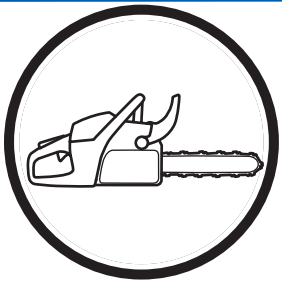
Husqvarna®

Workshop Manual
455, 455e, 455e TrioBrake
465 Rancher II



English

Workshop Manual
Husqvarna 455 Rancher II, 455e Rancher II, 455e Rancher II TrioBrake and 465 Rancher II

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2 Introduction and safety regulations

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2 Introduction and safety regulations

2.1 General

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

2.2 Safety

Note: The section dealing with safety must be read and understood by all those carrying out repair work 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”. A new warning symbol decal must be applied as soon as possible if a warning symbol on the chain saw has been damaged or is missing so that the greatest level of safety can be maintained when using the chain saw.

2.3 Target group

This Workshop Manual is written for personnel with general knowledge about the repair and service of 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 for use when training new employees.

2.4 Changes

Any modifications to the chain saw will be gradually introduced into ongoing production. As these modifications affect service and/or spare parts, specific service information 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 This means that in time this Workshop Manual will become out of date.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 information 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 made apparent in each section.

Always use original Husqvarna:
- **Spare parts**
- **Service tools**
- **Accessories**

2.6 Structure

This Workshop Manual can be used in two different ways:

- For the repair of a particular system on the chain saw.
- Dismantling and assembly of the entire chain saw.

Repair of a specific system
When a particular system on the chain saw is to be repaired, proceed as follows:

1. Look up the page for the system in question.
2. Carry out the following steps:

   Disassembly

   Cleaning and inspection

   Assembly

Dismantling and assembling the chain saw
When taking apart the whole chain saw and putting it back together again, do as follows:

1. See the ”Repair instructions” chapter — which deals with the **Starter** — and carry out the instructions listed under the heading **Dismantling**.
2. 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 inspection**.
4. Work forward in the Manual and carry out **Cleaning and inspection** in the order set out in the sections.
5. Order or collect all requisite spare parts from the stores.
6. See the ”Repair instructions” chapter which deals with the **Crankcase** and carry out the instructions outlined in **Assembly**.
7. Work backward in the Manual and carry out **Assembly** in the order set out in the sections.

Some sections include a **Description** of the actual unit in order to increase basic understanding.

2.7 Numbering

Position references to components in 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 devices in accordance with local regulations.

No one may repair the chain saw unless they have read and understood the content of this Workshop Manual.

This Workshop Manual contains the following warning 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 in the chain saw has the following hazardous properties:

- The fluid and its vapor are poisonous.
- Can cause eye and skin irritation.
- Can cause breathing problems.
- Is highly flammable.

When using compressed air, do not direct the jet towards your body. Air can penetrate into the blood circulation, which means 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 the muffler.

The bar, chain and clutch cover (chain brake) must be fitted before the saw is started otherwise the clutch can work itself loose and cause personal injury.

Insufficient chain lubrication can result in chain breakage, which can cause serious or even life-threatening injury.

Exercise care to ensure the starter 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 removed, 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”.

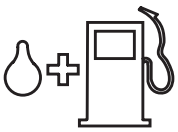
Keep in mind the fire risk. The chain saw may emit sparks, which cause ignition.

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

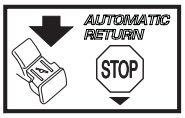
2.10 Symbols on the saw

The symbols below are embedded on the chain saw.

Choke control

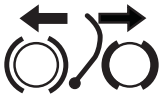


Fueling

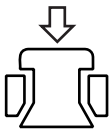


Stop button

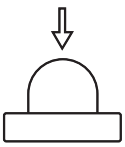
Filling with chain oil



Chain brake



Decompression valve

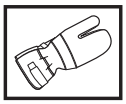


Fuel pump

Adjustment of the oil pump

2.11 Symbols in the Workshop Manual

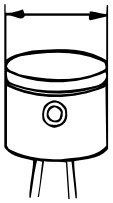
This symbol warns of personal injury when the instructions are not followed.

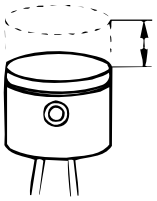


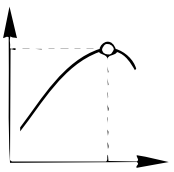
Use protective gloves.

Use protective goggles.

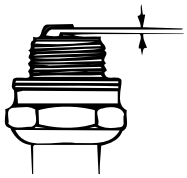
3 Technical data

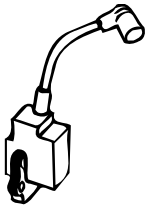


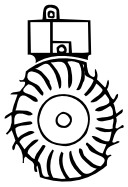


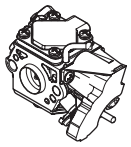


	Displacement cm3/cubic inch	Cylinder diameter Ø mm/Ø inch	Stroke mm/inch	Max. output/speed kW/hp/rpm
455 RII:	55.5 / 3.38	47 / 1.85	32 / 1.26	2.6 / 3.5 / 9,000
455e RII:	55.5 / 3.38	47 / 1.85	32 / 1.26	2.6 / 3.5 / 9,000
455e RII TB:	55.5 / 3.38	47 / 1.85	32 / 1.26	2.6 / 3.5 / 9,000
465 RII:	64.1 / 3.91	49 / 1.93	34 / 2.07	3.2 / 4.4 / 9,600

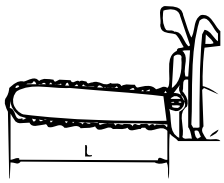


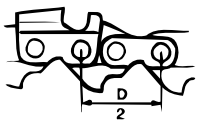


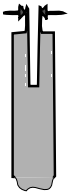




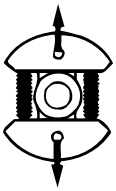
	Electrode gap mm/inch	Ignition system	Air gap mm/inch	Carburetor type
455 RII:	0.5 / 0.02	SEM DM61	0.3 / 0.012	Walbro AT3
455e RII:	0.5 / 0.02	SEM DM61	0.3 / 0.012	Walbro AT3
455e RII TB:	0.5 / 0.02	SEM DM61	0.3 / 0.012	Walbro AT3
465 RII:	0.5 / 0.02	SEM DM61	0.3 / 0.012	Walbro AT9

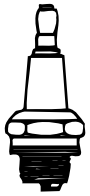


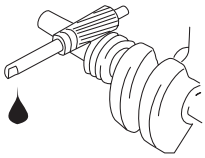




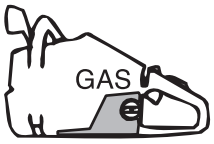
	Usable cutting length cm/inch	Chain speed at 133% of max. engine power speed, m/s	Chain pitch mm/inch	Drive link mm/inch
455 RII:	36-49 / 14-19	26,6 / 9,000	8.25 / 0.325, 9.52 / 3/8	1.5 / 0.058
455e RII:	36-49 / 14-19	26,6 / 9,000	8.25 / 0.325, 9.52 / 3/8	1.5 / 0.058
455e RII TB:	36-49 / 14-19	26,6 / 9,000	8.25 / 0.325, 9.52 / 3/8	1.5 / 0.058
465 RII:	36-69 / 14-27	28,5 / 9,600	9.52 / 3/8	1.5 / 0.058

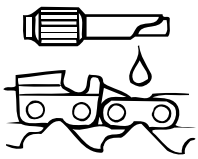


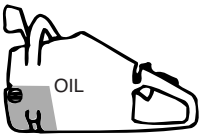




	Engage speed rpm	Spark plugs	Oil pump type
455 RII:	4 100 (+/- 120)	NGK BPMR 7A	Adjustable
455e RII:	4 100 (+/- 120)	NGK BPMR 7A	Adjustable
455e RII TB:	4 100 (+/- 120)	NGK BPMR 7A	Adjustable
465 RII:	4 100 (+/- 120)	NGK BPMR 7A	Adjustable







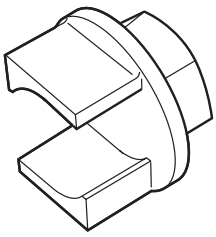
	Fuel tank capacity Liter/US.pint	Oil pump capacity at 9,000 rpm, ml/min	Oil tank capacity Liter/US.pint
455 RII:	0.44 / 0.93	6-17	0.32 / 0.68
455e RII:	0.44 / 0.93	6-17	0.32 / 0.68
455e RII TB:	0.44 / 0.93	6-17	0.32 / 0.68
465 RII:	0.44 / 0.93	6-17	0.32 / 0.68

Weight without bar and chain
kg / lbs

455 RII:	5.9 / 13.0
455e RII:	6.0 / 13.2
455e RII TB:	6.2 / 13.6
465 RII:	6.1 / 13.4

4 Service tools

1



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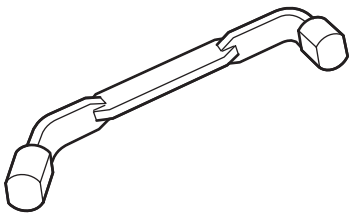

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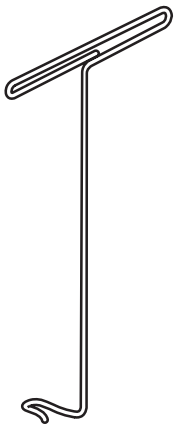

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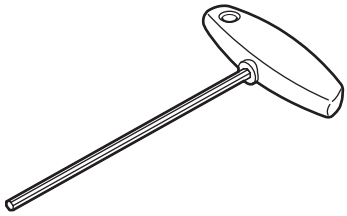

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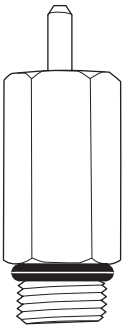

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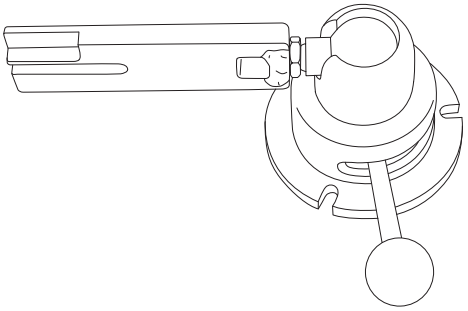

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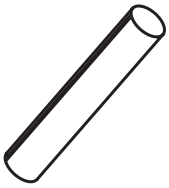

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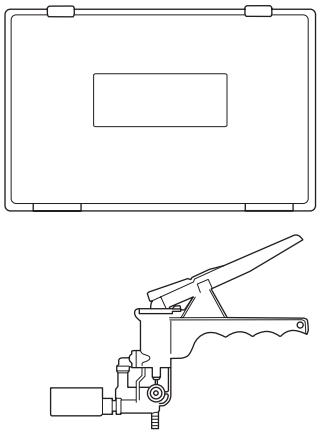

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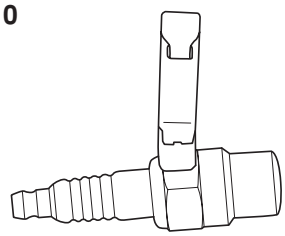

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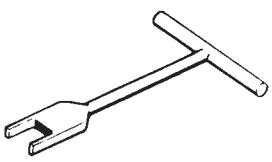

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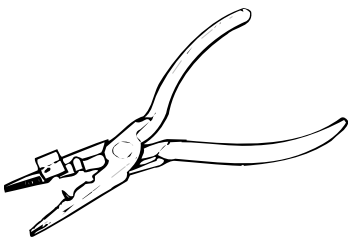
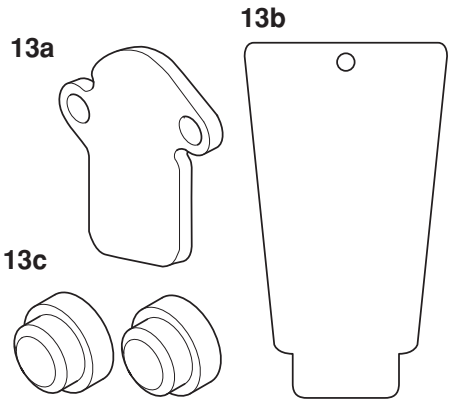
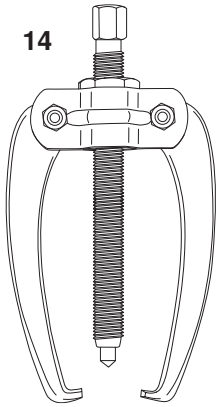
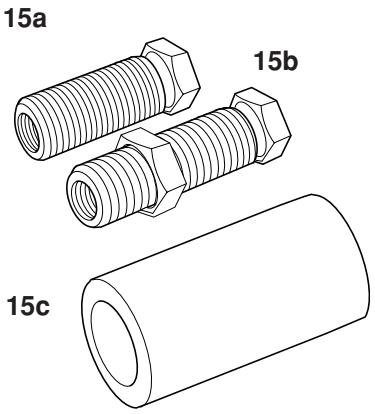
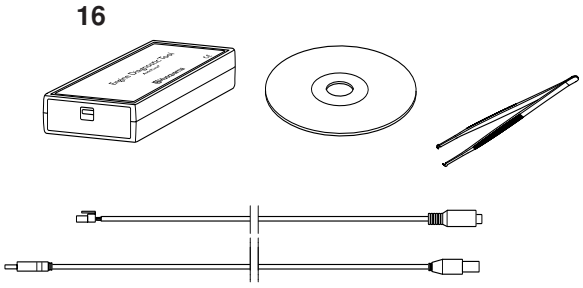




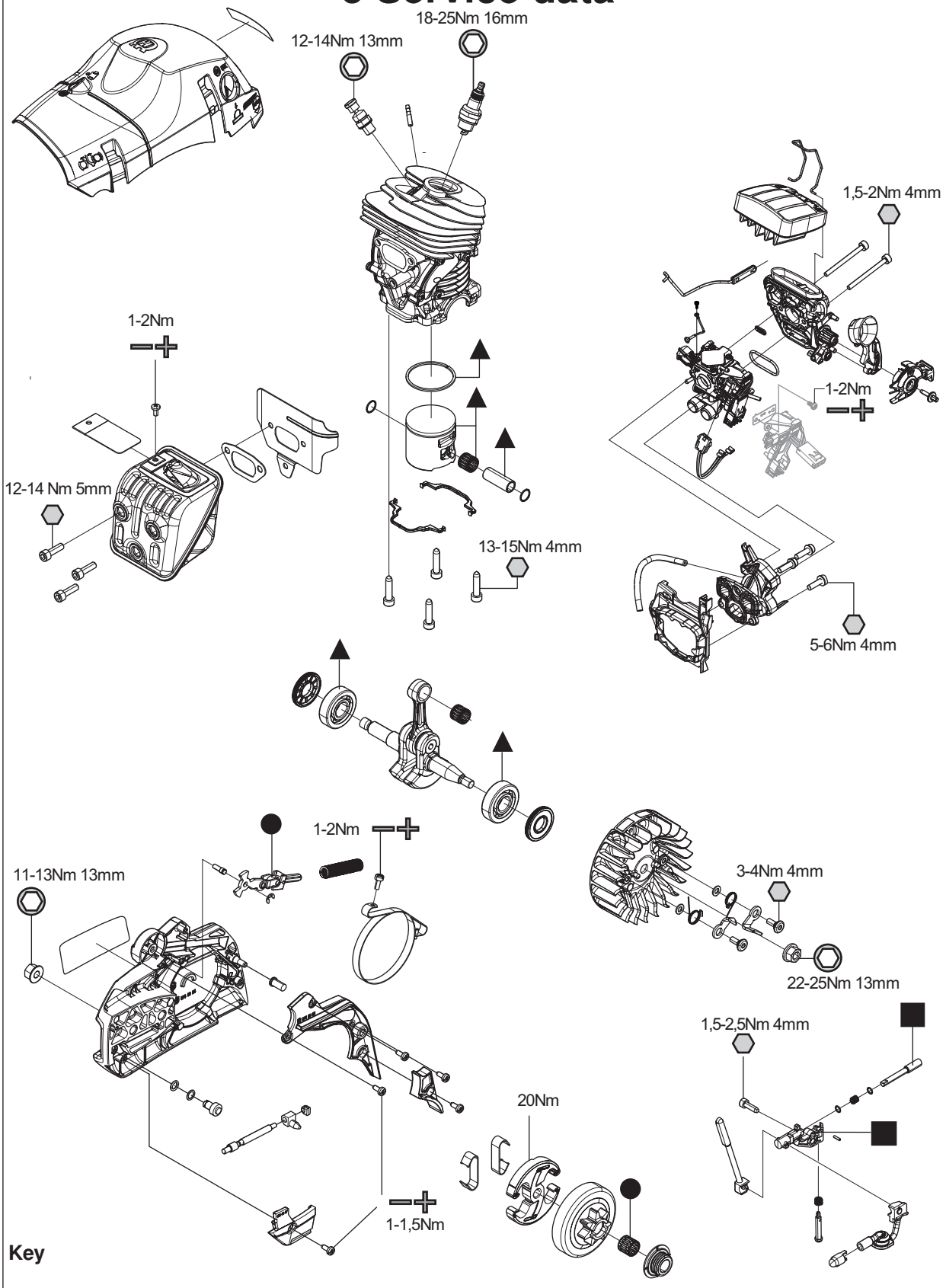






Pos	Designation	Used for	Order no.
1	Clutch tool	Centrifugal clutch	502 54 16-03
2	Piston stop	Crankshaft lock	504 91 06-05
3	Hook for fuel filter	Lifting out the fuel filter	502 50 83-01
4	Allen key, 4mm	For M5 screws	502 50 18-01
5	Pressure tester	Pressure testing the cylinder	503 84 40-02
6	Feeler gage	Setting, ignition module	502 51 34-02
7	Assembly fixture	Securing the chain saw	502 51 02-01
8	Mandrel	Dismantling the flywheel	502 51 94-01
9	Pressure gage	Pressure testing	531 03 06-23
10	Test spark plug	Checking the ignition module	502 71 13-01
11	Assembly tool	Assembling the spring chain brake	502 50 67-01
12	Assembly bar	Assembling the spark plug protector	502 50 06-01
13a	Cover plate, inlet	Closure of inlet	574 71 14-01
13b	Cover plate, outlet	Closure of inlet	502 54 11-02
13c	Cover plug, inlet	Closure of inlet	578 02 13-01
14	Puller	Dismantling the flywheel	504 90 90-01
15a	Shaft extension	Flywheel side	502 50 30-18
15b	Shaft extension	Clutch side	502 50 30-18
15c	Sleeve	Assembling the crankshaft	502 50 30-18
16	Engine Diagnostic Tool	Diagnosis and troubleshooting	576 69 23-01

