Husqvarna®

Workshop manual

K770 SmartGuard

English

1453 - 001 - 02.04.2020

Contents

1 Introduction

1.1 Document description

This manual gives a full description of how to do maintenance and repair on the product. It also gives safety instructions that the personnel must obey.

1.2 Target group

This manual is for personnel with a general knowledge of how to do repair and do servicing. All personnel that do repair or do servicing on the product must read and understand the manual.

1.3 Revisions

Changes to the product can cause changes to the maintenance work and spare parts. Separate information is sent out for each change.

Read the manual together with all received information about changes to maintenance and spare parts for the product.

1.4 Safety

WARNING: All personnel that repair or do servicing on the product must read and understand the safety instructions in this workshop manual.

1.5 Servicing tools

The manual gives information about necessary servicing tools. Always use original tools from Husqvarna.

2 Safety

2.1 Safety definitions

The definitions below give the level of severity for each signal word.

WARNING: Injury to persons.

CAUTION: Damage to the product.

Note: This information makes the product easier to use.

2.2 General safety instructions

- Do not repair the product unless you have read and understood this workshop manual.
- The service center where the product is repaired must have safety equipment approved by local bylaws.
- The product is examined and approved only with the equipment given or recommended by the manufacturer.
- Prevent health and safety risks. All personnel must obey laws and requirements when they do the procedures given in this manual.
- Obey the local waste regulations.
- Always make sure that all nuts and bolts are correctly tightened.
- Use protective gloves and eye protection. Goggles must obey the ANSI Z87.1 for US or EN166 for EU countries.
- When using compressed air, do not point it to your body. Air can go into the bloodstream.
- Use hearing protection when the engine is started.
- The product can make sparks and cause ignition of flammable materials.
- Replace all damaged or missing warning symbol decals.
- Gasoline and its fumes are poisonous.
- Gasoline can cause damage to the eyes and the skin.
- Gasoline can cause breathing problems.
- Gasoline is flammable.

2.3 Symbols on the product

WARNING: This product can be dangerous and cause serious injury or death to the operator or others. Be careful and use the product correctly.

Read the operator's manual carefully and make sure that you understand the instructions before you use this product.

Use approved protective helmet, hearing protection, eye protection and respiratory protection.

This product complies with applicable EC Directives.

Dust forms when cutting. The dust can cause injuries if inhaled. Use an approved respiratory protection. Avoid inhaling exhaust fumes. Always provide for good ventilation.

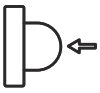
WARNING! Kickbacks can be sudden, rapid and violent and can cause life threatening injuries.

Sparks from the cutting blade can cause fire in fuel, wood, clothes, dry grass or other flammable materials.

Make sure that the cutting blade does not have cracks or other damages.

Do not use circular saw blades.

Choke



Air purge bulb

Decompression valve

Starter rope handle

Use a fuel mixture of gasoline and oil.

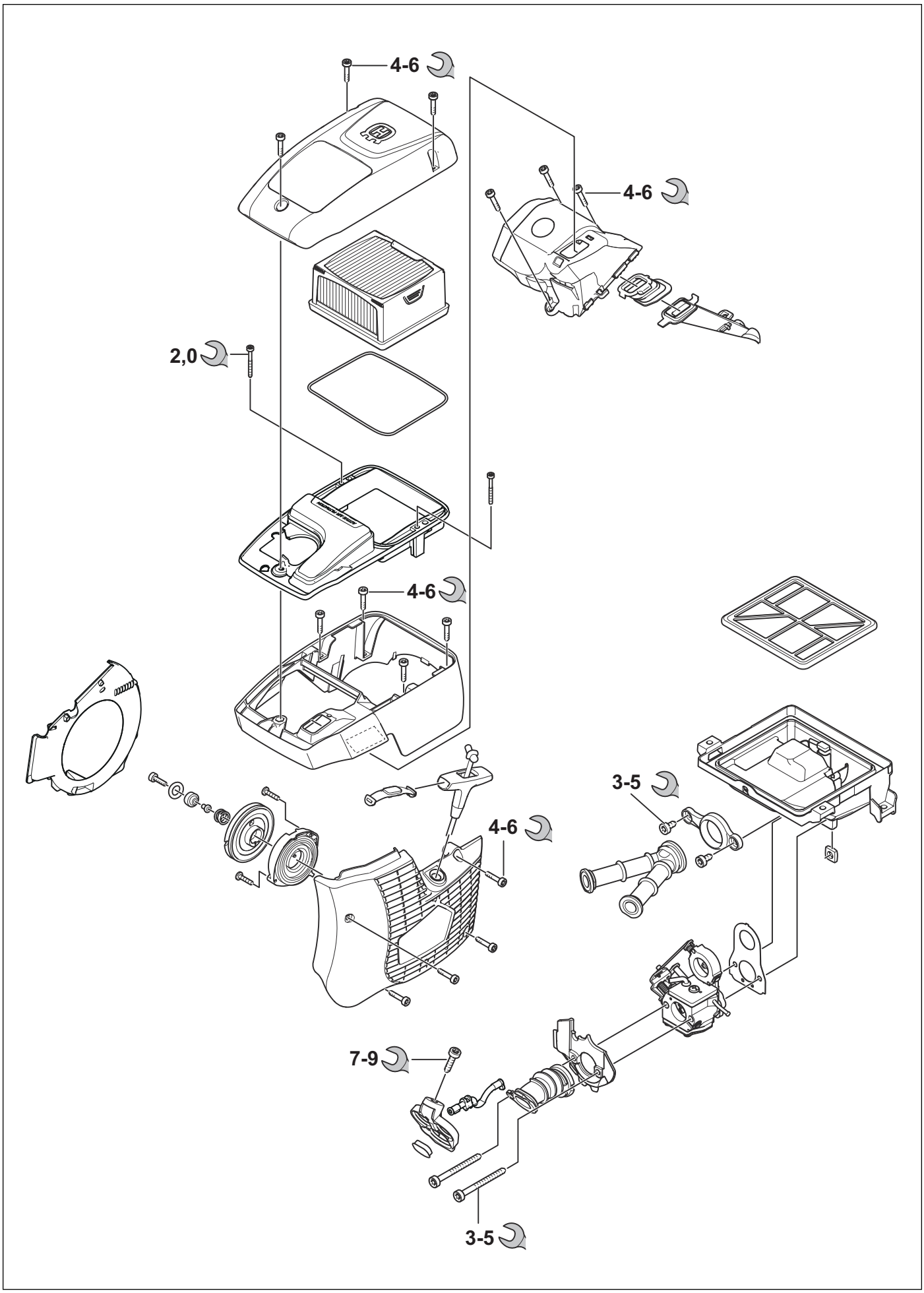
Note: Other symbols/decals on the product refer to special certification requirements for some markets.

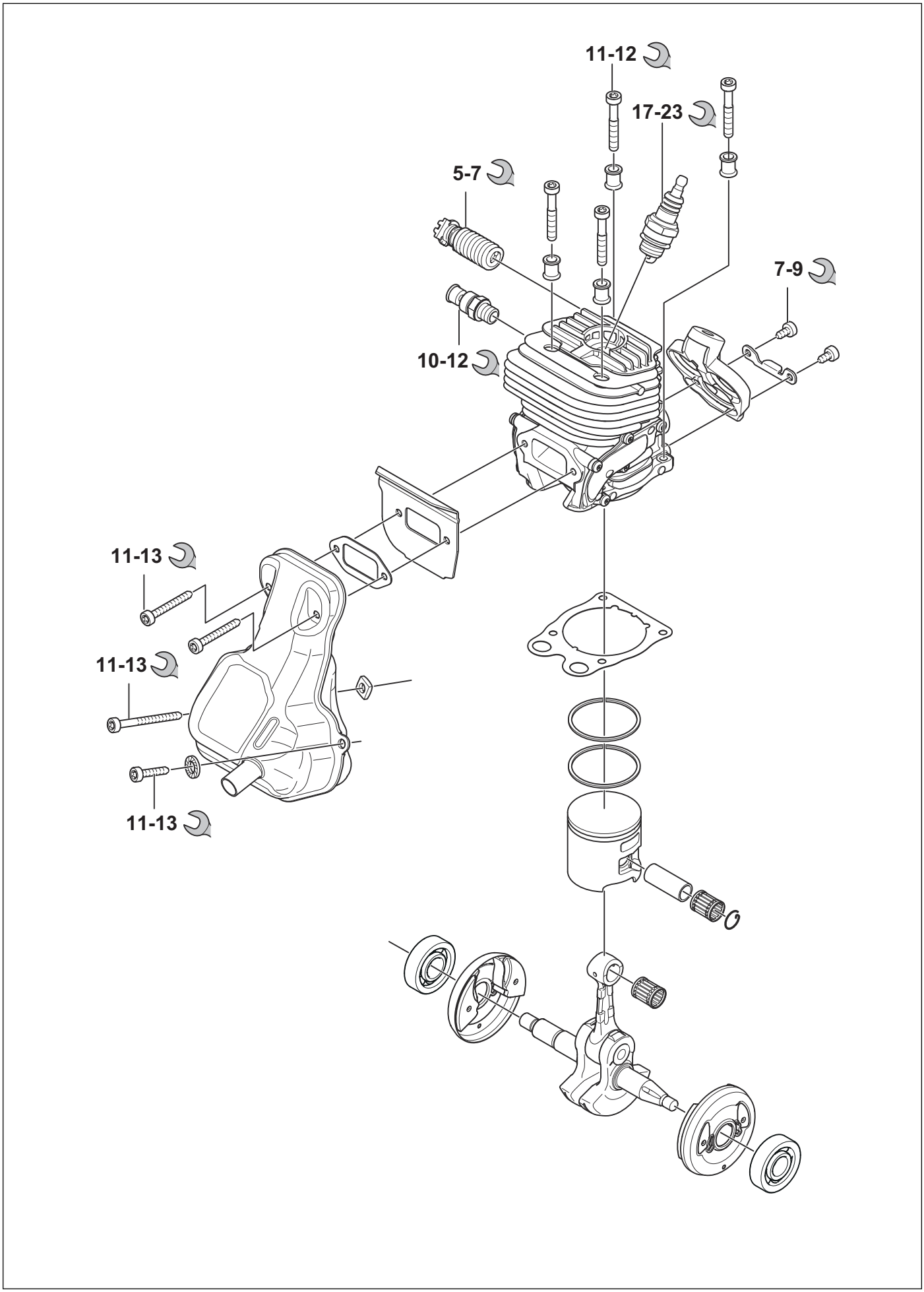
3 Servicing data

3.1 Symbols in the diagrams

Tightening torque, Nm

3.2 Tightening torques

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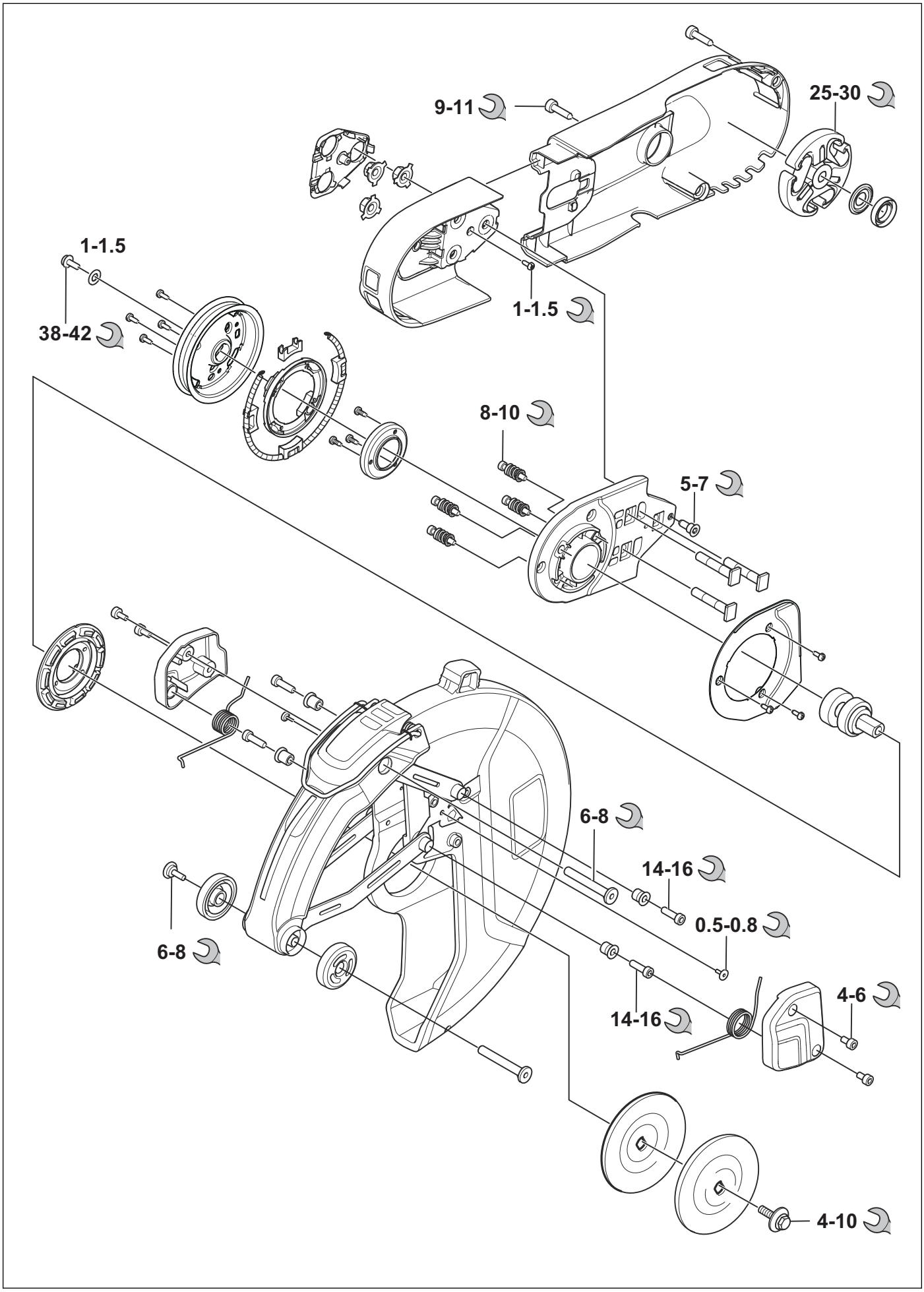
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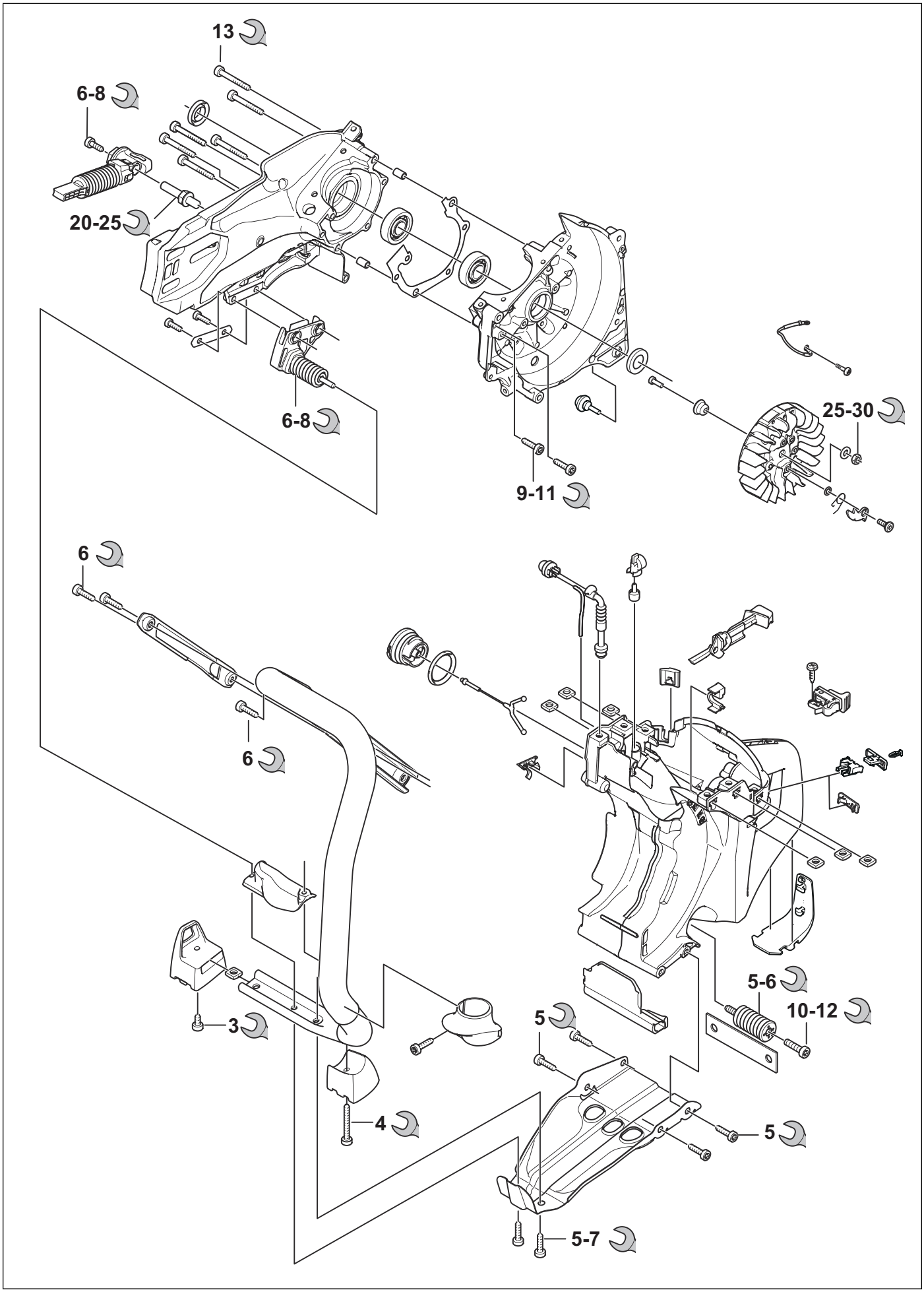
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20-25
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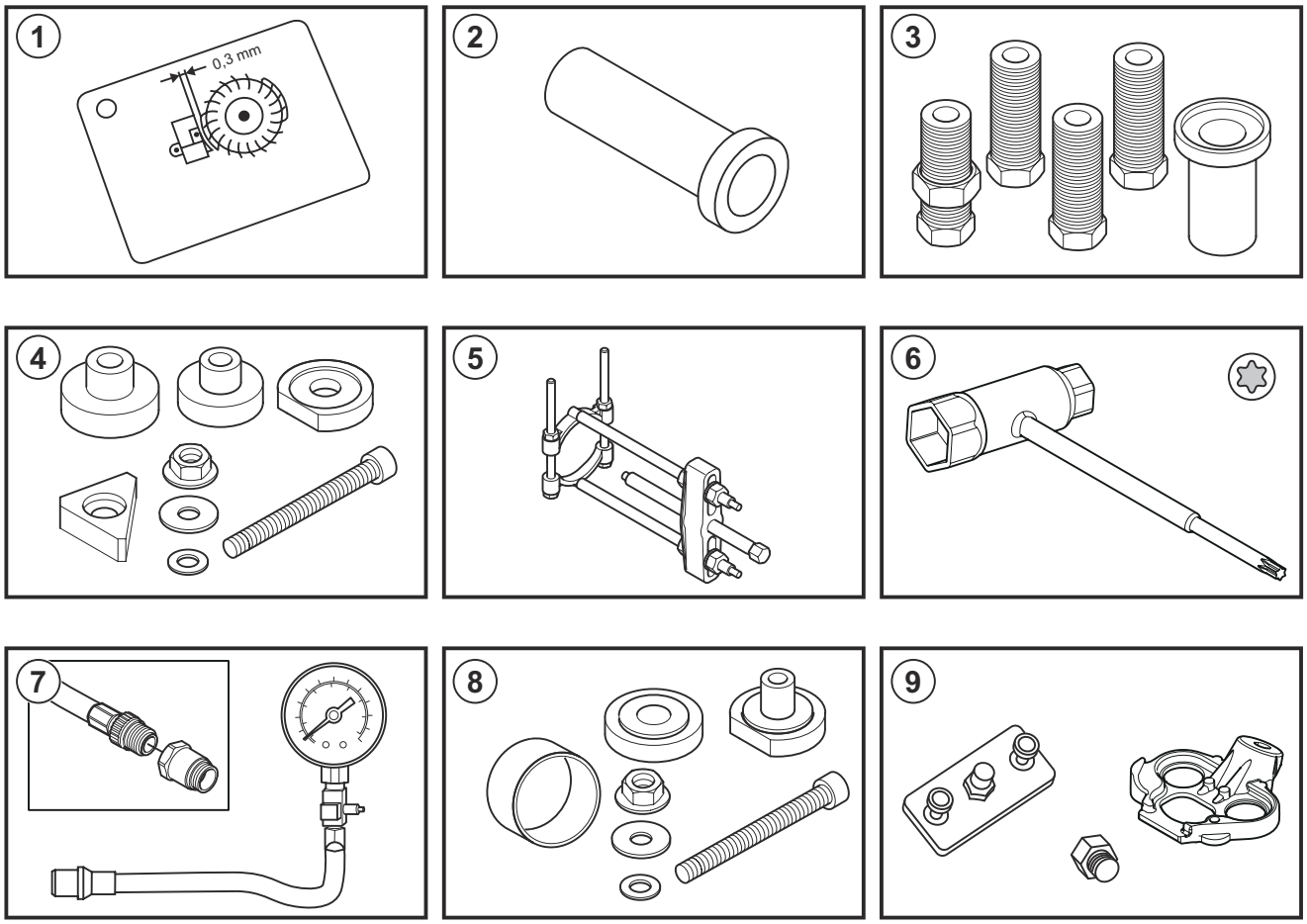
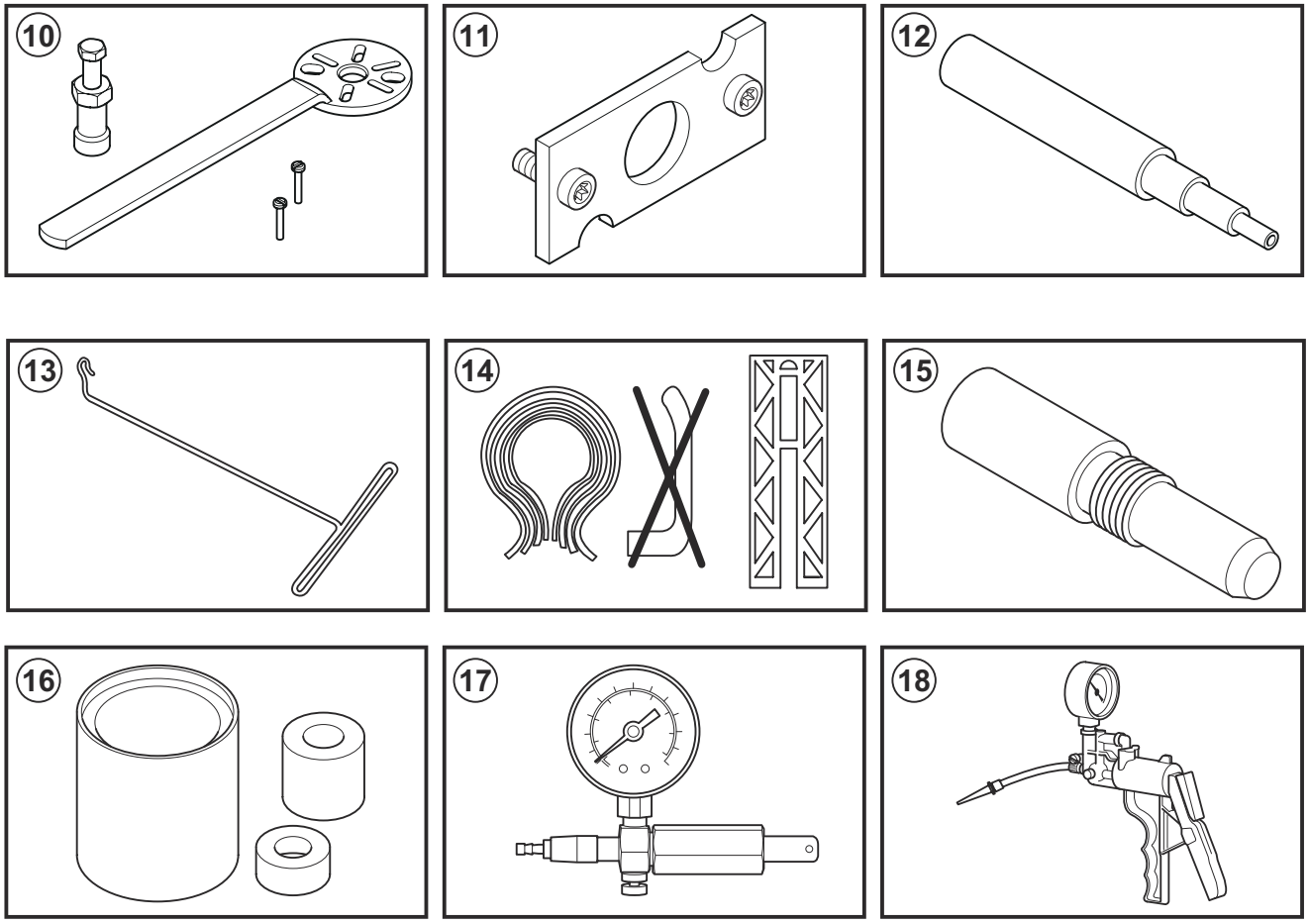
4.1 Servicing tools overview



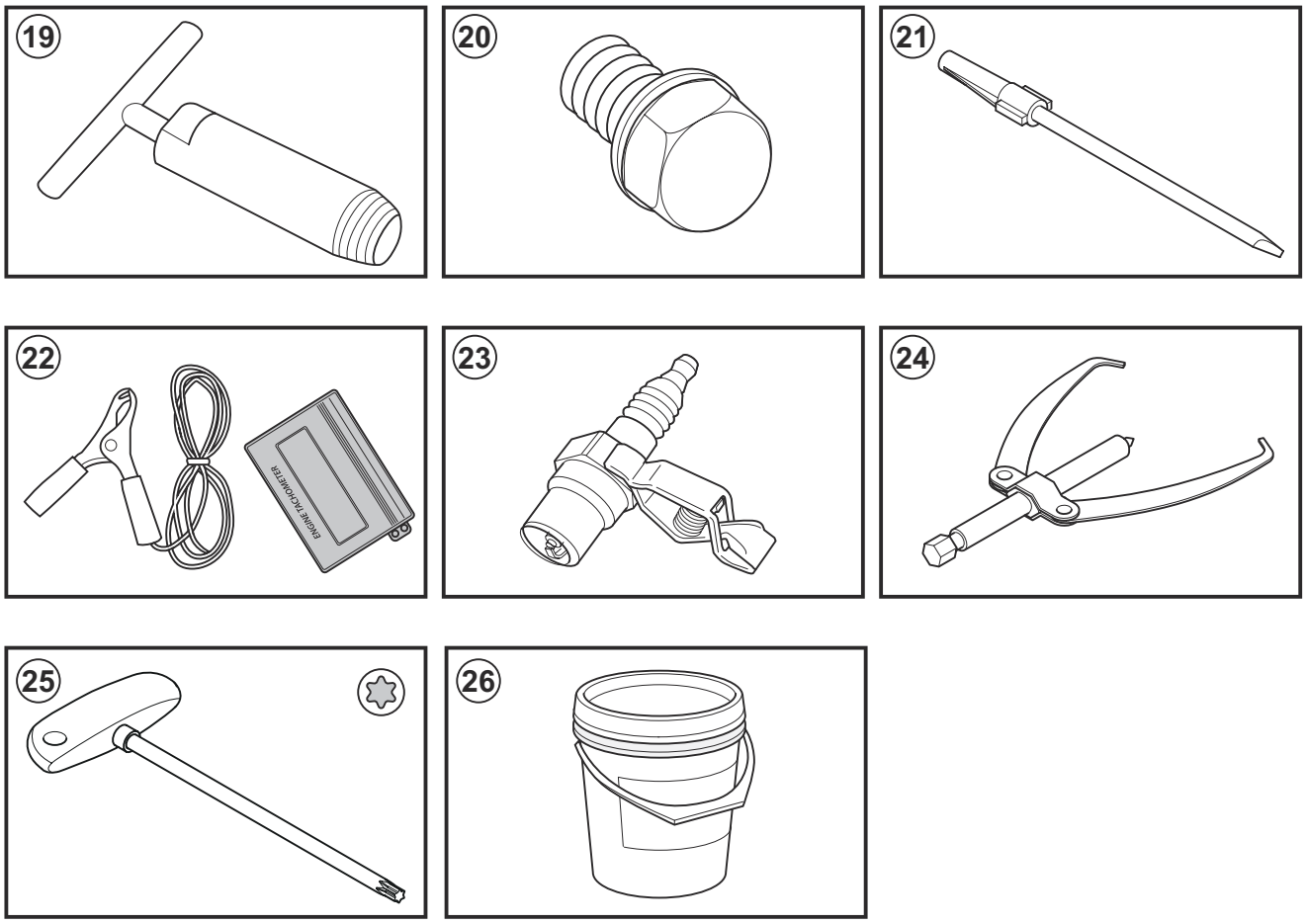
Position	Designation	Used for	Order No./ Source
1	Air clearance gauge	To adjust the air clearance between the ignition module and the flywheel.	502 51 34-02
2	Assembly punch	To assemble the sealing rings of the crankshaft in the crankcase.	502 50 82-01
3	Bearing press	To disassemble the primary bearing and assemble the crankshaft.	544 10 36-02
4	Bearing press	To assemble the primary bearing and assemble and disassemble blade shaft bearing and axle.	506 37 61-02
5	Bearing puller	Remove the primary bearing from the crankshaft.	531 00 48-67
6	Combination wrench	General.	506 38 26-01
7	Compression tester	To examine the compression in the cylinder.	531 03 16-86
8	Bearing press	To disassemble and assemble the clutch drum ball bearing.	504 56 79-01
9	Cylinder seal	To examine the crankcase for leaks.	544 10 33-01

4.2 Servicing tools overview



Position	Designation	Used for	Order No./Source
10	Flywheel puller	To disassemble the flywheel.	502 51 49-02
11	Grip plate	To divide the crankcase.	544 06 00-02
12	Gudgeon pin punch	To disassemble and assemble the gudgeon pin.	505 38 17-05
13	Hose catcher	To catch the fuel filter in the tank.	502 50 83-01
14	Kit for piston service	To do service on the piston.	502 50 70-01
15	Piston stop	To disassemble the clutch.	504 91 06-05
16	Pressing device	To disassemble and assemble the blade shaft bearings and axle.	575 96 20-01
17	Pressure tester	To examine the carburetor, fuel lines and check valve.	501 56 27-01
18	Pressure tester	To examine the crankcase for leaks.	531 03 06-23

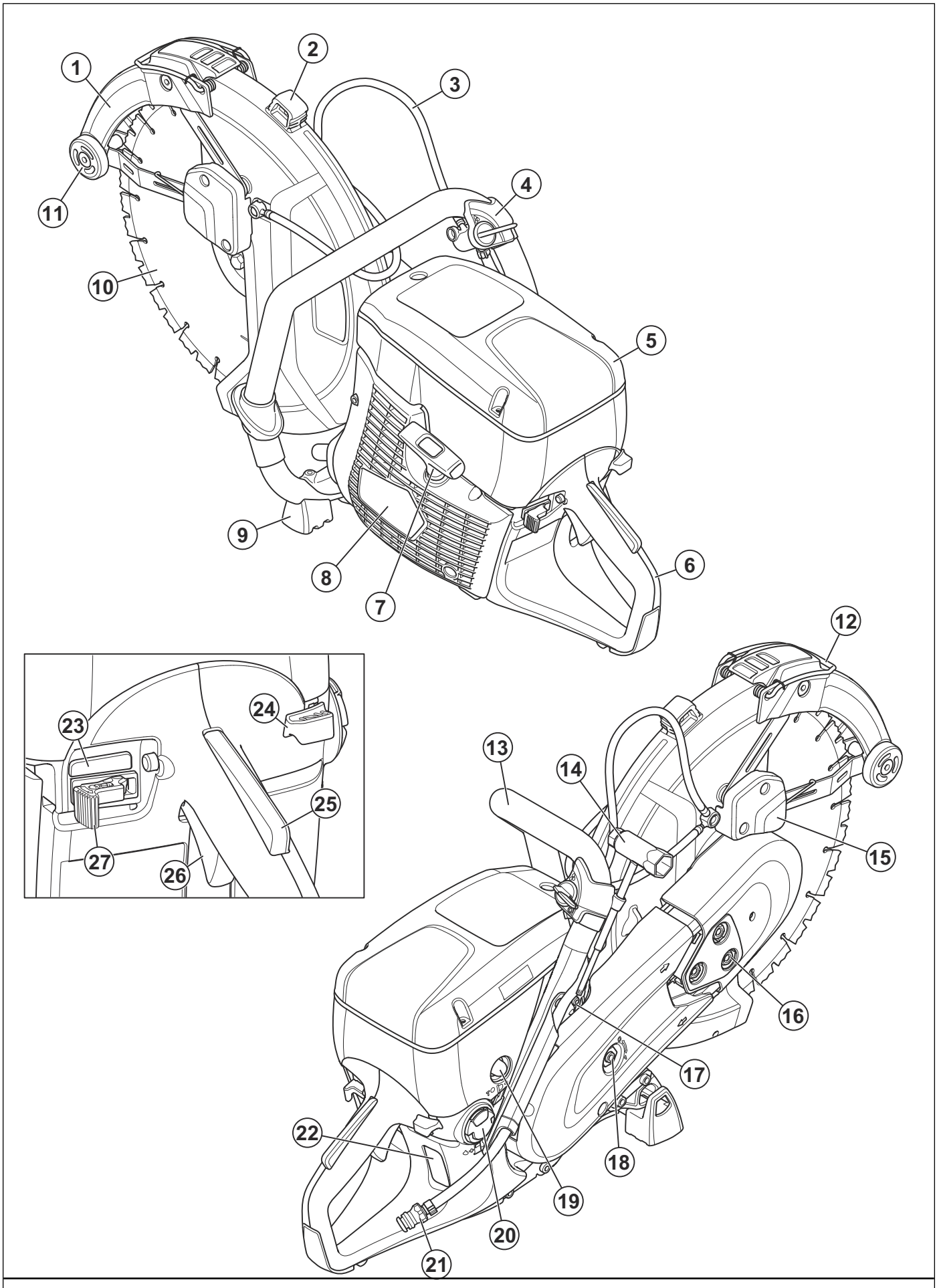
4.3 Servicing tools overview



Position	Designation	Used for	Order No./ Source
19	Puller	To disassemble the sealing rings of the crankcase in the crankcase.	504 91 40-01
20	Sealing plug	To examine the crankcase for leaks.	503 55 22-01
21	Special screwdriver	To adjust the idle speed.	501 60 02-03
22	Tachometer	To adjust the idle and maximum speed.	502 71 14-01
23	Test spark plug	To do servicing on the ignition unit.	502 71 13-01
24	Universal puller	To disassemble the support washer of the clutch on the crankshaft. To divide the crankcase.	504 90 90-02
25	Key Torx T27	General use.	502 71 27-02
26	Grease	To apply on the bushings of the	588 81 48-01

5 Product overview for repair and servicing

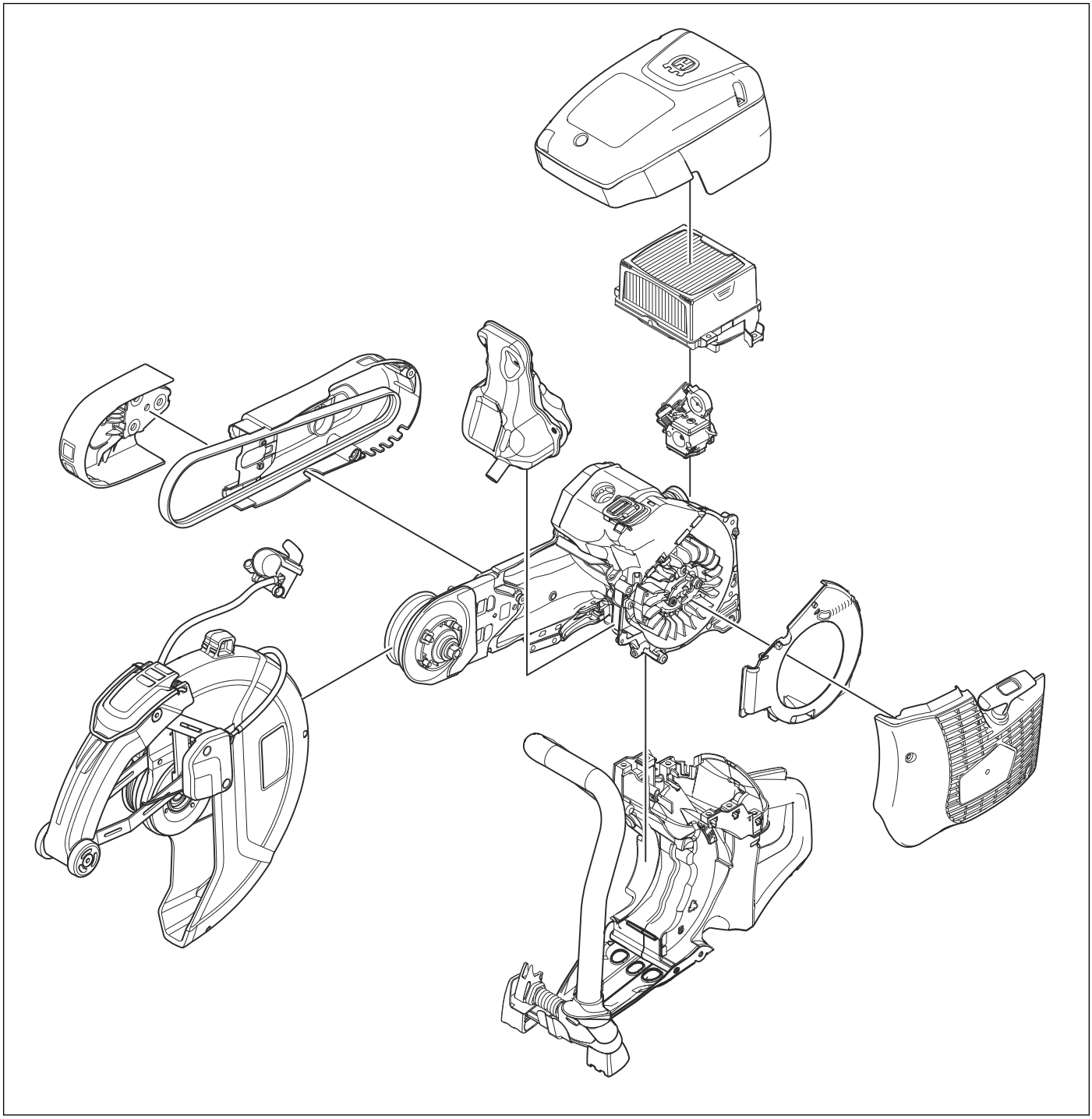
5.1 Components



1.
2. Adjustment handle for blade guard
3. Water hose
4. Water valve
5. Air filter cover
6. Rear handle
7. Starter rope handle
8. Starter
9. Ground support
10. Cutting blade
11. Guide wheels
12. Handle
13. Front handle
14. Combination wrench
15. Cover for springs
16. Lock screws for belt adjustment
17. Decompression valve
18. Belt adjustment screw
19. Air purge bulb
20. Fuel tank cap
21. Water connection with filter
22. Sight glass for fuel
23. OilGuard button
24. Choke lever
25. Throttle trigger lockout
26. Throttle control
27. Stop switch

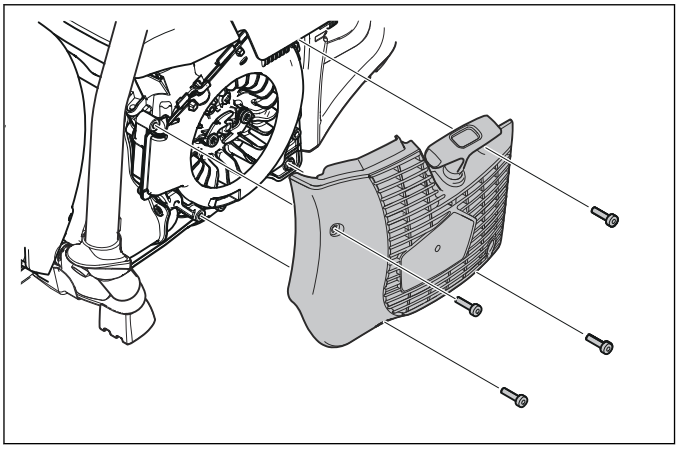
5.2 Basic modules of the product

This chapter shows how you can disassemble and assemble the product in its basic modules.



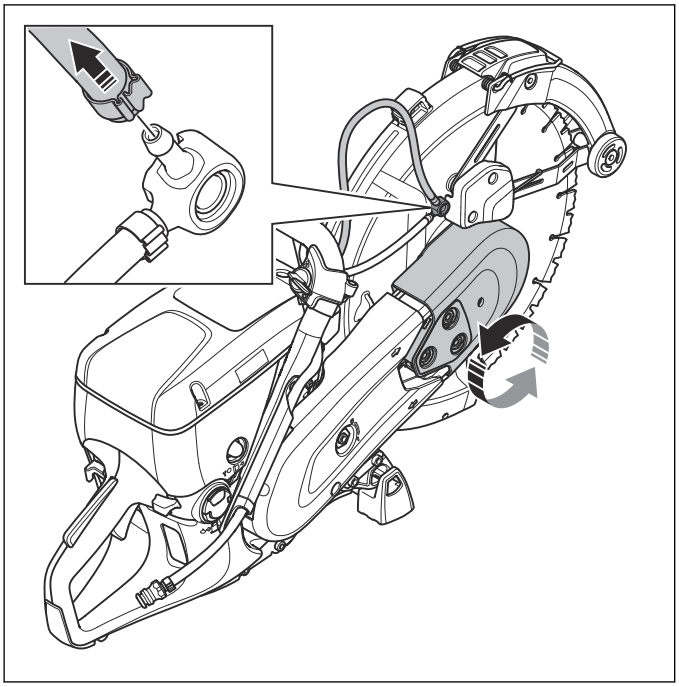
5.2.1 To remove the starter

1. Loosen the 4 screws on the guard.
2. Remove the starter.

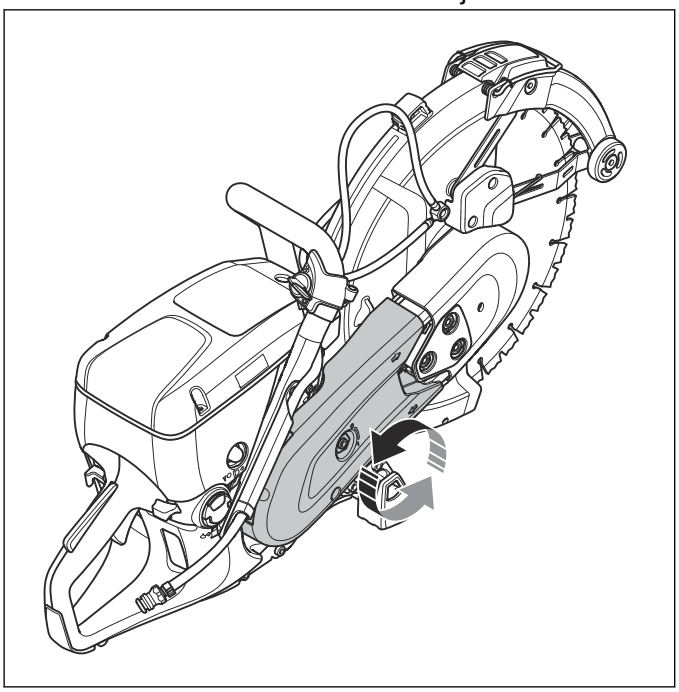


5.2.2 To remove the cutting head

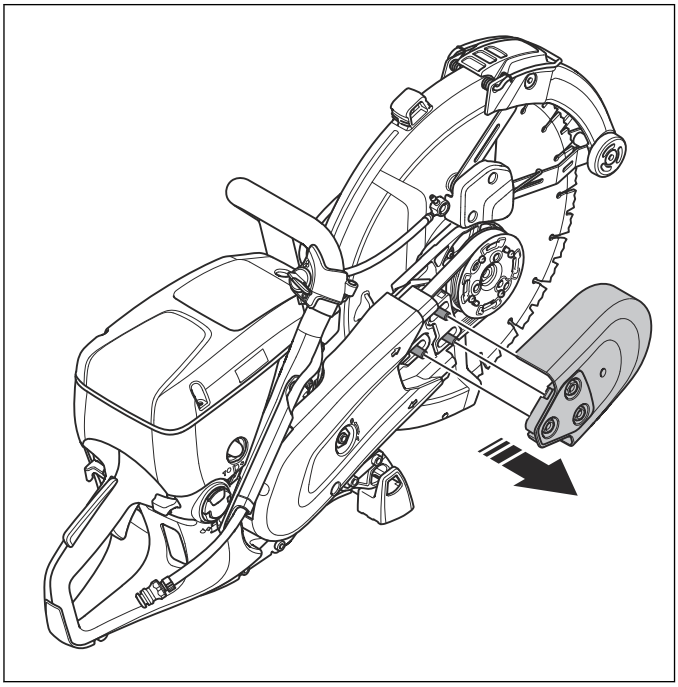
1. Loosen the hose clip. Refer to *To disassemble the wet system on page 66*. Loosen the 3 nuts on the front belt guard.



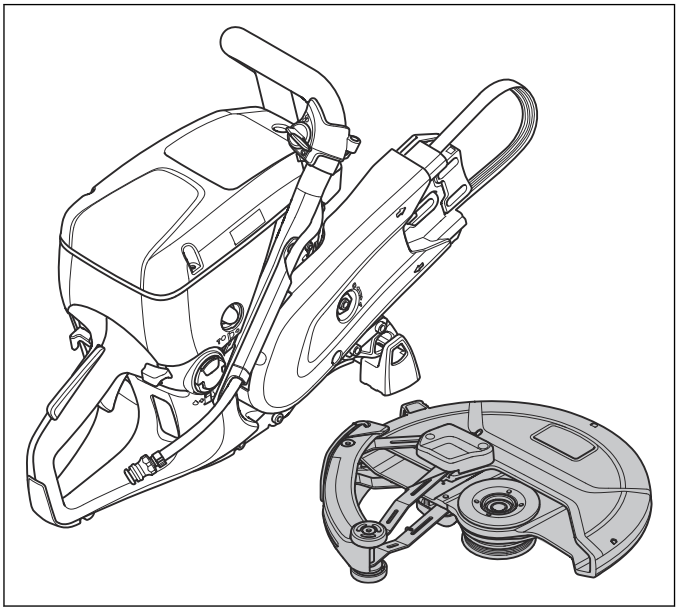
2. Loosen the belt tension with the adjuster screw.



