

Workshop manual

131RB



English

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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

Warnings, cautions and notes are used to point out specially important parts of the manual.



WARNING: Used if there is a risk of injury or death for the operator or bystanders if the instructions in the manual are not obeyed.



CAUTION: Used if there is a risk of damage to the product, other materials or the adjacent area if the instructions in the manual are not obeyed.

Note: Used to give more information that is necessary in a given situation.

2.2 General safety instructions



WARNING: Read the warning instructions that follow before you use the product.

The service center that repairs the product must have safety devices that obey local regulations. Warnings and cautions are used to point out specially important parts of the workshop manual.

2.3 Special safety instructions

- When you use compressed air, do not point the airflow in the direction of your body. Air can go into the blood circulation and kill you.
- Use eye protection when you do work on springs that have tension.
- Do not use accessories that are not approved by the manufacturer. Do not do changes that are not approved by the manufacturer. This can cause injury or death to the operator or other persons.
- Always use original spare parts and accessories.
- Use approved hearing protection. Noise from the product can result in permanent hearing loss.

2.4 Symbols on the product



WARNING! This product is dangerous. Injury or death can occur to the operator or bystanders if the product is not used carefully and correctly. To prevent injury to the operator or bystanders, read and obey all safety instructions in the operator's manual.



Please read the operator's manual carefully and make sure that you understand the instructions before use.



Use a protective helmet in locations where objects can fall on you. Use approved hearing protection. Use approved eye protection.



Use approved protective gloves.



Use heavy-duty slip-resistant boots.



The product can cause objects to eject, which can cause injury.



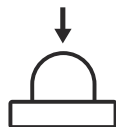
Maximum speed of the output shaft.



Keep a minimum of 15 m (50 ft) distance to persons and animals during operation of the product.



Risk of blade thrust if the cutting equipment touches an object that it does not immediately cut. The product can cut off body parts. Keep a minimum of 15 m (50 ft) distance to persons and animals during operation of the product.



Air purge bulb.



The direction to close the choke.



The direction to open the choke.



Keep all parts of your body away from the hot surfaces.



Noise emission to the environment refer to the European Community's Directive. The emission of the product is specified in the Technical data chapter and on the label.

Note: Other symbols/decals on the product refer to certification requirements for other commercial areas.

3 Prepare and do servicing on the product

3.1 Assembly

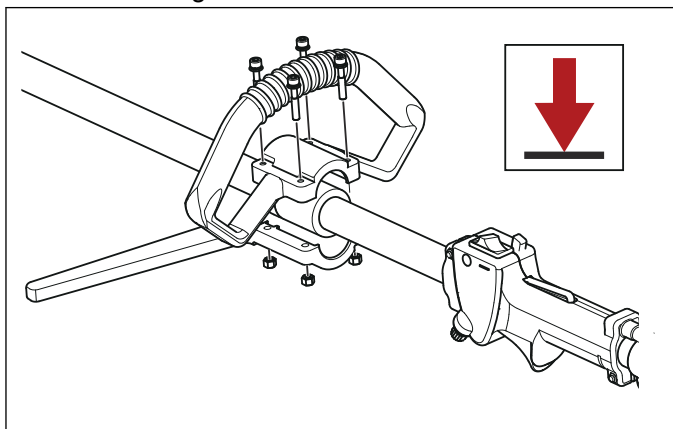
3.1.1 Introduction



WARNING: Read and understand the safety chapter before you assemble the product.

3.1.2 To install the loop handle

1. Remove the four screws.
2. Set shock-absorbing rubber on the aluminum tube.
3. Put the position of the ring handle corresponding to the label arrow on the aluminum tube.
4. Put the lower handle corresponding ring handle position on the aluminum tube, screw holes and rings. Align the hole in the handle.
5. Press and tighten the screws and nuts.

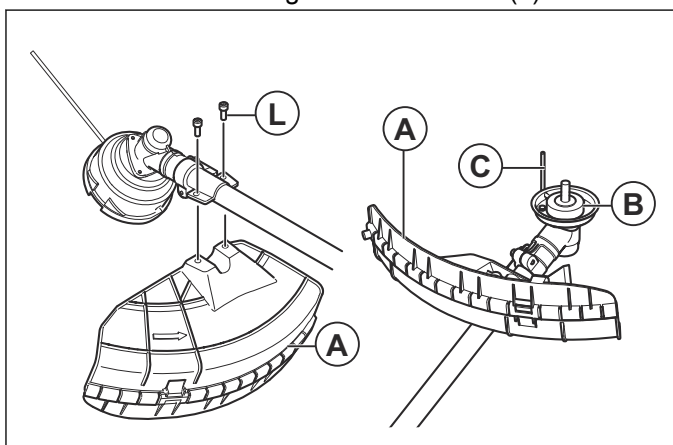


3.1.3 To install a blade guard and grass blade



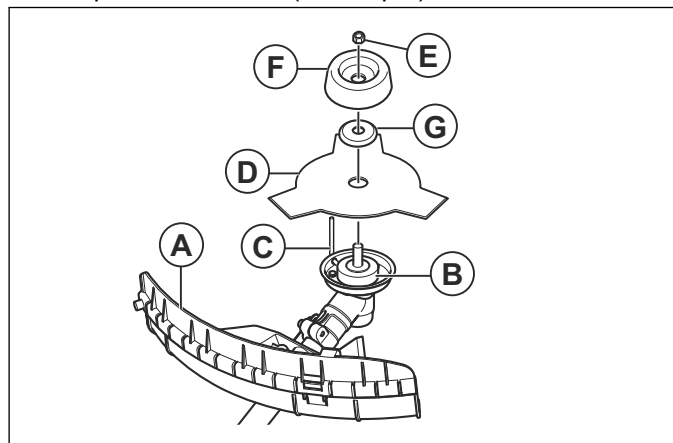
CAUTION: Only use the approved guard for the blades. See the operator's manual.

1. Attach the blade guard/cutting attachment guard (A) onto the shaft and tighten with the bolt (L).



2. Install the drive disc (B) on the output shaft.
3. Turn the output shaft until one of the holes in the drive disc aligns with the related hole in the gear housing.

4. Put the locking pin (C) in the hole to lock the shaft.
5. Put the blade (D), support flange (G) and support cup (F) on the output shaft.
6. Put the cup washer (F) on the output shaft with the not flat side against the blade.
7. Attach the nut (E). Hold the shaft of the wrench near the blade guard. Turn the wrench in the opposite direction to tighten the nut. Tighten the nut to a torque of 35-50 Nm (3.5-5 kpm).



Note: Left hand thread.

3.1.4 To install blades and trimmer heads



WARNING: Only use the approved guard for the blades, see the operator's manual. A defective guard can cause injury.

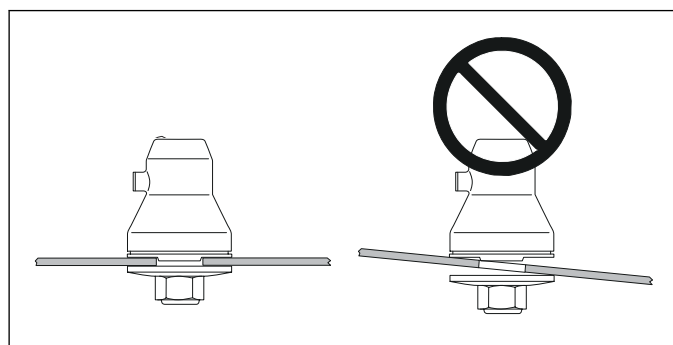


WARNING: If you operate the product with a grass blade, first install the correct handlebar, blade guard and harness.



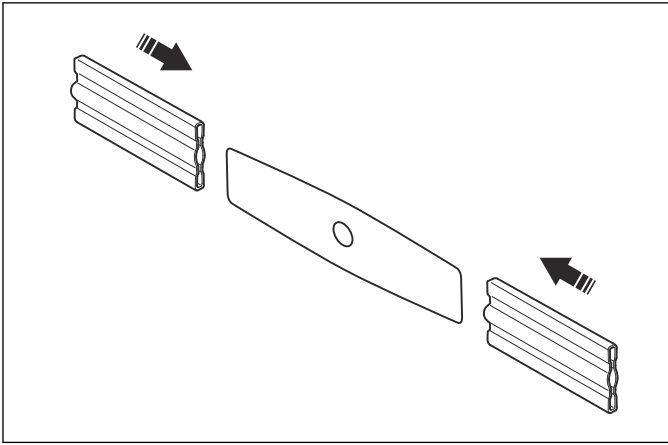
WARNING: If you do not install the the blades correctly, it can cause injury.

1. Make sure that the lifted section on the drive disc/ support flange engages correctly in the center hole of the blades.
2. Install the blades.



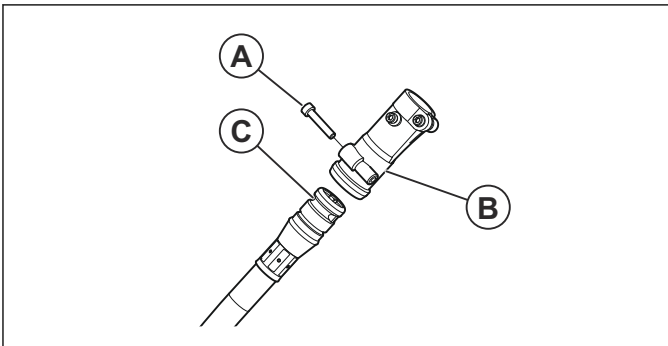
3.1.5 To install the transport guard

1. Attach the transport guards on the blade.

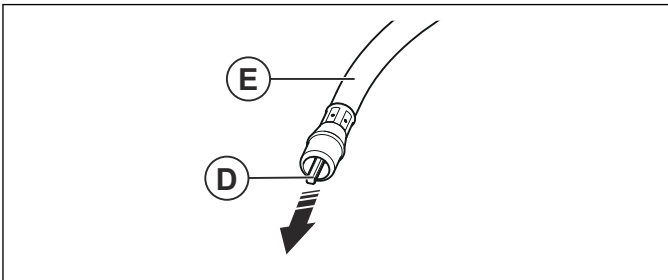


3.1.6 To install the liner

1. Remove the bolt (A) on the joint (B) of the outer pipe.

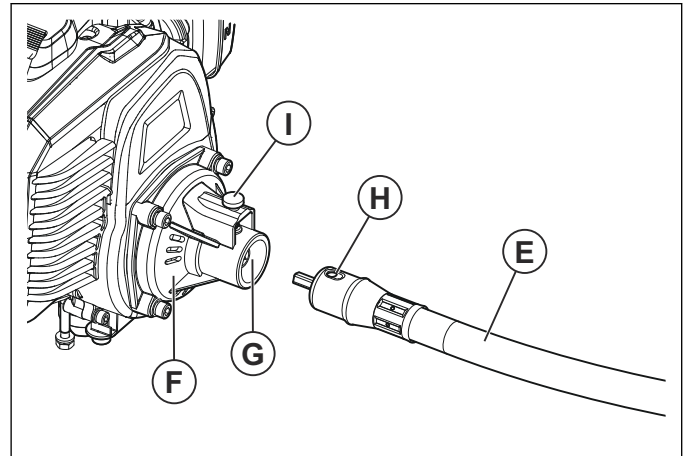


2. Align the groove (C) of the liner with the thread hole and tighten the screw.
3. Turn the flexible shaft (D) at the opposite end from the liner (E) to install it into the joint (B) tightly.



IMPORTANT: After you connect the inner shaft to the shaft of the outer pipe, pull on the flexible shaft by hand to make sure the flexible shaft does not come off.

4. Put the liner (E) straight and align the flexible shaft (D) with the angular hole (G) on the side of the clutch drum.



5. Install the liner (E) into the clutch housing (F). Make sure that the hole on the end of the liner points directly up.
6. When the hole (H) moves directly below the stopper (I), you can hear a click which means the stopper locks the liner.
 1. If you cannot lock the liner (E) into position, pull it out.
 2. Turn the flexible shaft a small distance and try to lock the liner (E) again.
7. After you lock the liner (E) into position, pull on the liner to make sure the stopper works correctly.

3.2 Function test on the model 967 84 33-xx

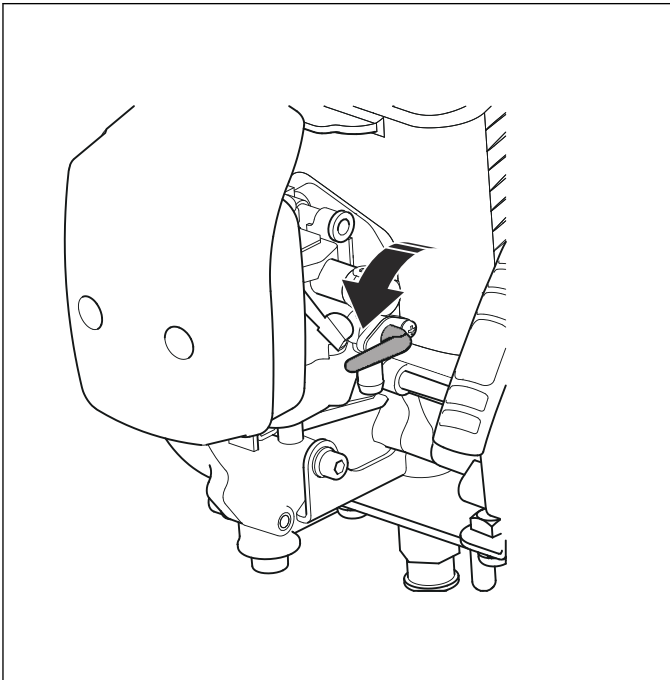
3.2.1 To examine before start

1. Examine the product for missing, damaged, loose or worn parts.
2. Examine the nuts, screws and bolts.
3. Examine the blades.
4. Examine the locknut. Make sure that the locknut has a minimum locking force of 1.5 Nm (1,1 ft lb). Torque the locknut to 35-50 Nm (26-36 ft lb).
5. Examine the air filter.
6. Examine the throttle trigger lockout and the throttle control.
7. Examine the stop switch.
8. Examine the product for fuel leaks.

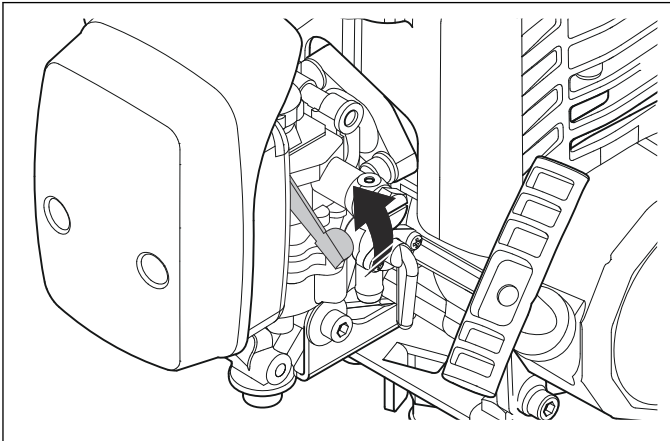
3.2.2 To start a cold engine

1. Set the stop switch to the start position.
2. Push the start throttle button.

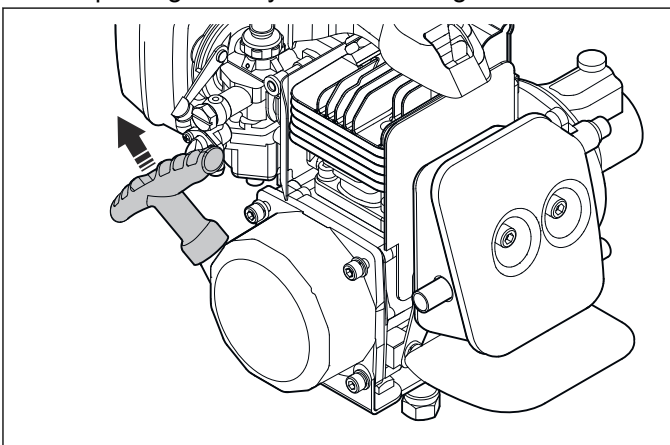
3. Turn the knob counterclockwise to a vertical position to open the valve of the fuel tank.



4. Set the choke control in the choke position.



5. Hold the product to the ground. Pull out the cord slowly with your right hand until you feel some resistance. Pull the cord quickly and with force. Keep doing it until you hear the engine start.

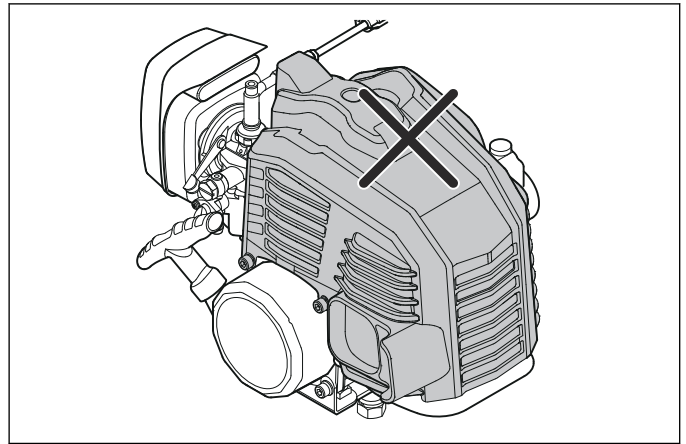


WARNING: Use the starter rope handle. Do not twist the starter rope around your hand.



CAUTION: Do not pull all the starter rope out. Do not let go of the starter rope handle when the cord is fully extended.

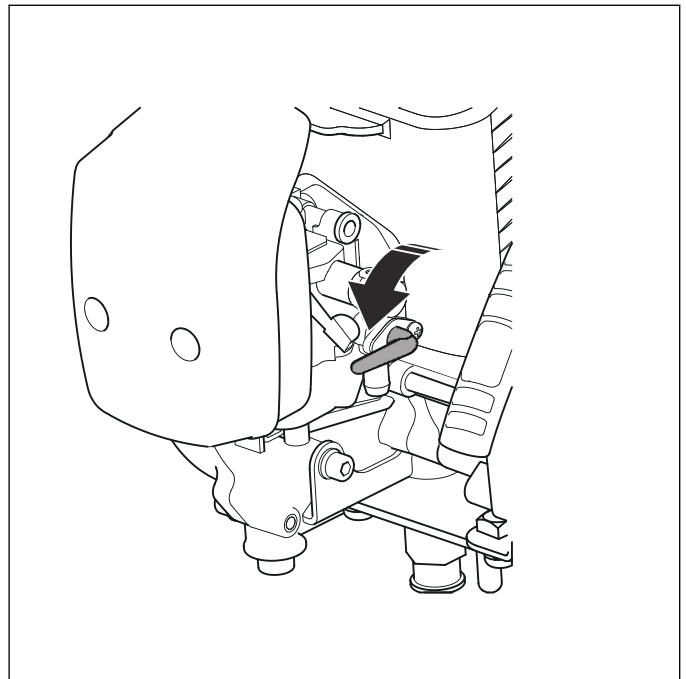
6. Set the choke control to the run position, then pull the start rope until the engine starts.
7. Pull the throttle trigger lightly and run at low speed for 60 seconds.



WARNING: Do not touch the cover. The cover can burn your skin and cause electrical shock if the spark plug cap is damaged. Do not use a product with damaged spark plug cap..

3.2.3 To start a warm engine

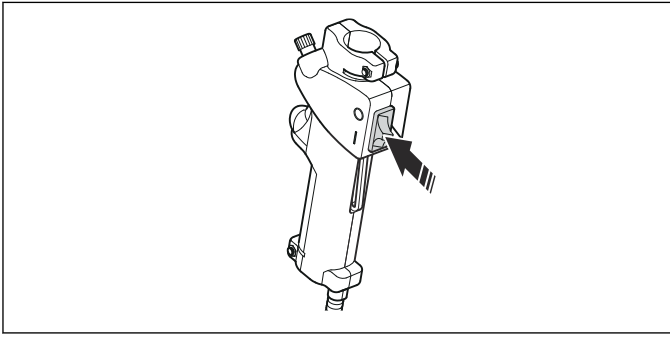
1. Set the stop switch to the start position.
2. Turn the knob counterclockwise to a vertical position to open the valve of the fuel tank.