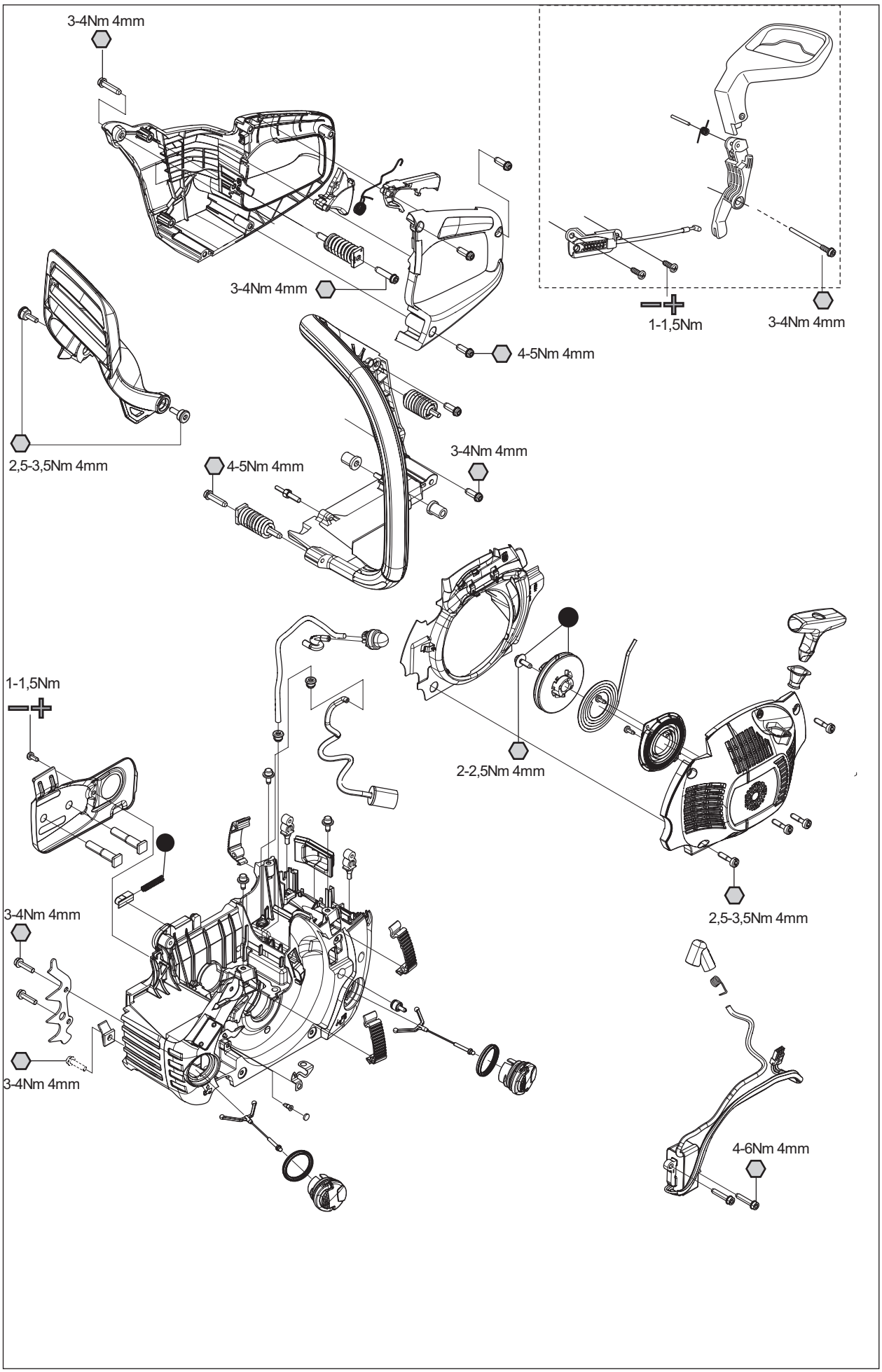
5 Service data



Key

The numbers by the components to be assembled with screws state the tightening torque in Nm.

▲ = Lubricate using two-stroke oil.
■ = Lubricate using chain oil.
● = Lubricate using grease.


3-4Nm 4mm
3-4Nm 4mm
4-5Nm 4mm
1-1,5Nm
3-4Nm 4mm
2,5-3,5Nm 4mm
4-5Nm 4mm
3-4Nm 4mm
1-1,5Nm
2-2,5Nm 4mm
2,5-3,5Nm 4mm
3-4Nm 4mm
3-4Nm 4mm
4-6Nm 4mm

6 Safety equipment

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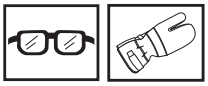
6 Safety equipment

6.1 Dismantling the chain brake

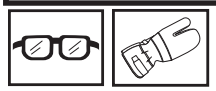


1
Release the brake by moving the hand guard backwards.
Dismantle the clutch cover, chain and bar.

2
Dismantle the hand guard.

Carefully tighten the clutch housing in a vice. Release the brake by using the saw's hand guard as a tool. Mesh with the brake and tighten anti-clockwise until the brake is activated, see figure 1.

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



3
Loosen the screws as outlined in Figure 2. Insert a screwdriver to maintain pressure on the spring as shown in figure 3. Then carefully remove the cover over the brake spring.

4
Hold one hand on top of the brake spring and press a small screwdriver into the spring. Carefully bend upwards until the spring is released and slides onto the screwdriver, see figure 4.

Cleaning and inspection

- Carefully clean and check all parts. 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 must not be less than 0.6 mm in any place. See figure 5.
- Lubricate the knee joint with grease.

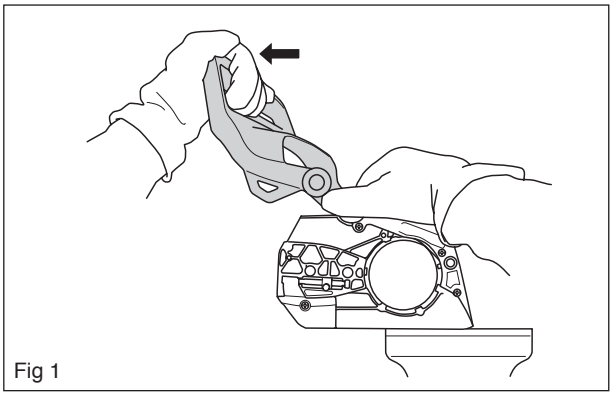


Fig 1

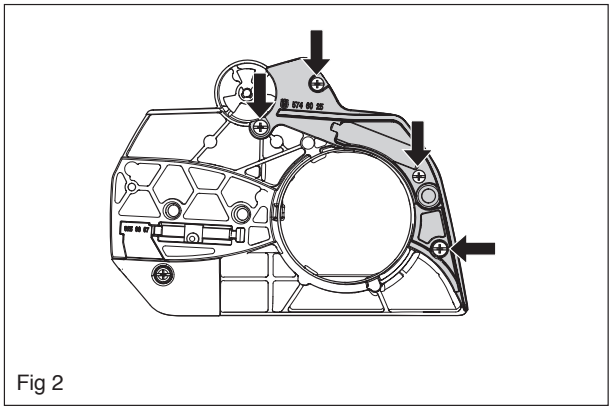


Fig 2

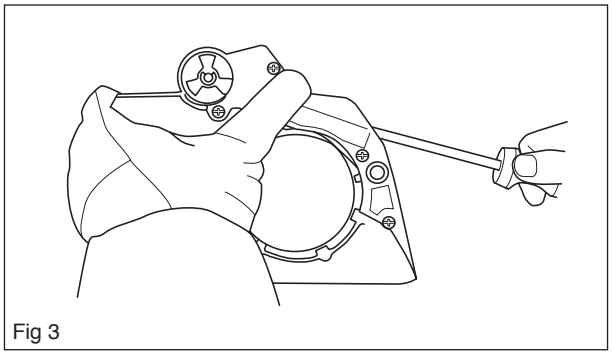


Fig 3

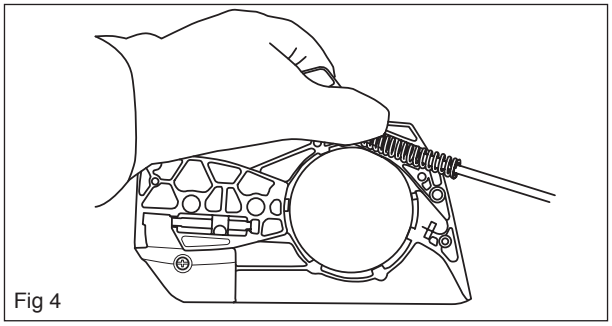


Fig 4

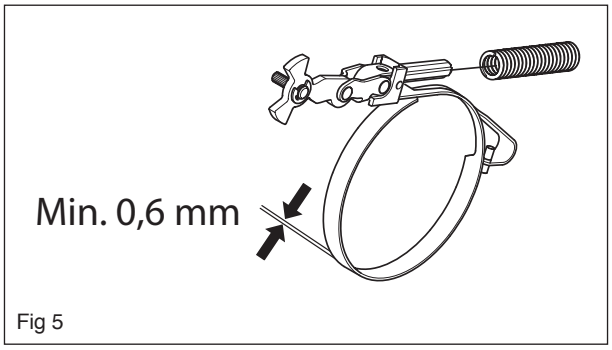


Fig 5

6.2 Assembling the chain brake

1
Screw the knee joint and the brake band together (see figure 5) with a tightening torque of 1-1.5 Nm. Place the knee joint with the fitted chain brake band in the opening in the clutch cover. The space for the spring in the cover must be lubricated with grease. See figure. 6.

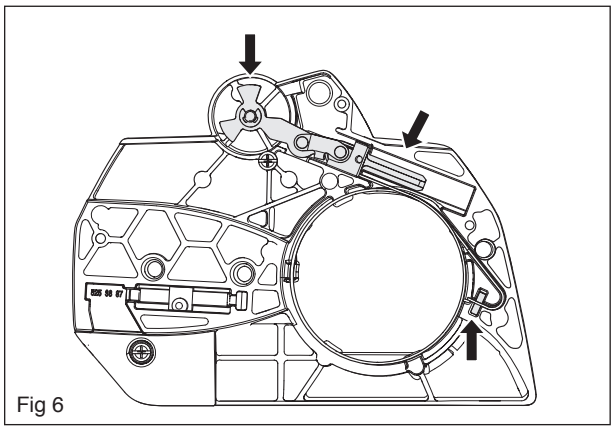
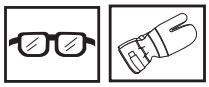


Fig 6

2
Compress the springs with a wide screwdriver or special tool 502 50 67-01. See figure 7.

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



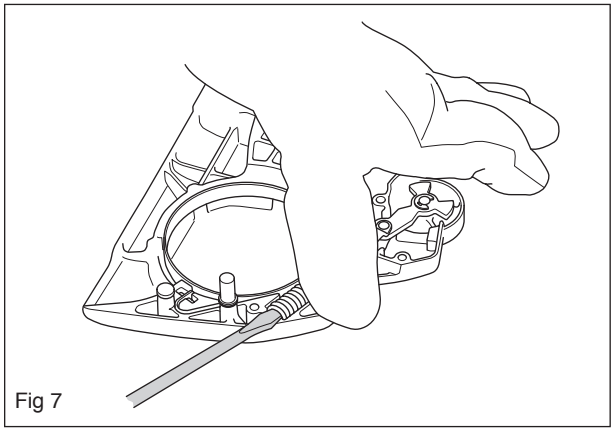


Fig 7

3
Fit the cover over the brake spring using 1-1.5 Nm tightening torque. See figure 8.

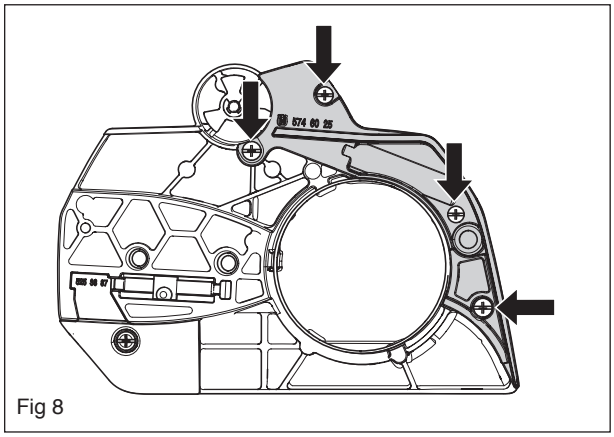


Fig 8

4
Tighten the brake by using the saw's hand guard as a tool. Mesh with the brake and tighten clockwise until the brake is in the off position. See figure 9.

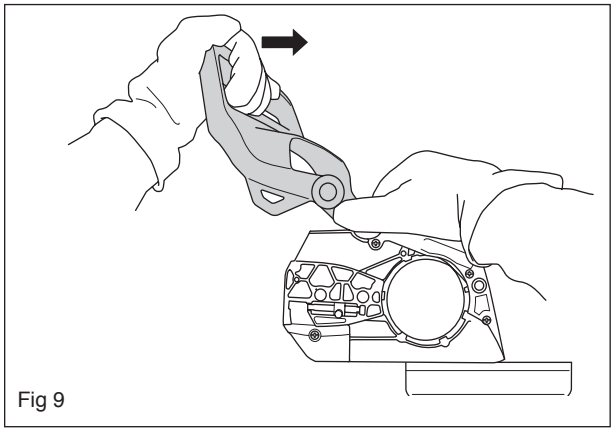


Fig 9

Fit the:
- bar
- chain
- hand guard
- clutch cover
- cylinder cover

NOTE!

After repairing, the chain brake must be inspected in line with the instruction below.

Functional inspection:
Do not turn on the motor when carrying out this inspection.

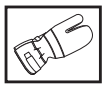
Bar length	Height
38-51 cm/15-20"	50 cm/20"
53-71 cm/21-28"	70 cm/28"

- Hold the chain saw over a stable surface. The distance between the bar and the surface is shown in the table above.
- Let go of the front handle and let the chain saw drop toward the surface underneath.
- When the bar hits the surface the chain brake must trigger. See figure 10.


Fig 10

6.3 Dismantling the muffler

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



1
Remove the cylinder cover, muffler, gasket and cooling fin.

2
The muffler is fitted with spark arrestor mesh, which is removed. If necessary, use the combination spanner to push down the plate edge and remove the spark arrestor mesh. See figure 11.

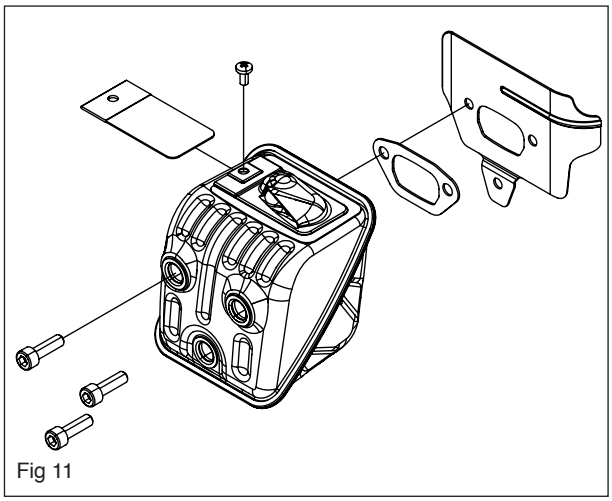


Fig 11

Cleaning and inspection
- Clean and check all components carefully. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.
- The spark arrestor mesh is best cleaned with a wire brush. The saw will overheat if the mesh is clogged resulting in damage to the cylinder and piston. The mesh must be replaced if damaged.
- Never use a chain saw with a defective muffler.

6.4 Assembling the muffler

1
Assemble the spark arrestor mesh. When fitting, make sure that the mesh is inserted in the right position. If necessary, use the combination spanner to insert the mesh.

2
Fit the:
- cooling fin
- gasket
- muffler, tightening torque of 12-14 Nm.
- cylinder cover

3
Warm up the saw for at least one minute and retighten the screws on the muffler to 12 to 14 Nm.

6.5 Replacing the chain catcher

A worn chain catcher must always be replaced with a new one. Always use original spare parts.

1
Release the brake by moving the hand guard backwards.
Remove the clutch cover, bar and chain.

2
Remove the chain catcher and replace with a new one. See figure 12a. Tightening torque 3-4 Nm. Make sure that the vibration element is fitted correctly on the crankcase when a new chain catcher is fitted.

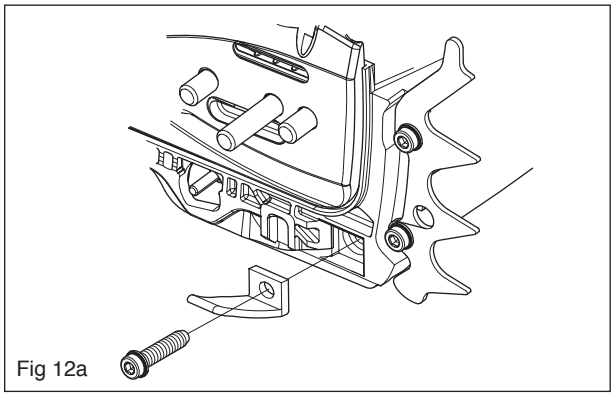


Fig 12a

6.6 Fitting a spike bumper

1
Release the brake by moving the hand guard backwards.
Remove the clutch cover, bar and chain.

2
Fit the spike bumper as outlined in figure 12b. Secure the screws. Tightening torque 3-4 Nm.

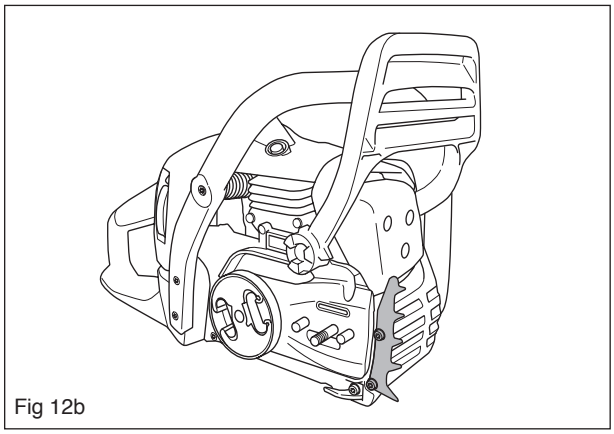


Fig 12b

6.7 Dismantling the start/stop switch

1
Dismantle the cylinder cover and the air filter. Dismantle the air filter holder. See the “Dismantling the carburetor” chapter.

2
Undo screw B and dismantle the stop control A. Unhook the rubber collar around the control from the guide plugs. See figure 13.

Cleaning and inspection

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

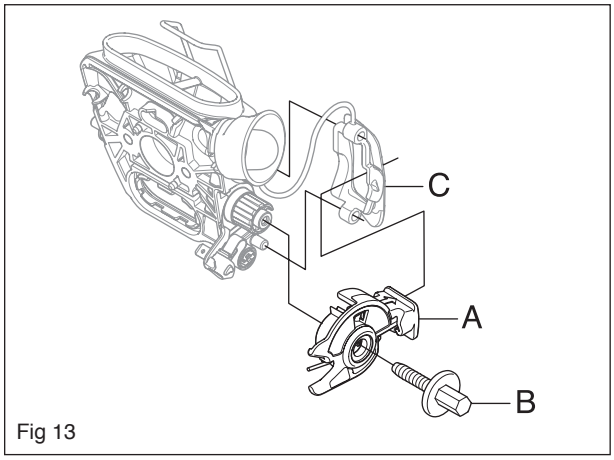


Fig 13

6.8 Assembling the start/stop control

1
Fit the new stop control (A) and tighten screw (B) in place with a torque of 1 Nm. Slide in the stop control in the rubber sleeve C and hook the sleeve on the guide taps. See figure 14.