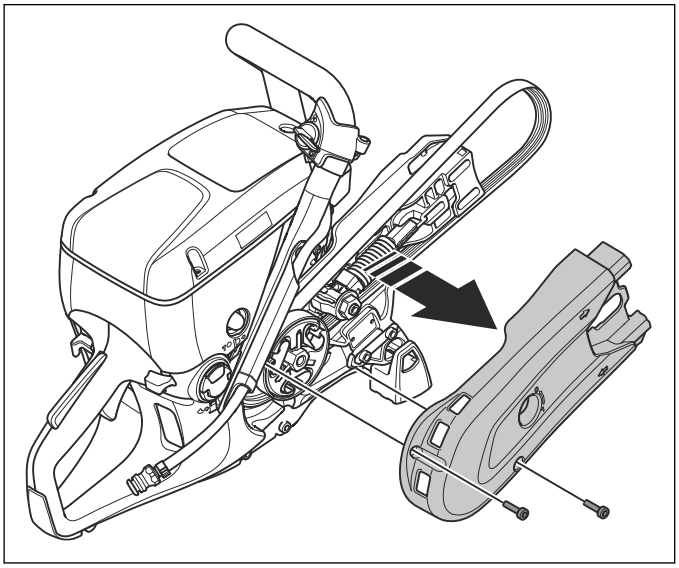
3. Remove the front belt guard.



4. Remove the cutting head.

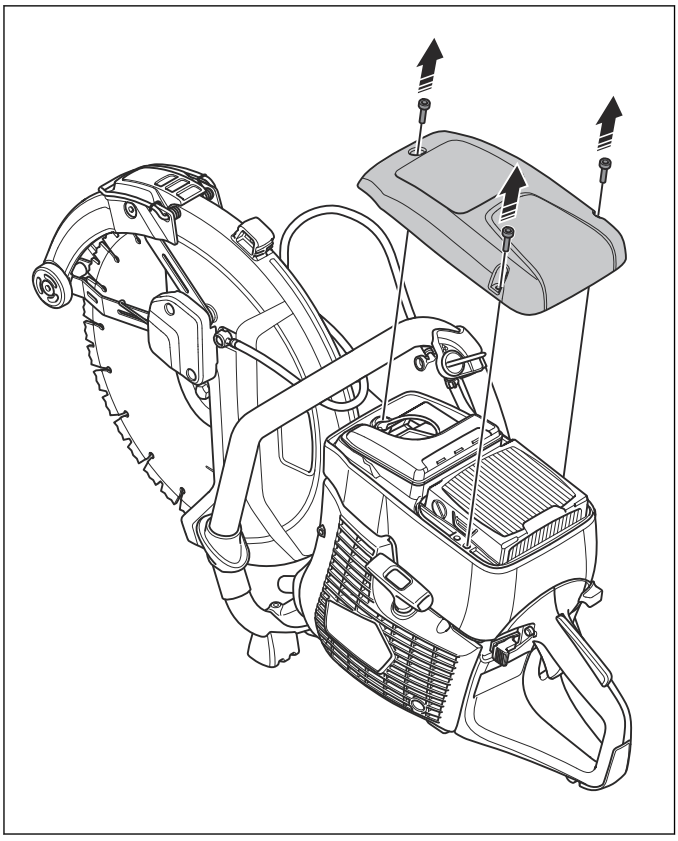


5. Remove the 2 screws on the rear belt guard. Remove the rear belt guard.

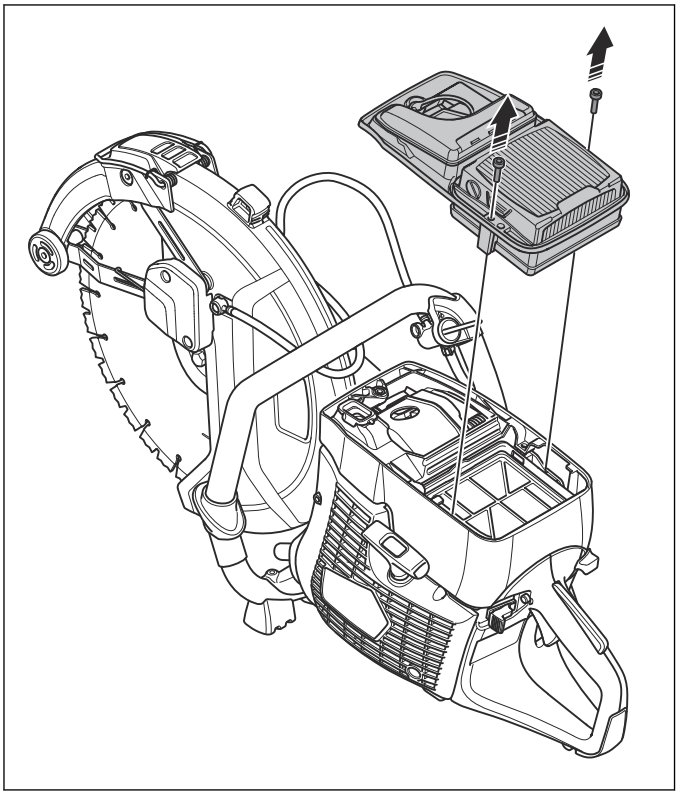


5.2.3 To remove the air filter

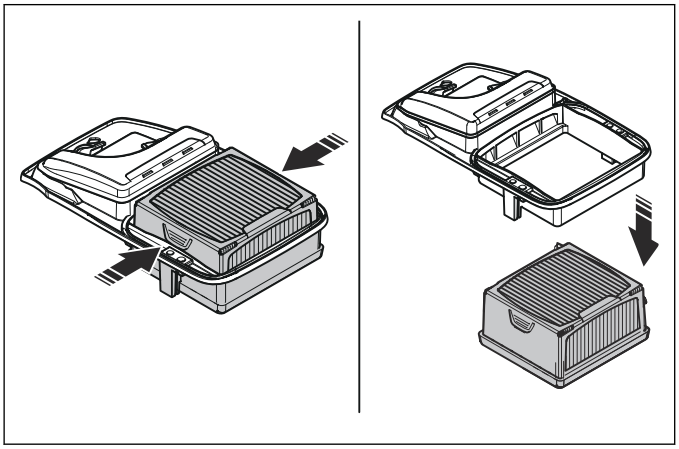
1. Remove the 3 screws and remove the air filter cover.



2. Remove the 2 screws and remove the air filter holder and the air filter.

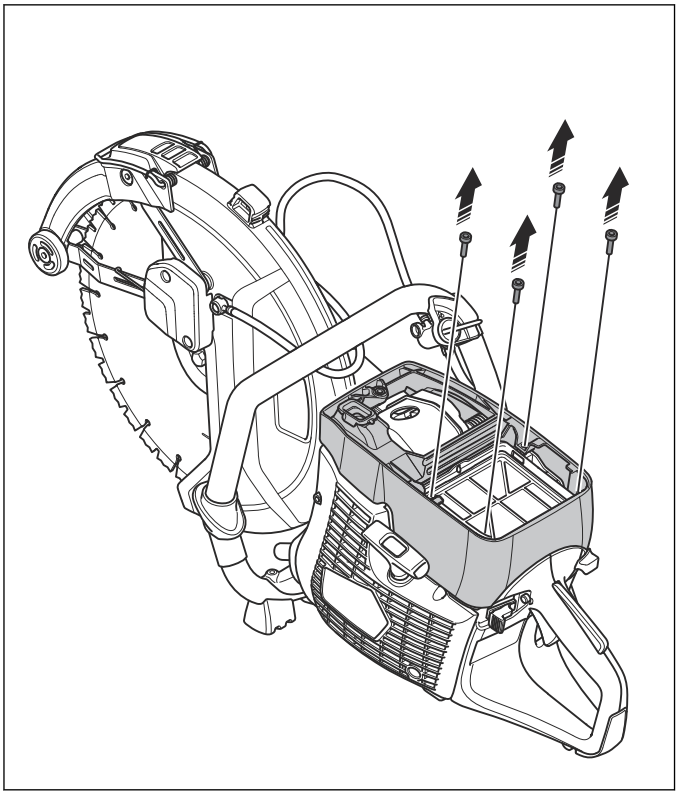


3. Remove the air filter.

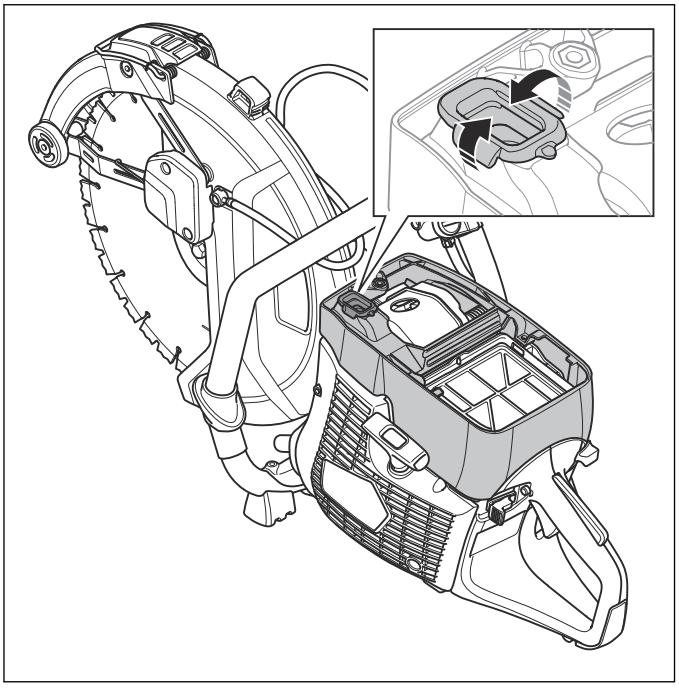


5.2.4 To remove the cylinder cover

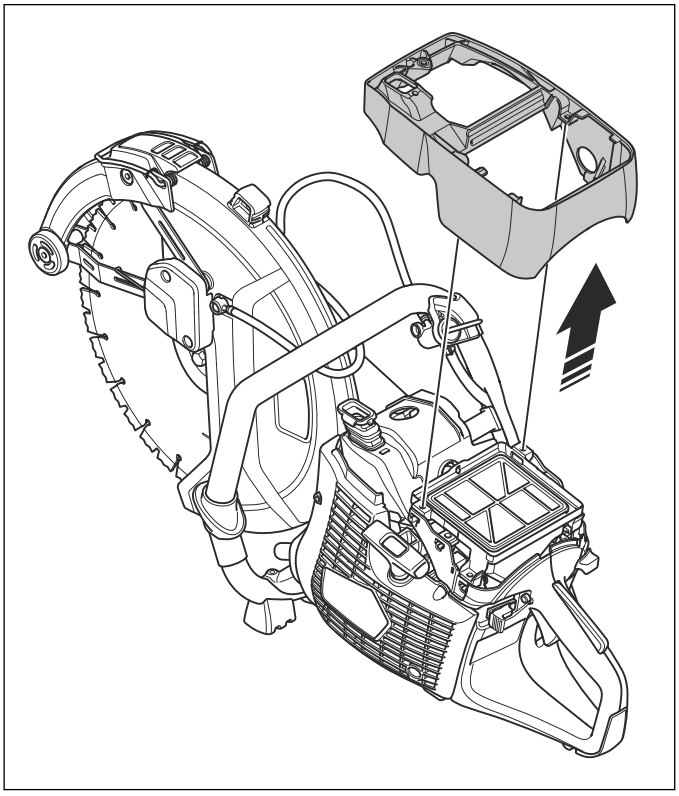
1. Remove the 4 screws.



2. Push the collar of the rubber seal through the hole.

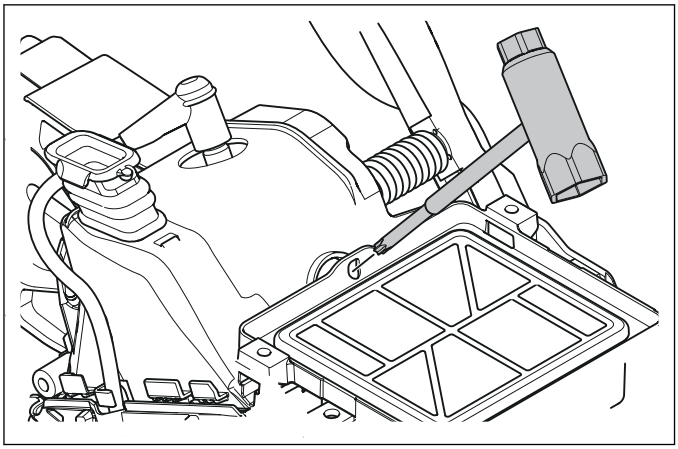


3. Remove the cylinder cover.

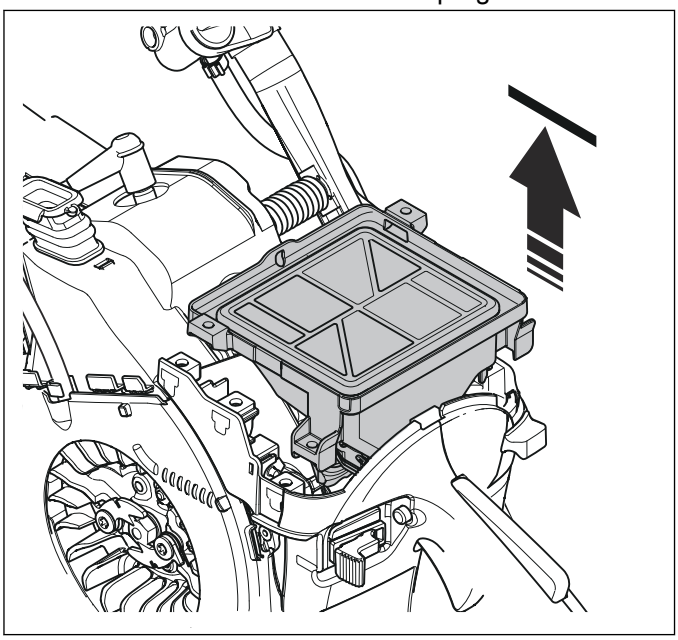


5.2.5 To remove the carburetor

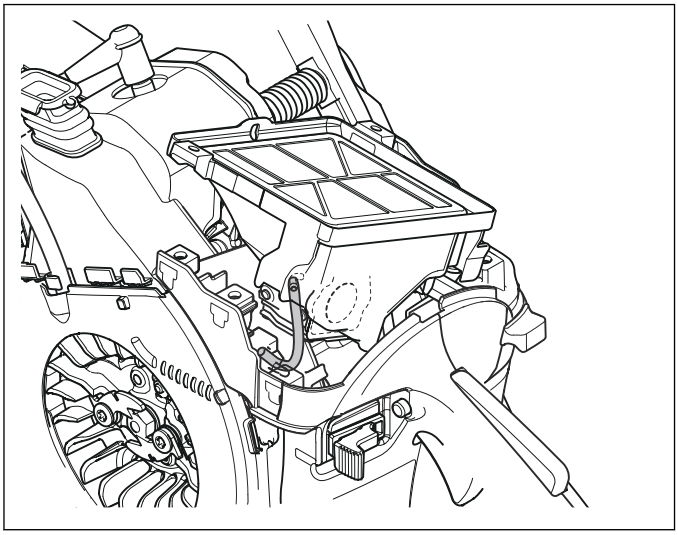
1. Remove the screw.



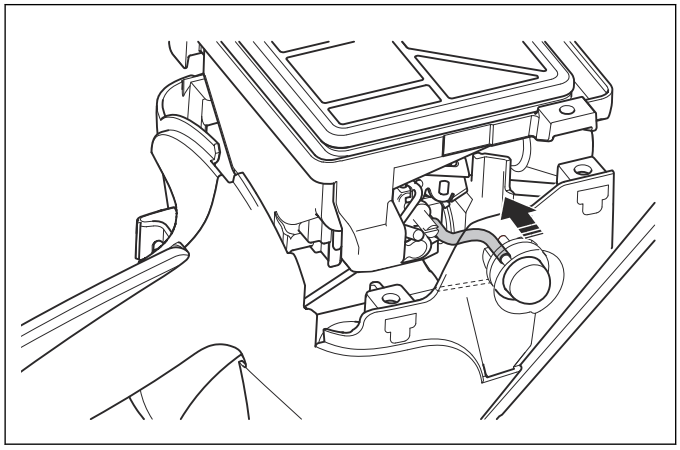
2. Lift the carburetor until you can get access to the fuel hose and the hose to the air purge bulb.



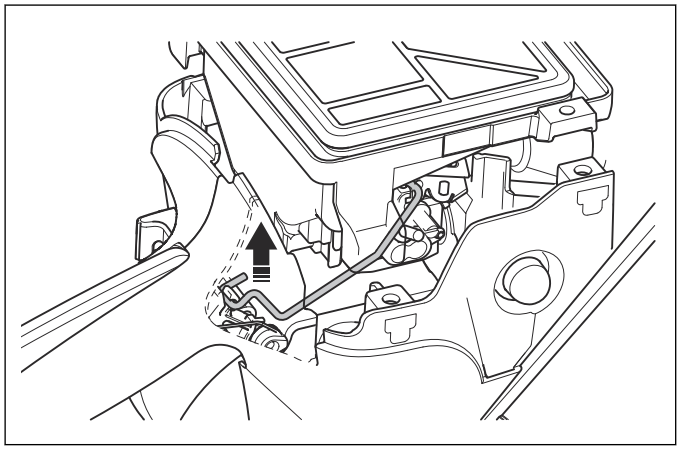
3. Remove the fuel hose from the carburetor.



4. Remove the hose to the air purge bulb.



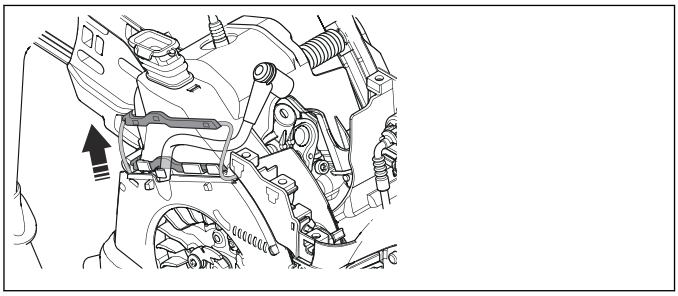
5. Remove the throttle rod from the throttle control.



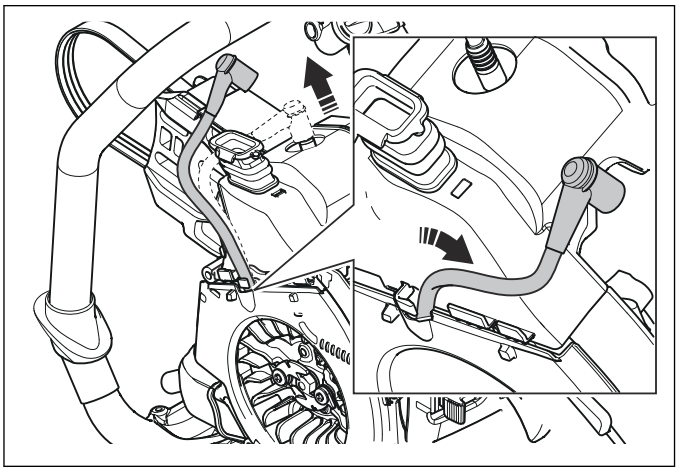
5.2.6 To remove the air duct

Remove the starter, air filter cover and cylinder cover before you remove the air duct.

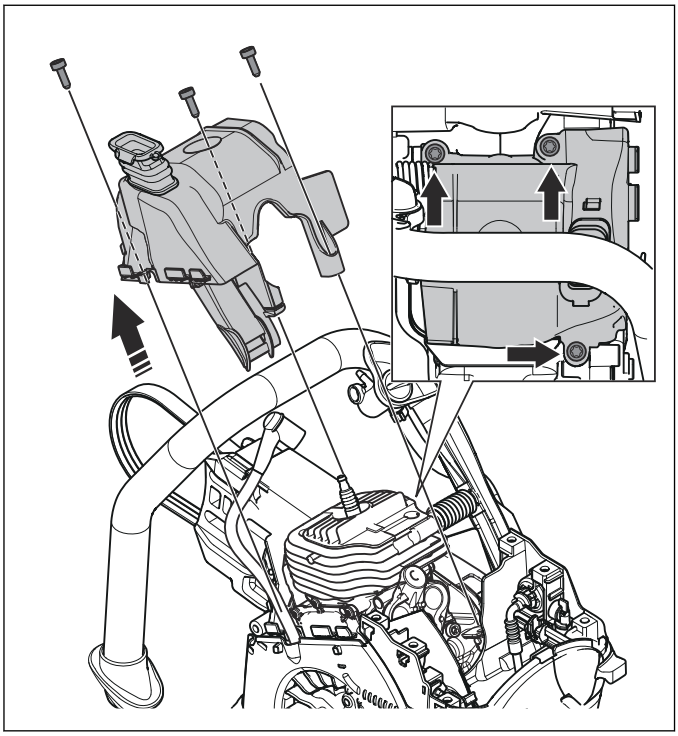
1. Lift the cable for the stop switch out of its holders.



2. Remove the ignition cable at the spark plug and lift the cable out of its holder in the cover.



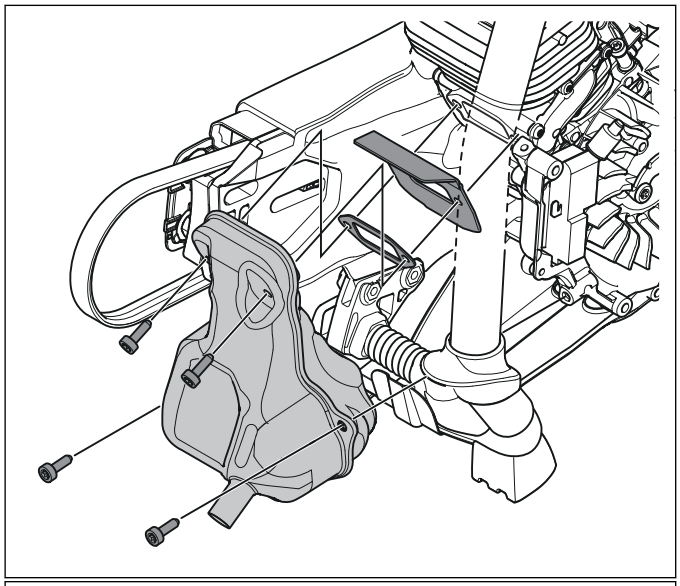
3. Remove the 3 screws on the air duct cover. Remove the air duct cover.

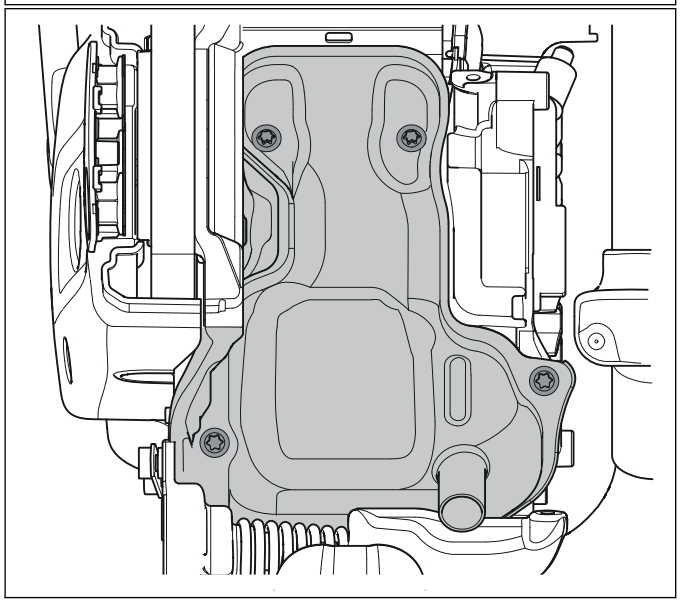


5.2.7 To remove the muffler

Remove the cutting head the and the starter before you remove the muffler.

1. Loosen the 4 screws.
2. Remove the muffler.

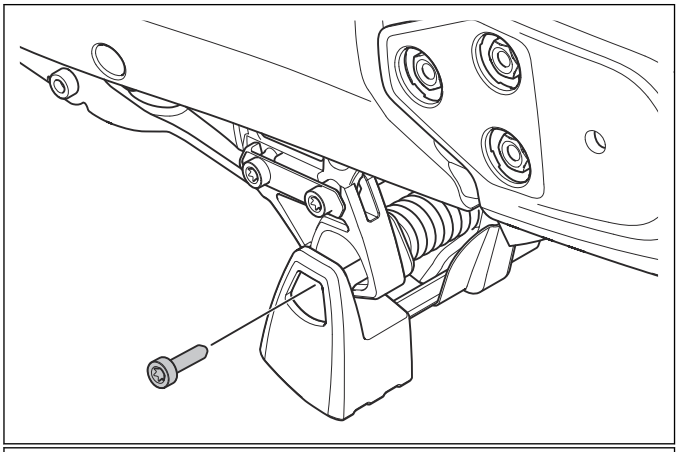


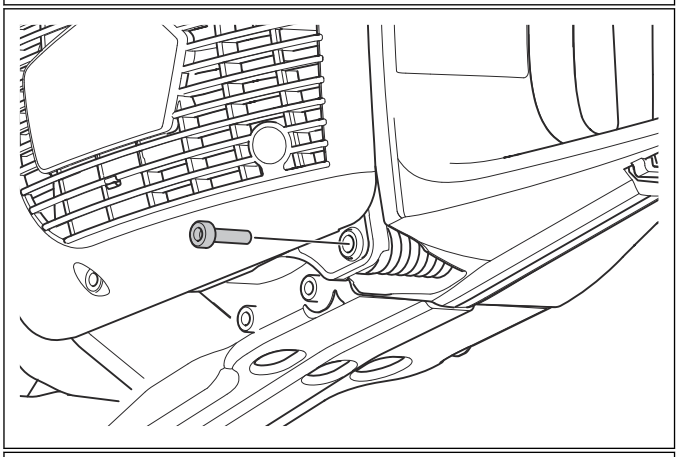


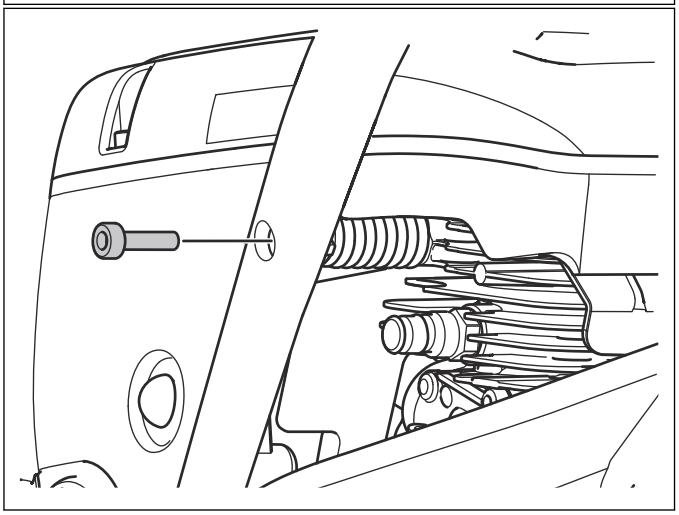
5.2.8 To remove the vibration damping units

1. Remove the air filter and cylinder cover. Refer to *To remove the air filter on page 17*.
2. Remove the air duct cover. Refer to *To remove the air duct on page 20*
3. Remove the screw that holds the carburetor. Refer to *To remove the carburetor on page 19*
4. Remove the cable lug by the ignition module. Refer to *To examine the short circuit cable and the stop switch on page 27*
5. Remove the cable at the ground point. Refer to *To remove the stop switch on page 28*

6. Remove the screws of the vibration damping units.



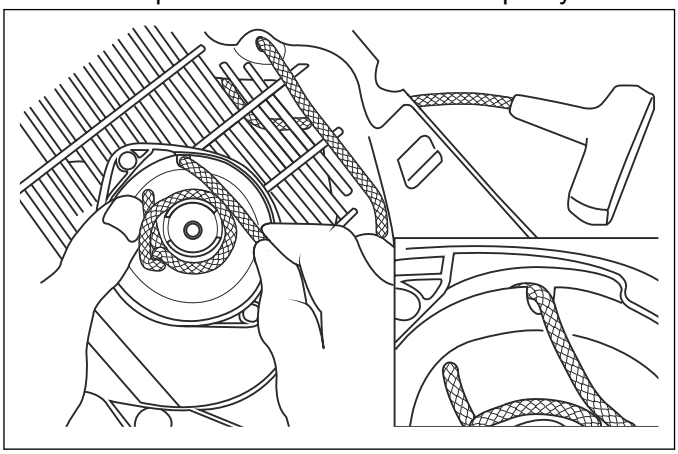




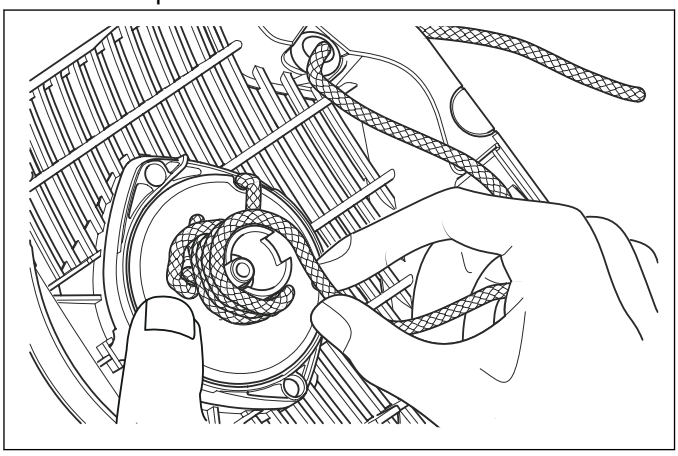
6.1 Starter

6.1.1 To remove the starter rope

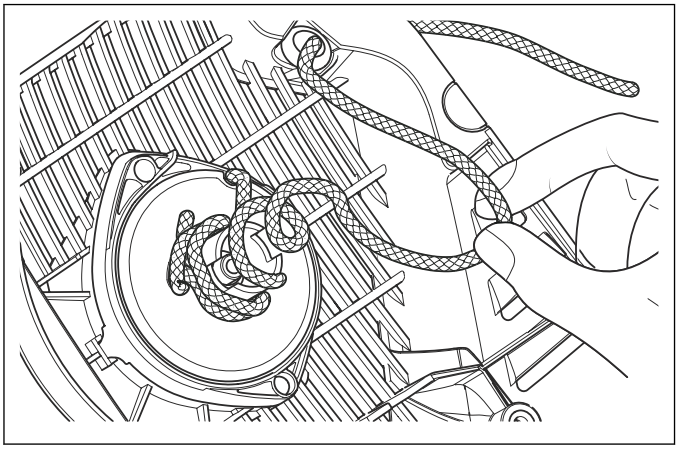
1. To remove the spring force from the return spring, pull out the starter rope approximately 12 in/30 cm. Hold the starter pulley with your thumb and put the starter rope in the notch on the starter pulley.



2. Let the starter pulley rotate slowly and wind up the starter rope on the metal sleeve.

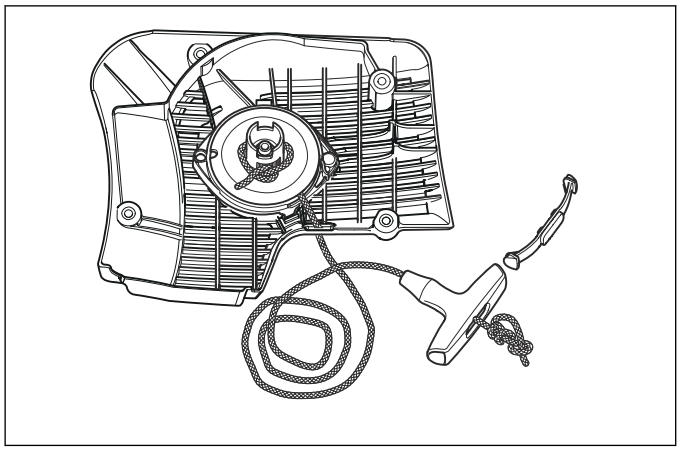


3. Remove the starter rope from the starter pulley.



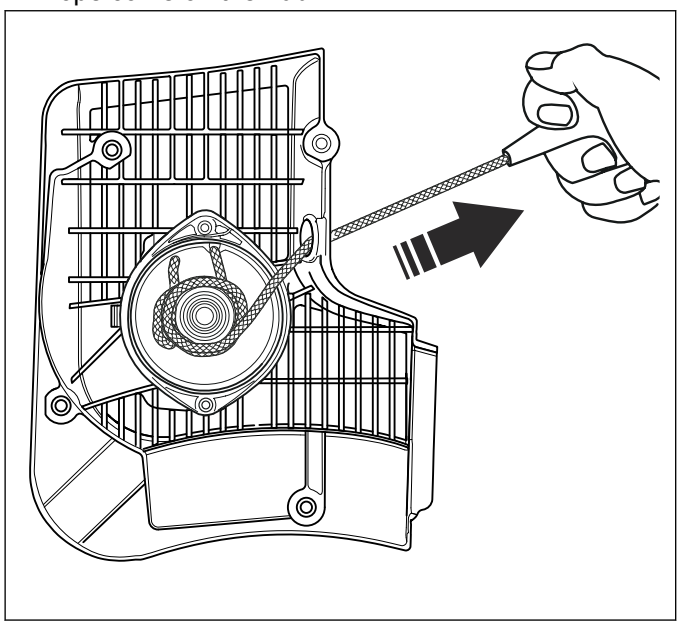
6.1.2 To attach the new starter rope

1. Put one end of the new starter rope from the top through the hole in the starter pulley. Then pull it out through the notch for the starter rope. Pull out most of the starter rope but keep some to make a knot.
2. Put the other end through the cover and on through the handle. Make 2 knots as in the illustration.



6.1.3 To load the return spring

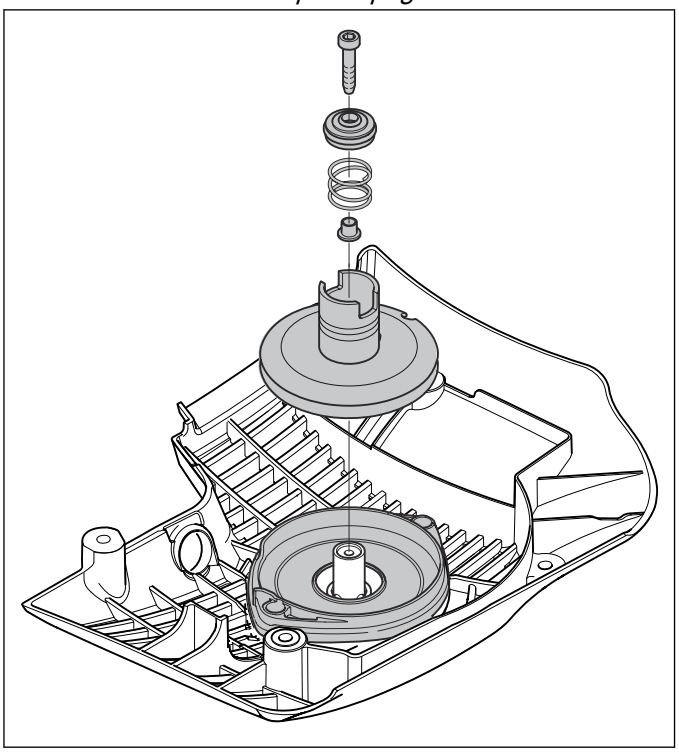
1. Put the starter rope in the notch.
2. Wind the starter rope 4 turns around the hub.
3. Pull out the starter rope handle to make the starter rope come off the hub.



4. Release the starter rope. Let it wind on the starter pulley. Do it again with 3 turns of rope around the hub.
5. Pull out the starter rope fully to make sure that the return spring is not an end stop. It must be possible to turn the starter pulley half a turn or more before the spring stops the movement.

6.1.4 To remove the starter pulley

1. Decrease the tension in the return spring. Refer to *To remove the starter rope on page 22*.



2. Remove the screw.
3. Remove the starter pulley.

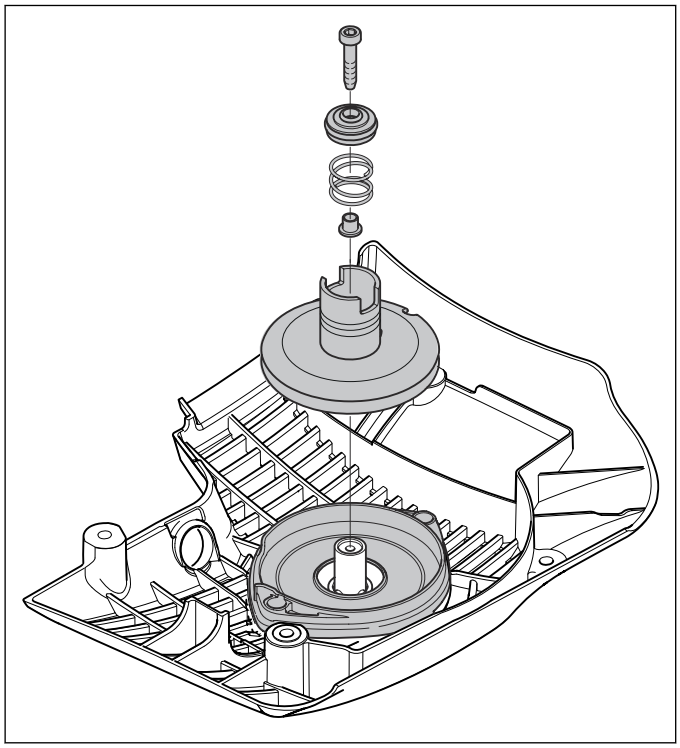
6.1.5 To clean and lubricate the starter pulley

1. Clean the surfaces between the starter pulley and the spring assembly.
2. Lubricate the hub with grease. Also apply some grease around the starter pulley hub to make the grease seal against the spring assembly.

6.1.6 To install the starter pulley

Note: Make sure that the spacer sleeve does not fall off.

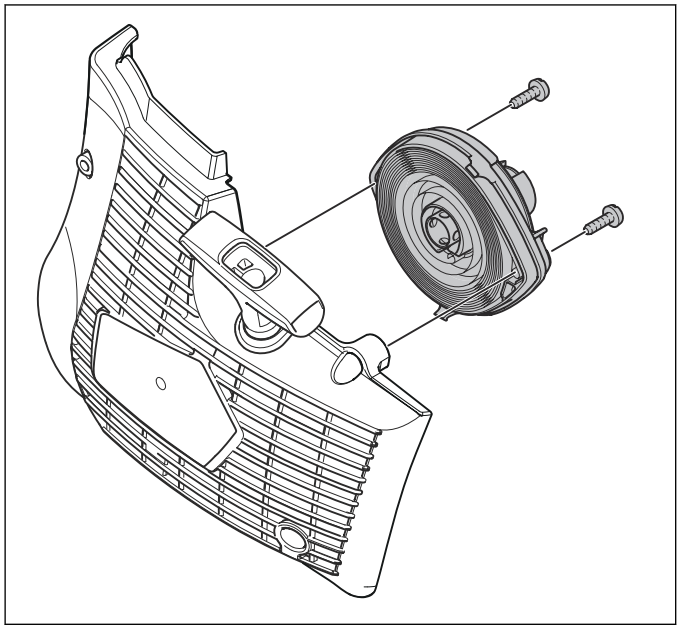
- Align the starter pulley notch with the end of the spring during assembly. Put the center bolt into the starter pulley assembly.



6.1.7 To remove the spring assembly

WARNING: Always use eye protection when you disassemble the spring assembly. There is a risk for eye injury, especially if a spring is broken.

1. Remove the 2 screws on the spring assembly.



2. Push the 2 brackets on the snap locks with a screwdriver.

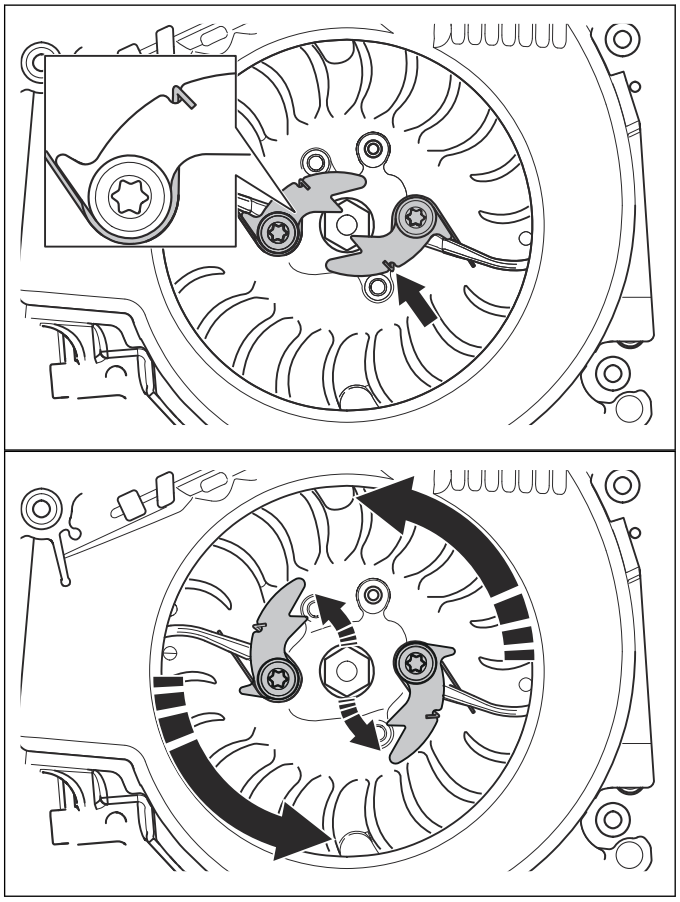
6.1.8 To clean the spring assembly

Note: Do not remove the spring from the spring assembly.

1. If the spring is dirty, blow clean with compressed air.
2. Apply a light oil on the spring.

6.1.9 Starter pawls

When the flywheel does not move, the starter pawls are pushed in the direction of the center by springs. When the flywheel rotates, the turning force pushes out the center pawls.



6.1.10 To examine the starter pawls

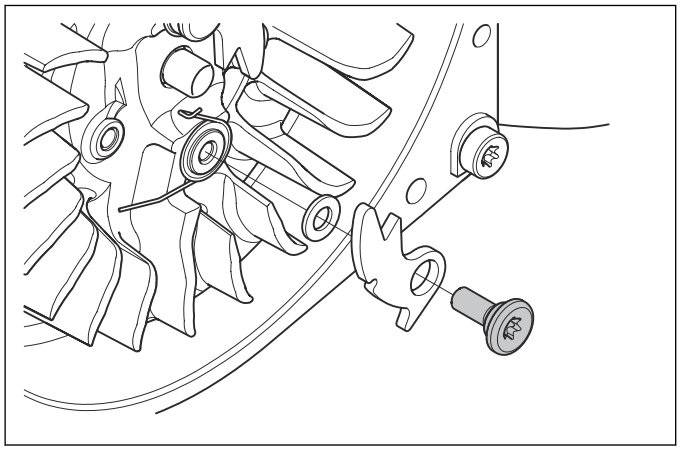
Note: Do not lubricate the starter pawls.

1. Make sure that the springs operate correctly and the starter pawls move freely.
2. If it is necessary, disassemble and clean the starter pawls.

6.1.11 To disassemble the starter pawls

Note: The position of the washer is below the starter pawls against the flywheel. Make a note of the position of the springs in relation to the flanges on the flywheel.

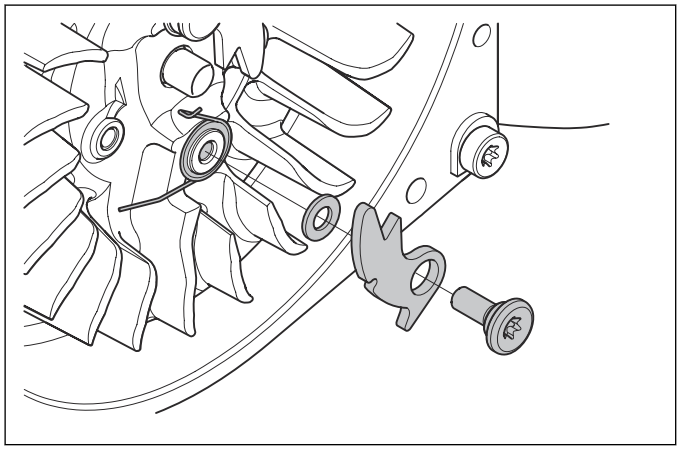
1. Remove the shoulder screws.



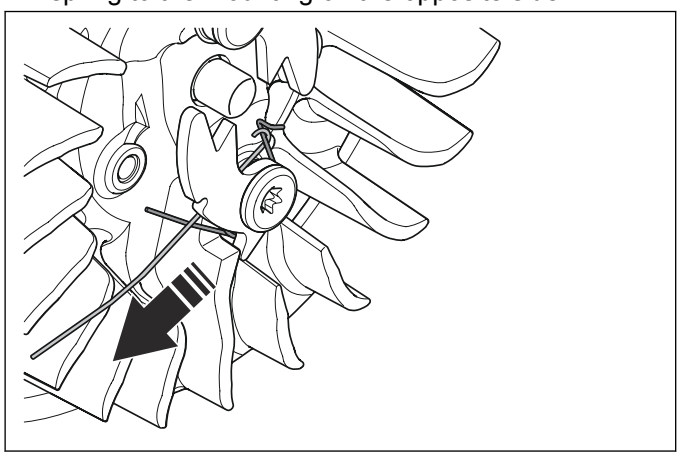
6.1.12 To assemble the starter pawls

Note: The spring must not get caught between the starter pawl and the flywheel.

1. Push the spring into position in the flywheel.



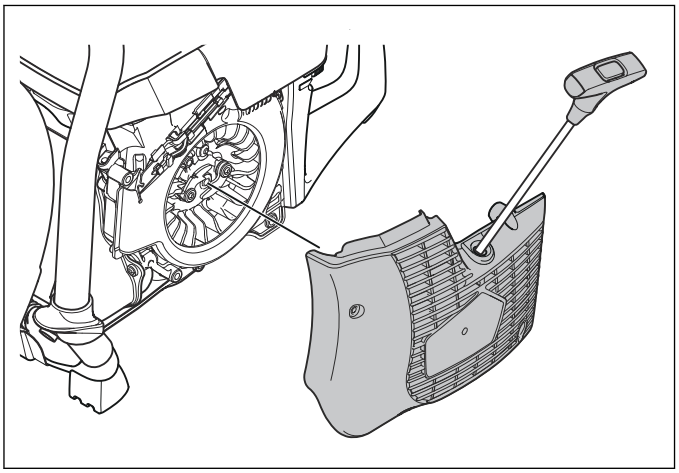
2. Install the washer, starter pawl and shoulder screw.
3. Bend the end of a thin steel wire. Use it to pull the spring to the mounting on the opposite side.



