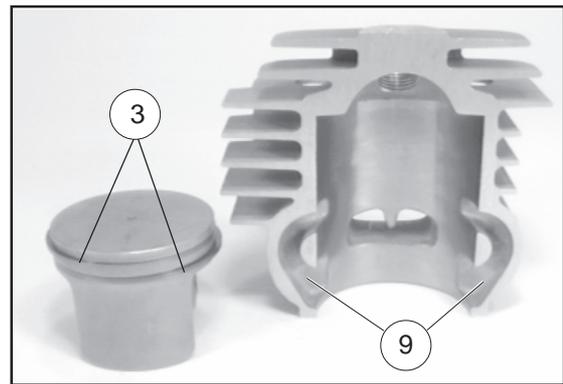
Spread the piston rings (3) at the ring gap (4) and carefully remove the rings from the piston (5).

**NOTE:** When assembling, ensure that the arrow points to the silencer.



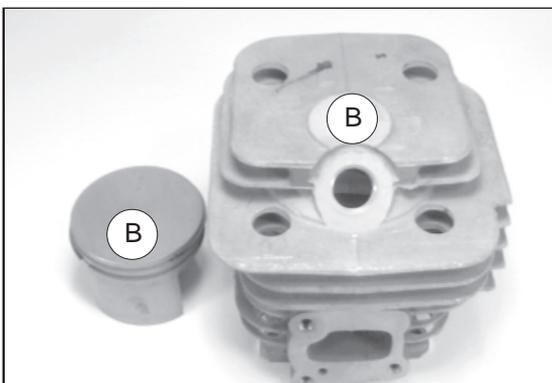
### 10-01 Removing the piston

Remove the gudgeon pin retaining ring and press out the gudgeon pin (6). Remove the piston from the piston rod (7) with bearing (8).



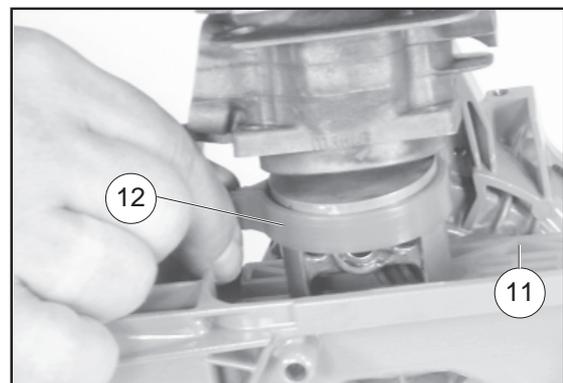
### 10-01 Henkel cylinder

Models 116si, 120si, are equipped with a Henkel cylinder (9) and a piston having two piston rings (3).



### 10-01 Cylinder and piston marking

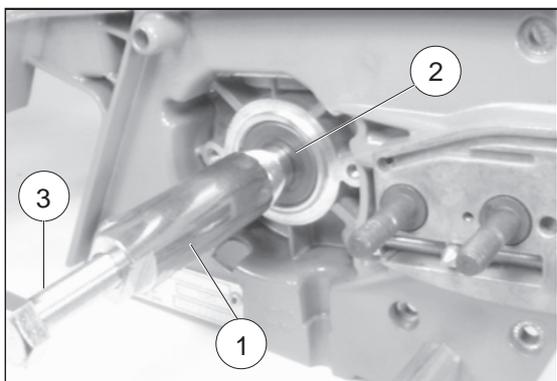
In the case of the Henkel-duct cylinder, piston and cylinder are precision-machined to form a single assembly. The identification A, B or C can be found at the top part.



### 10-01 Installing the cylinder

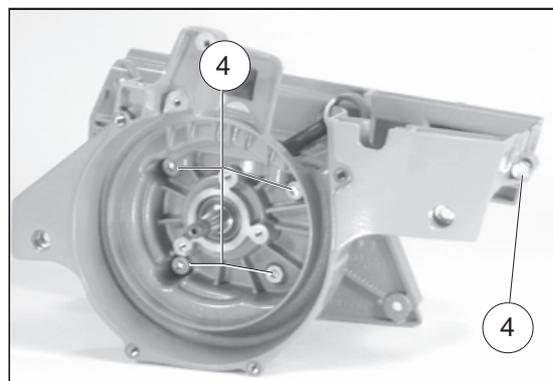
Place the fork (11), no. 944.600.001, on the crankcase, align the piston rings (3) and compress them using the tension band (12). Pass the cylinder over the piston while sliding the tension band downwards.

## 11 Crankcase



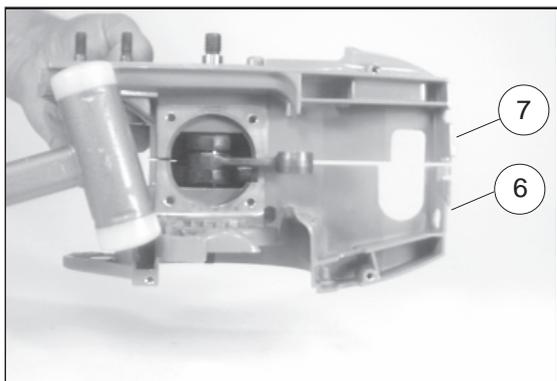
### 11-01 Replacing the radial rings

Tightly screw tool (1), no. 944.500.900, into the radial ring (2) and withdraw it from the crankcase by means of the spindle (3).