2
Fit the cables as outlined in Figure 15.

3
Attach the air filter holder. See the “Assembling the carburetor” chapter.

4
Assemble the air filter and cylinder cover.

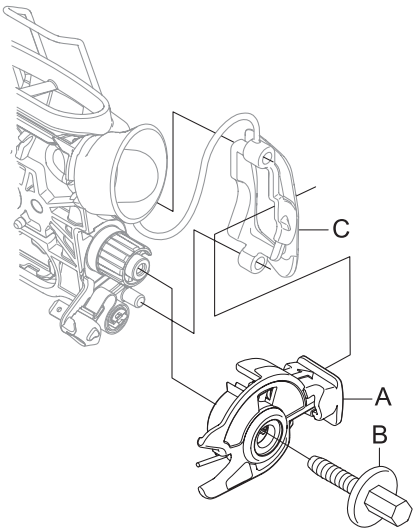


Fig 14

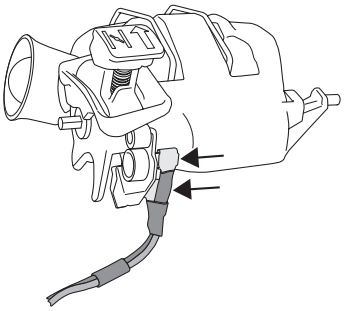


Fig 15

6.9 Resistance test - stop function

Clean the contact areas and check resistance in the following way:

Test the resistance by connecting a multimeter as outlined in figure 16. NOTE! The power switch must be in the “on” position to get the correct reading. See figure 16.

The stop switch is in the “on” position when the button is held down (see figure 16) and in the “off” position when the button is in neutral.
Resistance can be 0.5 Ohm at most with the power switch in the “on” position.

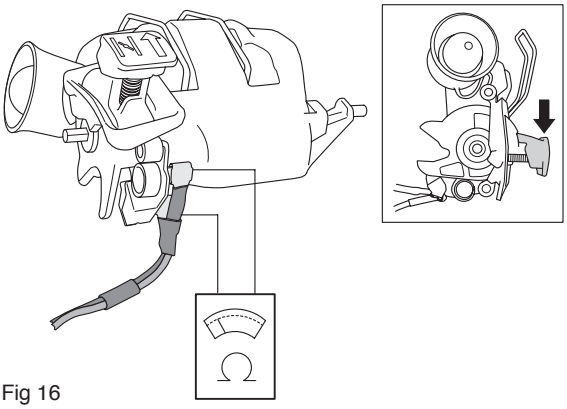


Fig 16

IMPORTANT! If the AutoTune connector is used, it must be remounted in the mating connector after use. See figure 17. Always start the chain saw after service and confirm that the stop function is working.

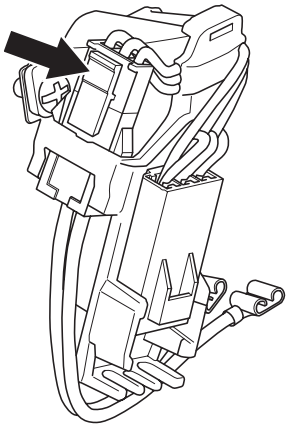


Fig 17

6.10 Dismantling the throttle lock, throttle control and spring

1
Dismantle the rear handle screws (3) and loosen the handle half. See figure 18.

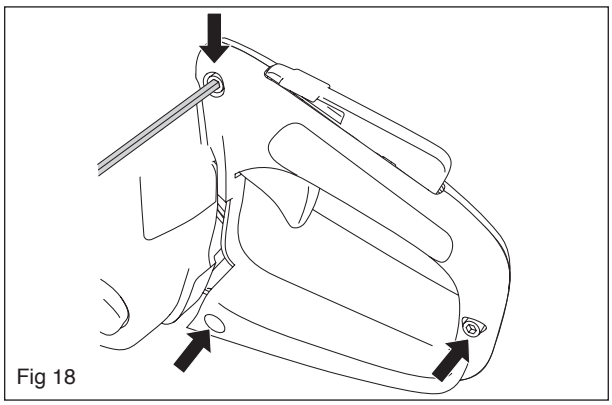


Fig 18

2
Loosen the throttle lockout from the handle and then dismantle the spring and throttle.
See figure 19.

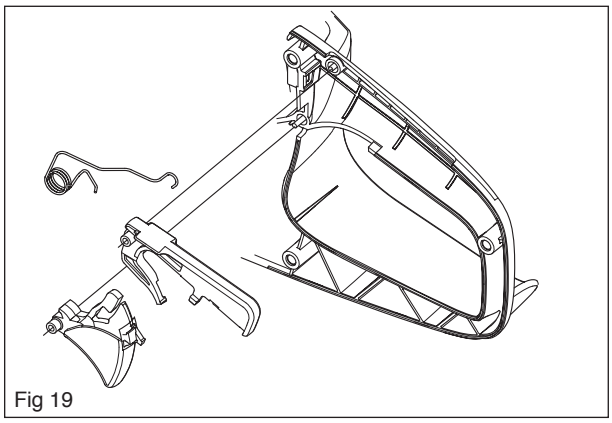


Fig 19

Cleaning and inspection

- Carefully clean and check all parts. See figure 20. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.
- Check that the spring is intact and retains all its tension.

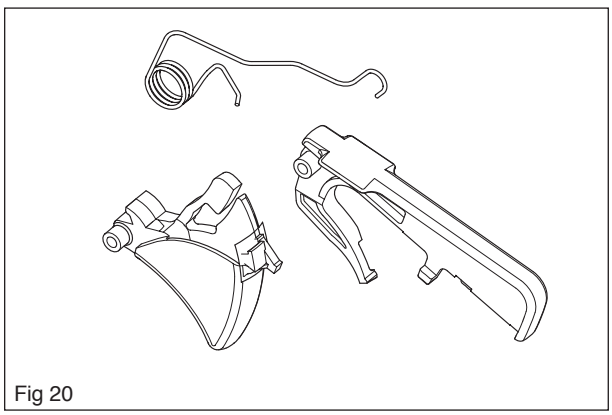


Fig 20

6.11 Assembling the throttle lock, throttle control and spring

1
Attach the spring to the throttle as outlined in figure 21. Ensure correct positioning of the spring by fastening one end to the triangular recess in the throttle.

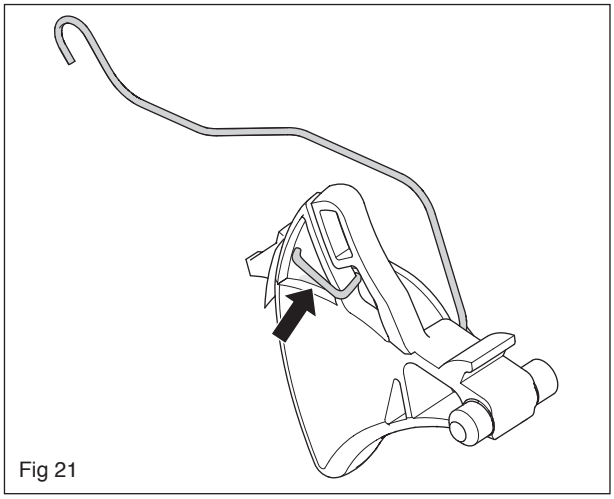


Fig 21

2
Attach the throttle to the handle. Place the spring in the rear recess of the throttle lock. Attach the throttle lock to the handle.
Note! The long hook of the spring is to pass to the left of the throttle lock. See figure 22.

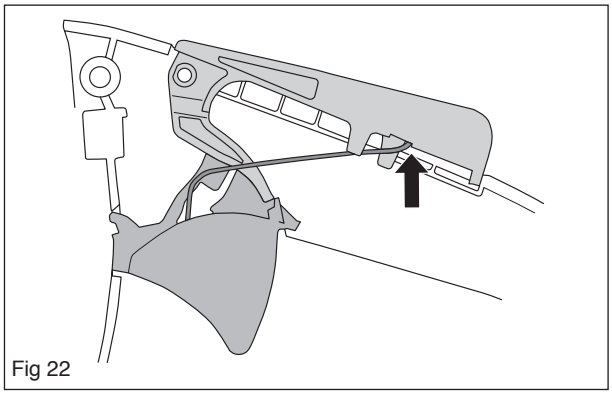


Fig 22

3
Assemble the handle half with the screws. See figure 23. Tightening torque 4-5 Nm.

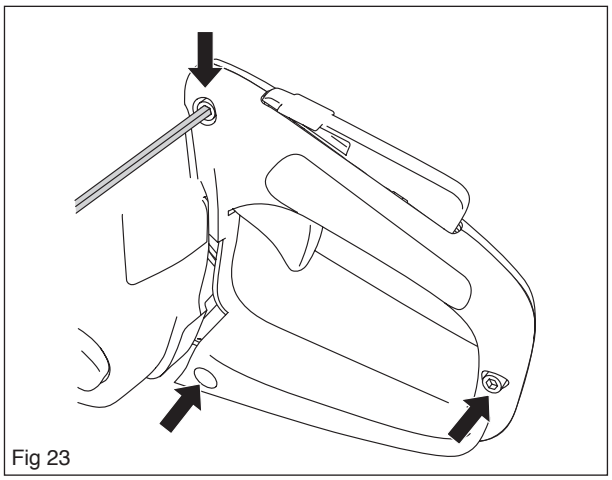


Fig 23

7 Repair instructions

Table of contents

7 Repair instructions

7.1 Dismantling the starter

1
Loosen the four screws, which hold the starter against the crankcase and remove the starter.

2
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 rotate anti-clockwise. See figures 1 and 2.

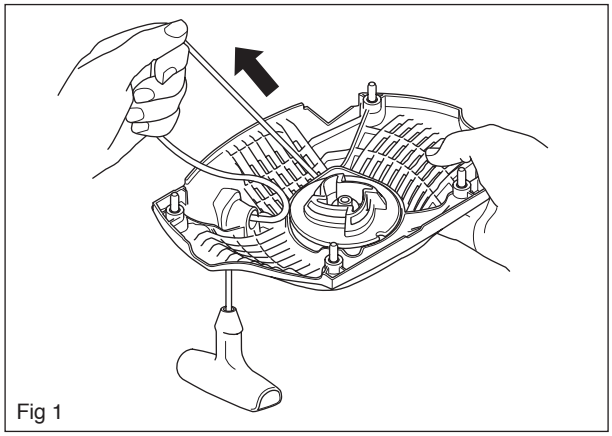


Fig 1

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

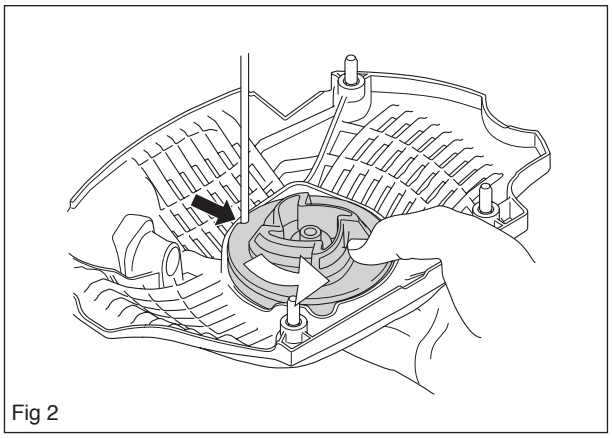


Fig 2

3
Undo the screw in the center of the pulley and remove the pulley. Loosen the screws on the cassette and remove the cassette and spring. See figure 3.

Cleaning and inspection
Clean all components and check:
- The starter cord.
- That the starter pawls on the flywheel are intact, i.e. that they spring back to the center and move easily.
- Lubricate the return spring with a light oil.

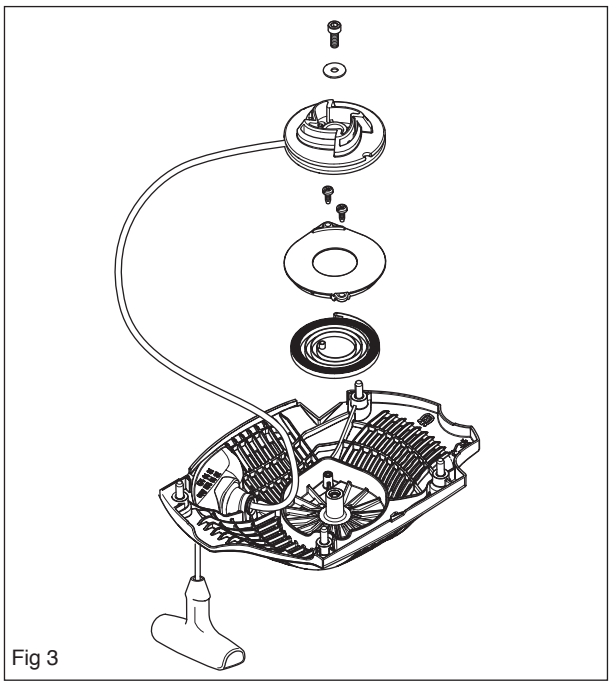


Fig 3

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 out the starter cord about 30 cm and lift it into the notch on the outside of the starter pulley. Release the tension in the recoil spring by letting the starter pulley rotate anti-clockwise.
See figure 4.

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

2
Loosen the screw in the center of the starter pulley and remove it. See figure 4.

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 as outlined in figure 4a. Wind approx. 3 turns of the starter cord onto the starter pulley. Turn the starter pulley until it latches into the correct position. Tighten the screw in the center of the starter pulley. Tightening torque 2-3 Nm.

Cleaning and inspection:
- Clean and check all parts thoroughly. Worn or damaged parts must be replaced. Lubricate the return spring with a light oil.

7.3 Tensioning the return spring

1
Pull the starter cord up into the notch in the starter pulley and turn the pulley about 3 turns clockwise. Check that the pulley can be turned at least a further 1/2 turn when the starter cord is pulled out fully. See figure 4b.

2
Stretch the cord with the handle. Remove your thumb and let the cord spin back. See figure 5.

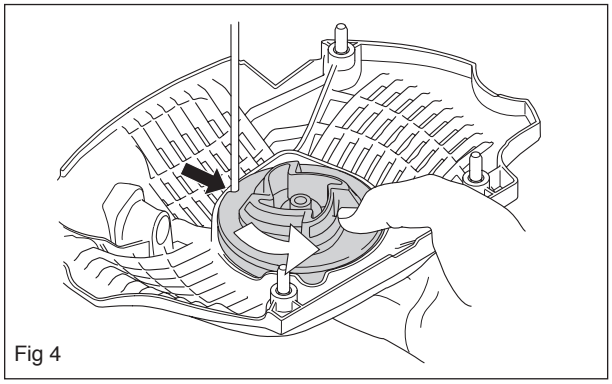


Fig 4

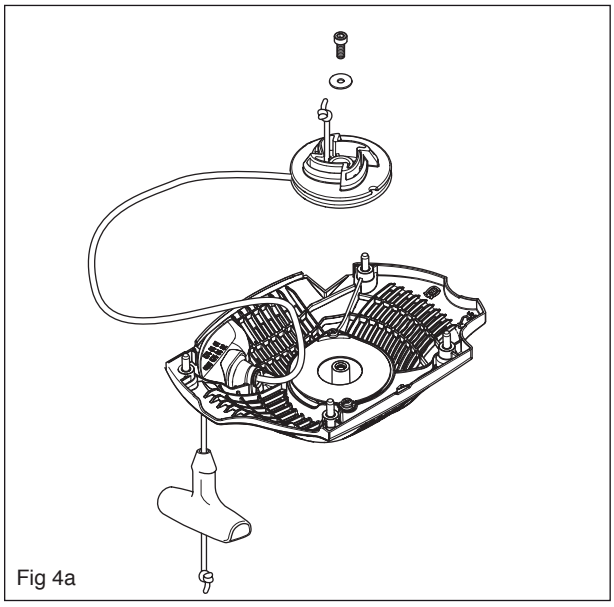


Fig 4a

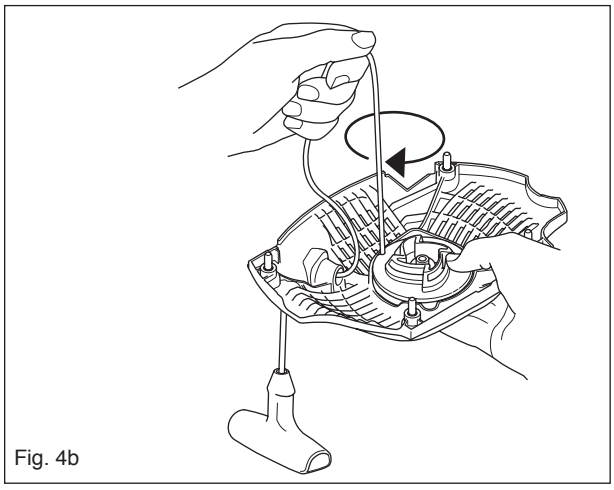


Fig. 4b

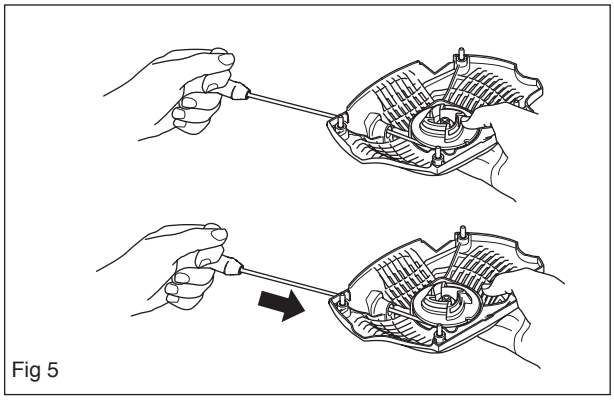


Fig 5

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
Loosen the screw at the center of the starter pulley and the screws on the cassette. Remove the starter pulley with the cassette and spring. See Figure 5a.

2
Remove the broken cassette and replace it with a new one.

3
Tighten the screw at the center of the starter pulley with a tightening torque of 2-2.5 Nm. Load the return spring, see “Loading the return spring”.

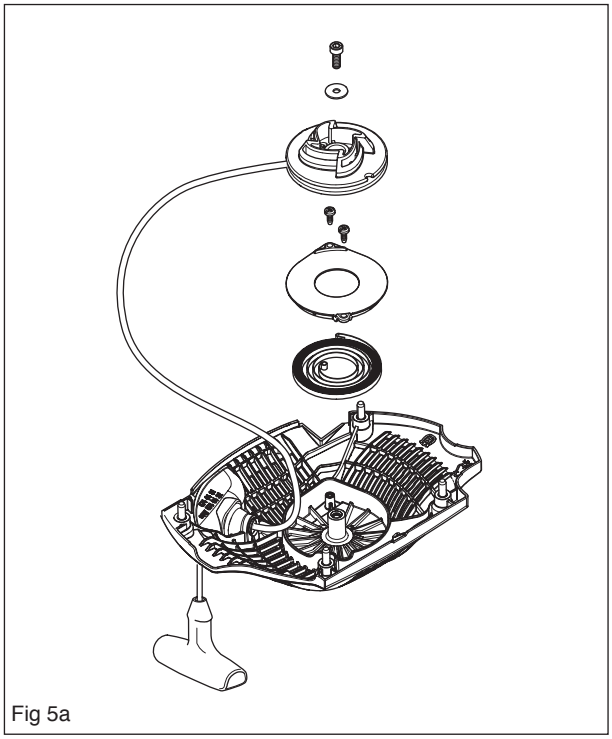


Fig 5a

7.5 Assembling the starter unit

1
Fit the starter to the crankcase and tighten the screws with a tightening torque of 2.5-3.5 Nm. See Figure 6a.

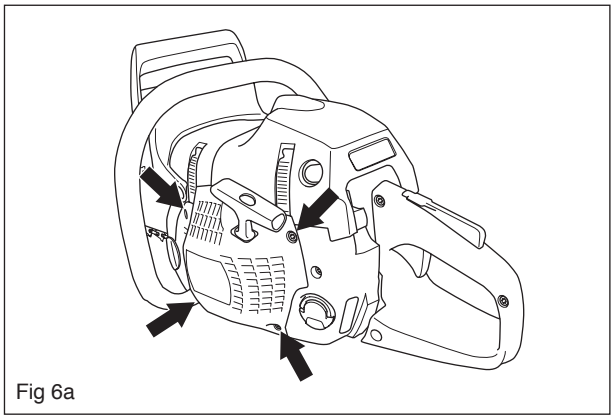


Fig 6a

Testing the ignition module

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

Check the ignition module as follows:

- Remove the cylinder cover.
- Connect test spark plug 502 71 13-01 to the ignition cable and clamp the test spark plug onto the cylinder.
- Turn over the engine with the starter cord.
- If a spark appears on the test spark plug, the ignition module is not faulty.

