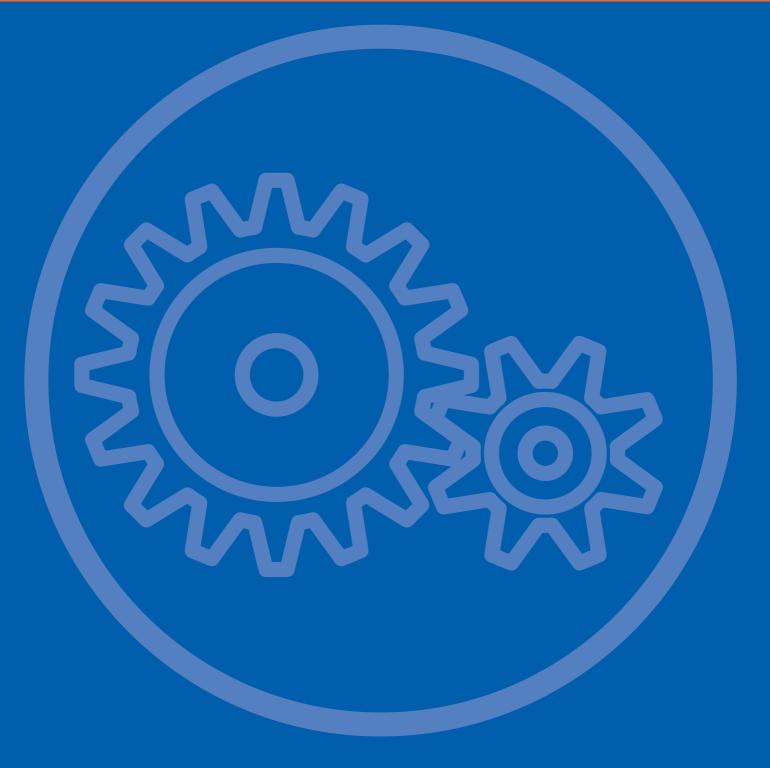
# **Husqvarna**



Workshop manual **T425** 



## Workshop Manual Husqvarna T425

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Husqvarna AB has a policy of continuous product development and therefore reserves the right to modify the design and appearance of products without prior notice.

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## 2 Introduction and safety regulations

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## 2 Introduction and safety regulations

### 2.1 General information

This Workshop Manual provides a comprehensive description of how to trouble shoot, repair and test the chain saw. A description of different safety measures that should be taken during repair work is also given.

### 2.2 Safety

Note! The section dealing with safety must be read and understood by everyone carrying out repairs or service on the chain saw.

Warning symbols can be found in this Workshop Manual and on the chain saw. See "Symbols on the saw" and "Symbols in the Workshop Manual". If any warning symbol on the chain saw has been damaged or is missing, a new one must be fitted as soon as possible in order to achieve the highest degree of safety when using the chain saw.

### 2.3 Target group

This Workshop Manual is written for personnel who are assumed to have general knowledge of repairing and servicing chain saws.

The Workshop Manual must be read and understood by personnel who will carry out repair work and service on the chain saw. The manual is also suitable to use when training new employees.

### 2.4 Modifications

Modifications will be successively introduced on the chain saw during production. When these modifications affect service and/or spare parts, a separate service message will be sent out on each occasion. This means that in time this Workshop Manual will become out of date. In order to prevent this, the Manual should be read together with all service messages concerning the chain saw in question.

### 2.5 Tools

Special tools are required for some stages. All service tools are listed in the Workshop Manual. Usage is evident from the respective section.

### Always use Husqvarna's original:

- Spare parts
- Service tools
- Accessories

### 2.6 Structure

This Workshop Manual can be used in two different ways:

- Repair of a specific system on the chain saw.
- Dismantling and assembly of the entire chain saw.

### Repair of a specific system

When a specific system on the chain saw must be repaired, do as follows:

- 1. Look up the page for the system in question.
- Carry out the steps: Dismantling

Cleaning and checking

Assembly

Dismantling and assembly of the entire chain saw When taking apart and putting back together the whole chain saw, do as follows:

- Look up the chapter "Repair instructions", which deals with **The starter** and carry out the instructions listed under the heading **Dismantling**.
- Work forward in the Manual and carry out Dismantling in the order set out in the sections.
- 3. Go back to **Starter** and carry out the instructions under **Cleaning and checking**.
- 4. Work forward in the Manual and carry out **Cleaning and checking** in the order set out in the sections.
- 5. Order or take out all requisite spare parts from the stores.
- 6. Look up the chapter "Repair instructions", which deals with **The crankcase** and carry out the instructions under **Assembly**.
- 7. Work backwards in the Manual and carry out **Assembly** in the order set out in the sections.

In order to increase the basic understanding, some sections include a **Description** of the unit in question.

### 2.7 Numbering

Position references to components inside the figures are designated A, B, etc.

The figures are numbered 1, 2 etc.

The position references and figure numbers restart in each new section.

### 2.8 General instructions

The workshop where the chain saw is to be repaired must be equipped with safety equipment in accordance with local regulations.

No one may repair the chain saw without having read and understood the contents of this workshop manual.

This workshop manual contains the following boxes in relevant places.



### **WARNING!**

The warning box warns of the risk of personal injury if the instructions are not followed.

### NOTE!

This box warns of material damage if the instructions are not followed.

### 2.9 Special instructions

The fuel used for the chain saw has the following hazardous properties:

- The liquid and its fumes are poisonous.
- Can cause eye and skin irritation.
- Can cause breathing difficulties.
- · Is very flammable.

When using compressed air, do not direct the jet towards the body. Air can penetrate into the blood circulation system, which entails mortal danger.

Use hearing protection when test running.

After test running, do not touch the muffler before it has cooled down. Risk of burns. Use protective gloves when working with mufflers.

Do not start the chain saw unless the bar, chain and clutch cover (chain brake) are fitted, otherwise the clutch may come loose and cause personal injury.

Insufficient chain lubrication can result in chain breakage, which can cause serious or even lifethreatening injury.

Exercise care to ensure the spring does not fly out and cause personal injury. Use protective goggles. If the spring tension is activated on the starter pulley when it is to be taken up, the spring can fly out and cause personal injury.

Check that the brake is applied when removing the pressure spring on the chain brake. Otherwise the pressure spring can fly out and cause personal injury.

After repairing, check the chain brake, see "Assembling chain brake \ Function check".

Keep in mind the fire risk. The chain saw may emit sparks, which cause ignition.

Check the chain catcher and replace it if it is damaged.

### 2.10 Symbols on the saw

### 2.11 Symbols in the workshop manual

The symbols below are embedded in the chain saw.



Choke control



This symbol warns of personal injury when the instructions are not followed.



Refuelling

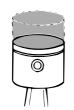


Stop button



Filling up saw chain oil

## 3 Technical data



Displacement cm3/cubic inch

T425: 25.4 / 1.55



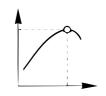
Cylinder diameter Ømm/Øinch

34 / 1.34



Length of stroke mm/inches

28 / 1.10



Max. output/speed kW/hp/ rpm

0.96 / 1.29 / 9,000



Electrode gap mm/inches

0.65/0.03

T425:



Ignition system

Ikeda Denso



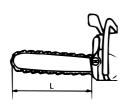
Air gap mm/inches

0.3/0.012



Carburettor type

Walbro WT 804



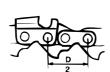
Usable cutting length cm/inch

T425: 25/10



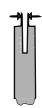
Chain speed at max. output - speed m/s - rpm

17.1 or 15.2 / 9,000



Chain pitch mm/inches

3/8" /9.52 or 1/4" /6.25



Drive links mm/inches

1.3 / 0.050



Idle speed rpm

T425: 2,900



Engage speed rpm

3,800



Spark plug

NGK BPMR 7A Champion RCJ 7Y



Volume fuel tank

Litres/US.pint

0.23/0.48

T425:

Capacity oil pump at 9,000 rpm, ml/min

3-9



Volume oil tank Litres/US.pint

0.16/0.34



Automatic oil pump

Yes



kg/lbs

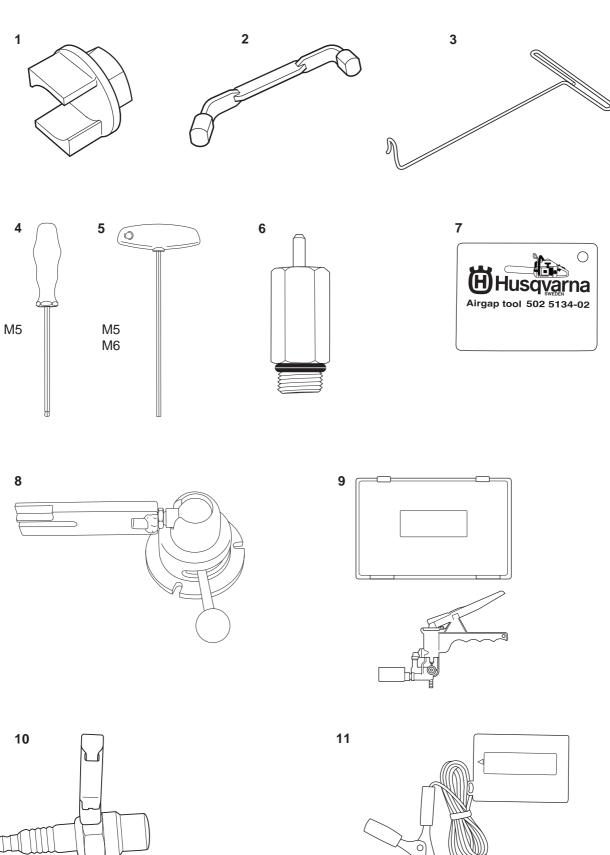
T425: 2.99/6.59

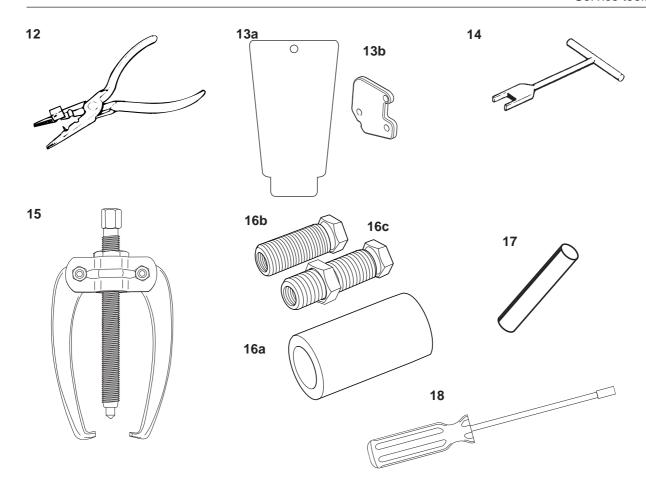


Weight without bar and chain Weight with bar and chain kg/lbs

3.40/7.51

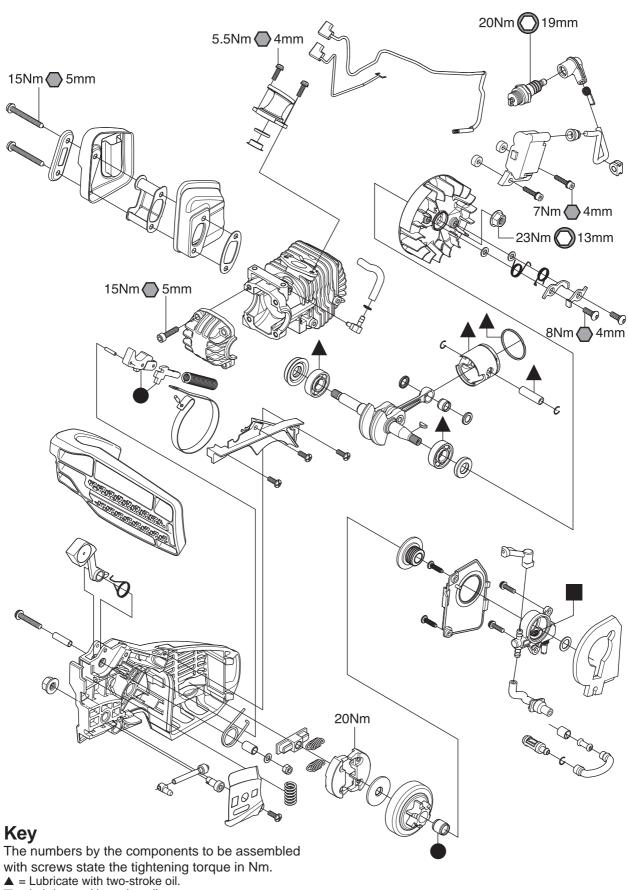
## 4 Service tools



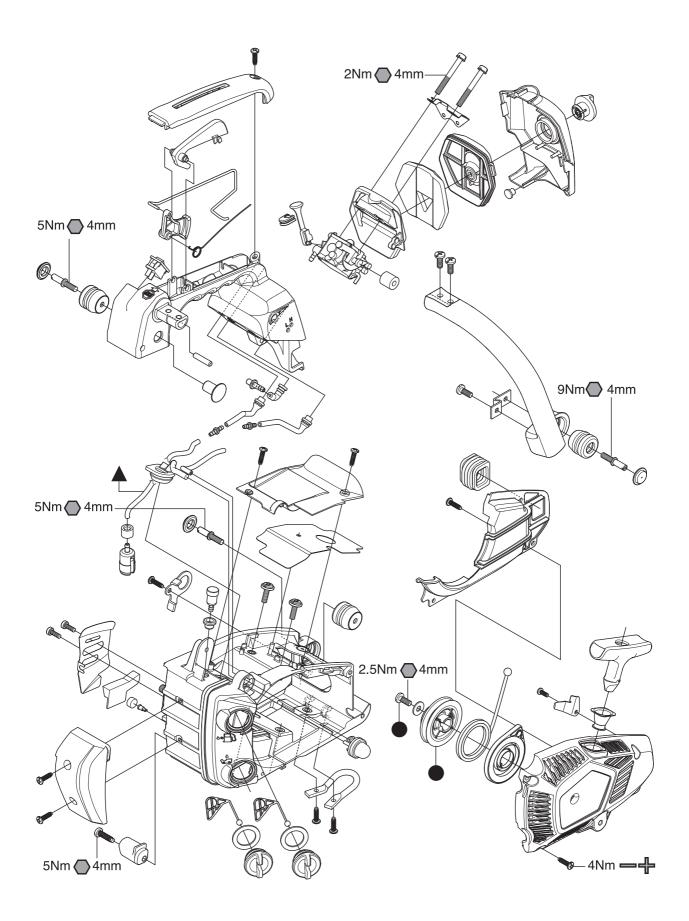


Pos.	Description	Used for	Order No.
1	Clutch tool	Centrifugal clutch	505 05 99-01
2	Piston stop	Locking the crankshaft	504 91 06-05
3	Hook for fuel filter	Lifting out the fuel filter	502 50 83-01
4	Allen key, 4 mm	For M5 bolts	502 50 87-01
5	Allen key, 4 mm	For M5 bolts	502 50 18-01
5	Allen key, 5 mm	For M6 bolts	502 50 64-01
6	Pressure tester	Pressure testing of cylinder	503 84 40-02
7	Feeler gauge	Setting, ignition module	502 51 34-02
8	Assembly fixture	Securing the chain saw	502 51 02-01
9	Pressure gauge	Pressure testing	531 03 06-23
10	Test spark plug	Checking the ignition module	501 97 64-01
11	Revolution counter	Adjusting the carburettor	502 71 14-01
12	Assembly pliers	Assembling the spark plug protector	502 50 06-01
13a	Cover plate, outlet	Closure of outlet	502 54 11-02
13b	Cover plates, inlet	Closure of inlet	502 52 48-02
14	Assembly tools	Assembling the spring chain brake	502 50 67-01
15	Puller	Dismantling the flywheel	504 90 90-01
16a	Sleeve	Assembling the crankshaft	502 50 30-18
16b	Shaft extension	Flywheel side	502 50 30-18
16c	Shaft extension	Clutch side	502 50 30-18
17	Mandrel	Dismantling the flywheel	502 51 94-01
18	Adjustment screwdriver	Adjusting the carburettor	530 03 55-60

## 5 Service data



- = Lubricate with engine oil.
- = Lubricate with grease.
- $\Box$  = Glued using 2 component adhesive.
- O = Sealed with silicone.



## 6 Safety equipment

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6.7	Assembling the start/stop switch	
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## 6 Safety equipment

### 6.1 Dismantling the chain brake



1

Release the brake by moving the kickback guard backwards.

Loosen the bar nut and remove the clutch cover, chain and bar.

Fig 1

2

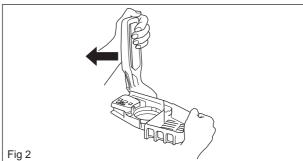
Release the brake by pushing the kickback guard forwards.



### WARNING!

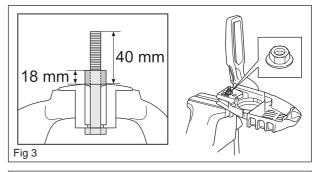
Exercise care to ensure the spring does not fly out and causes personal injury.

Wear protective goggles.



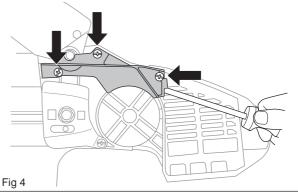
3

Secure a bolt in the vice, attain a distance of at least 18 mm and thread the clutch cover through the hole where the bar bolt runs. Lock with the bar nut.



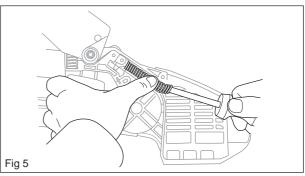
4

Loosen the screws and hold the cover in place with one hand. Insert a screwdriver as illustrated over the spring to prevent it from flying off when you lift the cover.



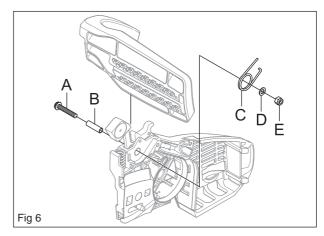
5

Carefully bend upwards until the spring is released and slides over the screwdriver.



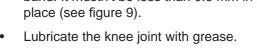
Loosen the nut E, washer D, spring C, sleeve B and screw A.

To remove the knee joint G and H, use a punch to press out the pin F. Pull out the pin J to loosen the brake band K and knee joint H (see figure 7).

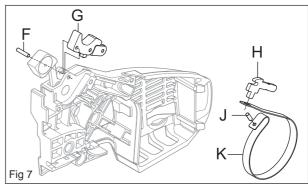


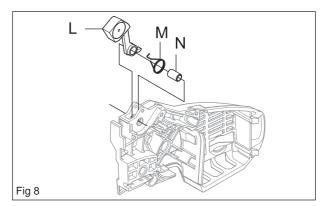
### Cleaning and checking

- Clean and check carefully, all components. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.
- Measure the thickness of the chain brake band. It mustn't be less than 0.6 mm in any



If necessary dismantle the weight L and check the spring M and sleeve N.





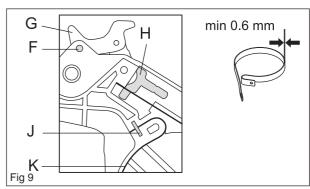
### 6.2 Assembling the chain brake

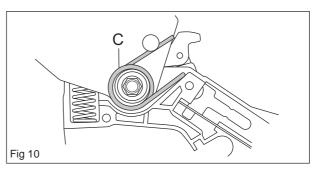
Fit the weight L, spring M and the sleeve N (see fig. 8 and 9).

Fit the knee joint G and the fork H. Punch in the pin F. Insert the pin J through the brake band K into its slot. Place the fork H in the notch of the brake band and place the brake band K in its track.

In the jointed end of G is a fixed pin, which must be placed in the notch in the fork H (see figure 9).

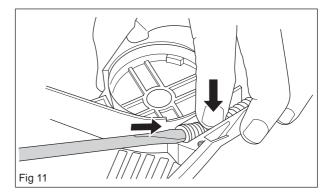
Fit the sleeve B and the screw A. Put the washer D in place and tighten the nut E (see figure 6). Put the spring C in place, use pliers to tighten the spring behind the plastic peg (see figure 10).