6.1.13 To install the starter

Note: The starter pawls must come into the correct position against the starter pulley sleeve.

1. Pull out the starter rope approximately 0.5 m.



2. Keep this position and put the starter against the product.
3. Slowly release the starter rope until the starter pawls come into the correct position.
4. Tighten the 4 screws on the starter to a torque of 7–9 Nm.

6.2 Ignition system

6.2.1 Function

The ignition system has no moving parts and it is not sensitive to moisture and dirt.

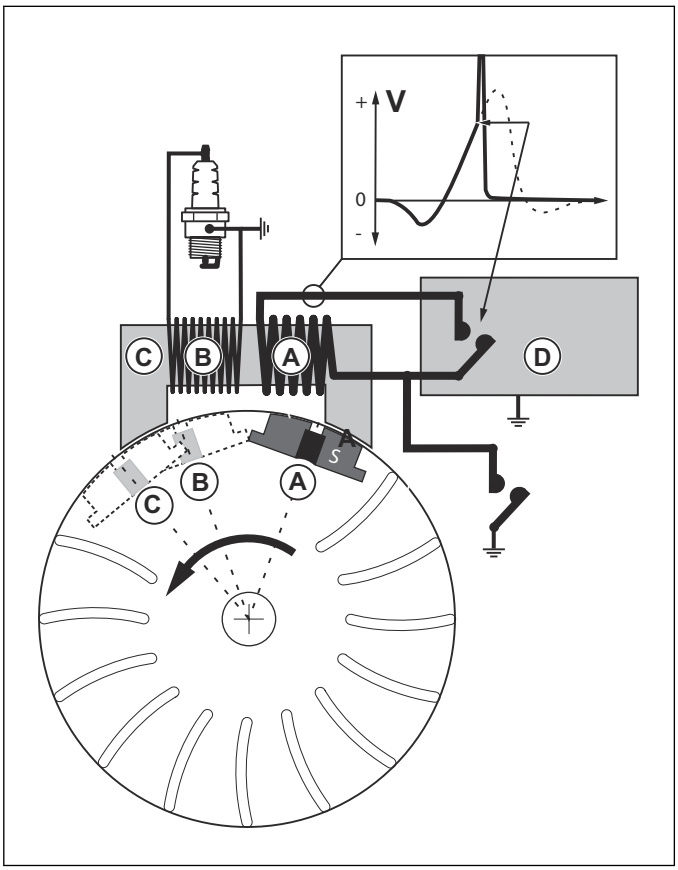
It is not necessary to adjust the ignition point.

The product has an overspeed protection rev limiter. The limit is 9300 rpm.

The ignition system has a primary coil (A) and a secondary coil (B). They are wound around an iron core (C). An electronic digital unit (D) controls the switch function.

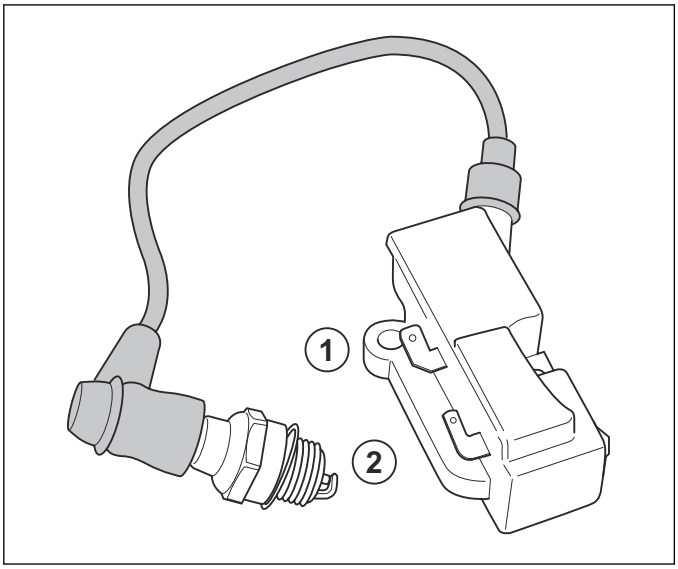
The voltage sequence is in the diagram in the illustration. The dotted line shows the voltage if the current is not broken.

Current moves through the coil by the permanent magnet on the flywheel. The electronic digital unit senses the voltage in the primary coil. It breaks the current before the piston is at the high turning point. Until this point, the primary coil is in a closed circuit. With an open circuit the current stops to flow and voltage increases from 5V (Volt) to approximately 200V. The primary and secondary coil work as a step-up transformer. The secondary coil increases the voltage to 20 000V. This causes a spark.



6.2.2 Ignition unit

The ignition unit is sealed and cannot be repaired. The spark plug cable, the connection unit to the spark plug and the seal on the ignition unit can be replaced.



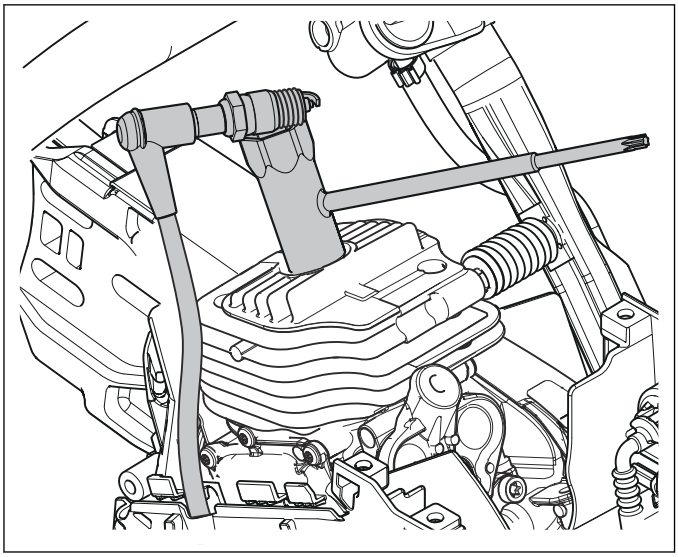
1. Stop switch
2. OilGuard

6.2.3 Troubleshooting ignition system

Examine the ignition system first if the engine does not start.

6.2.4 To examine the ignition spark

1. Ground the spark plug to the cylinder.



2. Move the stop switch to the operation position.
3. Pull the starter rope handle.

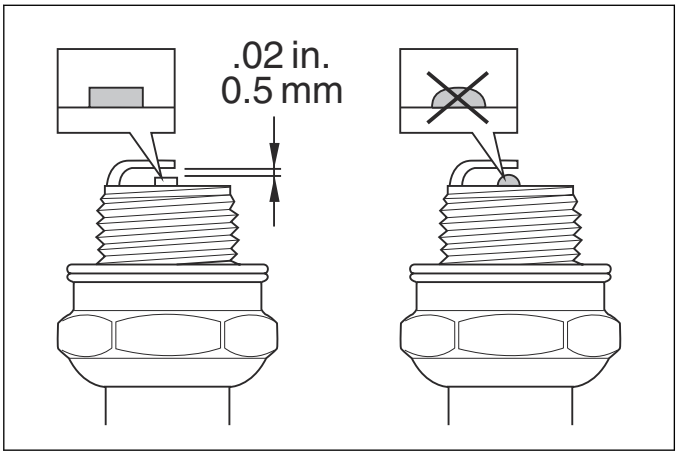
If there is no spark, the problem can be a defective spark plug, defective ignition cable or a damaged short circuit cable. Examine the spark plug.

6.2.5 To examine the spark plug

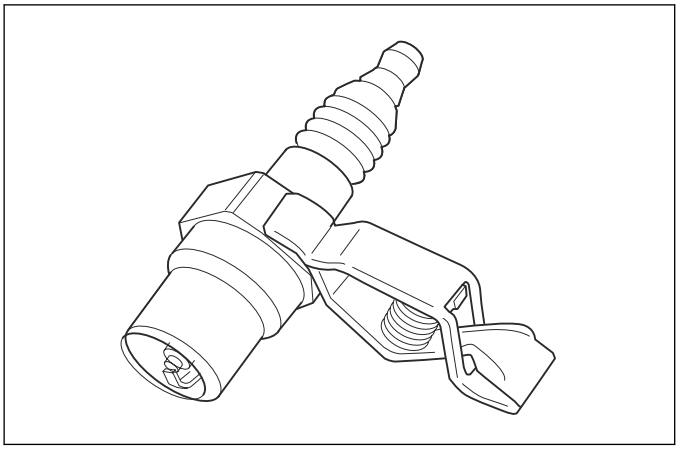
The electrode gap must be .02 in/0.5 mm.

The electrodes must be free of dirt and oil. Clean with a wire brush.

Note: An electrode with soft edges and damaged ceramic around it can cause pre-ignition. You must replace a spark plug with soft edges.



1. Replace the spark plug with the test spark plug. Refer to *Servicing tools overview on page 12*.

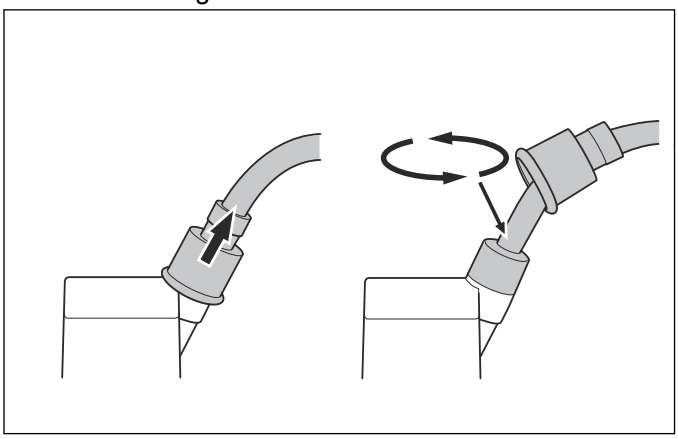


2. Move the stop button to the run position.
3. Ground the test spark plug.
4. Pull the starter rope handle as if you start the product.

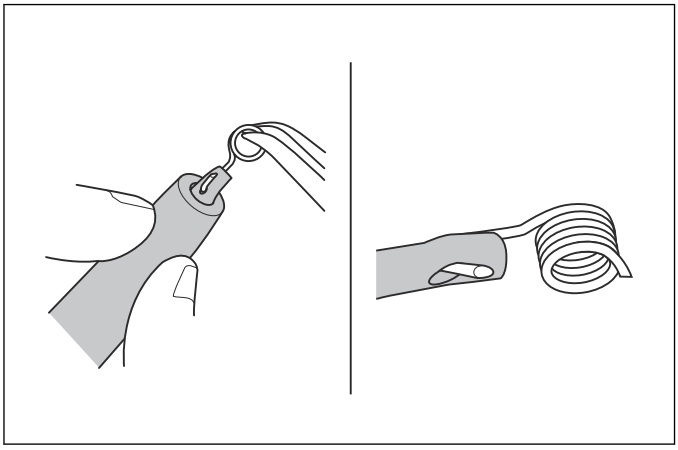
If there is a spark, the spark plug is defective. Replace the spark plug. If there is no spark, examine the ignition cable and the short circuit cable.

6.2.6 To examine the ignition cable

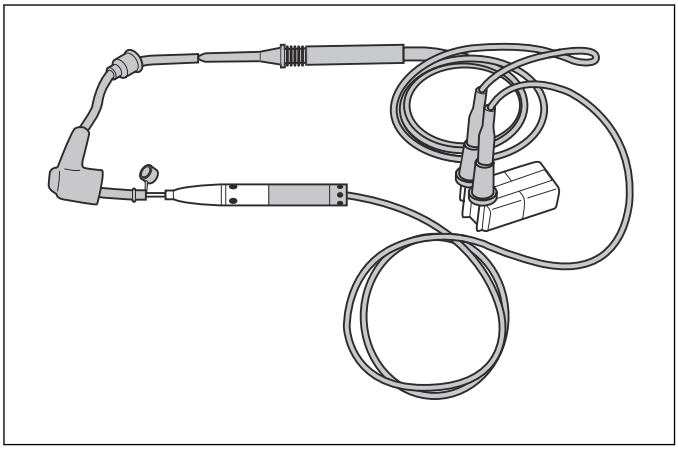
1. Pull up the rubber seal by the ignition unit and remove the ignition cable.



2. Put a pair of pointed pliers in the spark plug connection and pull out the spring and cable end.



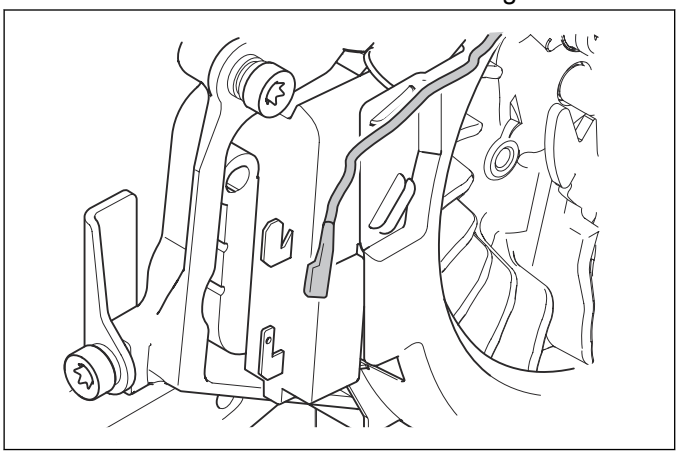
3. If the connection is defective, the ignition cable can be made shorter. Make a new hole in the cable and attach the connection spring.
4. The connection in the illustration can be used to make sure that the ignition cable is not broken. The battery is connected in series with a test lamp. A resistance control can also be made with a multimeter.



If there is no spark after this test, examine the short circuit cable.

6.2.7 To examine the short circuit cable and the stop switch

1. Remove the starter. Refer to *To remove the starter on page 15*.
2. Remove the short circuit cable on the ignition unit.



3. Put back the starter and make sure that the spark plug makes a spark.
4. Examine the short circuit cable.
   a) Use a battery in series with a test lamp or a multimeter.
   b) Connect to the short circuit cable and the engine body.

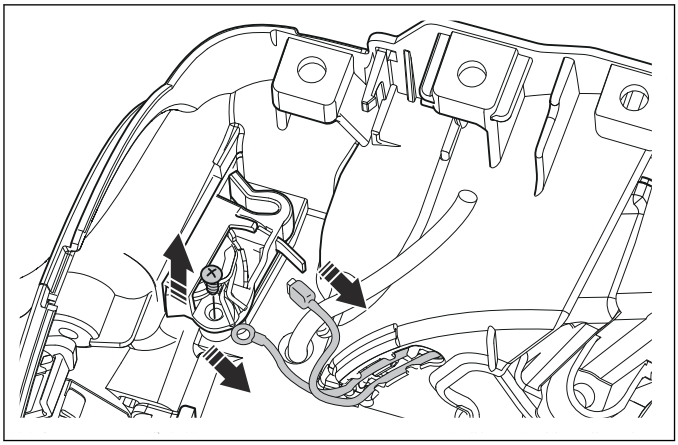
The lamp must not come on when the stop switch is in operation mode.

If the lamp comes on, examine the insulation on the short circuit cable.

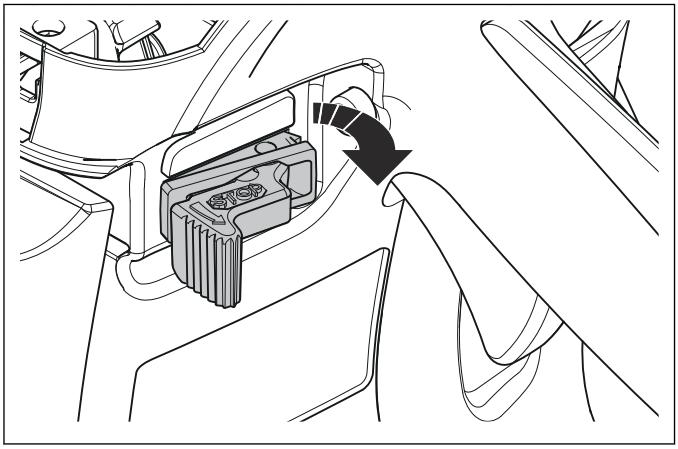
If the short circuit cable is not damaged, examine the stop switch. If the short circuit cable and the stop switch operate correctly, replace the ignition unit.

6.2.8 To remove the stop switch

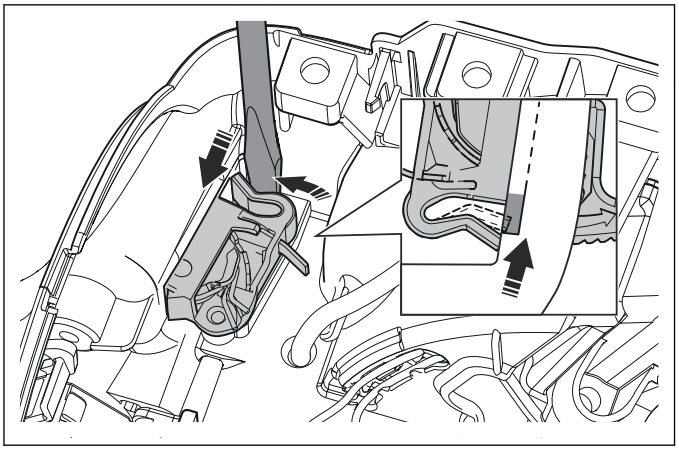
1. Remove the screw and disconnect the cable.



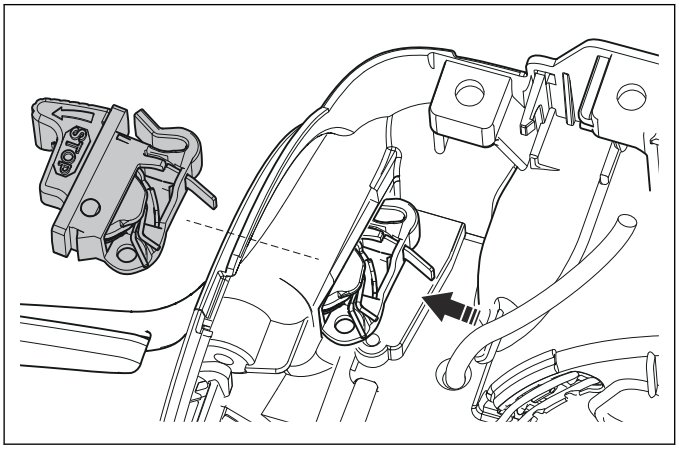
2. Pull the right side of the switch approximately 10 mm.



3. Push in the notch on the left side with a screwdriver and pull the right side out.

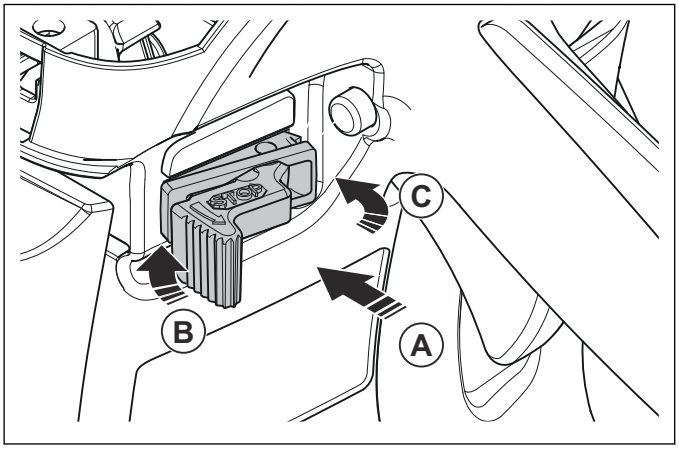


4. Remove the stop switch.

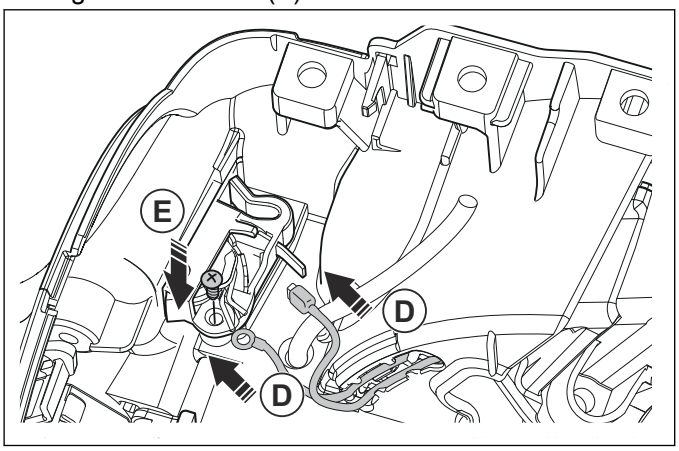


6.2.9 To install the stop switch

1. Push the stop switch into position (A).
2. Push in the left side until it locks (B).
3. Push in the right side (C).

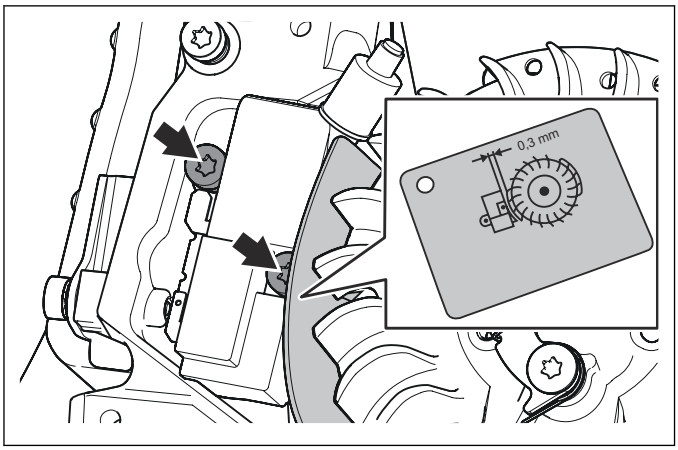


4. Connect the cables to the stop switch (D).
5. Tighten the screw (E).



6.2.10 To assemble the ignition unit

1. Align the magnet on the flywheel with the ignition unit.



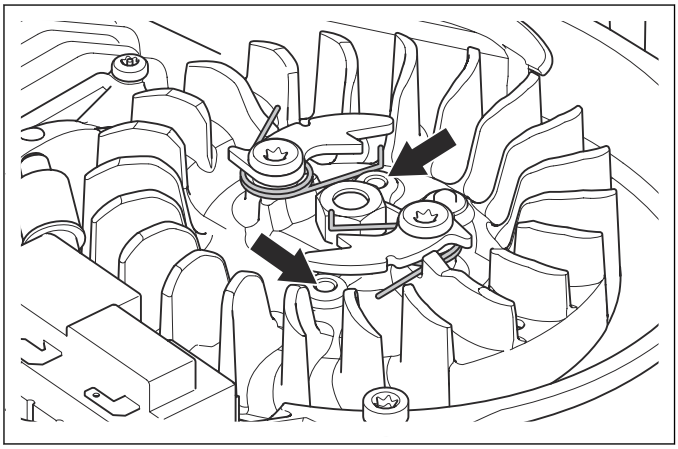
2. Put the air clearance gauge (.01 in/0.3 mm) against the magnets. Refer to *Servicing tools overview on page 10*.
3. Put the new ignition unit in position. Push it against the gauge as you tighten the screws. Tighten them with a torque of 10–12 Nm.

6.3 Flywheel

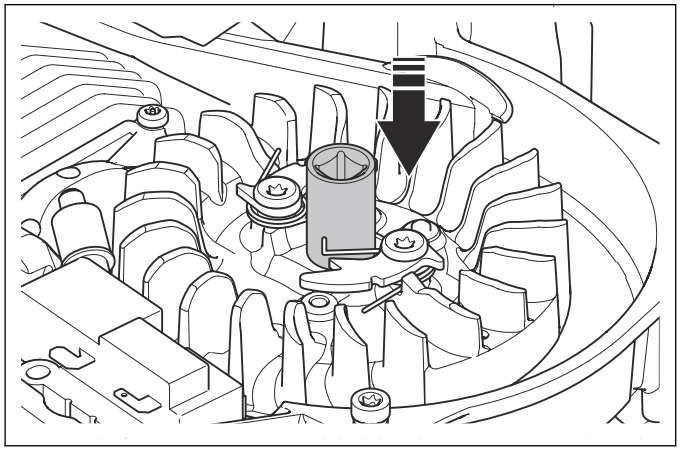
6.3.1 To remove the flywheel

Use a Husqvarna flywheel puller. Refer to *Servicing tools overview on page 11*.

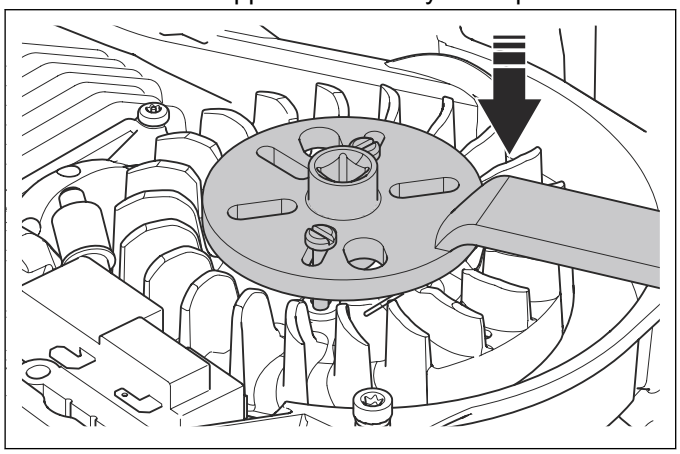
1. Remove the starter. Refer to *To remove the starter on page 15*.
2. Remove the lower air duct. Refer to *To remove the air duct on page 20*.
3. Loosen the springs and put the starter pawls in their outer positions.



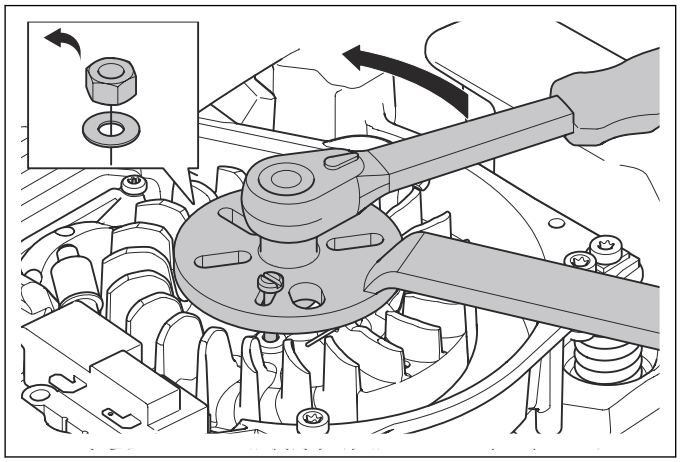
4. Put a 13 mm socket on the center screw of the flywheel.



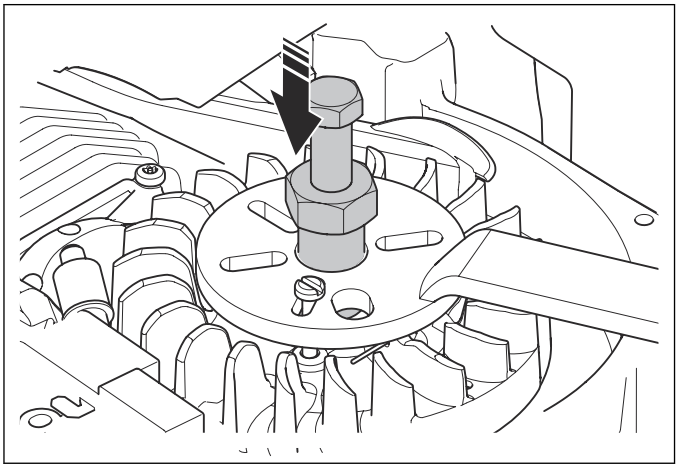
5. Attach the flywheel puller on the socket with the screw that is supplied with the flywheel puller.



6. Hold the handle of the flywheel puller to lock the flywheel. Remove the nut and washer.



7. Attach the screw press in the center.

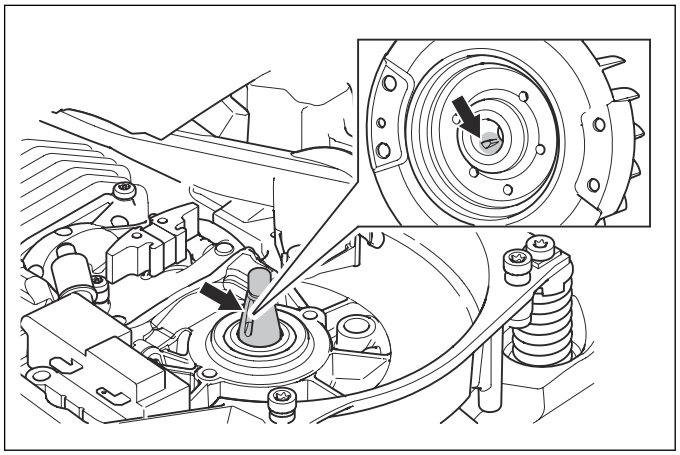


8. Lock the outer socket with a wrench and tighten the center screw until the flywheel releases.

Note: If the flywheel is not easy to remove, hit the center screw with a hammer. At the same time, lift the product with the handle of the flywheel puller.

6.3.2 To examine the seat and key

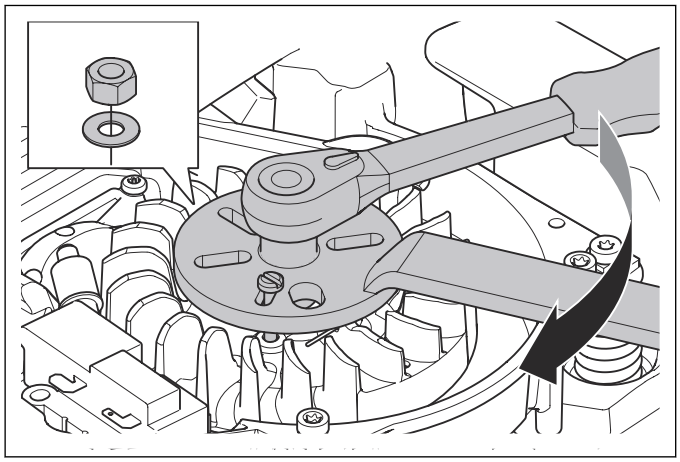
The key in the flywheel can not be replaced. If the key is damaged the flywheel must be replaced. For a correct ignition point, the position of the flywheel must align with the position of the crankshaft. The force of the center nut is not sufficient to hold the flywheel in the right position.



6.3.3 To install the flywheel

The crankshaft and the center of the flywheel must be free from grease. Tightening torque 25 – 30 Nm. Use a torque wrench to tighten the nut.

1. Align the key in the flywheel with the keyway on the crankshaft. Install the washer and nut.

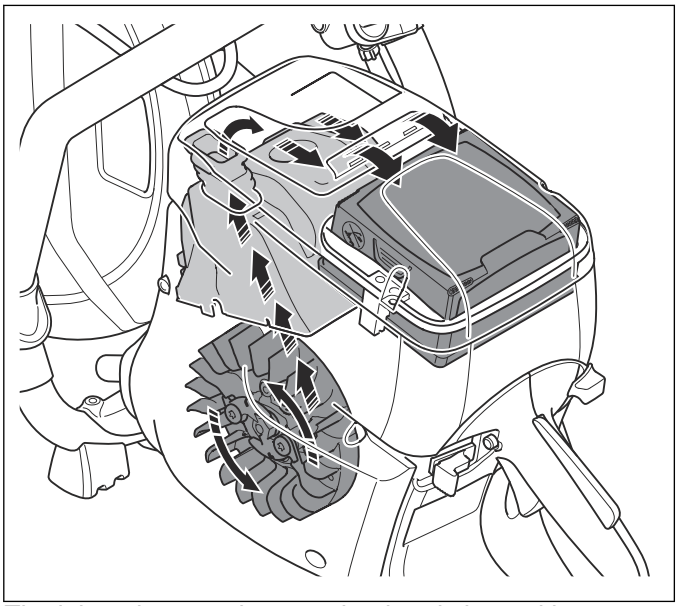


2. Remove the tool and put the springs on the starter pawls.

6.4 Air filter

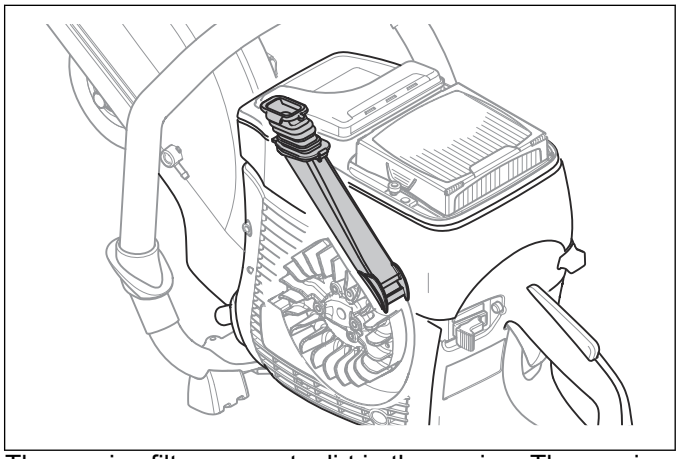
6.4.1 Function of the air filter

The centrifugal cleaning is the first step in the process to clean the inlet air. The blades on the flywheel supply the cylinder with cool air. This is shown in the illustration. The blades are also the part in operation on the centrifugal cleaning of the inlet air of the engine. An inlet tube is installed near the blades on the flywheel. The centrifugal force prevents large particles in the inlet tube. The centrifugal force pushes the large particles out before they can go into the tube. Only small dust particles go with the air to the inlet.

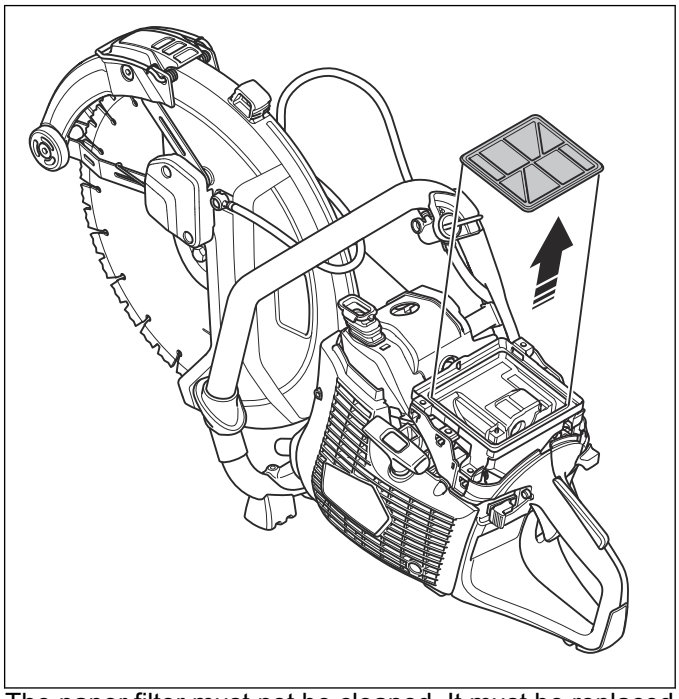


The inlet tube must be examined and cleaned in connection with filter replacement. Blow clean dust from dry cutting with compressed air. Material from wet cutting must be removed mechanically. Make sure that

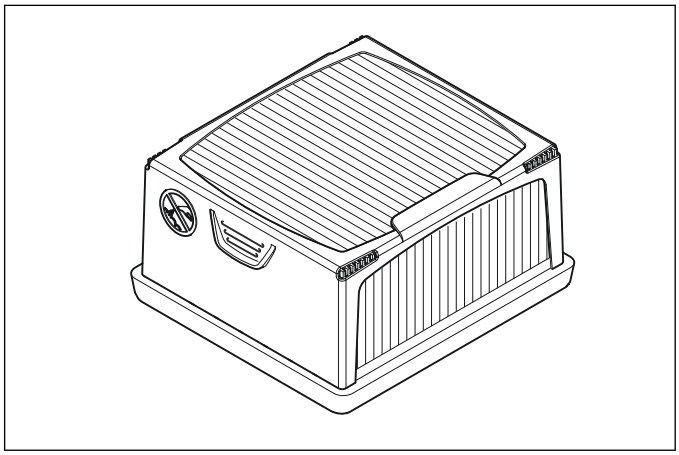
the rubber seal on the air duct cover is not damaged. Make sure that the rubber seal is correctly attached in the cylinder cover.



The service filter prevents dirt in the engine. The service filter must only be replaced when damaged.



The paper filter must not be cleaned. It must be replaced when necessary. The material to be cut and if the dust from the cutting is wet or dry controls how frequent. Replace the filter when the power of the product starts to decrease.



Note: Be careful when the filter is removed. No dust particles fall down in the carburetor inlet. Removal of waste is best done with a vacuum cleaner.

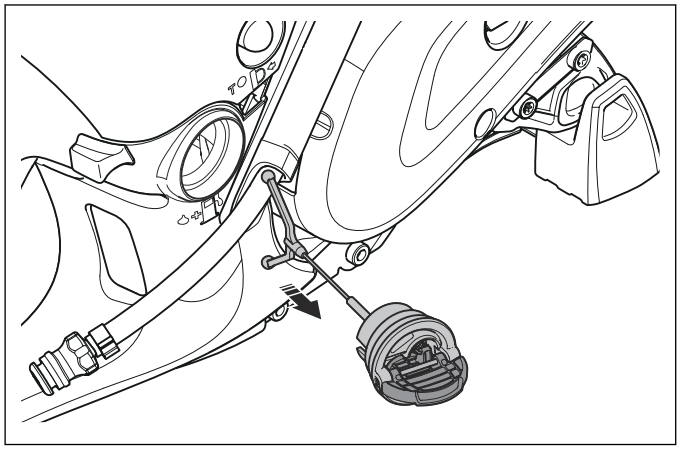
Note: Make sure the inlet pipes are not damaged and that it has a tight seal to the filter and the carburetor. Dust in the inlet pipes is a sign of dangerous faults in the filter system. They must be repaired before the product is operated.

6.5 Fuel system

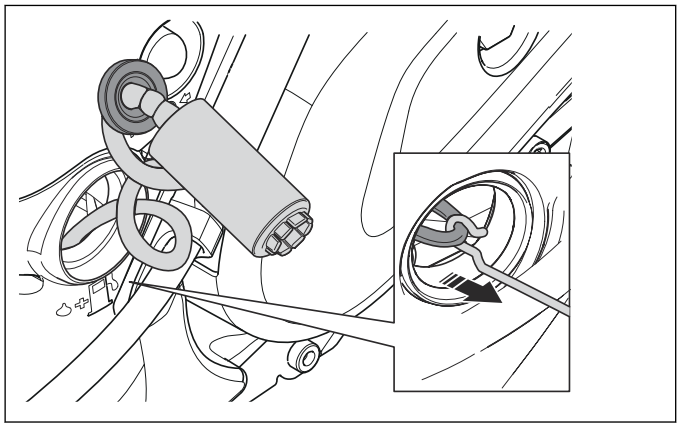
6.5.1 To remove the fuel filter

To remove the fuel filter, use Husqvarna hose catcher. Refer to *Servicing tools overview on page 11*.

1. Remove the fuel tank cap.



2. Catch the fuel hose with Husqvarna hose catcher and pull out the fuel filter.



3. Move back the metal weight and remove the fuel hose.

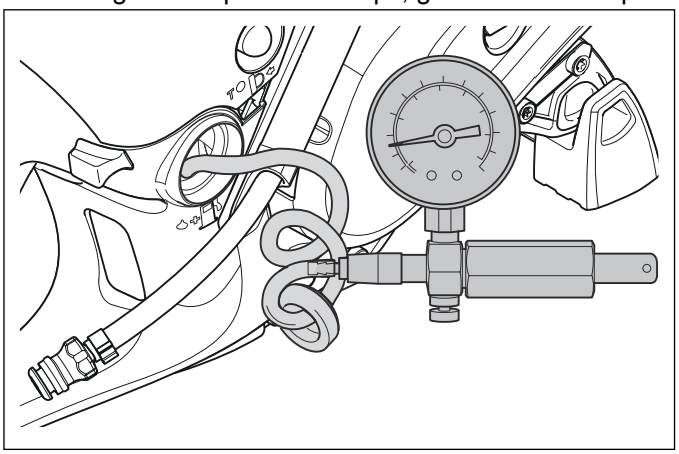
6.5.2 To examine the fuel filter

1. Examine the filter, make sure it is not damaged.
2. If the filter is very dirty, it can be because of dirty fuel. If necessary, drain the fuel and filter it before using it in the product.

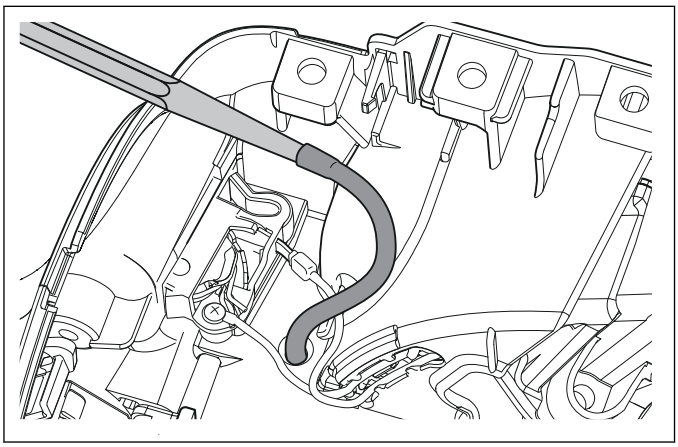
Note: Dirty filters must not be cleaned but replaced with a new one.

6.5.3 To examine the fuel system for leakages

1. Connect the adapter to a pressure test tool. Refer to *Servicing tools overview on page 11*.
2. Increase the pressure to approximately 7 psi/0.5 bar. If the pressure is constant, the fuel system has no leakage. If the pressure drops, go to the next step.

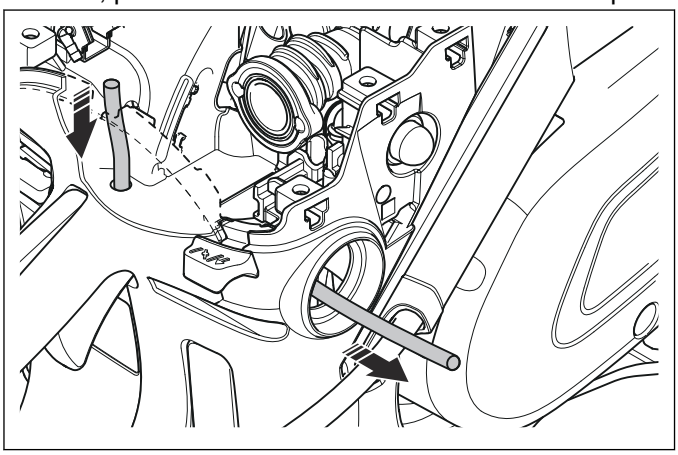


3. To make sure that the fuel hose does not cause the leakage, remove the carburetor unit. Seal the fuel hose by the carburetor and do the pressure test again. If the fuel hose is not damaged, the carburetor must be examined.



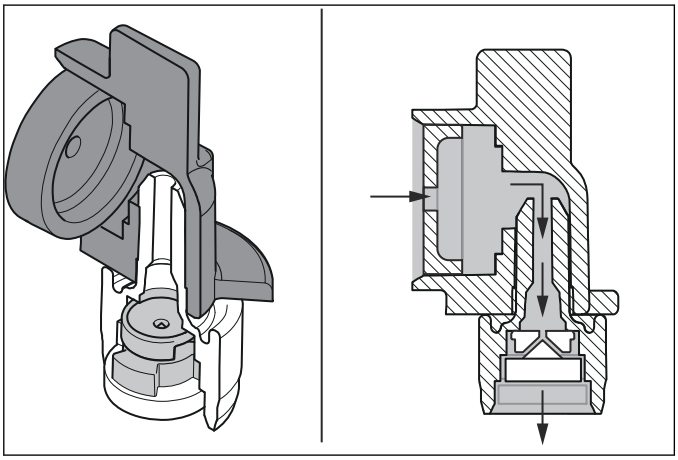
6.5.4 To remove and install the fuel hose

- Push the fuel hose down in the tank. At the same time, pull it out from the hole for the fuel tank cap.



6.5.5 Function of the tank venting

The fuel tank has a check valve that lets air enter the tank, but prevents fuel leakage. The filter lets air through slowly.

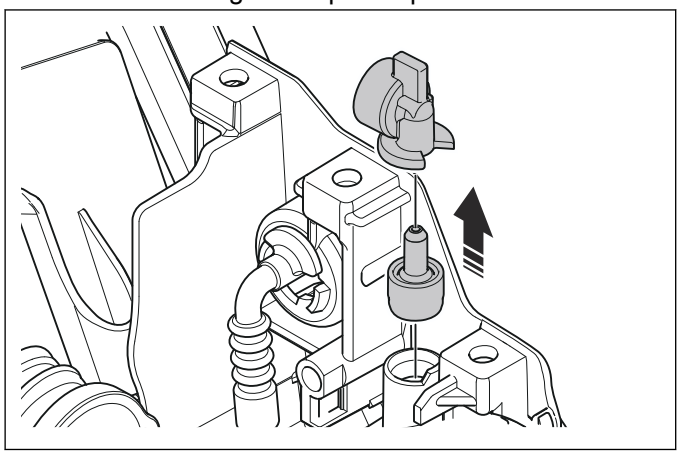


6.5.6 Tank air flow fault indication

If the tank air flow is blocked and the engine operates, the tank will have low pressure. This decreases fuel supply and the power. When you open the fuel tank cap you will hear the sound of air suction. Replace a clogged filter.

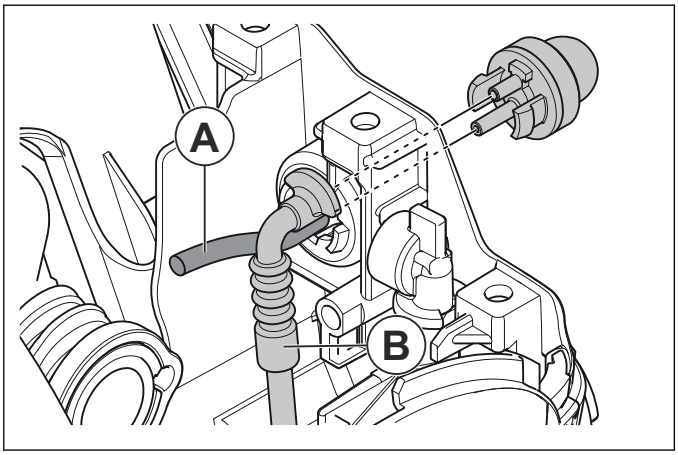
6.5.7 To remove the filter for the fuel tank venting

- Remove the check valve and then the filter for the fuel tank venting with a pair of pliers.



6.5.8 Function of the air purge bulb

The air purge bulb removes air from the fuel chamber of the carburetor and fills it with fuel.