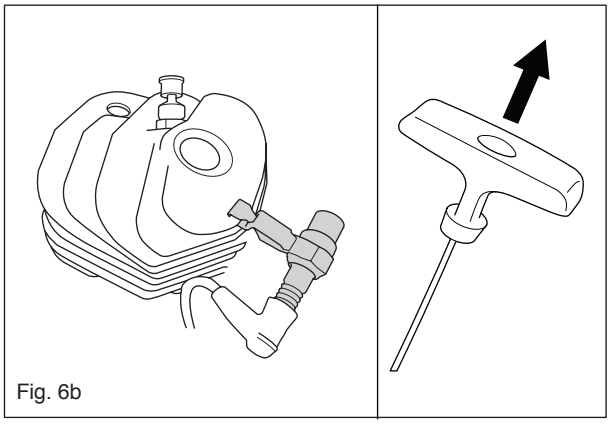


Fig. 6b

7.6 Dismantling the ignition module and flywheel

1
Remove the cylinder cover and starter. Unsnap the cables from the guide rail as outlined in figure 7. Remove the guide rail.

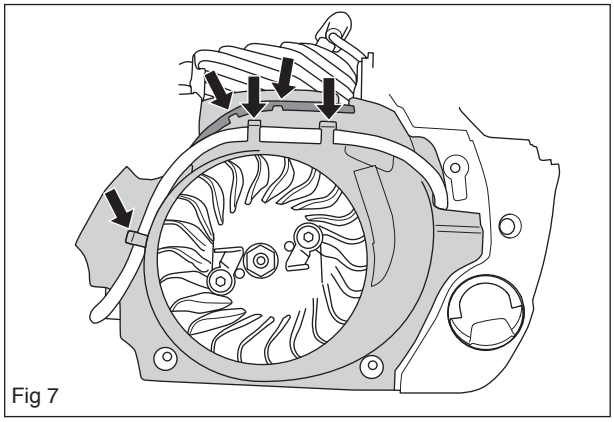


Fig 7

2
Knock out a few of the pins in the tool if it does not match up with the flywheel.
Use the tool to hold the flywheel in place while the flywheel nut is loosened using a suitable socket wrench. See figure 8.

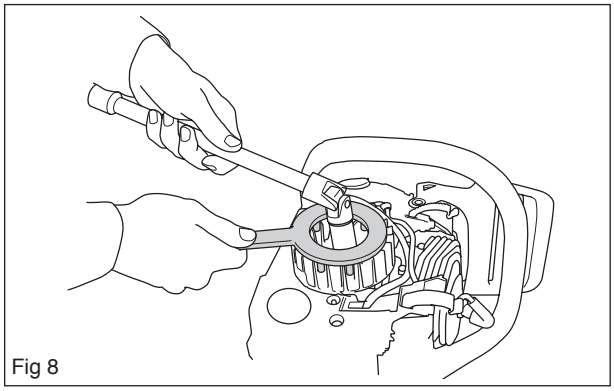


Fig 8

3
Thread the mandrel 502 51 94-01 on the crankshaft journal. Leave 1-2 threads to the flywheel. Knock on the mandrel with a suitable metal hammer while pulling the flywheel outward at the same time until it comes off the shaft. See figure 9. Remove the mandrel and the flywheel.

Loosen the screws on the ignition module when changing it. See figure 10.

Dismantle the air filter, air filter holder and carburetor. See the "Dismantling the carburetor" chapter.

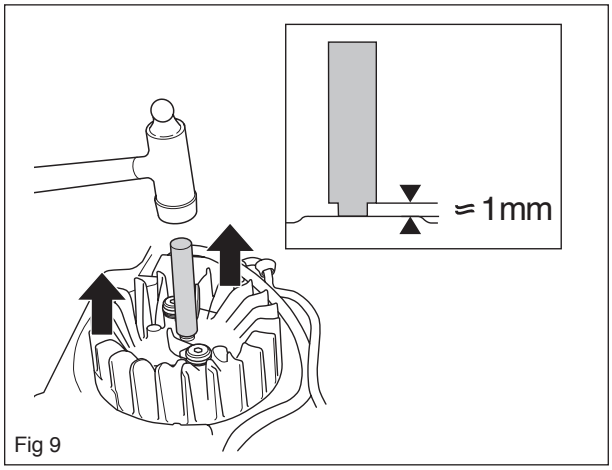


Fig 9

4
Take off the ignition cap from the spark plug and loosen the ignition cable from its attachment on the partition wall. Unsnap the connector and pull the cable through the hole in the crankcase. See figure 10.

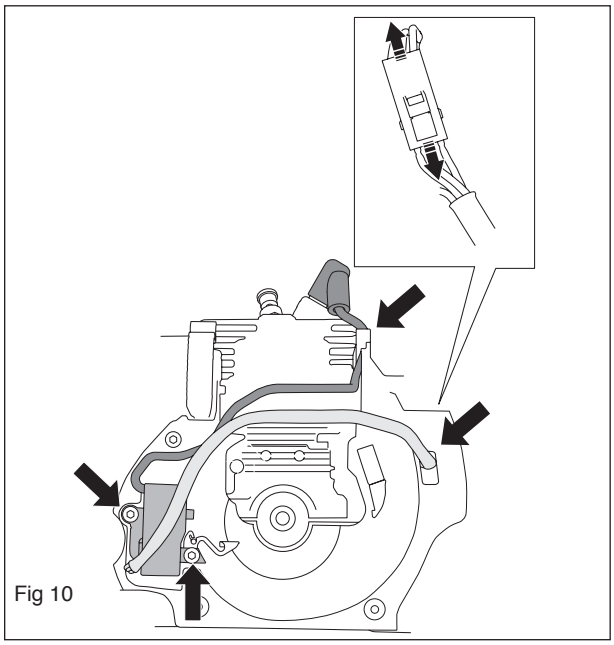


Fig 10

Cleaning and inspection
- Clean all parts, especially the tapers on the flywheel and shafts.
- Check the flywheel for cracks or any other signs of damage.

7.7 Assembling the ignition module and flywheel

1
Put the ignition module into position. Put the cable through the hole in the crankcase and plug in the connector. Fasten the ignition lead to the attachment on the partition wall. See figure 11.

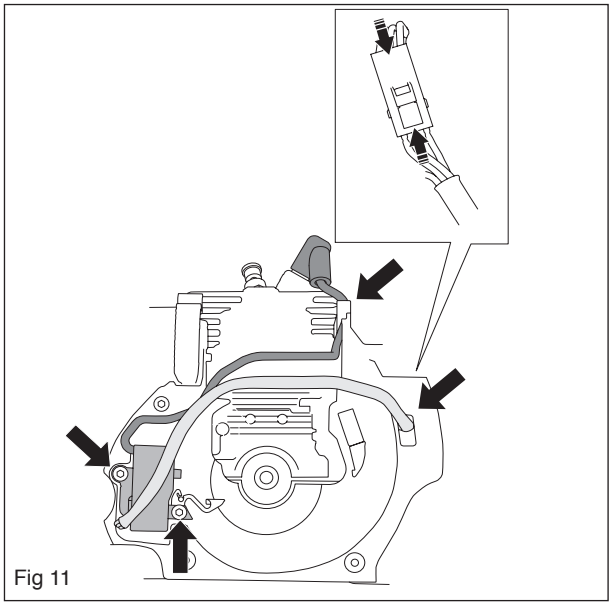


Fig 11

4
Fit the flywheel onto the crankshaft journal. Turn the flywheel until the key fits into the key slot on the shaft. See figure 12.
Tighten the nut. Tightening torque 22-25 Nm

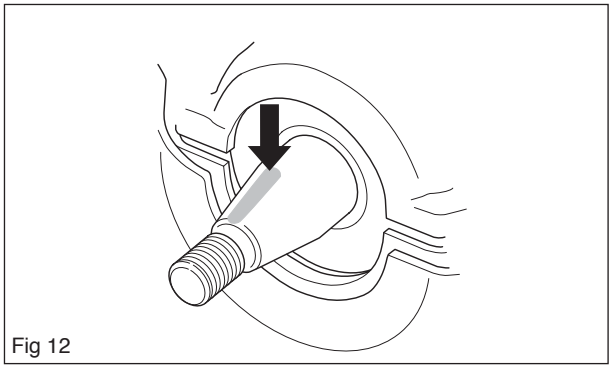


Fig 12

5
Place the 0.3 +- 0.1 mm feeler gage, 502 51 34-02, between the lugs on the ignition module and flywheel. Turn the flywheel so that the magnets are positioned opposite the ignition module. Tighten the screws, tightening torque 4-6 Nm. Remove the plastic air gap tool.

6
Then fit:
- the guide rail and press the cable in place
- the spark plug cap
- the starter, tightening torque 2.5-3.5 Nm
- the cylinder cover

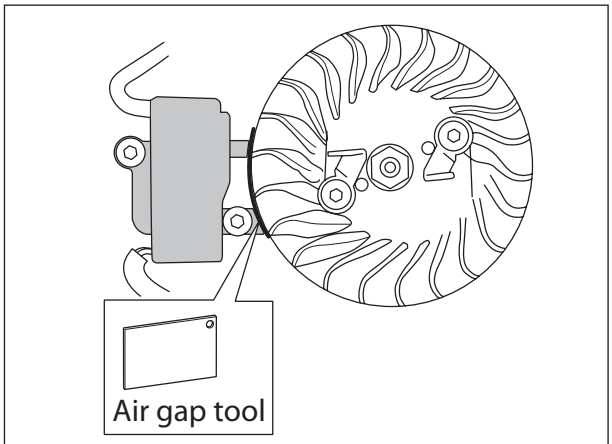


Fig 13

7.8 Dismantling the centrifugal clutch

1
Release the brake by moving the hand guard backwards. Remove the cylinder cover, the clutch cover, the chain and the bar.

2
Loosen the spark plug hat and remove the spark plug, and insert the plastic piston stop (504 91 06-05). See figure 14.

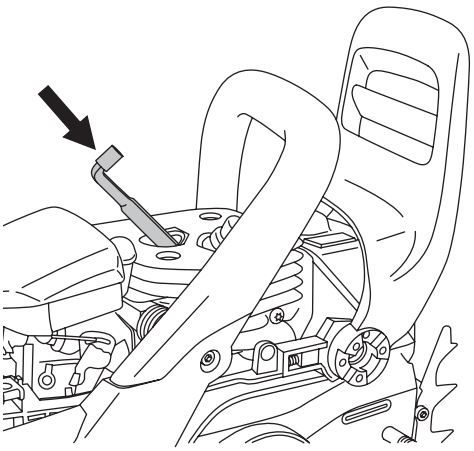


Fig 14

3
Loosen the clutch using tool 502 54 16-01 and a suitable socket wrench or combination spanner. See figure 14. Turn the clutch clockwise to loosen it.

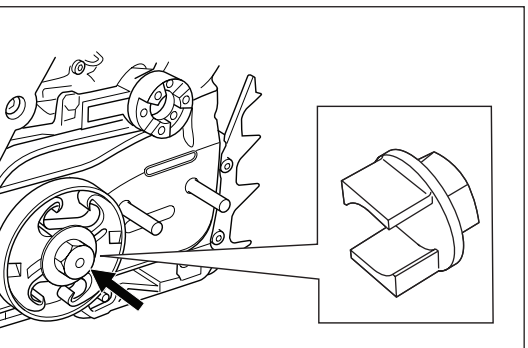


Fig 15

4
Carefully loosen the clutch springs with a screwdriver as outlined in figure 16.

NOTE!

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

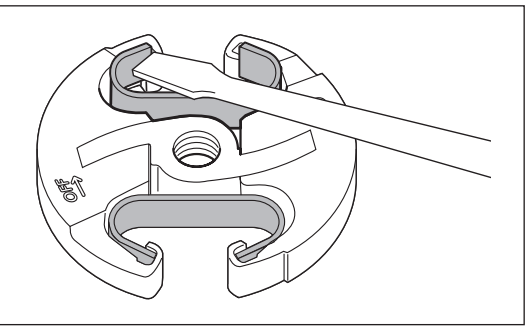


Fig 16

Cleaning and inspection

- Clean and check all parts carefully. Parts must be replaced if cracked or showing signs of other defects. Always use original spare parts.
- Check the thickness of the clutch shoes by measuring them with slide calipers across the whole clutch hub. If the thickness is below 65 mm, the entire clutch must be replaced. See Figure 17.

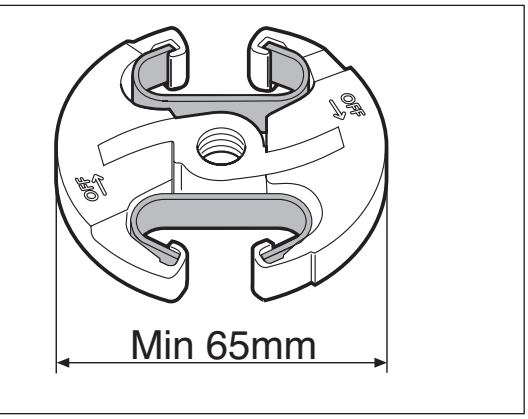


Fig 17

7.9 Assembling the centrifugal clutch

1
Fit the clutch springs onto the shoes using circlip pliers as outlined in figure 18.

2
Screw in the clutch (anti-clockwise) until it stops. Then tighten the clutch using tool 502 54 16-01 and a suitable socket wrench or combination spanner. Torque 20 Nm.

3
Remove the piston stop and fit the spark plug with a tightening torque of 15 Nm and the spark plug hat.

Then fit:
- cylinder cover
- bar
- chain
- clutch cover

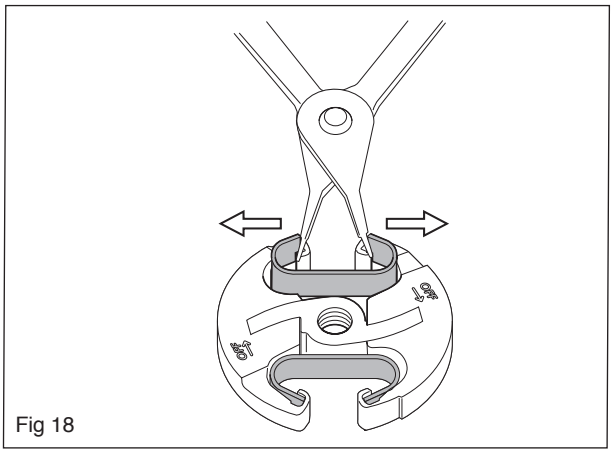


Fig 18

7.10 Dismantling the oil pump and screen

1
Empty and clean the chain oil tank.

2
Dismantle the centrifugal clutch as outlined in "Dismantling the centrifugal clutch".

3
Dismantle the clutch drum (A), drive sprocket (B), needle bearing (C) and pump drive wheel (D). See figure 19.
Note! Drive sprocket (B) only applies to model 465 Rancher II.

4
Undo the screws and remove the chain guide plate. See figure 20.

5
Loosen the screw holding the oil pump. Remove the oil pump with oil pressure hose. See figure 20.

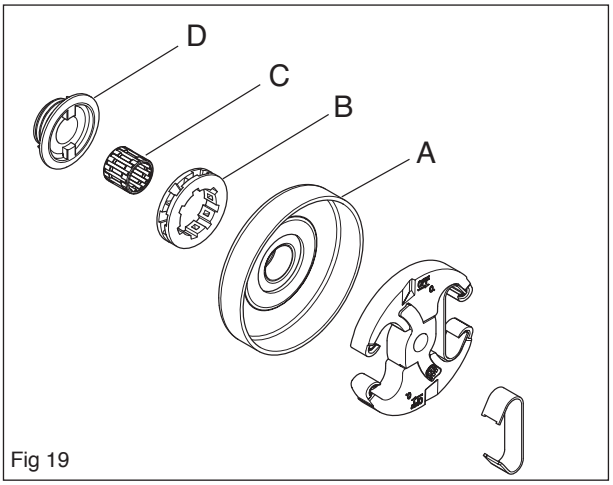


Fig 19

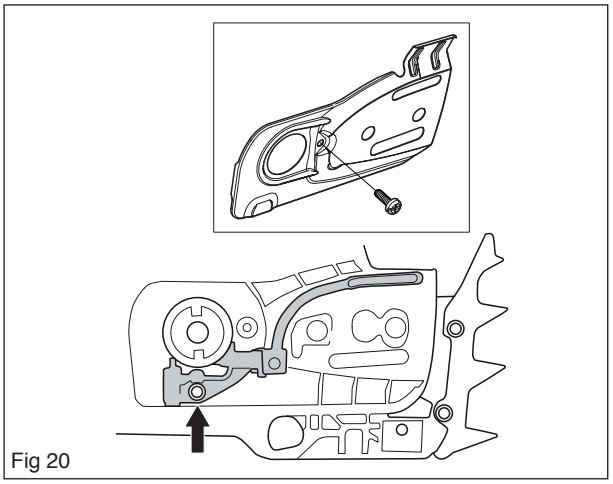


Fig 20

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

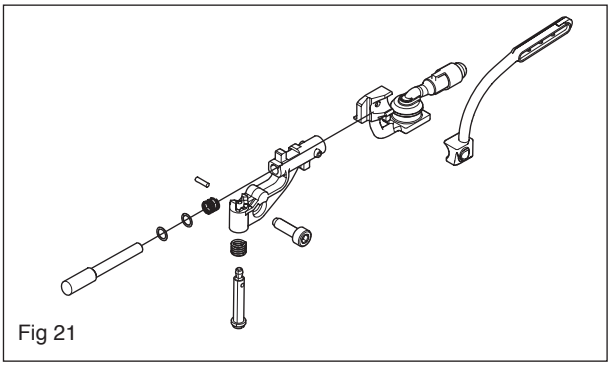


Fig 21

7.11 Assembling the oil pump and screen

1
Lower the oil filter, replace the oil pump as outlined in figure 20 and tighten the screw. Tightening torque 1.5-2.5 Nm. Fit the chain guide plate.

2
Fit the pump drive wheel, needle bearing, clutch drum and clutch. Tightening torque. 20 Nm.

3
Fit the chain, bar and clutch cover.

4
Fill with chain oil.

5
Adjust the oil pump with a screwdriver or a combination spanner. Turn the screw clockwise to reduce the oil flow and anticlockwise to increase the oil flow. See figure 22.

Recommended settings:
Bar 13"-15" Min position
Bar 15"-18" Mid. position
Bar 18"-24" Max position

WARNING!
Insufficient chain lubrication can result in chain breakage, which can cause serious personal injury.