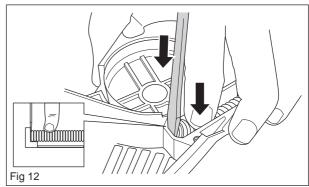
4

Insert the screwdriver into the end of the spring and press the spring together while pushing it down with the finger.



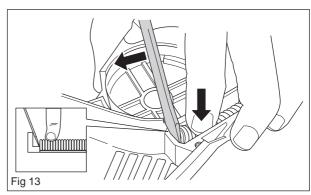
5

Hold the spring in place with the finger and remove the screwdriver. Insert the screwdriver straight from above and press down until the spring catches against the cut-out edge.



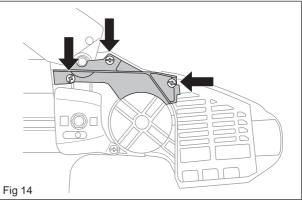
6

Bend the screwdriver away from the spring so that the spring is pressed together and slips down to the bottom.



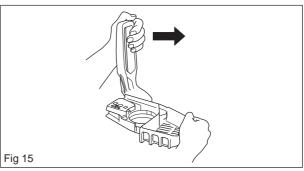
7

Fit and tighten the cover.



8

Clamp the brake by moving the handle backwards (see figure 15).



### 6.3 Dismantling the muffler



### **WARNING!**

Do not touch the muffler before it has cooled down. Risk of burns.

1

Release the brake by moving the kickback guard backwards.

Loosen the bar nut and remove the clutch cover, chain and bar.

2

Dismantle the muffler.



Clean and check all components carefully.

Parts must be replaced if cracked or showing signs of other defects.

Never use the saw with a muffler that is in bad condition. Always use original spare parts.

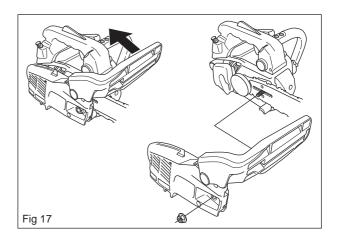
### 6.4 Assembling the muffler

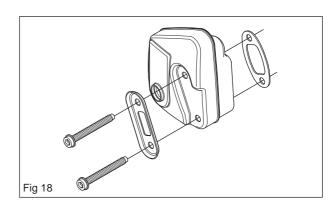
1

Assemble the muffler as shown in figure 18, tightening torque 15 Nm. Assemble the chain, bar and clutch cover.

3

Warm up the saw for at least 1 minute and retighten the muffler screws with 15 Nm.



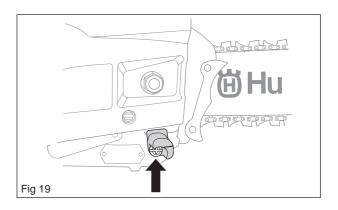


### 6.5 Replacing the chain catcher

A worn chain catcher must always be replaced with a new one.

1

Loosen the screw and replace the chain catcher with a new one as shown in figure 19.



### 6.6 Dismantling the start/stop switch

1

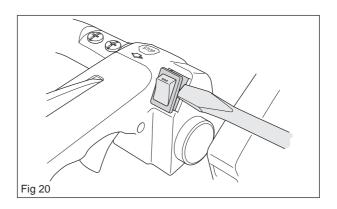
Bend the start/stop switch loose with a screwdriver (see figure 20).

2

Check that the start/stop switch is intact.

### Cleaning and checking

Clean and check carefully all components. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.



### 6.7 Assembling the start/stop switch

1

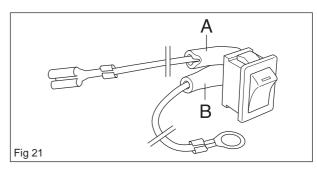
Attach the cables (se figure 21).

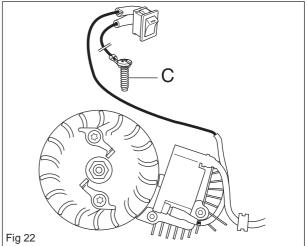
2

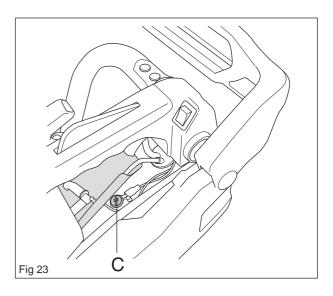
Push the start/stop switch into the slot.

Attach cable A, which comes from the ignition coil on the upper plate on the stop switch (see figure 21 and 22).

The earth cable B, which is attached under screw C (see figure 22 and 23), must be attached to the lower plate.







### 6.8 Resistance test - stop function

1

Remove the starter, see "Dismantling the starter".

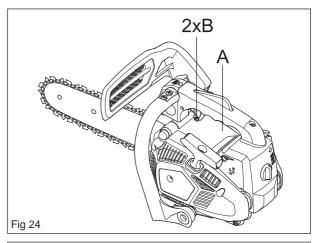
2

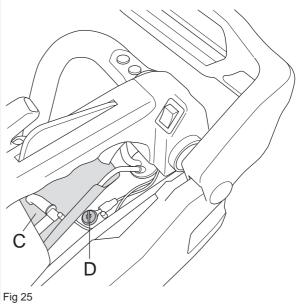
Remove the cover A (see figure 24) by loosening the two screws. Bend up the yellow cover paper C to be able to reach screw D for testing (see figure 25).

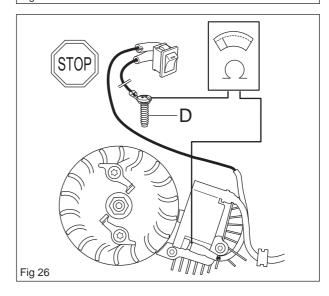
Clean the contact area and check the resistance as follows:

Test the resistance by connecting a multimeter to the ignition coil. NOTE! The power switch must be in the "on" position to get the correct reading (see figure 26).

The resistance must not exceed 0.5 Ohm with the power switch in the "on" position.



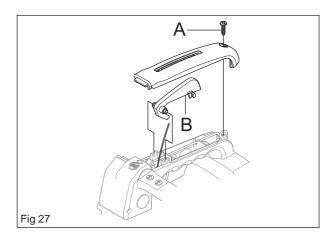




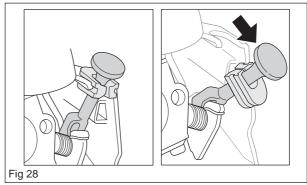
## 6.9 Dismantling the throttle lockout, throttle and spring

1

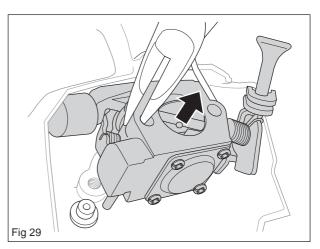
Unscrew the air filter housing and air filter holder. Dismantle the handle part by loosening screw A. Remove the throttle lockout B.



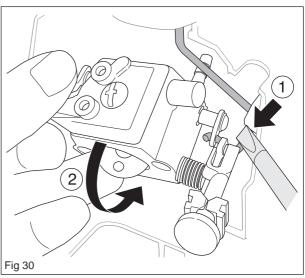
**2** Loosen the choke.



Lift out the carburettor with a pair of flat nosed pliers.

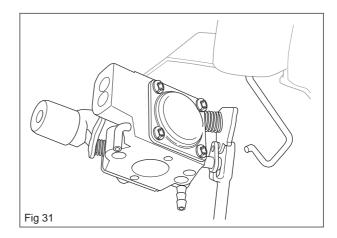


Pull the throttle actuator rod to the right with a screwdriver. Rotate the carburettor downwards half a revolution.



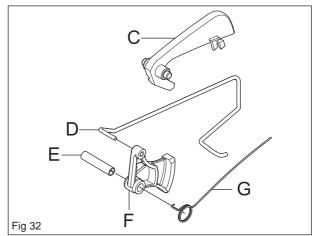
5

Unhook the carburettor from the throttle actuator rod.



6

Remove the throttle actuator rod D. Press out pin E to loosen the throttle F and spring G.



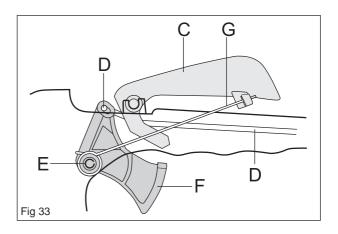
### Cleaning and checking

- Clean and check carefully all components.
   Parts must be replaced if cracked or show signs of other defects. Always use original spare parts.
- Check that the spring is intact and retains all its tension.

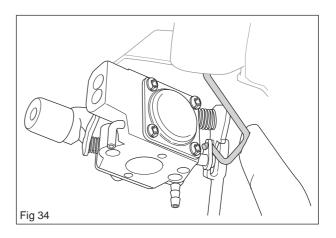
## **6.10** Assembling the throttle lockout, throttle and spring

1

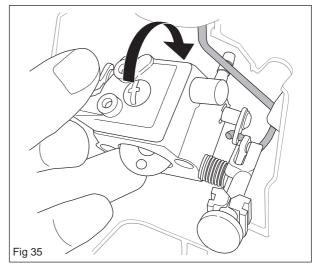
Refit throttle F and spring G and knock in pin E. Insert the throttle actuator rod D into the hole in throttle F. Fit the throttle lockout C. Hook spring G into the throttle lockout.



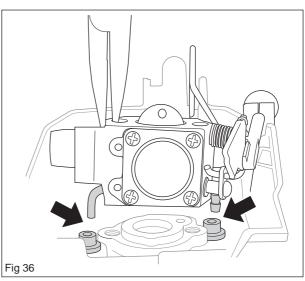
2 Insert the throttle actuator rod into the carburettor.



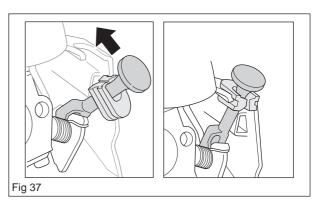
Turn the carburettor back half a revolution.