3. Set the choke control to the run position.
4. Pull the cord quickly with force. Keep doing it until the engine starts.

3.2.4 To stop

- Push the stop switch to stop the engine.



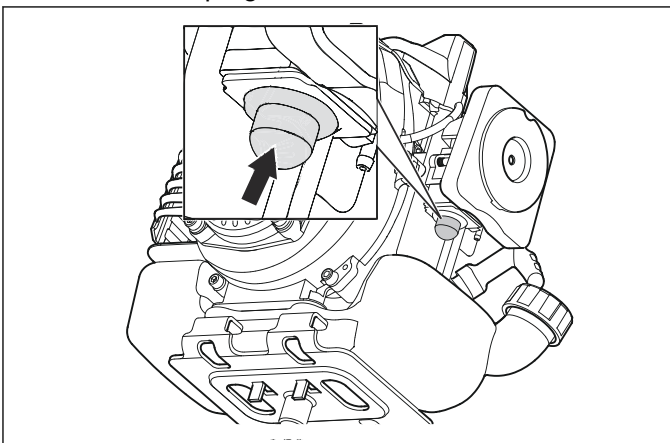
3.3 Function test on the model 967 84 32-xx

3.3.1 To examine before start

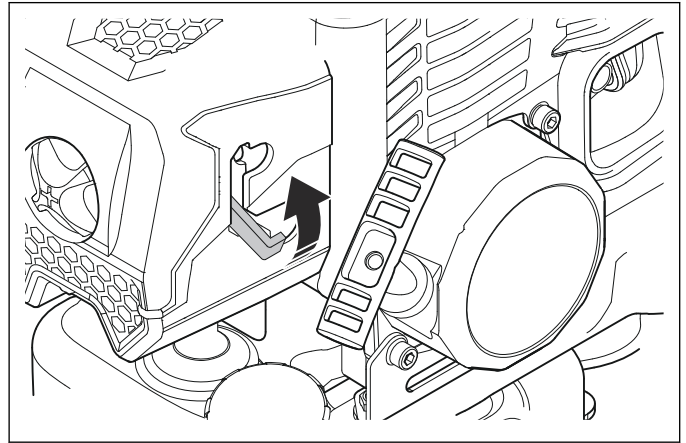
1. Examine the product for missing, damaged, loose or worn parts.
2. Examine the nuts, screws and bolts.
3. Examine the blades.
4. Examine the locknut. Make sure that the locknut has a minimum locking force of 1.5 Nm (1,1 ft lb). Torque the locknut to 35-50 Nm (26-36 ft lb).
5. Examine the air filter.
6. Examine the throttle trigger lockout and the throttle control.
7. Examine the stop switch.
8. Examine the product for fuel leaks.

3.3.2 To start a cold engine

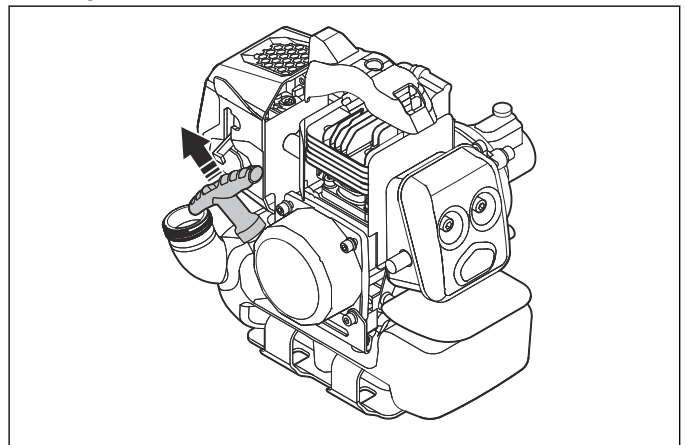
1. Set the stop switch to the start position.
2. Push the start throttle button.
3. Press the air purge 10 times.



4. Set the choke control in the choke position.



5. Hold the body of the product to the ground with the left hand. Pull out the cord slowly with your right hand until you feel some resistance. Pull the cord quickly with force. Keep doing it until you hear the engine start.



WARNING: Use the starter rope handle. Do not twist the starter rope around your hand.

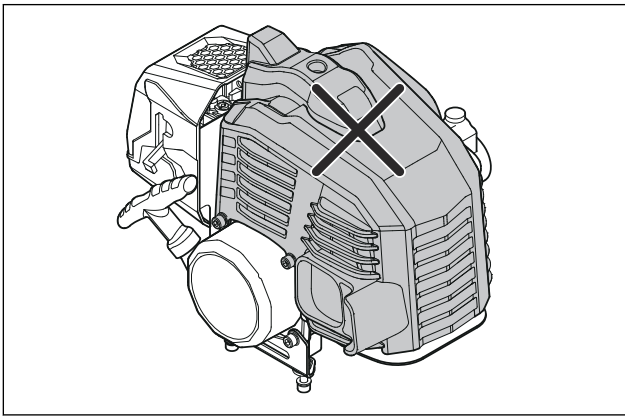


CAUTION: Do not pull out all the starter rope. Do not let go of the starter rope handle when the cord is fully extended.

6. Set the choke control to the run position, then pull the start rope until the engine starts.
7. Pull the throttle trigger lightly and run at low speed for 60 seconds.

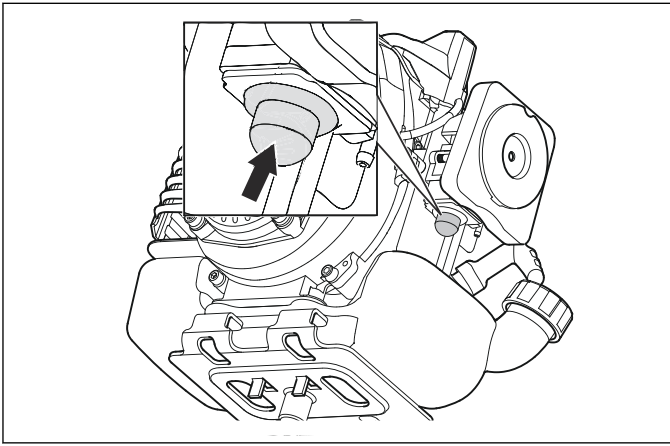


WARNING: Do not touch the cover. It can burn your skin and cause electrical shock if the spark plug cap is damaged. Do not use a product with damaged spark plug cap.



3.3.3 To start a warm engine

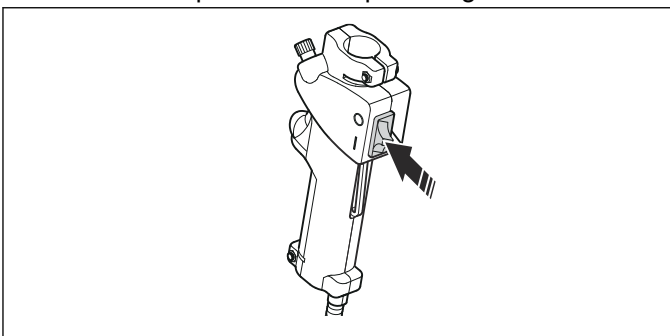
1. Set the stop switch to the start position.
2. Press the air purge 10 times. The bulb must not be fully filled.



3. Set the choke control to the run position.
4. Pull the cord quickly and powerfully. Keep doing it until the engine starts.

3.3.4 To stop

- Push the stop switch to stop the engine.



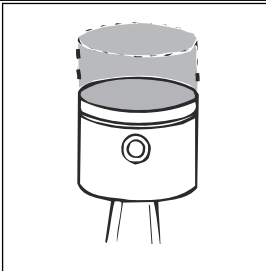
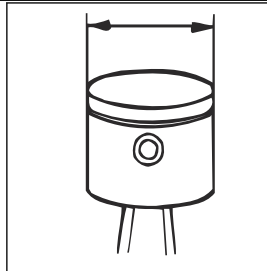
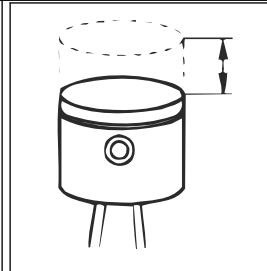
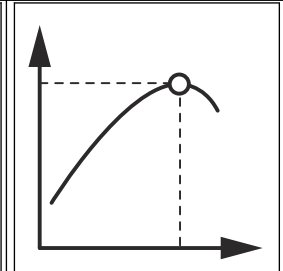
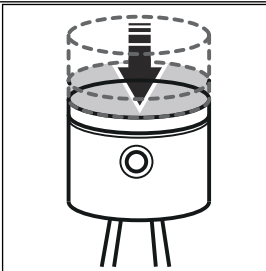
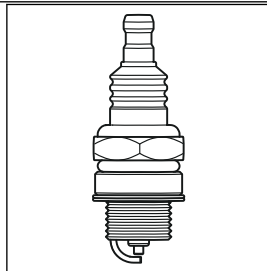
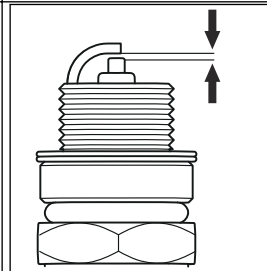
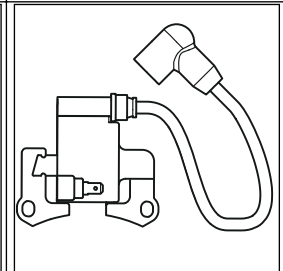
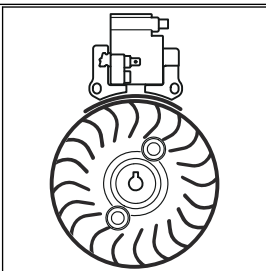
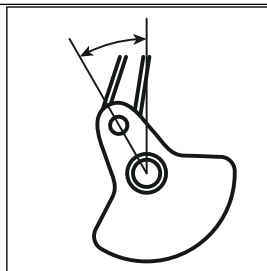
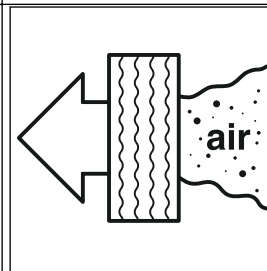
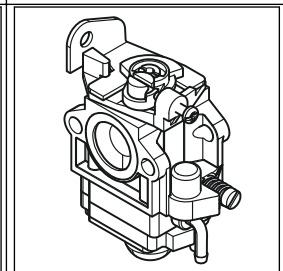
3.4 Servicing schedule

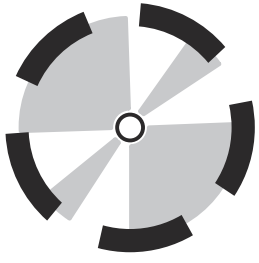
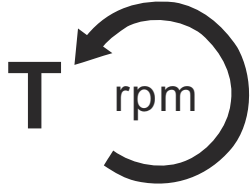
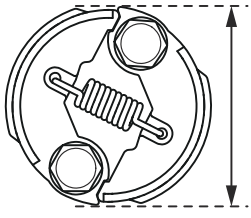
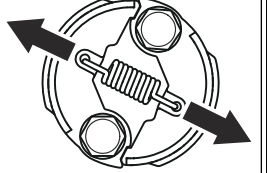
The descriptions of the maintenance procedures are in the operator's manual.

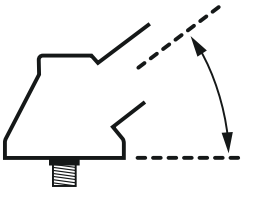
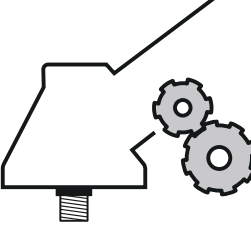
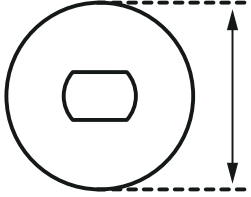
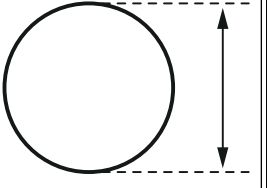
Maintenance task	Before use	After each use	Every 10 hours	Every 25 hours
Clean the external surfaces.		√		
Clean the air filter. Replace if it is necessary.				√
Make sure that the harness frame is not damaged.	√			
Make sure that the throttle trigger lock and the throttle functions correctly.	√			
Make sure that the handle and the handlebar functions correctly.	√			
Make sure that the stop switch functions correctly.	√			
Examine the guards.	√			
Make sure that the blade is sharp and not damaged.	√			
Make sure the blade is installed correctly in the center position.				
Examine the trimmer head.	√			
Make sure that the idle speed functions correctly.	√			
Examine the locknut.	√			
Do a check of fuel leaks.		√		
Examine the transport guard.	√			
Examine the starter rope handle and the starter rope.		√		
Make sure that the bevel gear grease is sufficient.				√
Clean the external part and the adjacent areas of the carburetor.		√		
Clean the external part of the spark plug.		√		
Remove the spark plug and examine the electrode gap. Adjust the distance or replace the spark plug. Install a correct spark plug to the supresor.				√
Clean the cooling system.			√	
Examine the fuel filter.			√	
Examine the fuel hose.			√	
Examine all cables and connections.				√

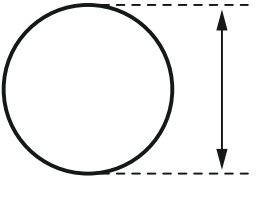
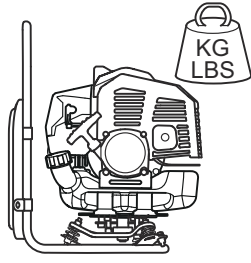
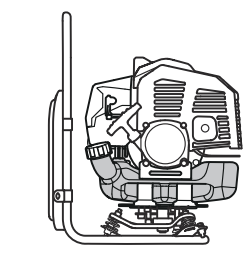
4 Technical data

4.1 Technical data

				
Model	Cylinder displacement cm ³ /cubic inch	Cylinder bore Ømm/Øinch	Stroke mm/inch	Max. power/rpm kW/hp / rpm
967 84 32-xx 967 84 30-xx	32,6/1.99	36/1.42	32/1.26	0.9/7500
967 84 33-xx 967 84 31-xx	32,6/1.99	36/1.42	32/1.26	0.9/7000
				
Model	Compression ratio	Spark plug	Electrode gap mm/inch	Ignition system
967 84 32-xx 967 84 30-xx	8.5:1	NGK BPMR7A	0.6/0.02	FENGLONG CDi
967 84 33-xx 967 84 31-xx	8.5:1	NGK BPMR7A	0.6/0.02	FENGLONG CDi
				
Model	Air gap mm/inch	Pre-ignition angle max output/idle	Air filter type	Carburetor type
967 84 31-xx 967 84 32-xx 967 84 30-xx	0.34/0.01	27/22	Dry sponge	RuiXing SK-C33E/SS
967 84 33-xx	0.34/0.01	27/22	Dry sponge	RuiXing H167-04

				
Model	Max speed rpm	Idle speed rpm	Clutch diameter mm/inch	Engage speed rpm
967 84 32-xx 967 84 30-xx	7000	3000±300	76/3	4500±300
967 84 33-xx 967 84 31-xx	7000	3000±300	76/3	4500±300

				
Model	Drive gear angle	Bevel gear ratio	Control disc drive mm/inch	Shaft diameter Ømm/Øinch
967 84 31-xx 967 84 30-xx	30	14:19	25.4/1	28/1.10
967 84 32-xx 967 84 33-xx	30	14:19	25.4/1	26/1.02

				
Model	Drive axle diameter Ømm/Øinch	Weight without fuel kg/lbs	Volume fuel tank Litre/US. pint	
967 84 31-xx 967 84 30-xx	8/0.31	8.4/18.5	0.9/1.90	
967 84 32-xx	8/0.31	10.1/22.3	0.9/1.90	
967 84 33-xx	8/0.31	10.5/23.2	1.1/2.32	

Vibration levels¹	Unit	967 84 33-xx	967 84 32-xx
Equivalent vibration level (ahv, eq), equipped with grass blade, front/back handle	m/s ²	4.58/2.58	5.42/2.89
Equivalent vibration level (ahv, eq) equipped with trimmer head, front/back handle	m/s ²	6.58/6.86	2.72/3.94
Noise emissions²			
Sound power level, guaranteed (L _{WA})	dB(A)	115	115
Sound power level, measured	dB(A)	111,9	111,9
Sound levels³			
Sound pressure level at operator's ear, equipped with grass blade	dB(A)	92,4	92,4
Sound pressure level at operator's ear, equipped with trimmer head	dB(A)	93,6	93,6
Product dimensions			
Weight (excluding cutting equipment)	kg	10,2	10,2

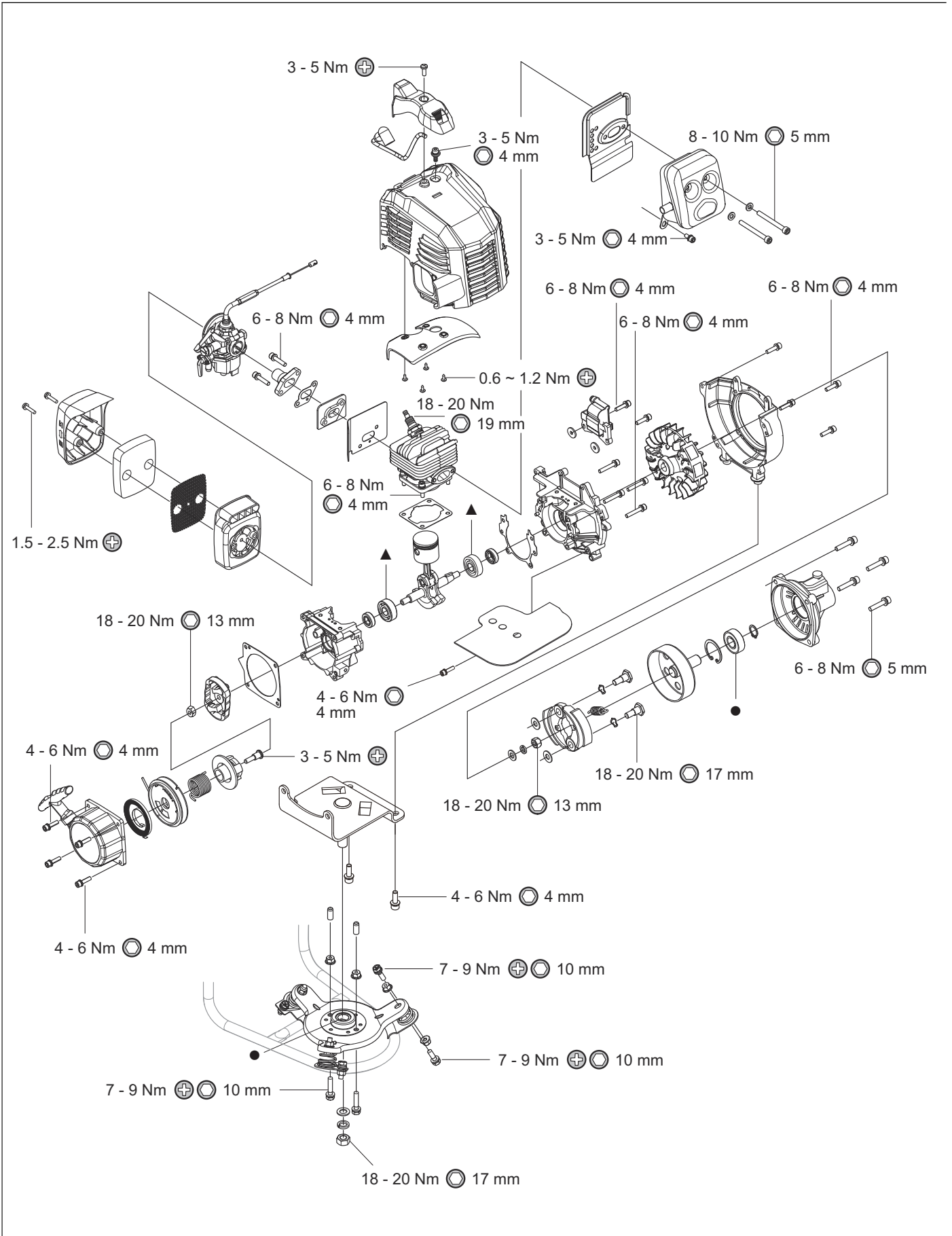
¹ Reported data for equivalent vibration level has a typical statistical dispersion (standard deviation) of 1.5 m/s².

