

EA5600FR

Caution:

Before doing any maintenance or service work, the combination switch must be in STOP position (ignition current interrupted), in order to prevent unintended starting by the easy start system!



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		EA5600F
Stroke volume	cm ³	55.6
Bore	mm	45
Stroke	mm	35
Max. power at rated speed	kW / 1/min	3.00 / 10,000
Max. torque at speed	Nm / 1/min	3.5 / 7,500
Idling speed / max. engine speed with bar and chain	1/min	2,800 / 13,800
Clutch engagement speed	1/min	4,700
Sound pressure level at the workplace $L_{pA, eq}$ per ISO 22868 ^{1) 3)}	dB(A)	104,4 / $K_{WA} = 2,5$
Sound power level $L_{WA, FI} + R_a$ per ISO 22868 ^{2) 3)}	dB(A)	116,5 / $K_{WA} = 2,5$
Vibration acceleration $a_{hv, eq}$ per ISO 22867 ^{1) 3)}	m/s ²	5,5 / K = 2
- Tubular handle	m/s ²	5,0 / K = 2
- Rear handle	Type	Diaphragm carburetor
Carburetor	Type	electronic
Ignition system	Type	NGK BPMR 7A
Spark plug	Type	-
or spark plug	Type	-
Electrode gap	mm	0.5
Fuel consumption at max. load per ISO 7293	kg/h	1.5
Specific consumption at max. load per ISO 7293	g/kWh	437
Fuel tank capacity	l	0.59
Chain oil tank capacity	l	0.31
Mixture ratio (fuel/two-stroke oil)		50 : 1 / 100: 1 (EXTRA)
- when using MAKITA/DOLMAR oil		50 : 1 (2%)
- when using Aspen Alkylat (two-stroke fuel)		50 : 1 (quality grade: JASO FC or ISO EGD)
- when using other oils		engages manually or in case of kickback
Chain brake		
Chain speed (at max. engine speed)	m/s	.325=25.6 3/8=29.6
Sprocket pitch	inch	.325 or 3/8
Number of teeth	Z	7
Chain type		see the Extract from the spare-parts list
Pitch / gauge	inch / (mm)	.325 / 0.058 (1.5 mm) oder 3/8 / 0.058 (1.5 mm)
Guide bar, length of a cut	cm	38 / 45 / 53
Guide-bar type		see the Extract from the spare-parts list
Weight (fuel tank empty, without chain, guide bar and accessories)	kg	5.8

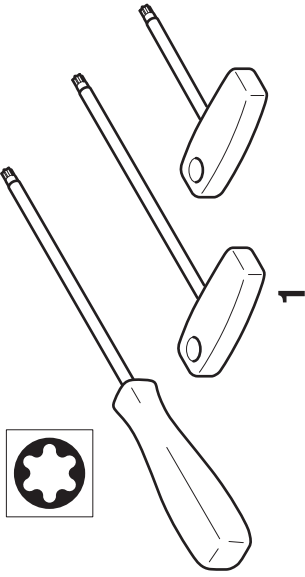
¹⁾ Figures derived in equal part from idling, full-load and racing speed.

²⁾ Figures derived in equal part from full-load and racing speed.

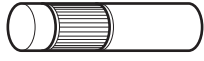
³⁾ Uncertainty (K=).

1 Torx screwdriver

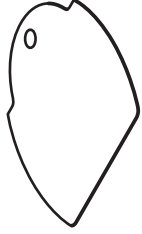
- Grip 944500860
- T-grip 200 mm 944500862
- T-grip 100 mm 944500861



1



2



3

2 Mandrel

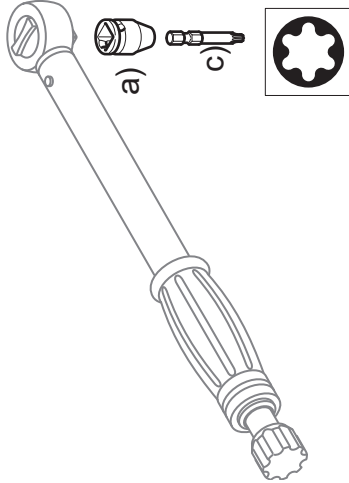
Disassembly mandrel for tapping out the flywheel without damage to the crankshaft thread 944500880

3 Setting gauge

Gauge for measuring the gap between flywheel and armature 944500891

4 Torque wrench

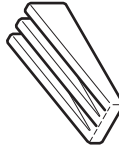
- a) 3/8" Drive socket 944500864
- b) Bit 152 mm 944500865
- c) Bit 49 mm 944500866



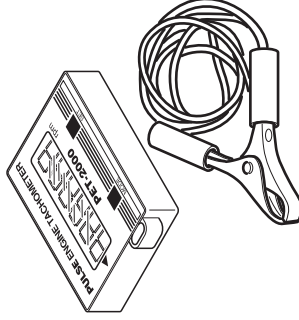
4

5 Piston stop wedge

Wedge for blocking the engine through the exhaust port 944602000



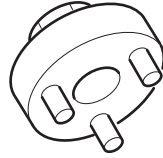
5



7

6 Assembly and disassembly wrench

Wrench for disassembling and assembling the centrifugal clutch 944500590

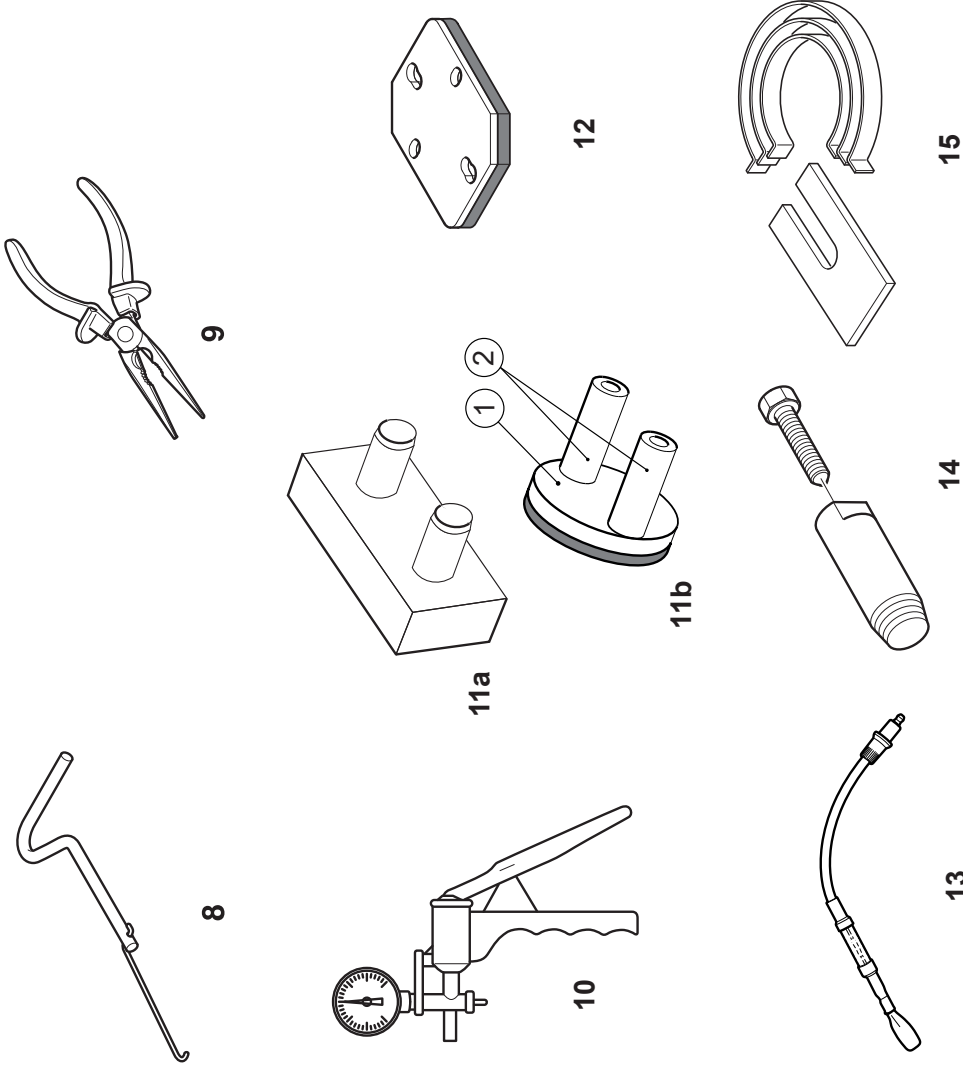


6

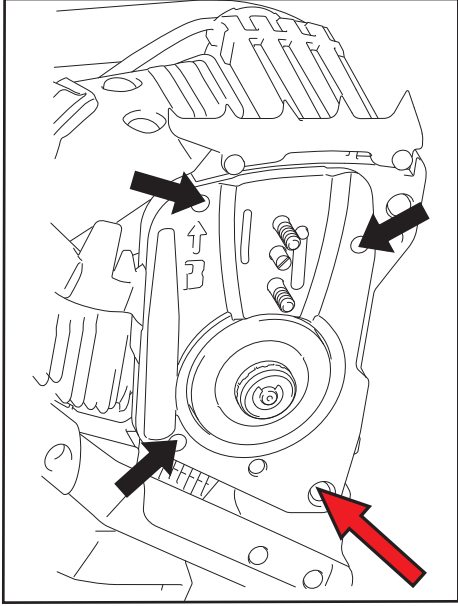
7 Tachometer

Electronic tachometer for measuring the engine speed of 2-and 4-stroke engines 950233220

8 Disassembly hook		
Removal/installation		950237000
Brake band spring		
9 Needle-nose pliers		
Various assembly/ disassembly tasks		944603400
10 Over/underpressure pump		
For checking sealing of radial rings/carburetor		957004001
11 Sealing plates		
a) For sealing air scavenging		1R453
b) For sealing intake side		1R454
(b contents 1pcs. ①, 2pcs. ②)		
12 Sealing plate		
For sealing exhaust side		944603180
13 Ignition tester		
Checking the ignition		950233230
14 Radial ring puller		
15 mm radial ring puller		944500895
Spindle		950203020
15 Piston tension belts		
For piston assembly into cylinder		944500895



01 CHAIN TENSIONING SYSTEM



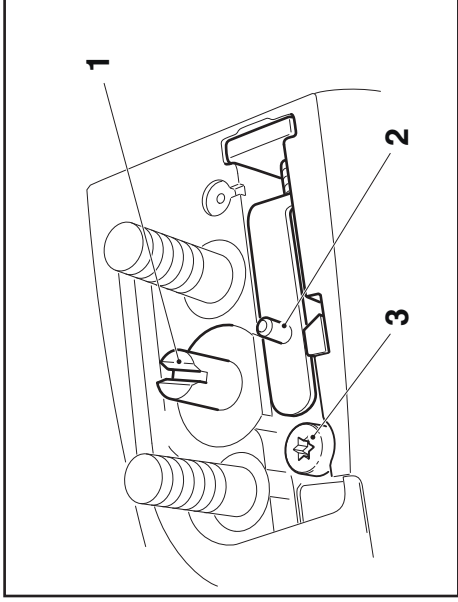
Remove the sprocket guard, bar, and chain.
CAUTION: Do not work on the chain brake unless the spring is detensioned!

Chain tensioner

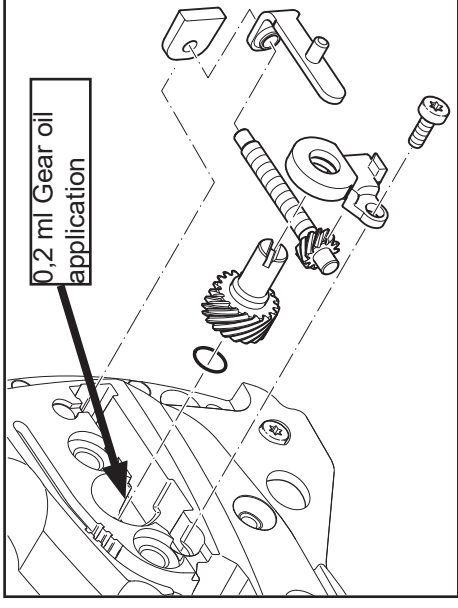
Unscrew 3 pcs. 5x15 screws and 1 pcs. 5,5x20 screw and remove the cover. Hold the impact protector on the backside when remove the screw bottom left.