Hold the carburettor with a pair of flat nosed pliers and make sure the nipples are pushed down properly into the inlet- and fuel connections.



**5** Put the choke back into its slot.



## 7 Repair instructions

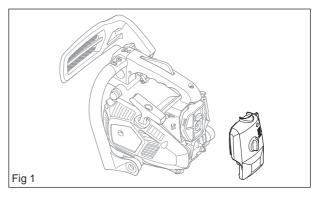
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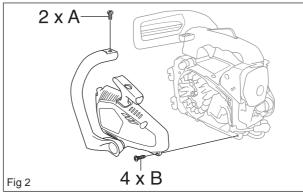
## 7 Repair instructions

### 7.1 Dismantling the starter

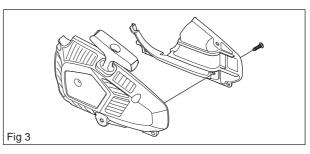
1 Dismantling the air filter cover.



2 Loosen the starter with the screws 2xA and 4xB.



Loosen the air conductor from the starter.

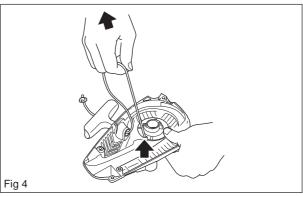


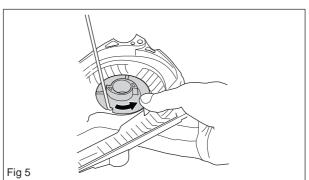
4 Pull the cord out about 30 cm and lift it into the notch on the starter pulley's outer edge. Release the tension in the return spring by allowing the starter pulley to rotate slowly backwards (see figure 4 and 5).



### **WARNING!**

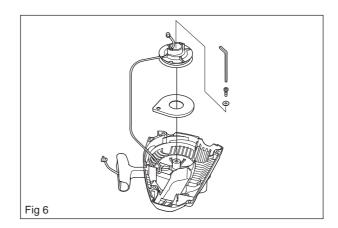
If the spring tension is activated on the starter pulley, the spring can fly out and cause personal injury. Use protective goggles.





### 5

Undo the screw in the centre of the pulley and remove the pulley and the spring cassette.



### Cleaning and checking

Clean the parts and check:

- · Starter cord.
- That the starter pawls on the flywheel are intact, i.e. that they spring back to the centre and move easily.
- Lubricate the return spring with a light oil.

## 7.2 Changing a broken or worn starter cord

When the starter cord is worn and must be replaced, the tension in the return spring must be released.

1

Pull the cord out about 30 cm and lift it into the notch on the outside of the starter pulley. Release the tension in the return spring by letting the starter pulley slowly rotate backwards. See "Dismantling the starter".



### **WARNING!**

If the spring tension is activated on the starter pulley, the spring can fly out and cause personal injury. Use protective goggles.

### 2

Undo the screw in the centre of the pulley and remove the pulley.

### 3

When the starter pulley is removed, insert a new starter cord and attach it to the starter pulley. Thread the other end of the starter cord through the hole in the starter housing and starter handle and tie a double knot on the cord.

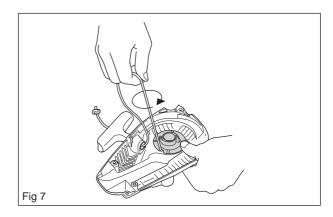
### Cleaning and checking

Clean and check carefully all components.
 Worn or damaged parts must be replaced.
 Lubricate the return spring with a light oil.

### 7.3 Loading the return spring

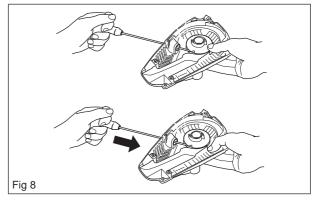
1

Wind approx. 3 turns of the starter cord onto the pulley. Fit the bolt into the centre of the starter pulley, tightening torque 2-3 Nm. Pull the starter cord up into the notch in the starter pulley and turn the pulley about 3 turns clockwise.



2

Stretch the cord with the handle. Remove your thumb and let the cord spin back. Check that the pulley can be turned at least a further 1/2 turn when the starter cord is pulled all the way out.



### 7.4 Replacing a broken return spring



### WARNING!

Exercise care to ensure the spring does not fly out and causes personal injury. Wear protective goggles.



1

Undo the screw in the centre of the pulley and remove the pulley and spring.

### 2

Remove the broken return spring and replace it with a new one.

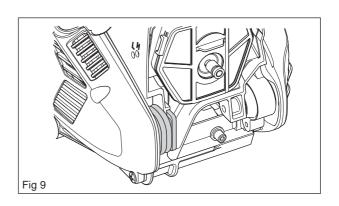
3

Fit the bolt into the centre of the starter pulley, tightening torque 2,5 Nm. Load the return spring, see "Loading the return spring".

### 7.5 Assembling the starter

1

When assembling the starter, ensure that the rubber bellows is inserted into the carburetor area (see figure 9).



### 7.6 Testing the ignition module

1

In case of malfunctioning ignition system, the ignition module must be tested before the ignition system is removed.

Check the ignition module as follows:

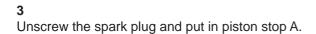
- Unscrew the spark plug. Connect test spark plug 505 71 13-01 to the ignition cable and clamp the test spark plug onto the cylinder.
- Put the stop switch in "ON" position and turn over the engine with the starter cord.
- If a spark appears on the test spark plug, the ignition module is free from defect (see figure 10).

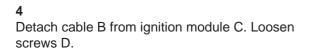
## 7.7 Dismantling the ignition module and flywheel

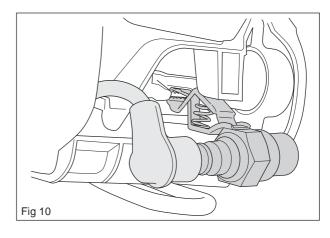
1

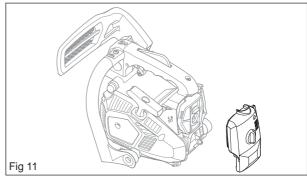
Remove the air filter cover.

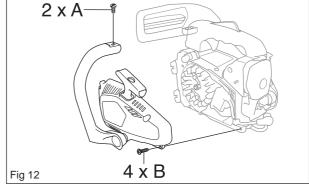


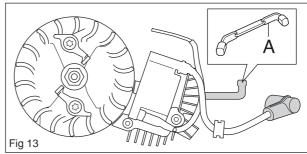


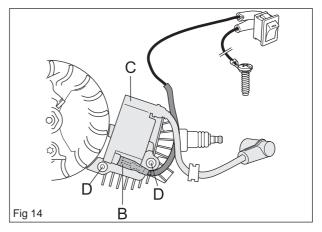










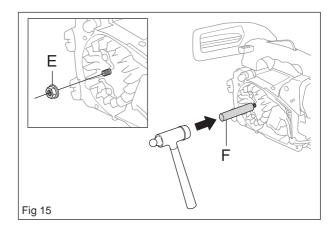


5

Loosen flywheel nut E with a suitable socket wrench and then remove the nut (see figure 15.)

6

Knock on the mandrel F with a suitable metal hammer until the flywheel comes off the shaft. Remove mandrel and flywheel (see figure 15).



### Cleaning and checking

- Clean all parts, especially the tapers on the flywheel and shafts.
- Check the flywheel for cracks and any other damage.

## 7.8 Assembling the ignition module and flywheel

1

Fit the flywheel onto the crankshaft journal. Turn the flywheel until the key goes into the keyway on the shaft.

Fit the nut, tightening torque 23 Nm (see figure 16).

2 If the ignition module must be fitted, do as follows:

Turn the Flywheel so that the magnets are positioned opposite the ignition module. At the same time, fit ignition module C and plastic feeler gauge G (502 51 34-02) without tightening screws D. Connect the ignition cable B to ignition module C. Adjust the gap 0.3+/- 0.1 mm, between ignition module and magnet. The measurement applies to the two lowest lugs on the ignition module. Tighten the screws D, tightening torque 7 Nm. Place the rubber bushing H in the groove in the carburetor area.

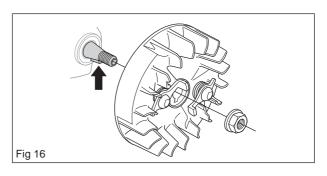
### 3

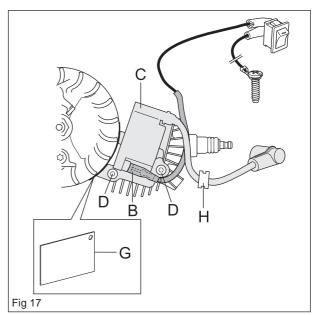
### Then fit:

- Spark plug cap
- starter, tightening torque 2.5-3.5 Nm
- air filter housing

When replacing the cables, they are fitted on the stop switch as shown in figure 17.

NOTE! When assembling the starter, be careful to insert the rubber bellows in its groove, see chapter "Assembling the starter".



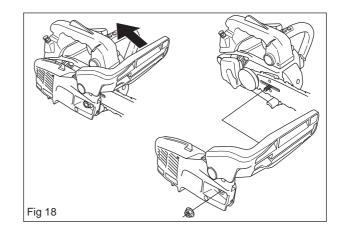


### 7.9 Dismantling the centrifugal clutch

1

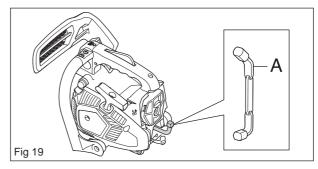
Release the brake by moving the kickback guard backwards

Loosen the bar nut and remove the clutch cover, chain and bar.



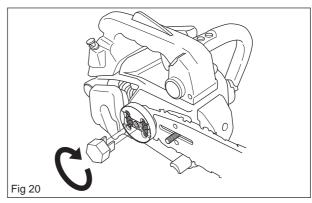
2

Unscrew the spark plug and put in piston stop A.



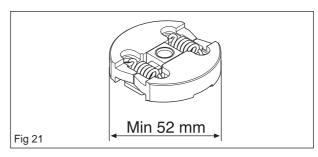
3

Loosen the clutch using tool 505 05 99-01 (B) and a suitable socket wrench or combination spanner. Turn the clutch clockwise to loosen it.