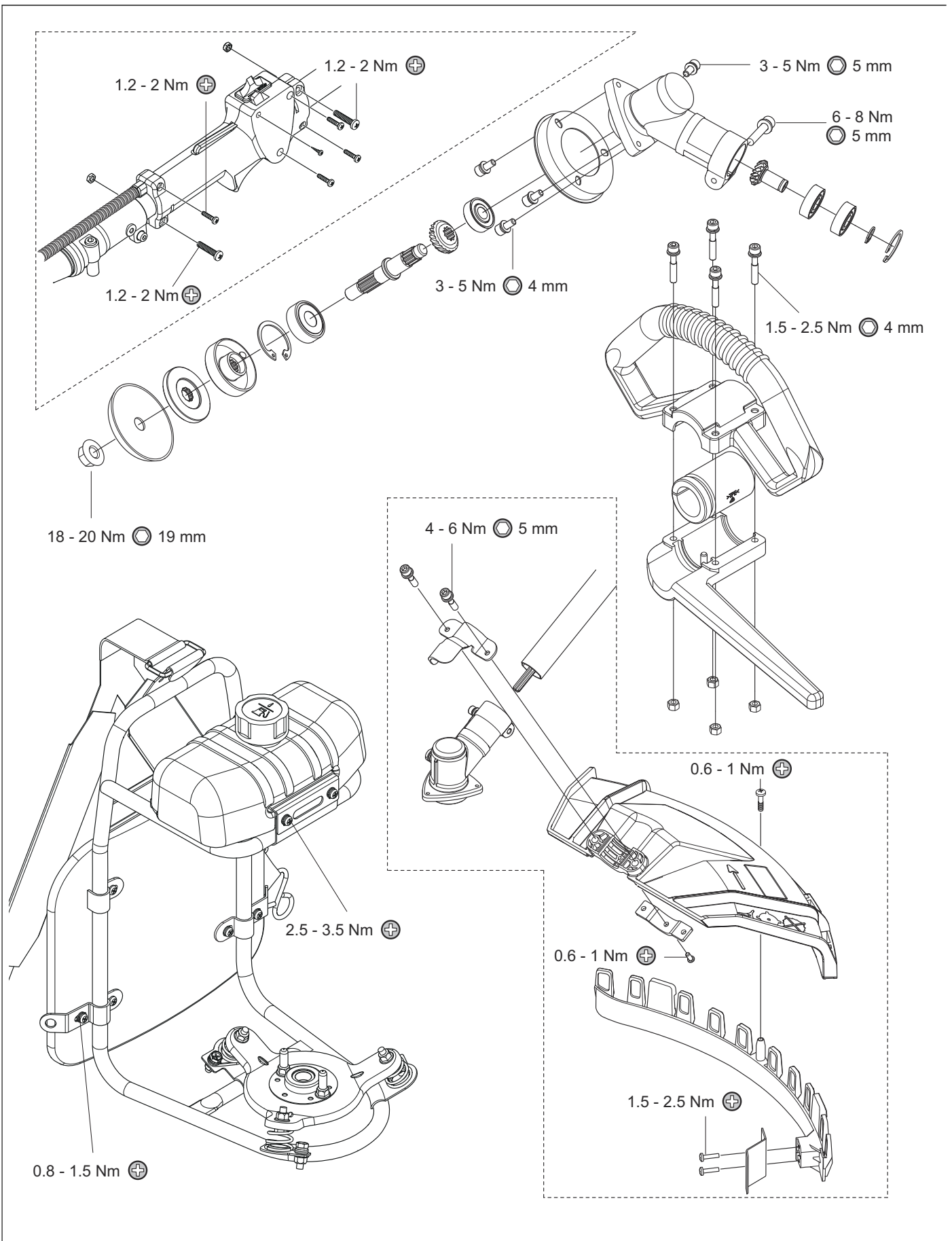
² Noise emissions in the environment measured as sound power (L_{WA}) in conformity with EC directive 2000/14/EC. Reported sound power level for the machine has been measured with the original cutting attachment that gives the highest level. The difference between guaranteed and measured sound power is that the guaranteed sound power also includes dispersion in the measurement result and the variations between different machines of the same model according to Directive 2000/14/EC.

³ Reported data for equivalent sound pressure level for the machine has a typical statistical dispersion (standard deviation) of 2.5 dB (A).

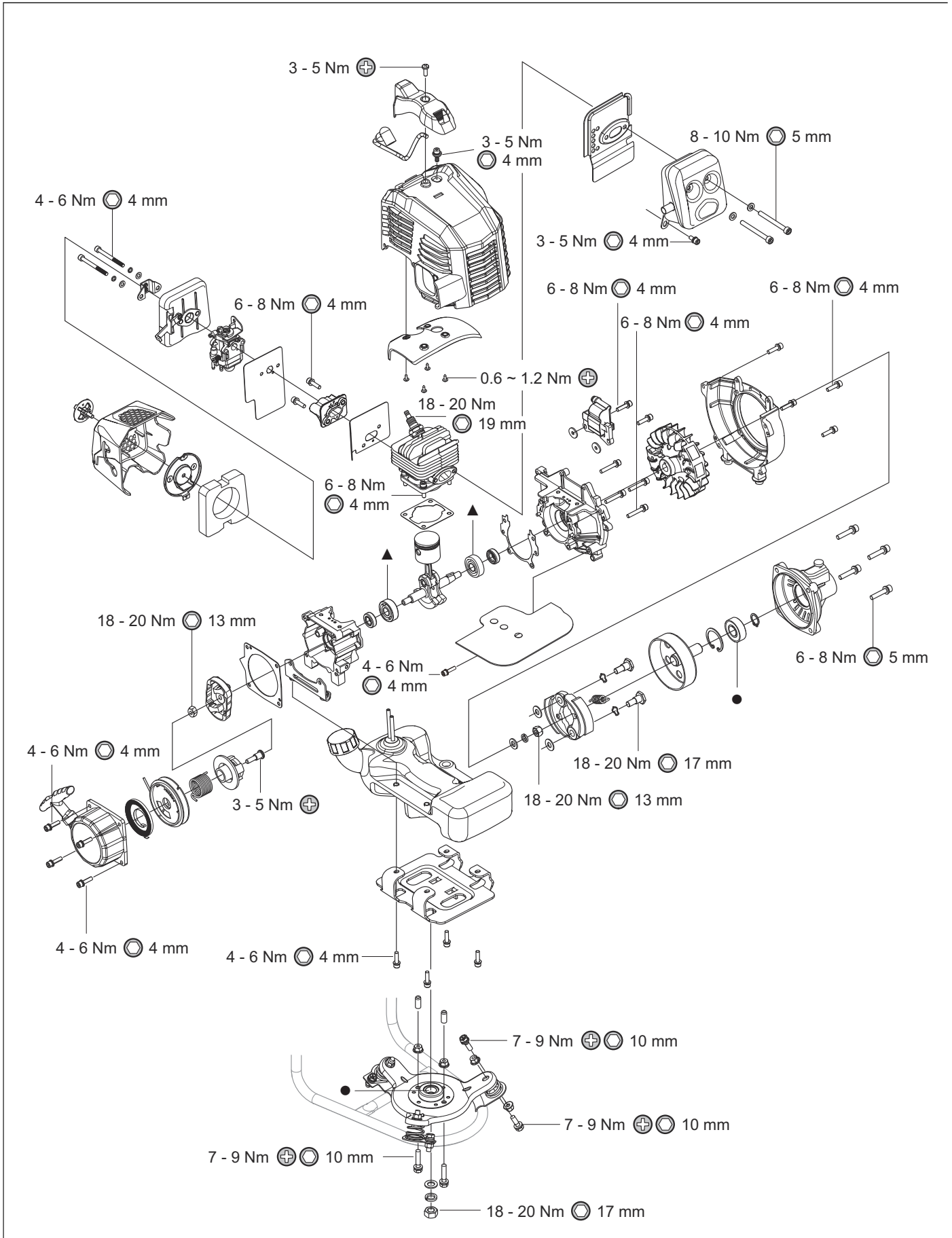
5 Servicing data

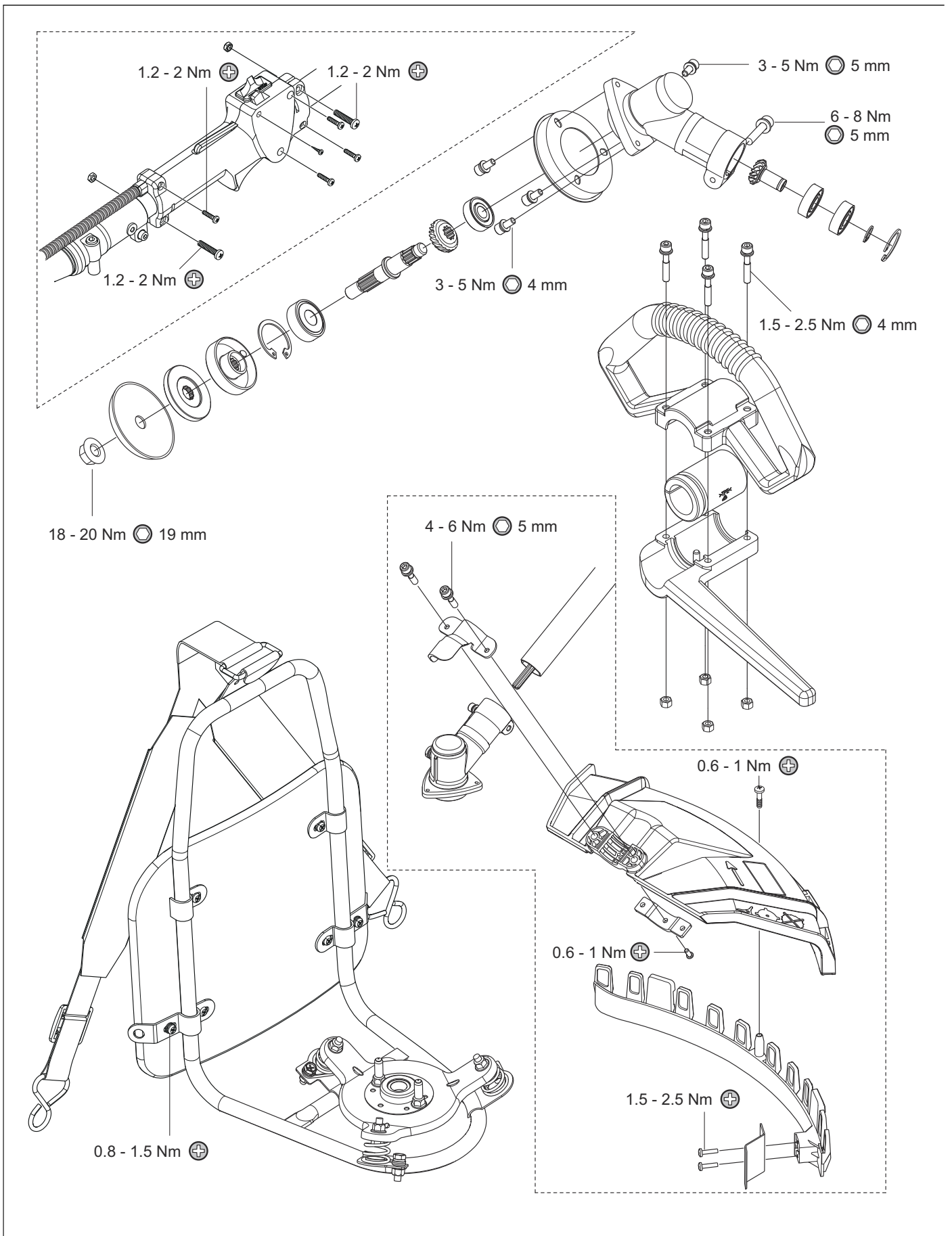
5.1 Servicing data for the model 967 84 33-xx





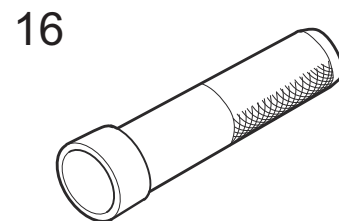
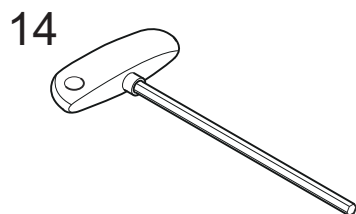
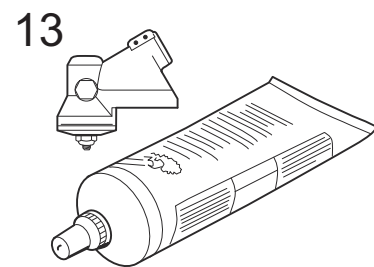
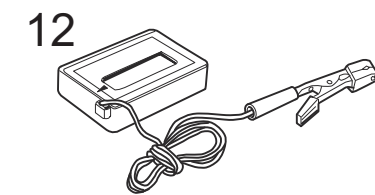
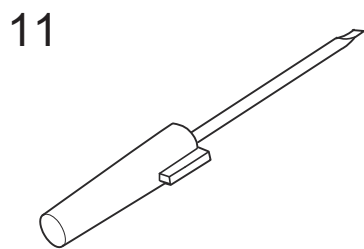
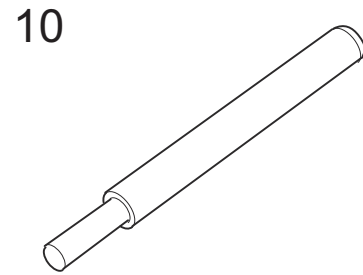
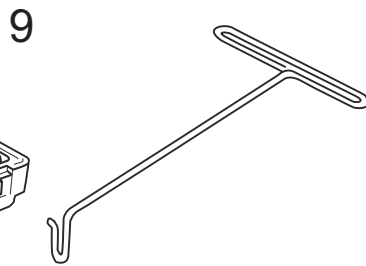
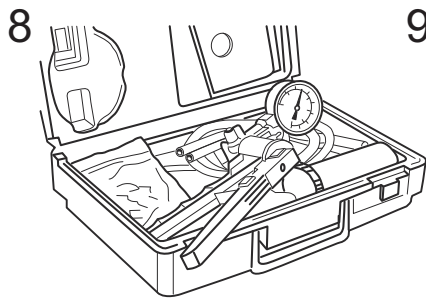
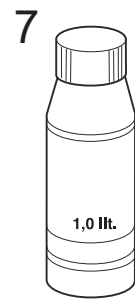
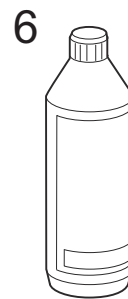
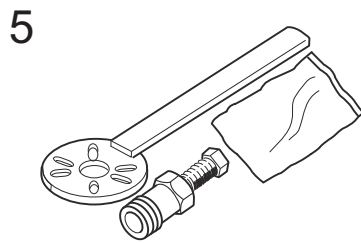
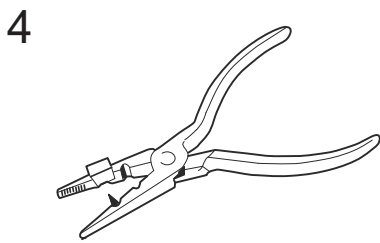
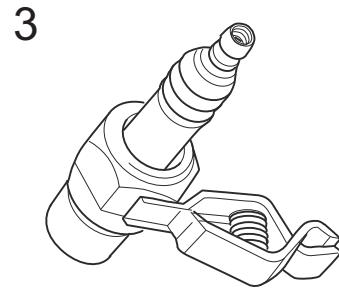
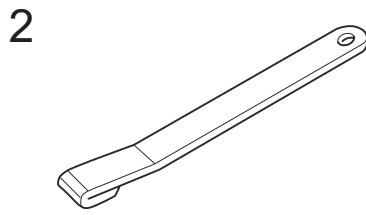
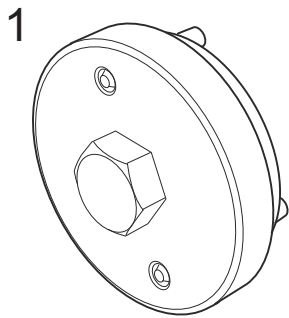
5.2 Servicing data for the model 967 84 32-xx



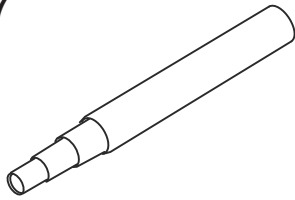


6 Servicing tools

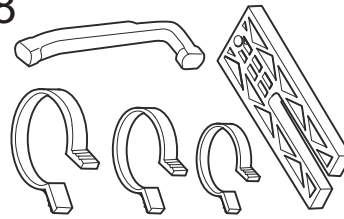
6.1 Servicing tools for 967 84 33-xx and 967 84 32-xx



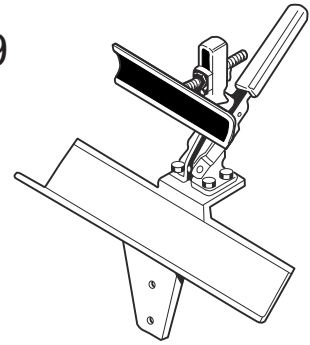
17



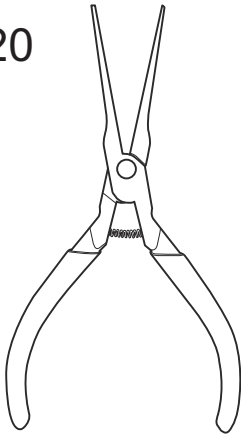
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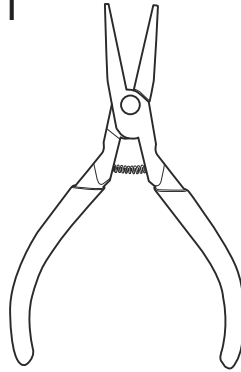
19



20



21



Item	Description	Use for	Article number
1	Driver	Removing the drive	510 13 90-01
2	Piston stop	Locking the piston	522 43 18-01
3	Test spark plug	Checking the ignition spark	502 71 13-01
4	Ignition cable plier	Repairing the ignition cable	502 50 06-01
5	Flywheel removal tool	Removing the flywheel	502 51 49-02
6	Active cleaning	Cleaning product	505 69 85-70
7	Air filter oil	Air filter cleaning	531 00 60-76
8	Pressure vacuum tester	Leakage testing	531 03 06-23
9	Hook for fuel filter	Removing the fuel filter	502 50 83-01
10	Pin	To lock the angle gear	502 02 61-02
11	Carburetor adjustment screwdriver	Adjusting the carburetor settings	501 60 02-03
12	Tachometer	Checking engine rpm	502 71 14-01
13	Grease	Greasing the parts in the angle gear	503 97 64-01
14	Allen key	4 mm	502 50 18-01
14	Allen key	5 mm	502 50 64-01
15	Air gap tool 0,3 mm	Adjusting ignition module	502 51 34-02
16	Drift	Disassembling/assembling sealing ring	505 38 17-09
17	Piston pin rod	Disassembling/assembling piston pin	505 38 17-05
18	Piston assembly kit	Assembling the piston	502 50 70-01
19	Assembly fixture	For brush cutters and trimmers	502 51 03-01
20	Circlip Pliers		N/A
21	Pliers		N/A

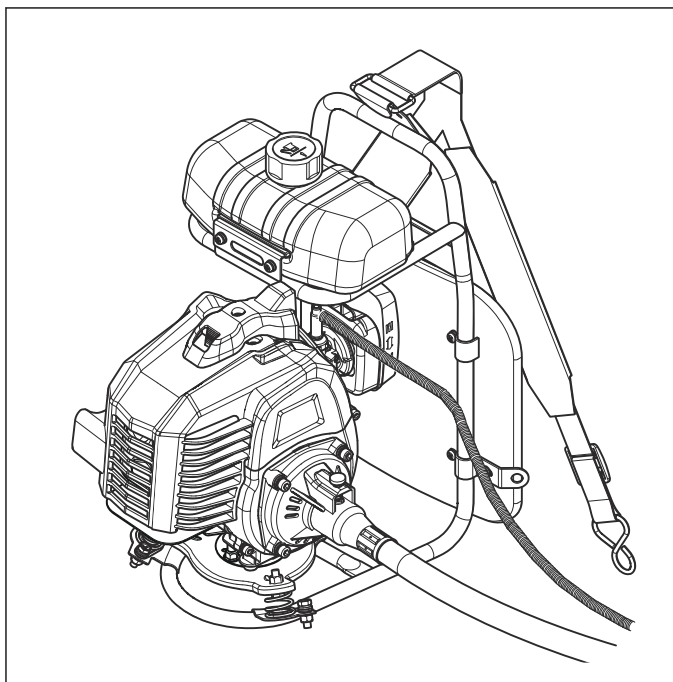
7 Function overview

7.1 Type plate/Product serial number

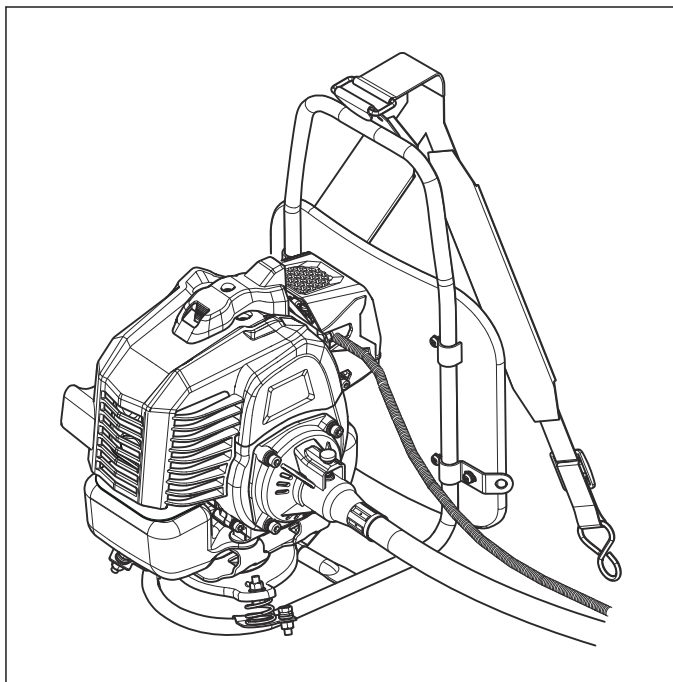
The product serial number is given on the type plate. Supply the model name and the article number when you send an order for spare parts.