Chain tensioner function

An angled worm drive converts the turns of the adjustment screw **1** to forward or backward motion of the tensioning pin **2**.



If necessary, turn adjusting screw **1** clockwise, until the fastening 3x10 screw **3** is accessible.
Unscrew the fastening screw and pull the chain tensioner up and out.



Assembly

Grease spindle and worm gear with multi-purpose grease (944.360.000).

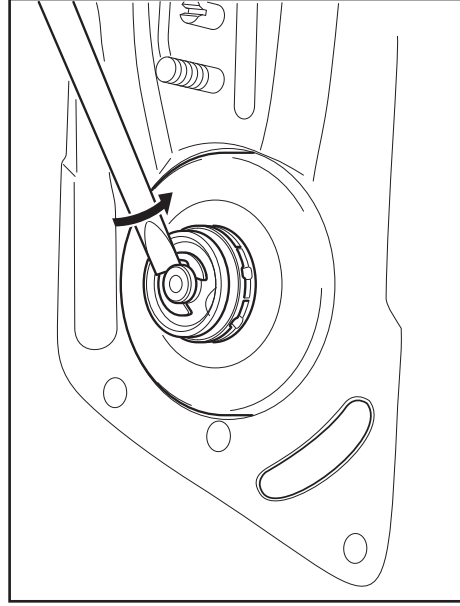
Lubricate the guide dome of the engine housing with 0,2ml gear oil.

Assemble the chain tensioner as shown in picture above and attach the gear cover with the 3x10 screw.

Add the cover and secure the screws with Loctite 601.

Note: Don't forget to set the impact protector behind the screw bottom left.

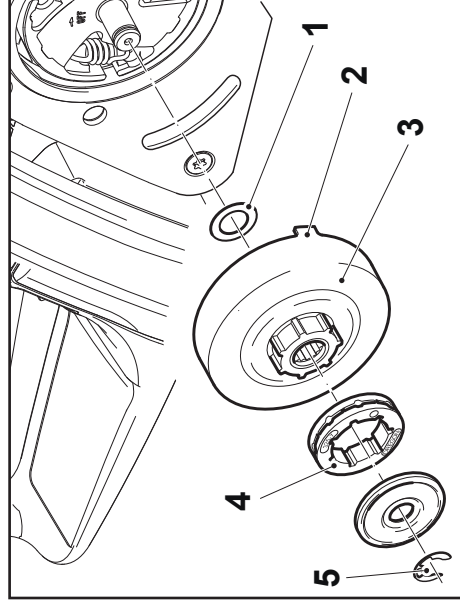
02 CLUTCH DRUM / CHAIN SPROCKET



Remove the sprocket guard, bar and chain.
Release the chain brake.

Remove the circlip **5** with the universal wrench.

Remove cup washer.



Sprocket and clutch drum with needle bearing

Check the chain sprocket **4** for damage and wear.

Important customer information:

Before installing a new saw chain, always check the condition of the chain sprocket.

A worn chain sprocket will damage a new saw chain and must be replaced.

Check the clutch drum needle bearing for wear and damage.

Assemble the bearing with multi-purpose high-performance grease (944360000).

Check the inside and outside of the clutch drum **3** for damage and wear.

Replace the clutch drum if annealing.

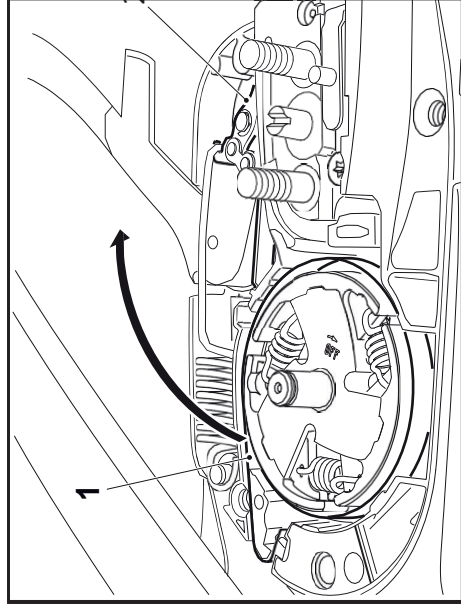
Note: Make sure to assemble with thrust washer 1!

Note: Always use a new circlip **5** (927408000)!

When assembling the clutch drum, make sure that the lug of the oil pump drive 2 is not positioned on the oil pump drive.

When inserting, turn the clutch drum slightly.

03 CHAIN BRAKE / GUIDE BAR BOLT



Removing the brake band

CAUTION: To prevent cuts, wear protective gloves and disassemble the spike bar (2 screws)!

Remove the sprocket guard, bar and chain.

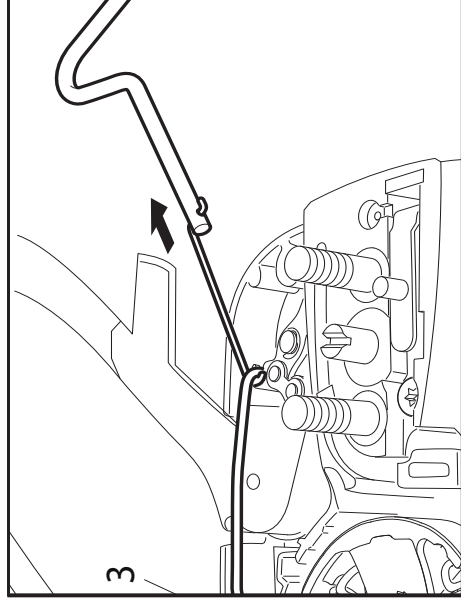
Pull the hand guard towards the tubular handle to release the chain brake.

Remove the clutch drum, see chapter 02.

Push the hand guard forward to engage the chain brake. This releases the brake band spring.

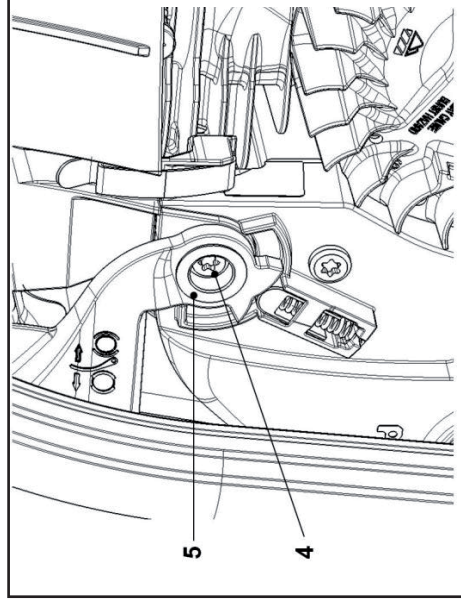
Remove the cover plate, see chapter 01.

Fold the brake band **1** upward and turn it out of the disengagement mechanism **2**.



Secure the chain saw from slipping (vise).

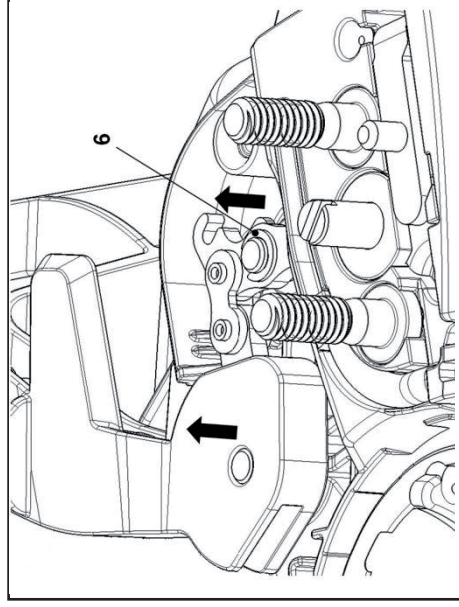
Using the disassembly hook (chap. 00, Pos. 8), disengage the brake band spring **3**.



Remove the hand guard and disengagement mechanism

Remove the starter, see chap. 06. Unscrew screw **4** and pull out the sleeve **5**.

03 CHAIN BRAKE / GUIDE BAR BOLT



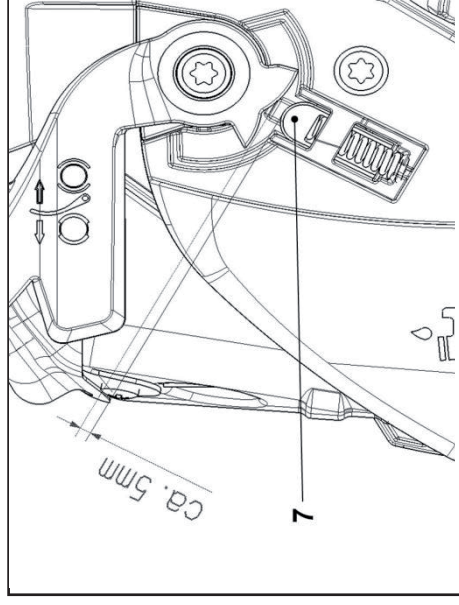
Remove the circlip 6.

Pull the disengagement mechanism and hand guard up in parallel with the axes.

Assembly in reverse order.

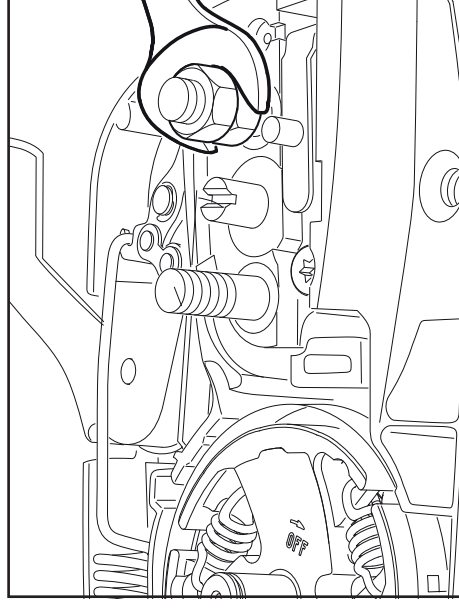
Lubricate all joints and axes of the brake mechanism with gear oil.

Note: When reassembling always use a new circlip 6 (927304000)!



Note: Make sure that the hand guard guide 7 is not unhooked. If necessary, push it back into position with a screwdriver (about 5 mm from the axle support). The hand guard can only be assembled when the rest piece is in this position.

Assemble the hand guard and disengagement mechanism, brake band and brake band spring in reverse order.

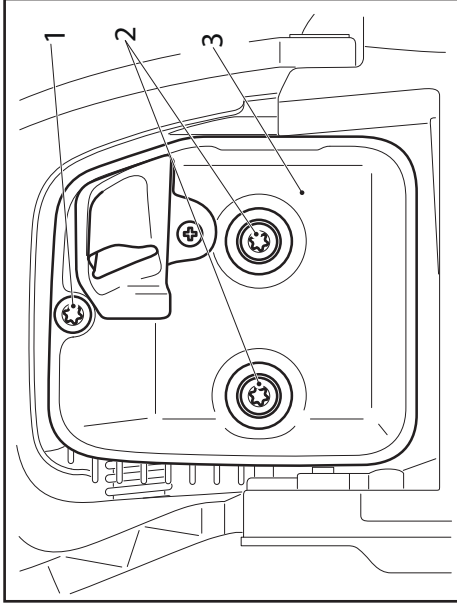


Replacing the guide bar bolt

Screw two nuts onto the bar bolt and counterlock them. Unscrew the bar bolt.

Assembly: Apply Loctite 243 (980009000) to the guide bar bolts and turn them all the way in.