4

Check the thickness of the clutch shoes by measuring them with slide callipers across the whole clutch hub. If the thickness is below 52 mm, the clutch must be replaced (see figure 22).

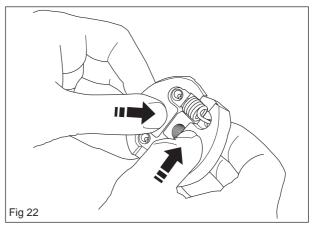


5

Break apart the clutch as shown in figure 22.

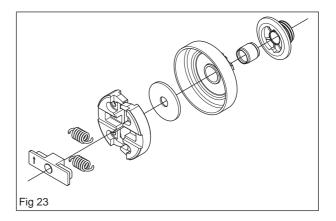
### NOTE!

Be careful with the clutch springs, opening them too much can result in material damage.



### Cleaning and checking

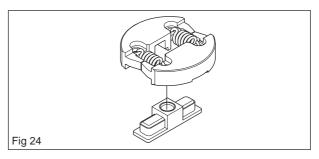
 Clean and check all parts carefully. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.

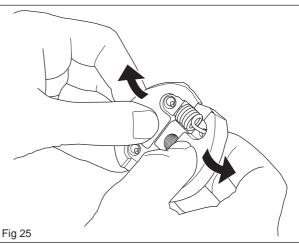


### 7.10 Assembling the centrifugal clutch

1

Hook the springs into the clutch shoes. Press in the clutch hub from below while bending back the clutch shoes around the clutch hub as shown in figure 24 and 25.





## 7.11 Dismantling the oil pump and screen

1

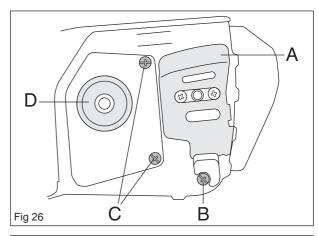
Dismantle the centrifugal clutch as in "Dismantling the centrifugal clutch".

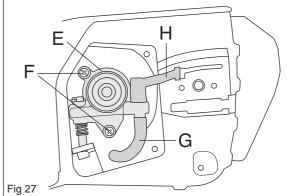
2

Loosen the chain catcher screw B, halfway. Remove the chain guide plate A. loosen screws C and pump drive wheel D and then lift off the cover.

3

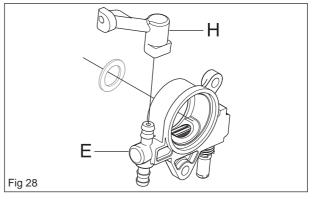
Loosen screws F and carefully lift up pump housing E. Detach pressure hose H from the tank unit. Completely detach pump hose G from the pump housing E.



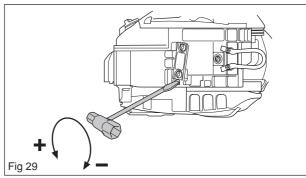


### Cleaning and checking

- Clean and check all parts carefully. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.
- Lubricate all moving parts with engine oil.



The adjuster screw for the oil pump is located on the bottom of the saw (see figure 29).



### 7.12 Assembling the oil pump and screen

### Refit the:

- pump housing
- cover
- · pump drive wheel
- · chain guide plate

Tighten the chain tightening screw. Now fit the clutch and clutch cover.

### 7.13 Carburettor



### **WARNING!**

The fuel used for the chain saw has the following characteristics:

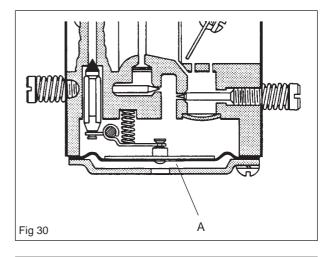
- 1. The liquid and its fumes are poisonous.
- 2. Can cause skin irritation.
- 3. Is very flammable.

### **Description**

The images for this description do not correspond to the carburettor on the chain saw. They purely show the principle for the design and function. The carburettor is based on three sub-systems:

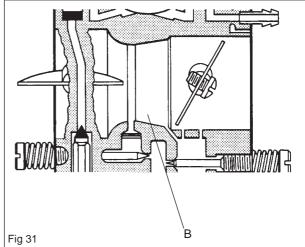
### **Metering unit**

The needles and the fuel's control functions are located in the metering unit (A). Here the correct fuel amount is adjusted for the current speed and power output.



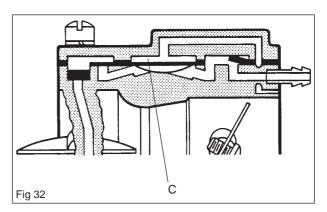
### Mixing venturi

The mixing venturi (B) houses the choke, throttle valve and diffuser jets. Here, air and fuel are mixed to create a fuel-air mix that can be ignited by the ignition spark.



### Pump unit

In the pump unit (C), fuel is pumped from the fuel tank to the metering unit. One side of the pump diaphragm is connected to the crankcase and pulses in time with the pressure changes in the crankcase. The other side of the diaphragm pumps the fuel.

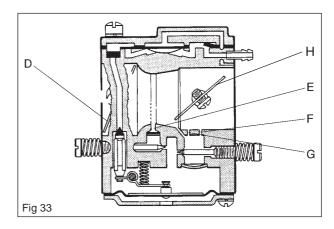


### **Function**

The carburettor functions differently in the following modes:

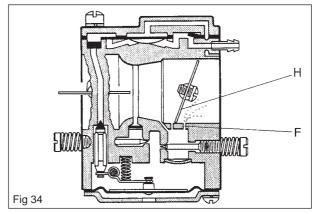
### Cold start mode

In cold start mode the choke valve (D) is completely shut. This increases the vacuum in the carburettor and fuel is easier to suck from all the diffuser jets (E, F and G). The throttle valve (H) is partly open.



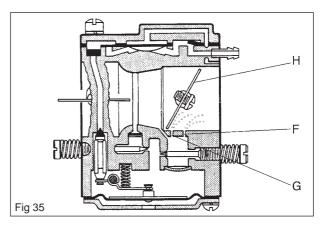
### Idle mode

In idle mode the throttle valve (H) is shut. Air is sucked in through an aperture in the throttle valve and a small amount of fuel is supplied through the diffuser jet (F).



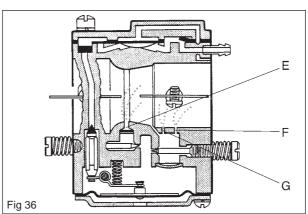
### Part throttle mode

In part throttle mode the throttle valve (H) is partly open. Fuel is supplied through the diffuser jets (F and G).



### Full throttle mode

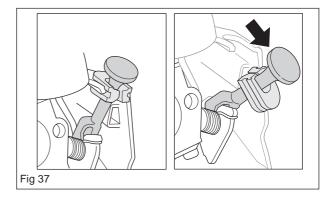
In full throttle mode both valves are open and fuel is supplied through all three diffuser jets (E, F and G).



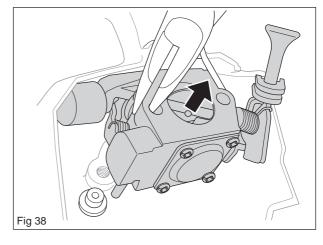
## Dismantling the carburettor

1

Loosen the choke.



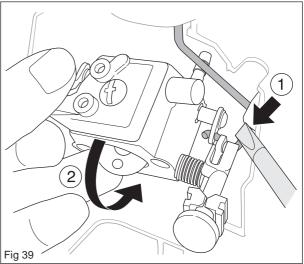
2 Lift out the carburettor with a pair of flat nosed pliers



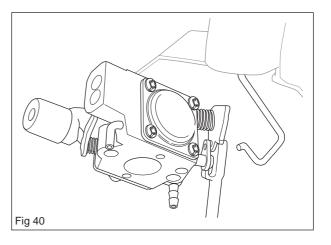
**3**Pull the throttle actuator rod to the right with a screwdriver. Rotate the carburettor downwards half a revolution.

## NOTE!

Be careful when lifting out the carburettor so that the fuel hose does not come loose.



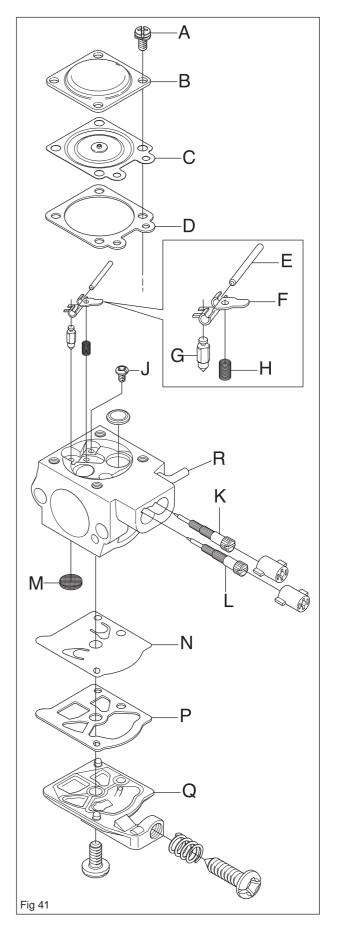
Unhook the carburettor from the throttle actuator rod.



5

Dismantle the pump cover Q and carefully remove the membrane N with gasket P.

- Unscrew screws A and lift off cover B and carefully remove gasket D and control diaphragm C.
- Unscrew screw J and remove needle valve G with lever arm F, shaft E and spring H.
- Use a needle or similar and carefully lift up fuel screen M.
- 9 Dismantle high-speed screw L and low-speed screw K (see figure 41).
- 10 If necessary, dismantle throttle valve T and choke valve S and remove the shafts with lever arms and springs (see figure 42).