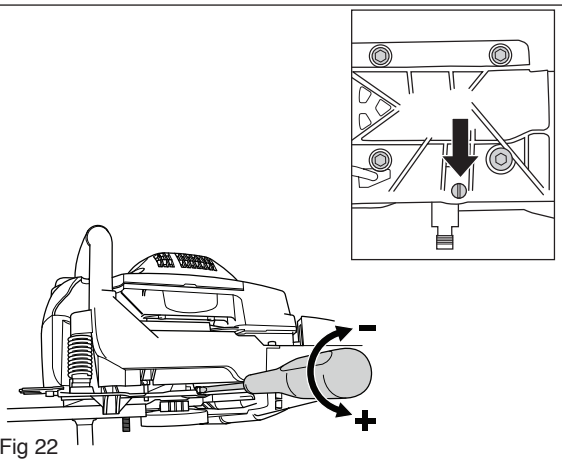


Fig 22

7.12 Dismantling the intake system

The intake system consists of:
- partition wall A
- intake manifold B
- carburetor flange C
- impulse hose D

See figure 23.

1
Dismantle the following parts:
- cylinder cover
- air filter
- carburetor. See “Dismantling the carburetor”.

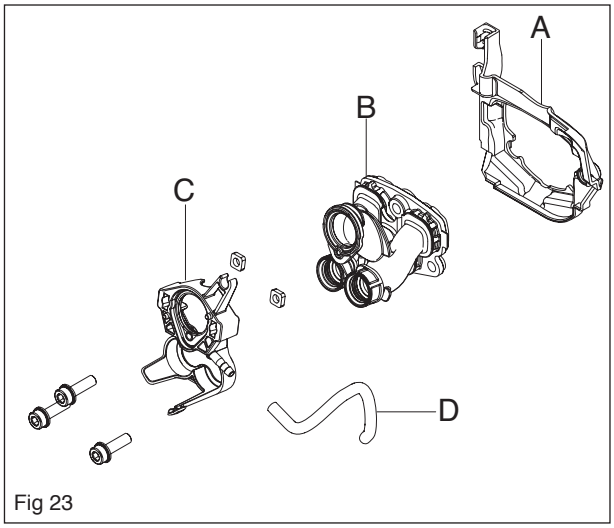


Fig 23

2
Undo the screws for the vibration element on the cylinder and the screws on the handle system. See figure 24. Dismantle the hand guard.

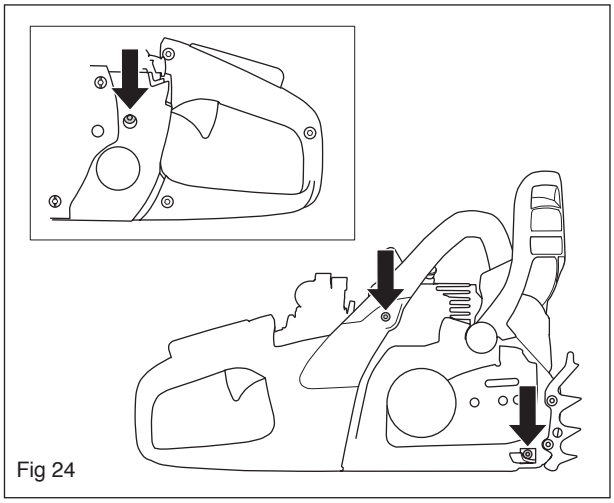


Fig 24

3
Loosen the screws holding the cylinder.
See figure 25.

4
Carefully dismantle the cylinder (see Dismantling the piston and cylinder). Tap the crankshaft and/or flywheel with a plastic hammer. Loosen the impulse hose and the screws (3x) holding the intake bellows on the cylinder. Remove the partition wall.

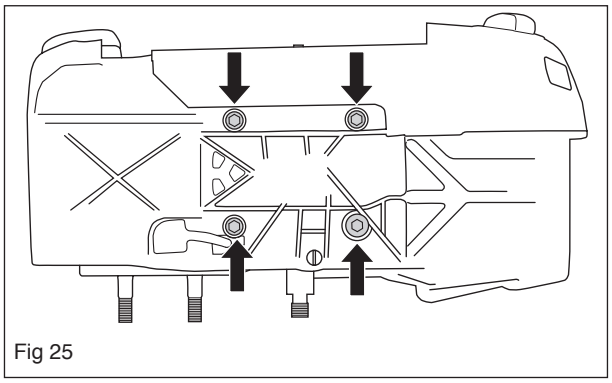


Fig 25

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

NOTE!
When a replacing the impulse hose, this must not be lubricated with grease or oil.

7.13 Assembling the intake system

1
Assemble the carburetor flange on the intake bellows. Fit the impulse hose, intake bellows and partition wall on the cylinder. See figure 26.

2
Place a new cylinder pedestal gasket on the cylinder. See figure 26b.

3
Fit the cylinder. The screws (4x) must be tightened crosswise with a tightening torque of 13-15 Nm.

4
Fit the handle system and hand guard.

5
Fit the carburetor, the filter holder and the air filter as outlined in “Assembling the carburetor”.

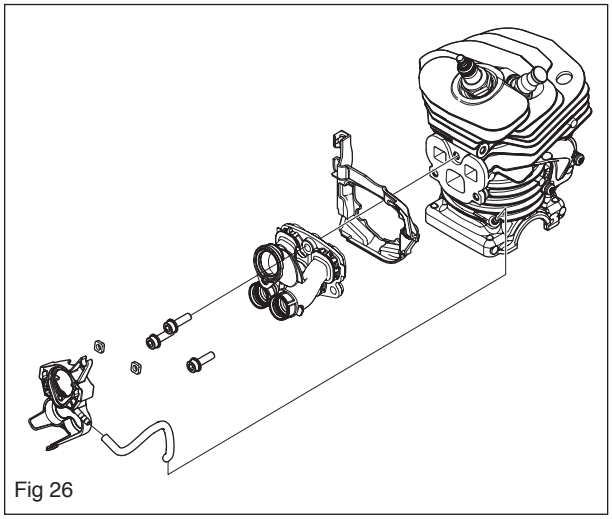


Fig 26

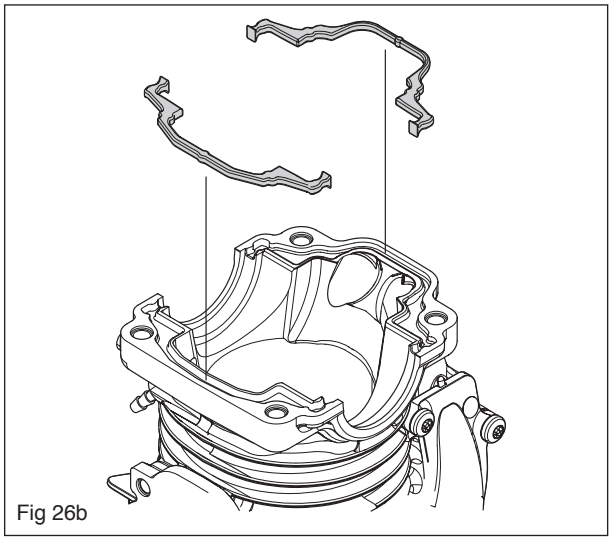


Fig 26b

7.14 Carburetor

WARNING!
The fuel used in the chain saw has the following hazardous properties:
1. The fluid and its vapor are toxic.
2. Can cause skin irritation.
3. Is highly flammable.

Description
The figures accompanying this description do not correspond with the carburetor on the chain saw. They only represent the design and function.

Design
The carburetor is based on three sub-systems:
- Metering unit, A.
- Mixing unit, B.
- Pump unit, C.

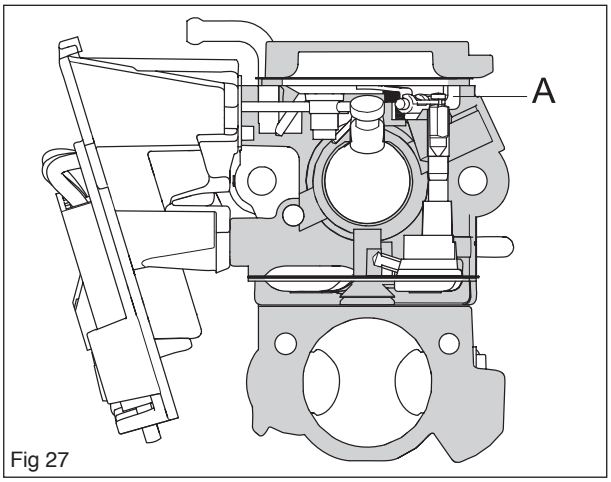


Fig 27

The needles and the fuel's control functions are located in the metering unit (A). Here the correct quantity of fuel is adjusted for the actual speed and power output. See figure 27.

The mixing venturi (B) houses the choke, throttle valve and diffuser jets. Here air is mixed with the fuel to give a fuel/air mixture that can be ignited by the ignition spark. See figure 28.

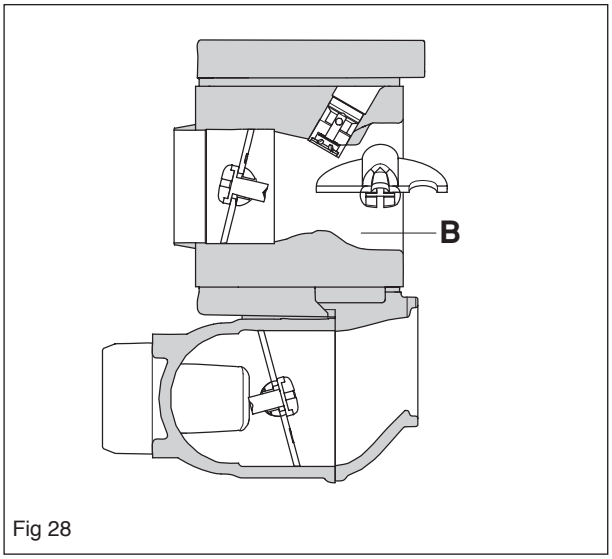


Fig 28

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. See figure 29.

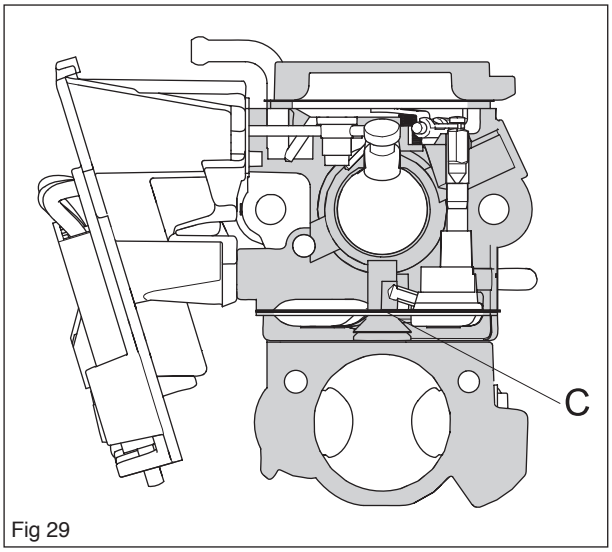


Fig 29

Function
The carburetor operates differently in the following modes:

- Cold start mode
- Idling mode
- Part throttle mode
- Full throttle mode

In cold start mode the choke valve H is completely shut. This increases the vacuum in the carburetor and fuel is easier to suck from all the diffuser jets D, E, and F. The throttle valve I is partly open. The throttle valve, J, is closed. See figure 30

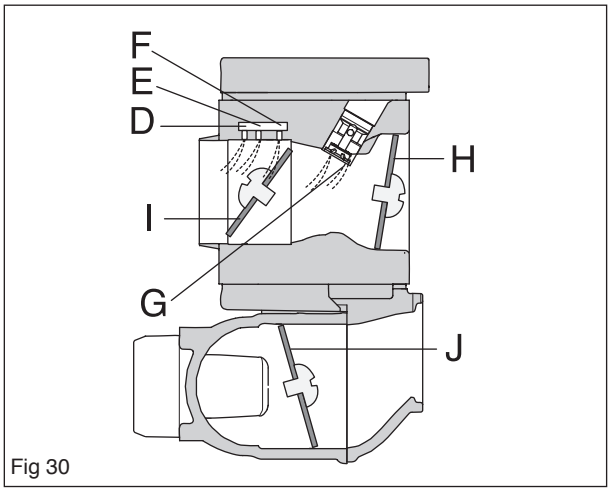


Fig 30

In idling mode, the throttle valves I and J are closed and the choke valve H is open.

Air is sucked in through an aperture in the throttle valve and a small amount of fuel is supplied through the diffuser jet D. See figure 31.

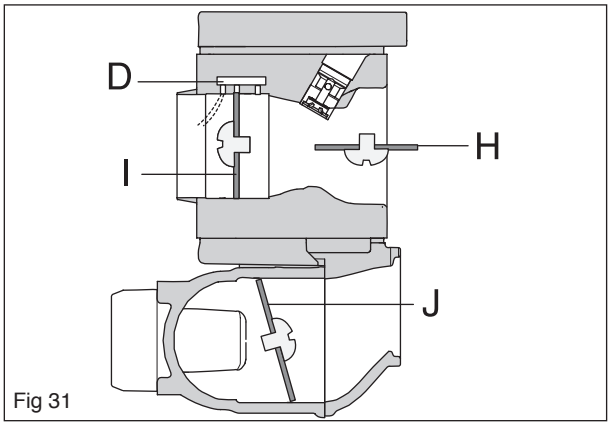


Fig 31

In part throttle mode, the throttle valve I is partly open and the choke valve H is fully open. Fuel is supplied through jets D and E. The throttle valve J starts to open. See figure 32.

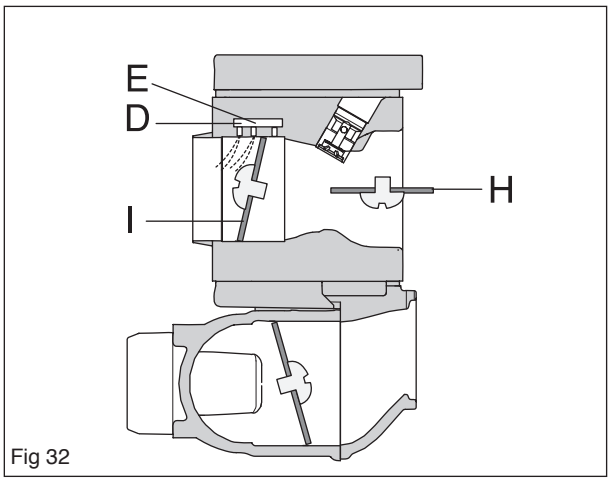


Fig 32

In the full throttle mode both valves are open and fuel is supplied through all four diffuser jets (D, E, F and G). The throttle valve J is also fully open. See figure 33.

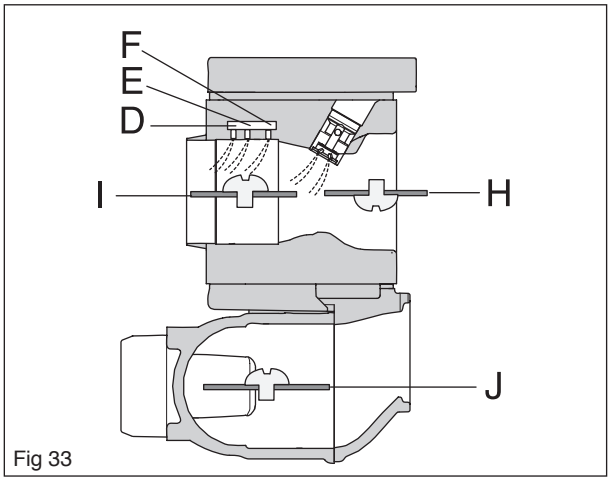


Fig 33

Dismantling the carburetor

1
Dismantle the cylinder cover and the air filter.

2
Loosen the suction hose A, the return hose B and the fuel hose C. See figure 34.

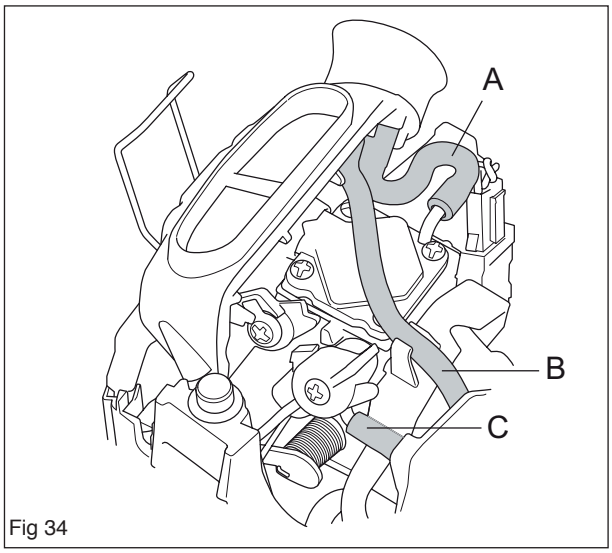


Fig 34

3
Detach the earth cable from the carburetor by undoing the screw as outlined in figure 35.

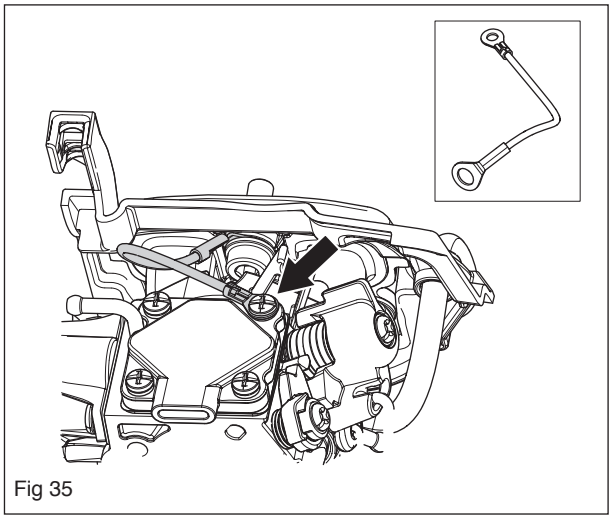


Fig 35

4
Press down the throttle valve shaft (1) and remove the throttle pressure rod (2) out of its fastening as outlined in figure 36a.

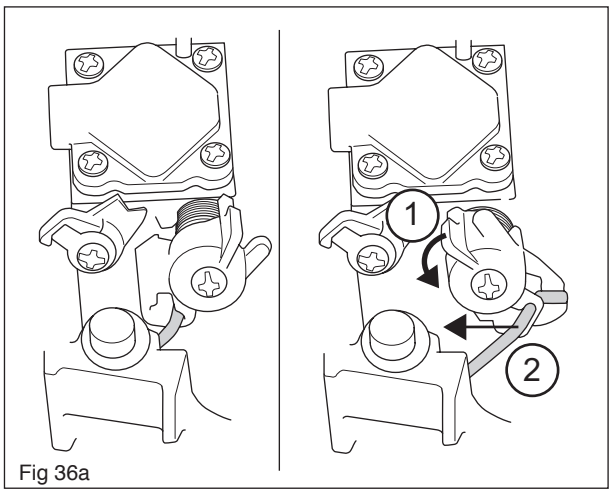


Fig 36a

5
Undo screws E. Unhook the rubber mountings D on both sides. See Figure 36b.

6
Remove the air filter holder.

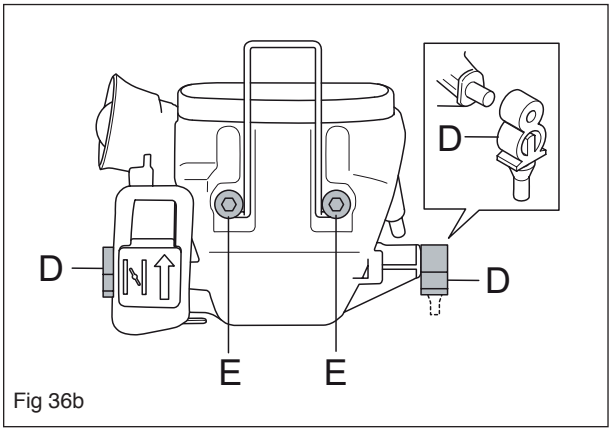


Fig 36b

7
Note! The lug on the carburetor must be detached from the partition wall before the carburetor can be removed. See figure 37a.