04 CLUTCH



Disassembly

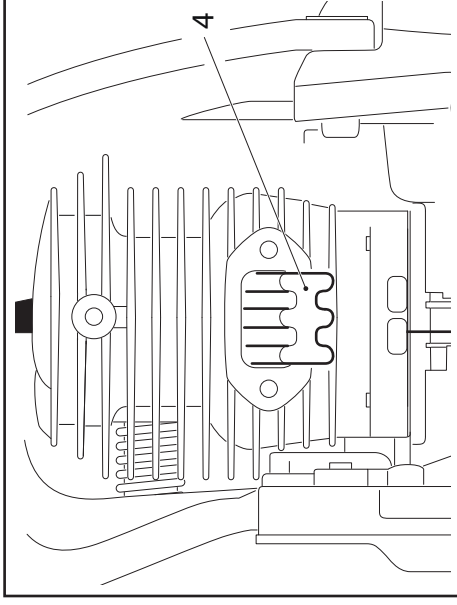
CAUTION: To prevent cuts, wear protective gloves and disassemble the spike bar (2 screws)!

Remove the sprocket guard, bar and chain.

Pull the hand guard towards the front handle to release the chain brake if necessary.

Remove the clutch drum, see chapter 02.

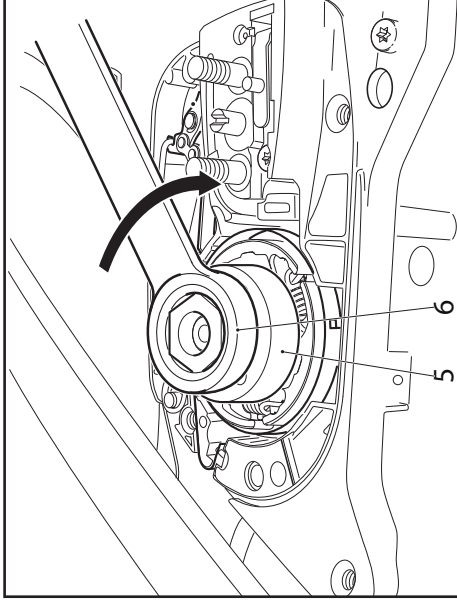
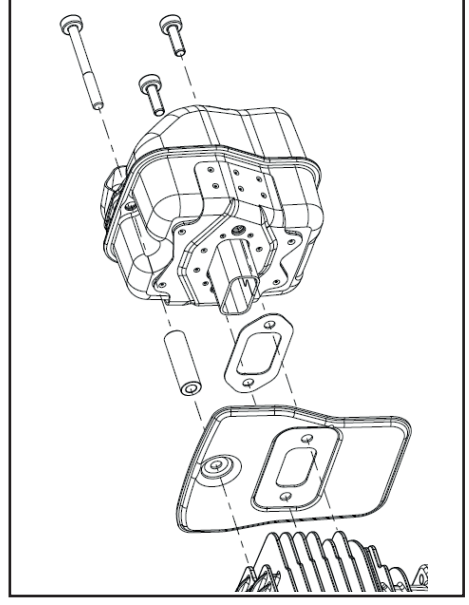
For removing the muffler, unscrew 1 pcs. M5x60 screw **1** on the top and 2 pcs. M5x16 screws **2** in the middle of the muffler **3**.



Move piston to bottom dead centre (visible through the exhaust opening).

Press the piston stop wedge **4** (cap. 00, pos.5) into the exhaust opening.

Position of gasket and cooling plate for muffler assembly:

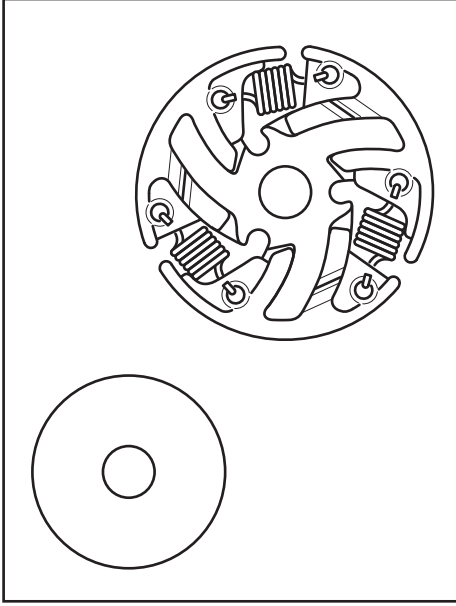


Insert wrench **5** (chap. 00, Pos. 6) into the clutch and use a socket wrench **6** to turn in the direction of the arrow (left-hand thread) to loosen and remove the clutch.

Remove the guide washer (inside of the clutch).

The flyweights can now be pushed off the guide axially in one direction.

04 CLUTCH



Inserting the flyweights

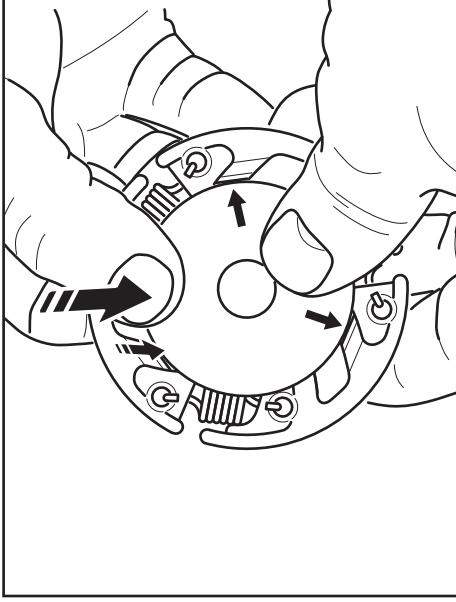
Hook the springs as shown in the illustration. Then press the flyweights onto the guide. To do this, first push on two flyweights half-way, then put on the third flyweight by setting it on its edge.

Press the flyweights all the way onto the guide.

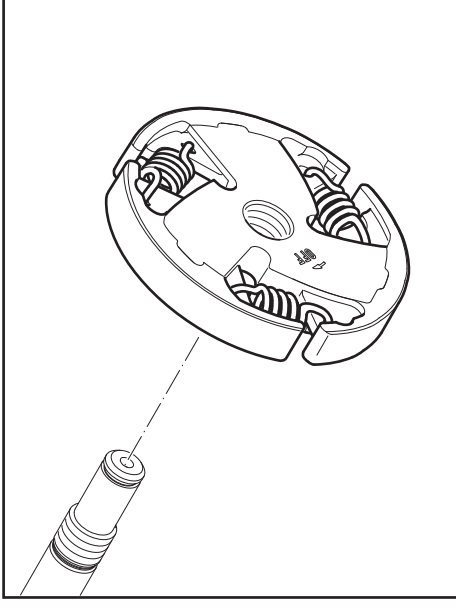
CAUTION: Note the position of the springs.

Do not replace springs individually! If a spring breaks or is fatigued, all three springs must be replaced. The springs must not touch the cover.

The illustration shows the inside of the clutch.



Press the disc onto the clutch. It must be flat and be engaged.



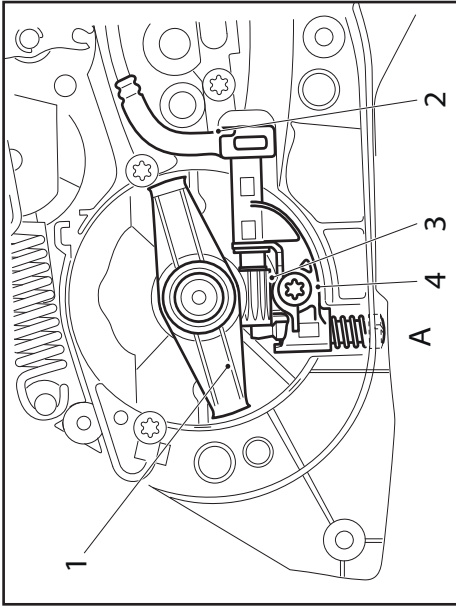
Installing the clutch

Install the clutch with the arrow marking point up.

Mounting torque: 35 \pm 2.5 Nm

CAUTION: Before installing the clutch, disassemble the starter (chap. 06) in order to prevent damage to the starting catches.

05 OIL PUMP



General

The oil pump is driven by the clutch drum.

Lugs on the clutch drum transfer the power to the drive arms of the oil pump drive **1**.

The drive worm of the oil pump drive engages in the teeth of the oil pump **3**.

This means that oil is pumped only when the chain is running.

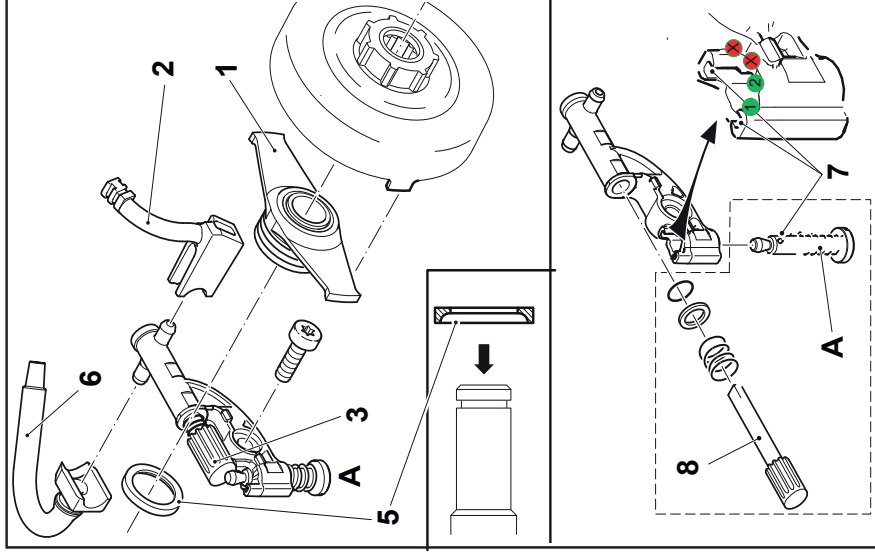
The oil flow rate can be adjusted with adjusting screw **A**:

- Turn right for more oil
- Turn left for less oil

Disassembly

Remove the clutch drum and clutch, see chapter 04. Remove brake band, see chapter 03.

Turn the oil pump drive **1** counter-clockwise and pull it off the shaft.



The suction line **6** remains in the engine housing. It extends into the oil tank. To remove it, carefully pull on the connection to the oil pump.

Removing the oil pump

Push the adjusting screw **A** up against the spring pressure and turn it until the pin **7** goes into the assembly slit **7**. If necessary press the supply piston **8** in somewhat.

Note: When assembling put the adjusting screw **A** counterclockwise to stop.

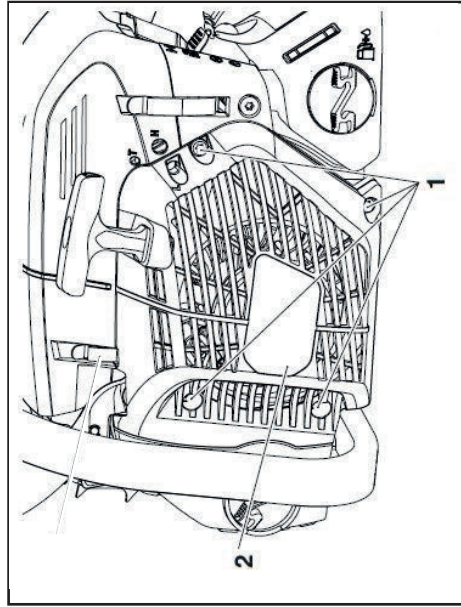
Removing the oil tank vent

Note: The ventilation valve **9** must be punched into the tank. Press in a new valve about 2 mm deep under the housing surface.

Make sure that the ventilation channel **10** is free of deposits. Clean if necessary.

Pull the oil pressure line **2** from the oil pump. Unscrew screw **4** and remove the oil pump. Remove spacer ring **5** from the crankshaft.

Note: Make sure to install in the right position. Set Pin **7** the screw **A** after assembly in position 1 or 2. See illustration.



Disassembly

Unscrew four 5,5x16 screws **1** and remove the fan housing **2**.