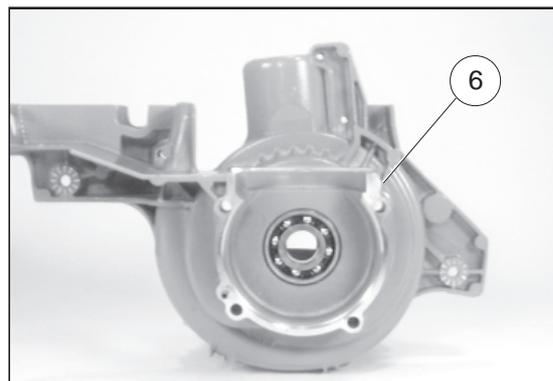
### 11-03 Dismantling the crankcase

For dismantling the crankcase remove the five screws (4).



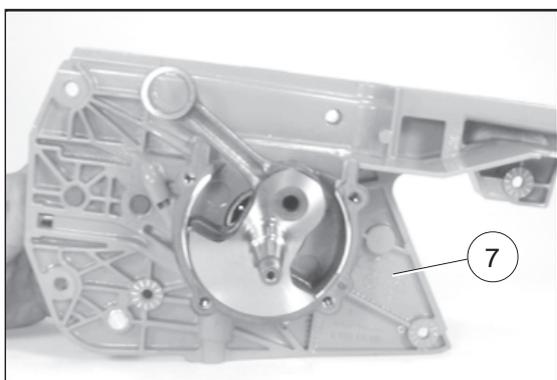
### 11-03 Removing the crankcase

After removing the five attachment screws, carefully separate the crankcase using a plastic hammer.



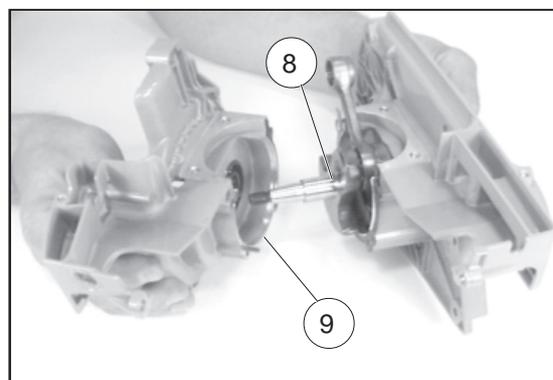
### 11-03 Crankcase

The crankcase is divided into a magnet side (6).



### 11-03 Crankcase

The crankcase is divided into a clutch side (7).  
**NOTE:** Housings supplied as spare parts are already prefitted with ball bearings and radial rings.



### 11-03 Assembling the crankcase halves

Start by inserting the crankshaft (8) into the clutch side-half. Place the gasket (9) over the locating pins. Assemble the magnet side-half to the clutch side-crank-case half and press both halves together. **NOTE:** Tighten the housing screws (4) using a torque of 10 Nm.



## 12 Checking operations



### 12-02 Checking the ignition system

Use tester no. 956.010.300 for checking the ignition system/spark plug.



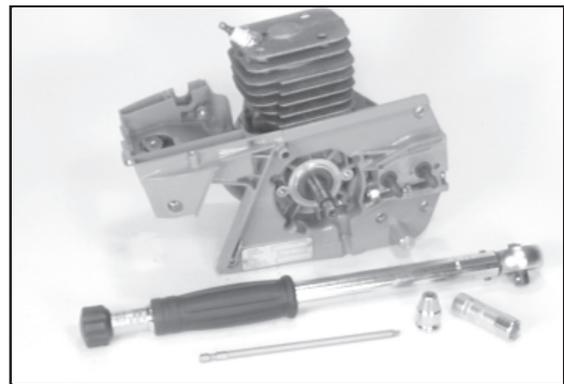
### 12-03 Checking the carburettor

For in-situ checking of the carburettor separate the fuel pipe from the connection nipple. Fit pressure tester no. 965.004.000 to the connection nipple.



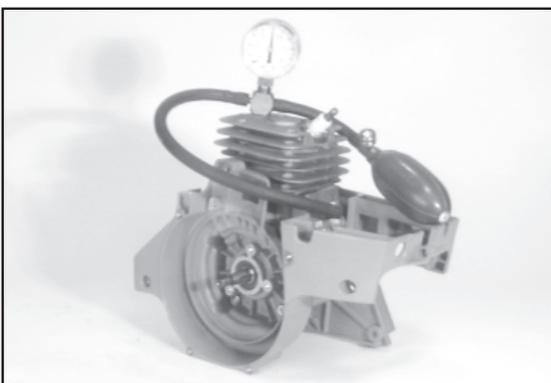
### 12-03 Checking the carburettor

Pressure-testing of the carburettor or crankcase is to be performed at a max. pressure of 0.5 bar.



### 12-04 Use a torque wrench for tightening screwed connections

Cylinder base screws, crankcase screws, muffler screws, the flywheel nut and the clutch hub must be tightened using the prescribed torque.



### 12-05 Checking the crankcase with cylinder

For pressure-testing the crankcase blank off the exhaust duct using flange no. 944.603.060. Screw flange no. 944.603.070 to the inlet duct.

## Torques

<b>Assy. set</b>	<b>Type</b>	<b>116si / 120si</b>
<b>Muffler</b>		9,0 - 1,0
<b>Crankcase</b>		10,0 + 1,0
<b>Cylinder</b>		11,5 + 1,0
<b>Ignition coil</b>		3,0 + 1,0
<b>Turbular handle</b>		5,0 ± 0,5
<b>Rubber buffer</b>		7,0 + 1,0
<b>Intermediate flange</b>		5,5 + 1,0
<b>Carburettor</b>		6,0 ± 1,0
<b>Clutch hub</b>		55,0 ± 2,5
<b>Flywheel</b>		30,0 - 2,5
<b>Spark plug</b>		25,0 ± 5,0



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Specifications subject to change without notice

Form: 995 715 020 (5.01 GB)