7.2 Engine

The model 967 84 33-xx has an engine with a float-type carburetor:



The model 967 84 32-xx has an engine with a rotary carburetor:



7.3 Fuel

7.3.1 To use fuel



CAUTION: This product has a two-cycle engine. Use a mixture of gasoline and two-cycle engine oil. Make sure to use the correct quantity of oil in the mixture. Incorrect ratio of gasoline and oil can cause damage to the engine.

7.3.2 Gasoline



CAUTION: Do not use gasoline with an octane number less than 90 RON (87 AKI). This can cause damage to the product.



CAUTION: Do not use gasoline with more than 10% ethanol concentration (E10). This can cause damage to the product.

- Always use new unleaded gasoline with a minimum octane number of 90 RON (87 AKI) and with less than 10% ethanol concentration (E10).
- Use gasoline with a higher octane number if you frequently use the product at continuously high engine speed.

7.3.3 Two-cycle engine oil

- Use only the two-cycle engine oil of high quality, especially HUSQVARNA two-cycle oil. Use only the oil of an air cooled engine.
- Mixture ratio 1:40 (2.5%).
- Oil of low quality and high oil/fuel ratio can decrease the lifetime of catalytic converters.
- Speak to your dealer when you select an oil.
- If Husqvarna two-stroke oil is not available, you can use another two-stroke oil of good quality that is intended for air cooled engines. Contact your dealer when you select oil.
- Do not use the two-stroke oil for water-cooled outboard engines. The two-stroke oil is sometimes referred to as outboard oil.

Gasoline, litre	Oil, litre
	2.5%(1:40)
5	0,125
10	0,25
15	0,375
20	0,50

7.3.4 To make the fuel mixture

Note: Always use a clean fuel container when you mix the fuel.

Note: Do not make more than 30 days quantity of fuel mixture.

1. Add half of the gasoline quantity.
2. Add the full quantity of oil.
3. Shake the fuel mixture to mix the contents.
4. Add the remaining gasoline quantity.
5. Shake the fuel mixture to mix the contents.
6. Fill the fuel tank.

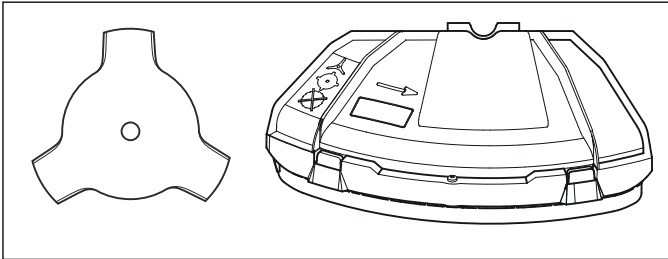
7.3.5 To add fuel

- Always use a fuel container with an antispill valve.
- If there is some fuel on the container, remove the unwanted fuel and let the container dry.
- Make sure that the area near the fuel tank cap is clean.
- Shake the fuel container before you add the fuel mixture to the fuel tank.

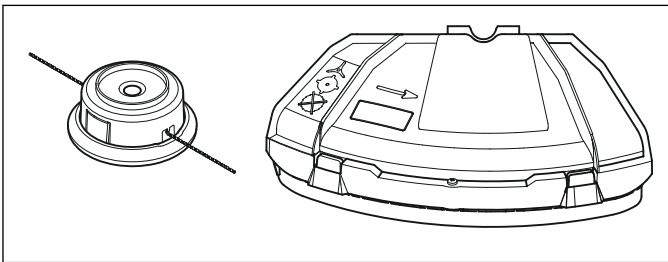
7.4 Cutting equipment

7.4.1 Cutting equipment

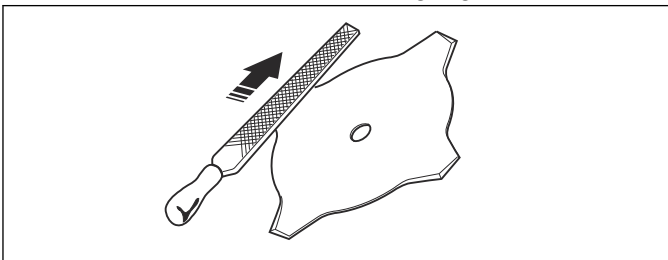
- Use the blades and grass knives to cut thick grass.



- Use the trimmer head to cut grass.



- An incorrectly sharpened or damaged blade increases the risk of accidents. Keep the teeth of the blade correctly sharpened. Obey the instructions and use the recommended file gauge.

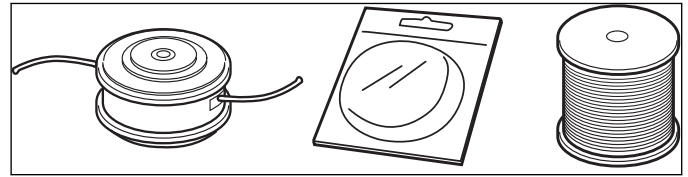


- Examine the cutting attachment for damage or cracks. Replace a damaged cutting attachment.
- Only use cutting attachments with recommended guards, see the operator's manual.

7.4.2 Trimmer head



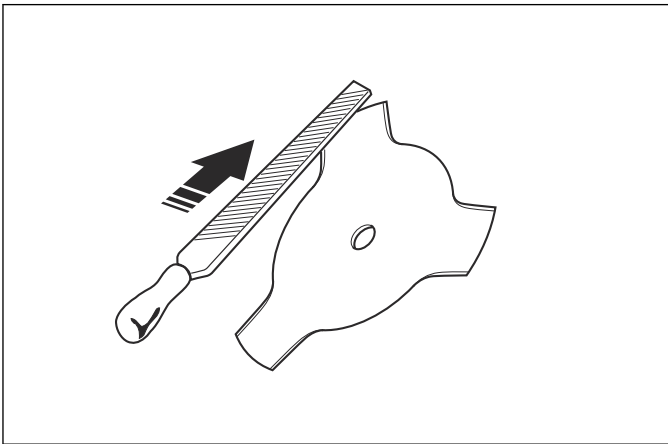
WARNING: Always make sure the trimmer line is wound tightly and evenly around the drum to prevent harmful vibration.



- Only use recommended trimmer heads and trimmer lines.
- Only use recommended cutting attachments.
- Smaller machines requires small trimmer heads and vice versa.
- The length of the trimmer line is important. A longer trimmer line requires greater engine power than a shorter trimmer line of the same diameter.
- Make sure that the cutter on the trimmer guard is intact. This cuts the trimmer line to the correct length.
- Soak the trimmer line in water for a couple of days before use to increase the life length.

7.4.3 Grass blades and grass cutters

- Use the product with an approved grass blade. Do not use a grass blade without proper installation of all required parts. Make sure that the installation is done correctly and that the proper parts are used. Improper installation may cause the blade to fly off and seriously injure the operator or the bystanders.
- Wear protective gloves when you handle or do maintenance on the blade.
- Use head protection when you operate a product with a grass blade.
- Grass blades and grass cutters are used to cut rough grass.
- A grass blade can cause injury while it continues to spin after the engine is stopped or the throttle trigger is released. Make sure that the grass blade has completely stopped rotating before any maintenance.
- Stop the engine before you do work on the cutting attachment. Make sure the cutting attachment fully stops. Disconnect the lead from the spark plug.
- Only use an approved cutting attachment or a correctly sharpened blade.
- Keep the teeth of the blade correctly sharpened.



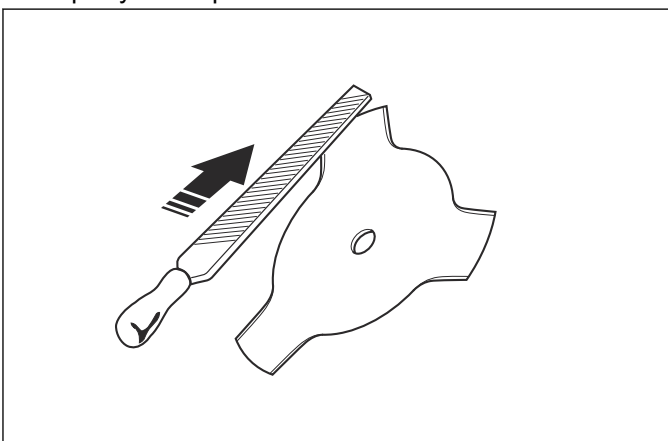
- Do not use a damaged cutting attachment.
- Attach the transport guard to the grass blade when you transport or store the product.

7.4.4 Blade thrust

- A blade thrust is a sudden movement of the product to the side, forward or rearward. A blade thrust occurs when the grass blade or saw blade hits an object that cannot be cut. In areas where it is not easy to see the material being cut the risk of blade thrust increases.
- When a blade thrust occurs, there is a risk that the product or the operator moves out of position. A blade that moves can hit bystanders and there is a risk of injuries.
- If a blade is bent, has cracks, is broken or damaged, discard the blade.
- Use a sharp blade. The risk of blade thrust increases when a blade is not sharp.

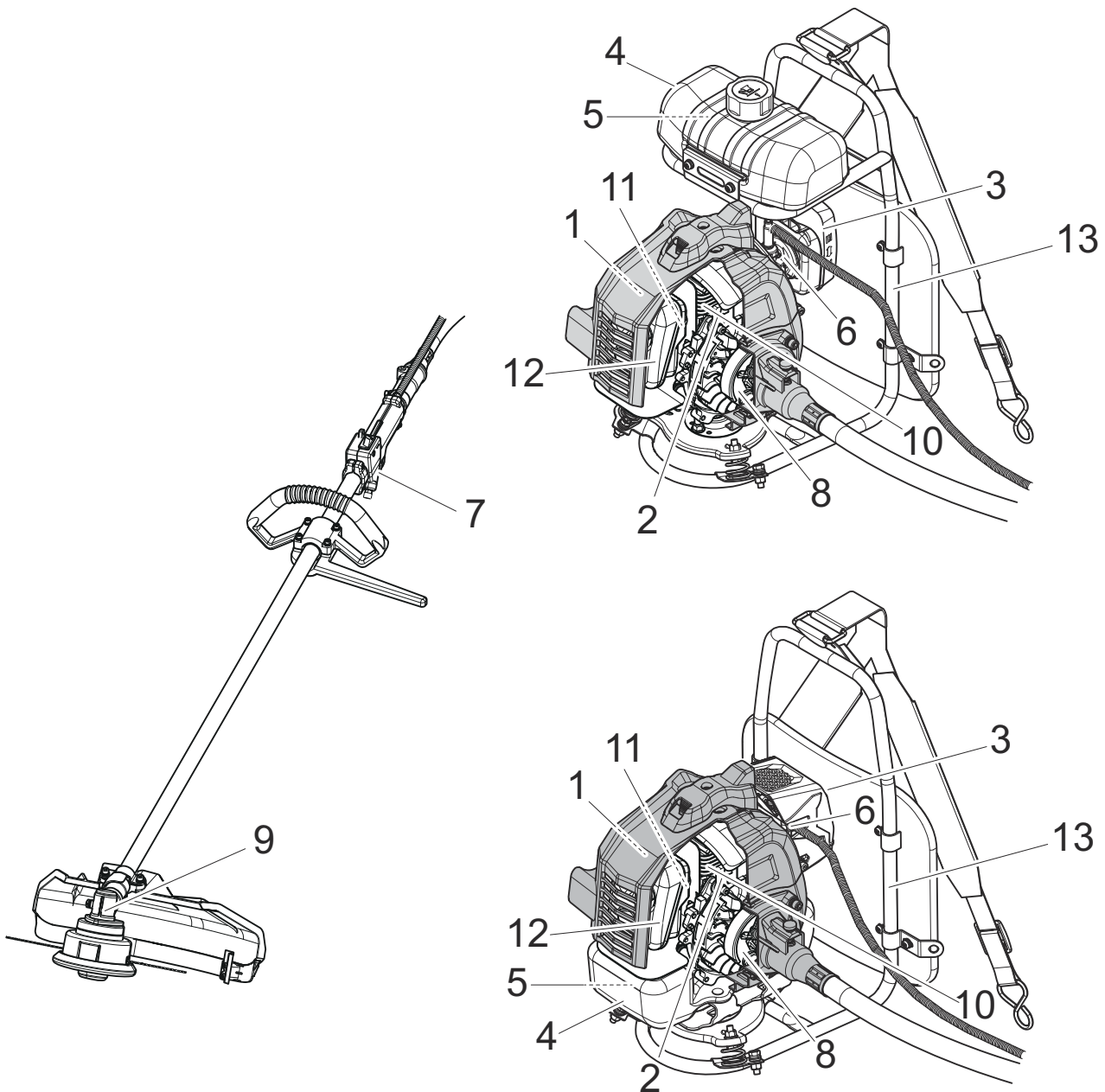
7.5 To sharpen grass cutters and grass blades

1. Sharpen grass cutters and grass blades with a single-cut flat file.
2. Sharpen all edges of the grass cutters and blades equally to keep the balance.



8 Repair instructions

8.1 Product overview for repair instructions



1. Starter
2. Ignition system
3. Air filter
4. Fuel tank
5. Fuel filter
6. Carburetor
7. Handle
8. Centrifugal clutch
9. Bevel gear
10. Cylinder and piston
11. Crankshaft and crankcase
12. Muffler
13. Harness frame

8.2 To clean and examine the product parts

- Clean and examine all parts fully. You find more instructions in the chapter for each part if special tools or procedures are necessary.
- Replace damaged or defective parts.
- Always use original spare parts.

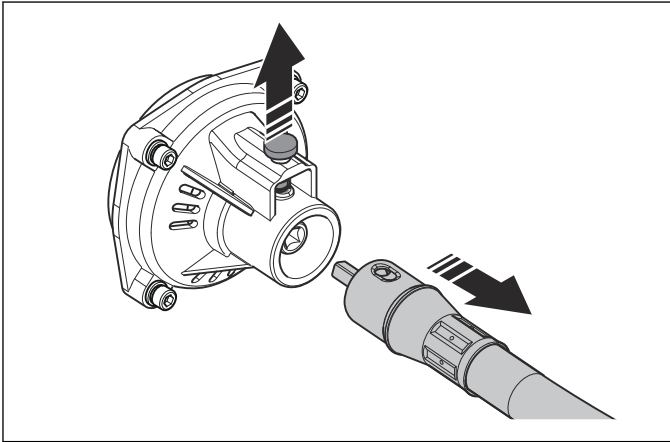
8.3 Starter

8.3.1 To disassemble the starter on 967 84 33-xx

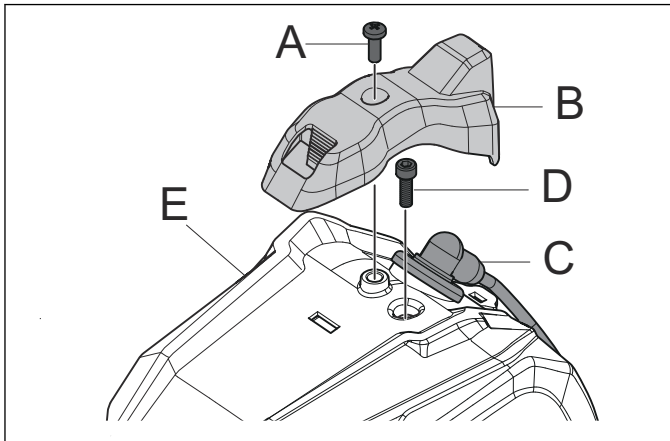


WARNING: Use protective glasses to prevent injury to the eyes if the recoil spring ejects.

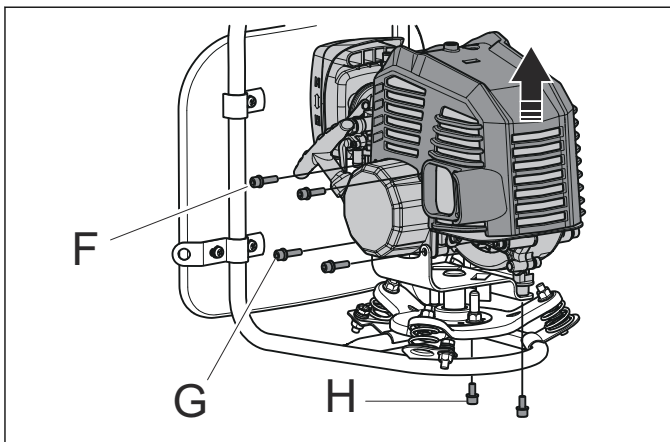
1. Pull up the knob and remove the shaft.



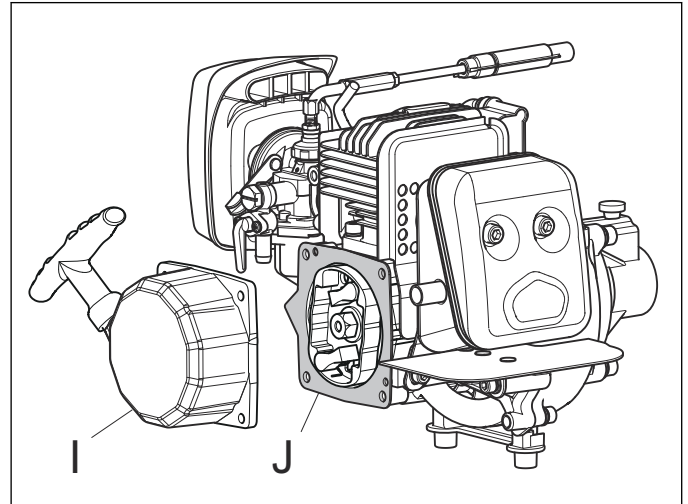
2. Remove the screw (A), the spark plug cap (B), the spark plug cable (C) and the spark plug. Remove the screw (D) from the cylinder cover (E).