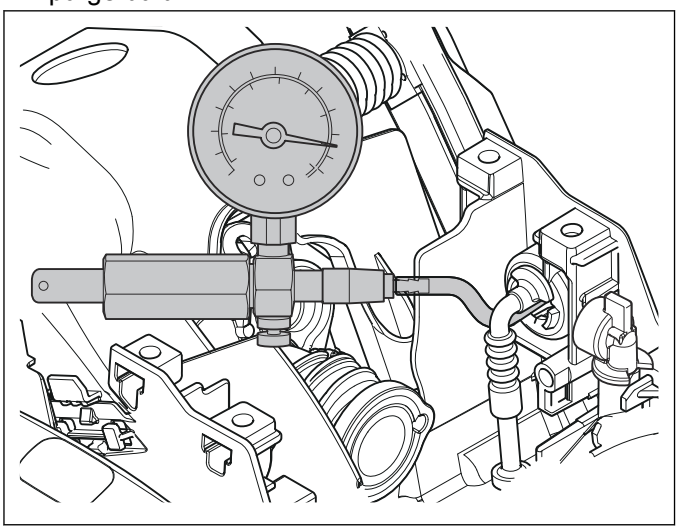
Hose (A) is connected to the carburetor. When you push the air purge bulb, a vacuum is caused and fuel fills the fuel chamber. When the fuel chamber is fully filled, unwanted fuel is pushed to the tank through return hose (B). This means that the fuel level in the carburetor does not become too high.

6.5.9 To do a test of the air purge bulb

A Husqvarna test instrument for fuel lines and check valves is necessary. Refer to *Servicing tools overview on page 11*

If the air purge bulb does not fill with fuel when you push it, do this procedure.

1. Connect the test instrument to the hose from the air purge bulb.

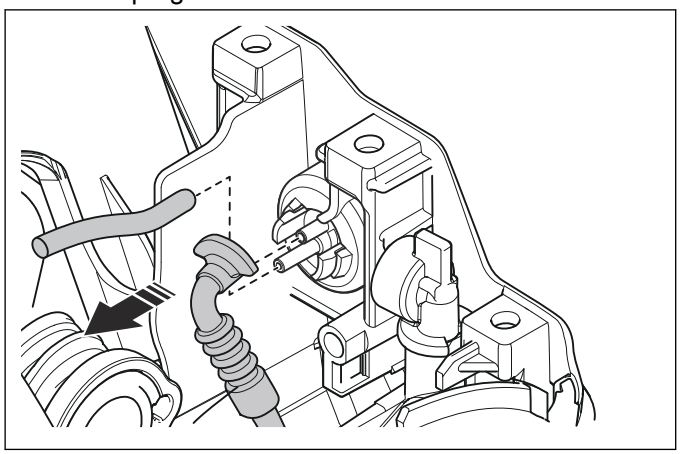


2. Set the test instrument for vacuum test.
3. Push the air purge bulb to increase the pressure to 0.3–0.5 bar.

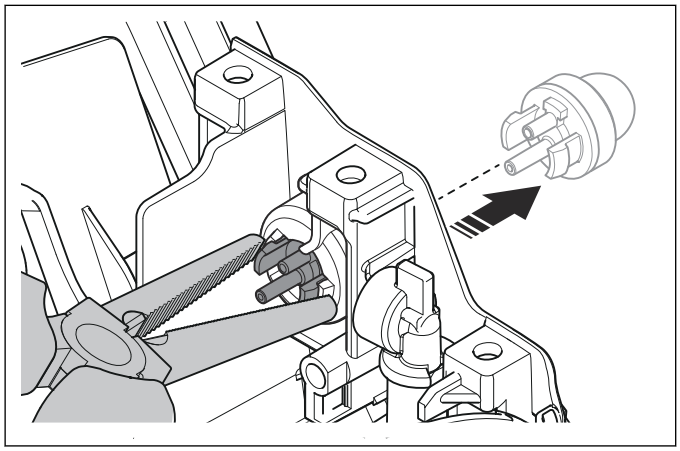
If the pressure can be increased to 0.3–0.5 bar, the air purge bulb and hose connection are not damaged. Then it is necessary to look for faults in the other components of the fuel system.

6.5.10 To remove the air purge bulb

1. Remove the return hose and carburetor hose from the air purge bulb.



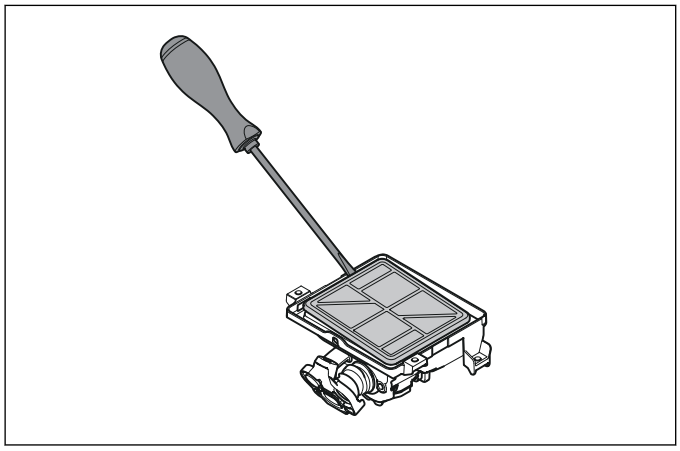
2. Push the snap lock with pliers and push the air purge bulb out.



6.6 Carburetor

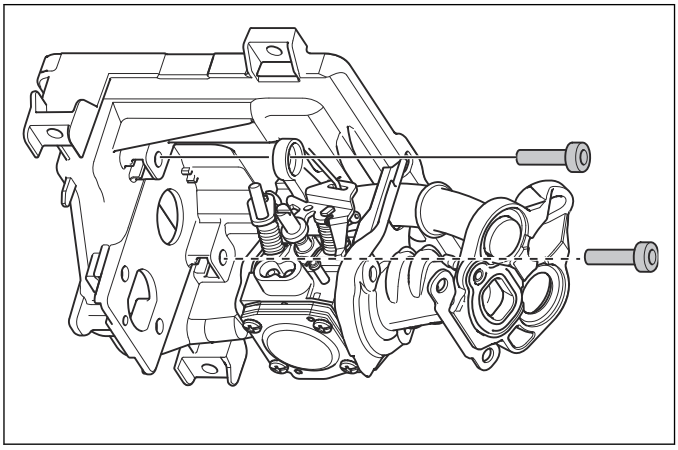
6.6.1 To remove the carburetor from the inlet system

1. Remove the service filter.

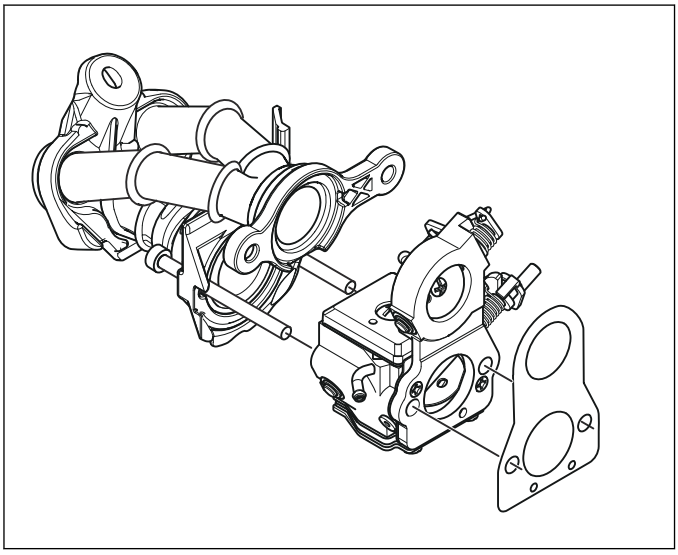


2. Clean the outer parts of the carburetor before you remove it from the inlet system.

3. Remove the carburetor from the bracket.

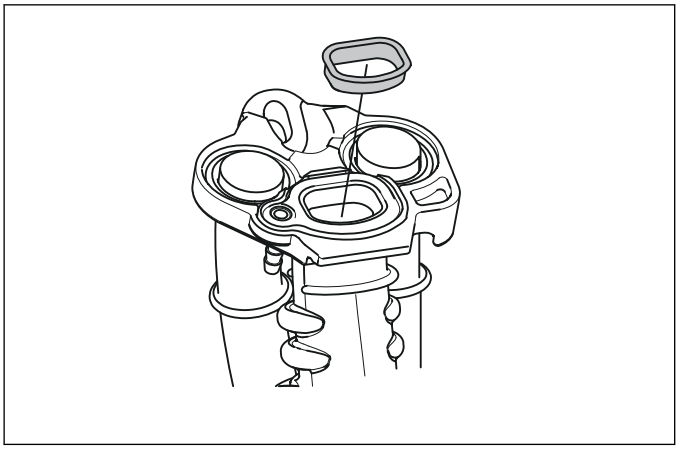


4. Pull off the hose from the carburetor and divide the units.

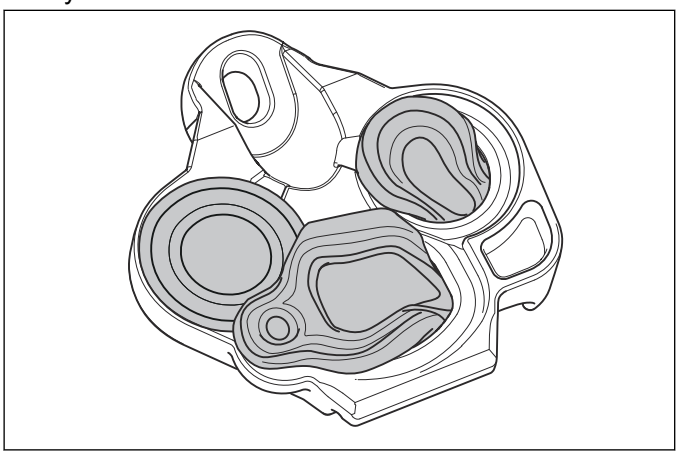


6.6.2 To disassemble the guides

1. Remove the support insert.



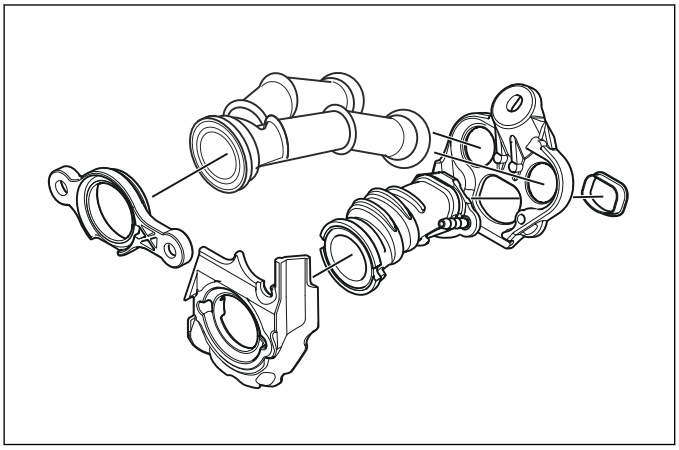
2. Push out an edge of the guides, then push them out by hand.



6.6.3 To examine the inlet system

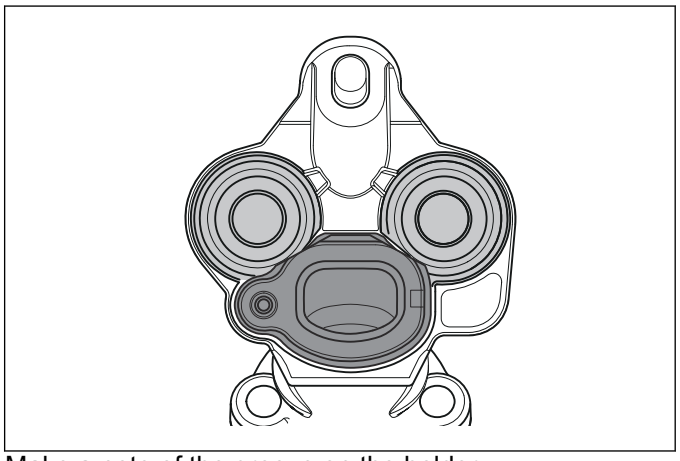
Dust can decrease the life of the engine. Dust on the inner side of the seals means there are defective or incorrectly installed components.

- Look for leaks. Make sure the rubber guides are not cracked.

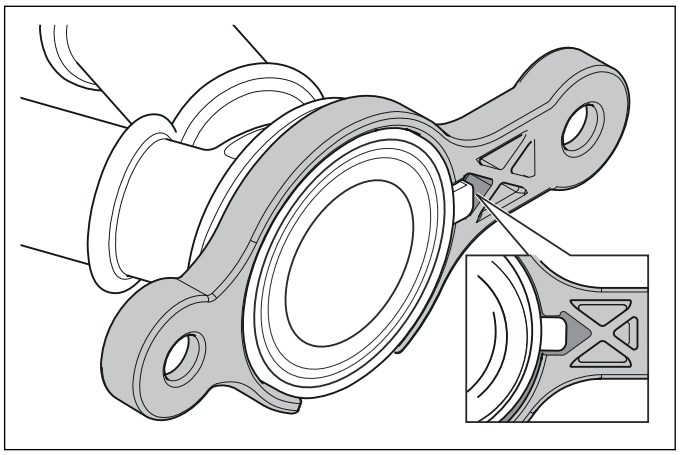


6.6.4 To assemble the inlet manifolds

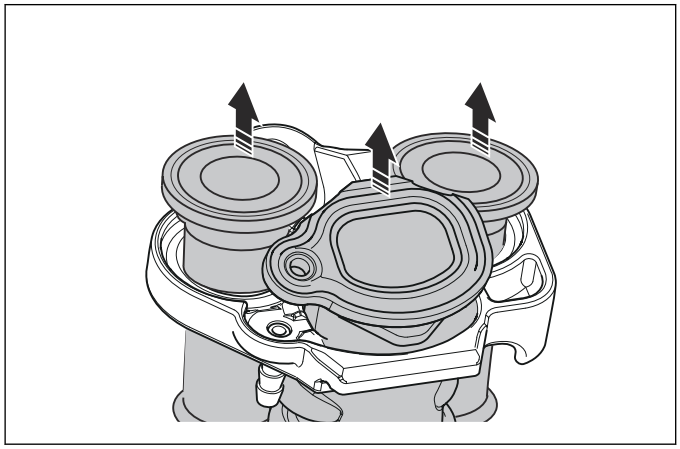
Make a note that the guide to the inlet is irregular.



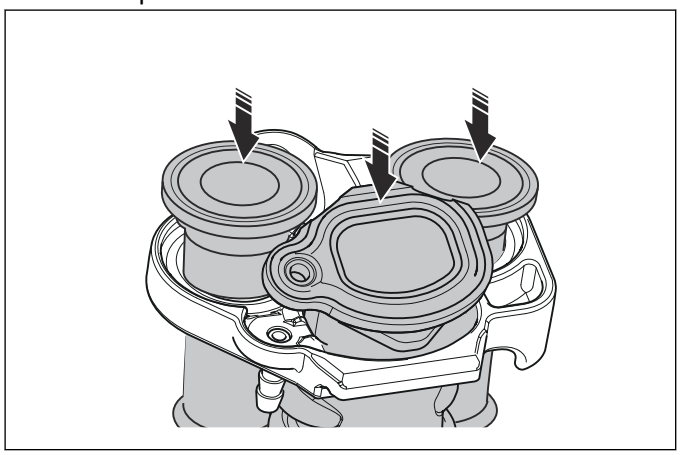
Make a note of the groove on the holder.



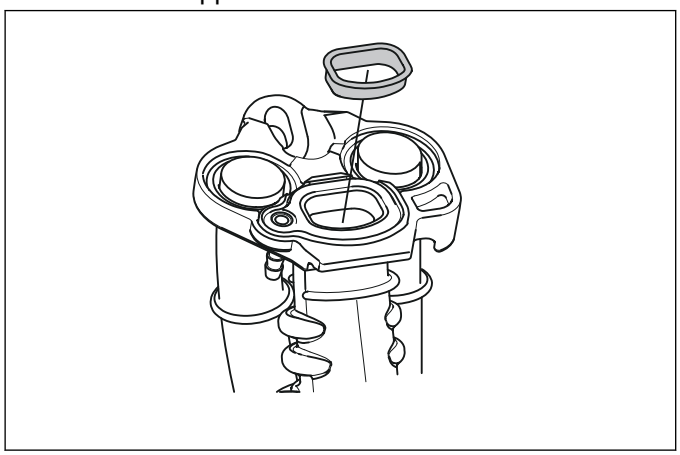
1. Pull in the manifolds past their grooves on the plate.



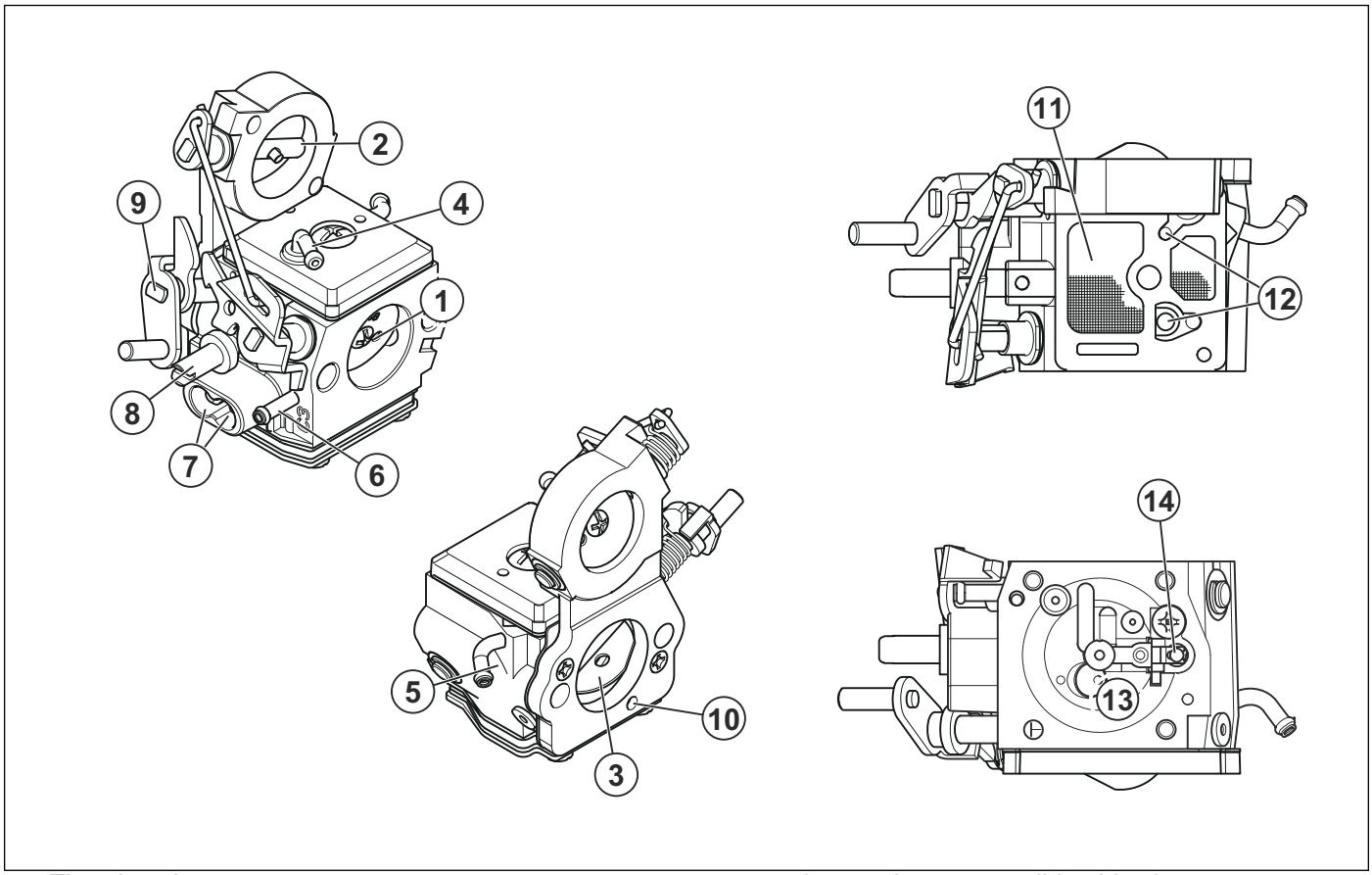
2. Push out the manifolds, one at a time, into their correct position.



3. Install the support insert.



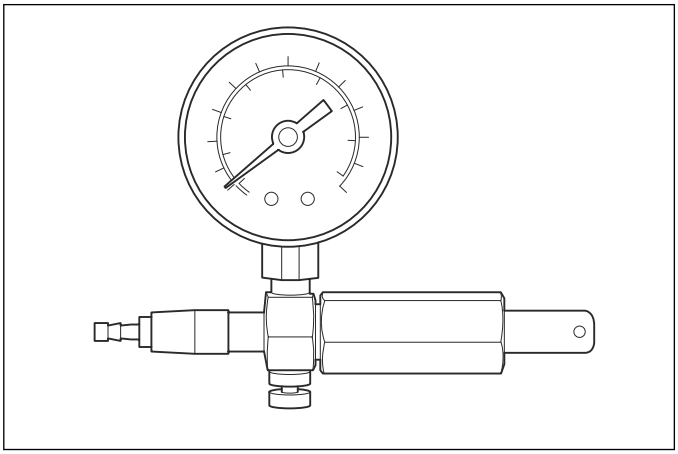
6.6.5 Carburetor components



1. Throttle valve
2. Air valve
3. Choke valve
4. Impulse channel, from the crankcase to the carburetor pump diaphragm
5. Fuel line from the fuel tank
6. Connection to the air purge bulb
7. High and low speed nozzle (set at the factory)
8. Idle screw, speed adjustment
9. Throttle lever for choke
10. SmartCarb
11. Fuel pump diaphragm
12. Fuel pump valves
13. Fuel chamber, measurement chamber diaphragm above
14. Needle valve

6.6.6 Pressure tester

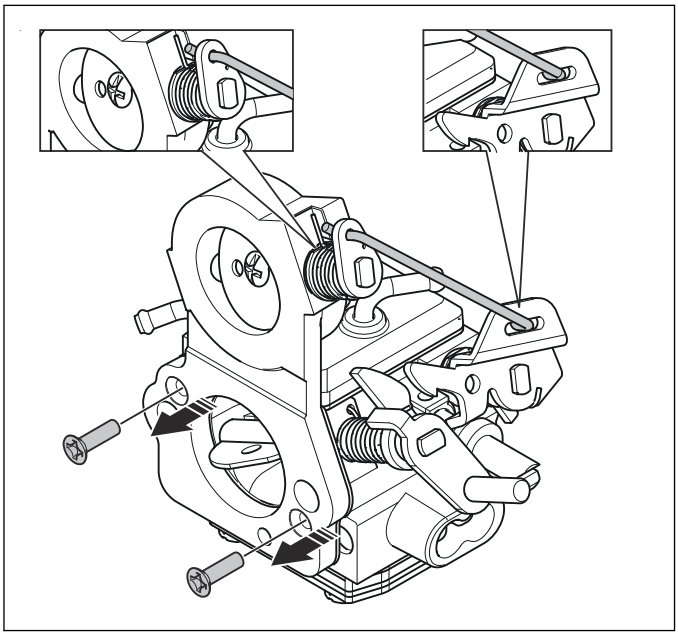
The pump piston of the pressure tester must be operated with one hand. Refer to *Servicing tools overview on page 11*.The pressure tester is supplied with an adapter for small dimensions. Make the hose connection as short as possible, this gives a more accurate test result.



6.6.7 To remove the air valve

It is not necessary to remove the air valve to do servicing on the carburetor, but it makes it easier.

1. Make a note of the connection of the link rod.
2. Remove the 2 screws.



6.6.8 Needle valve

6.6.8.1 Indications of a needle valve leak

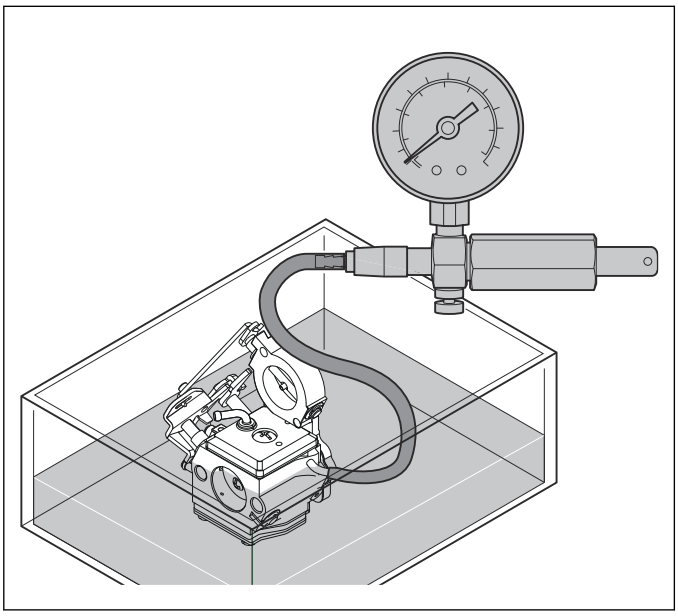
There are many symptoms of a needle valve with a leak.

A product that is used for short periods is usually not easy to start when it is warm. Fuel leaks into the venturi and gives too much fuel for the next warm start.

With a cold start, the fuel chamber above the needle valve is dry. This is the situation especially when the product has not been used for a long period. After many tries to start, new fuel has gone into the carburetor and the product starts.

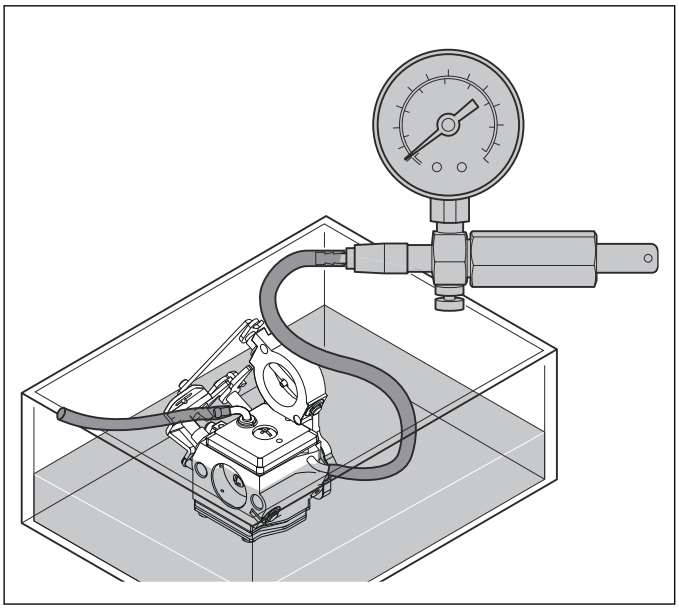
6.6.8.2 Test conditions

The best test result is from a carburetor that is drained, but has some fuel left. Do not examine a fully dry carburetor, or a carburetor that has not been used for a long time. The result will not be accurate. When the carburetor is full, turn the carburetor with the pulse line up, as shown in the picture. Increase the pressure to approximately 30 psi/2 bar. Let the fuel go out through the venturi which is fully in water. Not until air bubbles come from the venturi, can the function of the needle valve be examined as set out below.



6.6.8.3 To examine external leakage and the function of the needle valve

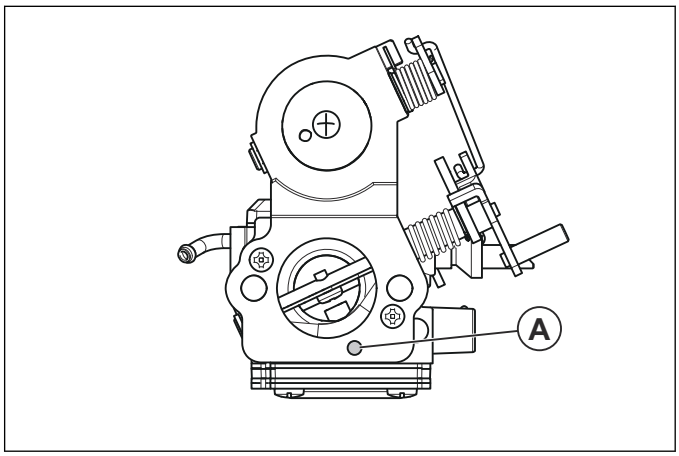
1. Lower the carburetor into water.



2. Connect a piece of hose to the pulse line. It must come out above the water line.
3. Connect the pressure tester to the fuel line.
4. Increase the pressure to 15–36 psi/100–2.5 bar.

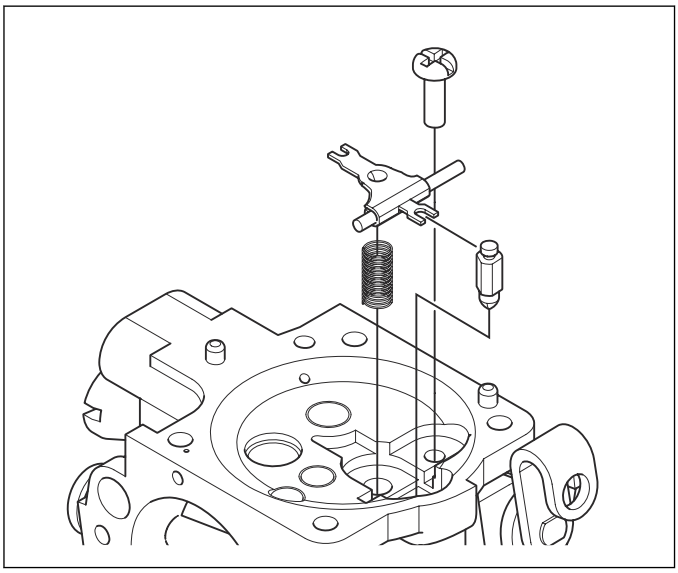
The needle valve must lift and air bubbles come out of the jets in the venturi. The pressure must then decrease to approximately 15–7 psi/100–0.5 bar and then decrease much slower or stop. A pressure drop after 7 psi/0.5 bar means there is a leak at the needle valve. If the needle valve does not open at 36 psi/2.50 bar (max. permitted pressure test), blow through the hole for filter compensation (A) to open it. If the pressure does not

increase, the cause can be a damaged pump diaphragm.

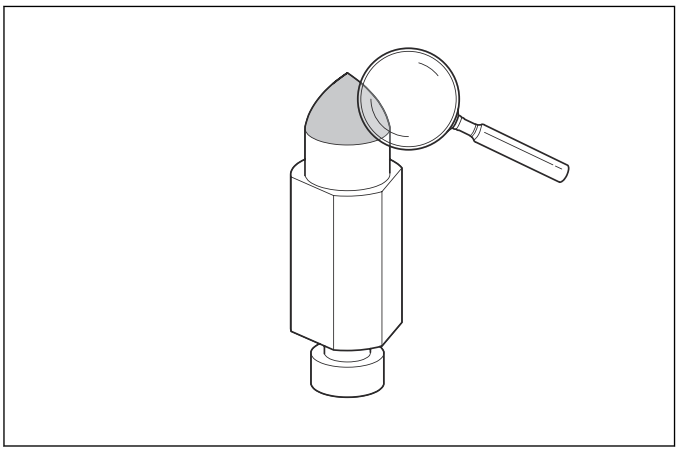


6.6.8.4 To examine and clean the needle valve

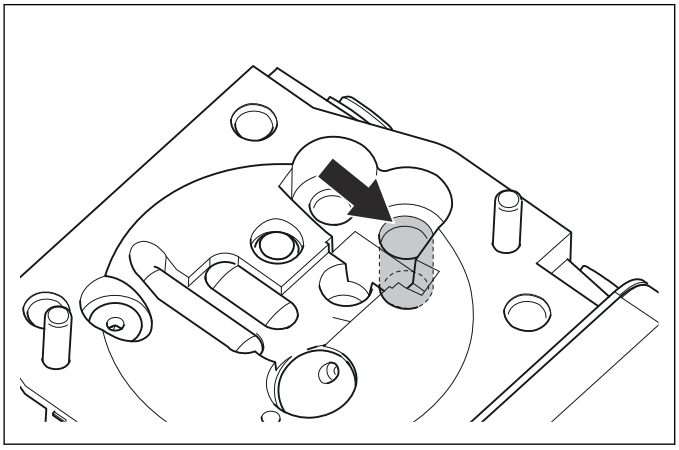
1. Remove the needle valve.



2. Examine the spring and make sure that the lever moves easily on the axle.
3. Examine the needle valve end with a magnifying glass. If there are signs of particles or if the end of the needle valve is damaged, replace the needle valve.



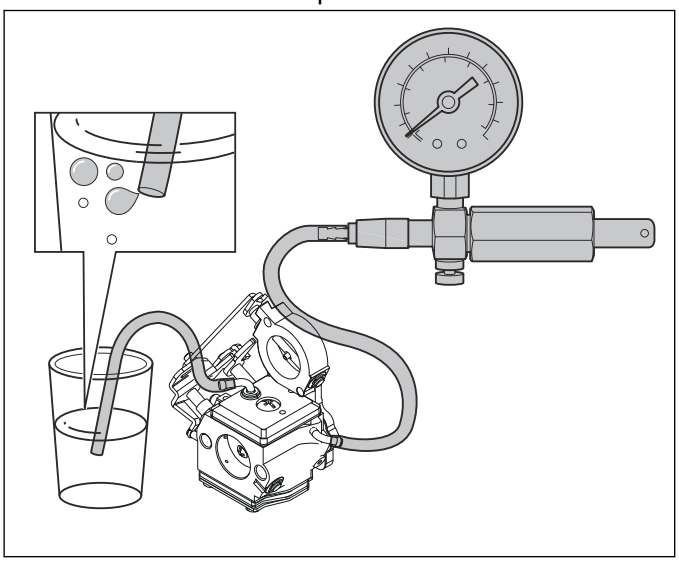
4. Clean the needle valve seating.



5. Install the needle valve in the opposite sequence.

6.6.9 To examine the pump diaphragm

1. Connect the pressure tester to the fuel pipe.
2. Put a hose from the impulse line into water.

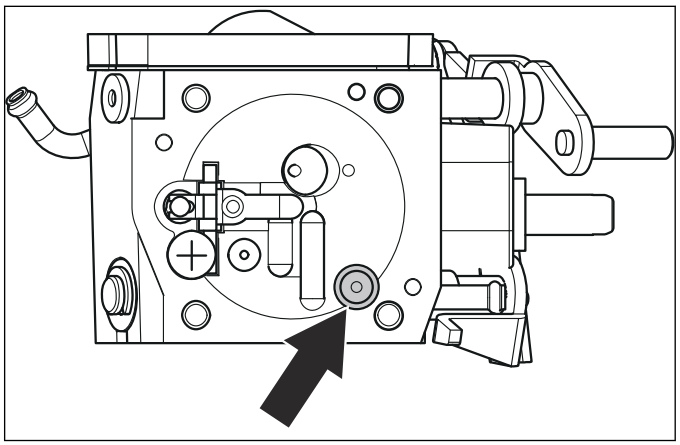


3. Apply pressure with the tester.

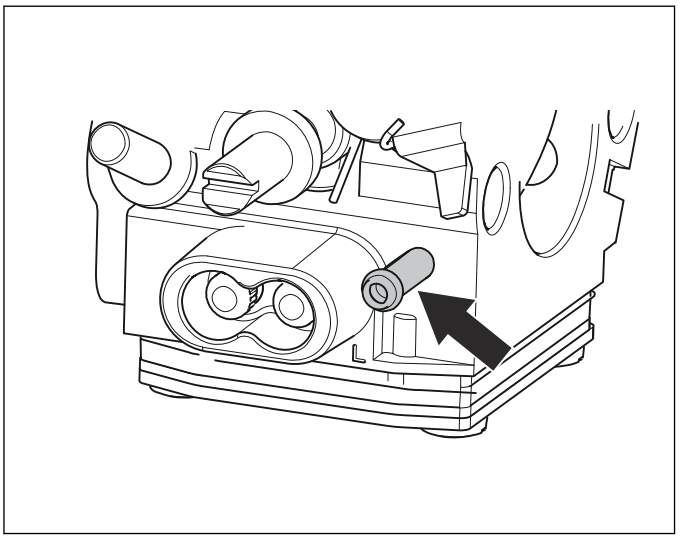
If air comes out of the impulse channel, the pump diaphragm is broken.

6.6.10 To examine the check valve for the air purge bulb

This valve in the carburetor stops fuel leaks out of the carburetor if leaks occur in the air purge bulb or connections.



1. Put a hose on the air purge bulb connection of the carburetor.

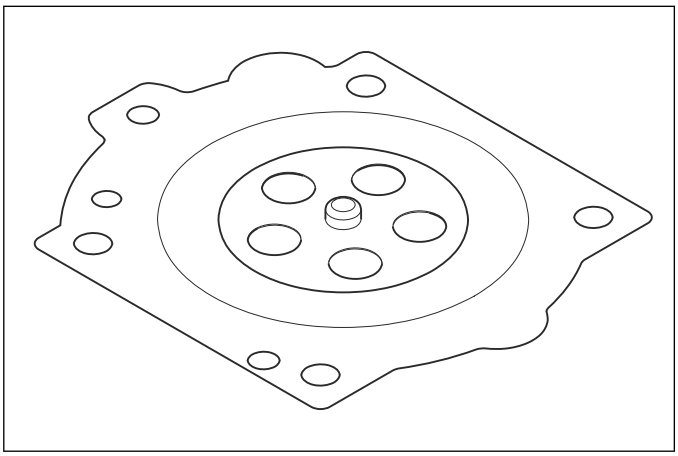


2. Blow in and out.

The valve must close when you blow in to the carburetor and open when you blow out.

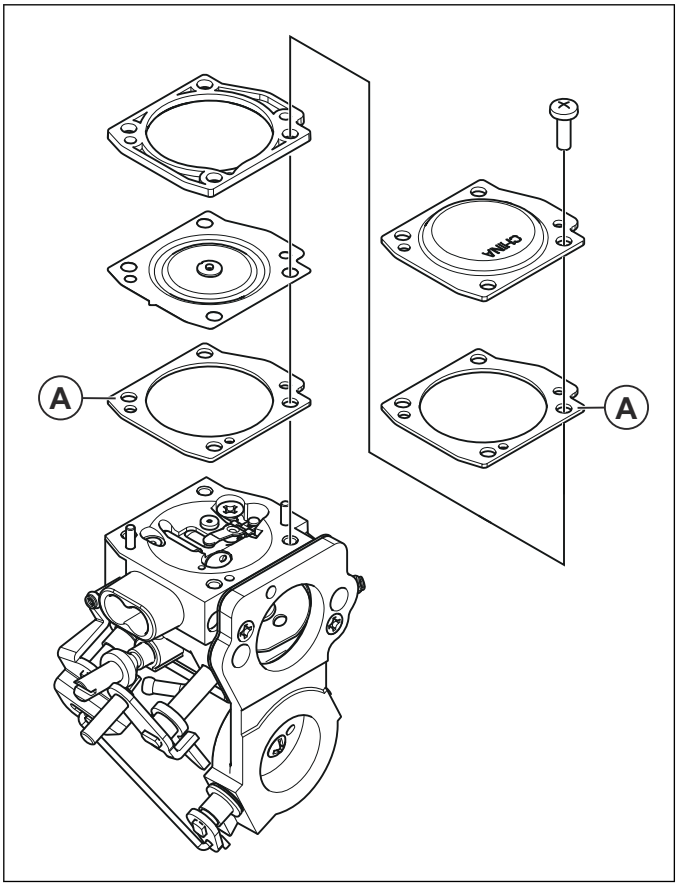
6.6.11 Function of the measurement chamber

The product has filter compensation. The measurement chamber has an air chamber to the cover and a fuel chamber to the carburetor body. The air chamber and the fuel chamber are divided by the measurement chamber diaphragm. The diaphragm controls and keeps a constant level of fuel in the fuel chamber through the mechanically connected needle valve. The air chamber is near the inlet, after the air filters, and gives the air chamber the same pressure. You cannot examine the chamber diaphragm with a pressure check. To examine the diaphragm, refer to *To examine the measurement chamber diaphragm on page 39*. A hole in the diaphragm stops the fuel supply.

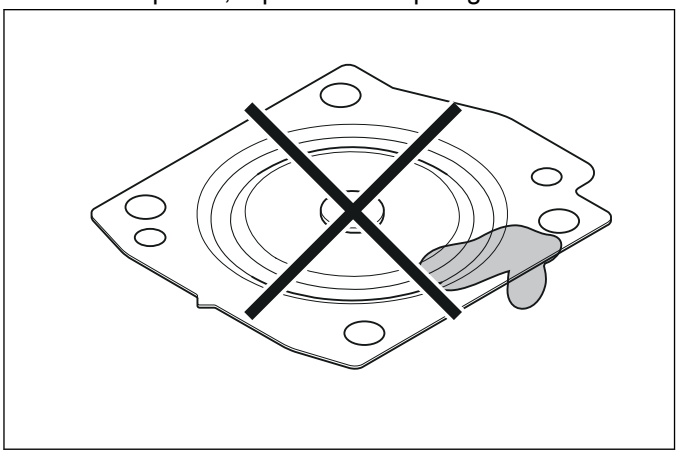


6.6.12 To examine the measurement chamber diaphragm

Assemble the parts in the order shown in the figure. The gaskets (A) are the same.

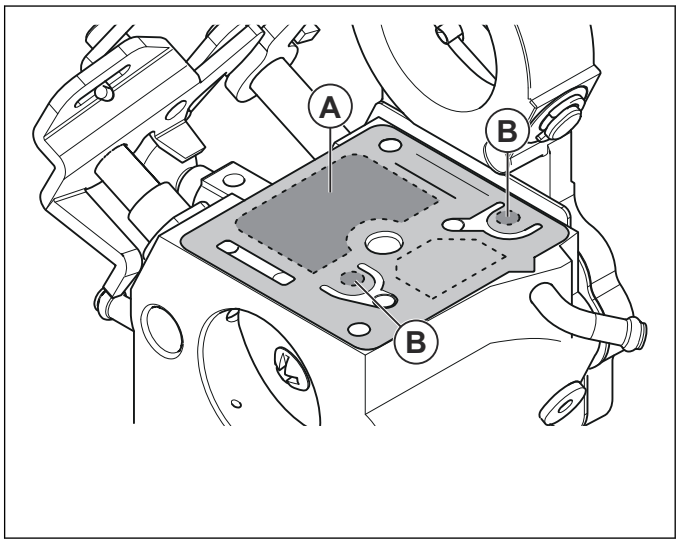


- Examine the diaphragm visually. Fuel on the top side, to the cover, is a sign of leaks. If there is fuel on the top side, replace the diaphragm.



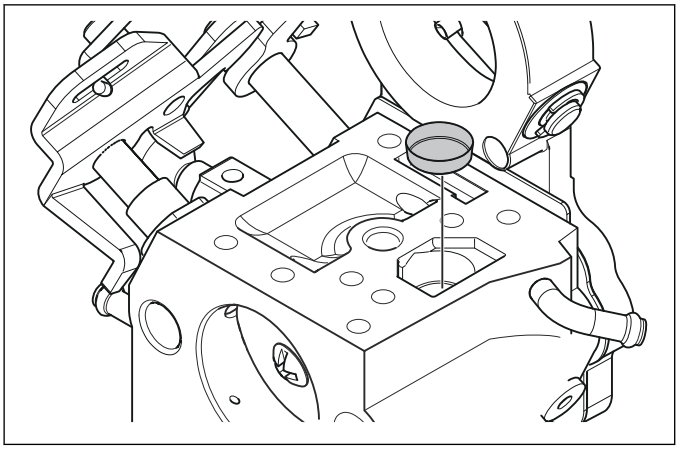
6.6.13 Pump unit function

The pump diaphragm (A) receives power by changes of pressure in the crankcase. The pressure changes are caused by the piston movement and transmitted to the top of the pump diaphragm. The fuel below the diaphragm is pushed to the valves (B). Pressure from the measurement chamber diaphragm to the needle valve in the measurement chamber controls how much the valve opens. It also controls the quantity of fuel transmitted to the fuel side of the measurement chamber.



6.6.14 To examine the fuel strainer

1. Examine the fuel strainer with a magnifying glass.

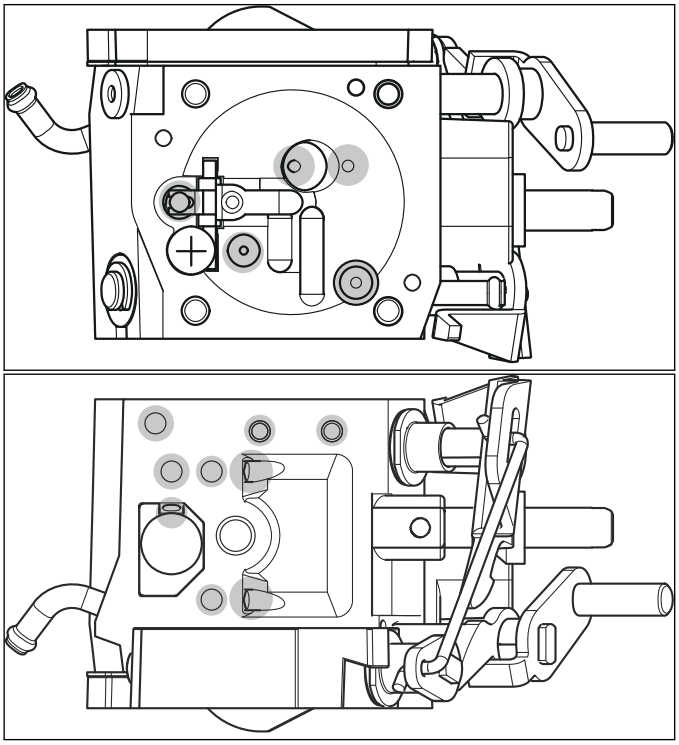


2. Remove loose dirt particles from the seating of the needle valve with air.

Replace the fuel strainer if it is damaged. Remove the fuel strainer with a needle and install with a 7 mm pin punch.

6.6.15 To clean the carburetor channels

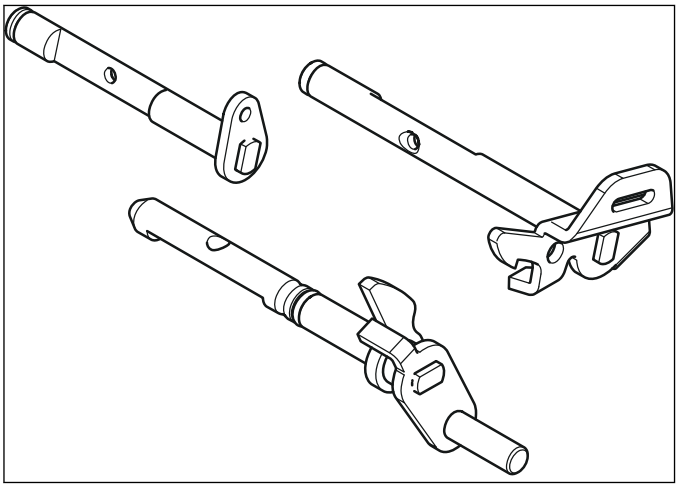
1. Disassemble the chamber diaphragm, the pump diaphragm and the needle valve.
2. Open the choke valve to give free air flow through the venturi.
3. Clean the channels with compressed air. The rings in the illustration below show where to blow clean.