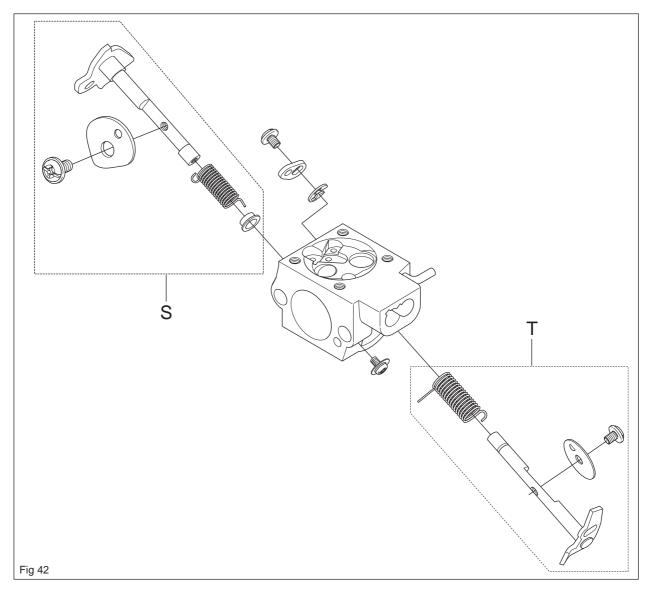
## Cleaning and checking

Clean all units in clean petrol.

Use compressed air to dry the petrol on the components. Direct the air through all channels in the carburettor housing and ensure that they are not blocked. Check the following:

- 1. That gasket, pump and control diaphragms are undamaged.
- 2. That there is no play on the throttle and choke valve shafts.
- 3. That the needle valve G and its lever arm F are not worn (see figure 41).
- 4. That the fuel screen M is intact and clean (see figure 41).

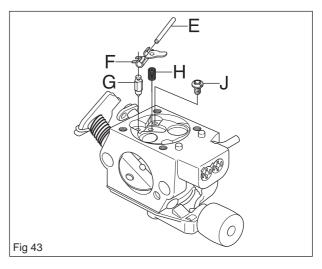
- 5. That the tips of the high L and low K speed needles are not damaged (see figure 41).
- 6. That the inlet tube R is intact (see figure 41).

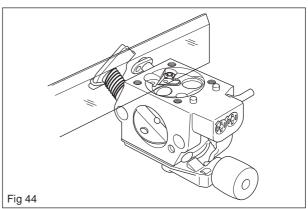


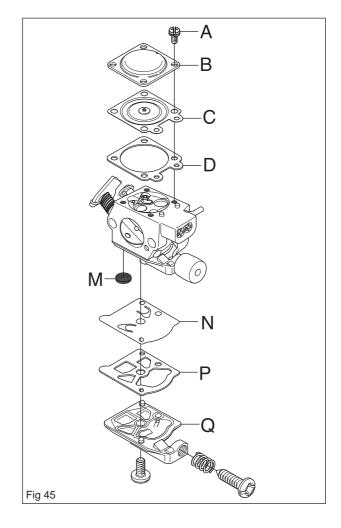
#### **Assembly**

Observe cleanliness when assembling the carburettor. The slightest contamination can cause malfunctions.

- 1. If throttle and choke valves with shafts, lever arms and springs are removed, these shall be assembled. The springs are tightened 1-2 revolutions. Lubricate the shaft bearings using a light oil.
- Assemble the high- and low-speed screws with springs. Note! Do not tighten the screws against the bases. This will damage seats and needle tips.
- 3. Assemble the fuel screen M using the handle of a small screwdriver (see figure 41).
- 4. Assemble membrane N with gasket P and screw tight the pump cover Q.
- 5. Assemble needle valve G with lever arm F, shaft E and spring H, and tighten screw J (see figure 43).
- 6. Check using a ruler or the like that the lever is level with the assembly plane on the cover. If necessary, the lever arm can be bent (see figure 44).
- 7. Assemble control membrane C, gasket D, cover B and tighten screws A.
- 8. Do a pressure test.







#### Pressure testing the carburettor

Pressure testing should be carried out with the carburettor fully assembled. The test shall always be done after the carburettor has been repaired, but can also be carried out as trouble shooting before the carburettor is taken apart.

See figure 46 and check as follows:

1

Adjust the high- and low-speed screw to two revolutions from the bottom.

#### 2

Connect pressure tester to the carburettor fuel inlet.

#### 3

Submerge the carburettor into a container with water (see figure 46).

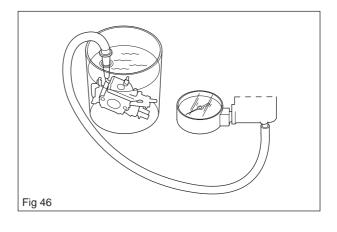
#### 4

Pump up the pressure to 50 kPa.

#### 5

No leaks are permitted. In case of leaks, see the table below.

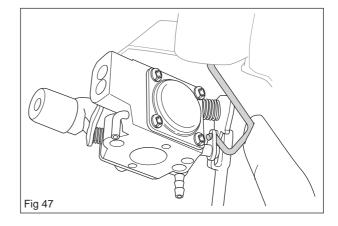
Leak in	Fault with
Diffuser jets Leak in the impulse pipe Ventilation hole on the metering unit.	Needle valve Pump membrane Control membrane



### Assemble on the saw

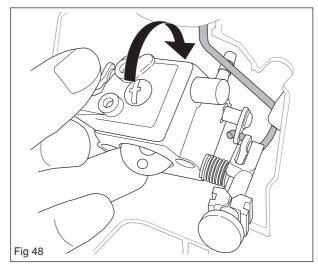
1

Insert the throttle actuator rod into the carburettor.



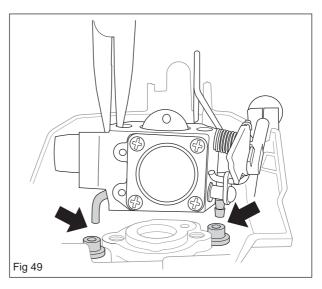
2

Turn the carburettor back half a revolution.



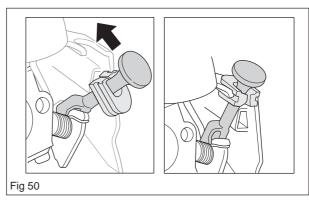
3

Hold the carburettor with a pair of flat nosed pliers and make sure the nipples are pushed down properly into the inlet- and fuel connections.



4

Put the choke back into its slot.



## 7.14 Dismantling the intake system

Dismantle the:

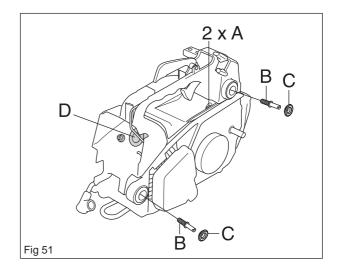
- clutch cover
- air filter cover
- air filter
- · air filter holder
- handle lock
- carburettor

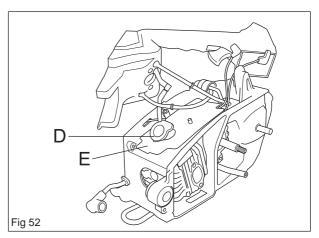
1

Bend loose the plastic covers C with a small screwdriver and loosen screws B (see figure 51). Unscrew screws 2xA and remove the cover.

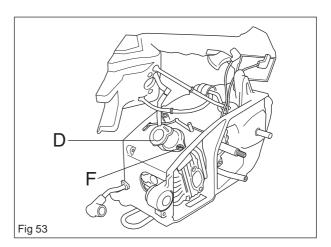
2

Press the inlet bellows D together and thread it through the handle, which is now loose.





Remove the yellow cover paper E. Loosen the screws and lift off the inlet bellows D.



## Cleaning and checking

Clean and check all parts carefully. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.

## 7.15 Assembling the intake system

1

Fit and tighten inlet bellows D. Refit the yellow cover paper.

2

Press the inlet bellows D together and thread it through the handle part (see figure 52).

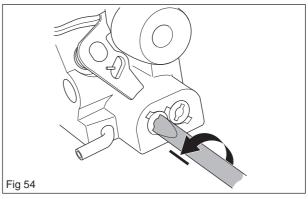
3

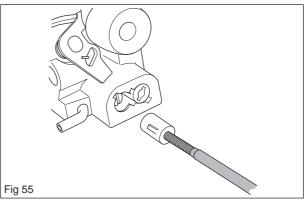
Fit and tighten screws B and snap the plastic covers C into place using a small screwdriver. Screw on the cover with screws 2xA (see figure 51). Fit the:

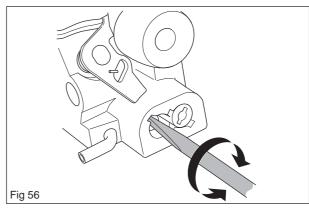
- carburettor
- handle cover
- air filter holder
- air filter
- air filter cover
- clutch cover

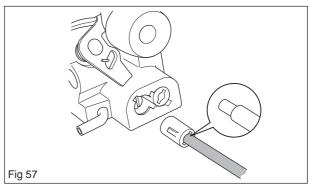
## Adjusting the carburettor Conditions during adjustment

- 1. Turn low and high needles counterclockwise to the limit by a carburetor adjustment screw driver without force.
- Screw the threaded-side (left-handed) of the limiter cap tool counterclockwise several times (5 or 6) into the limiter cap. **Note!** If screwed too tight, the limiter cap tool hit the needle surface. Doing so may cause damage.
- Pull the limiter cap tool gently with the cap. The cap stops at the inner side of the cover. Note! When the limiter caps are pulled out, turn the limiter cap tool clockwise and take it off from the cap.
- 4. Adjust low and high needles by a carburetor adjustment screw driver.
- 4.1. Turn low and high needles clockwise to the limit without force Then set them back the basic adjustment number of turns.
- 4.2. Start the engine and allow it to warm up in low speed for 3,5 minutes. If necessary, adjust the idling speed with the carburetor adjustment screw driver until the chain stops.
- 4.3. Turn low needle slowly clockwise to find the position where idling speed is maximum, then set the low needle back a quarter (1/4) turn counterclockwise. Make sure proper idling speed for each machine by the next pages carburetor specifications.
- 4.4. Next, adjust high needle. Make a test cut and adjust high needle for best cutting power, not for maximum speed. Make sure proper no-load maximum speed for each machine by the next pages carburetor specifications.
- 5. After the repair/re-adjustment, push the limiter cap into the carburetor by the guide side of the limiter cap tool.
- Start the engine, make sure that the idling speed and the wide open throttle speed are in the specified values. Also make sure that the chain doesn't move and the engine acceralates properly.