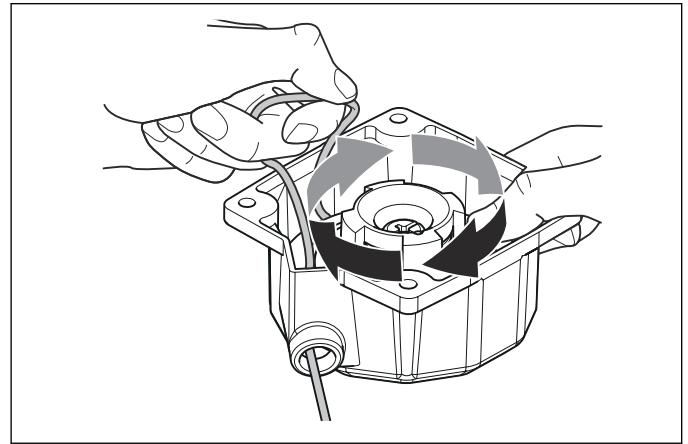
3. Remove the screws (F) and the cylinder cover. Remove the screws (G). Remove the screws (H). Remove the engine from the support plate on the harness frame.



4. Remove the starter assembly (I) and the gasket (J).

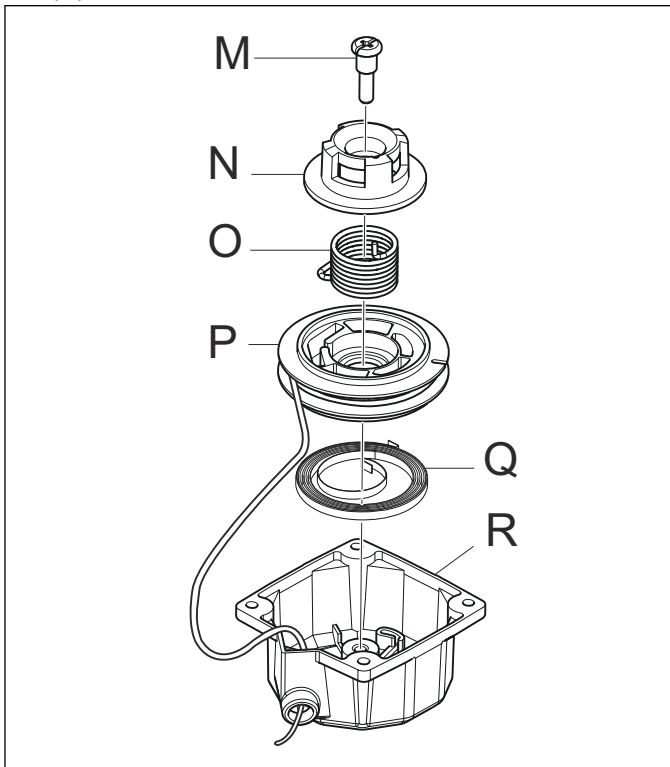


5. Pull out the starter rope approximately 30 cm. Slow the starter pulley with your thumb. Put the starter rope in the groove in the starter pulley. Let the starter pulley rotate rearward until the spring tension stops.



WARNING: The recoil spring can cause injury to your thumb when the starter pulley rotates in reverse.

- Remove the screw (M) and remove the pulley (N). Remove the torsion spring (O). Remove the starter pulley (P) to access the recoil spring (Q). Carefully remove the recoil spring from the starter housing (R).



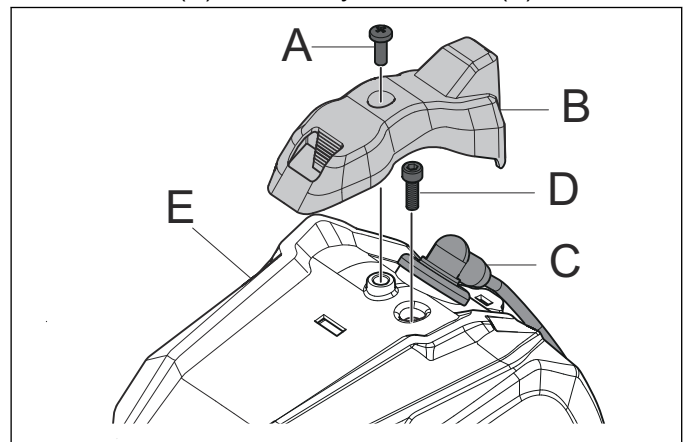
WARNING: Be very careful when you remove the starter pulley. The recoil spring can eject and cause injury to you.

8.3.2 To disassemble the starter on 967 84 32-xx

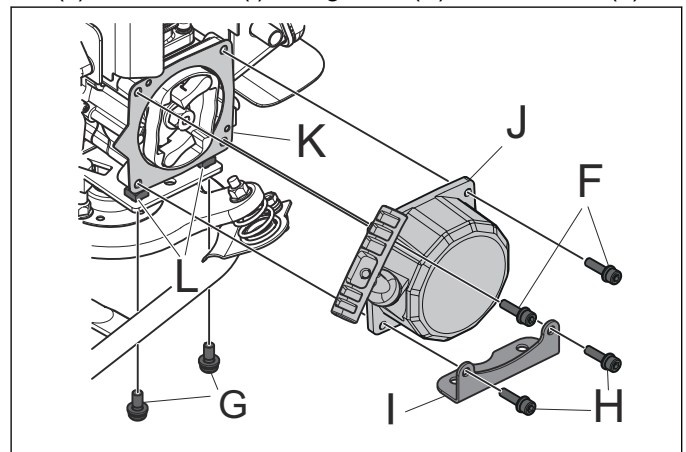


WARNING: Use protective glasses to prevent injury to the eyes if the recoil spring ejects.

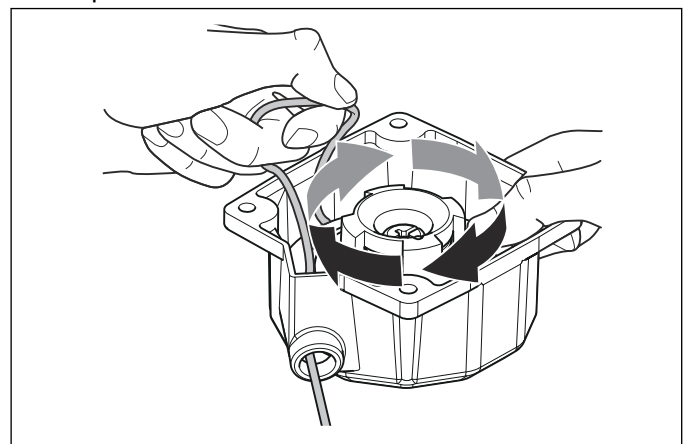
- Remove the screw (A), the spark plug cap (B), the spark plug cable (C) and the spark plug. Remove the screw (D) from the cylinder cover (E).



- Remove the screws (F) and the cylinder cover. Remove the screws (G and H). Remove the starter (J), the bracket (I), the gasket (K) and the nuts (L).



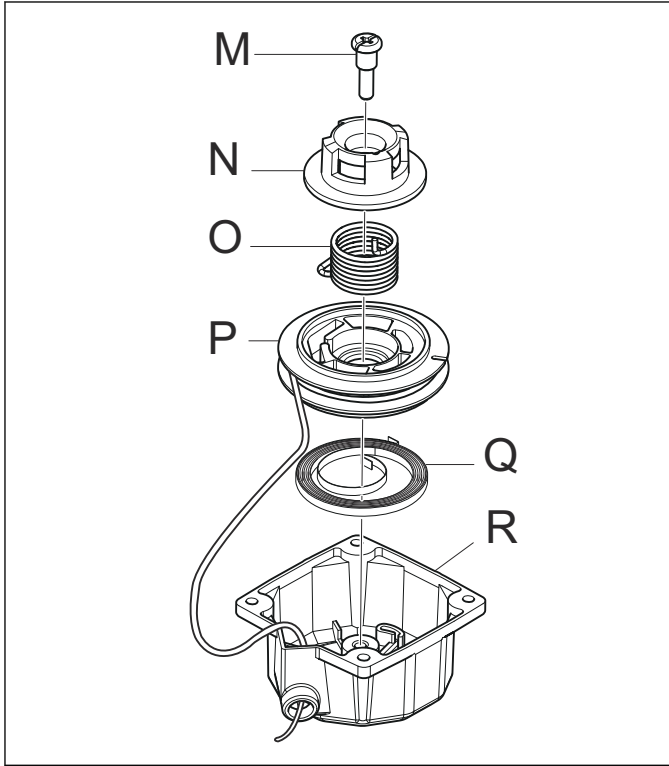
- Pull out the starter rope approximately 30 cm. Slow the starter pulley with your thumb. Put the starter rope in the groove in the starter pulley. Let the starter pulley rotate rearward until the spring tension stops.





WARNING: The recoil spring can cause injury to your thumb when the starter pulley rotates in reverse.

4. Remove the screw (M) and remove the pulley (N). Remove the torsion spring (O). Remove the starter pulley (P) to access the recoil spring (Q). Carefully remove the recoil spring from the starter housing (R).

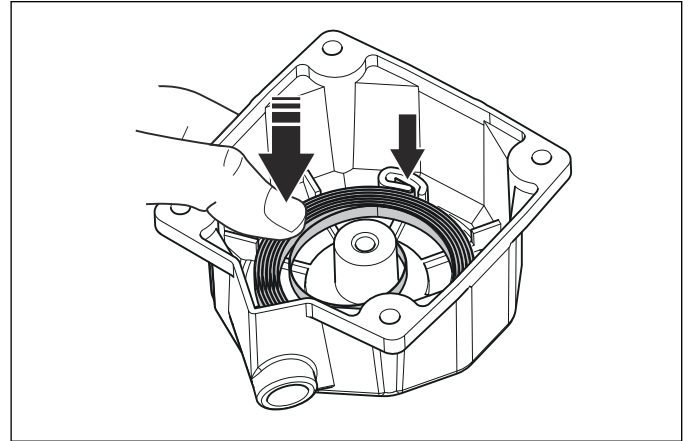


WARNING: Be very careful when you remove the starter pulley. The recoil spring can eject and cause injury to you.

8.3.3 To replace the recoil spring in the starter housing

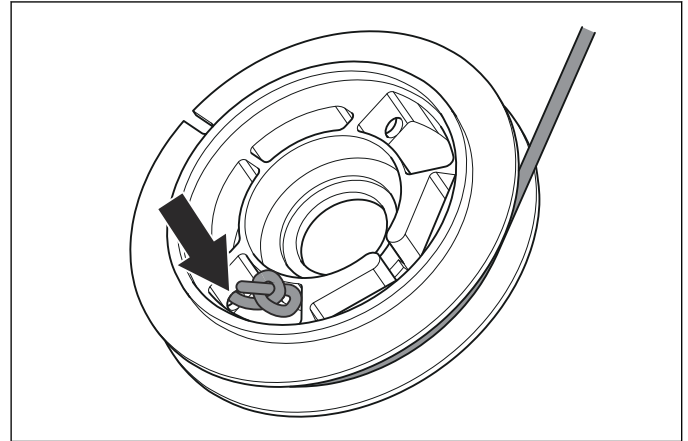
1. Put the recoil spring in the starter groove of the housing.
2. Push down the recoil spring with your thumb on the inner side of the starter housing.

3. Move your thumb around the edge of the starter housing and push down the recoil spring turn after turn.



8.3.4 To replace the starter rope in the starter pulley

1. Pull the starter rope through the hole in the starter pulley and tie a knot.

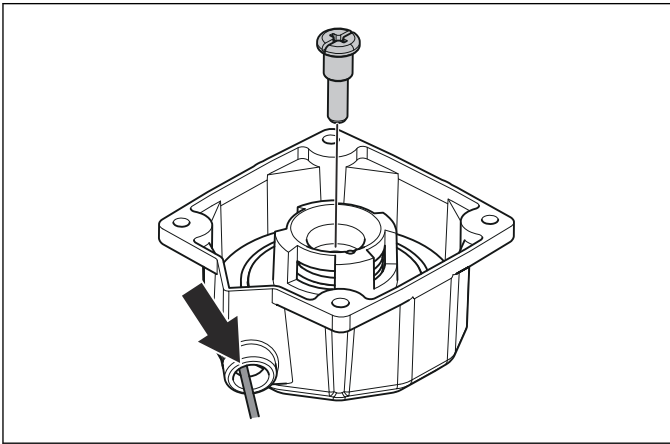


2. Make sure that the knot is as small as possible and enters the groove on the starter pulley.
3. Wind the cord 3 turns counterclockwise around the starter pulley.
4. Lubricate the recoil spring and the stub axle of the starter pulley with cold resistant grease or thin oil.
5. Put the starter rope through the opening in the starter housing and the opening in the bearing journal.

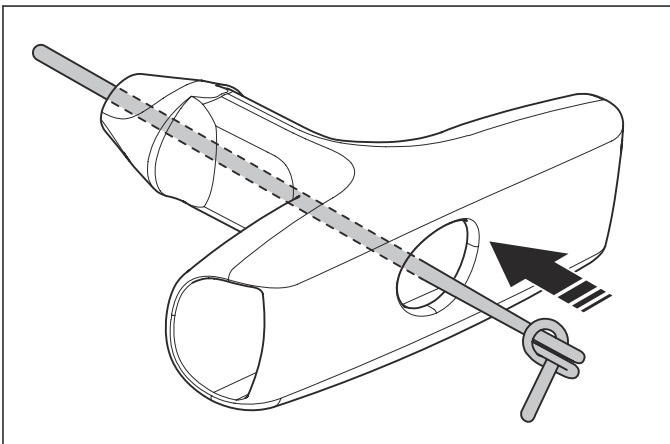
8.3.5 To assemble the starter on 967 84 33-xx

1. Put the starter pulley down into the starter housing.
2. Put the torsion spring in the starter pulley.

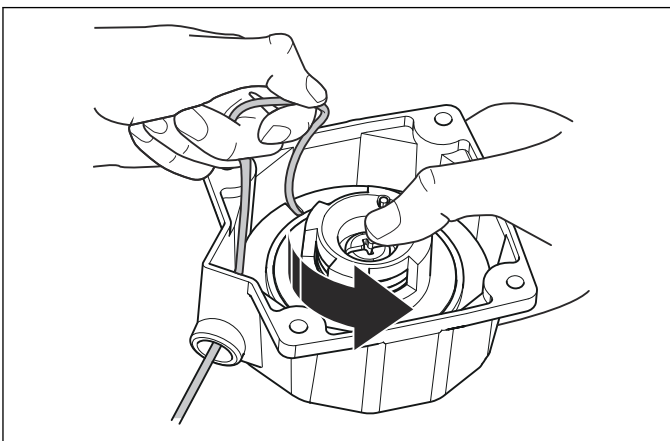
- Put the pulley on the starter pulley and attach the screw.



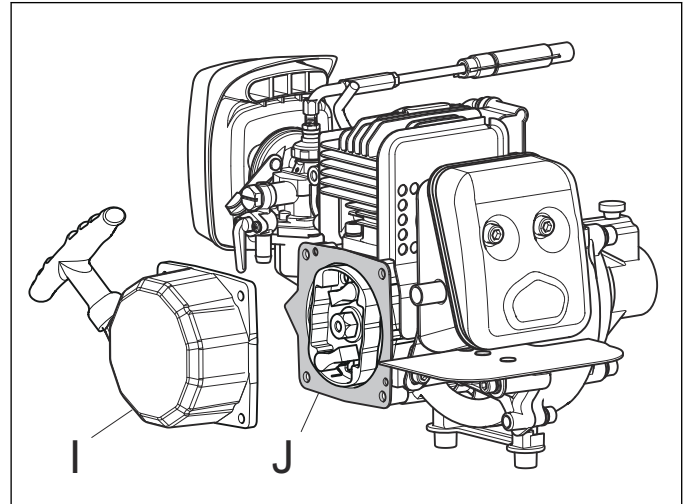
- Pull the starter rope through the starter rope handle.
- Make a small knot on the starter rope and pull the knot into the handle.



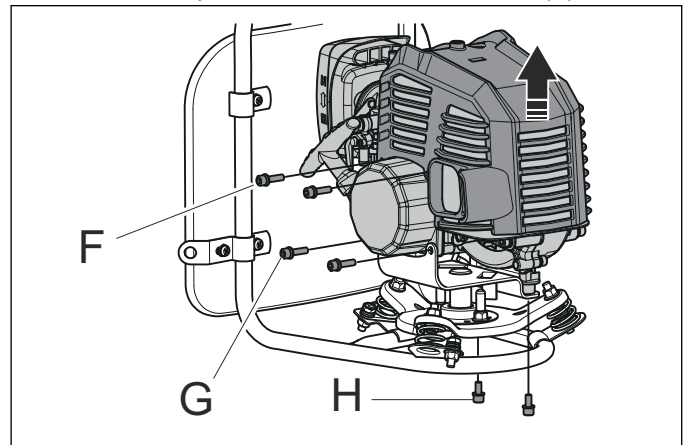
- Tighten the recoil spring. Pull out the starter rope fully and slow the starter pulley with your thumb. Lift the starter rope up out of the groove on the starter pulley. Then turn the starter pulley counterclockwise 4 revolutions. Pull out the starter rope fully and turn the starter pulley a minimum of a half revolution more.



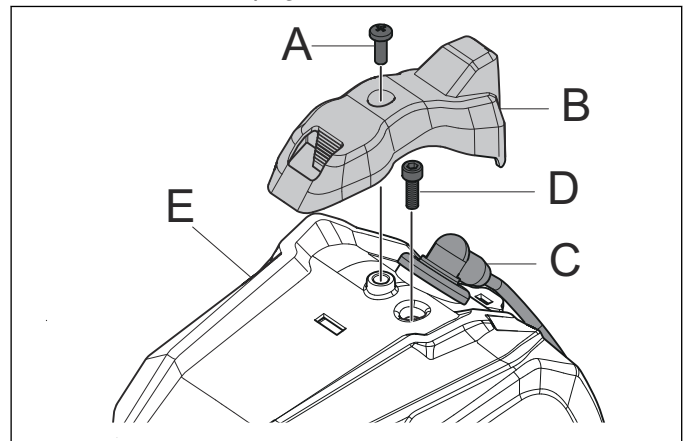
- Attach the gasket (J) and the starter assembly (I).



- Put the engine on the support plate on the harness frame. Attach the screws (H) and the screws (G). Attach the cylinder cover and the screws (F).



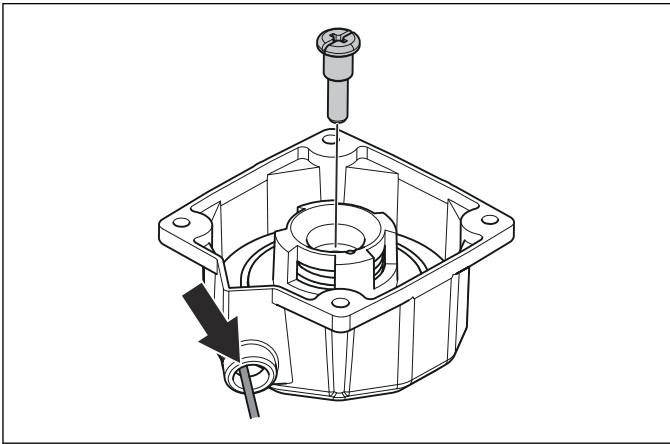
- Attach the screw (D) to the cylinder cover (E). Attach the spark plug cable (C). Attach the spark plug cap (B) and the screw (A). Tighten all screws to the correct torque. Refer to *Servicing data for the model 967 84 33-xx on page 14*



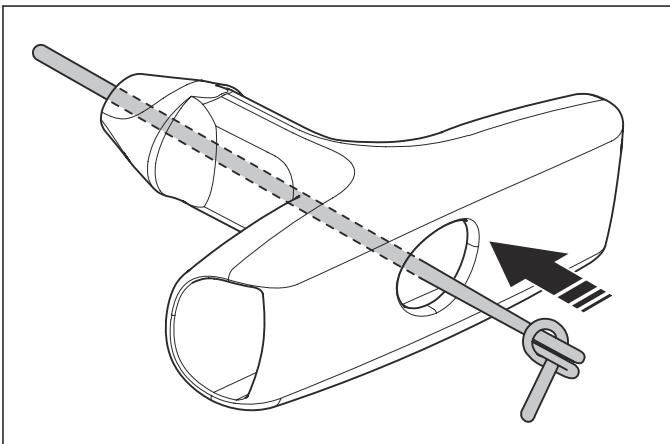
8.3.6 To assemble the starter on 967 84 32-xx

- Put the starter pulley down into the starter housing.
- Put the torsion spring in the starter pulley.