Remove the air guide **4** from the fan housing. **CAREFUL! Injury hazard! Do not unscrew screw 8 if the return spring is under tension.**

Unscrew screw **8** and remove the driver **9** with spring **7** and the cable drum **6**. Separate the fan driver **9** and cable drum **6**. Lightly tap the fan housing on a wooden surface with the entire surface of the hollow side, and hold it down. Now lift the fan housing **carefully and in small steps**. This will allow the return spring pack **14**, which should now have fallen out, to relax in a controlled manner if the return spring has popped out of the plastic pack.

CAREFUL! Injury hazard! The return spring can pop out! Always wear eye protection and protective gloves!

If the spring pops out, put it back into the plastic housing as shown in the schematic.

Assembly

Note: If installing a new return spring cassette, grease it on the spring side.

Carefully insert a new return spring cassette **14** and press down until it engages. Lightly grease the surface of the spring and spring cassette with multipurpose grease (944360000).

Insert spring **7** in the cable drum **6** and thread in a new cable (dia. 3.8 mm, 1 m long) as shown. Tie knots in both ends and tighten. Press the knot on the cable drum into the space provided.

Guide the hole **16** in the driver over the end of the spring, press down the driver and turn it slightly counter-clockwise until it is flush on the cable drum **6**.

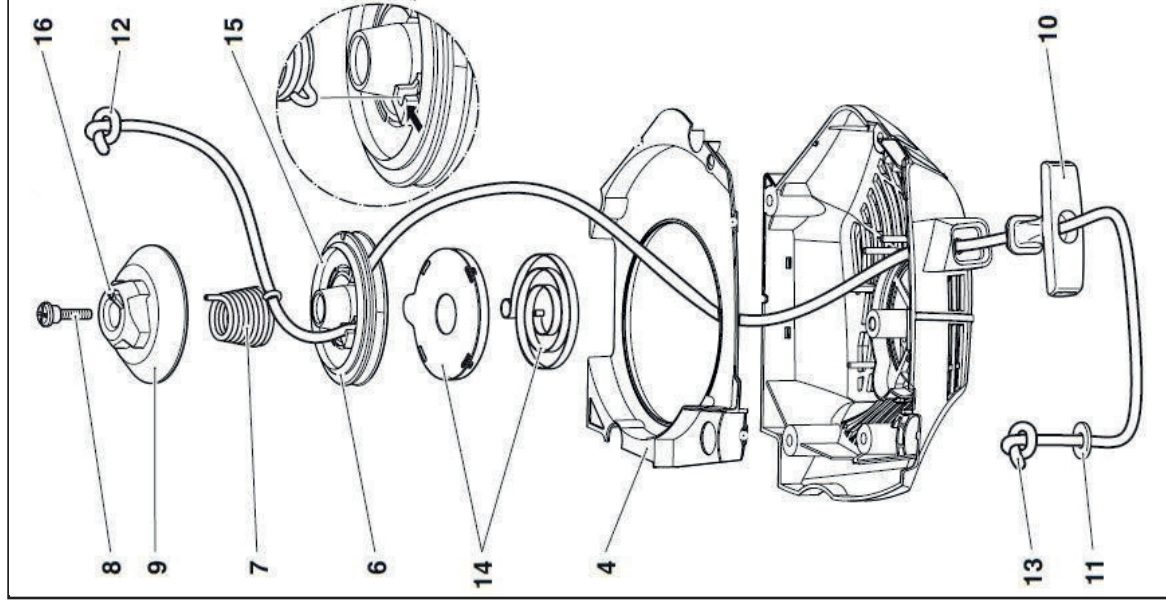
Put the drum **6** on its spindle and turn it slightly until the return spring engages.

Insert screw **8** and tighten.

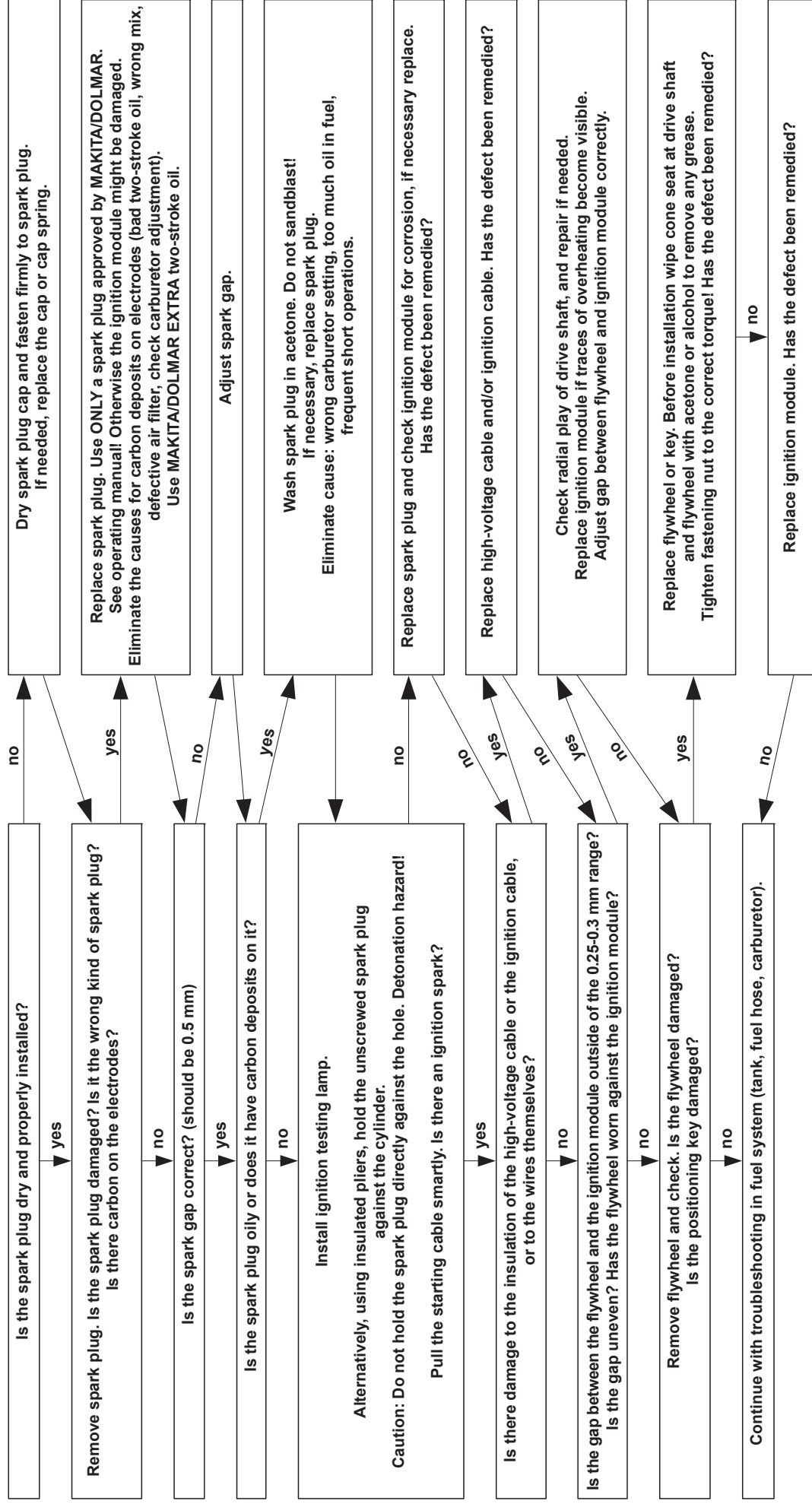
Tension the return spring clockwise. Turn the return spring about **6** turns with the aid of the cable, which should be pressed into the gap in the cable drum.

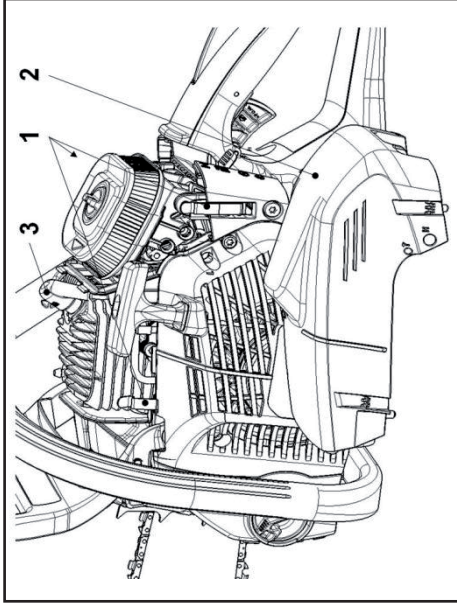
Place the air guide **4** in the fan housing and make sure the five recesses engage.

Position the fan housing correctly on the saw, press against it slightly, and pull the starter handle until the starter catches. Tighten screws **1**.



07 IGNITION SYSTEM (TROUBLE-SHOOTING)





Spark plug

Disengage the hood clips **1** with the combination tool and remove the hood **2**.

CAUTION:

Do not touch the spark plug or plug cap if the engine is running (high voltage).

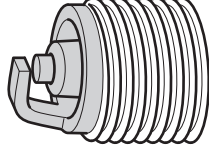
Switch off the engine before starting any maintenance work.

A hot engine can cause burns.

Wear protective gloves!

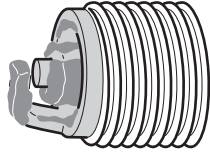
The spark plug (NGK BPMR 7A, parts no. 965603021) must be replaced in case of damage to the insulator, electrode erosion (burn) or if the electrodes are very dirty or oily. Pull the plug cap **3** off the spark plug. Use only the combination wrench supplied with the saw to remove the spark plug.

The electrode gap must be 0.5 mm.



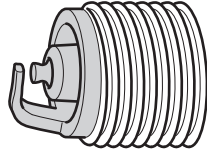
Normal

Proper spark plug, good combustion



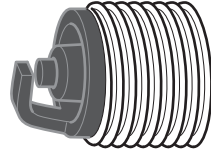
Deposits

Poor-quality oil, material wear



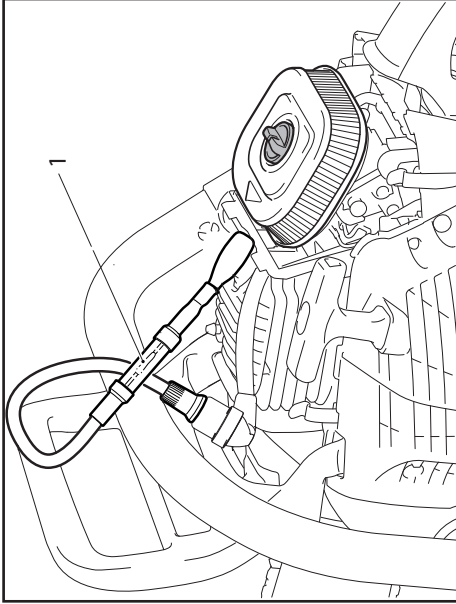
Overheating

Wrong thermal value



Carbon deposits

Wrong spark plug thermal value



Checking the ignition spark

See Instruction Manual.

Checking the ignition

NOTE: Test the ignition only in the manner described here. Testing the ignition when uninstalled can destroy the ignition armature.

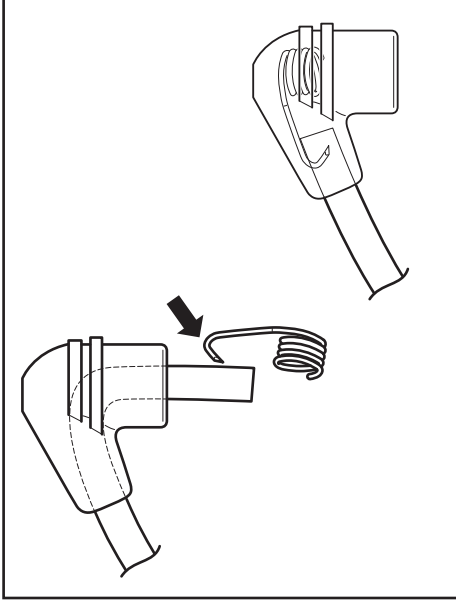
Remove the hood.