#### 7.16 Tank unit



#### **WARNING!**

The fuel used for the chain saw has the following hazardous properties:

- 1. The liquid and its fumes are poisonous.
- 2. Can cause skin irritation.
- 3. Is very flammable.

#### **Dismantling**

Dismantle the air filter and starter. Bend the handle part upwards and use a pair of flat nosed pliers to lift up the tank venting valve.

#### NOTE!

Exercise care so that the fuel hose and throttle cable are not damaged.

## 7.17 Venting the fuel tank

Remove the rubber bushing A. Use a pair of flat nosed pliers to refit the tank venting valve. Insert a small screwdriver into the hole and press down the tank venting valve (see figure 59).

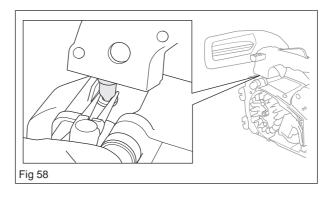
#### Test

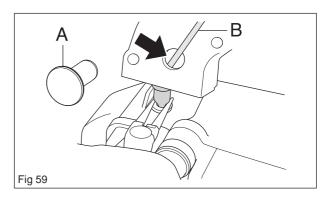
#### Opening pressure outwards:

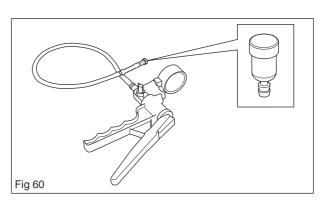
- 1. Open the tank lock and leave it open during the entire test. Empty the tank of fuel.
- 2. Connect the pump, ref. no. 531 03 06-23, to the tank valve.
- 3. Switch the pump to vacuum mode.
- 4. After pumping the indicator should be between 10-45 kPa.

#### Opening pressure inwards:

- 1. Open the tank lock and leave it open during the entire test. Empty the tank of fuel.
- 2. Connect the pump, ref. no. 531 03 06-23, to the tank valve.
- 3. Switch the pump to pressure mode.
- After pumping the indicator should stop at max. 7 kPa.







## 7.18 Vibration damping system

#### Dismantling

- 1. Dismantle the following parts:
  - Chain and bar. See the Operator's Manual.
  - Airfilter cover. See the Operator's Manual.
  - Tank unit and handle.
- 2. Dismantle the vibration damping springs on the starter housing using a 4 mm Allen key (see figure 61).
- 3. Dismantle the vibration damping springs on the tank unit and handle using a 4 mm Allen key (tool 502 50 18-01)

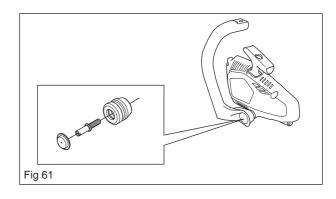
(see figure 61 and page 43 figure 51).

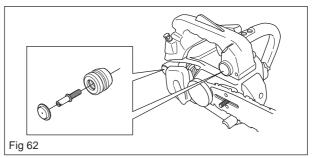
## Cleaning and checking

Clean and inspect all parts.

## **Assembly**

- 1. Fit the vibration damping springs on the cylinder using a 4 mm Allen key (tool 502 50 18-01).
- 2. Assemble the following parts:
  - Tank unit and handle.
  - Airfilter cover. See the Operator's Manual.
  - Chain and bar. See the Operator's Manual.





## 7.19 Replacing the fuel filter

#### NOTE!

Fluted pliers may not be used with the fuel hose. They can cause material damage resulting in damage to the fuel hose.

1

When replacing the fuel filter, the old fuel filter must be taken out of the tank unit using special tool 502 50 83-01.

2

Pull the fuel hose C off the tank unit. Pull back locking sleeve D so that you can remove filter E.

3 ⊏∷

Fit the new fuel filter E and press the fuel hose C back into place. Push the locking sleeve back again.

## 7.20 Replacing the fuel hose/return hose

1

Dismantle the cover under the top handle (2 screws).

2

Split the hoses at the pitches (see figure 64).

3

Pull off the suction hose from the fuel pump. Now pull off the return hose from the fuel pump and carefully pull up the seal (without sharp tools).

If necessary, also replace the hoses on the other side of the pitch by first loosening the carburettor and then dismantling the hoses from the carburettor chamber base.

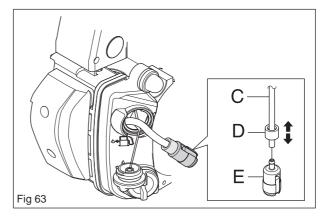
#### 4

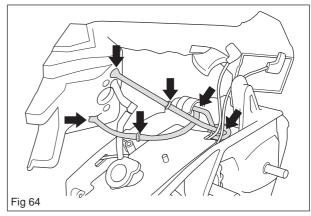
Then fit new hoses in reverse order.

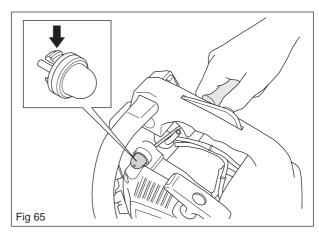
## 7.21 Replacing the fuel pump

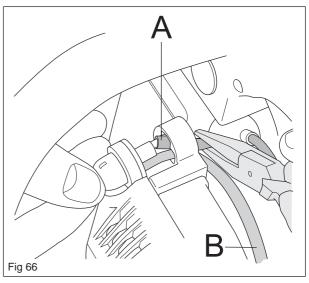
Use a flat screwdriver to snap the fuel pump loose.

Fit the suction hose A and return hose B as shown in figure 66 and press the fuel pump back into place.









## 7.22 Dismantling the piston and cylinder

#### 1

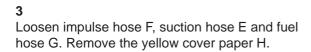
Dismantle:

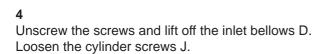
- clutch cover (see "Dismantling the clutch cover")
- starter (see "Dismantling the starter")
- handle cover (see "Dismantling the handle part")

2

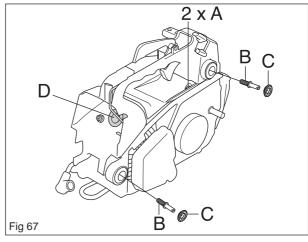
Dismantle the stop button and loosen the cables. Remove the air filter and air filter cover. Dismantle the carburettor, clutch, muffler, flywheel and ignition coil. Loosen the cable on the ignition coil. Remove the cover of the oil pump and the oil pump. Remove the foam rubber piece and washer. Snap off plastic covers C using a small screwdriver. Loosen screws B and unscrew the screws 2xA (see figure 67).

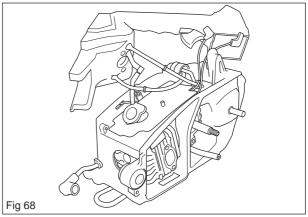
Remove the cover. Press the inlet bellows D together and thread it through the handle, which is now loose (see figure 68).

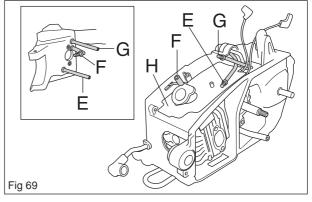


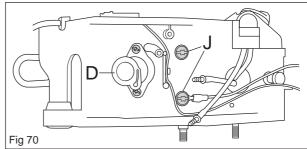


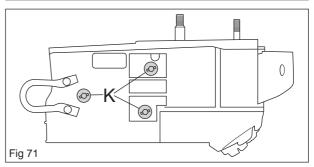
5 Unscrew screws K on the base of the saw.





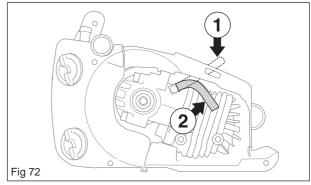






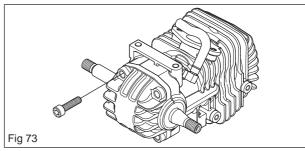
6

Push in the impulse hose as shown in figure 72 before removing the cylinder.



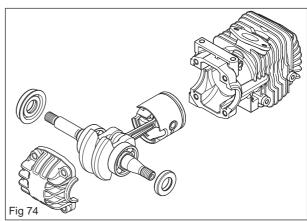
7

Screw apart the crankcase half and the cylinder.



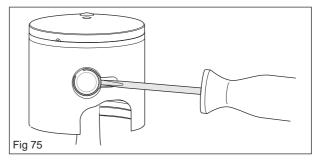
8

Carefully pull out piston and crankshaft. Cover with paper over the cylinder opening to prevent dirt from coming in.



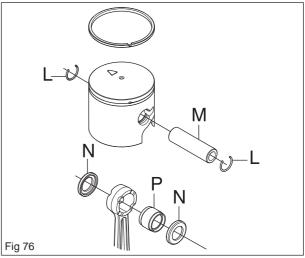
9

Carefully loosen the circlips L (see figure 75 and 76) with a small screwdriver.



10

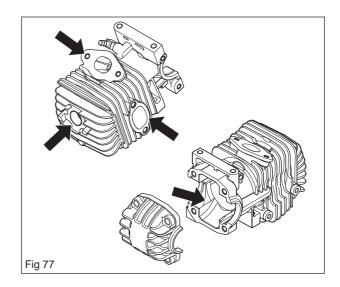
Press out the gudgeon pin M. Now lift off the piston. Remove the covers N and the gudgeon pin bearing P.