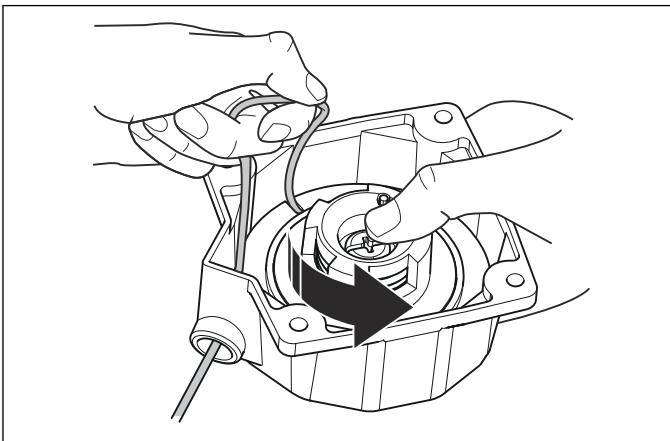
- Put the pulley on the starter pulley and attach the screw.



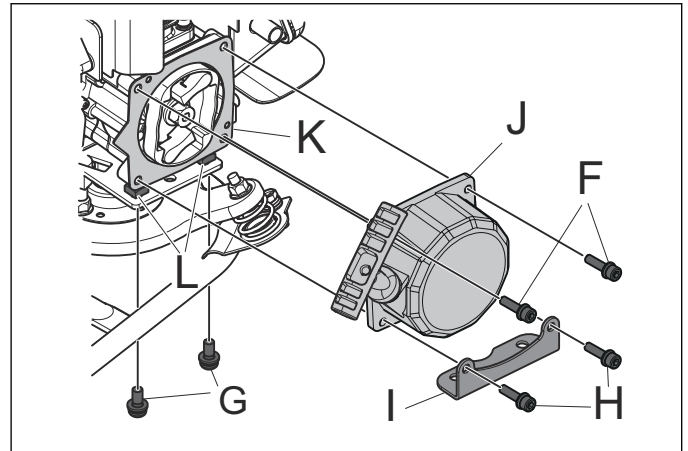
- Pull the starter rope through the starter rope handle.
- Make a small knot on the starter rope and pull the knot into the handle.



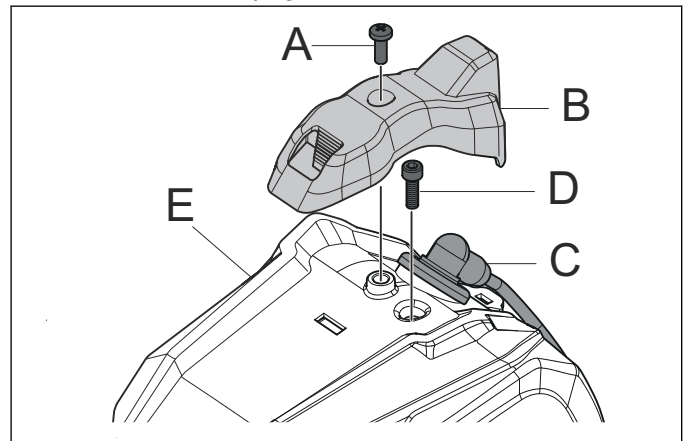
- Tighten the recoil spring. Pull out the starter rope fully and slow the starter pulley with your thumb. Lift the starter rope up out of the groove on the starter pulley. Then turn the starter pulley counterclockwise 4 revolutions. Pull out the starter rope fully and turn the starter pulley a minimum of a half revolution more.



- Put the gasket (K) on the crankcase and attach the screws (H) to the starter housing (J) and crankcase. Attach screws (G) to the support plate and the bracket (I). Attach the nuts (L) to the screws (G) and tighten. Put the cylinder cover in the correct position and attach the screws (F) to the starter housing and cylinder cover. Tighten the screws to the correct torque. Refer to *Servicing data for the model 967 84 32-xx* on page 16.



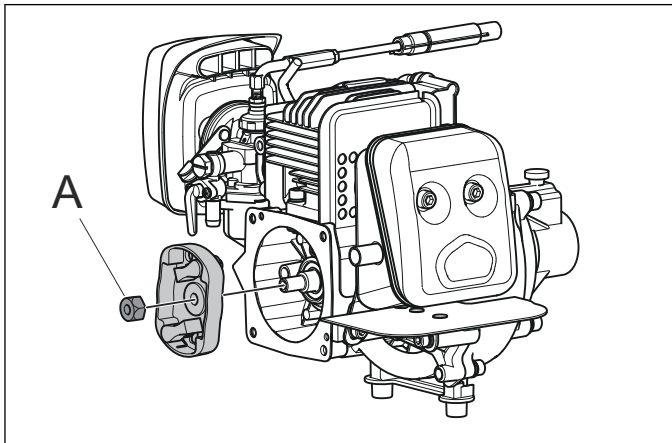
- Attach the screw (D) to the cylinder cover (E). Attach the spark plug cable (C). Attach the spark plug cap (B) and the screw (A). Tighten all screws to the correct torque. Refer to *Servicing data for the model 967 84 32-xx* on page 16



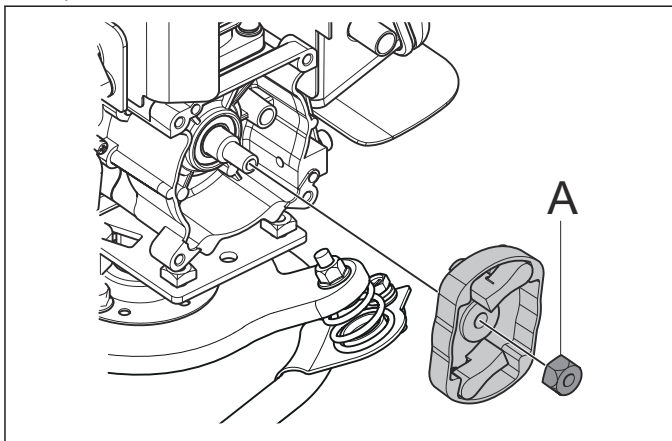
8.3.7 To replace the drive

- Remove the starter assembly as given in *To disassemble the starter on 967 84 33-xx* on page 24 or *To disassemble the starter on 967 84 32-xx* on page 25.
- Use a piston stop to lock the axle.
- Loosen the nut (A). Remove the drive and the spacer in the drive disc.

a) On the model 967 84 33-xx



b) On the model 967 84 32-xx

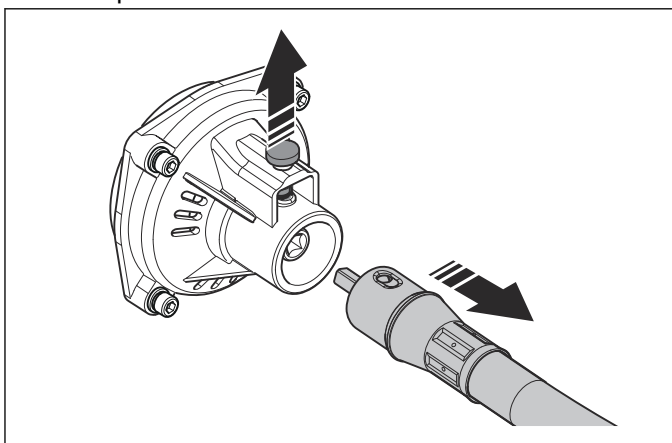


4. Examine the drive. Clean the drive if it is dirty. Replace the drive if it is damaged.
5. Assemble in the opposite sequence to how it was disassembled.

8.4 Ignition system

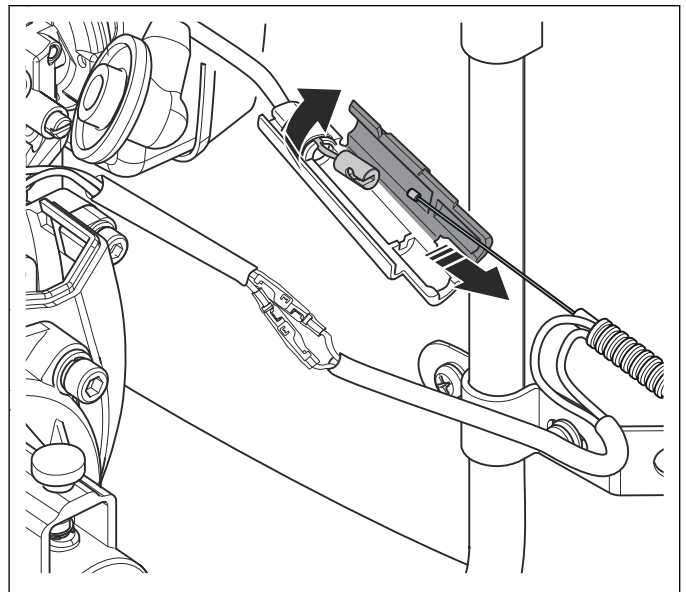
8.4.1 To disassemble the ignition system

1. Pull up the knob and remove the shaft.

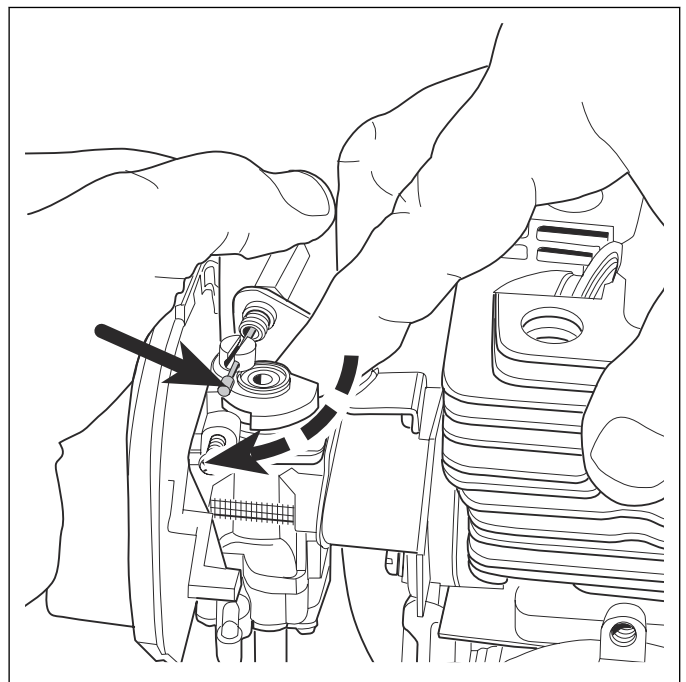


2. Remove the spark plug cover.
3. Remove the cylinder cover.
4. Remove the air filter cover (only on the model 967 84 32-xx).
5. Disconnect the throttle wire from the carburetor.

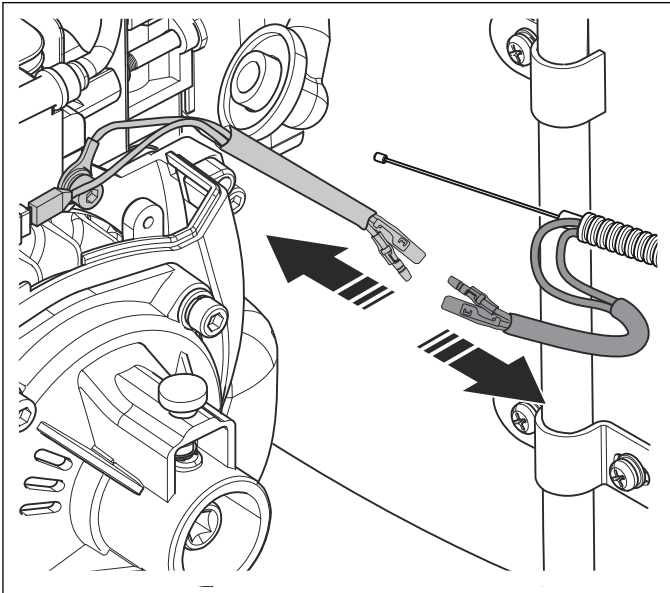
a) For the model 967 84 33-xx: Open the holder and disconnect the throttle wire from the carburetor connection.



b) For the model 967 84 32-xx: Remove the cap and disconnect the throttle wire.

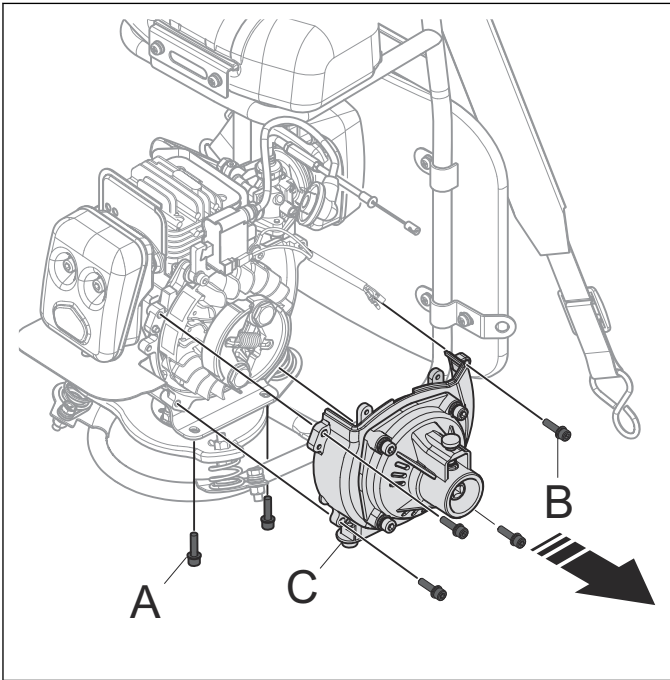


6. Disconnect the cables.

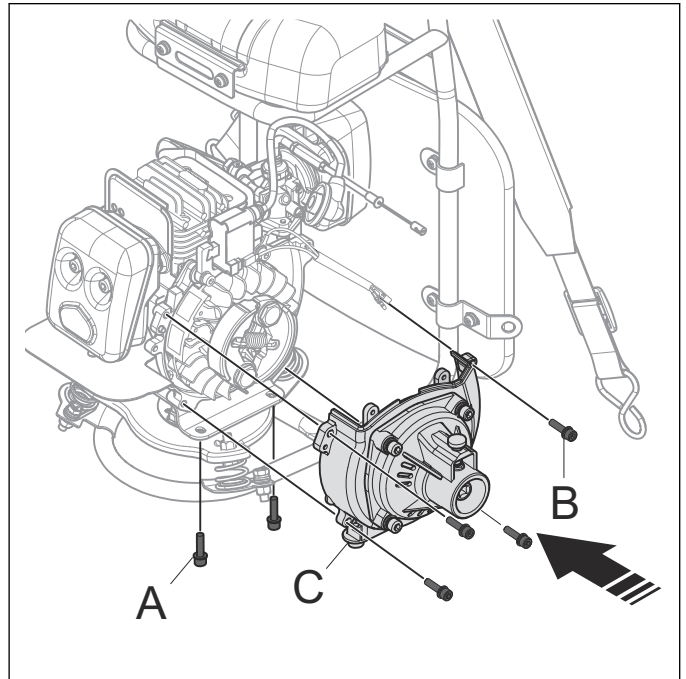


7. Remove the clutch drum and clutch drum cover.

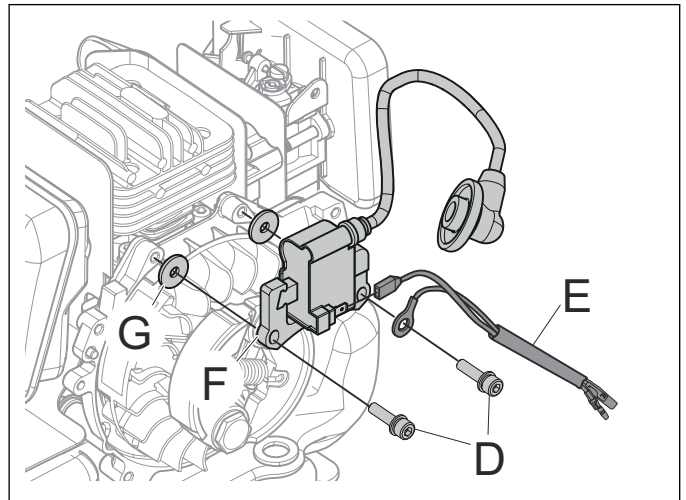
a) For the model 967 84 33-xx: Remove the 2 screws (A), the 4 screws (B) and pull out the clutch drum assembly (C).



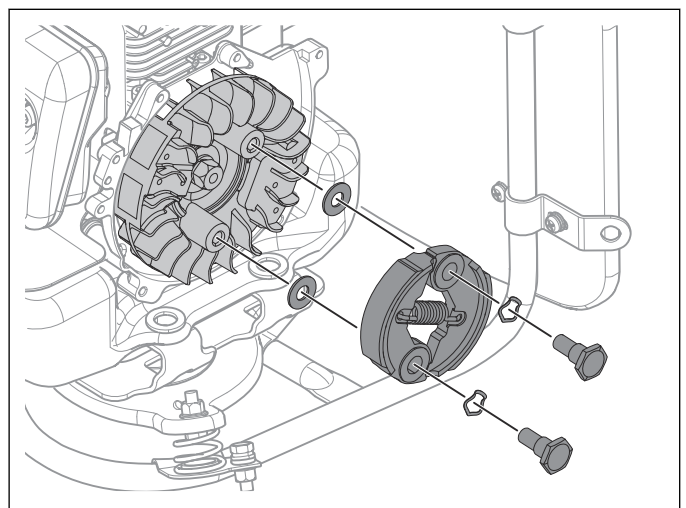
b) For the model 967 84 32-xx: Remove the 2 screws (A) and 2 washers. Remove the 4 screws (B) and pull out the clutch drum assembly (C).



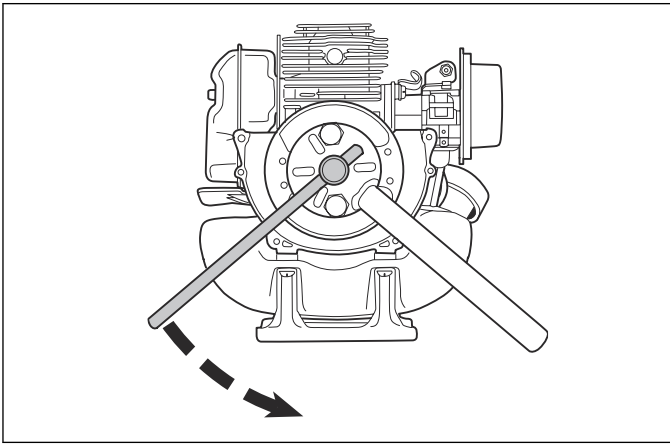
8. Remove the 2 screws (D), the cables (E), the ignition module (F) and the 2 washers (G).