Pull off the spark plug cap and connect the ignition tester 1 as shown in the illustration.

Start the engine, let it warm up and then check the ignition over the entire speed range.

NOTE: When it reaches the cut-off speed the ignition will cut off.

For ignition cut-offs, see **IGNITION SYSTEM (TROUBLE-SHOOTING)**.



Replacing the plug connector

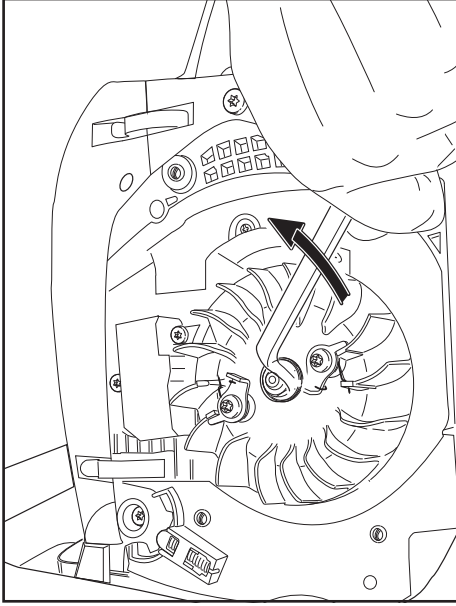
Hold the plug connector spring using pointed pliers and push the rubber cap backwards over the ignition cable.

NOTE: Lightly grease the ignition cable for easier assembly and disassembly of the spark plug cap.

Check the rubber cap and ignition cable for damage, and replace if necessary. The spring must not be bent. During assembly, push the hook of the spring into the middle of the cable from above.

Pull the rubber cap over the spring. Check for proper seating of the spring in the cap.

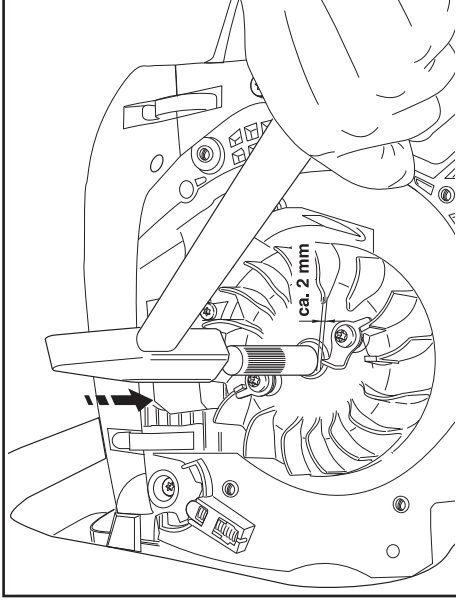
Incorrect positioning of the spring can cause weak ignition sparking or complete non-functioning.



Removing the flywheel

Remove the starting system, see chapter 06.
Block the piston, see chapter 04.

Loosen the nut in the direction of the arrow and remove it along with the washer.

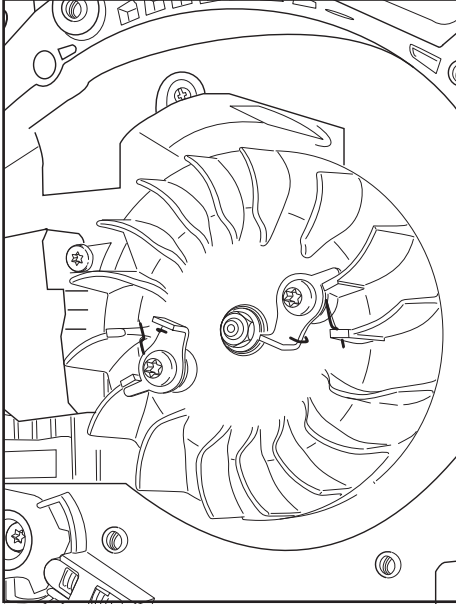


Screw the disassembly mandrel (chap. 00, Pos. 2) onto the threaded end of the shaft.
Do not screw the mandrel all the way down.
Leave about 2 mm between the mandrel and the flywheel.

Hold the machine in one hand and knock the flywheel loose with a tap on the mandrel.

CAUTION: The cone of the crankshaft must always be degreased before assembly.

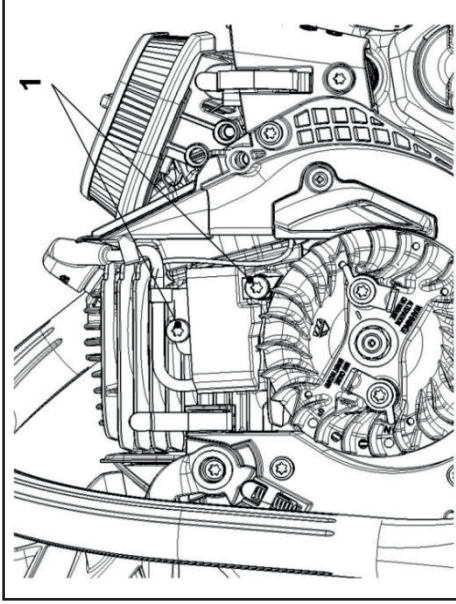
Nut tightening torque: 28 $^{+/-2.0}$ Nm



Starting ratchets

Check the starter pawls on the flywheel for easy movement, and clean if necessary.
Install spring as illustrated.

Screw tightening torque: 8 $^{+/-1.0}$ Nm.

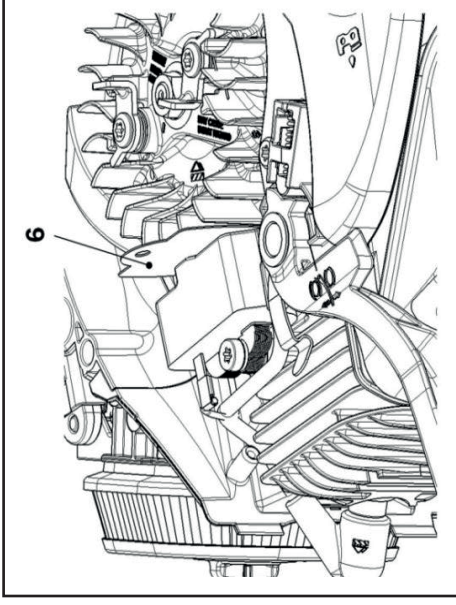


Removing the ignition armature

- Remove the cover.
- Remove the starter. See Chap. 06.
- Unscrew 2 M5x20 bolts on ignition armature 1.
- Remove ignition armature with high-voltage cable.

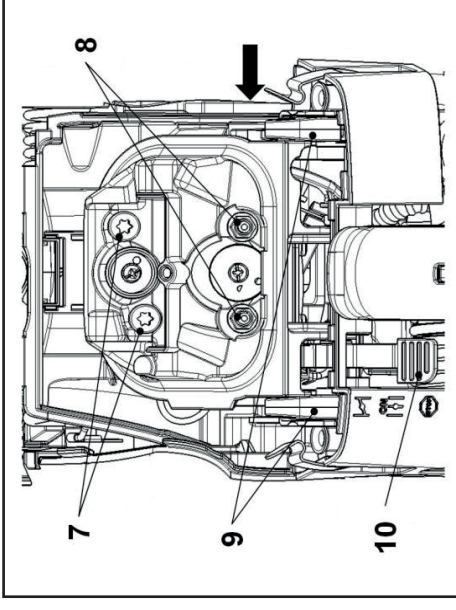
Installing the ignition armature

- NOTE:** The high-voltage cable is moulded onto the ignition system and cannot be replaced separately.
- Set 2 pcs. insulating washers between cylinder and ignition coil.
- Insert the ignition armature and screw in the screws until just before they stop.



Place high-voltage cable behind the dome of the intermediate flange.

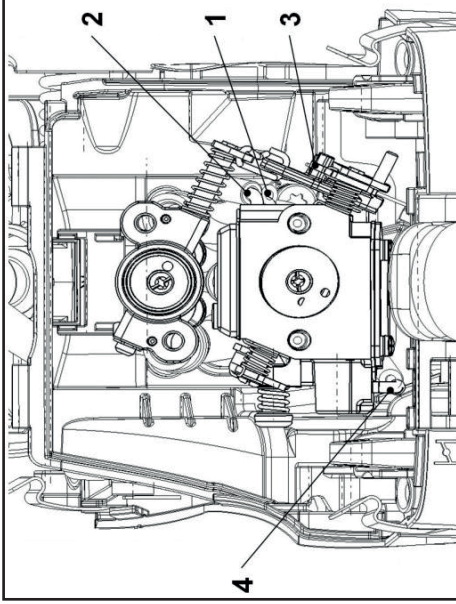
- Insert the setting gauge 6 (chap. 00, Pos. 3) between the ignition armature and the flywheel.
- Position the flywheel so that the magnet is against the armature (gap 0.25 – 0.3 mm).
- Press the armature against the gauge towards the flywheel and tighten the armature screws (5 ^{+/-0.5} Nm).
- Then check the gap again to make sure it is correct.



Combination switch

- Remove the cover and air filter
- Unscrew 2 flanged nuts 8 (A/F 7).
- Unscrew M5x20 screws 7.
- Carefully remove the intake manifold from the rubber buffers 9.
- The combination switch 10 with ground wire and contact spring can now be removed from the intake manifold.
- Assemble in reverse order.
- Note:** A damaged seal on the carburetor or air flap must be replaced.
- Reassembly in reverse order.

08 CARBURETOR



Removing the carburetor

CAUTION: Completely empty the fuel tank before disassembling the carburetor!

Remove the cover and air filter. Remove the intake manifold; see Chap. 07 under **Combination switch**.

Remove the pulse line **1**, fuel line **2** (with groove) and primer suction line **4** from the carburetor.

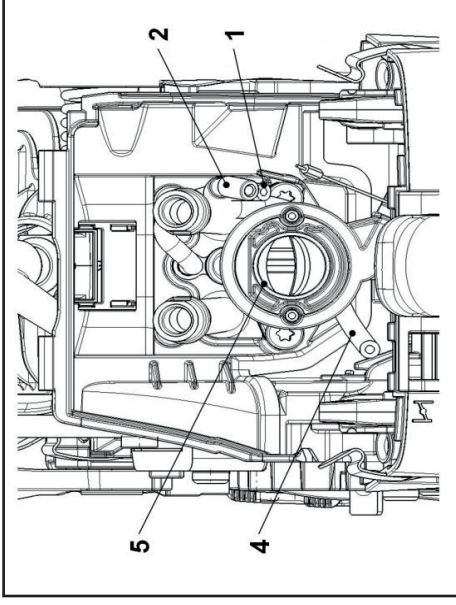
CAUTION: There is fuel in the line. Catch escaping fuel with a cloth.

Disengage the throttle cable **3**.

Disengage the air flap linkage **6** from the carburetor

Pull the air flap off the air hose.

Pull the carburetor off the stationary bolts.



Assembly

Place the insert **5** in the intake manifold if necessary.

Hook in the air flap linkage **6**, see illustration.

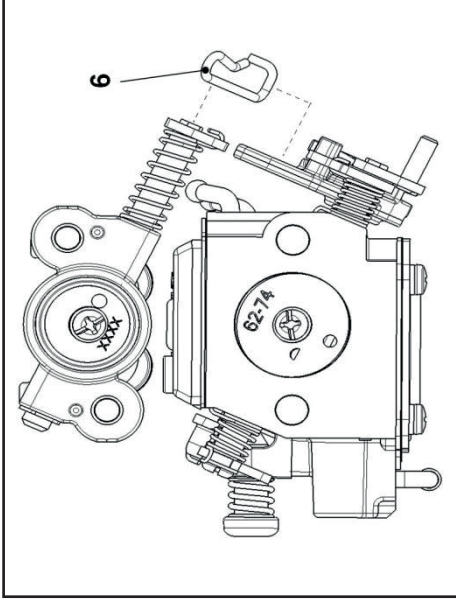
Note: Engage the air flap linkage **6** on the carburetor in the throttle flap actuator on the carburetor side.

Push the carburetor onto the stationary bolts.

Push the air flap onto the air hose.