#### Cleaning and checking

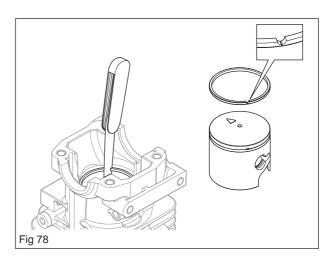
Clean all parts, scrape off all gasket residue and carbon from the following places:

- The piston crown
- Top of the cylinder bore (inside)
- The cylinder exhaust port
- The base of the cylinder and/or crankcase (see figure 77)



#### Check the following:

- That the cylinder's surface coating is not worn.
   Especially the upper part of the cylinder.
- That the cylinder does not have any chafe or cutting marks.
- That the piston is free from cutting marks.
   Minor scratches can be polished off using fine emery paper.
- That the piston ring is not welded to its track.
- Remove the piston ring from the piston to measure the wear. Use the base of the piston to push the piston ring down into the cylinder. The opening in the ring must not exceed 1 mm. Put the piston ring back into the piston slot and make sure it is the right way around (see figure 78).
- That the gudgeon pin bearing is intact.
- That the inlet bellows is intact.
- That air hoses and impulse hose are intact.



## Faults and causes Cutting marks on the piston (Q)

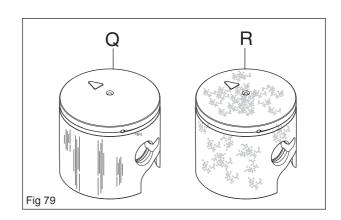
- Wrong carburettor setting. Too high fast idle speed.
- 2. Too low octane number of petrol.
- 3. Too low or incorrect oil in the fuel.

### carbon build-up(R)

- Wrong carburettor setting. Too low fast idle speed.
- 2. Too much or incorrect oil in the fuel.

### Piston ring breakage

- 1. Too high engine speed.
- 2. Piston ring worn out.
- 3. Oversized piston ring groove.



## 7.23 Assembling the piston and cylinder

1

Cover the gudgeon pin bearing P with a thin layer of two-stroke oil and insert it into the connecting rod, press in the covers N. (see figure 80).

2

Replace the piston with the arrow facing the exhaust port S (see figure 82), slide in the gudgeon pin M and fit the circlips J (see figure 80 and 81). **NOTE!** Use new circlips.

3

Oil the piston and piston ring with two-stroke oil.

4

Compress the piston ring and carefully push it into the cylinder. Put back the seals and screw together the crankcase half and cylinder (see figure 82). The screws should be tightened crosswise with a tightening torque of 15 Nm.

#### NOTE!

It is very important that the intake system is leak tight, or the engine may seize up.

5

Refit the cylinder, fold in the hose into the out-take on the fuel unit (see figure 83). Fit and tighten three screws on the bottom of the saw (see figure 71). Tighten two screws on the top of the saw (see figure 70). Attach the earth cable under one. Fit the inlet bellows in the correct direction (see figure 70).

Assemble the flywheel and ignition coil. Fit the cable onto the ignition coil, adjust the length and snap it into place in the cable groove (see figure 70).

Refit the yellow cover paper. Fit the suction hose, fuel hose and impulse hose (see figure 68 and 69). Insert the inlet bellows through the hole in the handle part. Fit and tighten the screws and fit the plastic covers (see figure 67).

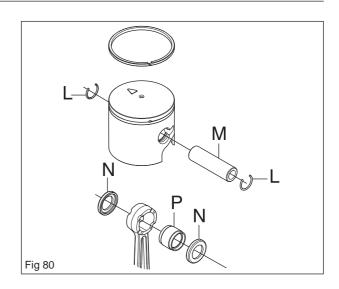
Assemble the carburettor (see "Assembling the carburettor").

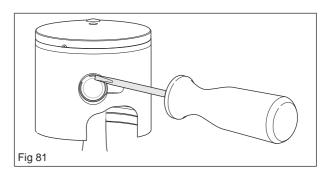
Fit the air filter holder and air filter. Connect the cables to the start/stop button. First thread the cables through the handle and out through the start button cut-out and connect them to the start/stop button (see "Assembling the start/stop switch, figure 21, 22 and 23).

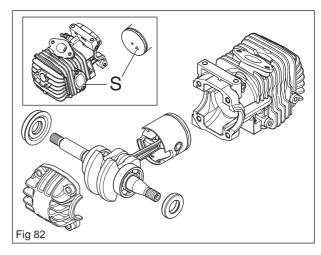
Fit the foam rubber piece and washer before assembling the oil pump (see "Assembling the oil pump and screen").

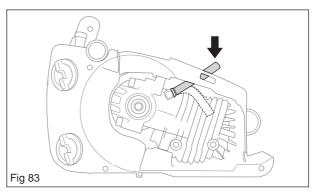
#### Fit the:

- cover
- chain guide plate
- clutch
- muffler
- handle cover
- clutch cover
- starter
- air filter cover









# 7.24 Dismantling the crankcase and crankshaft

1

See chapter "Dismantling the piston and cylinder".

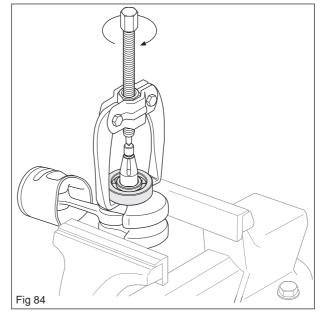
## 7.25 Replacing the crankshaft bearing

Remove:

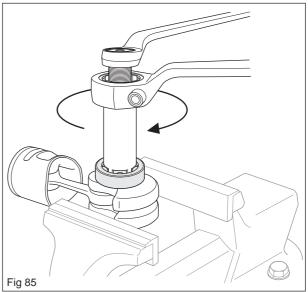
• the crankshaft completely from the crankcase.

1

Pull out the crankshaft bearing from the crankshaft (see figure 84).



**2** Fit the new bearing on the crankshaft using tool 502 50 30-18 (see figure 85).



## 7.26 Assembling the complete crankshaft

1

See chapter "Assembling the piston and cylinder".

## 8 Trouble shooting

## List of contents

8.1	Trouble shooting	54
8.2	Trouble shooting techniques	55

## 8.1 Trouble shooting

The different faults which may occur on the chain saw are divided into four groups. Within each group possible operating faults are listed to the left while the probable fault alternatives are listed to the right. The most likely fault is listed first, etc.

## Starting

=	
Starting difficulties	Adjust the L-screw Clogged air filter Choke does not work Worn choke shaft Worn choke valve The fuel filter is clogged The fuel hose is clogged Piston ring is stuck Blocked impulse channel
The carburettor leaks fuel	Loose or defective fuel hose Hole in the membrane Worn needle/needle tip Control system is binding Control system set too high Leaking control system (air or fuel) The cover on the carburettor pump side is loose
Floods when the engine is not running	Worn needle/needle tip Control system set too high Control system is binding

## Idling (low speed)

Does not run at idling	Adjust the L-screw Leaking inlet hose (rubber) Loose clamping screws carburettor Loose or defective fuel hose The fuel filter is clogged The fuel hose is clogged Tank venting clogged The throttle valve shaft is inert Throttle stay is binding Defective throttle return spring Bent valve shaft stop Faulty diffuser jet
Too high idling speed	Adjust the L-screw Worn needle/needle tip Control system set too high Worn lever arm in the control system Leak in control membrane/ cover plate Control system is binding

## Idling (low speed) (cont.)

Runs in idle with closed L-screw	Worn needle/needle tip Leak in control membrane/ cover plate Control system is binding Worn lever arm in the control system Faulty diffuser jet
Irregular idling	The fuel filter is clogged The fuel hose is clogged Leaking inlet hose (rubber) Loose clamping screws carburettor Worn throttle valve shaft The throttle valve screw is loose The throttle valve is worn Control system is binding Leaking control system (air or fuel) The control system's centre knob is worn Hole in the membrane Leak in control membrane/ cover plate Crankcase leak
The L-screw must be constantly adjusted	The fuel hose is clogged Control system set too high Control system is binding Leaking control system (air or fuel) Leaking diaphragm/ cover plate Faulty diffuser jet Crankcase leak
Too much fuel at idle speed	Control system set too high Control system is binding Control system damaged Worn needle/needle tip Leak in control membrane/ cover plate Incorrectly fitted control system

## High speed

Does not run at full throttle	Adjust the H-screw Blocked air filter Tank venting clogged The fuel filter is clogged The fuel hose is clogged Loose or defective fuel hose Impulse channel leaking Blocked impulse channel The cover on the carburettor pump side is loose Faulty pump diaphragm Leaking inlet hose (rubber) Loose clamping screws carburettor Control system set too low Control system damaged Control system incorrectly assembled Leak in control membrane/cover plate Control system is binding Clogged muffler
Low on power	Adjust the H-screw Tank venting clogged The fuel filter is clogged Impulse channel leaking Blocked impulse channel The cover on the carburettor pump side is loose Faulty pump diaphragm Blocked air filter Control system is binding Leaking control system (air or fuel) Control system incorrectly assembled Loose diaphragm rivet Hole in the membrane Leak in control membrane/ cover plate
Will not "four stroke"	Tank venting clogged The fuel filter is clogged The fuel hose is clogged Loose or defective fuel hose Impulse channel leaking Blocked impulse channel The cover on the carburettor pump side is loose Faulty pump diaphragm Leaking inlet hose (rubber) Loose clamping screws carburettor Control system set too low Leaking control system (air or fuel) Control system incorrectly assembled Loose diaphragm rivet Hole in the membrane Leak in control membrane/ cover plate

#### **Acceleration and retardation**

Does not accelerate	Adjust the L-screw Adjust the H-screw Blocked air filter Tank venting clogged The fuel filter is clogged The fuel hose is clogged Loose or defective fuel hose Blocked impulse channel The cover on the carburettor pump side is loose Faulty pump diaphragm Leaking inlet hose (rubber) Loose clamping screws carburettor Control system set too low Control system incorrectly assembled Control system is binding Faulty diffuser jet Clogged muffler
The engine stops when releasing the throttle	Adjust the L-screw Adjust the H-screw Faulty pump diaphragm Control system set too high Control system is binding Faulty diffuser jet
Too rich acceleration	Adjust the L-screw Adjust the H-screw Blocked air filter Faulty pump diaphragm Faulty diffuser jet

## 8.2 Trouble shooting techniques

In addition to faults given in the above schematic, trouble shooting can be carried out on a specific component or specific chain saw system. The different procedures are described in respective sections and are as follows:

- Function check of chain brake
- Resistance testing the stop plate
- Pressure testing the carburettor
- Pressure testing the decompression valve
- Pressure testing the cylinder



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