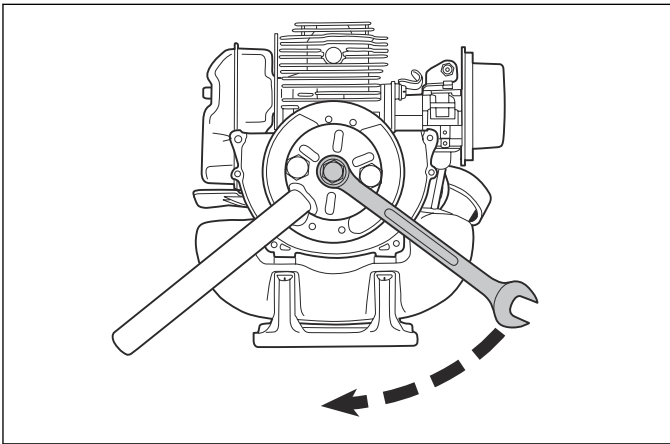
9. Remove the 2 screws and the 2 washers that hold the centrifugal clutch. Lift off the clutch. Remove the 2 washers between the flywheel and the centrifugal clutch.



10. Attach the puller on the flywheel. Hold the puller to loosen and remove the nut.

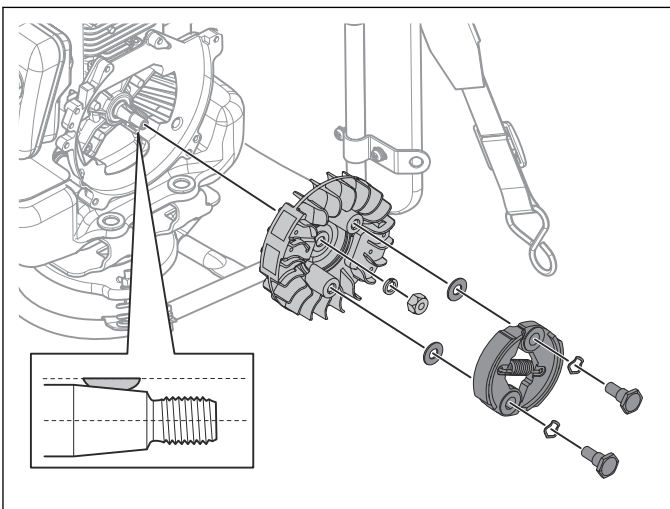


11. Attach the center unit to the puller. Tighten the center bolt and use the holding tool to prevent movement until the flywheel releases.



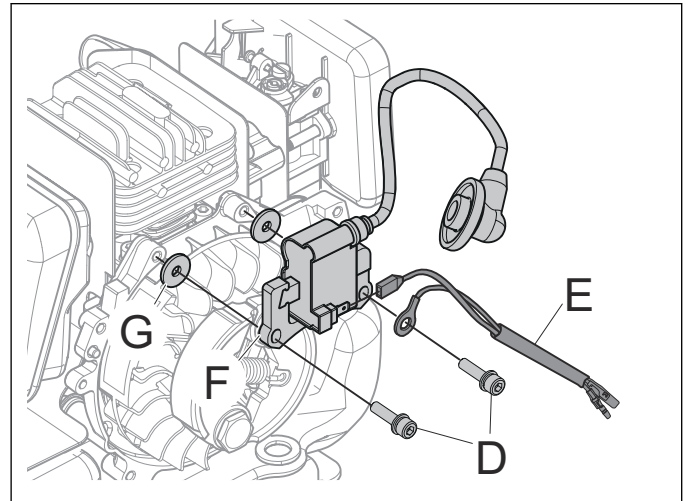
8.4.2 To assemble the ignition system

1. Make sure that the keyway in the flywheel and the keyway in the crankshaft are not damaged. Make sure that the key is not damaged. Attach the flywheel and the centrifugal clutch with the spacers and screws as shown in the illustration.

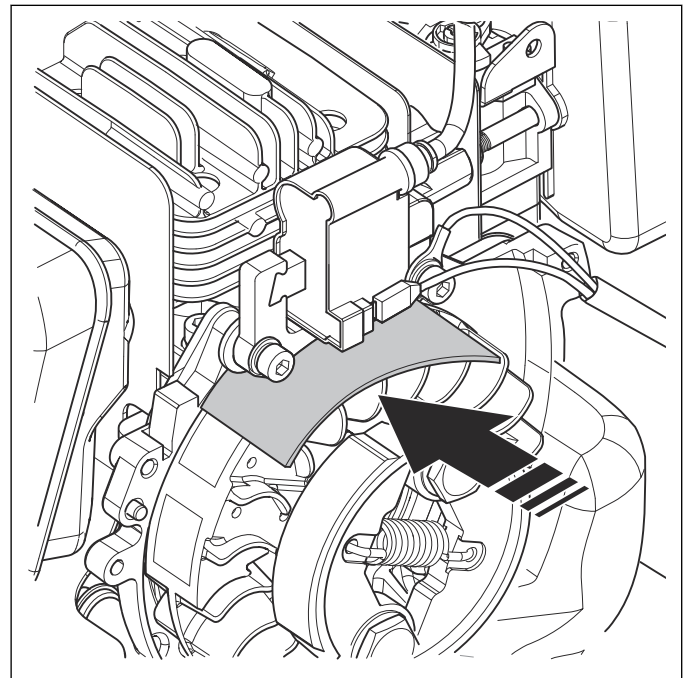


Note: Turn the clutch until you can see the arrows that show the turning direction.

2. Assemble the cables (E) to the ignition module. Use the 2 screws (D) and the 2 washers (G) to assemble the ignition module on the frame.

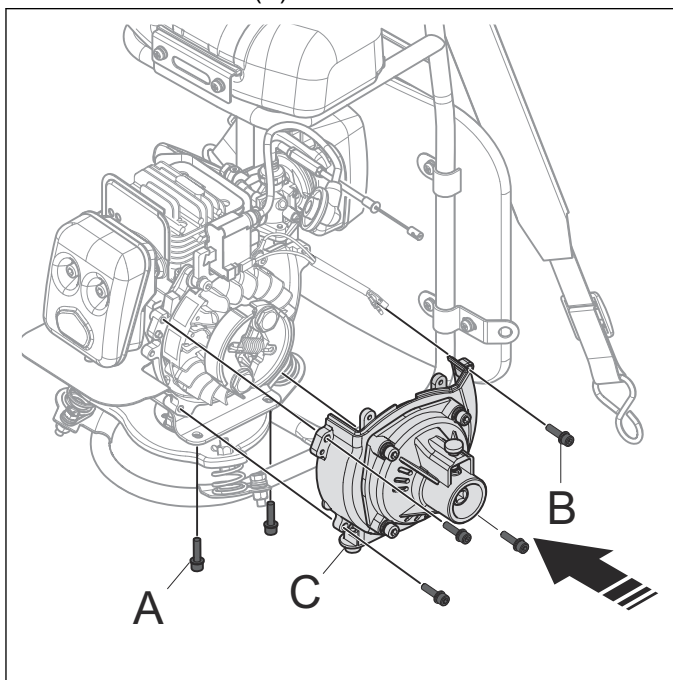


3. Use a feeler gauge to make sure the distance between the ignition module and the flywheel is 0.3 mm.

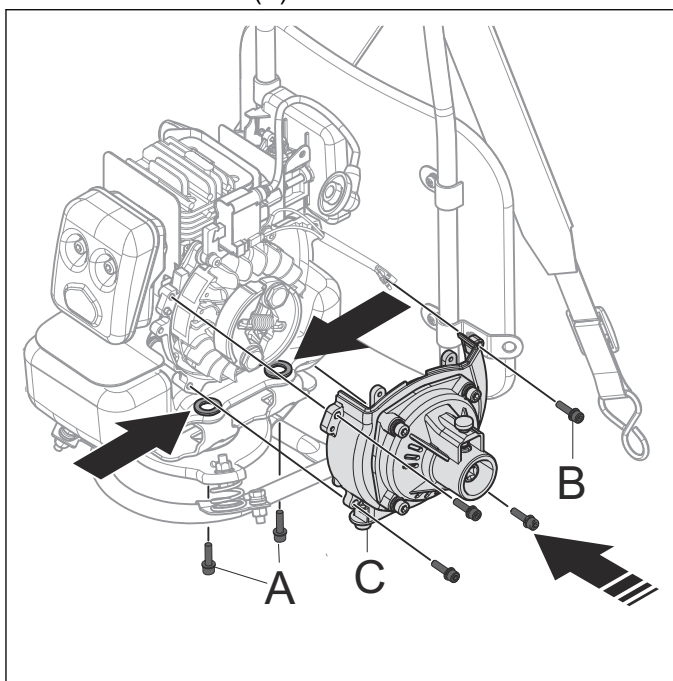


4. Attach the clutch drum and clutch drum cover.

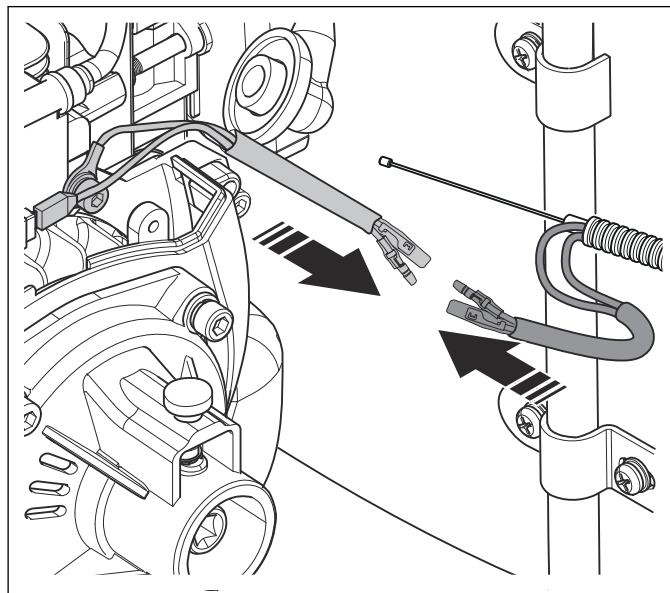
- a) For the model 967 84 33-xx: Attach the clutch drum assembly (C) with the 4 screws (B). Attach the 2 screws (A).



- b) For the model 967 84 32-xx: Attach the clutch drum assembly (C) with the 4 screws (B). Attach the 2 screws (A) and the 2 washers.

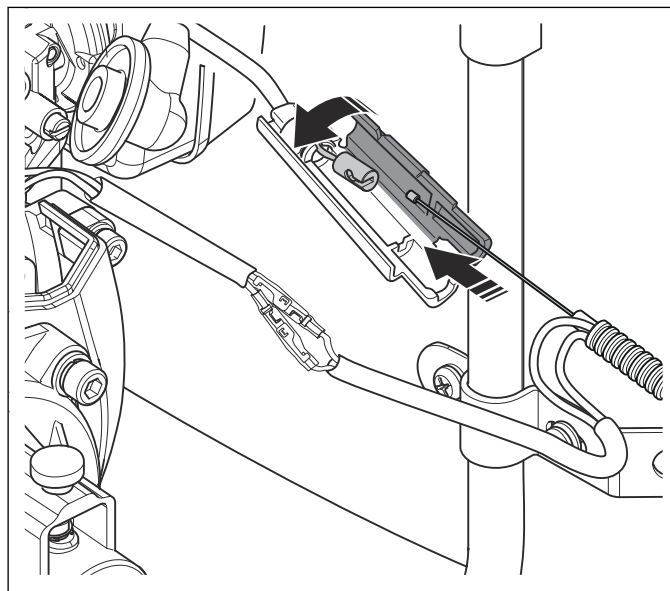


5. Connect the cables.

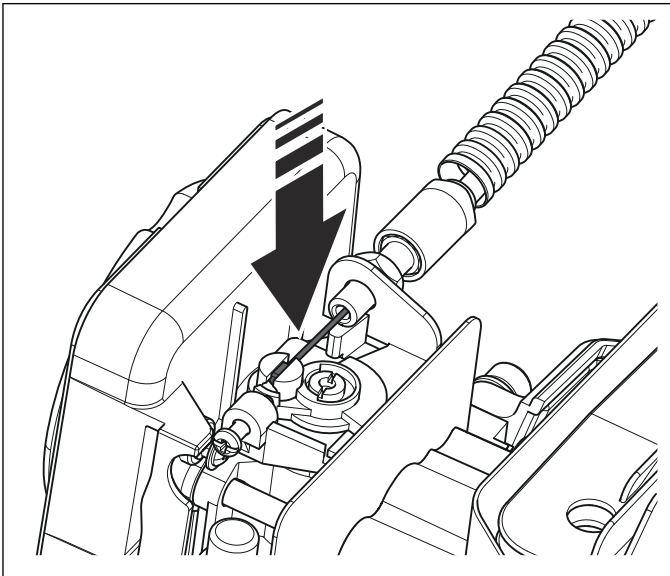


6. Assemble the throttle wire.

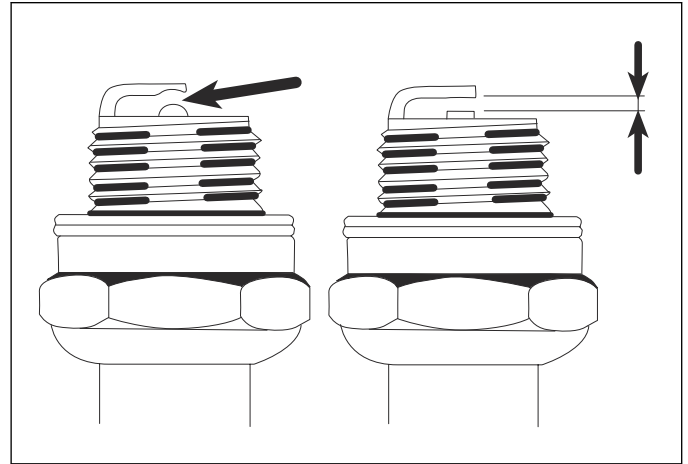
- a) For the model 967 84 33-xx: Connect the throttle wire to the carburetor connection and close the holder.



- b) For the model 967 84 32-xx: Connect the throttle wire and attach the cap.

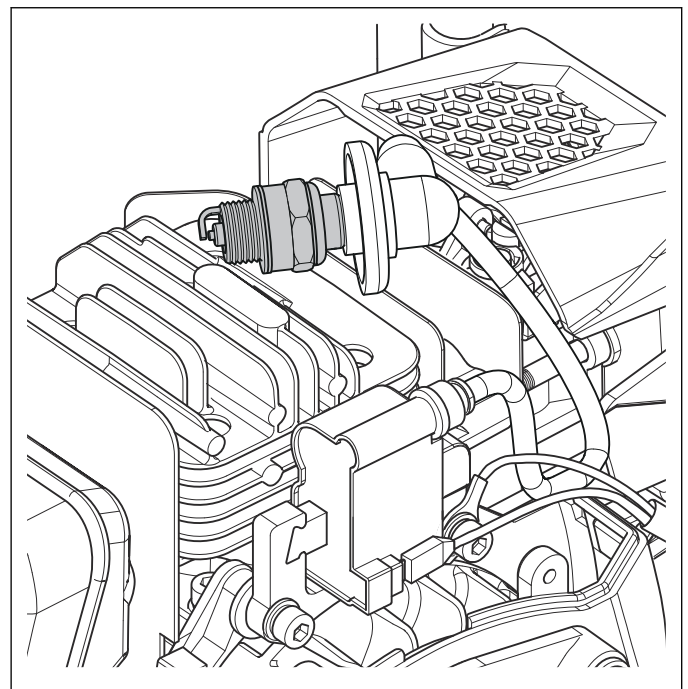
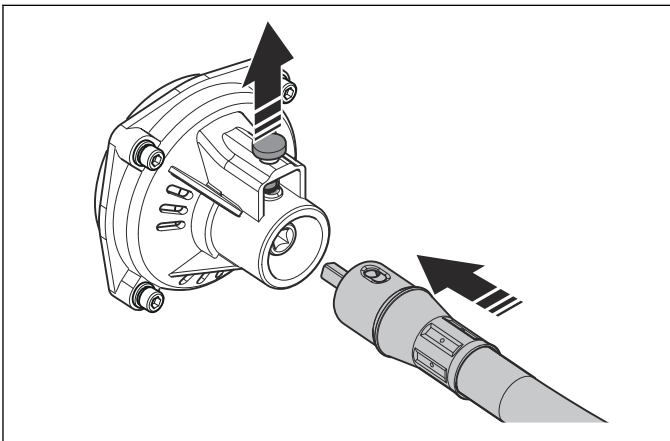


3. Examine the spark plug. If the electrodes are worn more than 50%, replace the spark plug. Make sure that the electrode gap is 0.6 mm. Adjust the space with the side electrode.



7. Assemble the air filter cover (only for the model 967 84 32-xx).
 8. Assemble the spark plug, the cylinder cover and the spark plug cover.
 9. Pull up the knob and attach the shaft.

4. Ground the spark plug on the cylinder and pull tightly on the start handle.

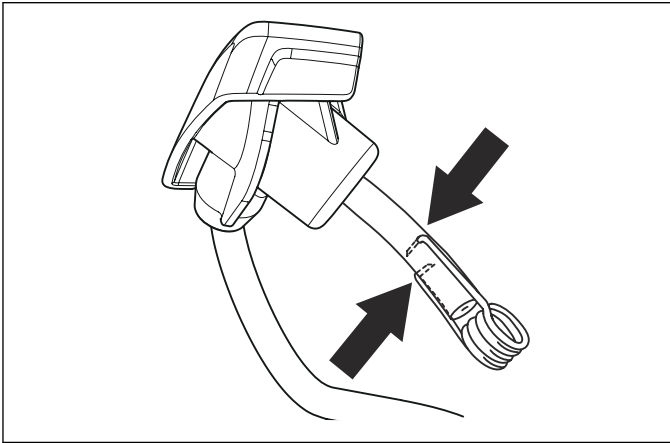


8.4.3 To examine the ignition spark

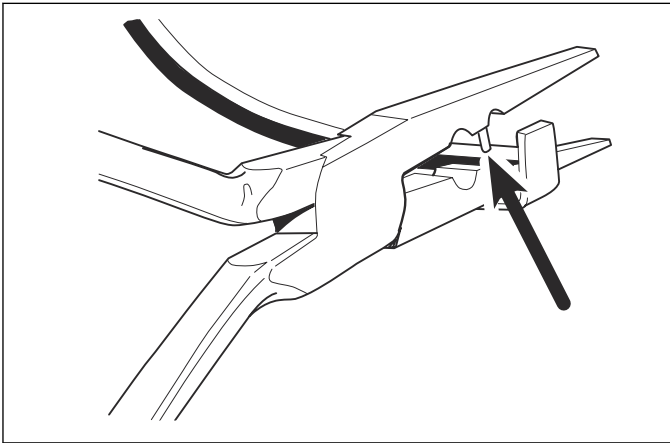
1. Disassemble the spark plug cup and the spark plug cover.
 2. Remove the spark plug and clean it from particles with a steel brush.

5. If no spark occurs, replace the spark plug with a test spark plug see *Servicing data for the model 967 84 33-xx on page 14*. If a spark occurs, the spark plug is defective. Replace the spark plug.

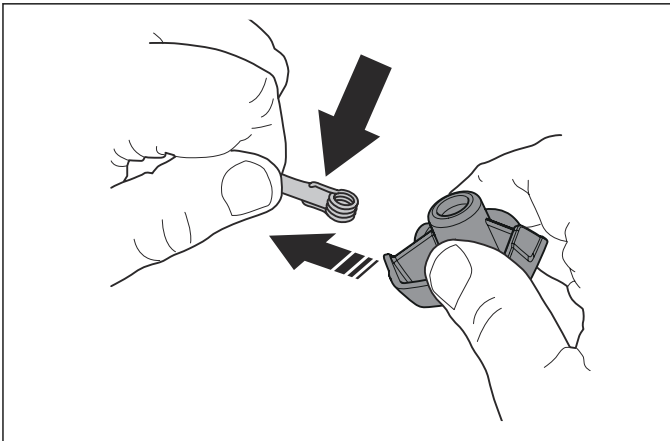
- If no spark occurs, examine the spark plug connection. Remove the spark plug cover and make sure that the ignition cable is not damaged. If it is necessary, remove a part of the cable to get sufficient connection at the connection coil.



- Use pliers to make a new hole in the ignition cable to attach the connection coil.



- Attach the ignition coil to the ignition cable and make sure that the wire is folded along the cable. Move the connection coil into the spark plug cover. If it is necessary, lubricate the hole in the spark plug cover.