Connect the primer suction line **4** to the carburetor.

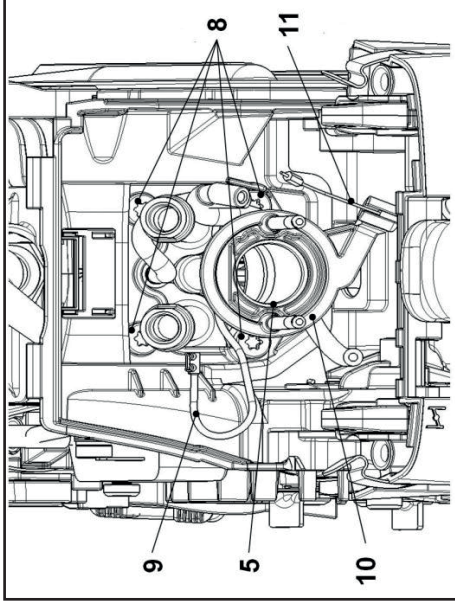
Connect the pulse line **1** and fuel line **2**, and then connect the throttle cable **3**.



Place the carburetor and air valve gasket with the red side to the outside.

Before installing the intake manifold, see Chap. 07 under **Combination switch**.

Before assembling the air filter bottom, see Chap. 07 under **combination switch**, hang the choke linkage **7** into the choke valve linkage on the carburetor.



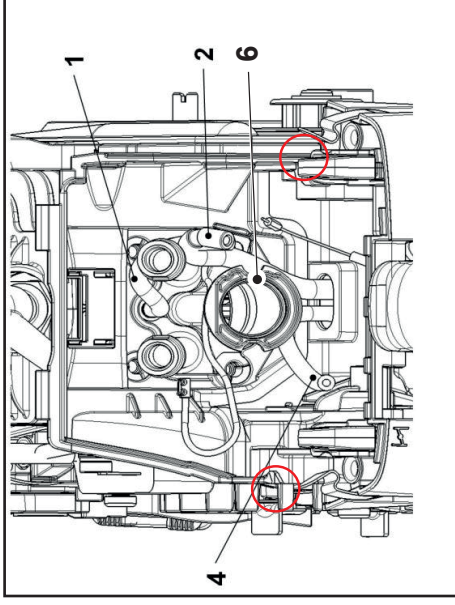
Removing the intermediate wall, suction hose and air hose.

Remove the insert **5** from the suction hose if necessary.
Detach the Bowden cable **11**.
Remove the flange ring **10** from the suction hose if necessary.

Unscrew 2 pcs. M5x12 screws **8** at the top and 2 pcs. M5x20 screws **8** at the bottom.

Remove the earth cable **9**.

Carefully remove the intermediate wall, suction hose and air hose



Assembly

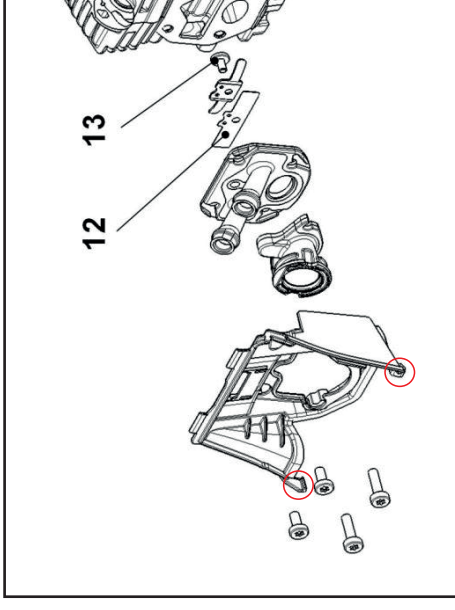
Assemble in reverse order. Make sure that the intermediate wall with the hooks on the left and right (see circles) engages in the engine mount.

Tighten bolts **8** to 5 ^{+/-0.5} Nm.

Route the lines as shown below on the right side. Note the different lengths!

- 1** Pulse line (black)
- 2** Fuel line (red, with groove)
- 4** Primer suction line (top primer connection)
- 6** Insert for suction hose

Note: Check all lines for cracks and damage. Any damaged lines must be replaced.

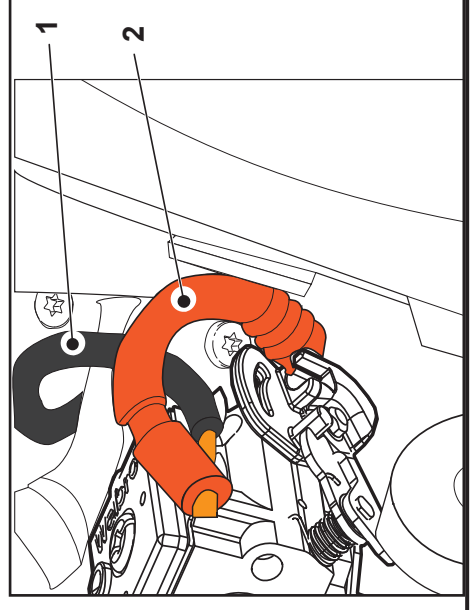


Intake diaphragm (reed valve)

If the intake diaphragm **12** is damaged or protruding away from the air hose flange, it must be replaced.

Note: Turn the side with TOP on it to the outside when assembling.

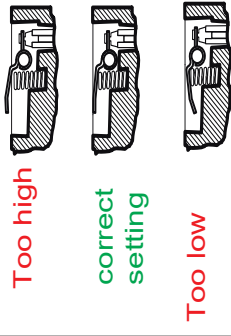
Tighten M4x8 screw **13** to 3 ^{+/-0.5} Nm



08 CARBURETOR



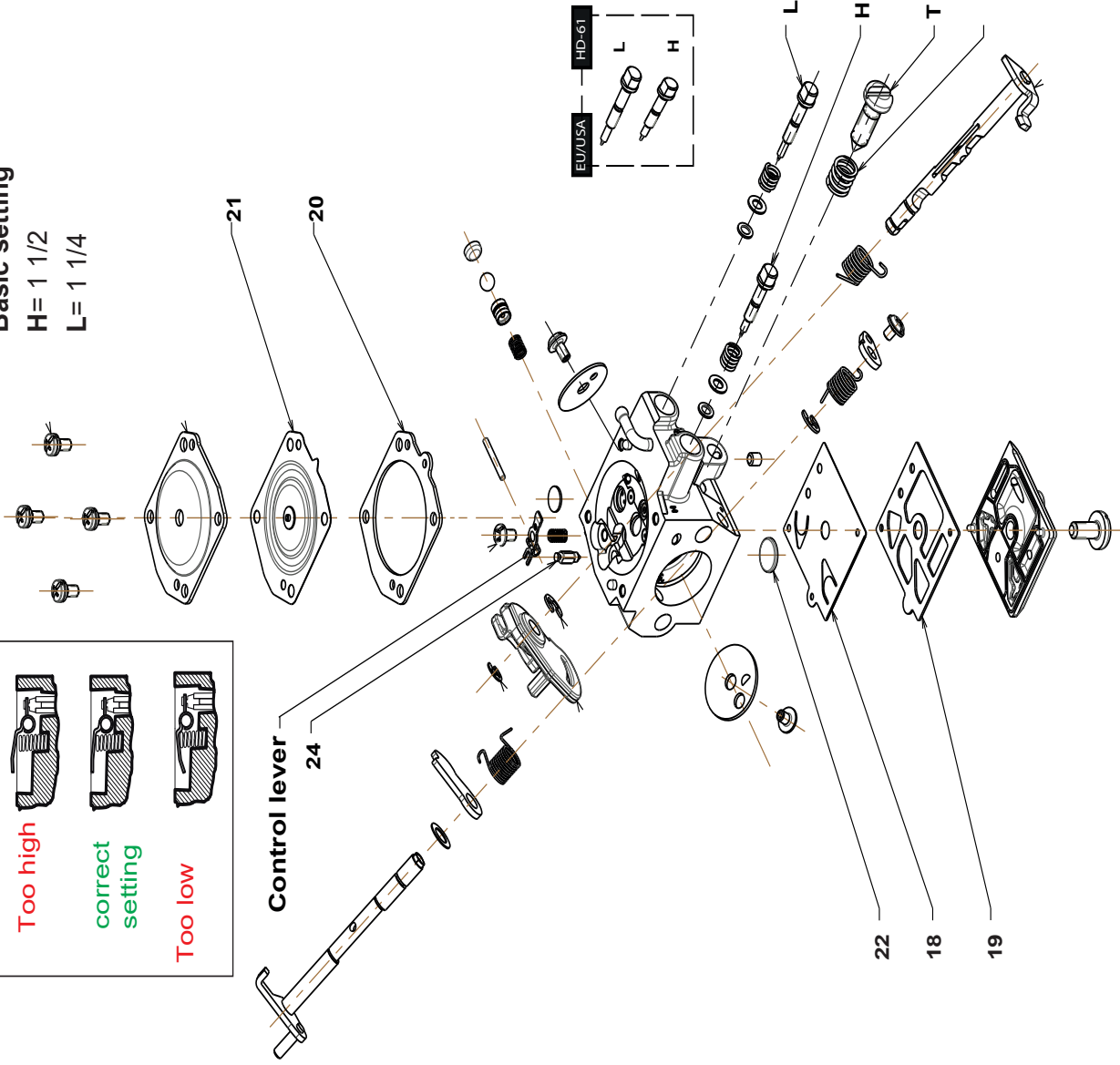
Adjustment control lever



Basic setting

H= 1 1/2

L= 1 1/4



Pressure test

Connect the pressure gauge (956004001) to the carburetor fuel connection **23**.

Set up a pressure of max. 0.5 bar.

If the pressure drops off, check the inlet needle **24** for damage or foreign objects. If necessary, replace control parts.

If the inlet needle is OK, replace the gasket **20** and diaphragm **21**.

If the pump diaphragm **18** is obviously dented, it needs to be replaced along with the gasket **19**.

Check:

- Screen **22** for contamination
- Pulse hole for contamination

Check control parts

(control lever/inlet needle):

Check the tip of the inlet needle for wear.

Check control lever for correct installation, see illustration to the bottom.

If the control lever is too low:

- Insufficient fuel flow
- Poor acceleration
- No max. speed

If the control lever is too high:

- Carburetor flooding
- Warm starting problems
- Poor idling

H and L adjusting screws of carburetors HD-61 for the EU and USA are adjustable with a **D screwdriver** (957340030). The HD-62 carburetor is only approved for unregulated markets.

Disassembly

CAUTION: To prevent cuts, wear protective gloves and disassemble the spike bar (2 screws)!

Note: For removal and installation, guide the Torx screwdriver through damper springs.

Damper spring A

For easier disassembly, remove the cover.

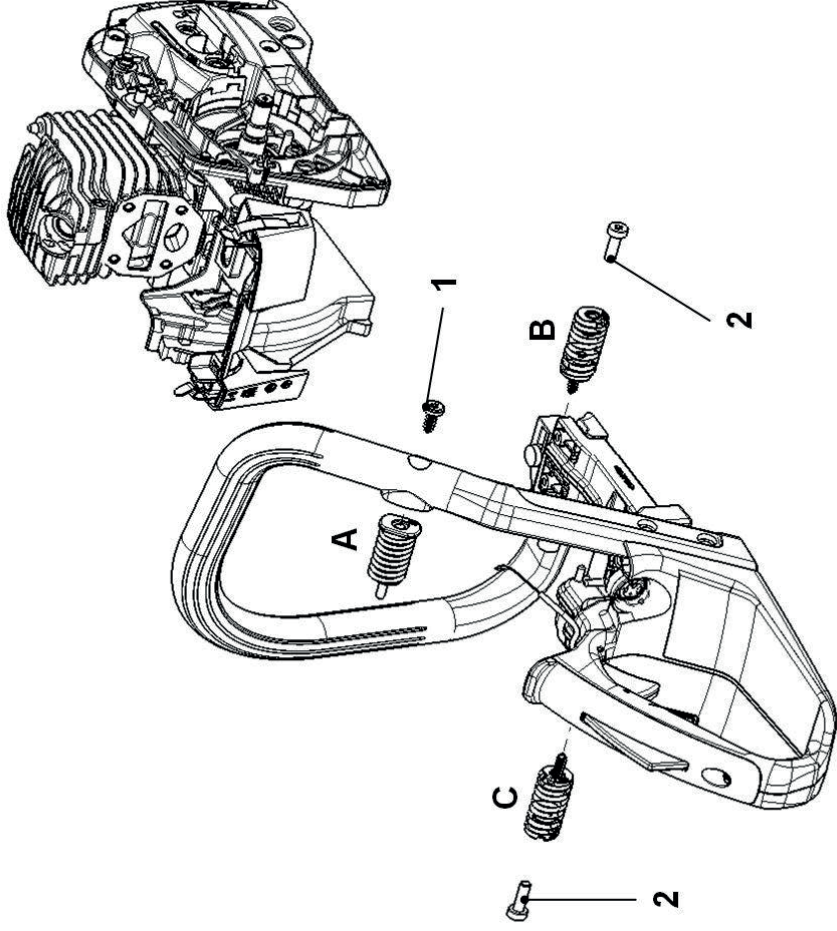
Unscrew the 6.7x16 screw **1** of damper spring **A**.