6.6.16 To examine the valve axles

Leakage from the valve axles results in incorrect fuel/air mixture and dust in the engine.

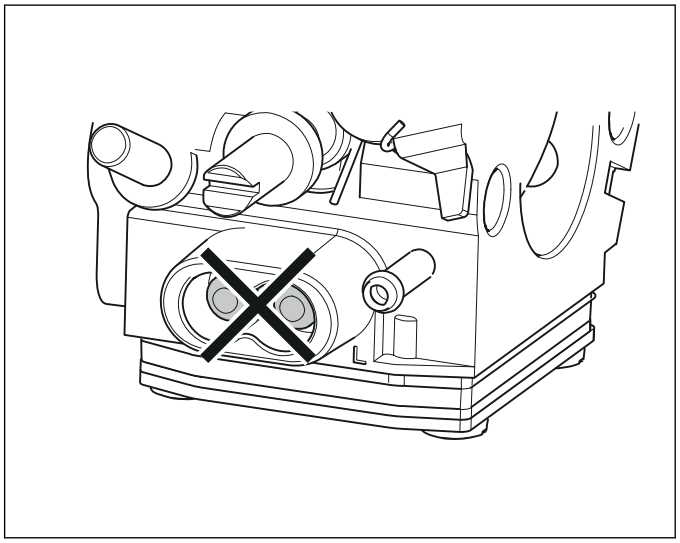
1. Make sure there is no radial play on the valve axles.



2. Replace parts if necessary.

6.6.17 High and low speed jets

The low and high speed nozzles on the carburetor have been factory set. They must not be adjusted.



6.6.18 To adjust the idle speed

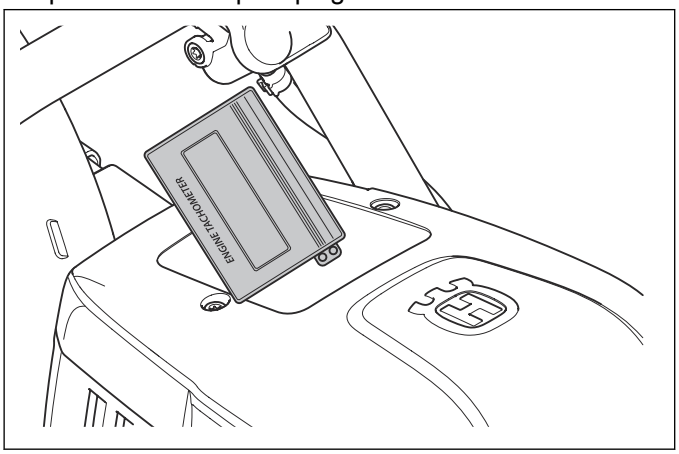
Use a special screwdriver and tachometer, refer to *Servicing tools overview on page 12*. Make sure that the cutting blade is installed.

Note: Do not connect the tachometer directly to the ignition system. The tachometer senses the magnetic field from the ignition system.

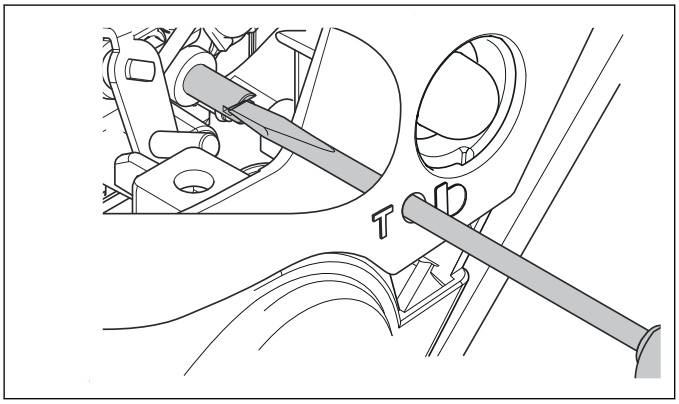
Note: Do not remove the air filter cover.

WARNING: Adjust the idle speed outdoors. The exhaust fumes are poisonous.

1. Operate the product for approximately 5 minutes until it is warm.
2. Keep the instrument with the arrow down to the position of the spark plug.



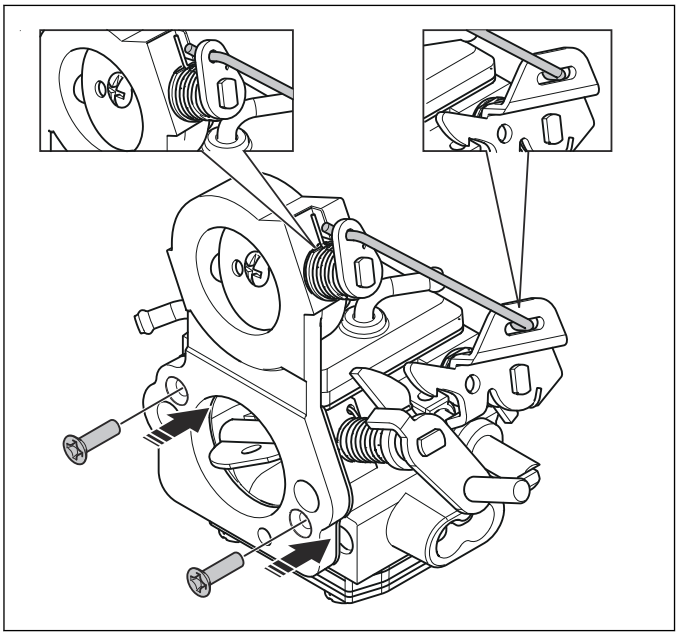
3. Adjust the idle screw to an idle speed of approximately 2700 rpm.



If the cutting blade rotates at this speed, do a check of the clutch.

6.6.19 To assemble the air valve

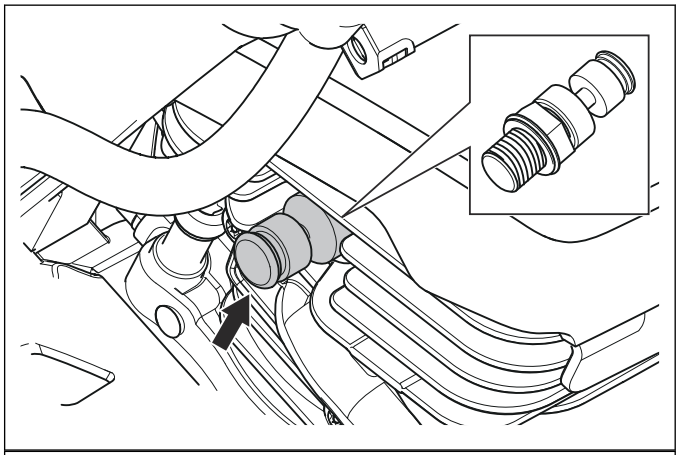
- Attach the air valve to the carburetor with 2 screws.

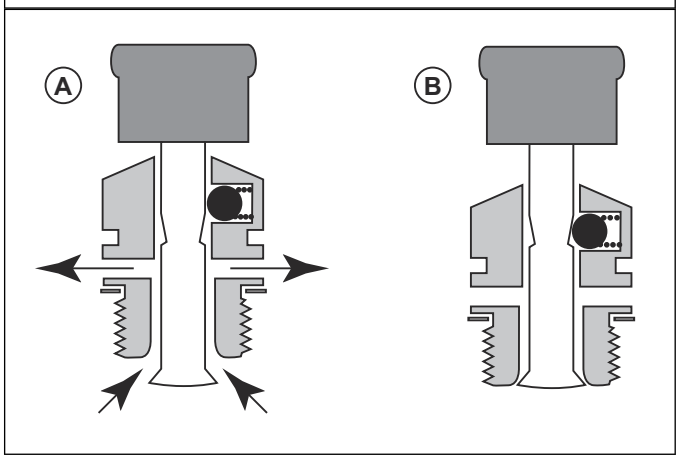


6.7 Decompression valve

6.7.1 Decompression valve function

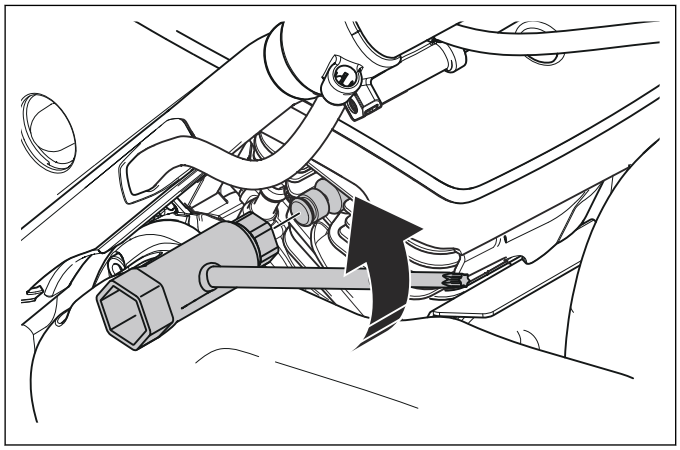
The decompression valve decreases the compression in the cylinder when the engine starts. A small quantity of a mixture of fuel and air goes through the decompression valve (A). The valve closes because of the combustion pressure when the engine fires (B).





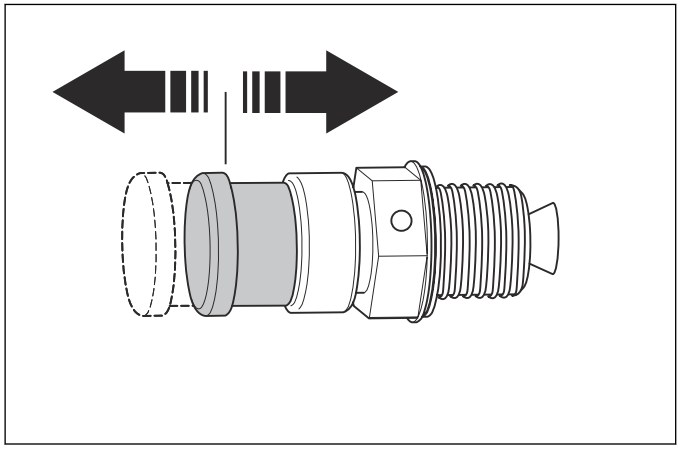
6.7.2 To disassemble the decompression valve

- Remove the decompression valve with a long socket or the combination wrench.



6.7.3 To examine the decompression valve

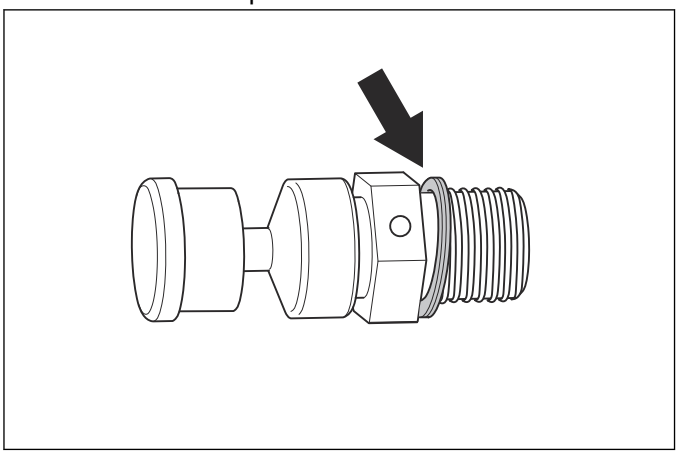
1. Make sure that the decompression valve moves.



2. Clean the decompression valve.
3. Apply leakage spray or soap water on the decompression valve before installation.
4. Install the decompression valve. Refer to *To install the decompression valve on page 43*.
5. Move the stop button to the stop position.
6. Slowly pull the starter rope handle and look at the decompression valve to make sure that there are no leaks.

6.7.4 To install the decompression valve

1. Clean and examine the sealing washer before you install the decompression valve.

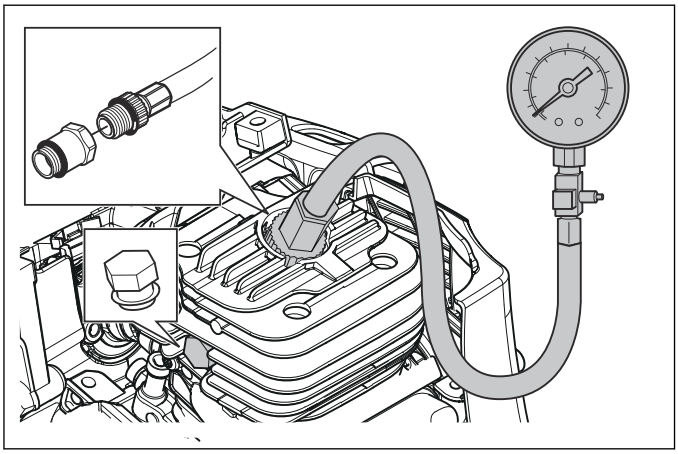


6.8 Cylinder and piston

6.8.1 To examine the compression of the cylinder

The test shows leakage from the combustion chamber.

1. Operate the engine for some minutes until it is warm.
2. Close the decompression valve or put in the sealing plug. Refer to *Servicing tools overview on page 10*.

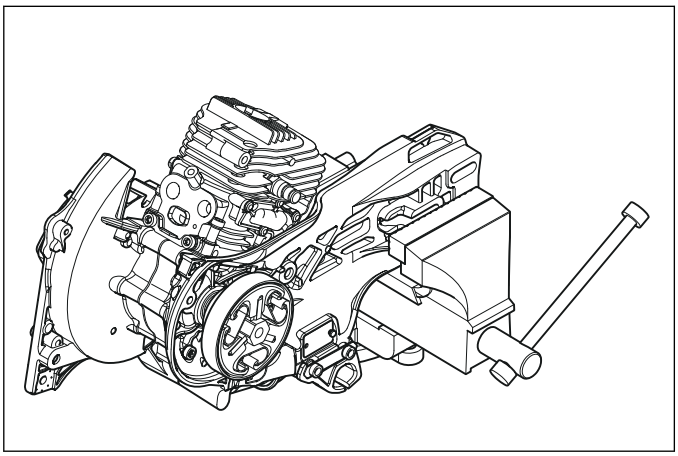


3. Remove the spark plug.
4. Connect the compression tester to the spark plug hole.
5. Pull the starter rope 5-6 times and read the pressure on the gauge. Remove the pressure from the cylinder and do the procedure some more times.
6. Make a note of the average of the tests.

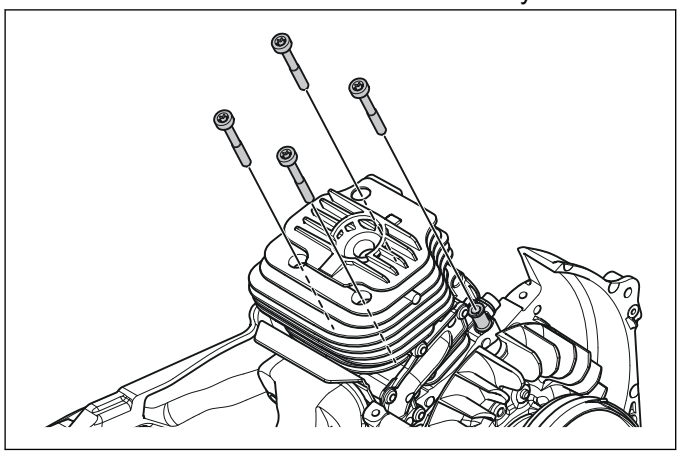
The average for a new engine is approximately 10 bar / 150 psi. Values less than 8 bar / 120 psi show faults with or on the cylinder, piston or piston rings.

6.8.2 To remove the cylinder

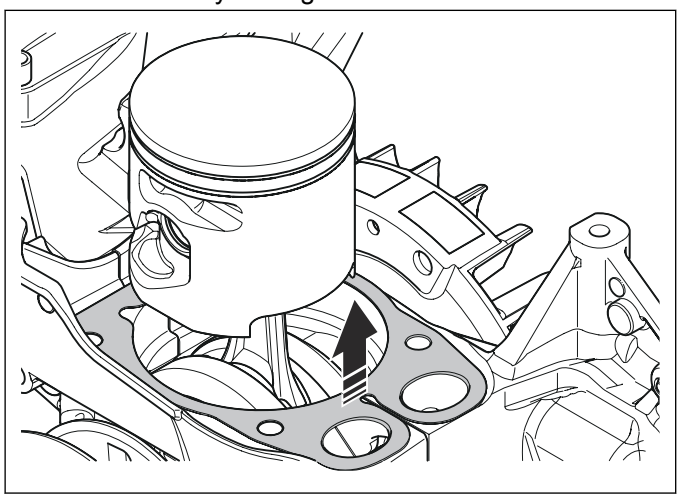
Divide the product at the vibration damping unit for easier access to the cylinder. Refer to *To remove the vibration damping units on page 20*. Tighten the engine body in a vise. Use soft guards.



1. Remove the 4 screws and remove the cylinder.



2. Remove the cylinder gasket.

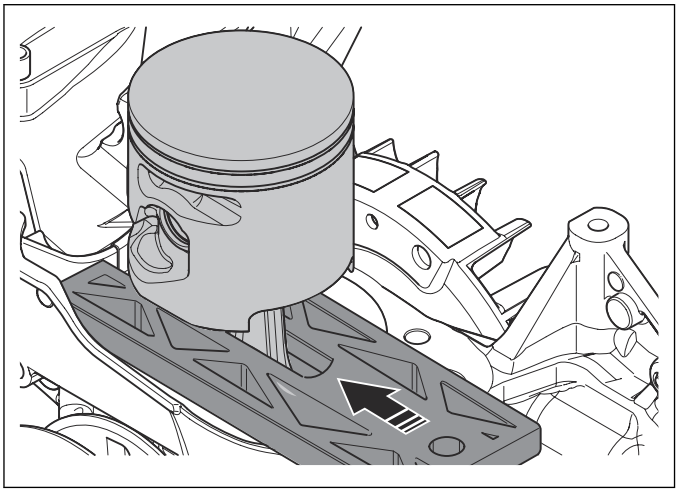


6.8.3 To remove the piston

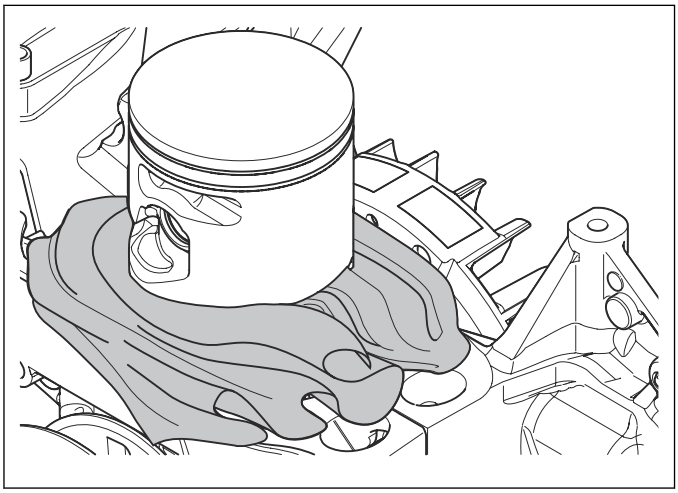
To remove the piston, use a kit for piston service. Refer to *Servicing tools overview on page 11*. The kit contains piston ring compressors, a piston stop, and a support plate for the piston. To remove the wrist pin, use the wrist pin punch. Refer to *Servicing tools overview on page 11*.

CAUTION: Do not use the piston stop on this product.

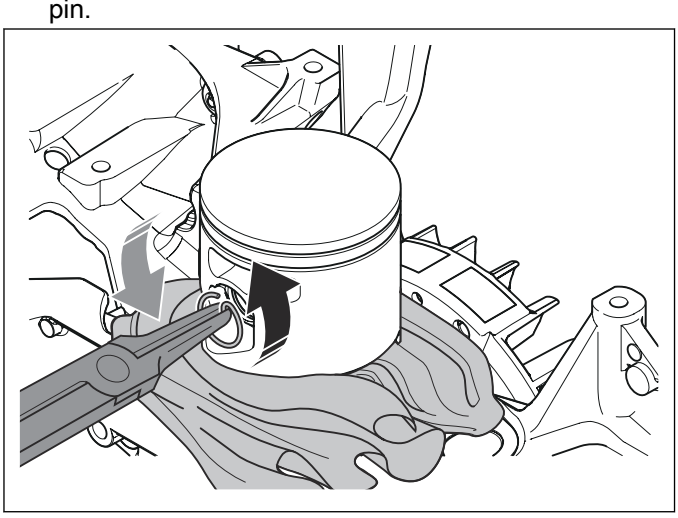
1. Put the support plate below the piston.



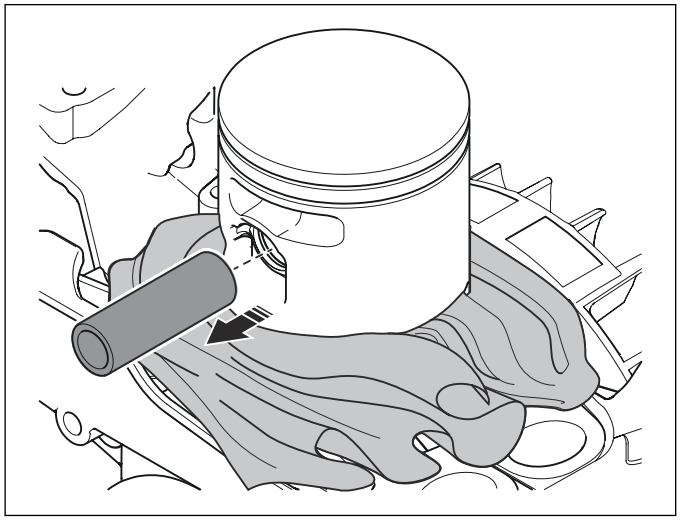
2. Seal with a cloth or paper to make sure that parts do not fall into the crankcase.



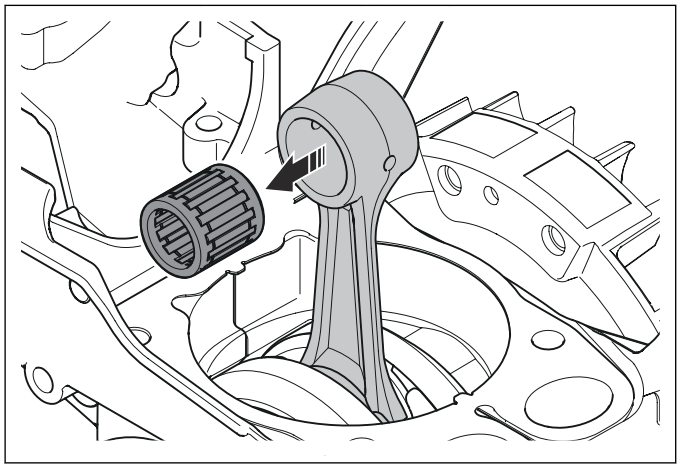
3. Remove the snap rings on the 2 sides of the wrist pin.



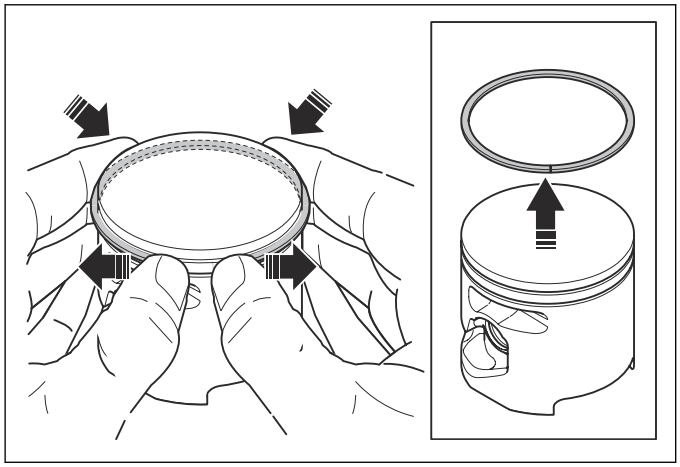
4. Push out the wrist pin by hand. If it is tight, use a small hammer and light force.



5. Push the needle bearing out of the connecting rod.



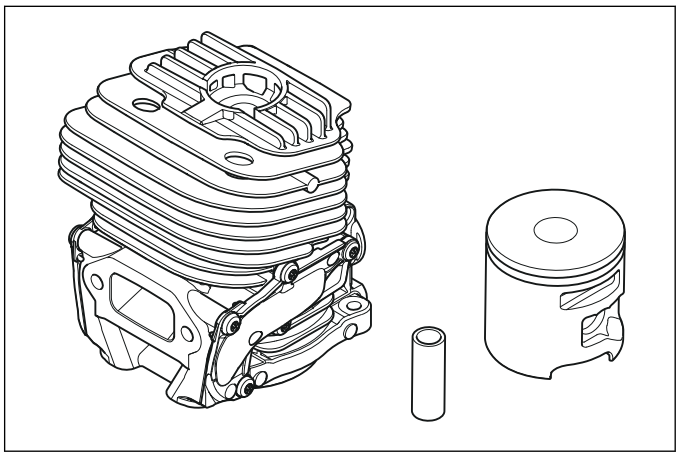
6. Remove the piston rings.



6.8.4 Examine the cause of failure

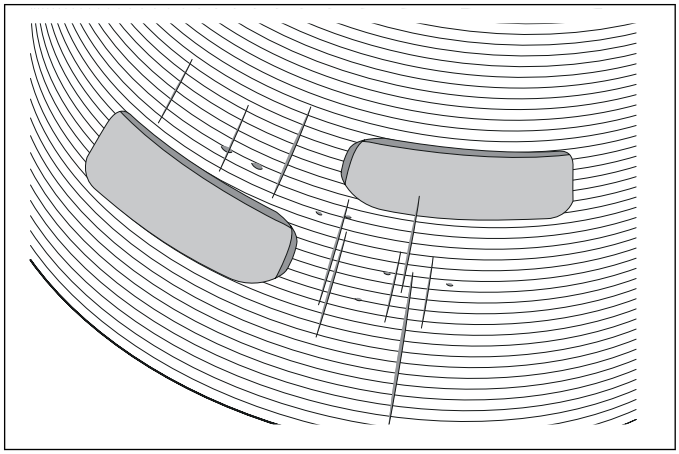
Examine the cause of low compression or failure. With usual wear and many hours of operation, components must be examined and replaced if necessary. A product that has not been used for many hours must be

examined carefully. It is important to identify the cause of the unusual wear.



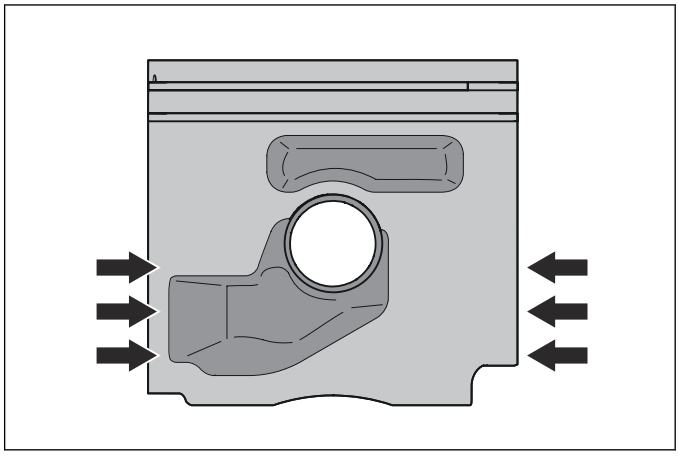
6.8.5 To examine cylinder wear

Examine the cylinder bore against the light. You can continue to use the cylinder if the surface layer has not been broken through. Aluminium from the piston can be removed using emery cloth.



6.8.6 To examine the piston

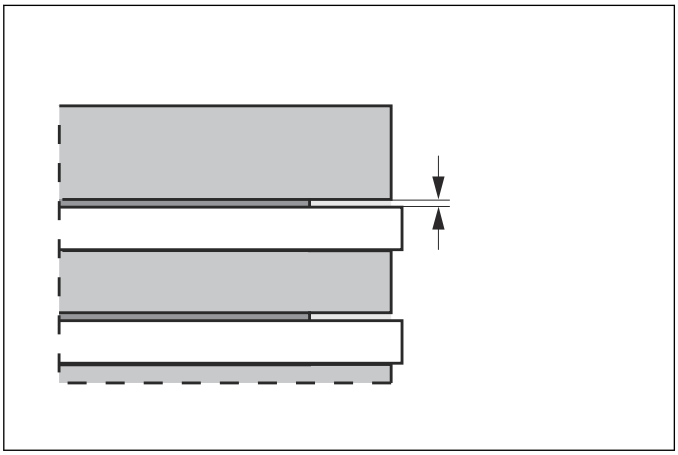
The bottom of the piston, near the inlet and exhaust ports, usually shows the largest signs of wear. Examine the lines made by the manufacturing process. Replace the piston if the bottom has been worn smooth. A product with a worn piston is difficult to start because of the decreased valve function of the piston.



6.8.7 Piston wear tolerances

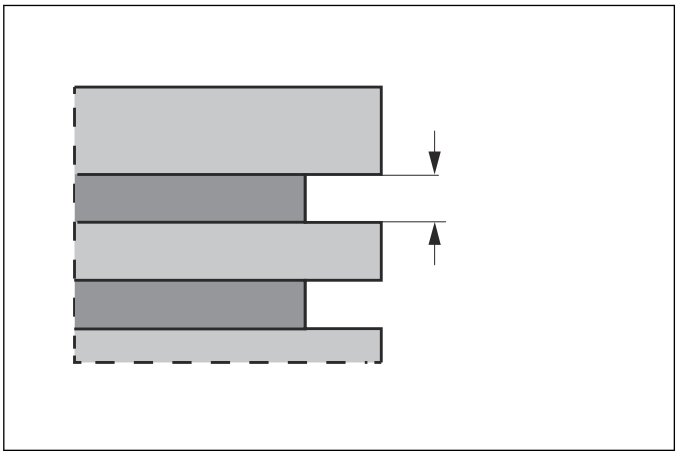
6.8.7.1 Piston ring play

If the piston ring play is more than 0.006 in./0.15 mm, the piston ring groove must be measured as set out below.



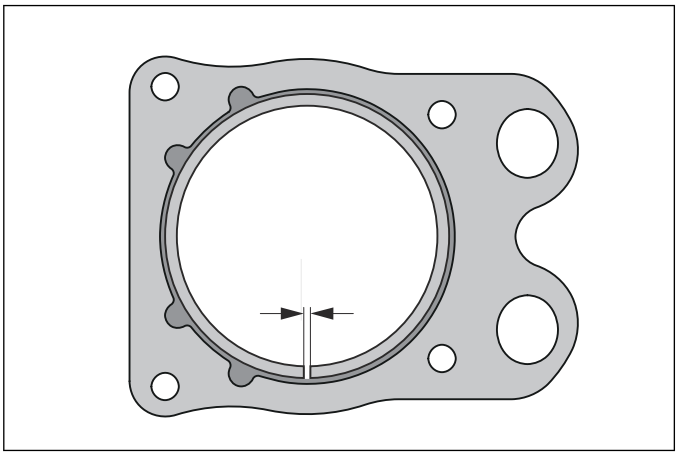
6.8.7.2 Piston ring groove

If the piston ring groove is larger than 0.06 in./1.6 mm, the piston must be replaced. Install a complete piston kit with piston rings, needle bearing and wrist pin.



6.8.7.3 Piston ring wear

Put the piston ring in the cylinder with the aid of the piston. Put it around 1 in/2.5 cm from the bottom of the cylinder. The piston ring distance must be max. .04 in/1.0 mm.



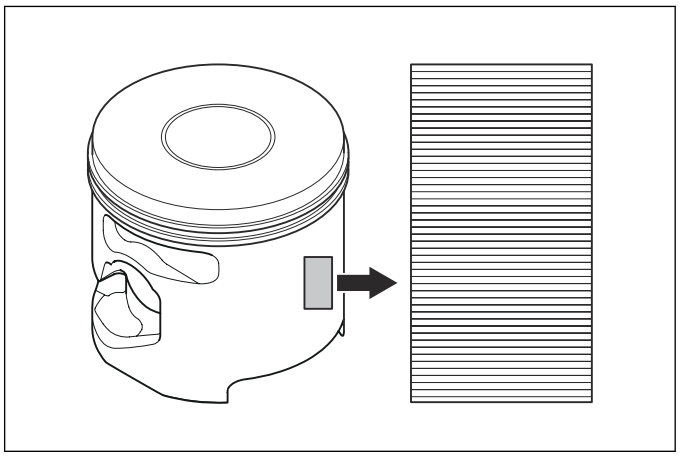
6.9 Piston wear

The cause of engine failure can be hard to find if the previous operation and service of the product is not available. Use the following examples for help.

6.9.1 Usual wear

Usual wear is easiest to see on the piston sections that point at the exhaust and inlet sides. The picture shows that the piston has been polished to give a bright surface. The lines from the production can also be seen.

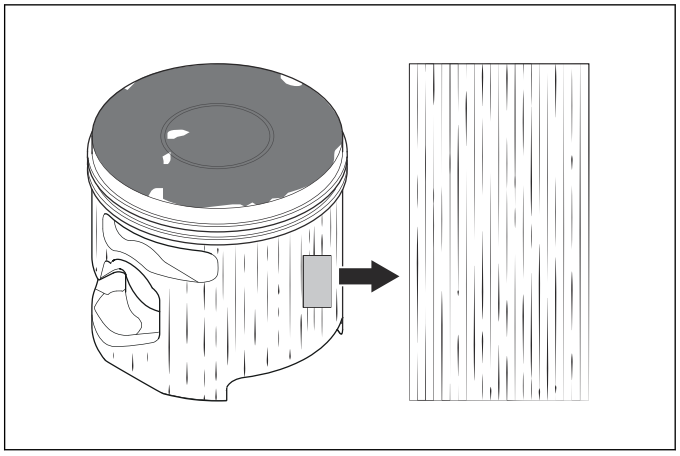
Oil on the piston rings shows correct lubrication. The piston rings can move freely in the piston ring groove.



6.9.2 Dust

If dust enters the engine, the engine life decreases. The effect of dust can be seen with a magnifying glass. Rounded lines in line with the travel of the piston are clear signs. The lines after production cannot be seen. The surface is matt.

The usual cause is a bad filter and/or leakage. Examine the condition of the filters and gaskets. Also examine the rubber guides between the cylinder, the carburetor and the connections. Look for dust from the filter units to the inlet by the cylinder. Carbon particles on the top of the piston show that the product is used at short intervals. The engine has not become fully warm.

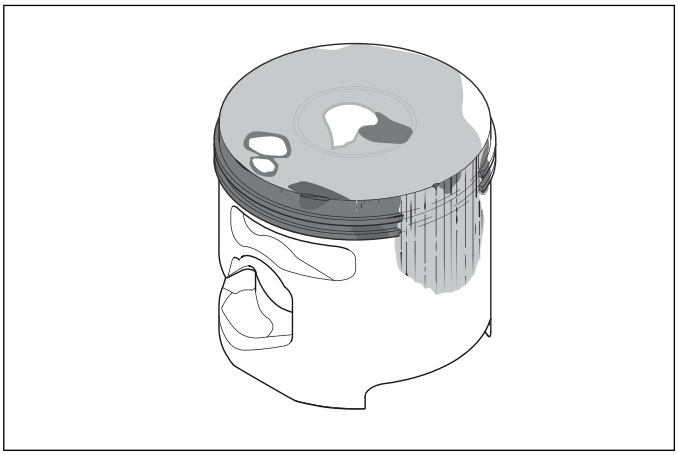


6.9.3 Scoring

Scoring occurs when the engine is too hot. The scores are usually on the exhaust side, which is the hottest. The inlet side can show equivalent damage.

Examine the product to see if it has broken down because of an incorrect oil mixture, or no oil at all. If there is oil on a piston that is too hot it can carbonize. If not, check if the connecting rod or the crankcase has a thin layer of oil.

If there is sufficient oil, inlet leakage can be the cause. When the engine leaks air on the inlet side, the fuel/air mixture changes. This causes scoring, mainly on the exhaust side. Look for scoring damage in combination with a piston top that has become too hot.



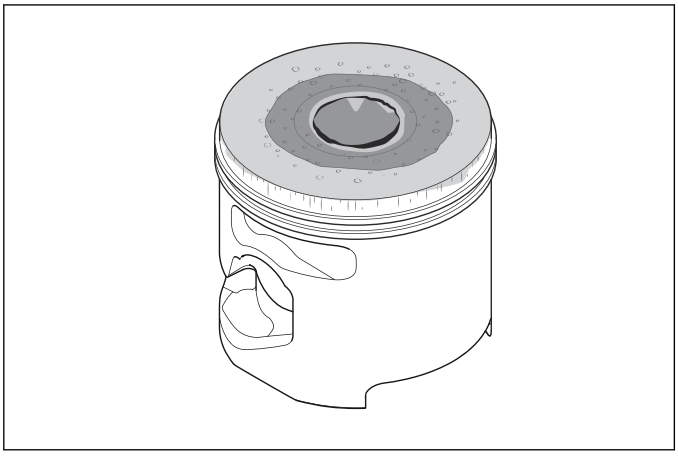
6.9.4 Too hot piston top

If the engine has been too hot, aluminum particles are frequently found on the top of the piston. This can cause the piston to melt.

Too much air in relation to the fuel volume increases the temperature in the combustion chamber. Examine if the inlet system is blocked. Examine that the fuel supply has not been blocked by a defective fuel hose, tank vent or the pulse hose.

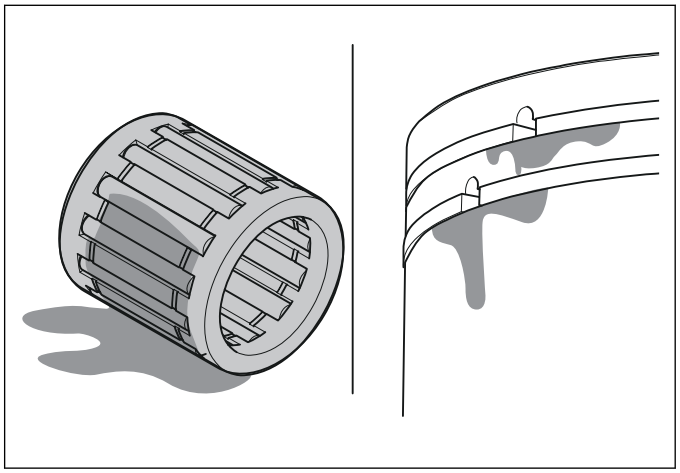
Gasoline with a too low octane grade can cause ignition at the incorrect position. Spark plugs with incorrect heat rated value can cause the same problem. They can increase the temperature in the combustion chamber.

Make sure that the key on the flywheel of the crankshaft is not damaged. The flywheel position on the crankshaft controls the ignition point.

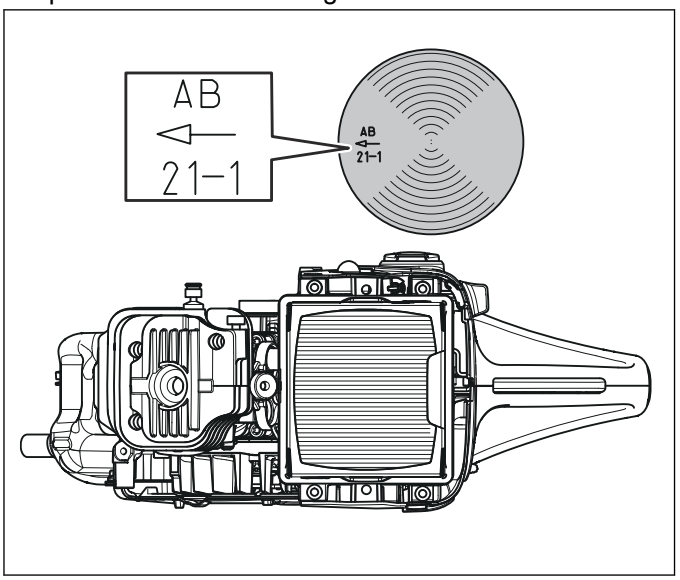


6.10 To assemble the piston

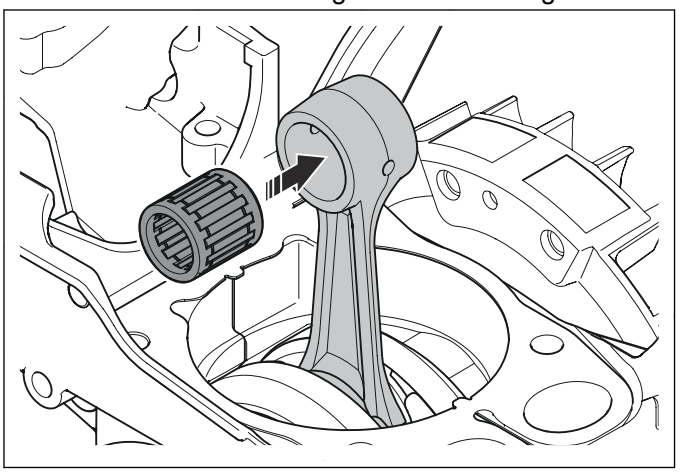
Lubricate new or cleaned bearings and piston rings with 2-stroke oil before you assemble them.



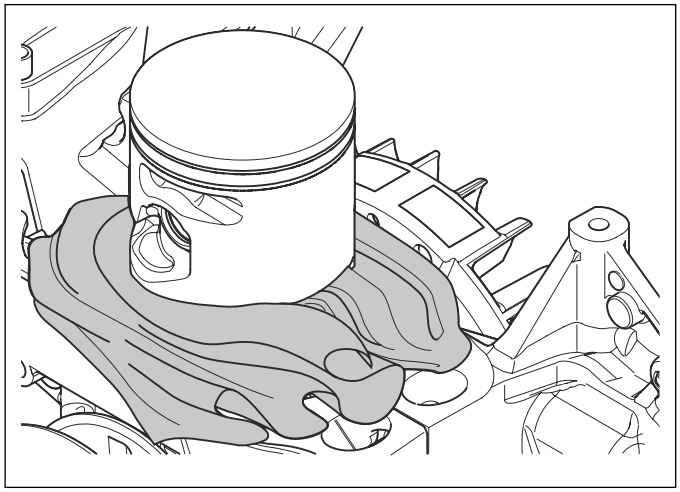
1. Make sure that the arrow on the piston points in the direction of the muffler when you assemble the piston on the connecting rod.



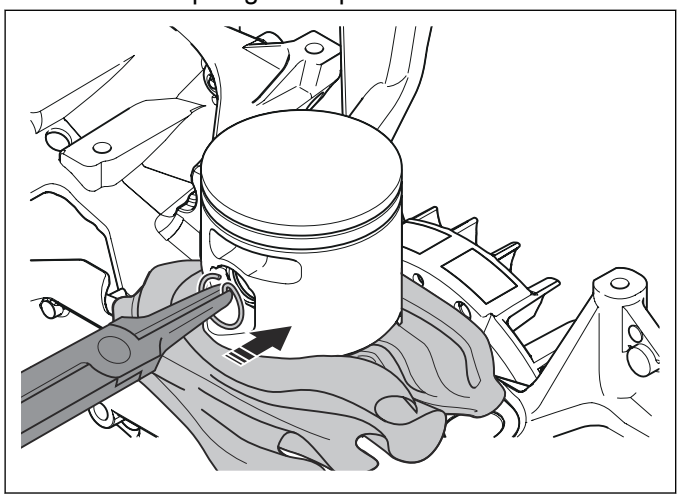
2. Install the needle bearing in the connecting rod.



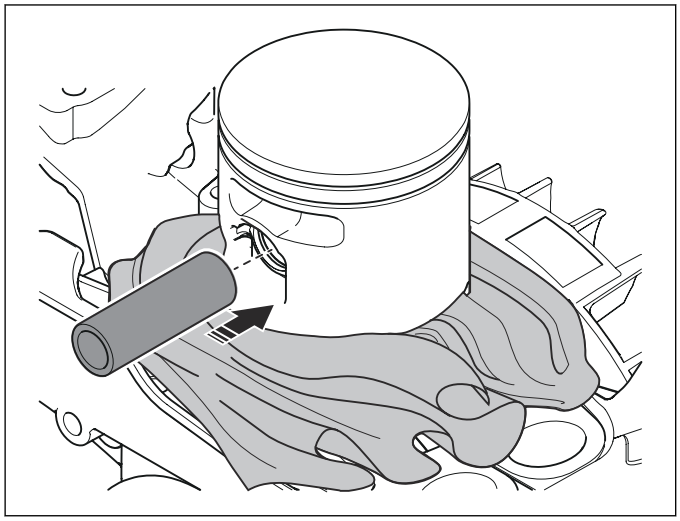
3. Seal with a cloth or paper to make sure that parts do not fall into the crankcase.