NOTE!

The lug on the carburetor is securely attached to the partition wall.

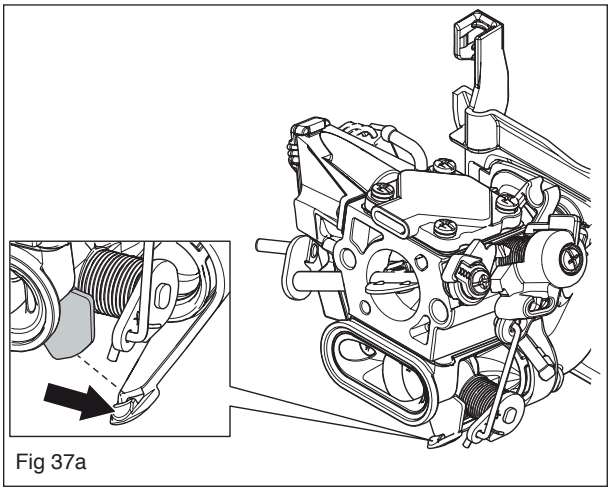


Fig 37a

8
Use a small flat screwdriver to snap open the connector from the black attachment. Separate the connector by pressing down the catch with a flat screwdriver and then pulling the unit apart. See figure 37b.

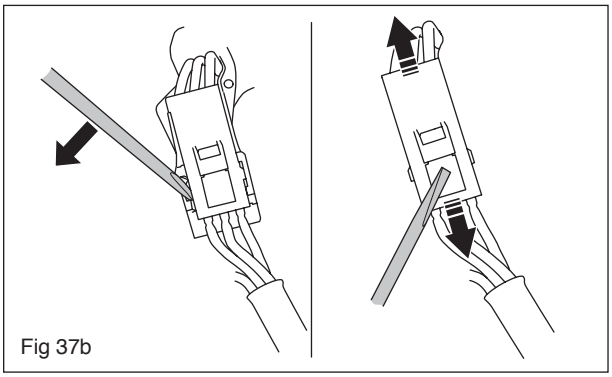


Fig 37b

9
Dismantle the pump cover H and carefully remove the control diaphragm J and gasket K.

10
Unscrew screw P and remove needle valve M with lever arm Q, shaft L and spring R.

11
Use a needle or similar device and carefully pull up the fuel screen (W). See figure 39.

12
If necessary, dismantle throttle valve T and choke valve U and air valve S, and remove the shafts with lever arms and springs (see figure 39).

13
If necessary, dismantle the AutoTune AB unit. See figure 38.

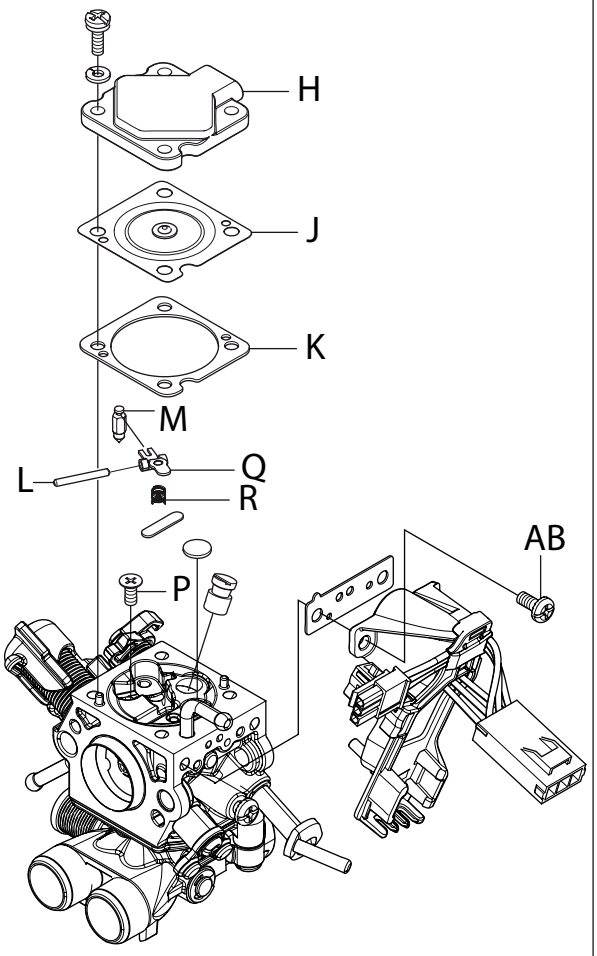


Fig 38

Cleaning and inspection
Clean all units in clean petrol.

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

1. That the gasket, pump and control diaphragms are undamaged, and so the gasket between the carburetor body and the autotuner.
2. That there is no play on the throttle valve and choke valve shafts.
3. That the needle valve M and its lever arm Q are not worn. See figure 38.
4. That the fuel screen W is intact and clean. See figure 39.
5. That the inlet manifold V is intact. See figure 39.
6. Use the service tool, Engine Diagnostic Tool 576 69 23-01, to inspect the AutoTune unit. See separate instruction.

Assembly
Observe cleanliness when assembling the carburetor. The slightest contamination can result in downtime.

1. If the throttle and choke valves with shafts, lever arms and springs are removed, they must be reassembled. The springs are tensioned 1-2 turns. Lubricate the shaft bearings using a light oil.
2. Fit the fuel screen W using the handle of a small screwdriver. See figure 39.
3. Fit the gasket X in the carburetor as well as the holder Y. Screw in place screw Z as outlined in figure 38.
4. See figure 39 on how to assemble the AutoTune AB unit with gasket.

   Note! When replacing the AutoTune unit or carburetor with an AutoTune unit, the unit must first be programmed before it can be used. Refer to the local support page for more information.

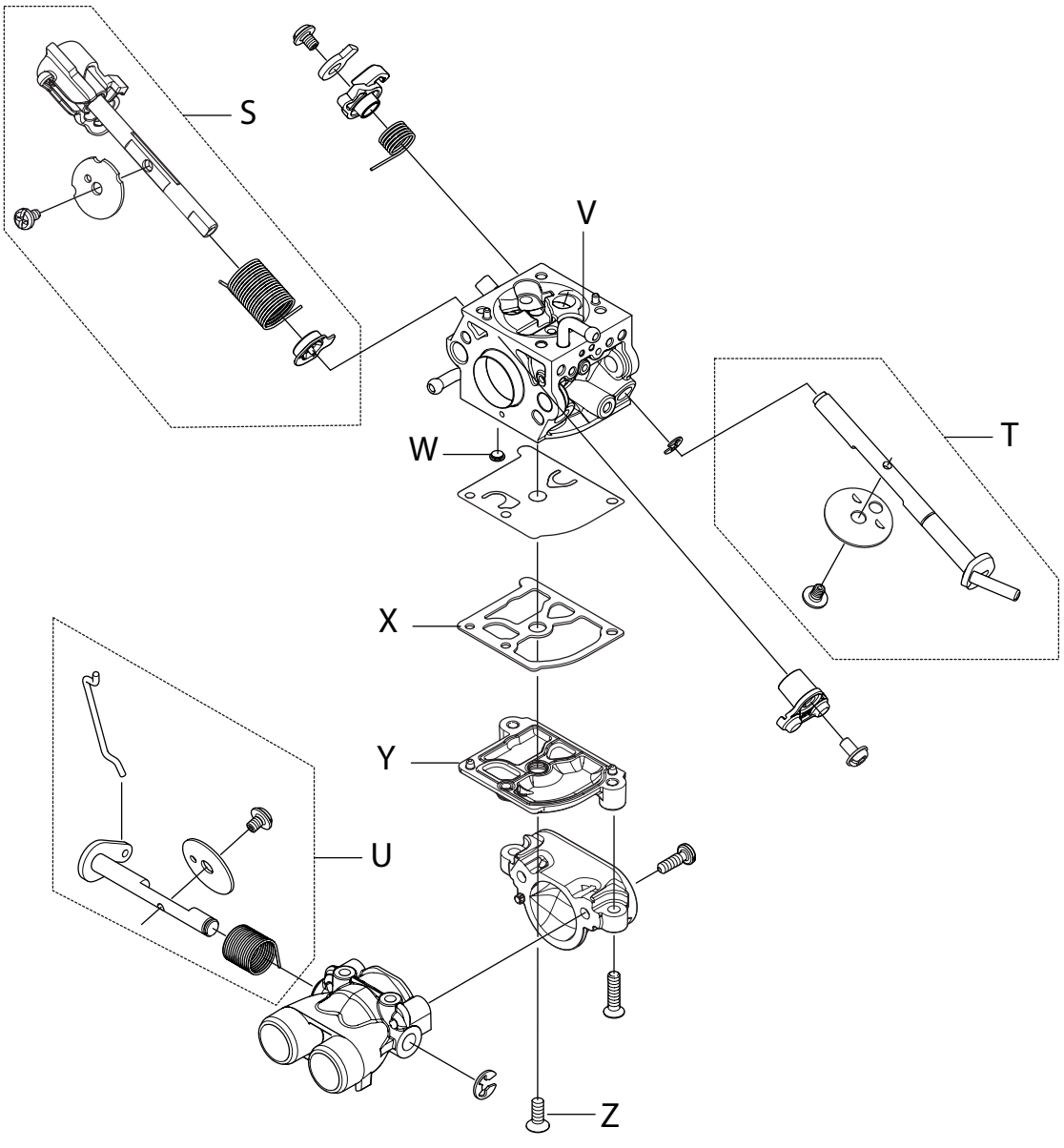


Fig 39

5. Assemble needle valve M with lever arm Q, shaft L and spring R, and tighten screw P. (Fit the expansion washer). See figure 40.

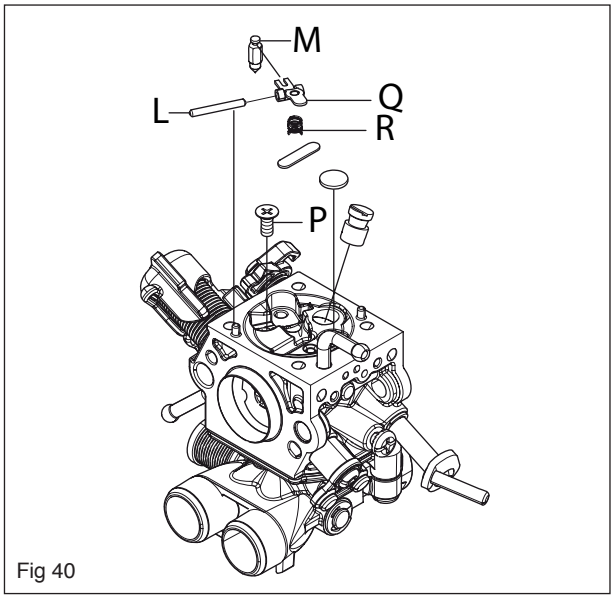


Fig 40

6. Using a ruler or a similar tool, check that the lever is level with the assembly plane on the cover as outlined in figure 41. The lever arm can be bent if necessary.

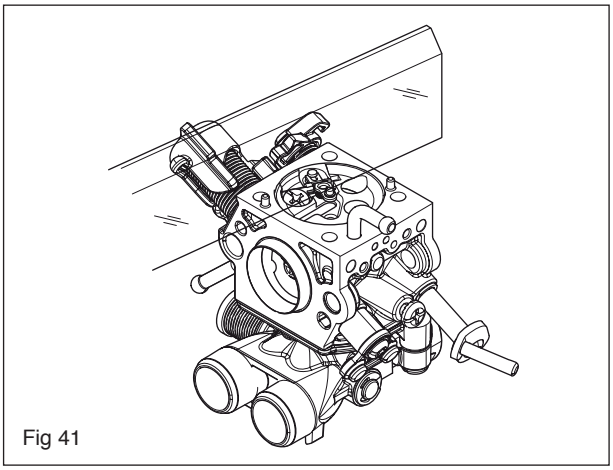


Fig 41

7. Fit gasket K, control membrane J and pump cover H. See figure 42.
8. Carry out a pressure test.

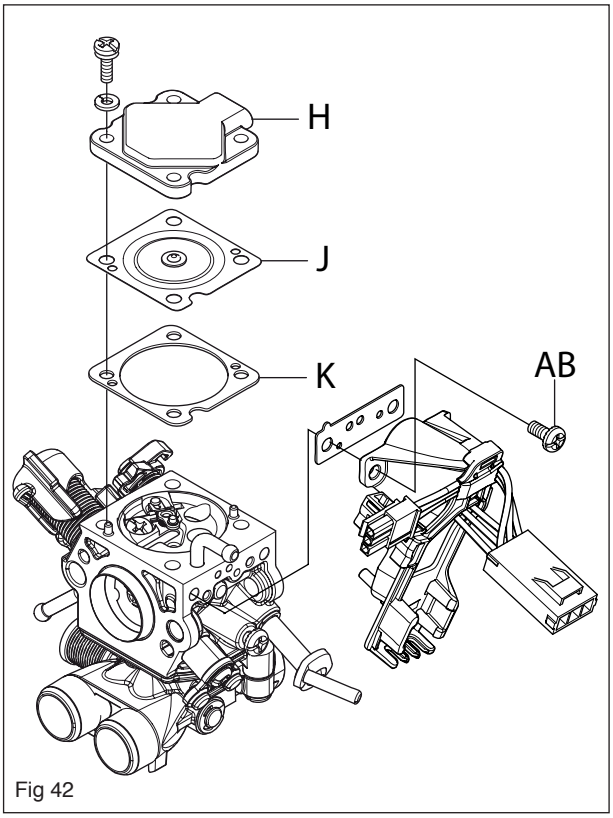


Fig 42

Pressure testing the carburetor
Pressure testing should be carried out with the carburetor fully assembled. Testing should always be carried out after the carburetor has been repaired but a test can also be made for troubleshooting before dismantling.

Test 1
See figure 43 and check as follows:

1
Connect pressure gage 531 03 06-23 to the carburetor's fuel intake.

2
Submerge the carburetor into a container with water. See figure 43.

3
Pump up the pressure to 20 kPa.

4
No leakage is permitted. In case of leaks, see the table below.

Leakage at	Fault with
Diffuser jets	Needle valve
Leakage in the impulse pipe	Pump diaphragm
Ventilation hole on metering unit	Control diaphragm

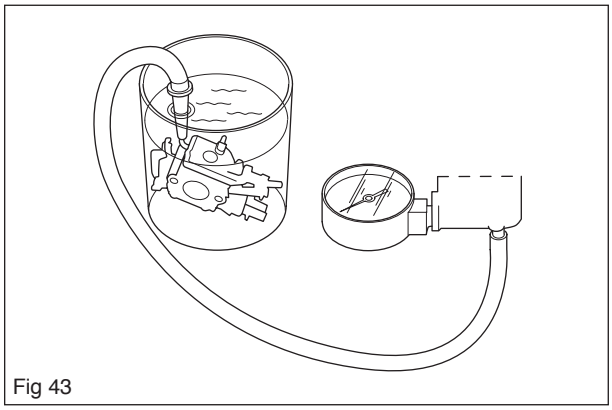


Fig 43

Test 2
1
Plug the connections to the fuel inlet.

2
Create a vacuum to the purge nipple on the carburetor. No leakage is permitted. In case of leakage, leakage spray may be used with some difficulty. Try and identify where the spray is absorbed. It can be used to show leakages in main jets, idling needles, measuring cover gaskets, measuring diaphragms and the AutoTune gasket.

Fitting on the saw

1

Press the connector together as outlined in figure 44 and press it into place in the holder.

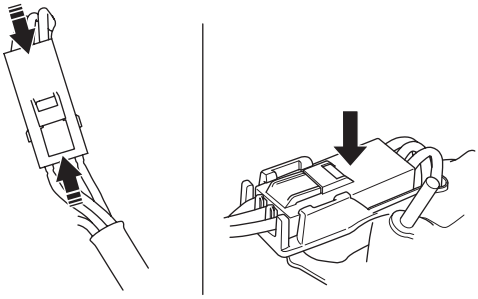


Fig 44

2

Connect the cables to the stop switch. See figure 45.

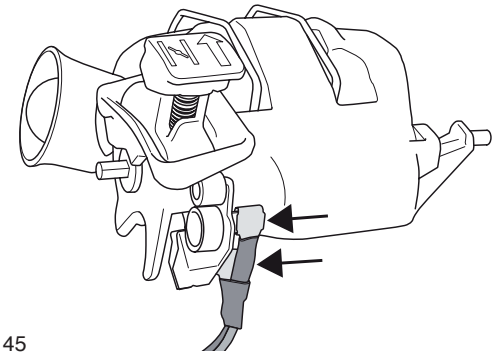


Fig 45

3

Fit the carburetor and make sure the lug on the carburetor hooks in place on its mounting on the intake system. See figure 46.

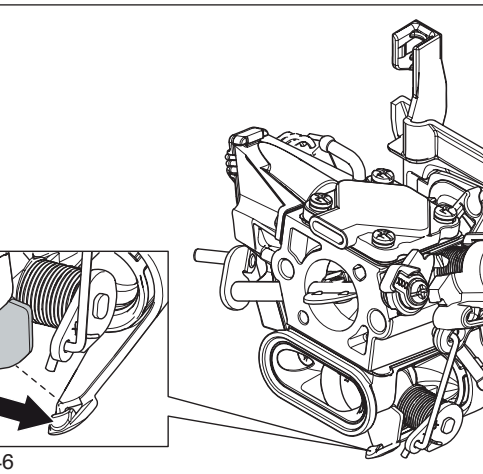


Fig 46

Make sure that the following components are correctly fitted:

- Position the air filter holder against the carburetor.
- Make sure the carburetor cover's intake channel is aligned correctly with the slot for the air filter holder.
- The spring must be fitted under the choke pin on the carburetor. See figure 47.
- The rubber collar on the stop button must be on the inside of the bottom of the carburetor compartment. See figure 47.
  NOTE! Make sure that the fuel and return hoses are not crushed.

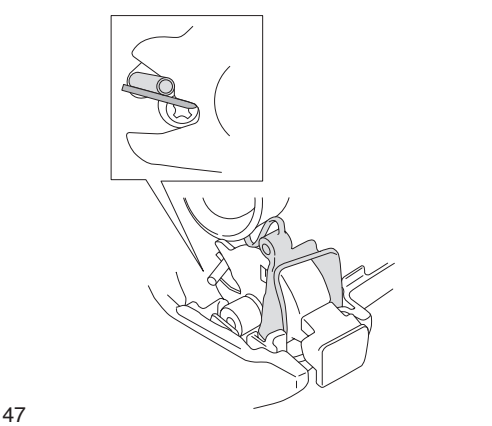


Fig 47

4
Place guide pins on the air filter holder in the rubber grommets D. Tighten the screws E. Tightening torque 1.5-2 Nm. See figure 48.