Damper spring B and C

Disassemble chain guard, bar and chain.

Remove the fan housing, see section 06.

Unscrew M6x20 screws **2** of the damping springs B, C and D.



ATTENTION: The engine unit is connected to the tank unit by using fuel hoses and the throttle cable. Separation of the units is not possible!

Lift the engine unit (for B on the clutch side, for C on the fan side) over damper springs B and C.

Unscrew the damper springs.

Assemble in reverse order.

Make sure the fuel lines remain connected to the tank.

Grip mechanism

The throttle trigger is linked to the carburetor by a bowden cable.

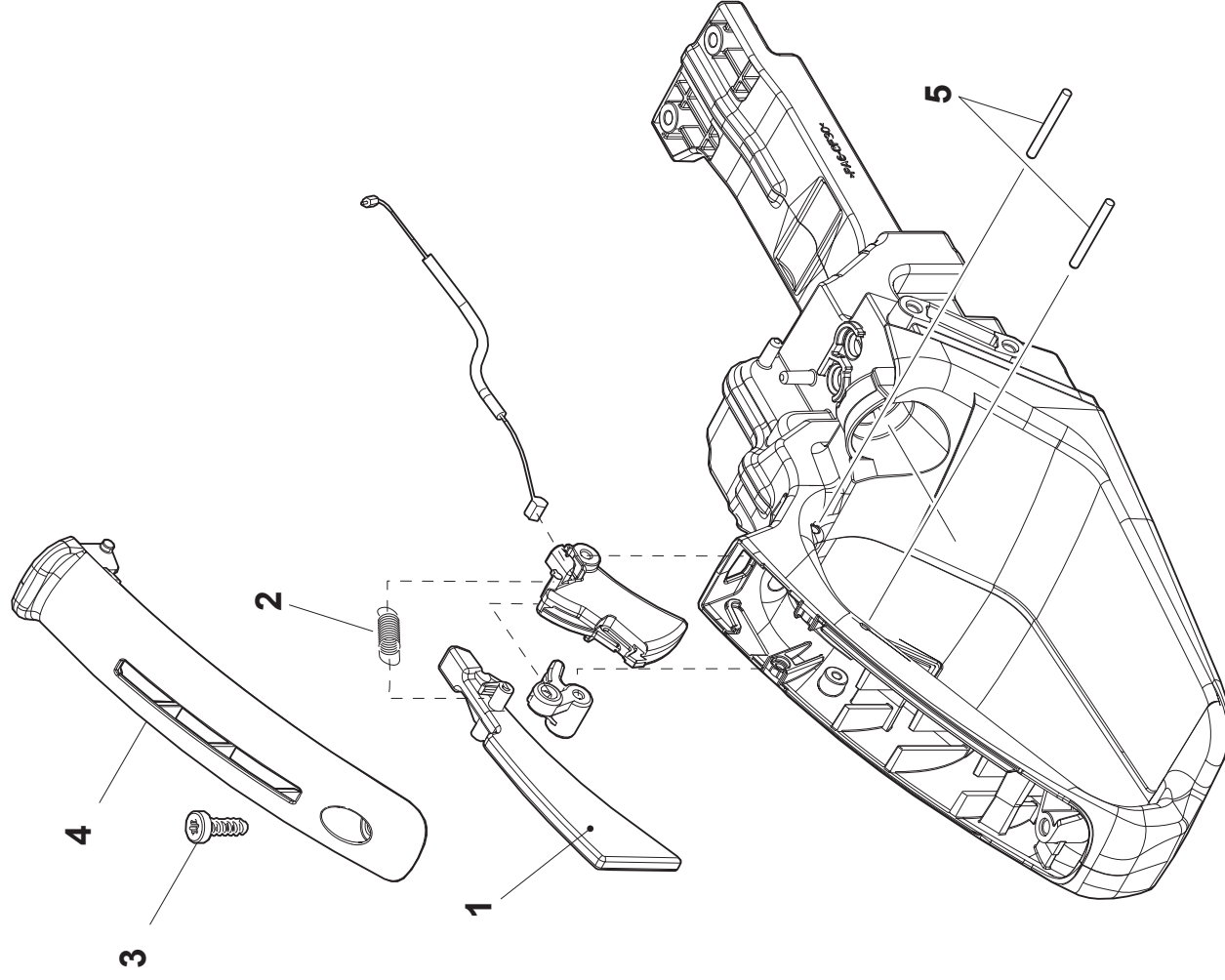
NOTE: Do not lubricate the bowden cable!

The grip shell is attached to the tank with a Torx screw **3**.

Disengage the throttle lock **1** and spring **2**.

Check for ease of motion and functioning of the safety throttle lock spring **2**.

To replace the throttle trigger and throttle lock on lever drive out the cylinder pins **5** (3.3 x 28.4 mm) with a mandrel (\varnothing 2 mm).



10 TANK



Removing the tank

NOTE: Make sure the fuel tank is empty before removing it.

Remove the damper springs. See Chap. 09. Detach the throttle cable from the carburetor, see Chap. 08.

Detach the bowden cable from the carburetor flange, see Chap. 08. Pull the fuel line and primer suction line off the carburetor.

Separate the tank and the engine unit.

Use needle-nose pliers to carefully pull the fuel line and primer return line off the fuel nipple.

Note: When attaching the lines, connect the fuel line to the fuel nipple 7.

Pressure test

Attach the over/underpressure pump (chap. 00 pos. 11) to one of the two fuel connections (6 or 7). Seal off the second connection. Set up a pressure of max. 0.3 bar.

- If the pressure drops off, check the following:
- Air valve
 - Fuel nipple
 - Tank cap Oring
 - Check tank for holes

Note: Detergent can be used to localize leaks.

Vacuum testing ventilation valve 9

Attach the over/underpressure pump as described.

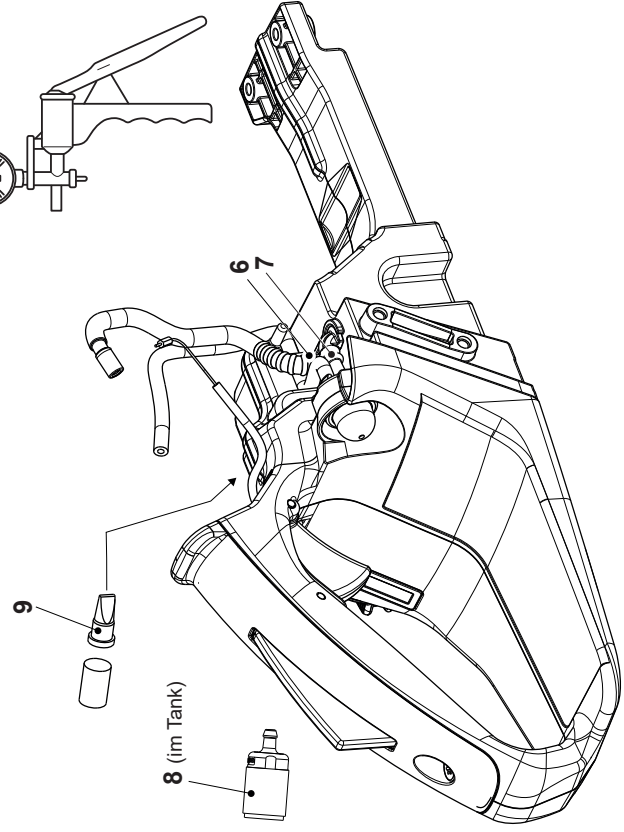
When the pump is operated the underpressure must quickly dissipate.

If underpressure builds, replace the ventilation valve.

Pull out the ventilation valve 9 with a small screwdriver or wire. Before inserting a new valve, wet it with fuel.

Parts

To remove the suction head 8 pull it through the tank opening with a hooked wire.

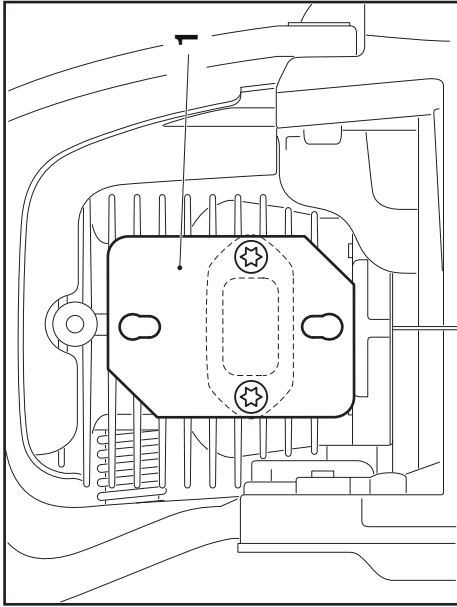


Note: Do not use pliers, as this may damage the line. Do not pull on the suction head or fuel line, because they can otherwise be drawn into the inside of the tank.

Turn the fuel nipple slightly counter-clockwise out of the retainer and then carefully lift it out with a sharp flat point screwdriver.

Note: Do not lever against the line connections, as this can break them off.

11 CYLINDER / PISTON



Engine pressure test

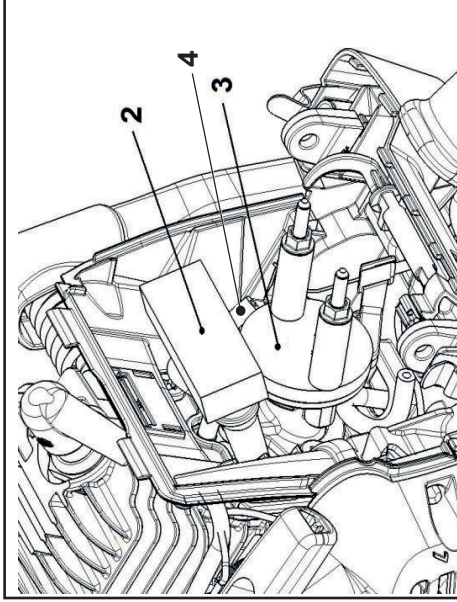
If it is not possible to adjust the carburetor properly, it will be necessary to check the sealing of the drive.

To seal the outlet side, the sealing plate 1 (944603108) is mounted instead of the muffler (rubber coating to the cylinder).

For this purpose, the muffler must be removed, see Chap. 04.

Then remove the carburetor, see Chap. 07 and 08.

Connect the positive and negative pressure pump to the pulse hose 4 and pump pressure 2-3 times. Don't let any pressure build up. If pressure builds up, check impulse line and nipple for passage.



To seal the inlet side, mount gasket plate 3 (1R454) instead of the carburetor unit.

Move the piston to the top dead center.

Seal the two air supply hoses with sealing plate 2 (1R453).

Build up a negative pressure of max. 0.5 bar.

If the pressure drops within 20 seconds, it may be caused by the following:

- Radial sealing rings leaking
- Leaky cylinder base seal
- Crankcase gasket leaking
- Crack in crankcase
- Crack in the cylinder
- Spark plug leaking

Note: A detergent liquid can be used to locate leaks.