4. Install a snap ring in the piston.

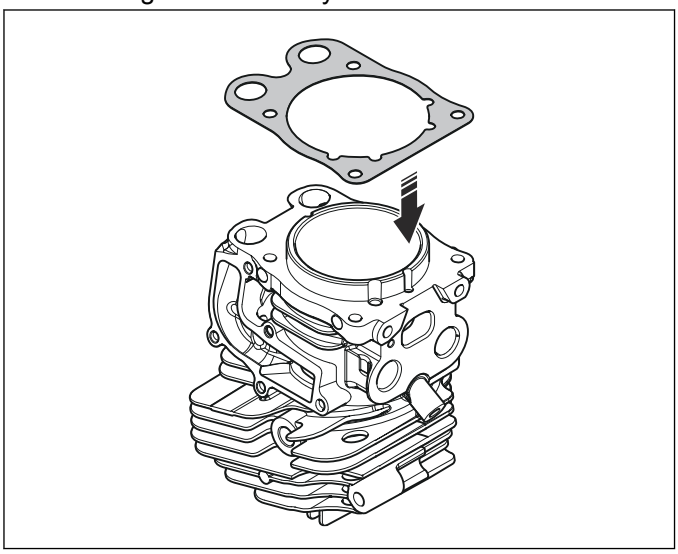


5. Hold the piston in position, push in the wrist pin and install the other snap ring.

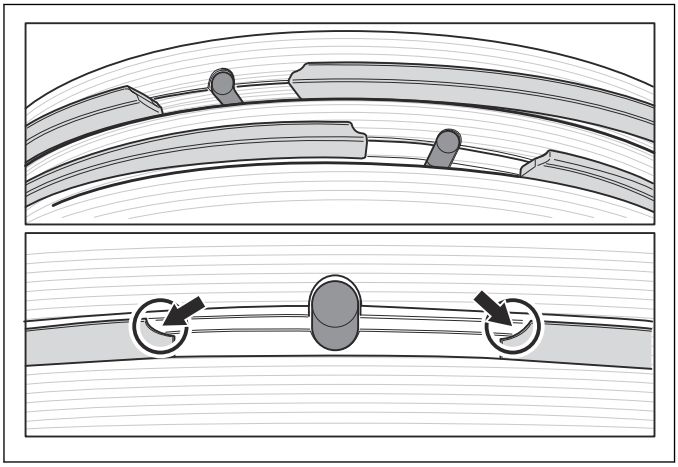


6.11 To assemble the cylinder

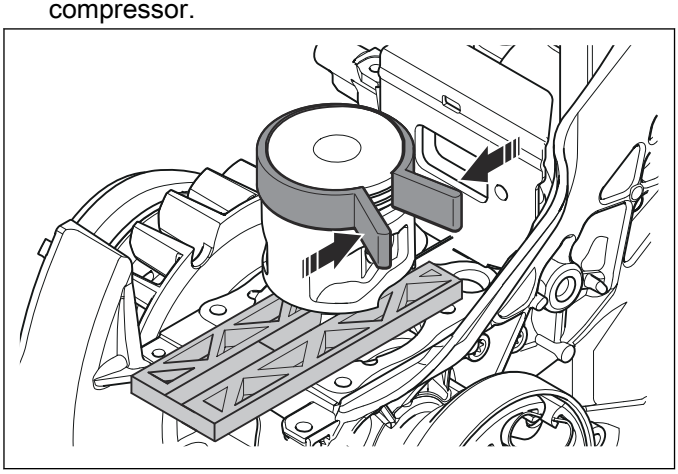
1. Clean and remove remaining bits of the first gasket from the surfaces that connect with the gasket.
2. Put the gasket on the cylinder.



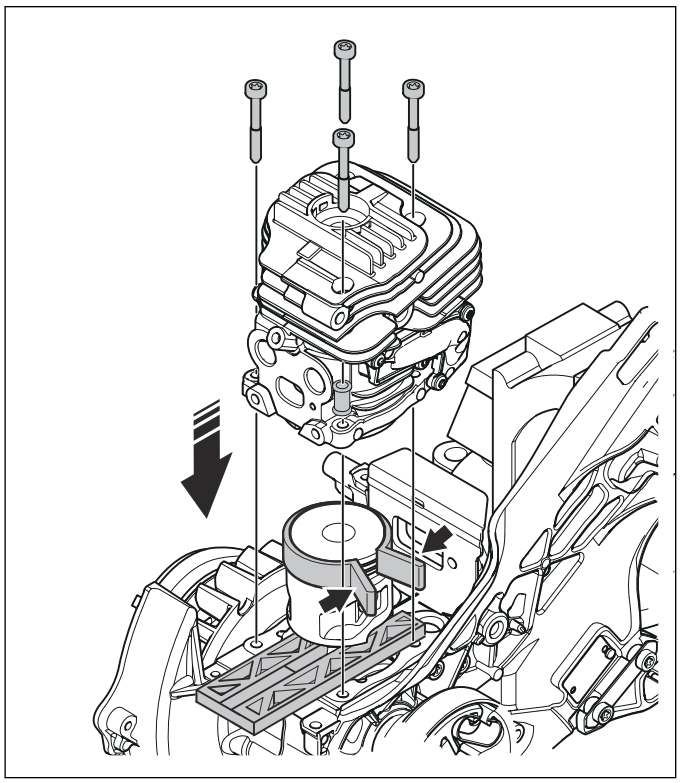
3. Make sure that the opening on the piston rings aligns with the guide pin.



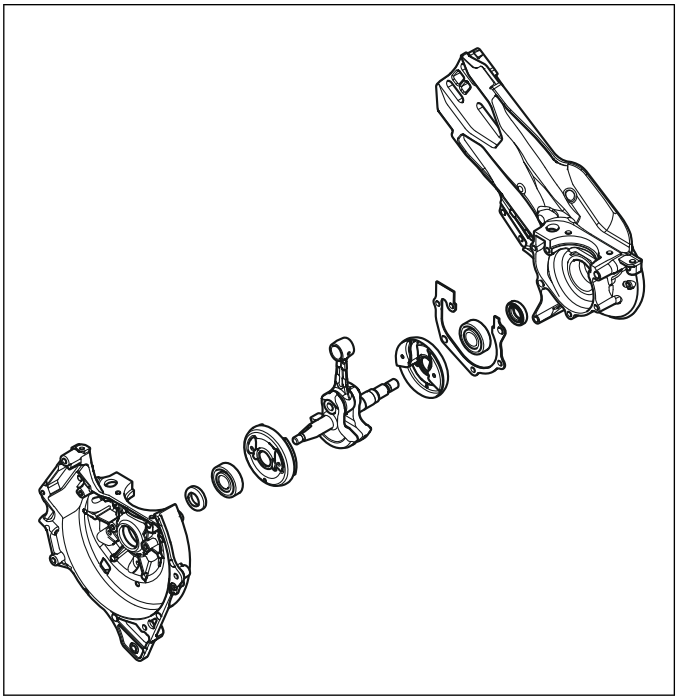
4. Push the piston rings together with the piston ring compressor.



5. Push down the cylinder on the piston and let the piston ring compressor move along the piston. Tighten the screws crosswise to a torque of 14–15 Nm.



6.12 Crankcase



6.12.1 To examine the crankcase for leaks

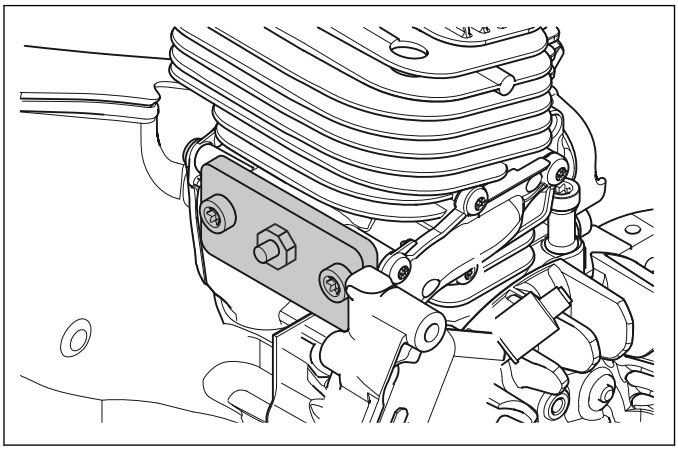
A crankcase with a leak has lower crankcase compression. A typical sign is that the product cannot easily start.

There are special tools to seal the exhaust and inlet ports of the cylinder. Refer to *Servicing tools overview*

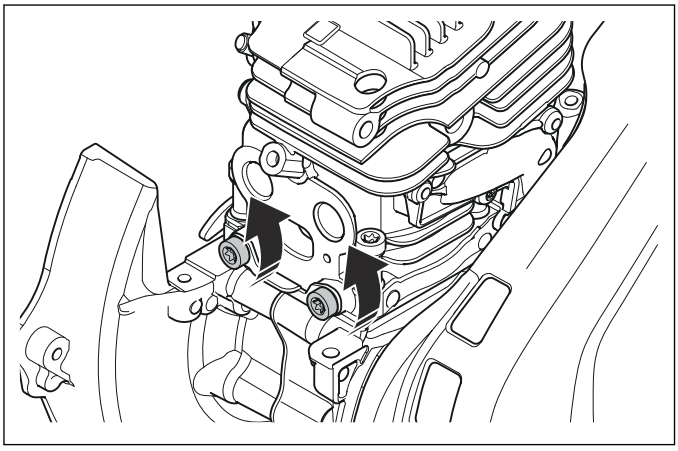
on page 10. There is also a sealing plug that replaces the decompression valve.

Use a pressure tester or equivalent for the test, refer to *Servicing tools overview on page 11*.

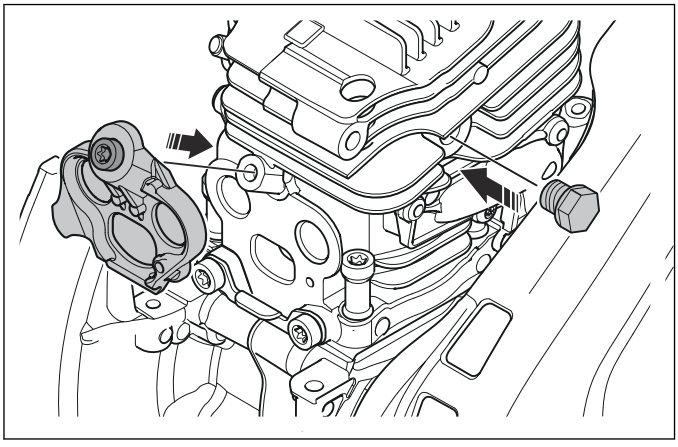
1. Turn the crankshaft until the exhaust port is fully open. The piston must be at its bottom point.
2. Put the sealing plug in the space for the decompression valve.
3. At the exhaust port, attach the exhaust port seal on the cylinder at the position for the muffler.



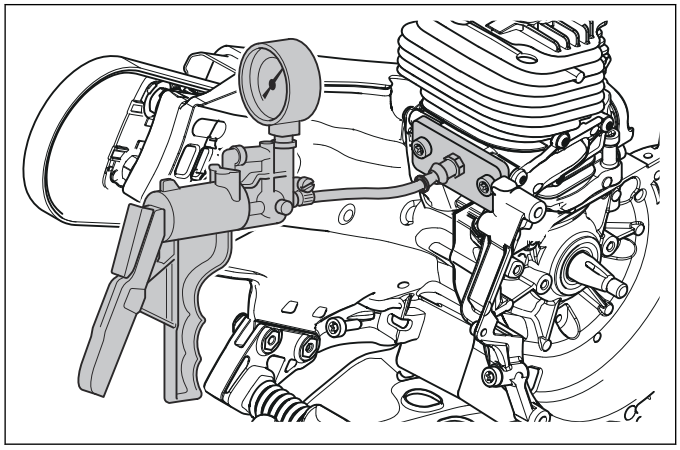
4. At the inlet port, loosen the 2 screws at the lower part of the carburetor.



5. Put the inlet seal in position and put in the screw. Be careful of the strap. Pull the lower part carefully.



6. Connect the pressure tester at the inlet port.

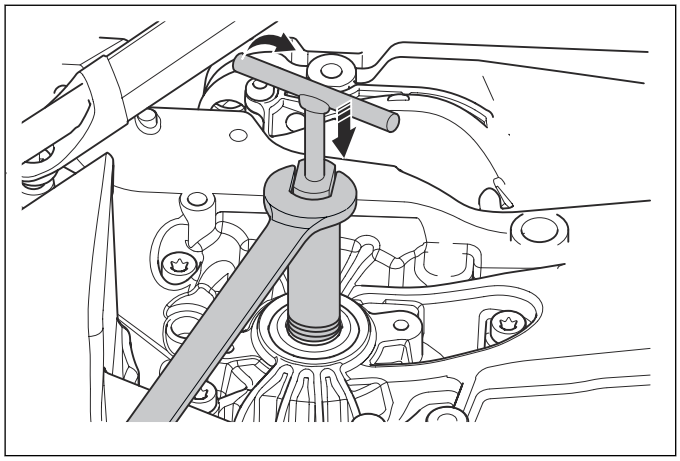


7. With the pressure tester, increase the pressure to 7 psi/0.5 bar. If the pressure decreases more than down to 3 psi/0.2 bar after 30 seconds, there is a leakage..
8. If there is a leakage, apply a solution of soap and water or use a leakage spray to find it.
   a) Examine the seals on the crankshaft.
   b) Examine around the gaskets where the crankcase halves are bonded and at the bottom of the cylinder.
   c) Look for cracks on the crankcase.

6.12.2 To remove the crankcase seal

To replace the crankcase seal rings, use a Husqvarna puller and an assembly punch. Refer to *Servicing tools overview on page 12* and *Servicing tools overview on page 10*.

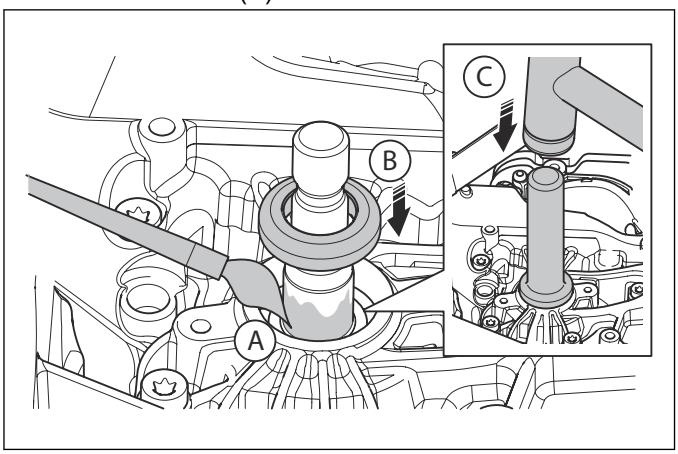
1. Push down the puller and tighten the outer thread of the puller in the sealing ring with a spanner.



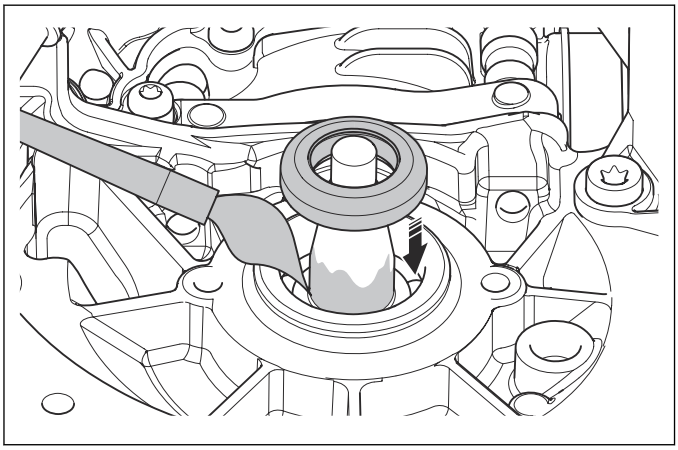
2. Turn the T-handle of the tool to pull up the crankcase seal.
3. Remove the crankcase seal in the same procedure on the flywheel side.

6.12.3 To assemble the crankcase seal

1. On the clutch side, lubricate the axle at the taper for the clutch drum (A).



2. Push down the sealing ring past the taper (B).
3. Hit the sealing ring into position with the assembly punch (C).
4. On the flywheel side, lubricate the axle.



5. Push the sealing ring down.
6. Hit the sealing ring into position with the assembly punch.
7. Clean the grease from the axle before you install the flywheel.

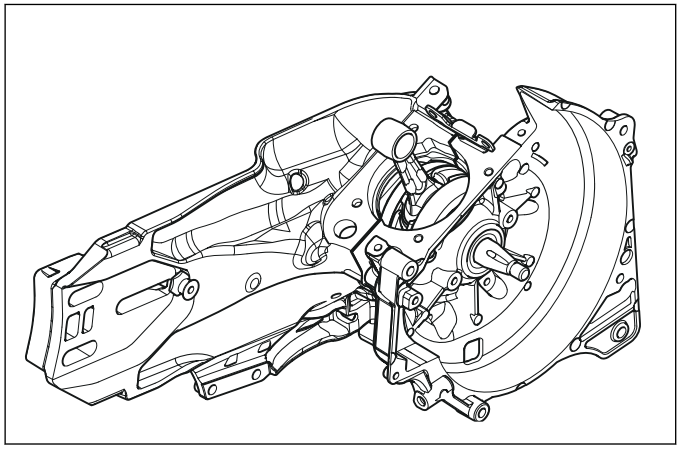
6.12.4 To examine the crankcase seals

1. Apply leakage spray or a solution of soap and water to examine the seals for leaks.
2. Use the pressure tester to find leaks.

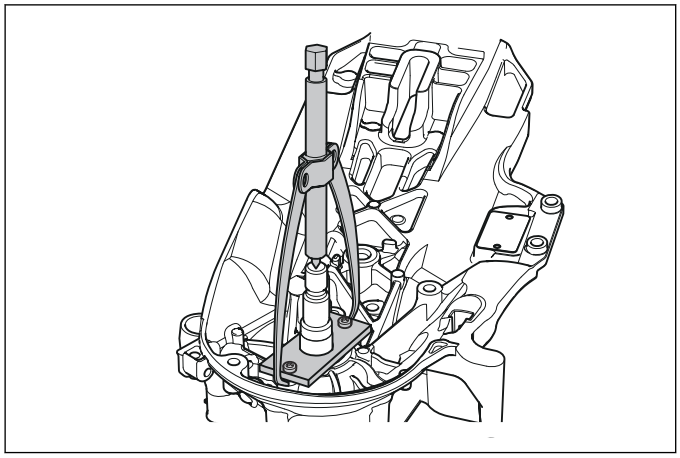
6.12.5 To disassemble the crankcase

Divide the crankcase with a universal puller and a grip plate from Husqvarna. Refer to *Servicing tools overview on page 12* and *Servicing tools overview on page 11*.

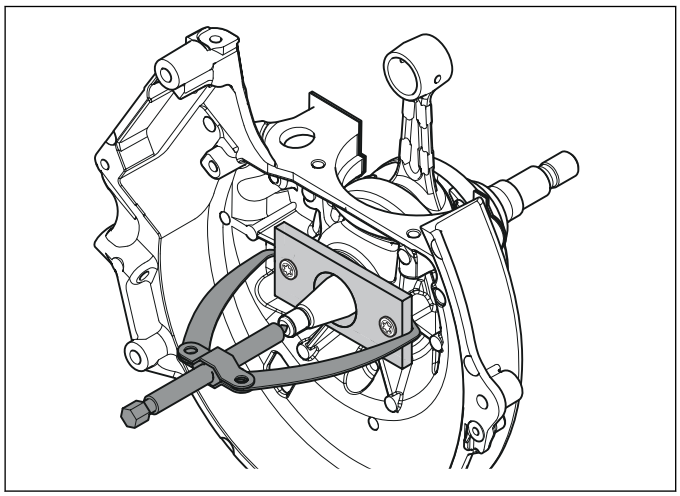
1. Disassemble the basic modules from the crankcase.



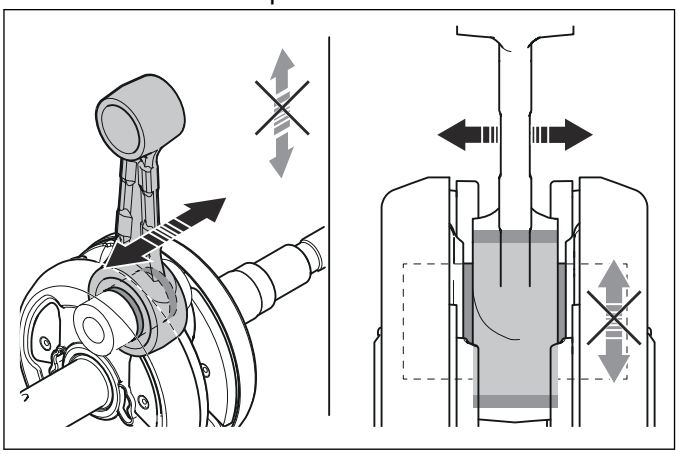
2. Remove the 6 screws that hold the crankcase halves together.
3. Put the grip plate above the hole for the crankshaft and push out the crankshaft with the puller.



4. Do the same with the other side of the crankcase.



5. Make sure there is no radial play on the connecting rod by the crankshaft journal. If there is radial play, the unit must be replaced.

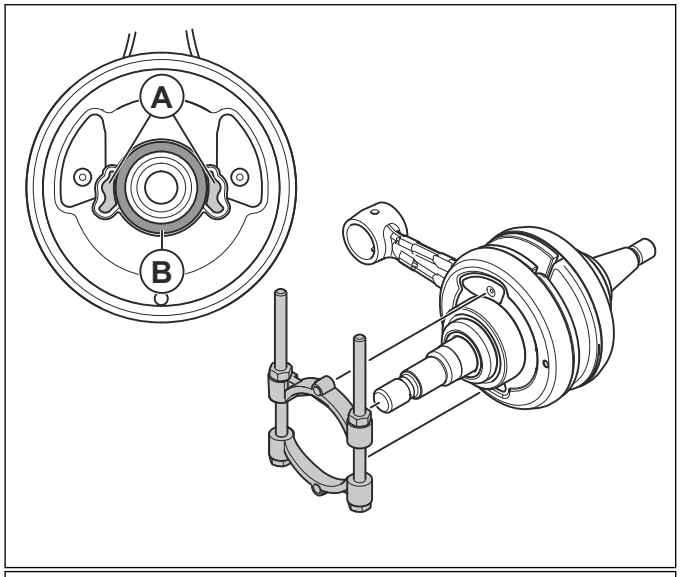


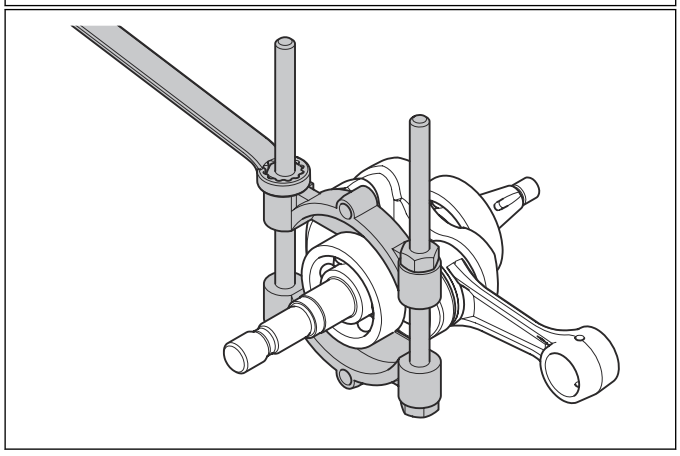
6. Carefully clean the gasket surfaces.

6.12.6 To remove the bearings from the crankcase

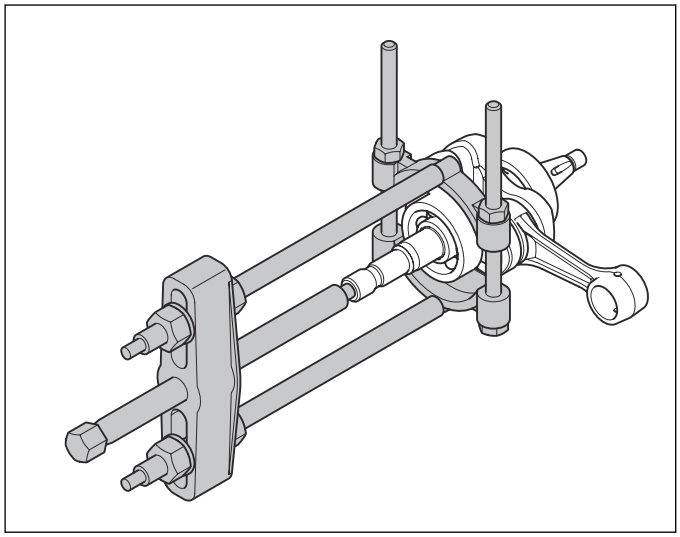
Usually the bearing releases from the crankshaft when the crankcase is disassembled. If not, you can remove the bearing with the puller. Refer to *Servicing tools overview on page 10*. To replace the bearing you must use 2 Husqvarna bearing press kits. Refer to *Servicing tools overview on page 10*.

1. Put the puller plate behind the bearing. Make sure that the plastic components on the balance weights are not damaged. The puller must be in a position where the ears (A) are free. The two parts of the puller head must not come nearer together than to the center ring (B). If they do, the plastic ring will be damaged.

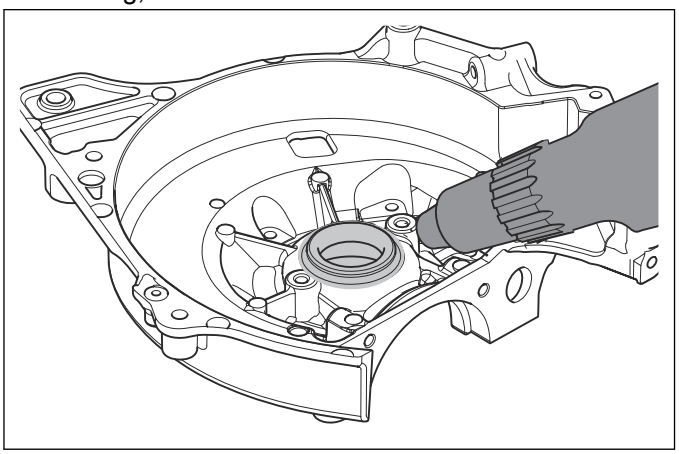




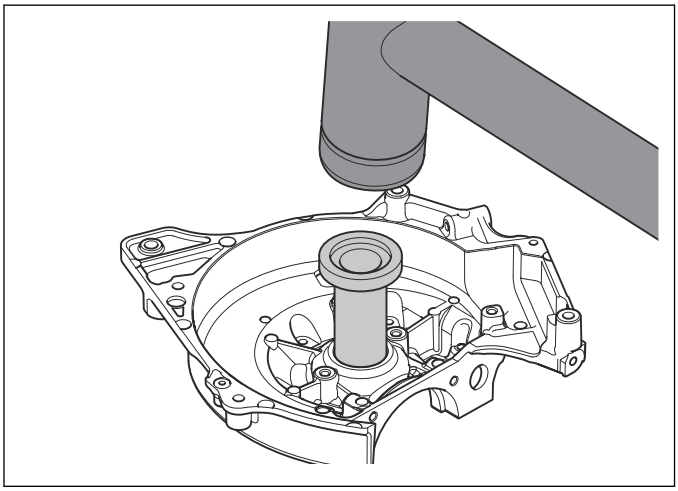
2. Attach the puller unit and press the bearing off from the crankshaft.



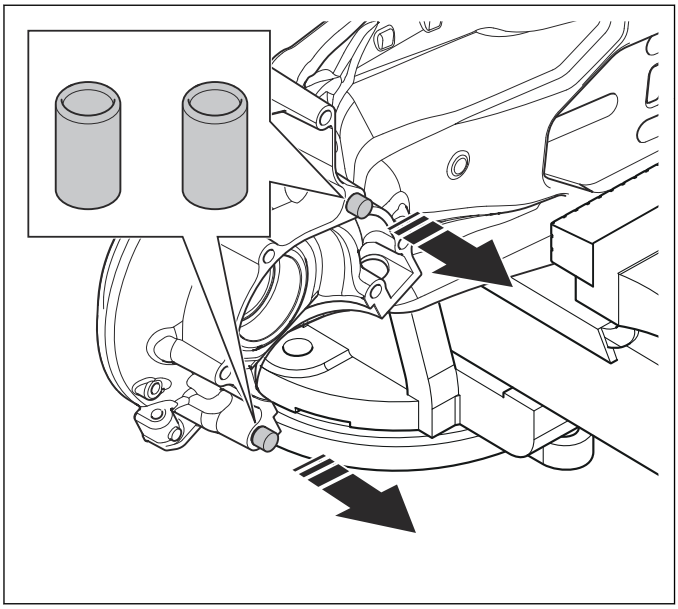
3. Put the crankcase halves against a flat piece of wood or equivalent. Use a hot air gun around the bearing, max. 300 °F/150 °C.



4. Put the sleeve from the tool kit against the bearing and hit it with a large plastic mallet.



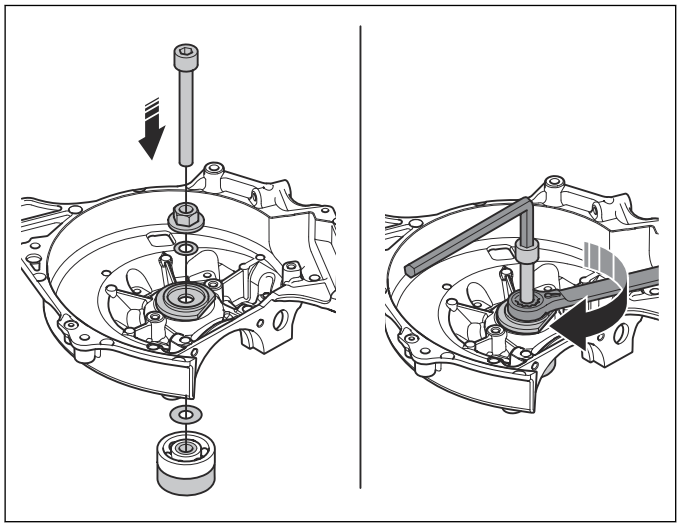
5. Remove the bushings for the crankcase halves.



6.12.7 To install the crankcase bearings

Use a Husqvarna bearing press to assemble the bearings in the 2 crankcase halves. Refer to *Servicing tools overview on page 10*.

1. Put the bearing on the support plate and hold it below the crankcase half.

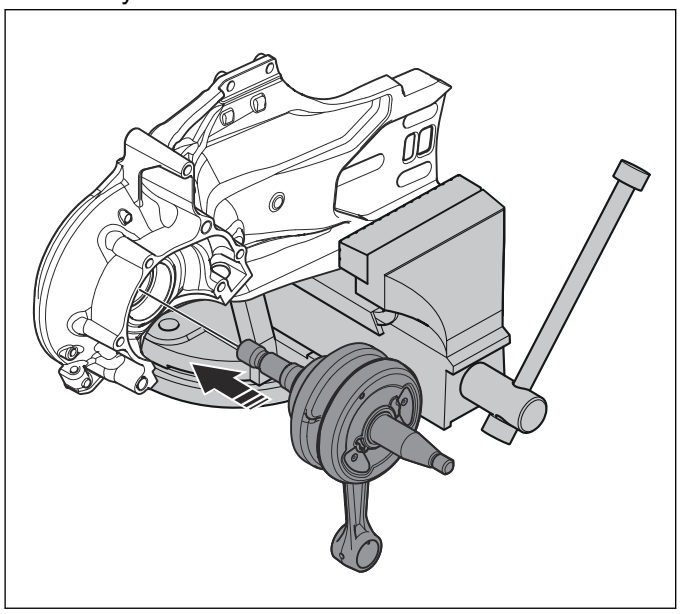


2. Put the screw through the washer and put the screw in the support plate.
3. Lock the screw and turn the nut until the bearing is in the stop in the crankcase half.

6.12.8 To assemble the crankcase

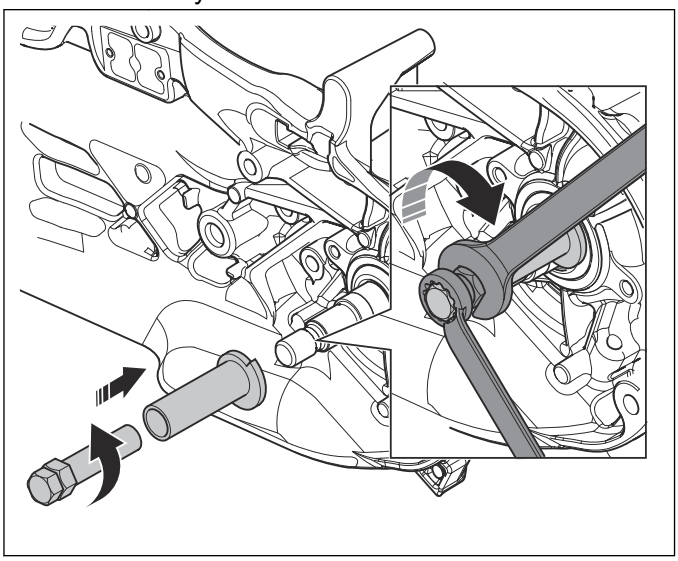
Use the bearing press to press the crankshaft into the bearing. Refer to *Servicing tools overview on page 10*. The mandrel threads for the clutch side is M10V and for the flywheel side it is M8X1.

1. Lock the crankcase half with the bottom of the cylinder plane pointing down. This makes sure that the connecting rod does not push on the crankcase when you assemble the crankcase.



2. Push the crankshaft in the bearing.

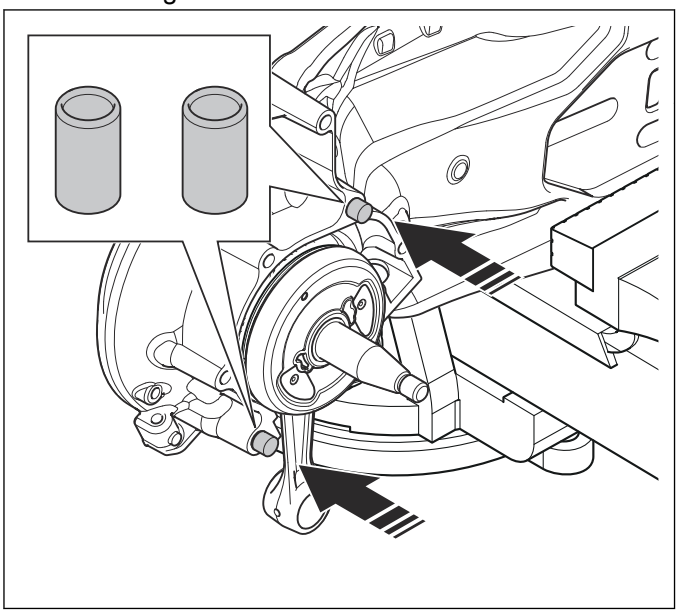
3. Put the sleeve from the tool kit against the crankcase half. Tighten the mandrel on the crankshaft by hand.



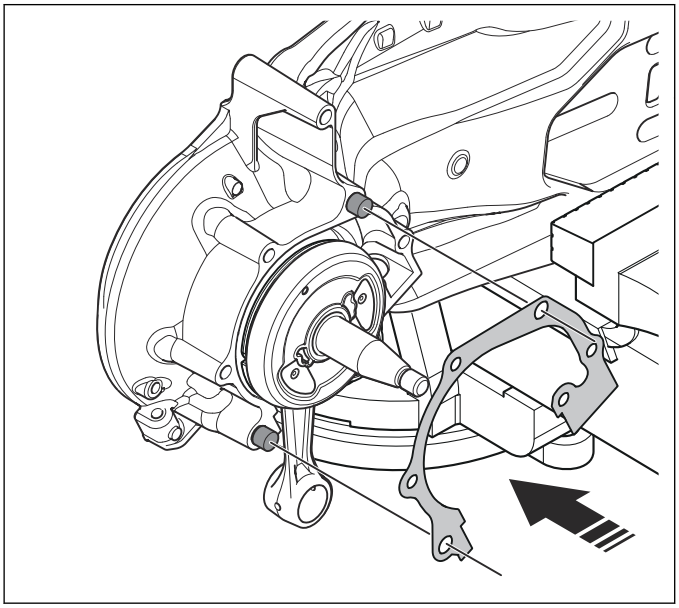
Note: The crankshaft has a reverse thread on the clutch side.

4. Lock the movement of the mandrel. Turn the nut to push in the crankshaft until the bearing is at the end of the crankcase half. Make sure that the connecting rod is not held against the crankcase half.

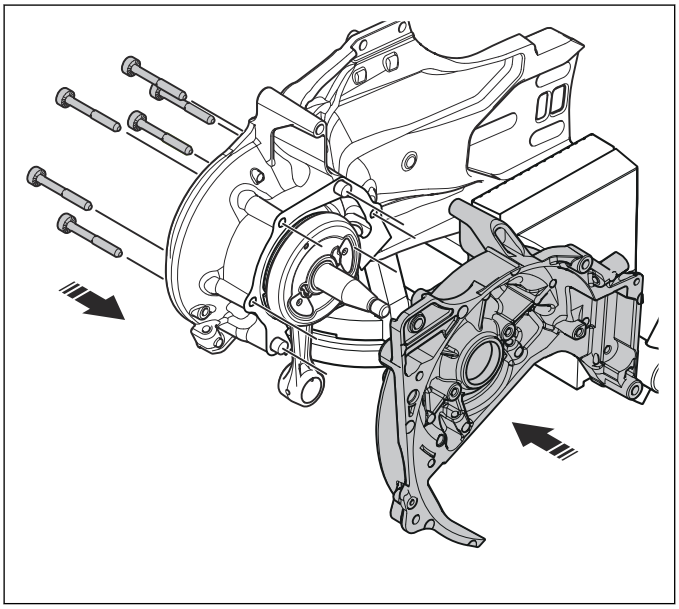
5. Put the 2 guides in the holes.



6. Install the new crankcase gasket.

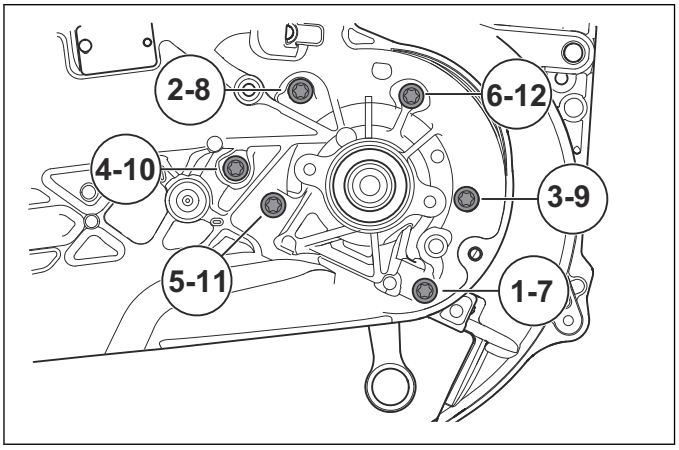


7. Assemble the other crankcase half using the same procedure.

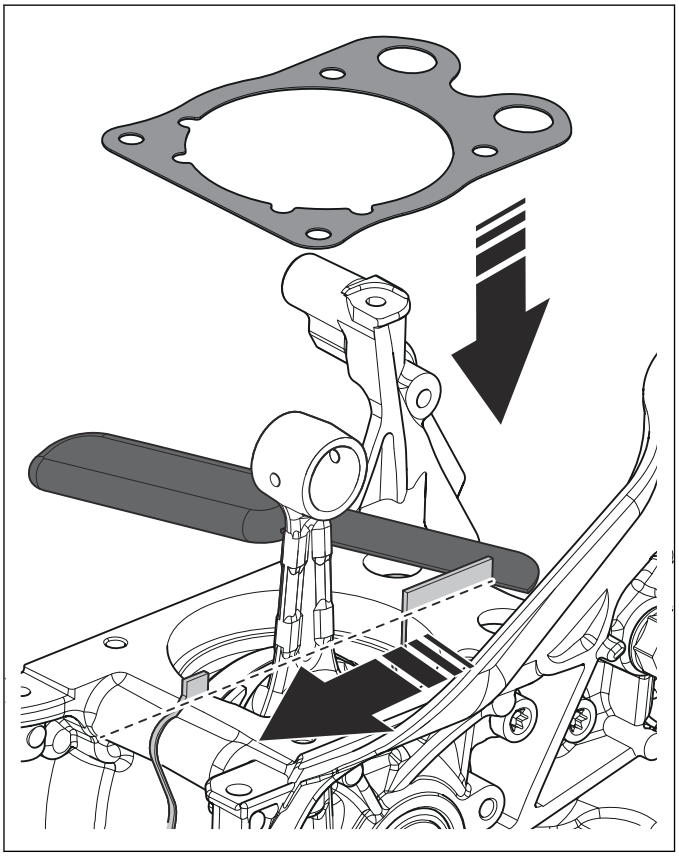


a) Change to the other mandrel.
b) Make sure the position of the connecting rod is correct.
c) Align the guides to prevent damage to the crankcase gasket.
d) Put in the screws before the crankcase halves are put together. This helps put the gasket into position.

8. Tighten the screws in the order shown in the illustration, torque 10–11 lbf·ft/14–15 Nm. Make sure that the crankshaft moves freely after it is assembled. Hit the ends of the shaft with a small plastic hammer to release tension.



9. Cut the gasket at the cylinder face.



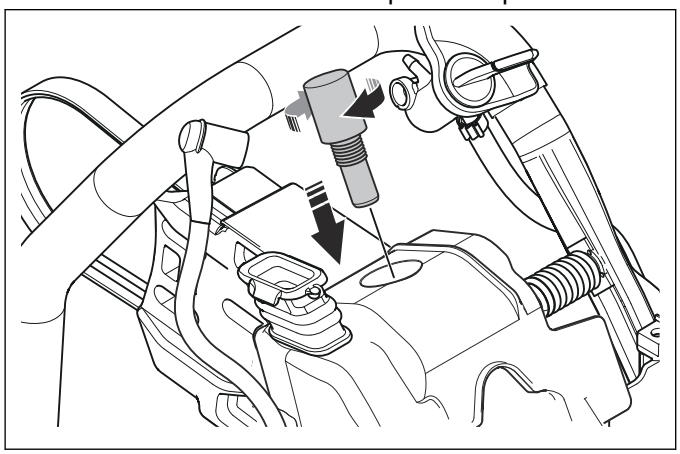
Examine the crankcase for leakages after the cylinder is assembled. Refer to *To examine the crankcase for leaks on page 48*.

6.13 Clutch

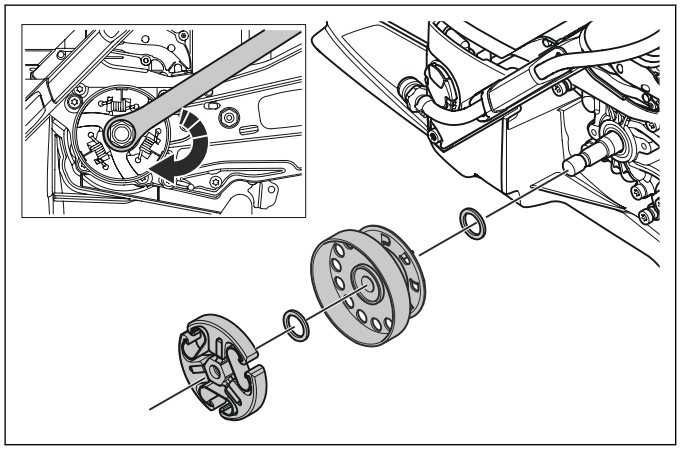
6.13.1 To remove the clutch

To remove the clutch you must use a Husqvarna piston stop. Refer to *Servicing tools overview on page 11*. Before you remove the clutch you must remove the cutting head, the rear belt guard, the air filter cover and the filter bracket.

1. Lock the crankshaft with the piston stop.



2. Release the clutch clockwise. It is has a mark with the direction “Off”.



CAUTION: Do not hit the puller. This will break the piston. If you use a hammer or equivalent without the piston stop, the locking mechanism of the flywheel can become damaged.

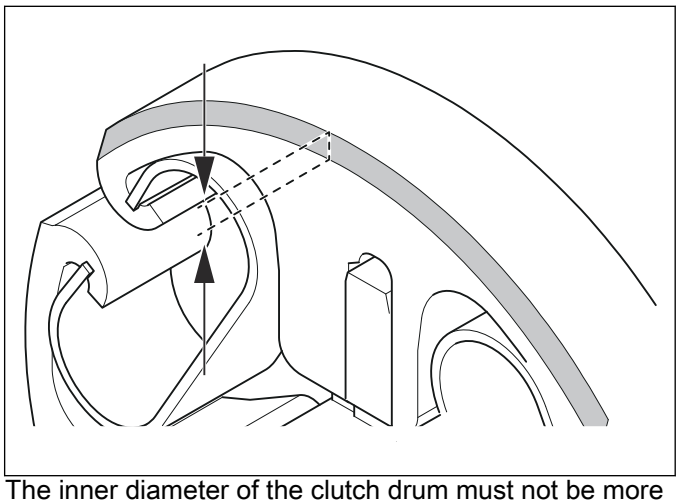
3. When the clutch is removed, the clutch drum can be removed from the axle. Make a note of the positions of the washer between the clutch and the drum and the washer against the bearing nearest the crankcase.

6.13.2 To examine clutch wear

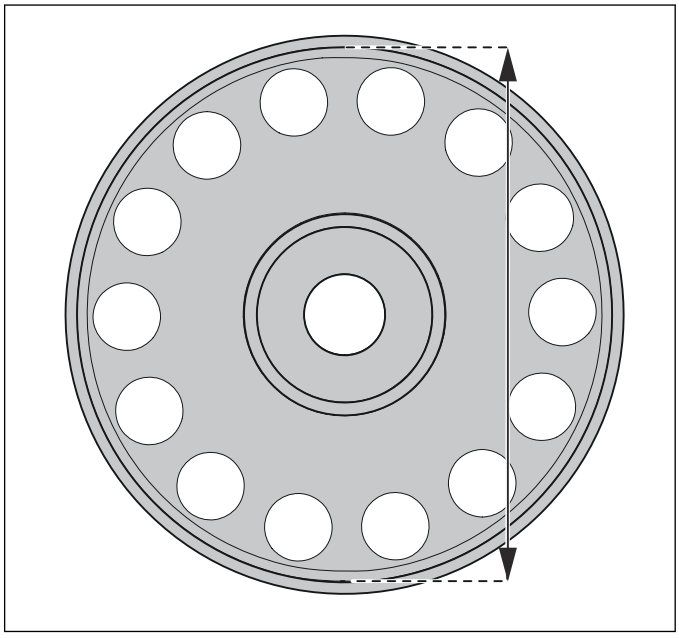
Repair the clutch if the cutting blade is engaged at engine speeds less than 3100 rpm.

The height of the clutch shoes edge must not be less than 1 mm. Replace if necessary with a complete clutch

assembly. Do not replace one shoe from a different clutch as this causes bad balance.



The inner diameter of the clutch drum must not be more than 79.8 mm. Replace if necessary with a new clutch drum.



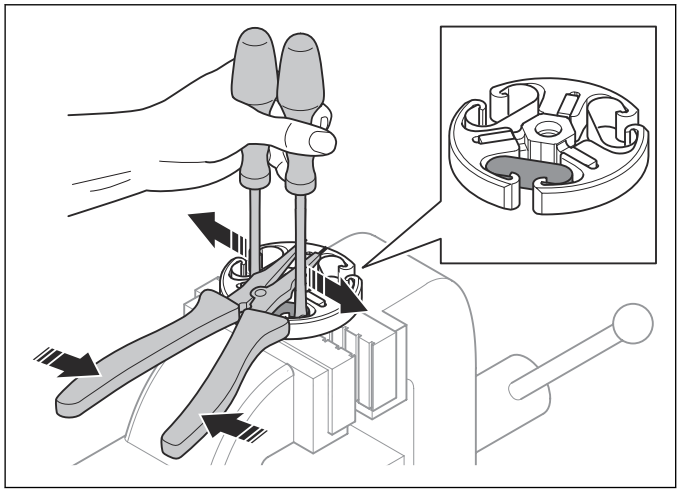
6.13.3 To assemble the clutch

WARNING: Risk of injury. Assemble the clutch with the correct tightening torque. Use a torque wrench.

- Tighten the clutch with a torque of 37–43 Nm.