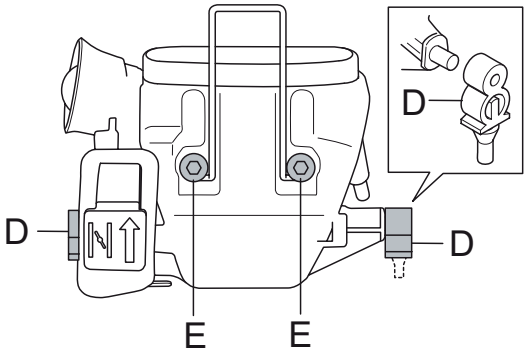


Fig 48

5
Press down the throttle valve shaft (1) and fasten the throttle pressure rod out to its fastening as outlined in figure 49.

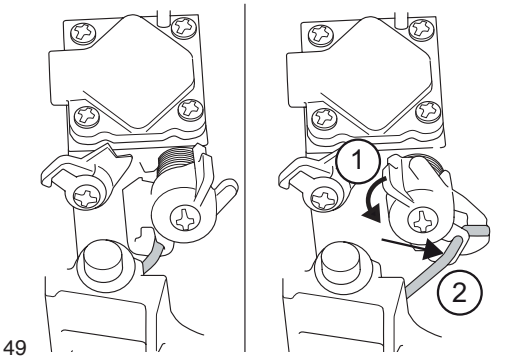


Fig 49

6
Fasten the return hose B and secure it in its mountings on the air filter holder and partition wall. Attach the pressure hose A (short hose on the short plastic plug) on the fuel pump and carburetor. Fasten the fuel hose C to the carburetor. See figure 50.

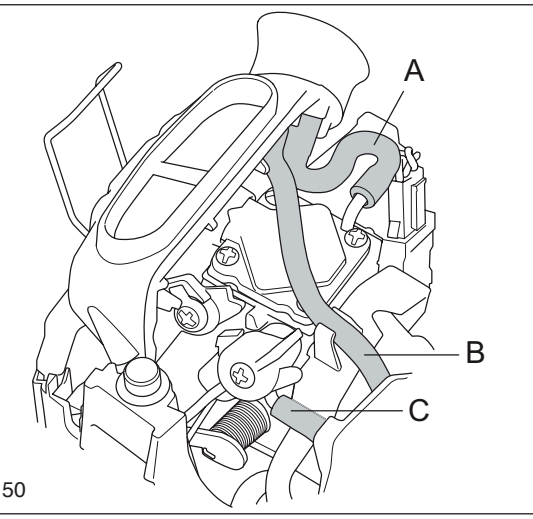


Fig 50

7
Attach the earth cable to the carburetor and intake system as outlined in figure 51. Note! The earth cable should be fitted at an angle of 45° to the intake system so as not to chafe against it.

8
Assemble the air filter and cylinder cover.

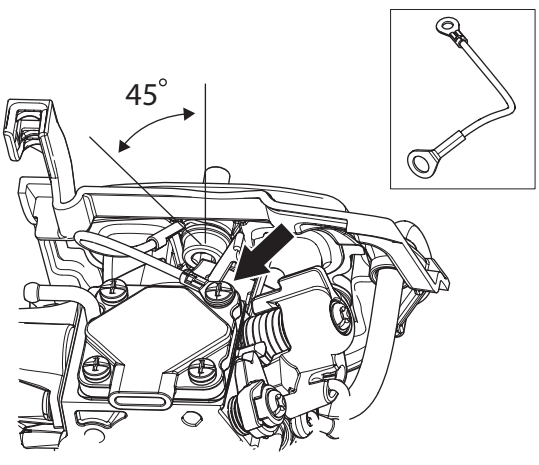


Fig 51

7.15 Tank unit

WARNING!
The fuel used in the chain saw has the following hazardous properties:
1. The fluid and its vapor are toxic.
2. Can cause skin irritation.
3. Is highly flammable.

7.16 Aerating the fuel tank

The two-way valve has the following properties:

- Controlled opening pressure in both directions, which prevents a positive pressure or a vacuum developing in the fuel tank and impairing engine performance. This also prevents fuel leakage.
- Opening pressure outwards 100-450 mbar.
- Opening pressure inwards (vacuum) max. 70 mbar.

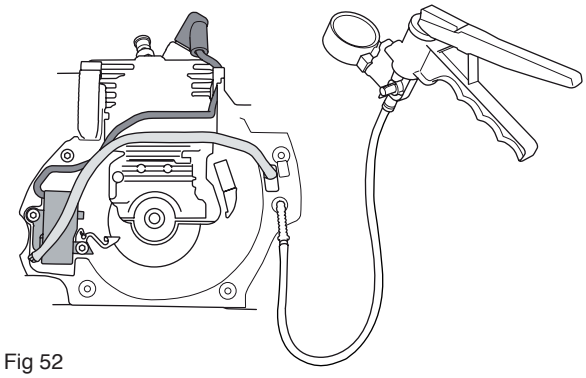


Fig 52

Test

Opening pressure outward:

1. Open the tank lock and leave it open during the entire test. Drain the fuel from the tank.
2. Connect the pump, ref. no. 531 03 06-23, to the tank valve. See figure 52.
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. Drain the fuel from the tank.
2. Connect the pump, ref. no. 531 03 06-23, to the tank valve.
3. Switch the pump to pressure mode.
4. Pump 3 times.
5. After pumping the indicator should stop at max. 7 kPa.

7.17 Vibration damping system

Disassembly

1
Release the brake by moving the hand guard backwards. Remove the cylinder cover, the clutch cover, the chain and the bar.

2
Loosen the screws as outlined in Figure 53.
Dismantle the hand guard.

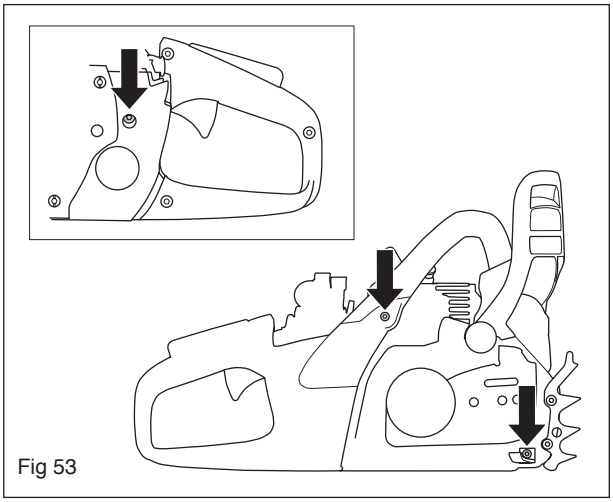


Fig 53

3
Press down the throttle valve shaft (1) and remove the throttle pressure rod (2) out of its fastening. See figure 54.
Remove the throttle pressure rod.

4
Remove the handle system.

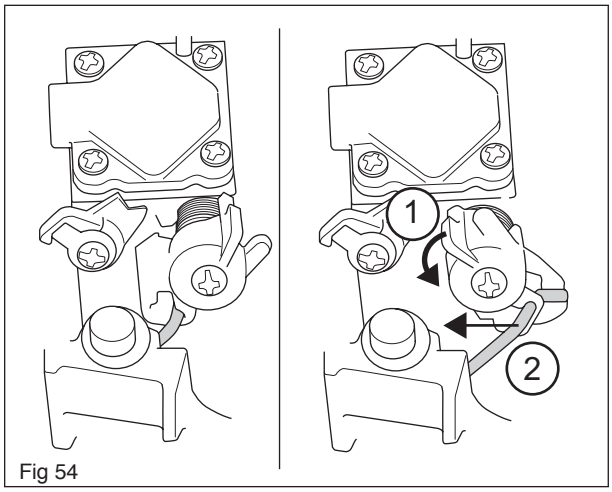


Fig 54

Cleaning and inspection

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

Assembly

1
Assembly the handle system and fasten the screws as outlined in figure 53. Assemble the hand guard.

2
Fit the throttle pressure rod, cylinder cover, chain and bar as well as the clutch cover.

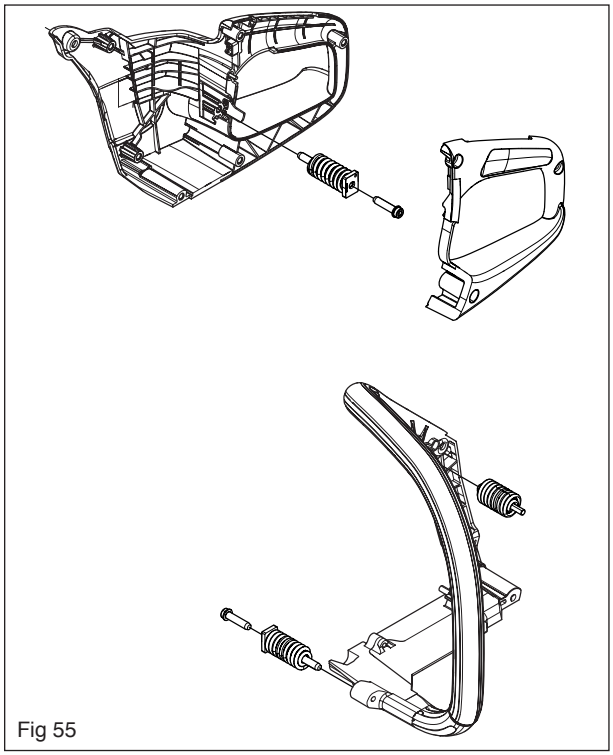


Fig 55

7.18 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. See figure 56.

2
Take out the fuel hose from the tank unit and pull off the fuel filter.

3
Fit the new fuel filter and press the fuel hose into place again.

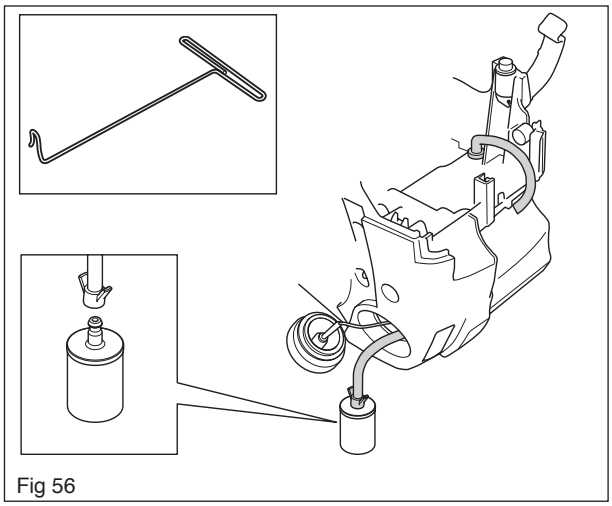


Fig 56

7.19 Replacing the fuel hose

NOTE!

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

1
Loosen the hose from the carburetor and pull the hose up through the tank.

2
Insert tool 502 50 83-01 into the hose bushing in the bottom of the carburetor suspension and out through the tank opening. Secure the new hose onto the end of the tool and, by using the tool, pull the hose through the hose bushing. Cut off both ends of the hose and then fasten it to the carburetor and fuel filter.

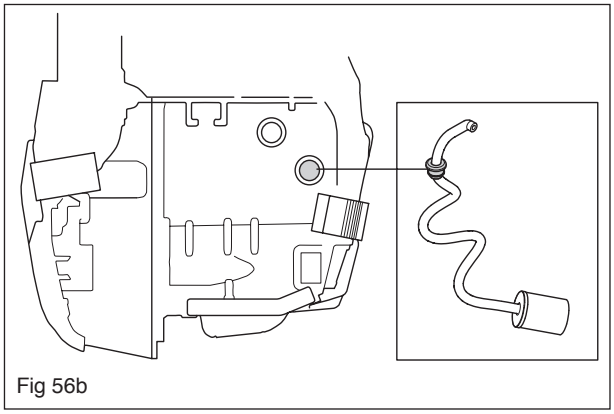


Fig 56b

7.20 Replacing the fuel pump (Purge)

Dismantling

1. Dismantle the cylinder cover and the air filter.
2. Loosen the return hose and pressure hose from the fuel pump. See figure 57.
3. Snap off the fuel pump from the filter holder.

Assembling

1. Snap the fuel pump into place in the filter holder. See figure 57.
2. Fasten the return hose and suction hose on the fuel pump (short hose on short plastic plug).

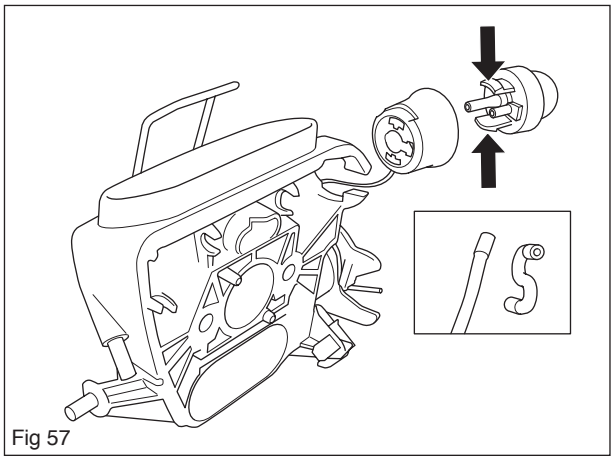


Fig 57

7.21 Replacing the tank ventilation valve

Pull out the tank ventilation valve with fluted flat nose pliers. See figure 58.

Carefully fit the new tank ventilation valve with a suitable sleeve.

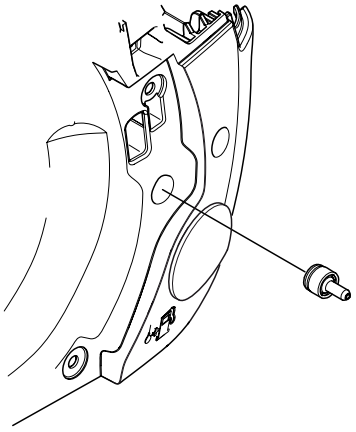


Fig 58

7.22 Dismantling the piston and cylinder

1
Dismantle:
- cylinder cover
- carburetor (see “Dismantling the carburetor”)
- muffler
- spark plug cap and spark plug
- hand guard
- intake system

2
Undo the vibration element/vibration damper spring from the front handle. See figure 59.

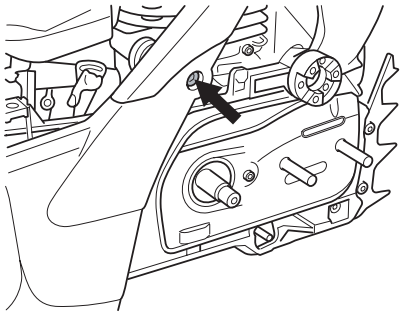


Fig 59

3
Unscrew the cylinder's four screws. See figure 60. Carefully lift away the cylinder and gasket.

4
Cover over the crankcase opening.

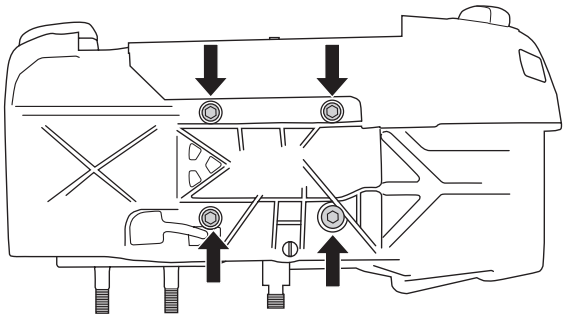


Fig 60

5
Remove the circlips for the gudgeon pin and press out the gudgeon pin. Then lift off the piston. See figure 61.

6
Remove the gudgeon pin bearing (needle bearing). See figure 61.

NOTE!

Take care to prevent any dirt or foreign particles from entering the crankcase.

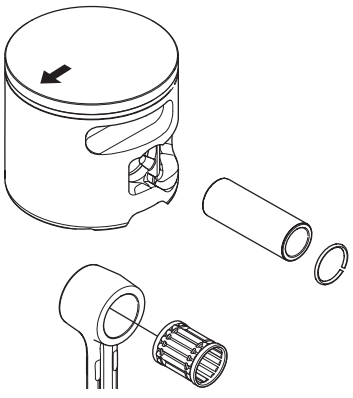


Fig 61

Cleaning and inspection of the cylinder
Clean all components, and scrape off all gasket remains and soot from the following areas:

- The piston crown
- The top of the cylinder (inside)
- The cylinder exhaust port
- The decompression valve channel
- The base of the cylinder and/or crankcase

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 wear or scoring.
- That the piston is free of scoring. Minor scratches can be polished off using fine emery paper.
- That the piston ring is not welded in its groove.
- Measure the wear on the piston ring. This must not exceed 1 mm. See figure 62. Use the piston to push the piston ring downward.
- That the gudgeon pin bearing is intact.
- That the intake bellows is intact.
- That air hoses and impulse hose are intact.
- Pressure test the decompression valve. Carry out pressure testing on the decompression valve as follows.

  A Connect the pressure gage 531 03 06-23 to the decompression valve.
  B Pump up the pressure to 80 kPa (0.8 bar).
  C Wait for 30 seconds.
  D The pressure must not fall below 60 kPa (0.6 bar).

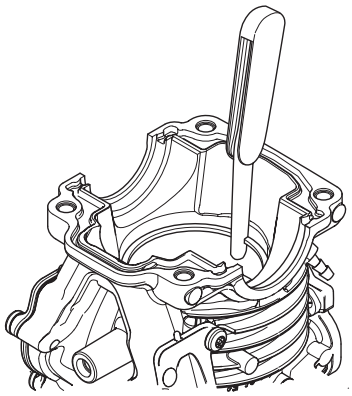


Fig 62

Faults and causes
Score marks on the piston (A).
1. Leakage, check not carried out.
2. Too low octane fuel.
3. Too little or incorrect oil in the fuel.

Carbon build-up (B)
1. Too much or incorrect oil in the fuel.

See figure 63.

Piston ring breakage
1. Piston ring worn out.
2. Oversized piston ring groove.

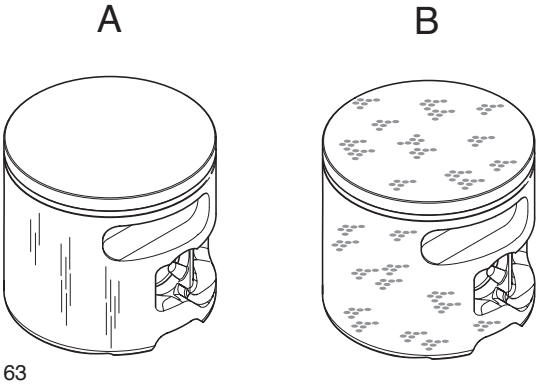


Fig 63

7.23 Assembling the piston and cylinder

1
Oil the gudgeon pin bearing with two-stroke oil and insert it into the crank rod. See figure 64.

2
Fit the piston with the arrow facing the exhaust port, slide in the gudgeon pin and fit the circlips.
NOTE! Use new circlips.

3
Fit the intake system onto the cylinder.
See figure 65.

NOTE!

It is very important that the intake system is sealed. Otherwise the engine may seize up.

4
Oil the piston and piston ring with two-stroke oil.

5
Fit a new cylinder top gasket. See figure 66a.
Compress the piston ring and carefully push the piston into the cylinder opening.