Engine, vacuum testing

Because radial sealing rings can fail even under negative pressure, the following checks must be carried out under vacuum in the crankcase due to the tightness.

Seal the outlet and inlet side as described.

Connect the positive and negative pressure pump to pulse line 4 and switch to vacuum. Move the piston to the top dead center.

Build up a vacuum of max. 0.5 bar.

If the pressure does not rise more than 0.3 bar within 20 seconds, the radial sealing rings are OK. Otherwise the radial sealing rings must be replaced.

Remove the flywheel and clutch, see Chapters 4 and 7. IGNITION SYSTEM and CLUTCH /CLUTCH DRUM.

Remove the snap ring on the clutch side from the shaft.

Guide the 15 mm extraction device for radial sealing rings (944500895) over the shaft in each case and screw it firmly into the radial sealing ring.

When the spindle is turned in, it supports itself against the shaft and pulls out the radial sealing ring.

ATTENTION: Never drive in the sealing ring puller

Cylinder and piston disassembly

- Remove the muffler, see chap. 04.
- Remove the starting system, see chap. 06.
- Remove the carburetor unit and intermediate wall unit, see chapter 08.
- Unscrew the 4 St. M5x65 cylinder bolts and pull the cylinder up and off.
- Remove and reinstall the circlip **5** with needle-nose pliers.

Assembling the cylinder and piston

Carefully remove any gasket residues!

Use a new cylinder base gasket **2!**

Before assembly, lightly oil the cylinder race, piston and needle bearing **6!**

Install the piston with the arrow marking **4** on the outlet side of the camshaft (piston ring lock on the inlet side).
Move piston to bottom dead centre.

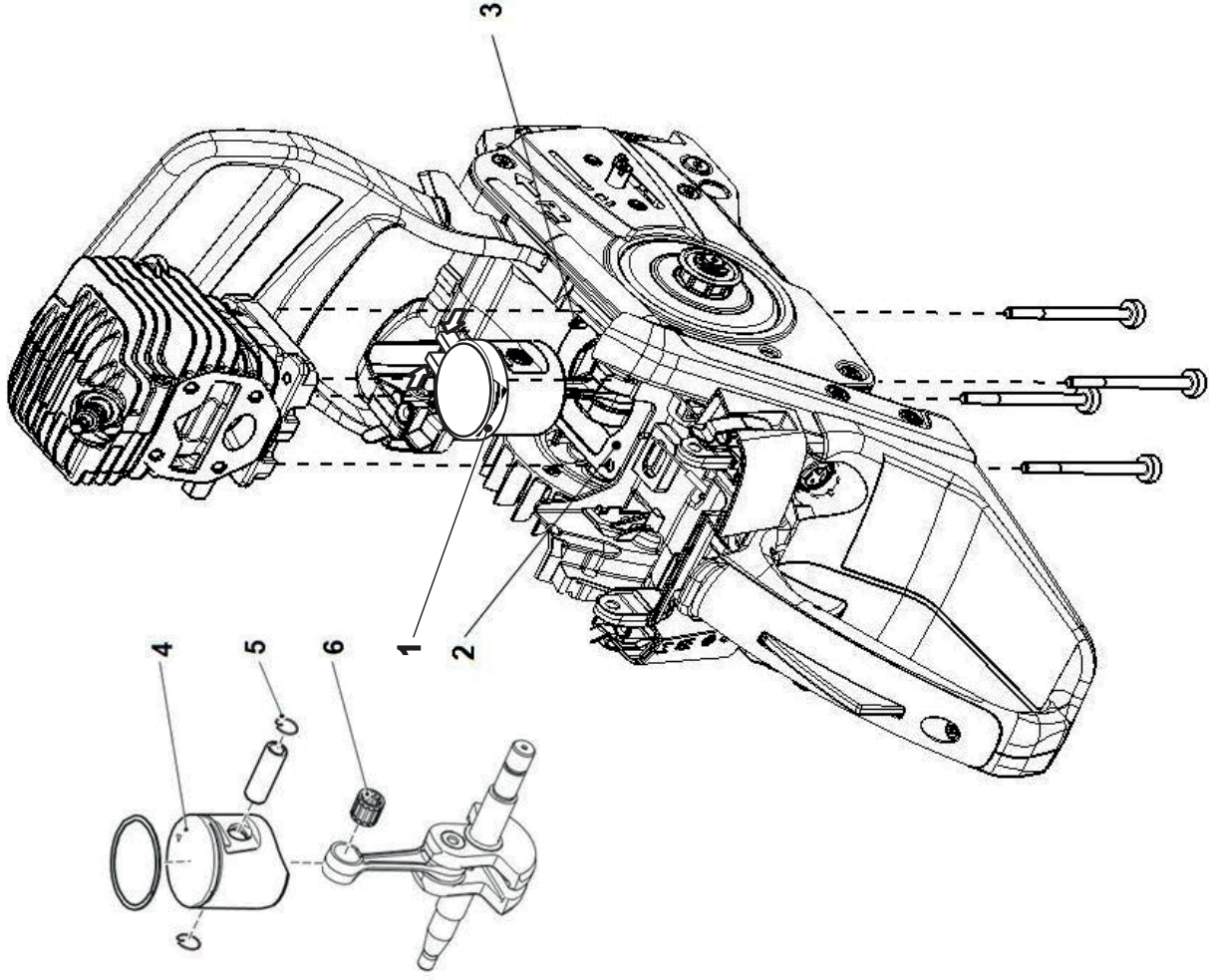
Position the opening on the piston ring towards the piston ring lock.

Use the piston ring tensioner **1** to press the piston ring together.

Push the cylinder onto the piston. Let the piston ring tensioner slide down with it.

Remove the piston ring tensioner and press the cylinder all the way down on the pins **3**.

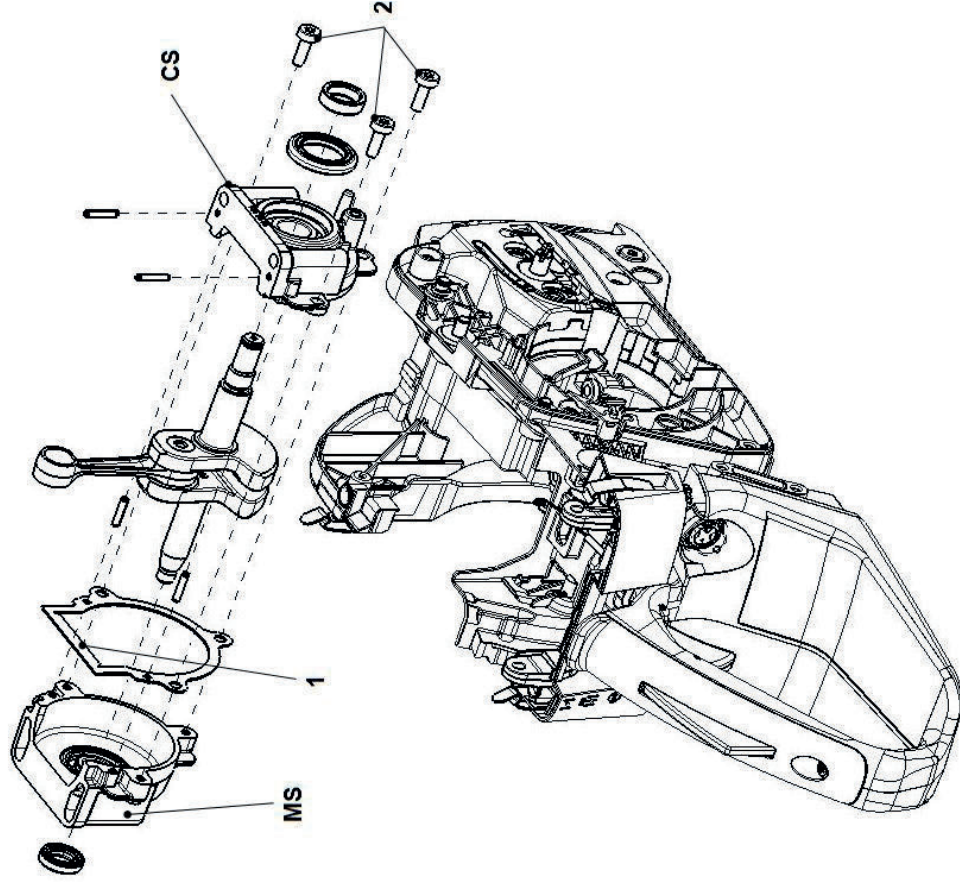
Hand-tighten the screws lightly crosswise, and then tighten to the correct torque ($10^{+1.0}$ Nm), again crosswise.



The complete crankcase is divided into:

- **CS** crankcase clutch side
- **MS** crankcase magneto side

Two pins ensure fitting.



Disassembly

Remove the cylinder, flywheel and clutch. Remove the crankcase unit from engine housing.

To disassemble, unscrew the three M5x16 bolts **2**.

Using a rubber hammer, carefully drive the crankshaft out of the crankcase **MS**.

Using a rubber hammer, carefully drive the crankshaft out of the crankcase **CS**.

For assembly of the bearings, heat up the crankcases **KS** and **MS** to 160 - 180°C.

Assembling

When driving the crankshaft into the crankcase **MS** or **CS**, support the crankshaft side between the webs.

When installing the second crankcase half, the crankshaft webs must be supported against each other.

NOTE: Make sure to remove the support after assembly.

Before assembly, carefully clean all sealing surfaces and remove any remnants of the old gasket. When assembling, install a new gasket.

Hand-tighten the screws lightly crosswise, and then tighten to the correct torque ($10^{+/-0.5}$ Nm), again crosswise.

After bolting the crankcase sides together, cut off the flash **1**.

13 TORQUES



Screw	Part No.	Size	Qty.	Torque [Nm]
1	914.105.656	Torx	4	10 +/-1
2	908.705.165	Torx	3	10 +/-1
3	908.004.085	Torx	1	3 +/-0,5
4	908.705.125	Torx	2	5 +/-0,5
5	908.005.205	Torx	2	5 +/-0,5
6	908.005.165	Torx	2	10 +/-1
7	908.605.505	Torx	1	10 +/-1
8	908.005.165	Torx	2	5 +/-0,25
9	175.131.300	A/F 7	2	2,5 +/-0,25
10	-	M12 x 1 L	1	35 +/-2,5
11	905.708.215	M8 SK6/M8 (Lock with Loctite 6300)	2	19 +/-1,5
12	908.805.205	Torx	2	4,75 +/-0,25
13	920.308.024	A/F 13	1	27 +/-2,0
14	913.455.164	Torx	4	4 +/-0,5
15	913.455.164	Torx	1	4 +/-0,5
16	913.455.204	Torx	2	5 +/-0,5
17	913.455.204	Torx	2	5 +/-0,5
18	131.114.200	Torx	1	5 +/-0,5
19	131.114.200	Torx	1	5 +/-0,5
20	908.005.165	Torx	1	6,5 +/-0,5
21	913.467.164	Torx	1	5 +/-0,5
22	908.006.205	Torx	1	6,5 +/-0,5
23	908.006.205	Torx	1	6,5 +/-0,5
24	965.603.021	A/F 19	1	25 +/-5
25	165.888.120	cross recess	1	1,5 +/-0,25
26	374.265.791	wing bolt	1	1 +/-0,5
27	908.705.125	Torx	1	6 +/-0,5
28	165.888.120	cross recess	1	1,5 +/-0,25
29	913.455.164	Torx	2	5 +/-0,5
30	913.850.155	Torx	3	4 +/-0,5
31	913.455.204	Torx	1	4 +/-0,5
32	165.888.120	cross recess	1	1 +/-0,25
33	913.455.164	Torx	1	4,75 +/-0,25
34	923.308.002	A/F 13	2	1 +/-0,5
35	165.888.120	cross recess	2	1 +/-0,25
36	170.166.041	Torx	2	8 +/-1
37	908.705.105 / 920.405.000	Torx	2x	5 +/-1

NOTES





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