6.13.4 To remove and install the clutch springs

1. Put a large screwdriver in each spring end.
2. Expand the spring with circlip pliers and remove the spring.

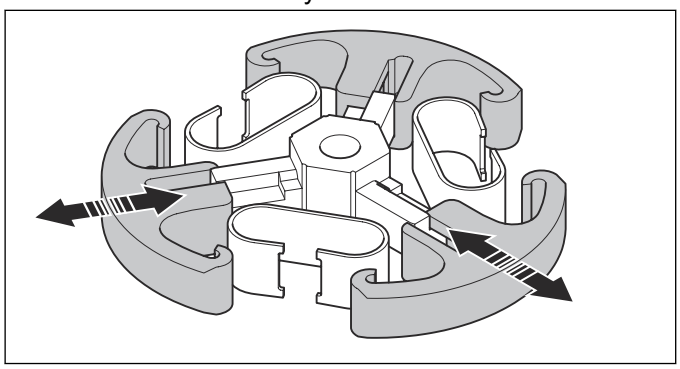


3. Install in opposite sequence.

6.13.5 To examine the clutch shoes and hub

CAUTION: Do not lubricate the clutch.

- Make sure the shoes move easily in their grooves. Clean if it is necessary.



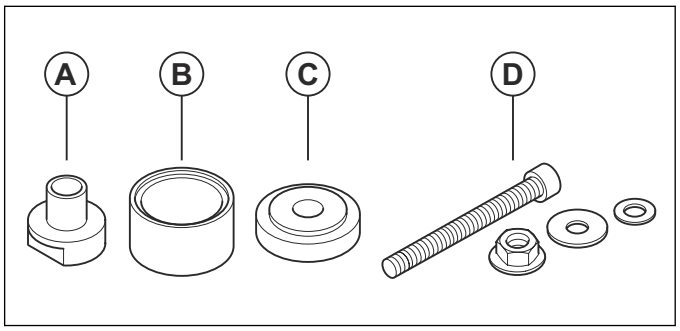
6.13.6 Belt pulley bearings

The clutch drum and the belt pulley are connected units. The belt pulley has 2 permanently lubricated ball bearings that are adjacent to each other without spacers. The outer rings of the ball bearings are installed with a light force on the belt pulley. They are installed with a sliding fit against the crankshaft. This means that the belt pulley can easily be pulled from the crankshaft when disassembling the clutch.

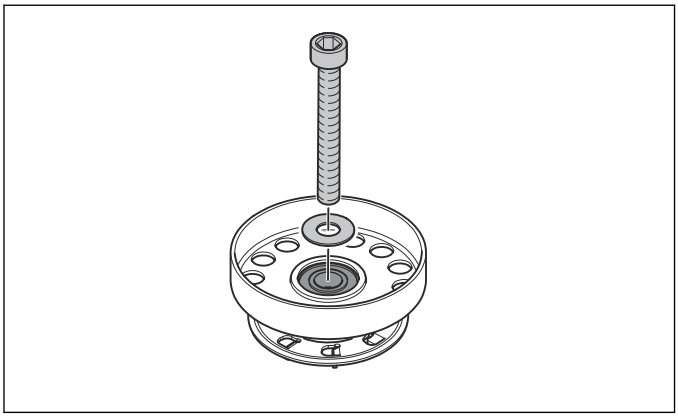
6.13.7 To remove the belt pulley bearings

Use the bearing press for the clutch drum bearing. Refer to *Servicing tools overview on page 10*. Use the tool to disassemble and install the bearing. The tool kit has a support plate for the bearing (A), the sleeve (B) and the cover (C). The cover has different contours. One side aligns with the sleeve when you disassembe and the other aligns with the clutch drum when you install. The

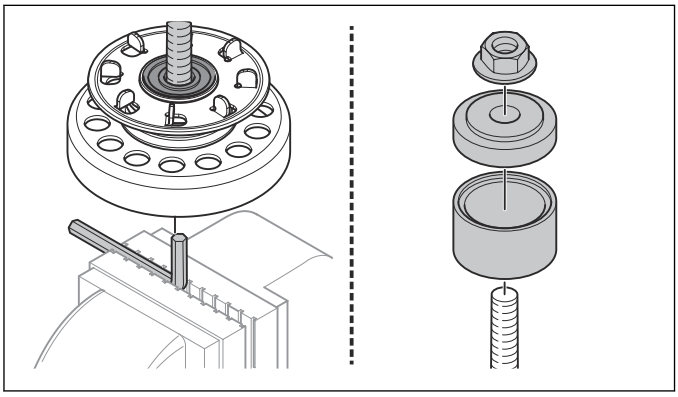
kit also contains the screw (D) with washers and nut. Lubricate the threads of the screw and the washers.



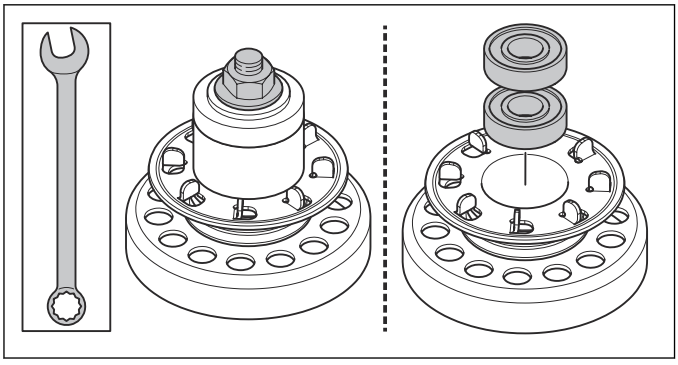
1. Put the screw with the large washer on the bearing.



2. Put the hex key in a vise. Put the head of the screw on the hex key. Put the socket and cover in position. Install washer and nut.

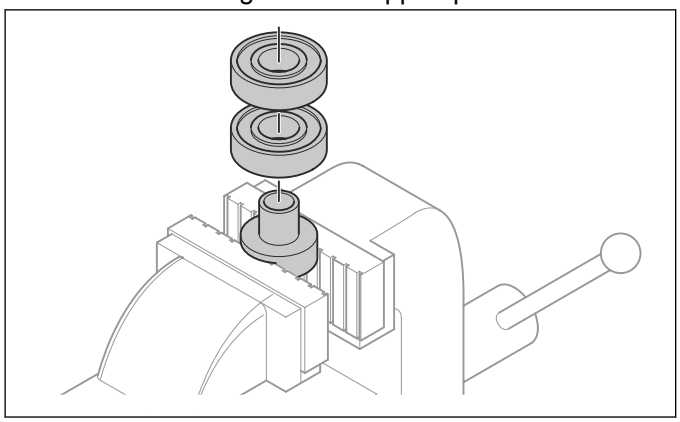


3. Tighten the nut to pull out the bearings.

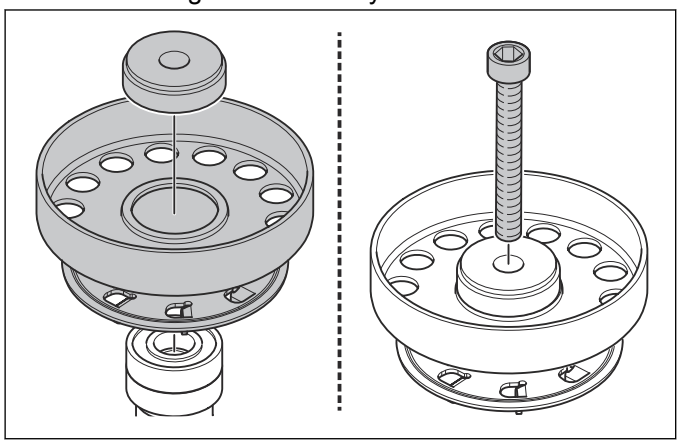


6.13.8 To install the belt pulley bearings

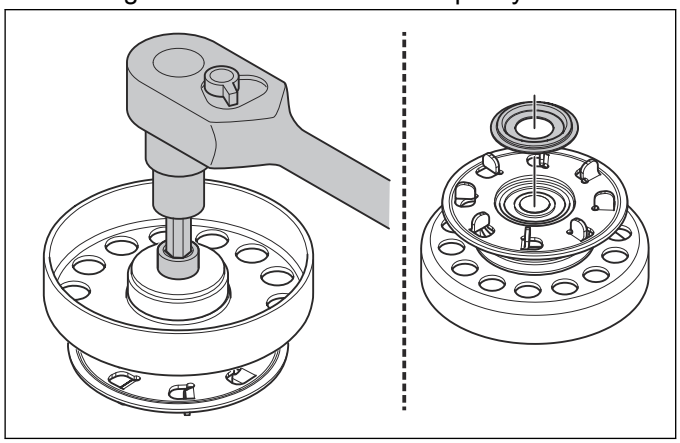
1. Put the support plate of the bearings in a vise. Put the 2 ball bearings on the support plate.



2. Put the belt pulley on top of the bearings. Put the cover and washers on top of the belt pulley. Put the screw through the assembly.



3. Tighten the screw to push the bearing in until the bearings are at the end in the belt pulley.

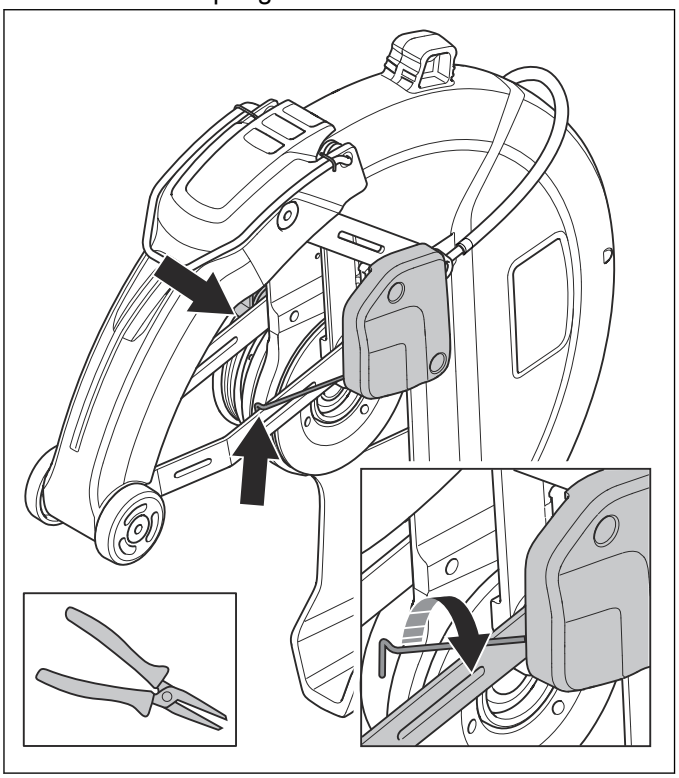


Note: When you install the clutch, you must first put the washer on the crankshaft.

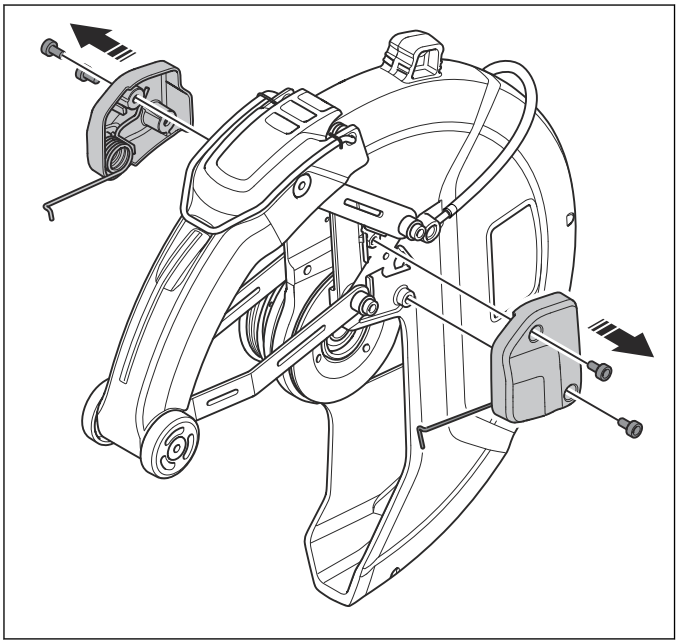
6.14 Cutting head

6.14.1 To disassemble and assemble the SmartGuard

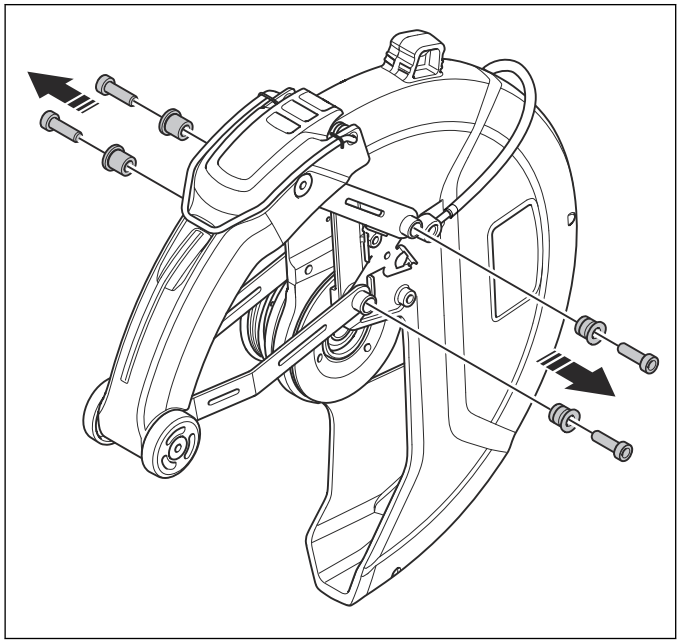
1. Remove the springs from the front arms.



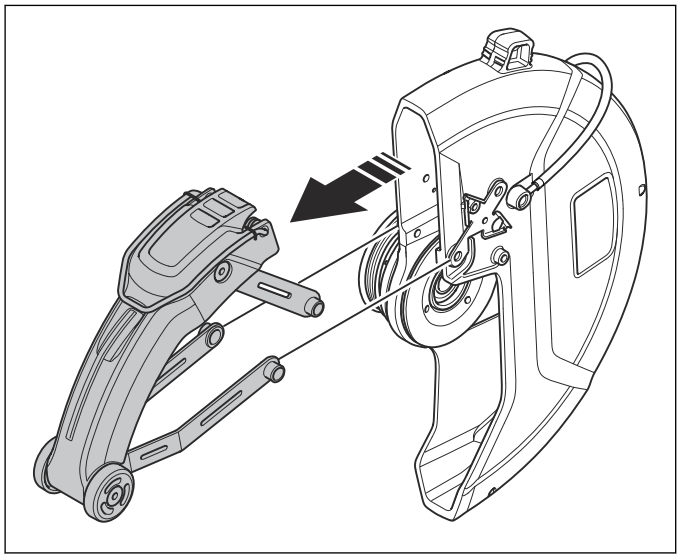
2. Remove the plastic covers and the springs. Discard the 4 screws.



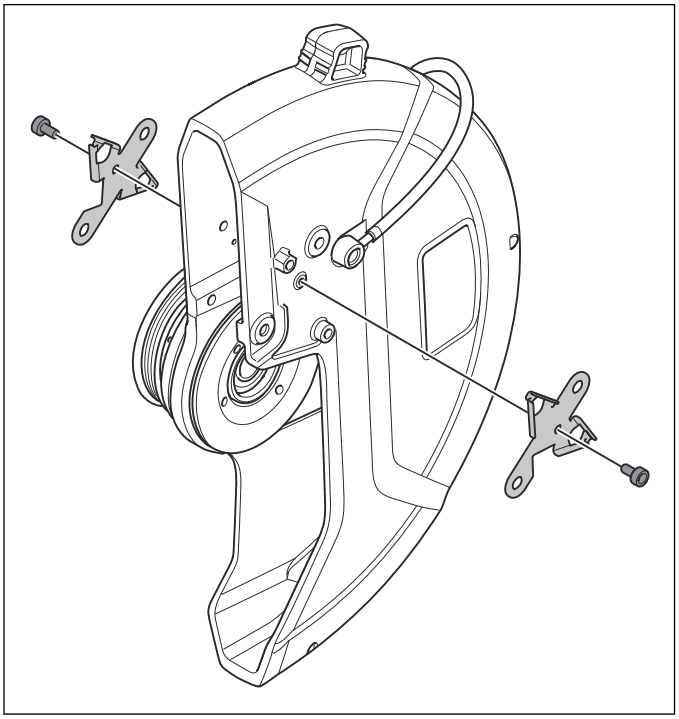
3. Remove the 4 screws and the bushings. Discard the screws.



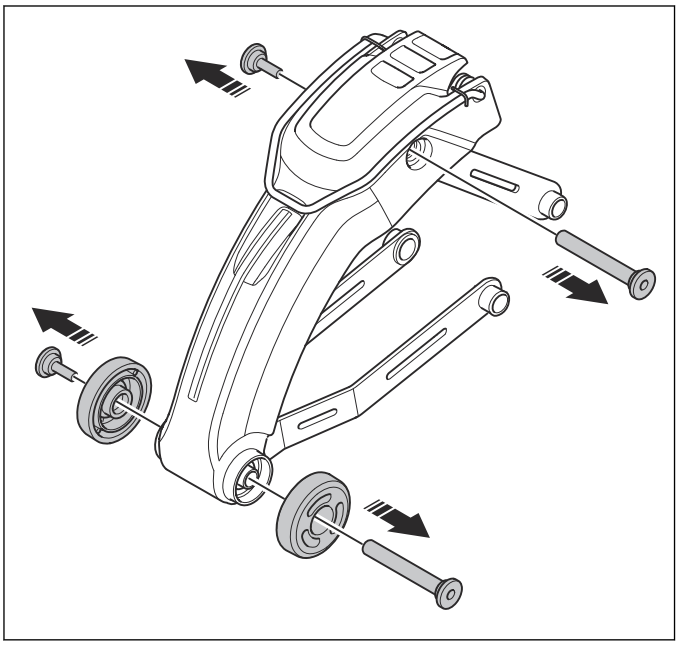
4. Remove the SmartGuard.



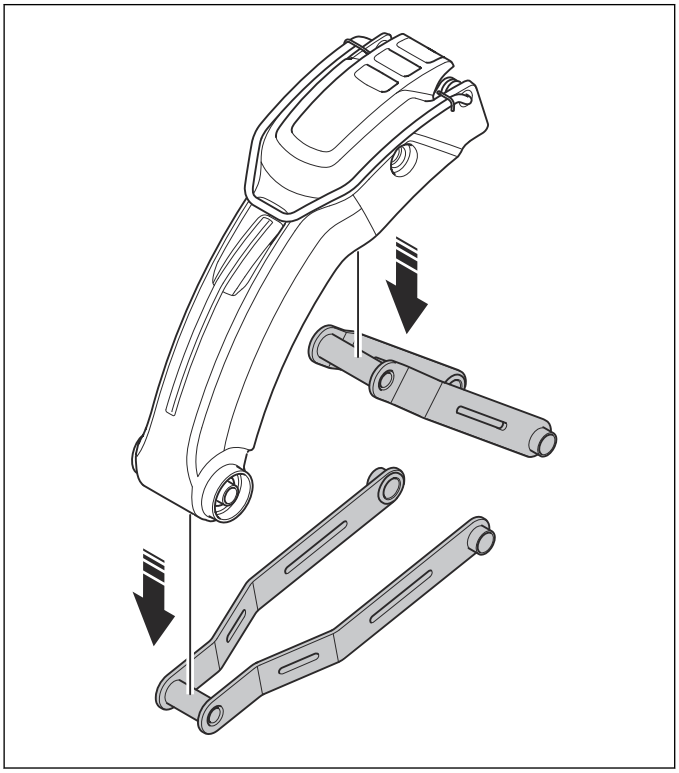
5. Remove the 2 screws and remove the plates. Discard the screws.



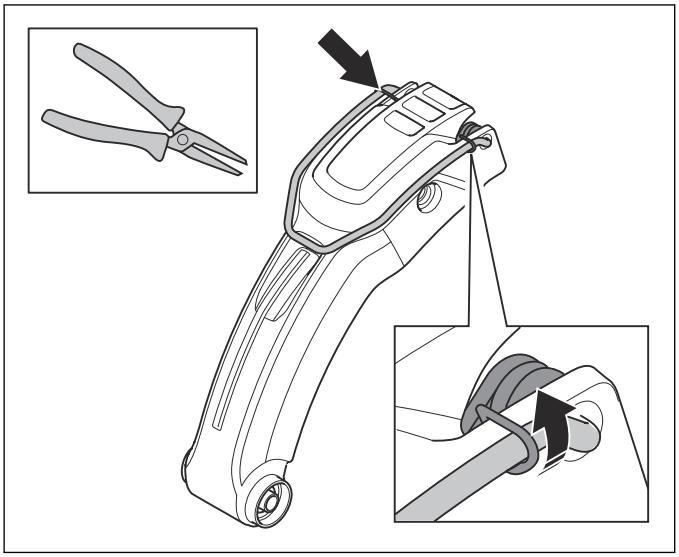
6. Remove the 4 screws and the 2 wheels. Discard the screws.



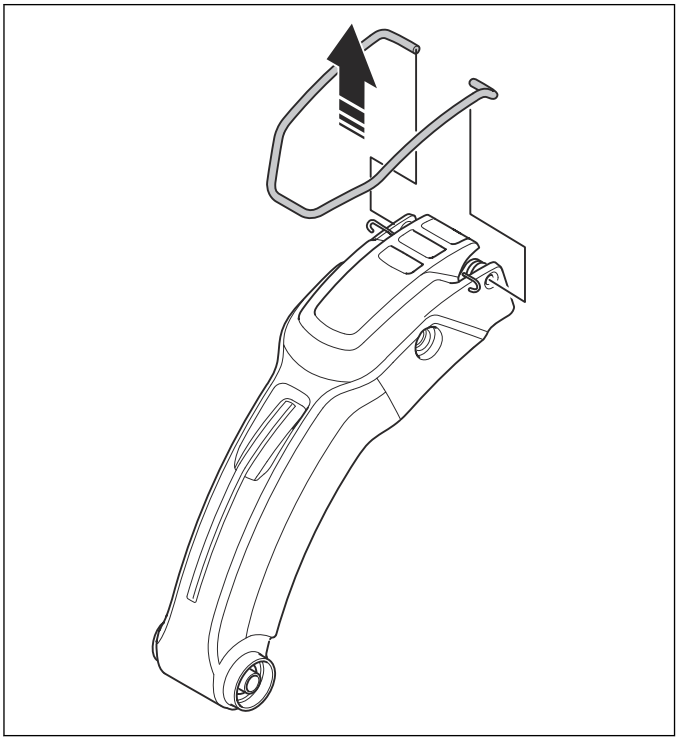
7. Remove the arms.



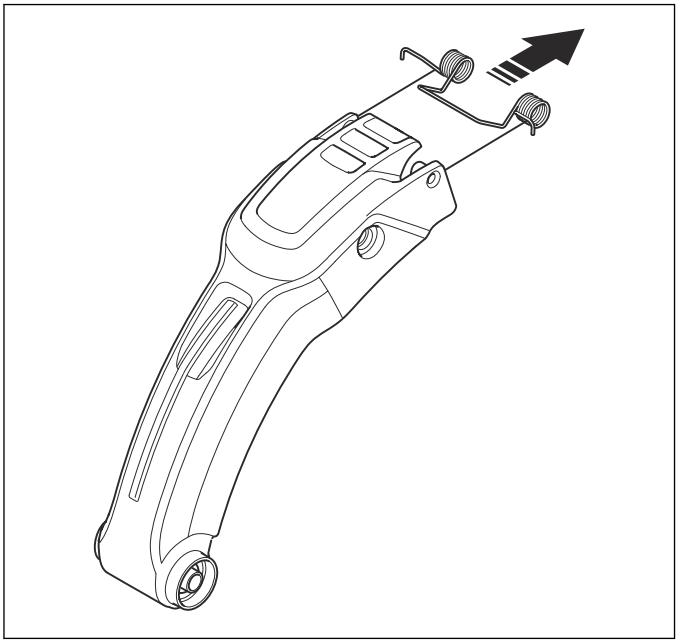
8. Remove the springs from the handle.



9. Remove the handle.

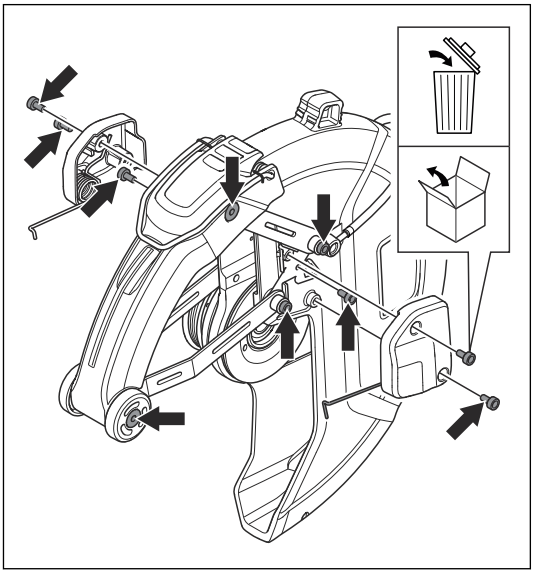


10. Remove the spring.

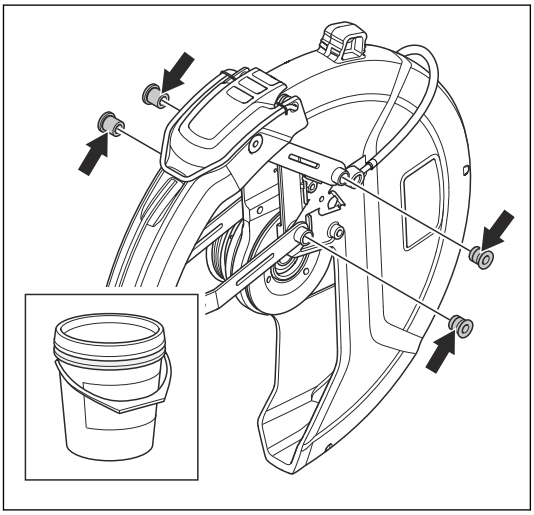


11. Assemble the SmartGuard in opposite sequence.

CAUTION: Discard and replace all self locking screws each time they are removed.

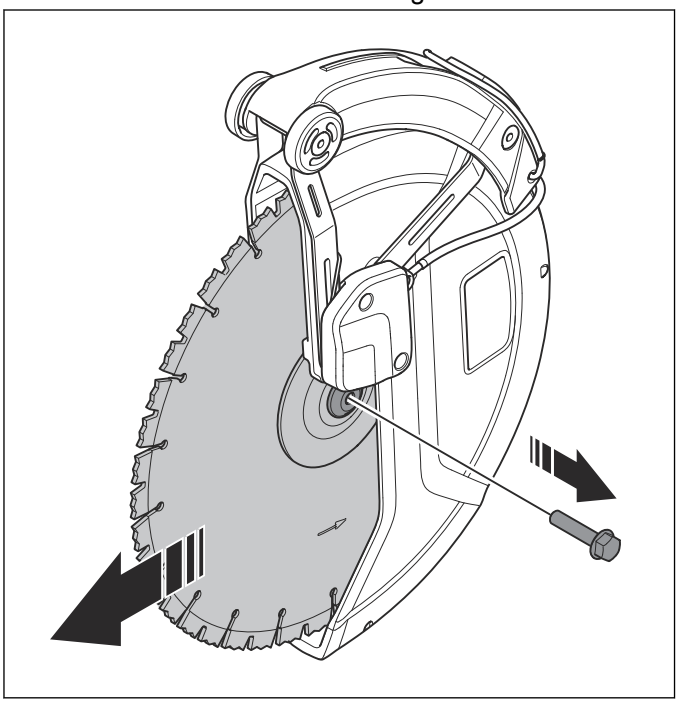


CAUTION: Apply grease on the bushings. Refer to *Servicing tools overview on page 12*.

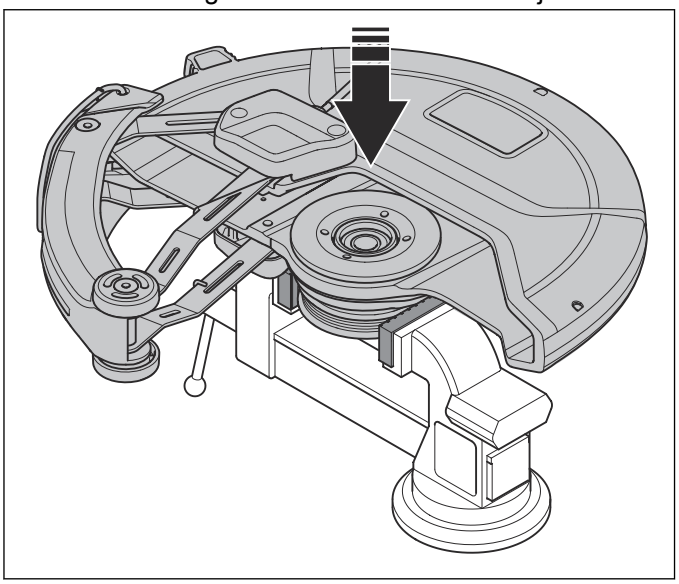


6.14.2 To disassemble the blade guard and the bearing housing

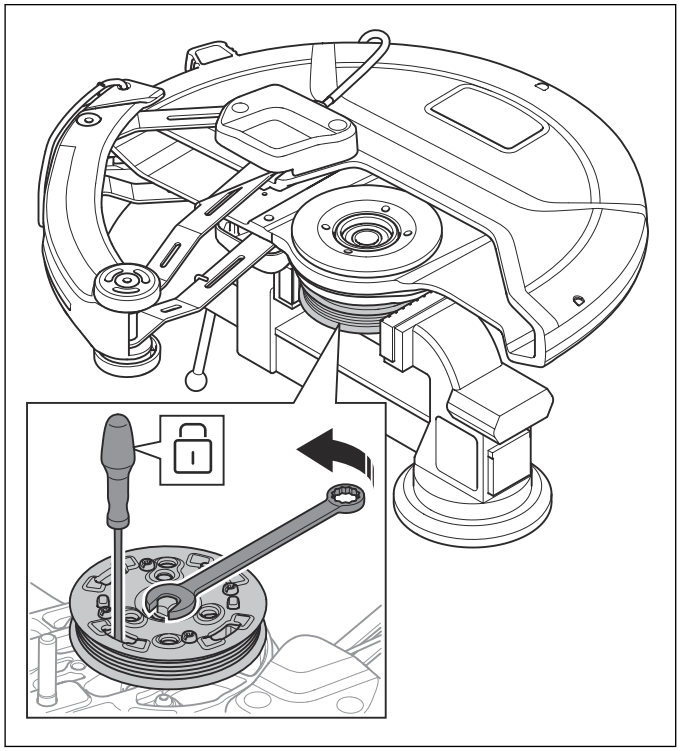
1. Remove the cutting head from the product. Refer to *To remove the cutting head on page 15*.
2. Remove the bolt and the cutting blade.



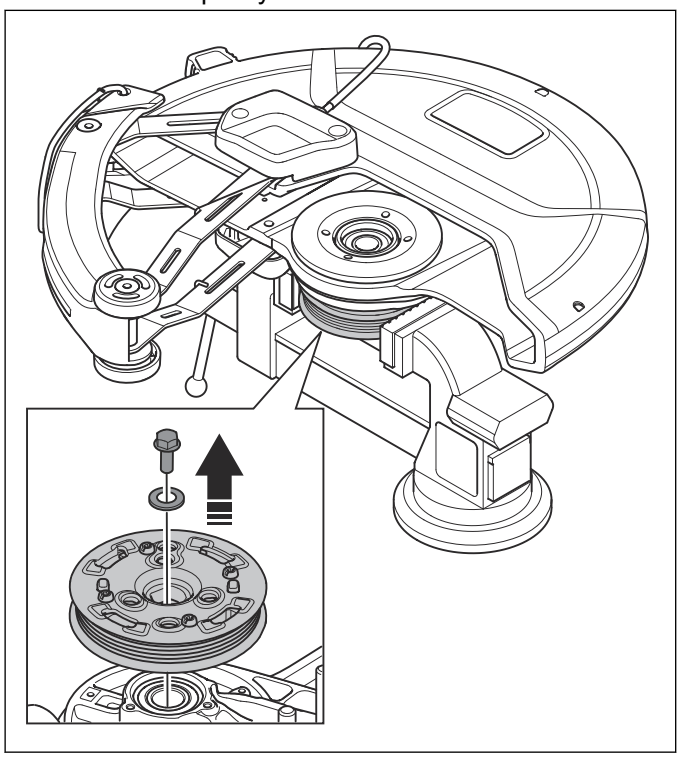
3. Put the cutting head in a vise with rubber jaws.



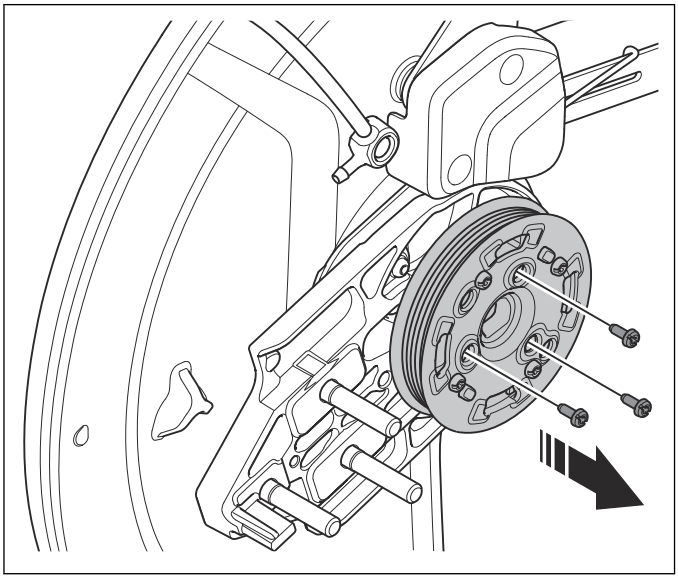
4. Lock the belt pulley with a mandrel or a screwdriver and loosen the center screw.



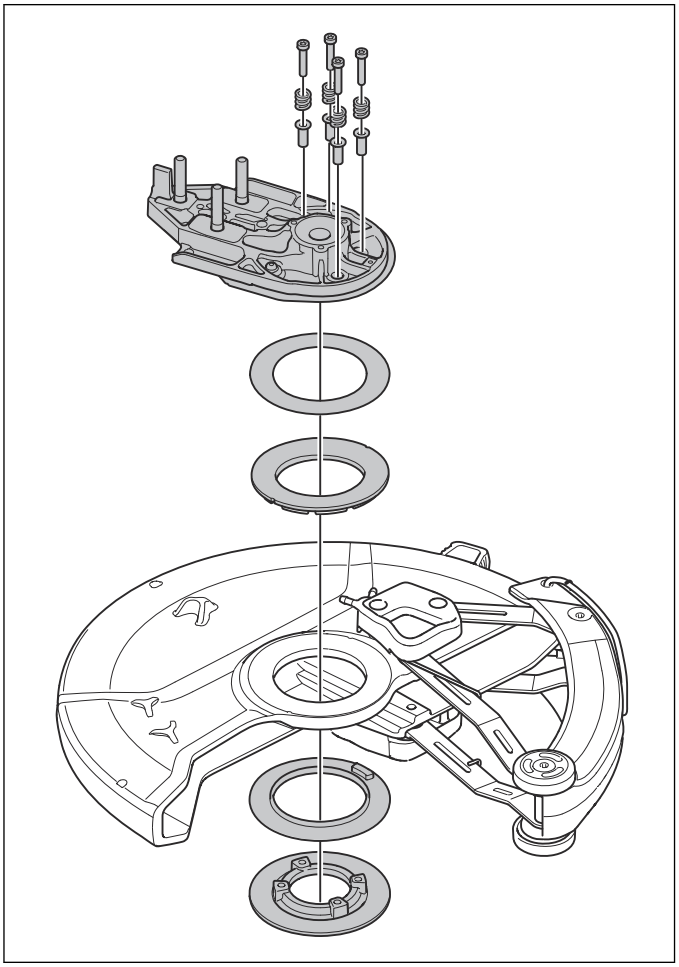
5. Remove the pulley.



6. Remove the 3 screws and the retarder.



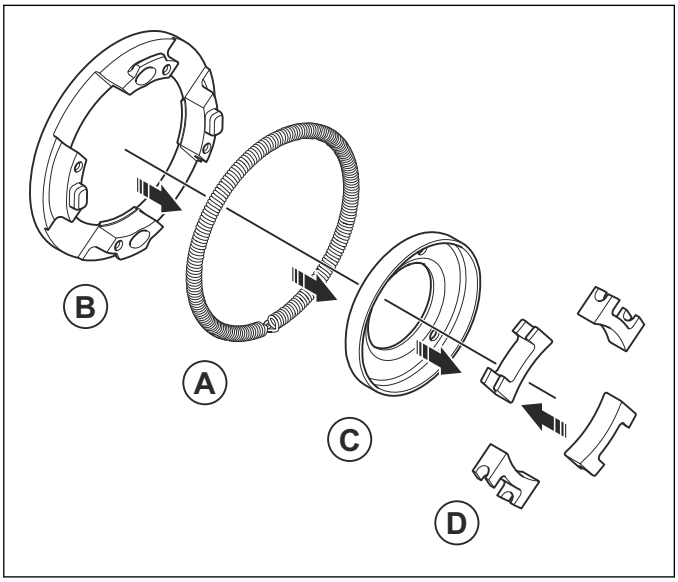
7. Remove the 4 screws, the bearing housing, the seals and the screen rings.



6.14.3 Function friction retarder

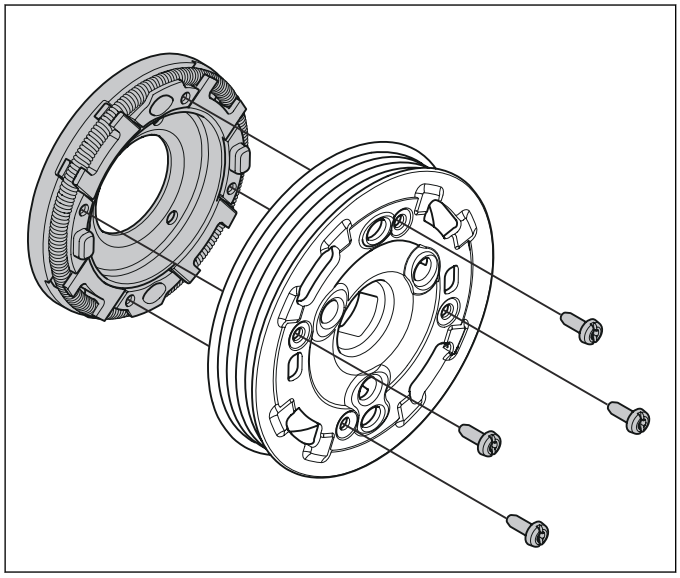
The friction retarder has a number of loosely assembled parts that are held together by the spring. Always replace the complete unit, as shown in the illustration. The brake drum is attached to the bearing housing with 3 screws. The guide plate is attached to the belt pulley with 4 screws.

The friction retarder slowly stops the cutting blade after operation. It operates when below work speed. The brake shoes (D) are pressed against the brake drum (C) by the spring (A). These units are held in position by the guide plate (B). When the speed goes above work speed, the brake shoes are pushed out from the brake drum. The retarder does not operate.



6.14.4 To disassemble the friction retarder

1. Remove the 4 screws.



2. Release the retarder unit from the belt pulley .

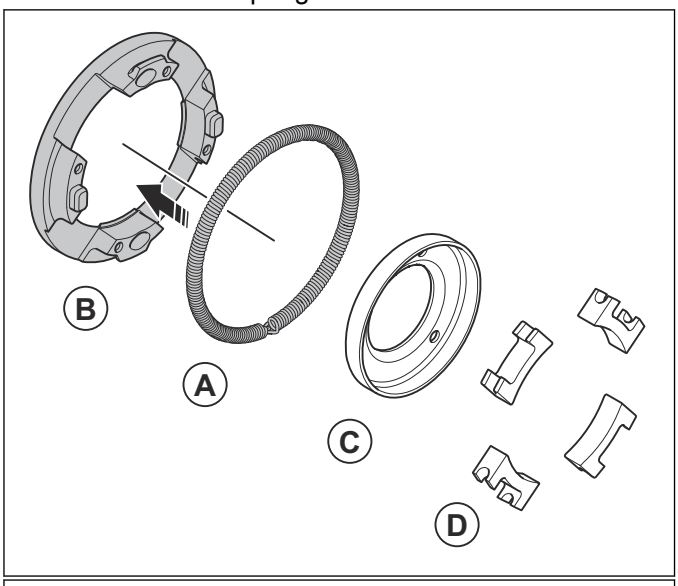
6.14.5 To clean the friction retarder

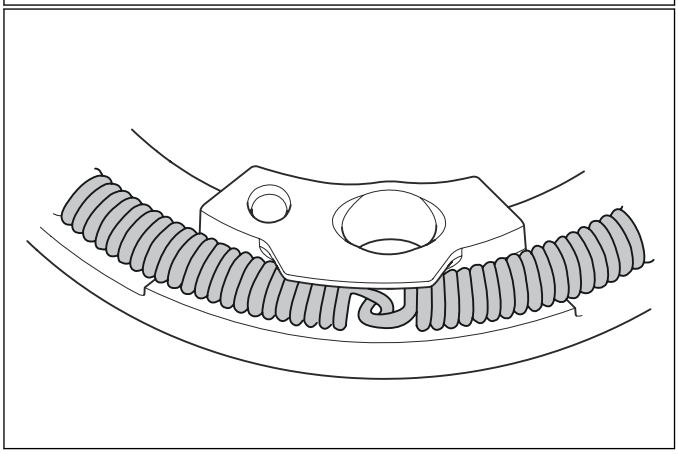
CAUTION: The retarder must not be lubricated.

- If it is necessary, clean off dust with compressed air.

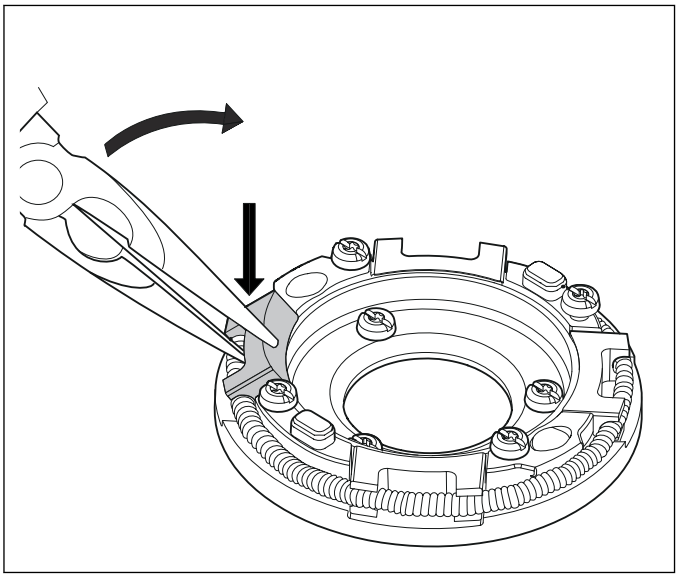
6.14.6 To assemble the retarder unit

1. Put the spring (A) in position in the guide plate (B). Note where the spring ends must be.



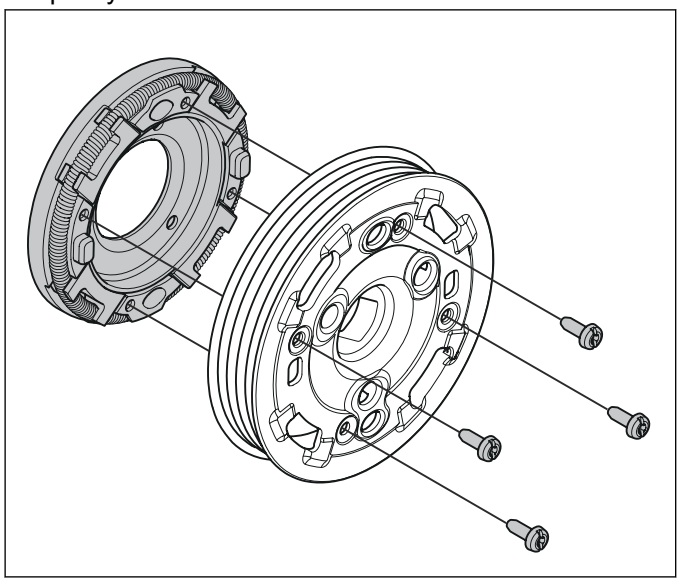


2. Put the brake drum (C) in position in the center of the guide plate.
3. Assemble the brake shoes (D) with a pair of pliers.

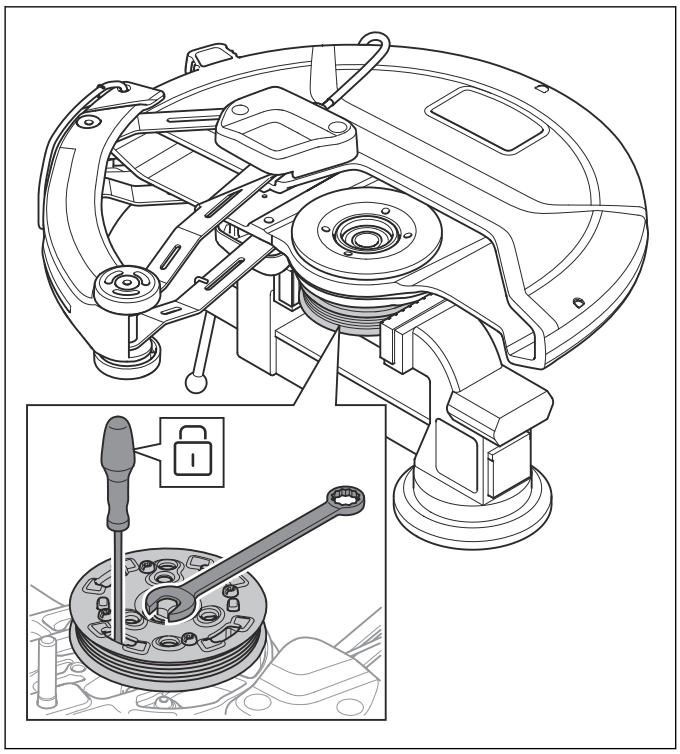


6.14.7 To assemble the retarder and belt pulley

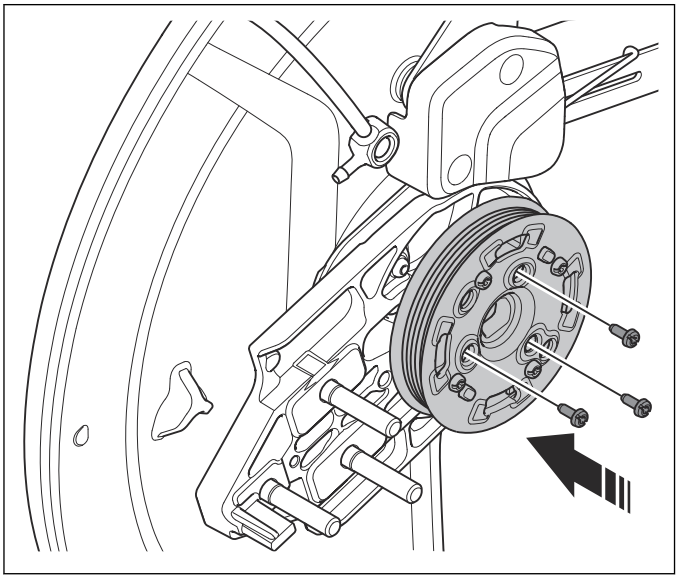
1. Assemble the plate of the retarder unit and the belt pulley with the 4 screws.