6
Attach the cylinder. The screws must be tightened crosswise with a tightening torque of 13-15 Nm.

7
Pressure test the cylinder. See "Pressure testing the cylinder".

8
Assemble the following parts:
- spark plugs, tightening torque 18-25 Nm.
- carburetor. See “Dismantling the carburetor”.
- muffler, tightening torque 12-14 Nm.
- hand guard
- cylinder cover

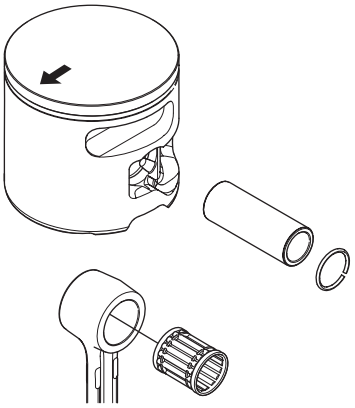


Fig 64

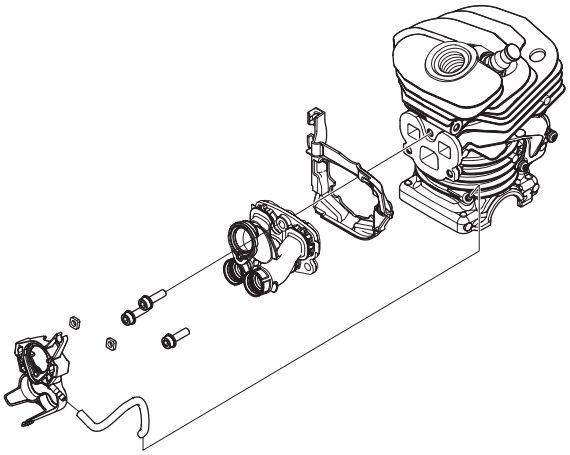


Fig 65

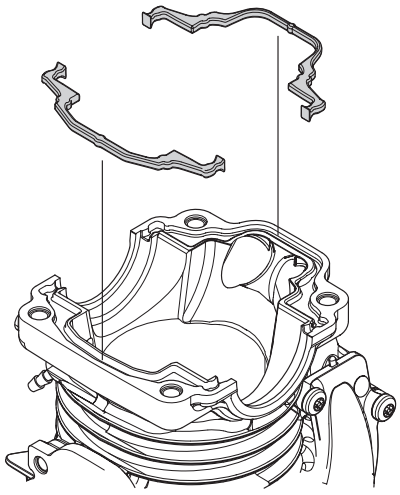


Fig 66a

7.24 Pressure testing the cylinder

1
Dismantle:
- cylinder cover
- carburetor*
- spark plug

* See specific instruction.

2
Attach the cover plate (A) 574 71 14-01 and cover plug (B) 578 02 13-01. See figure 66b.

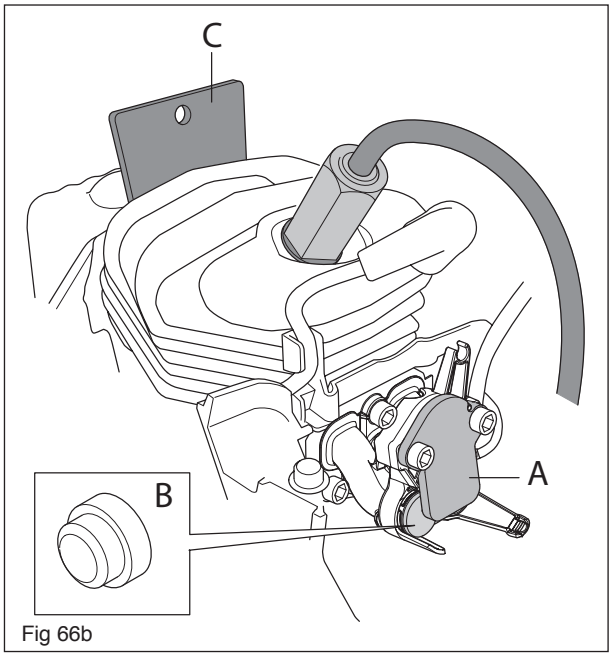


Fig 66b

3
Loosen the screws on the muffler and press the cover plate 502 54 11-02 (C) between the muffler and cylinder. Tighten the screws for the muffler. See figure 66b.

4
Screw the pressure test connection 503 84 40-02 into place. Connect tool 531 03 06-23 to the nipple.

5
Pump up the pressure to 80 kPa (0.8 bar). Wait 30 seconds. The pressure must not fall below 60 kPa (0.6 bar). Unscrew the cover plates and plugs. Tighten the screws to the stated torque. Remove the pressure test connection and fit the spark plugs.

NOTE!
It is very important that the intake system is sealed. Otherwise the engine may seize up.

7.25 Dismantling the crankcase and crankshaft

1
Dismantle the following:
- clutch cover
- chain and bar
- cylinder cover
- starter *
- centrifugal clutch *
- carburetor*
- muffler *
- handle system
- hand guard
- piston and cylinder*

* See specific instruction.

NOTE!

Take care to prevent any dirt or foreign particles from entering the bearings.

2
Lift the complete crankshaft out of the crankcase. See figure 68.

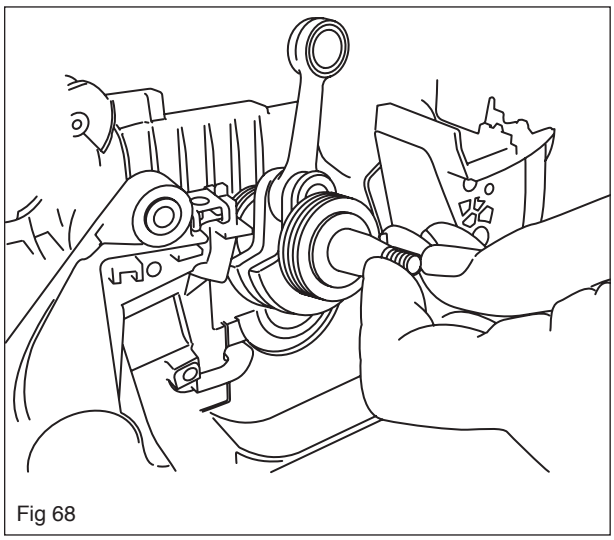


Fig 68

Cleaning and inspection

Clean all parts and scrape off all gasket remains from the contact surfaces on the crankcase halves. Check the following:

1.
That the big-end bearing does not have any radial play. Axial play is permitted. See figs. 69 and 70.

2.
That the big-end bearing does not have any score marks or
is discolored on the sides.

3.
That the bearing surface for the gudgeon pin bearing does not have any score marks or is discolored.

4.
That the crankshaft bearing has no play or knocks.

5.
That the sealing surfaces of the sealing rings fitted against the crankshaft are not worn, and that the rubber is not hard.

6.
That the crankcase is not cracked.

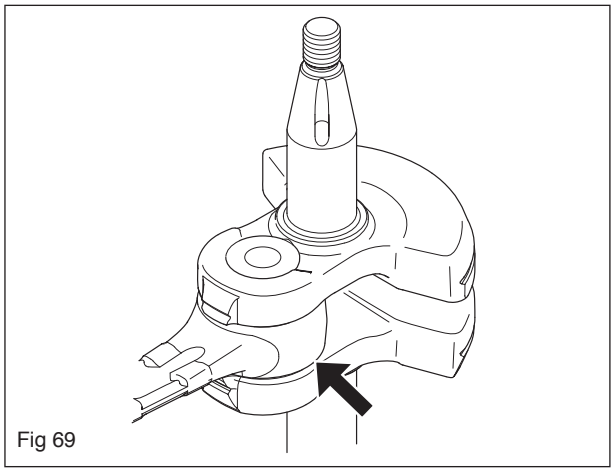


Fig 69

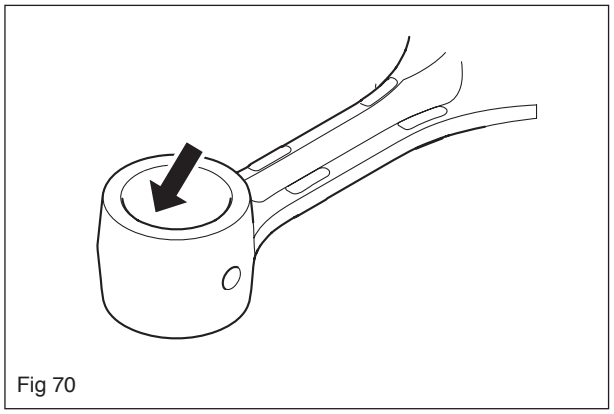


Fig 70

Replacing the crankshaft bearing

Remove:
- the complete crankshaft from the crankcase.

1
Remove the sealing rings from the crankshaft.
See figure 71.

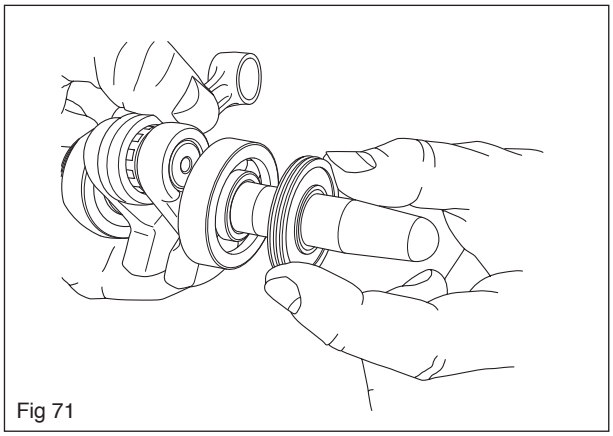


Fig 71

2
Pull the crankshaft bearing from the crankshaft.
See figure 72.
Use the 504 90 90-01 tool.

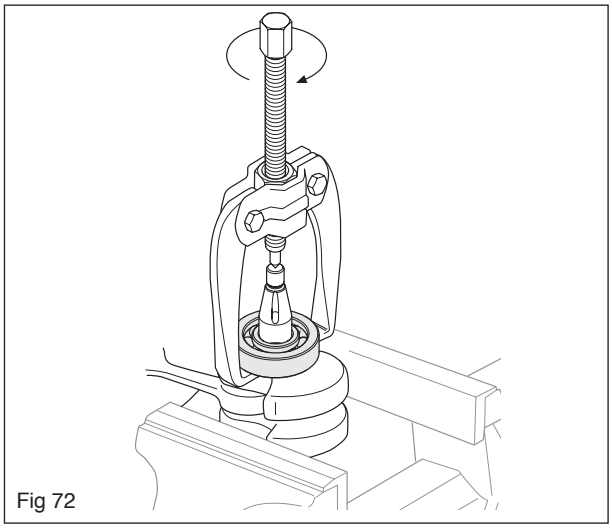


Fig 72

3
Fit the new bearing on the crankshaft using tool 502 50 30-18. See figure 73.

NOTE!

Take care to prevent any dirt or foreign particles from entering the bearings.

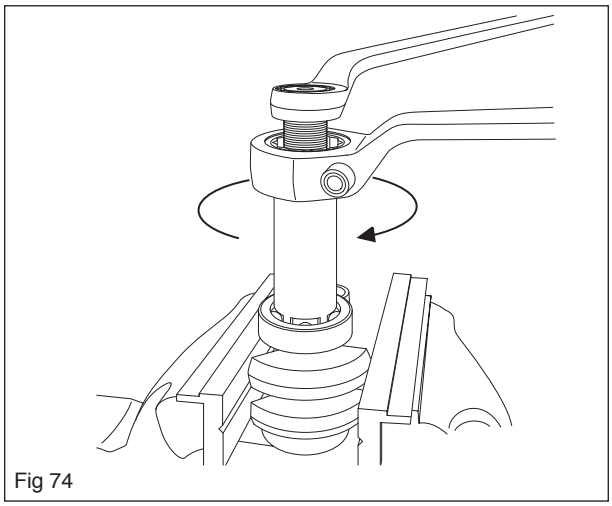


Fig 74

Assembling a complete crankshaft

1
Fit the complete crankshaft in the crankcase. See figure 75.

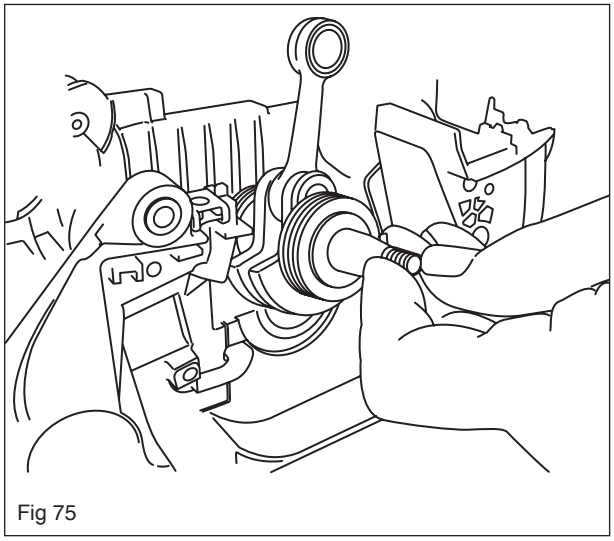


Fig 75

Assemble the following parts:

- piston and cylinder *
- handle system
- hand guard
- muffler *
- carburetor*
- throttle pressure rod
- centrifugal clutch *
- starter *
- cylinder cover
- clutch cover
- chain and bar.

* See specific instruction.

7.26 Replacing the bar bolt

Replacing a bar bolt with intact crankcase

1
Empty and clean the chain oil tank.

2
Knock in the old bar bolts from the outside so that they end up in the chain oil tank. (The plastic surface on the head will break.)

3
Remove the bolts from the oil tank.

4
Attach a wire to the head of the bar bolt, lower the wire through the oil tank and out through the bolt opening in the crankcase. See figure 76.

5
Pull out the bar bolt so that it protrudes from the opening. See figure 76.

6
Pull out the bar bolt with a nut. Insert a spacer between the nut and the crankcase. See figure 76.

7
Fill with chain oil.

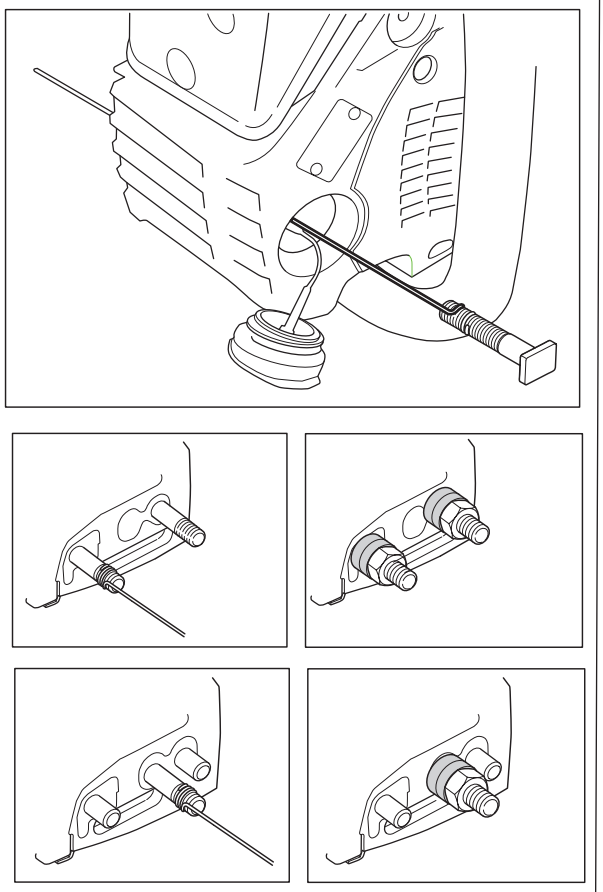


Fig 76

7.27 Repairing damaged threads

If threads on the chainsaw are worn, the repair kit (503 27 33-01) is available.

First drill with:
6.0 mm drill for the plastic crankcase.

Then screw in the thread plug using a suitable screw and spanner.

This type of screw plug is ideal for plastic and magnesium but cannot be used to repair threads in aluminum. There is another type of thread plug and metric screw available for this purpose. See figure 77. Check the manufacturer's manual for thread information.

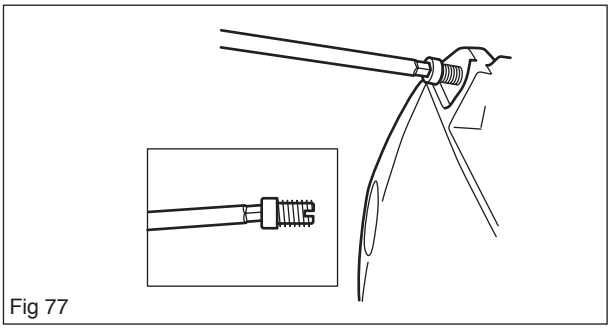


Fig 77

8 Troubleshooting

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8.1 Troubleshooting

The different faults which may occur on the chain saw are divided into four groups. Within each group, the 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. See separate instruction for AutoTune troubleshooting.

Starting

Difficult to start	Air filter blocked Choke does not work Worn choke axle Worn choke valve Blocked fuel filter Blocked fuel line Piston ring is stuck Blocked impulse channel
The carburetor leaks fuel	Loose or faulty fuel pipe Hole in the membrane Control system is binding Control system set too high Leaking control system (air or fuel) The cover on the carburetor pump side is loose
Floods when the engine is not running	Control system set too high Control system is binding

Idling (low speed)

Does not idle	Leaking inlet hose (rubber) Loose clamping screws carburetor Loose or faulty fuel pipe Blocked fuel filter Blocked fuel line Tank ventilator blocked Throttle valve shaft is inert Throttle stay is binding Defective throttle return spring Bent valve axle stop Faulty diffuser jet
Too high idling speed	Worn lever arm in the control system Leaking control diaphragm/ cover plate

Idling (low speed) (continued)

Uneven idling	Blocked fuel filter Blocked fuel line Leaking inlet hose (rubber) Loose clamping screws carburetor Worn throttle valve shaft Loose throttle valve screw Worn throttle valve Leaking control system (air or fuel) The control system's center knob is worn Hole in the membrane Leaking control diaphragm/ cover plate Leaking crankcase
Too much fuel at idle speed	Leaking control diaphragm/ cover plate

High speed

Does not run at full throttle	Blocked air filter Tank venting clogged Blocked fuel filter Blocked fuel line Loose or faulty fuel pipe Impulse channel leaking Blocked impulse channel The cover on the carburetor pump side is loose Faulty pump diaphragm Leaking inlet hose (rubber) Loose clamping screws carburetor Control system set too low Damaged control system Control system incorrectly assembled Leaking control diaphragm/cover plate Control system binding Blocked muffler
Low on power	Tank venting clogged Blocked fuel filter Impulse channel leaking Blocked impulse channel The cover on the carburetor 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 Leaking control diaphragm/cover plate
Too lean	Tank venting clogged Blocked fuel filter Blocked fuel line Loose or faulty fuel pipe Impulse channel leaking Blocked impulse channel The cover on the carburetor pump side is loose Faulty pump diaphragm Leaking inlet hose (rubber) Loose clamping screws carburetor Control system set too low Leaking control system (air or fuel) Control system incorrectly assembled Loose diaphragm rivet Hole in the membrane Leaking control diaphragm/cover plate

Acceleration and retardation

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

8.2 Troubleshooting techniques

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

- Resistance testing the stop plate
- Pressure testing the carburetor
- Pressure testing the decompression valve
- Pressure testing the cylinder

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