2. Put the retarder unit on the bearing housing. Lock the belt pulley with a mandrel and put the center screw with the washer on the blade shaft.

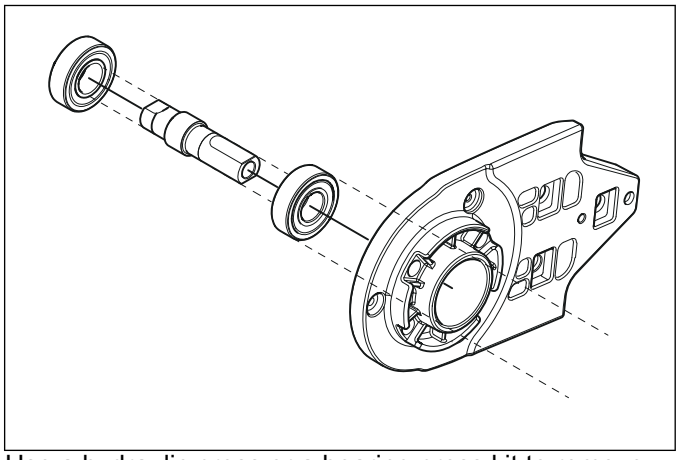


3. Assemble the the brake drum and the bearing housing.



6.14.8 To remove the blade shaft bearings

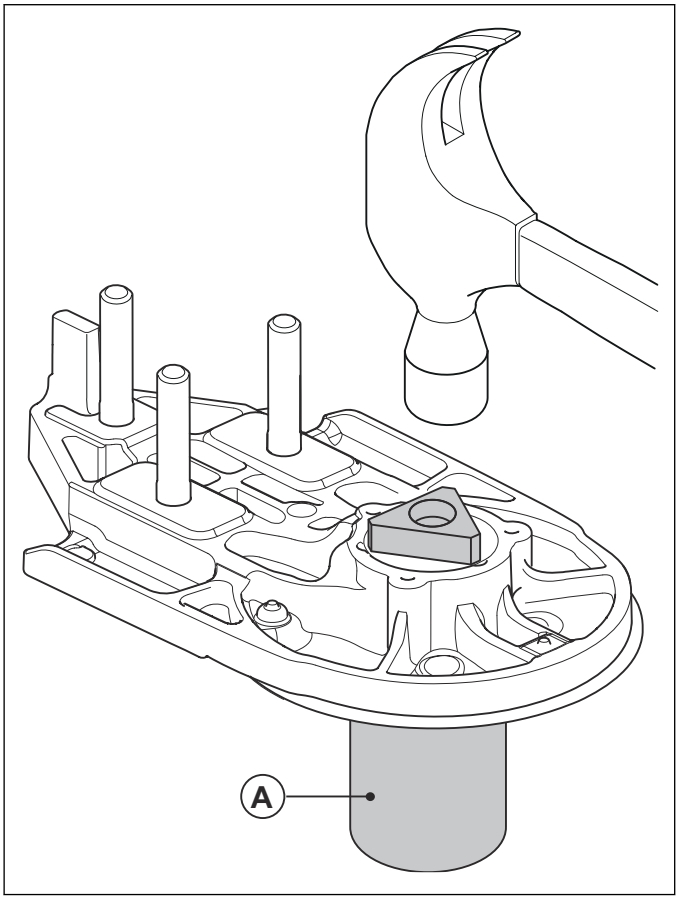
The blade shaft bearings are pushed against a spacer on the blade shaft. The inner rings of the bearing are installed against the shaft. The outer rings of the bearings are installed against the bearing housing.



Use a hydraulic press or a bearing press kit to remove the blade shaft bearings.

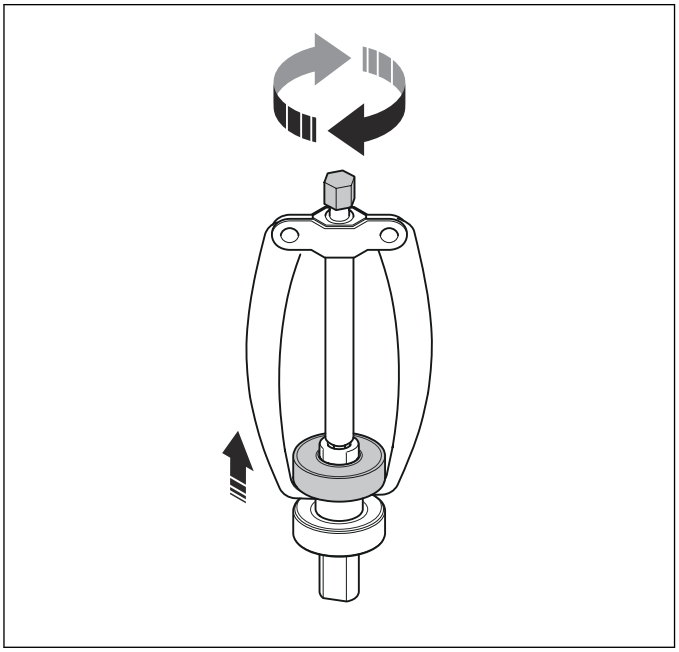
- If you replace the blade shaft bearings with a hydraulic press, use the Husqvarna press tool. Refer to *Servicing tools overview on page 11*.
- If you replace the bearings with a bearing press kit, use the Husqvarna bearing press kit. Refer to *Servicing tools overview on page 10*.

1. Turn the support for assemble (A) with its shoulder up and put the bearing housing on top of it.



2. Put the triangle from the bearing press kit, or assembly support from the hydraulic press, on top of the bearing. Refer to *Servicing tools overview on page 10* and *Servicing tools overview on page 11*.
3. Push out the bearing until the triangle is at the edge of the bearing housing. Then extend with a tool socket to push out the bearing unit fully from the bearing housing.

4. Remove the bearings from the shaft with a universal puller.



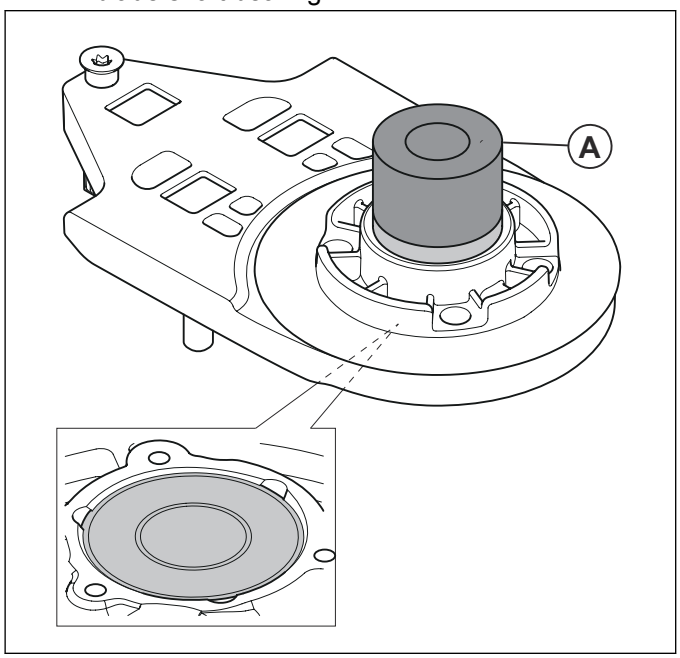
6.14.9 To assemble the blade shaft bearing

CAUTION: Do not put force between the inner and outer rings of the blade shaft bearing. The bearings can become damaged.

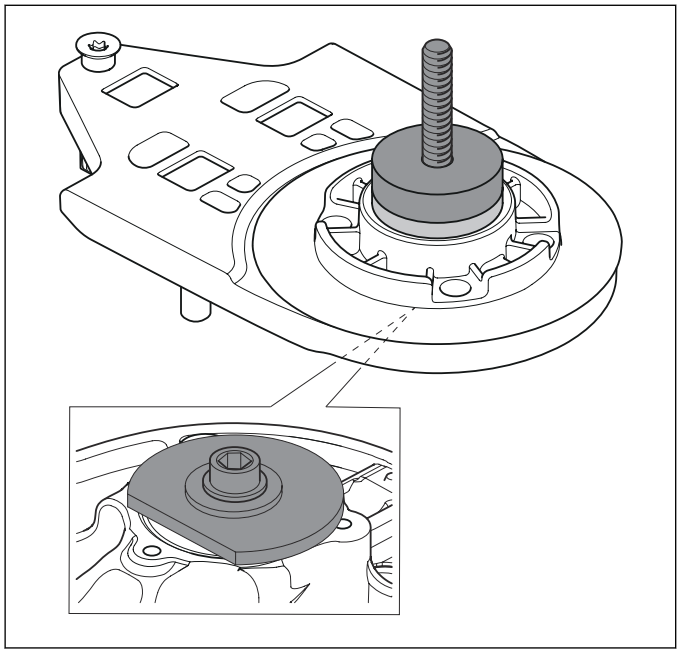
Use a hydraulic press or a Husqvarna bearing press kit to assemble the blade shaft bearings. Refer to *Servicing tools overview on page 10*.

- If you replace the blade shaft bearings with a hydraulic press, use the Husqvarna press tool. Refer to *Servicing tools overview on page 11*.
- If you replace the blade shaft bearings with a bearing press kit, use the Husqvarna bearing press kit. Refer to *Servicing tools overview on page 10*.

1. To assemble the blade shaft bearing with a hydraulic press:
   a) Put a piece of wood below the area for the blade shaft bearing to put the bearing housing in level position.
   b) Put the blade shaft bearing on the bearing housing and put the medium sized mandrel (A) from the Husqvarna press tool kit on top of the blade shaft bearing.

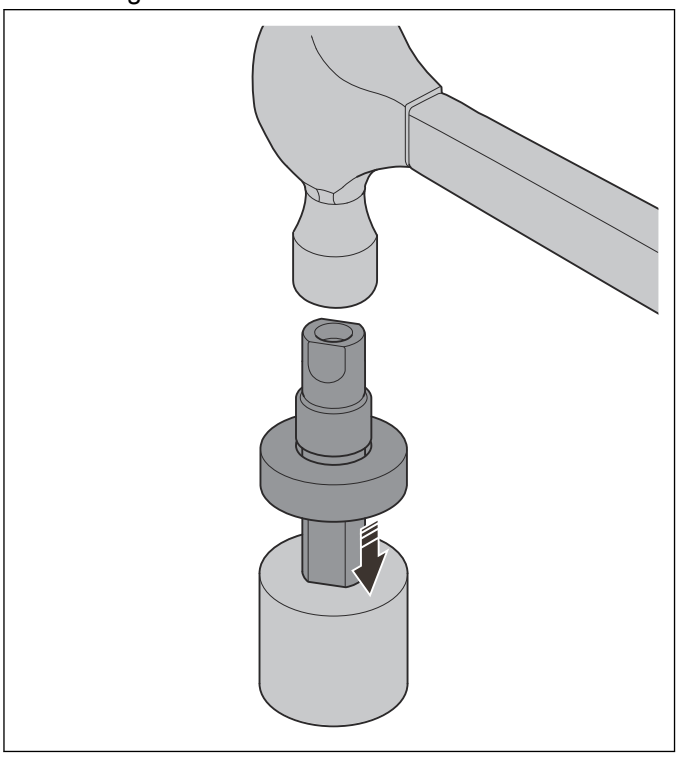


   c) Push down the blade shaft bearing fully to the stop in the bearing housing..
2. To assemble the blade shaft bearing with a bearing press kit:

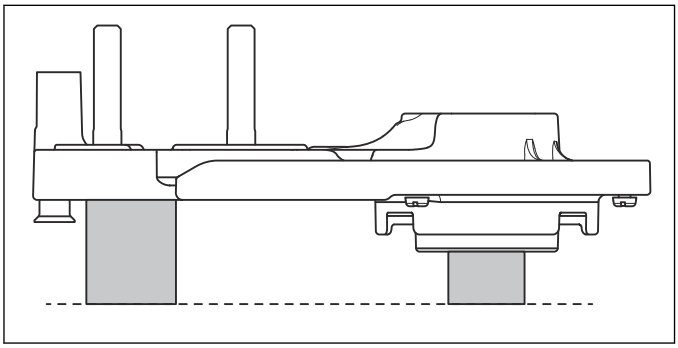


   a) Put the bearing and the bearing press on the bearing housing.
   b) Pull in the bearing to the stop.

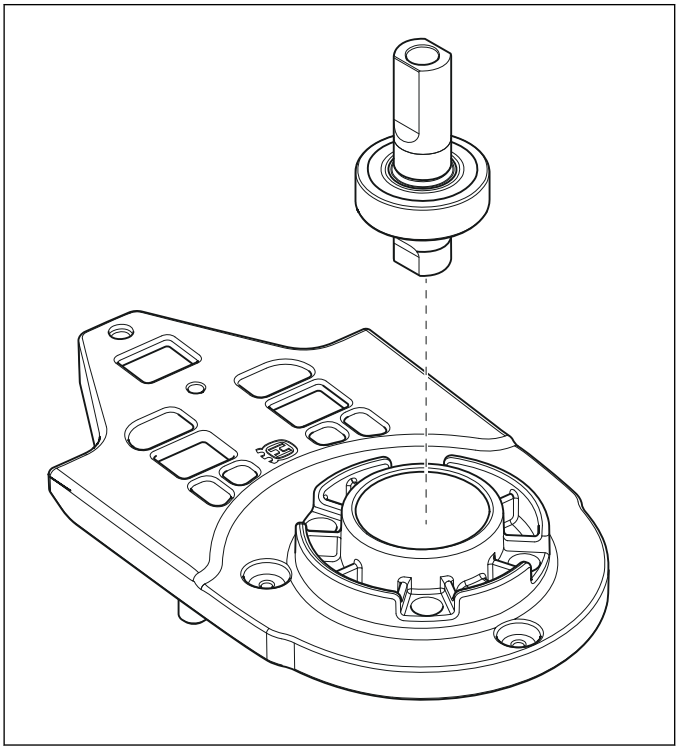
3. Use a plastic hammer and push the axle down until the spacer touches the inner stop in the bearing housing.



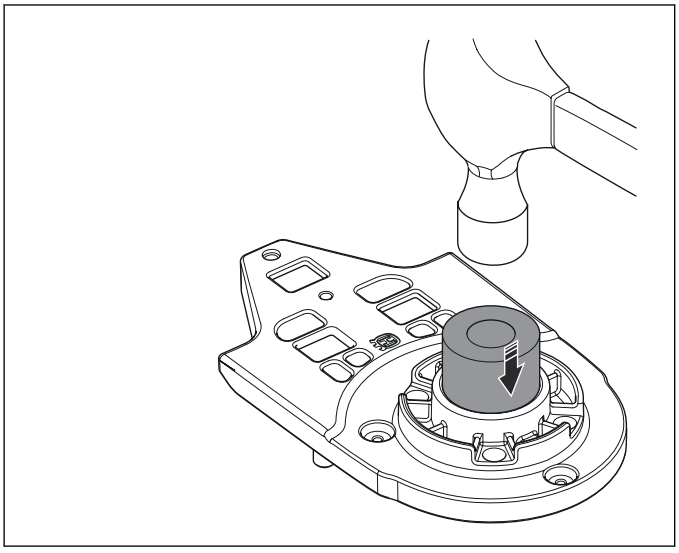
4. Put the shaft bearing on the axle and put the axle in the support for assembly.
5. Use the assembly support to make the bearing housing level.



6. Put the axle with the blade shaft bearing in the bearing housing with the spacer down.



7. Use a plastic hammer and push down the axle.

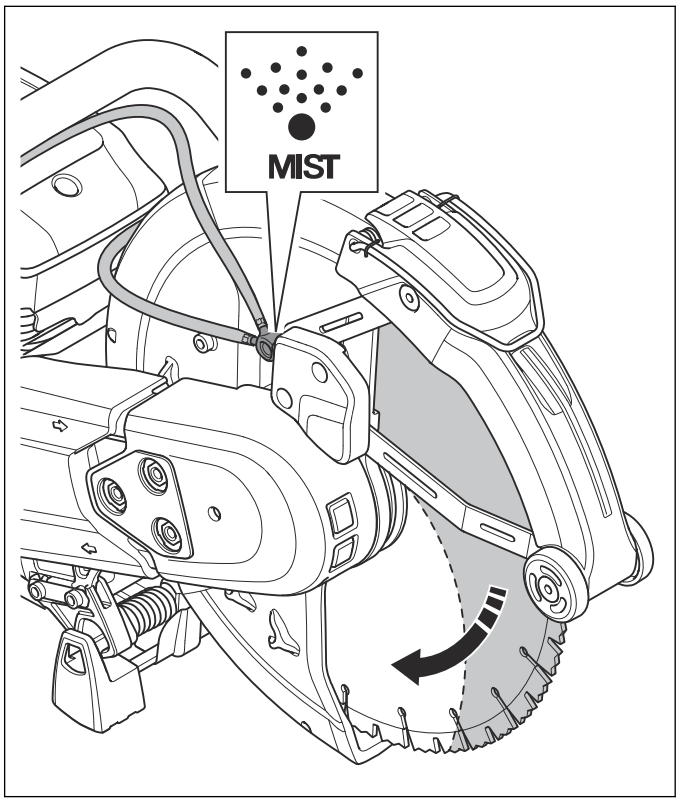


6.15 Wet system

6.15.1 Function

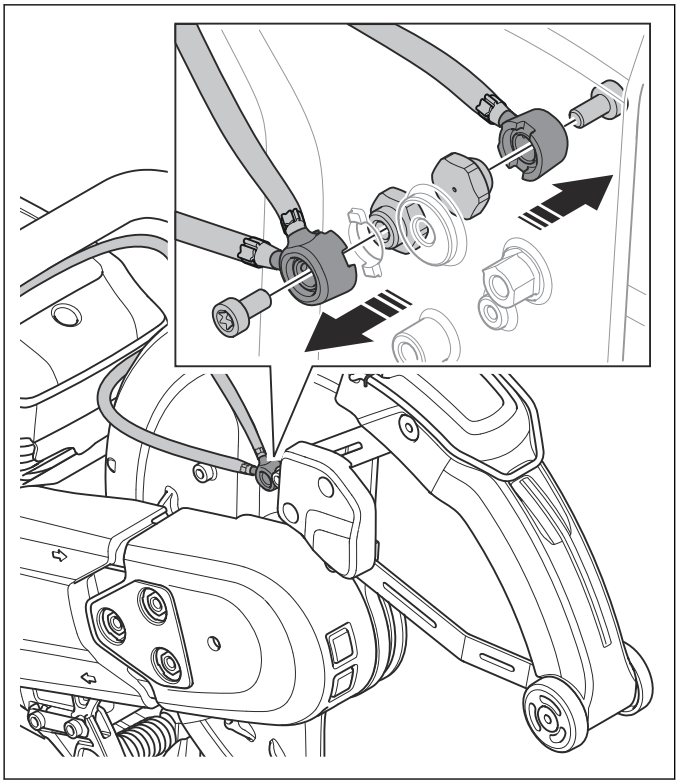
Each side of the blade guard has a spray nozzle. The water hits a section of the cutting blade and the centrifugal force moves it out to the edge. The spray nozzles are available with many different hole diameters

made for different types of machines and uses. Find the correct nozzle in the spare parts list.

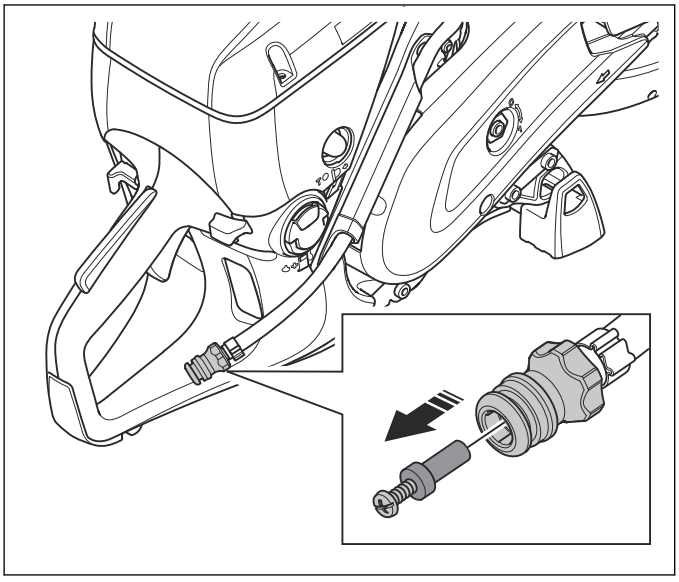


6.15.2 To disassemble the wet system

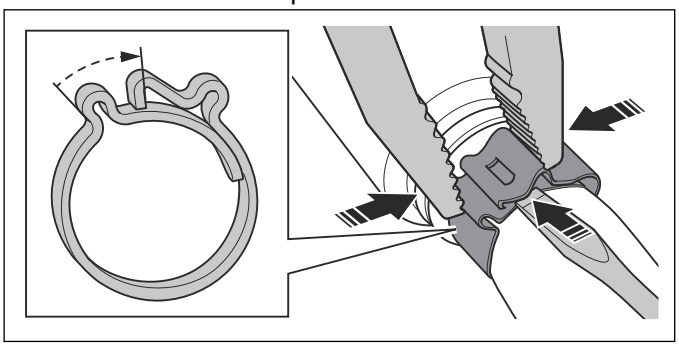
1. Remove the screws that hold the spray nozzle.



2. Remove the filter with a wood screw.

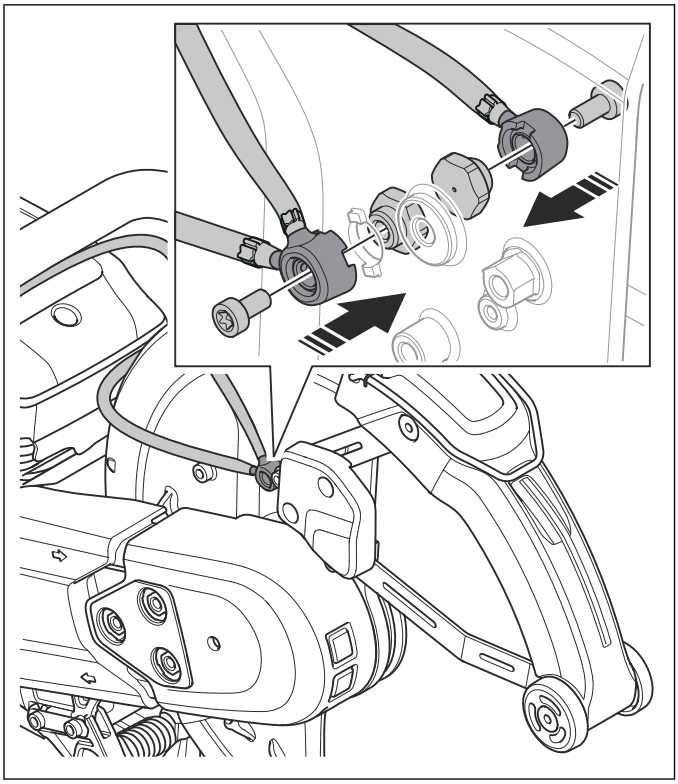


3. Remove the hose clip with a screwdriver.

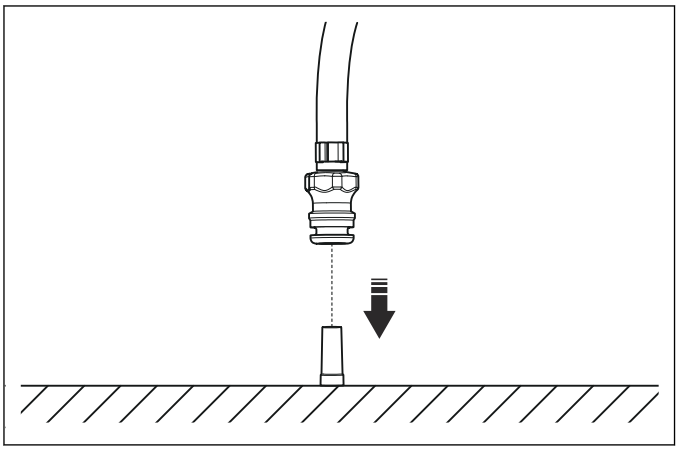


6.15.3 To assemble the wet system

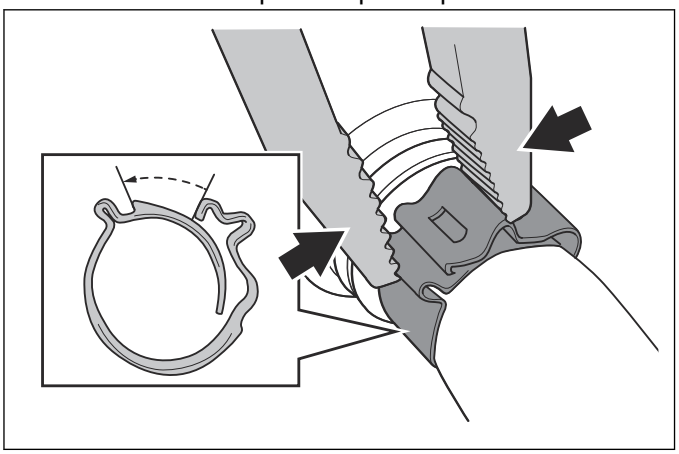
1. Put the spray nozzles on to the blade guard.



2. To put the filter in the connector, push it in on a flat surface.



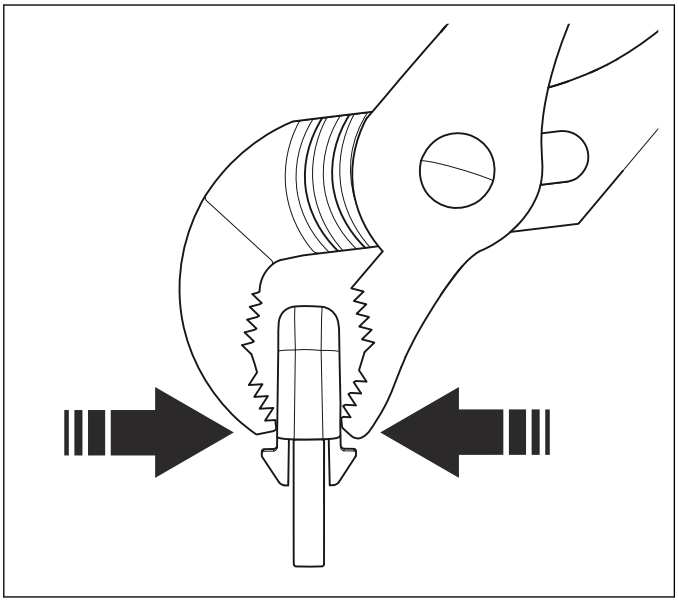
3. Close the hose clip with a pair of pliers.



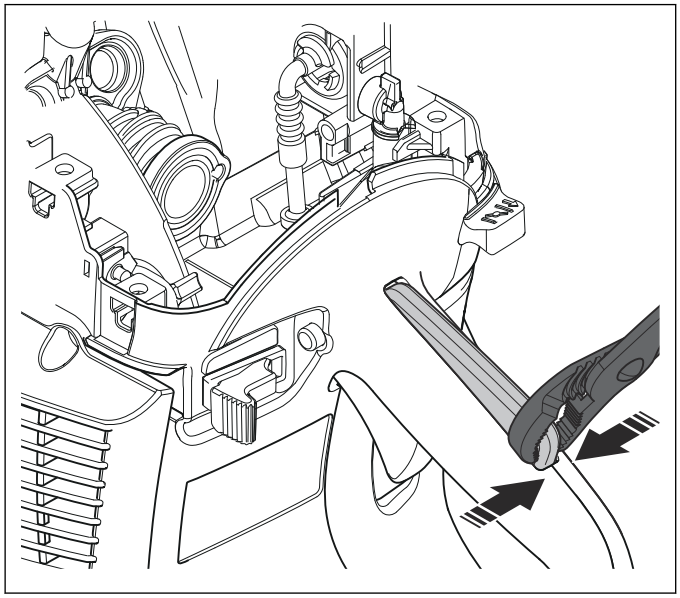
6.16 Throttle trigger and throttle trigger lockout

6.16.1 To remove the throttle trigger and throttle trigger lockout

When you remove the throttle trigger lockout, use a V-jaw adjustable pliers. Make sure that you hold the V-jaw of the pliers adjacent to the handle. Put a cloth on the throttle trigger lockout before you apply the pliers to prevent damage to the surface.

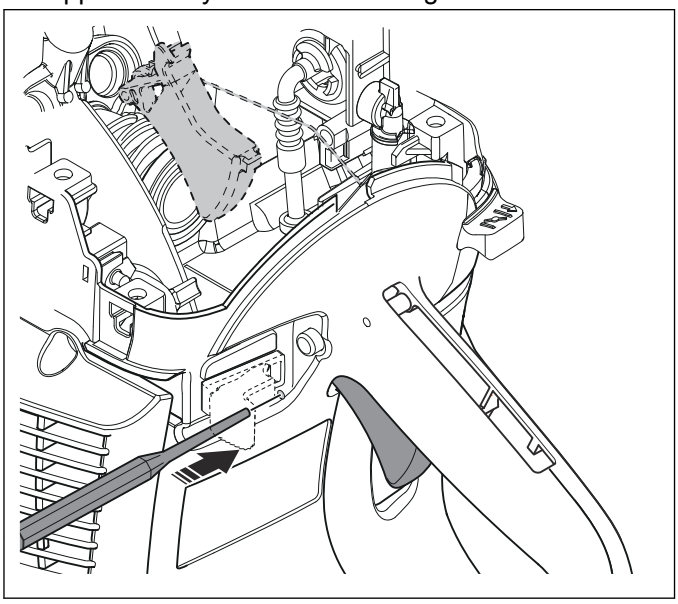


1. Remove the carburetor. Refer to *To remove the carburetor on page 19*.
2. Push in the lower part of the throttle trigger lockout with a V-jaw adjustable pliers.



3. Lift the lower part of the throttle trigger lockout and pull it out from the pin.

4. Push out the spindle to the right side. Use a rod with a diameter of 0.08–0.01 in./2–2.5 mm and approximately 4 in./10 cm in length.



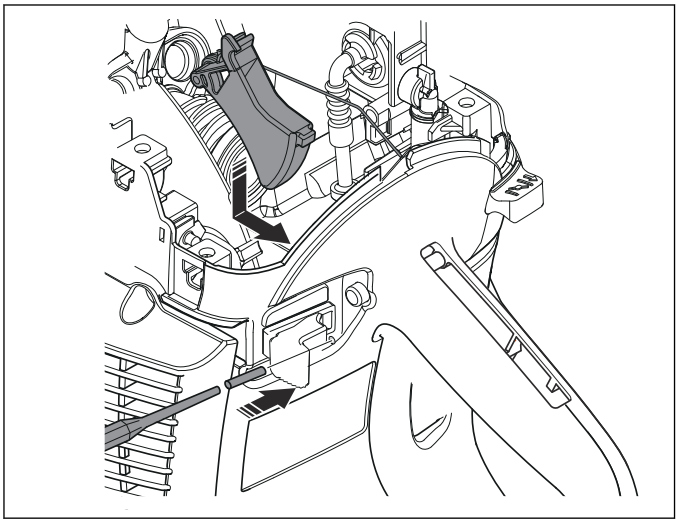
6.16.2 To examine the throttle trigger lockout

The throttle trigger lockout operates correctly if the throttle trigger is locked at idle speed.

- Make sure the throttle trigger cannot be released until the throttle trigger lockout is pressed.

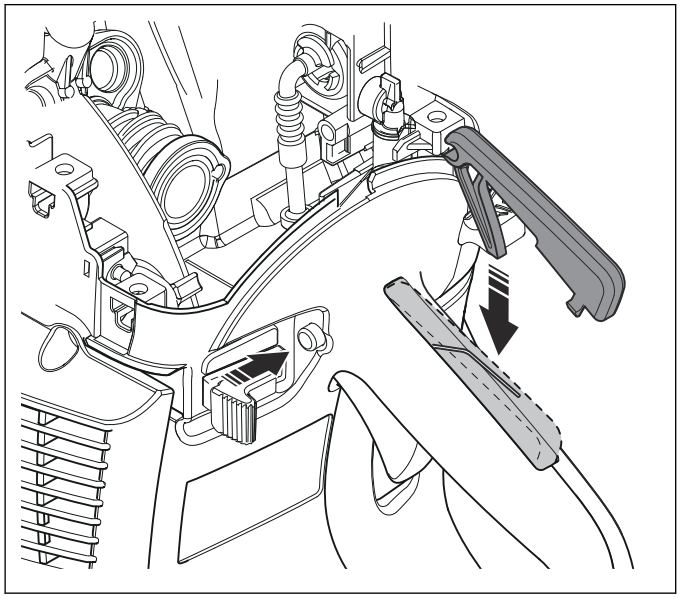
6.16.3 To assemble the throttle trigger and throttle trigger lockout

1. Install the throttle trigger from the carburetor area. Make sure that the spring comes out through the handle.



2. Push in the spindle from the left side.

3. Push the throttle trigger lockout onto the shaft. Push the throttle trigger lockout into position.

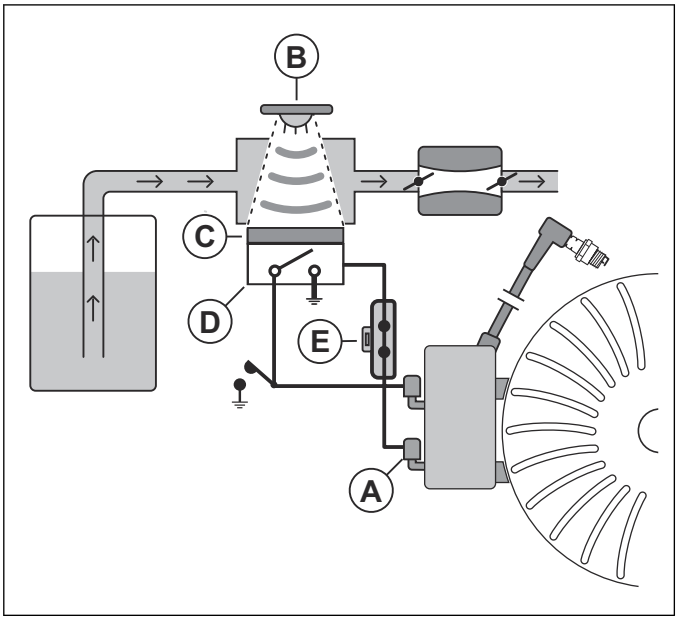


6.17 OilGuard

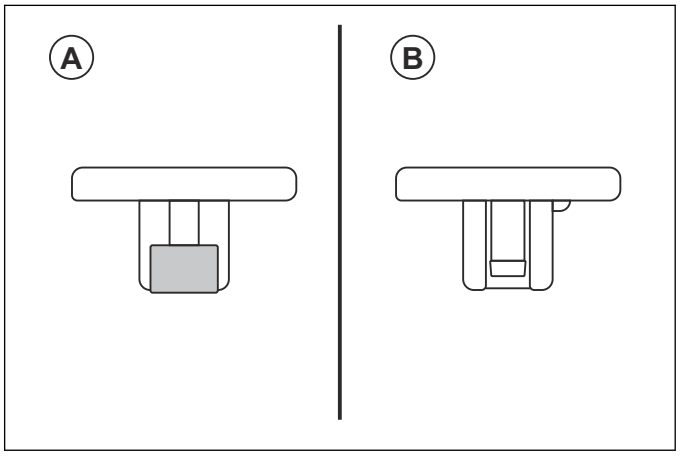
6.17.1 Function

The OilGuard prevents the product from running with incorrect fuel. For the OilGuard to operate, an oil containing dye, Husqvarna OilGuard oil, must be added. Fuel analysis starts 10 seconds after startup and continues for 50 seconds. If the OilGuard identifies incorrect fuel, the engine speed limit is 3800 rpm.

A winding in the ignition module (A) gives electric current to the OilGuard. The analysis unit has a light-emitting diode (B). The light hits a light sensitive phototransistor (C). The fuel flows between the diode and the phototransistor. The OilGuard oil contains a yellow dye which absorbs the light from the light-emitting diode. In this mode, the product is operating as usual. If the product is filled with clean gasoline or a different type of oil, the light goes through the fuel. The light hits the phototransistor and an electronic switch (D) engages and sets the engine speed limit to 3800 rpm.

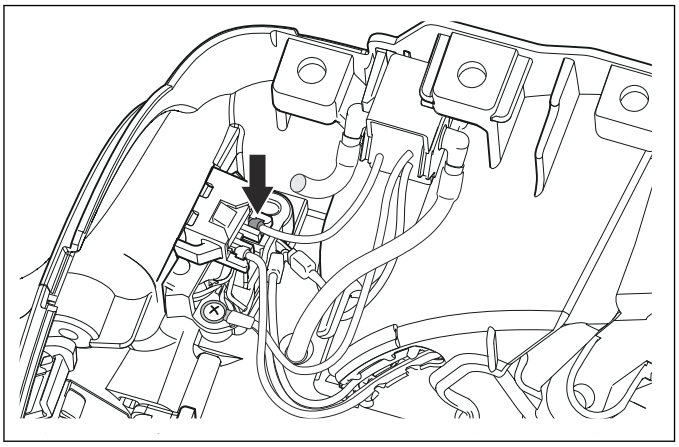


The blue plug above the stop button closes the circuit to OilGuard (E in the illustration above). To override the OilGuard function, remove the blue plug (A) with a screwdriver and replace it with an orange plastic plug (B).



6.17.2 To examine the power supply for the OilGuard

1. Remove the filter and cylinder cover.
2. Connect a multimeter to a ground point and the point of measure. Measure at idle rpm. The voltage must be 20–40 V AC.



7.1 Engine does not start

Remove the spark plug from the cylinder. Hold the cylinder, pull the starter rope and see if there are sparks between the spark plug electrodes.

There are no sparks at the spark plug.		
Examine	**Cause**	**Solution**
Spark plug	The spark plug electrodes are wet.	Dry them.
	There is carbon on the spark plug electrodes.	Remove the carbon or replace the spark plug.
	The insulation on the ignition cable is damaged.	Replace the spark plug.
	The space between the spark plug electrodes is too small or large.	Champion RCJ 6Y/NGK BPMR 7A: Adjust to 0.5 mm.
Ignition coil	The coil insulation is defective.	Replace.
	The cable trunks are damaged or the cable is broken.	Repair or replace.
	The distance between the rotor and coil is not correct.	Adjust to 0.3 mm.
Switch	The switch is OFF.	Set the switch to the left position.
	The switch is defective.	Replace.
	The primary wire is grounded.	Repair or replace.

There are sparks at the spark plug.		
Problem	**Cause**	**Solution**
Compression is good and fuel flows	There is too much fuel.	Remove the fuel.
	The carburetor is adjusted to give too rich mixture.	Repair, adjust or replace the carburetor.
	There is too much fuel mixture.	Adjust or replace the carburetor.
	The air filter is too dirty.	Replace the air filter.
	Low quality fuel is being used.	Replace with good quality fuel.
Fuel flows but compression is low	The spark plug is loose.	Tighten.
	There is wear or damage on the cylinder and piston.	Replace.
	There is a gas leak around the cylinder and crankcase.	Replace the gasket.
No fuel flows	The carburetor is not adjusted.	Adjust.
	There is a blockage in the carburetor.	Clean.
	There is a blockage in the fuel filter.	Clean or replace the fuel filter.
	The fuel hose is damaged or blocked.	Adjust.

7.2 Engine stops during operation - no sparks

There are no sparks at the spark plug		
Problem	**Cause**	**Solution**
Engine suddenly stops.	The switch is accidentally set to off.	Set the switch to the left position.
	The plug cap is not attached.	Attach the plug cap fully.
	The switch cable or high-voltage cable is worn.	Replace.
	Internal fault in the coil.	Replace.
	The engine has burned out.	Disassemble and repair.
	The air flow filter is blocked.	Clean.
Engine speed gradually decreases and the engine stops.	There is no fuel.	Fill with fuel.
	There is a blockage in the carburetor.	Clean.
	There is water in the fuel.	Empty the fuel tank, clean the inner surface of the tank and then fill with good quality fuel.
Engine speed suddenly increases, and then the engine stops.	There is no fuel.	Fill with fuel.
	There is a blockage in the carburetor.	Clean.

7.3 Engine stops during operation

Remove the spark plug from the cylinder. Hold the cylinder and pull the starter to see if there are sparks between the spark plug electrodes.

Problem	**Cause**	**Solution**
Engine suddenly stops.	The engine runs lean.	Adjust, repair or replace the carburetor.
	Dirt causes blockage in the air flow. This decreases the temperature of the engine.	Clean.
	Dirt on the cylinder fin causes blockage.	Clean.
	Low quality fuel is used.	Replace with good quality fuel.
	There is carbon in the combustion chamber (run-on occurs).	Clean.
	The edge of the spark plug is red hot.	Champion RCJ 6Y/NGK BPMR 7A: Adjust to 0.5 mm.
Switch.	The switch is defective.	Replace.
	The cable is broken.	Replace.
	There is an internal fault in the ignition module.	Replace.

7.4 Weak output or change of speed

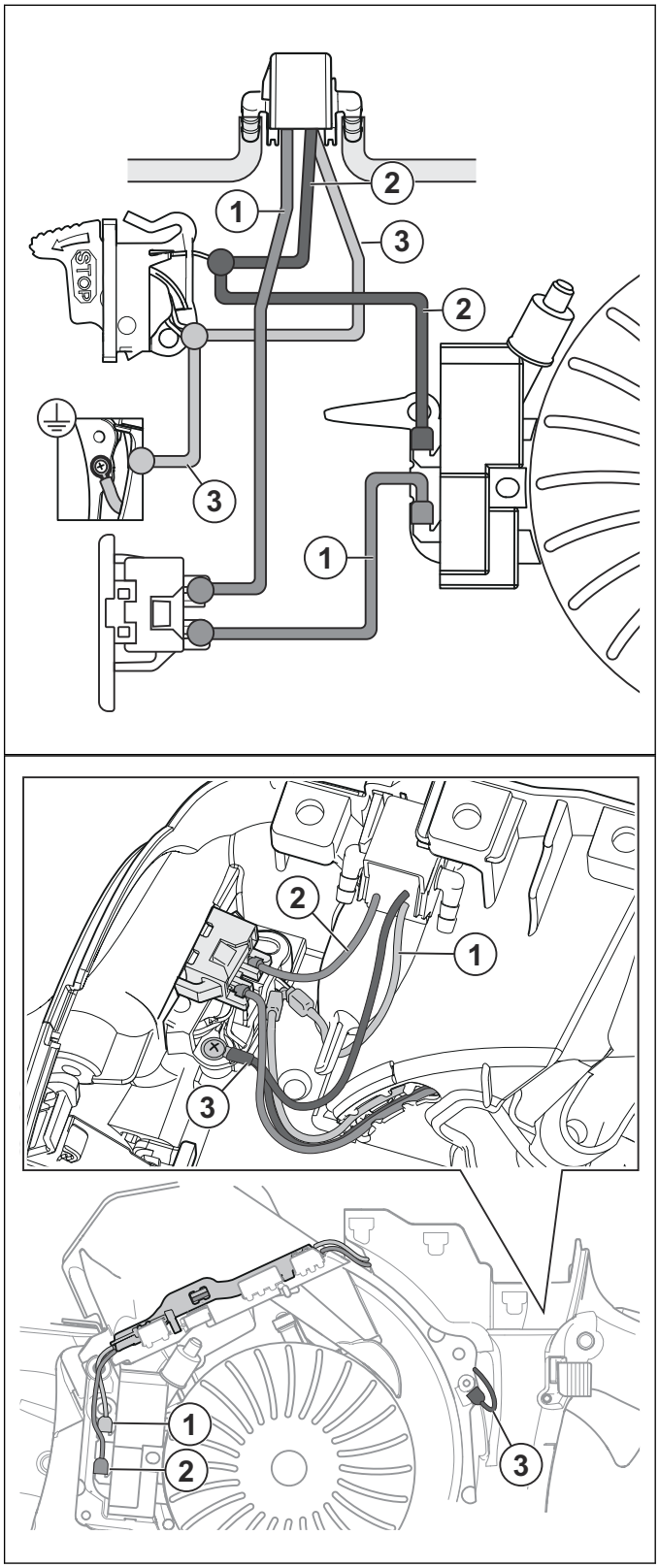
There are no sparks at the spark plug		
Symptom/Category	**Cause**	**Solution**
Compression is good and there is no flame out.	Air has gone through the fuel pipe joint.	Make sure it is tight.
	Air has gone into the fuel pipe because of a crack or pin hole.	Replace.
	Air has gone through the pulse pipe.	Make sure it is tight.
	Air has gone through the insulator and carburetor installation part.	Replace or tighten the gasket.
	Air has gone through the oil seal.	Replace.
	There is water in the fuel.	Empty and clean the tank, then fill with good quality fuel.
	The piston is burned.	Remove the burn with a file, or replace.
	Carbon blockage in the muffler.	Clean.
Overheating.	The engine is running lean.	Repair or replace the carburetor.
	Blockage because of dirt in the air channel for decreasing temperature.	Clean.
	Blockage because of dirt on the cylinder fin.	Clean.
	Low quality fuel is being used.	Replace with good quality fuel.
	The level of carbon has increased in the combustion chamber.	Clean.
	The spark plug tip is red hot.	Champion RCJ 6Y/NGK BPMR 7A: Adjust to 0.5 mm.
Other.	The air filter is too dirty.	Replace the air filter.
	Too high load.	Lower the load.

7.5 Other engine problems

There are no sparks at the spark plug		
Problem	**Cause**	**Solution**
When the engine revolution decreases, the blade does not stop.	The clutch spring is broken.	Replace the clutch spring of the engine.
	The clutch is open because of rusty clutch bolts.	Remove corrosion from clutch bolts, apply grease and assemble.
When the engine revolution increases, the blade does not rotate.	The drum bearing does not move.	Replace.
Strong vibration.	The blade not balanced.	Install a new blade. Make sure that the right bushing is used.
	The vibration dampening element is broken.	Replace.

8 Wiring diagram

8.1 Wiring diagram OilGuard



1. OilGuard - OilGuard plug - ignition module
2. OilGuard - stop switch - ignition module
3. OilGuard - stop switch - ground

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2020-04-02