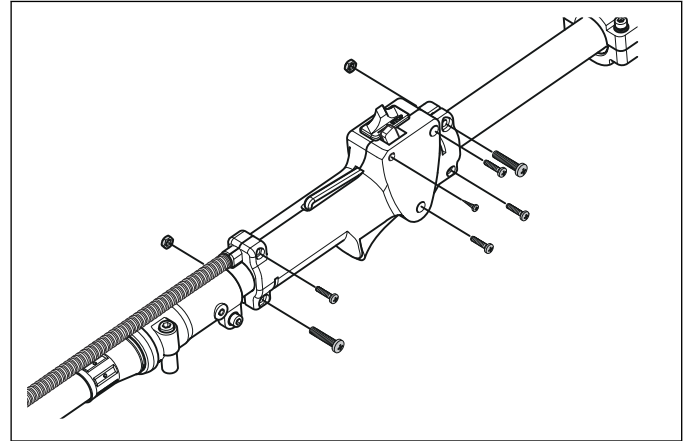
- If no spark occurs, examine the other cables for unsatisfactory connections, dirt, corrosion, cable breakage and damaged insulation. If no spark occurs, replace the ignition module.

Note: Use an Ohmmeter to examine if a cable is defective.

8.5 Handle and throttle trigger

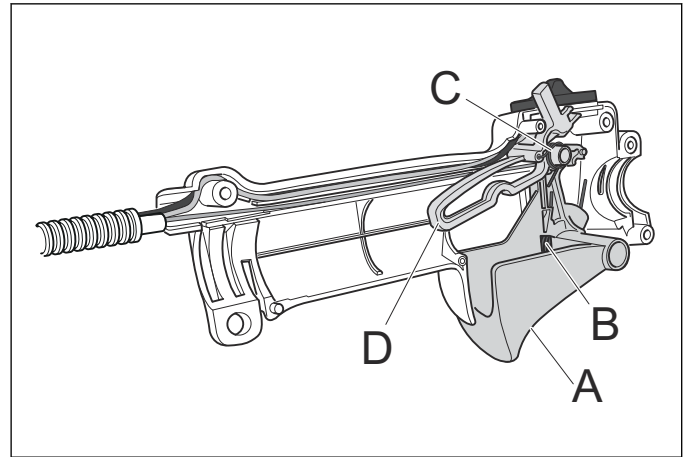
8.5.1 To disassemble the handle

- Remove the 7 screws and 2 nuts.

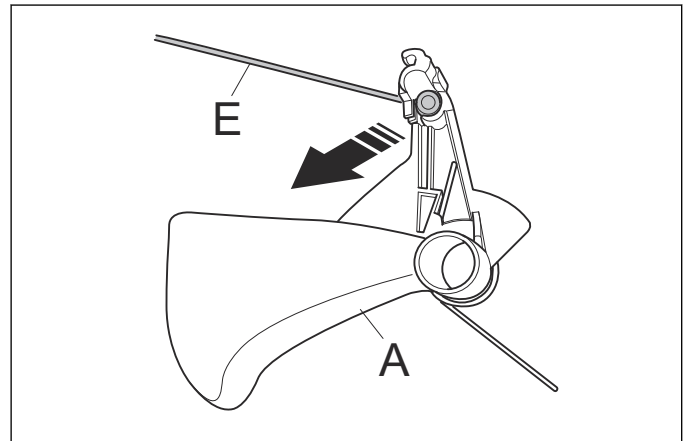


- Remove the handles halves from the rod.

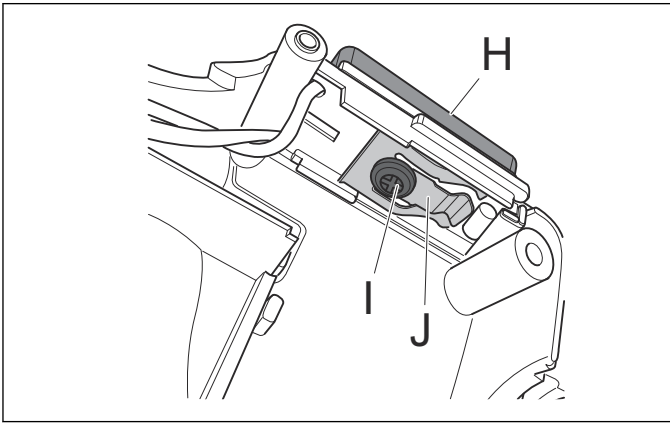
- Remove the throttle trigger (A) and the spring (B). Remove the spring (C). Remove the throttle lock (D).



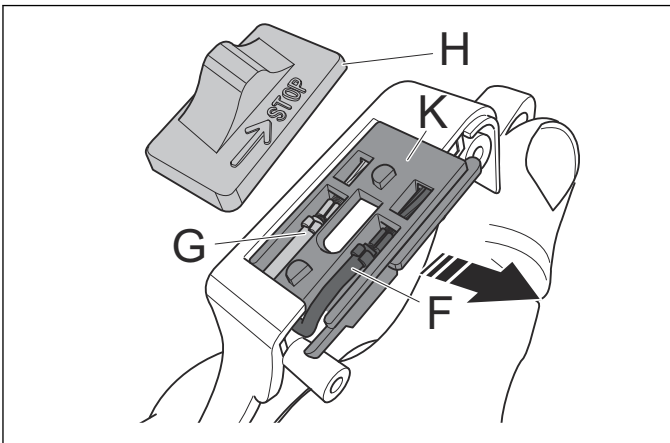
- Remove the throttle wire (E) from the throttle trigger (A).



- Remove the screw (I) and connection plate (J) that are attached below the stop switch (H).

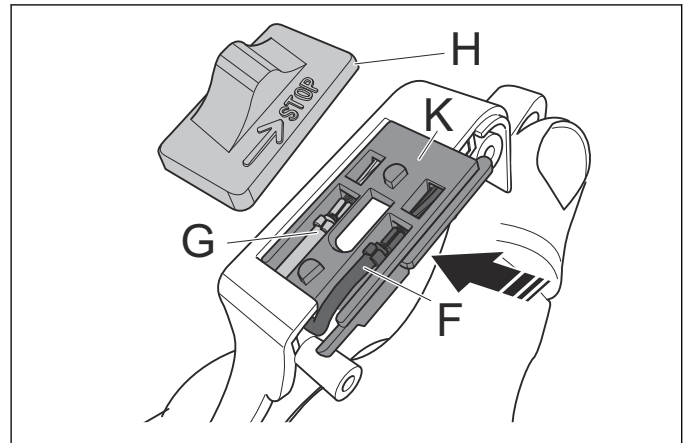


- Remove the stop switch (H). Pull out the cable retainer (K). If it is necessary, remove the black cable (G) and the red cable (F).

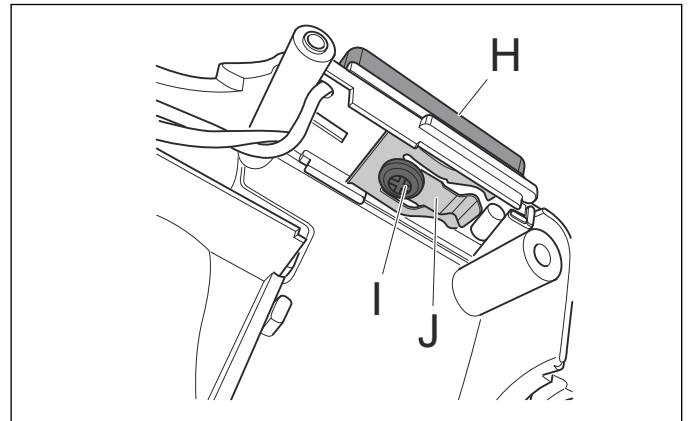


8.5.2 To assemble the handle

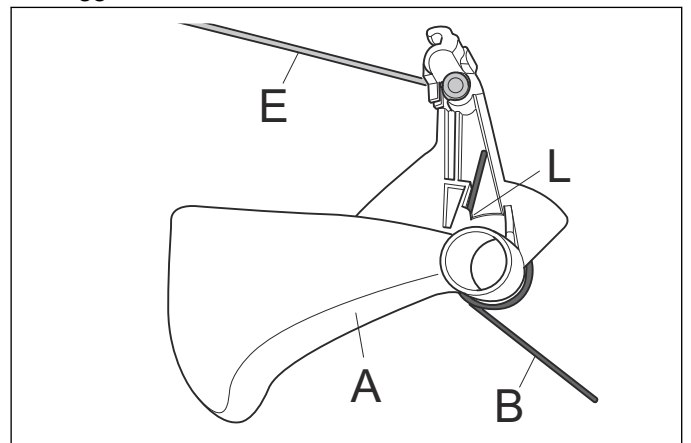
- Assemble the black cable (G) and red cable (F) in the cable retainer (K). Install the cable retainer on the left handle half. Assemble the stop switch (H) on the throttle.



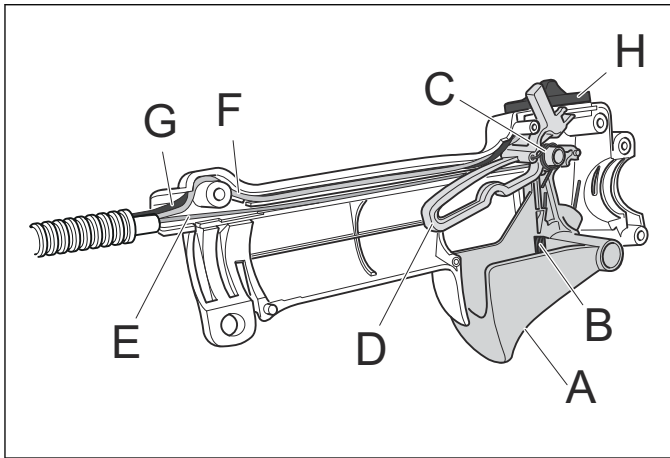
- Attach the connection plate (J) and the screw (I) below the stop switch (H). Use the correct torque, see *Servicing data for the model 967 84 33-xx on page 14*.



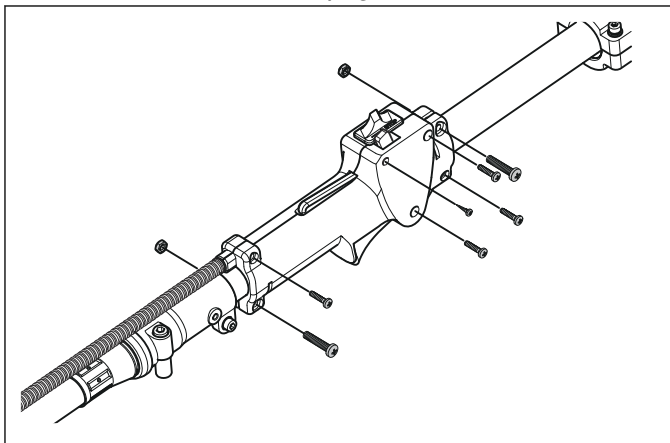
- Attach the throttle wire (E) in the throttle trigger (A). Put the spring (B) into the hole (L) in the throttle trigger.



- Put the spring (C) on the throttle lock (D) and put it in the correct position on the handle half. Put the throttle trigger (A) on the handle, make sure the end of the spring (B) is in the correct position in the handle. Make sure that the black cable (G), the red cable (F), the stop switch (H) and the throttle wire (E) are attached as shown in the illustration.



- Put the shaft in the left handle half and attach the right half with the screws and the nuts. Make sure to use the correct torque, see *Servicing data for the model 967 84 33-xx on page 14*.

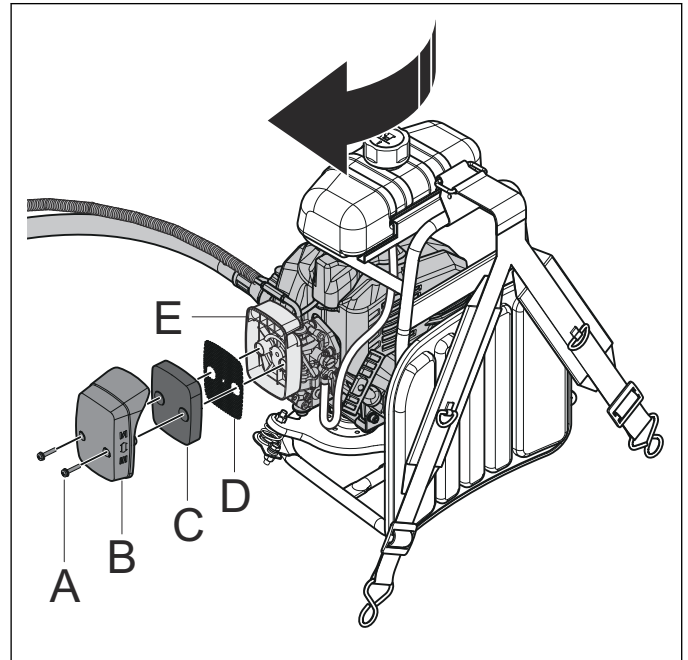


8.6 Air filter

8.6.1 To disassemble the air filter on 967 84 33-xx

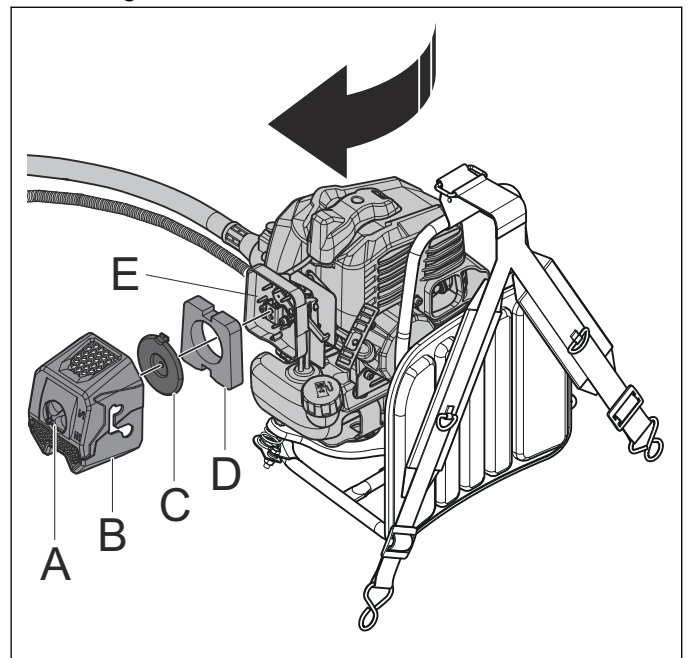
- Turn the engine around its axle to get access to the air filter.
- Remove the screws (A) that hold the air filter cover (B).
- Remove the air filter (C).
- Remove the air filter net (D).

- Remove the air filter holder (E), if it is dirty or damaged.



8.6.2 To disassemble the air filter on 967 84 32-xx

- Turn the engine around its axle to get access to the air filter.
- Turn the knob (A) to remove the air filter cover (B).
- Remove the filter holder (C).
- Remove the air filter (D).
- Remove the air filter holder (E), if it is dirty or damaged.

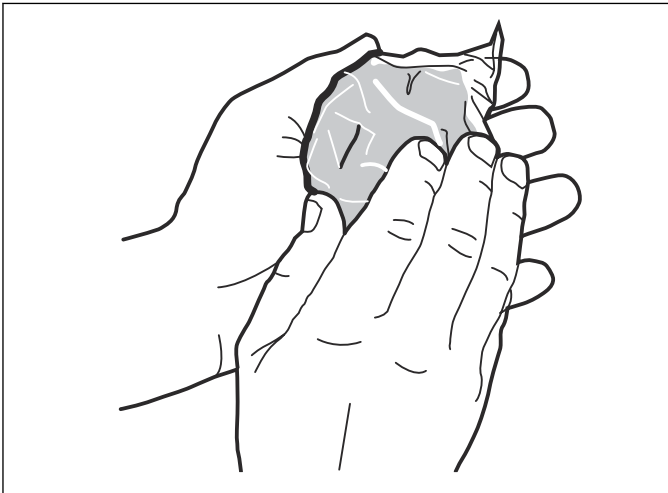


8.6.3 To clean and examine the air filter



CAUTION: Do not use gasoline to clean the air filter, it will damage the air filter.

1. Examine the air filter. If the air filter is damaged, replace it with a new air filter.
2. Clean the air filter with warm water and cleaning agent. Make sure to use the correct cleaning agent, see *Servicing tools for 967 84 33-xx and 967 84 32-xx on page 18*. Flush the air filter with warm water until it is free of cleaning agent.
3. Soak the air filter with oil. Put the air filter in a plastic bag and put about a tablespoon of oil into the bag. make sure to use the correct oil, see *Servicing tools for 967 84 33-xx and 967 84 32-xx on page 18*. Press the outside of the plastic bag to apply the oil equally in the air filter.



8.6.4 To assemble the air filter

1. Assemble in the opposite sequence to how it was disassembled.

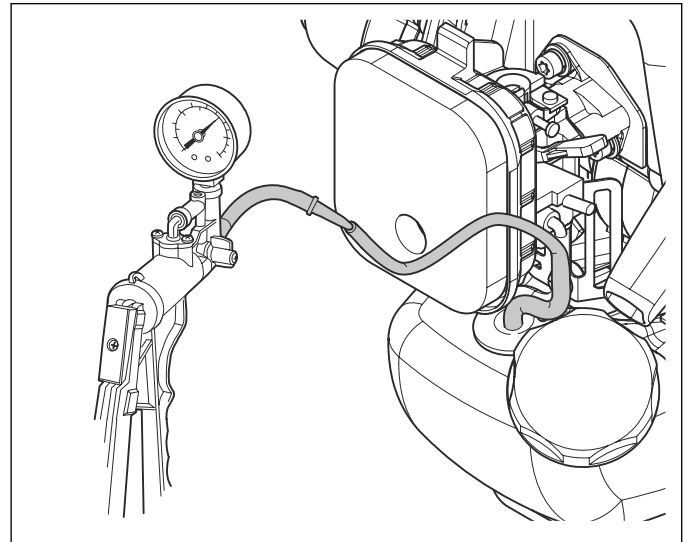
8.7 Fuel tank

8.7.1 To do a fuel tank venting

Fuel tank venting must be done correctly for the engine to operate satisfactorily.

1. Empty the fuel tank.
2. Remove the air filter cover.
3. Remove the transparent fuel hose from the carburetor.

4. Connect the fuel hose to a pressure tester. Refer to *Servicing data for the model 967 84 33-xx on page 14*.

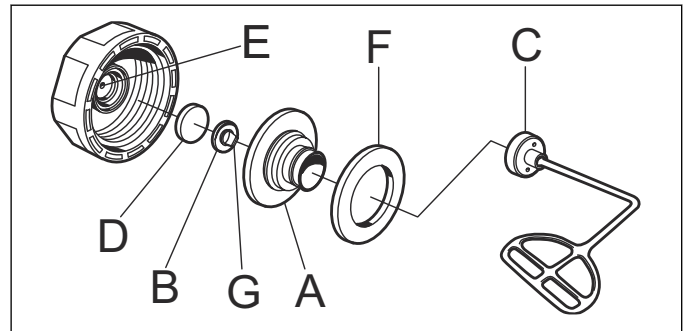


5. Examine the hose bushings in the fuel tank for leaks.
6. Put your thumb on the hole in the fuel tank cap.
7. Pump up a vacuum of 0.5 bar in the fuel tank.
8. Remove your thumb from the hole in the fuel tank cap.

The pressure decreases to atmospheric pressure in less than 15 seconds.

8.7.2 To clean and examine the fuel tank

1. Disassemble the fuel tank cap for cleaning. Use a screwdriver to remove the housing (A) that contains the check valve (B) and cover (C).
2. Use compressed air to clean the filter (D) and the hole in the fuel tank cap (E).
3. Examine the check valve.
 - a) Press the sides of the check valve to see a small space (G). If you can see the space when you do not press the sides of the check valve, the valve is damaged.
 - b) Replace the check valve if it is damaged.
4. Assemble the fuel tank cap. Make sure the seal (F) is not damaged.

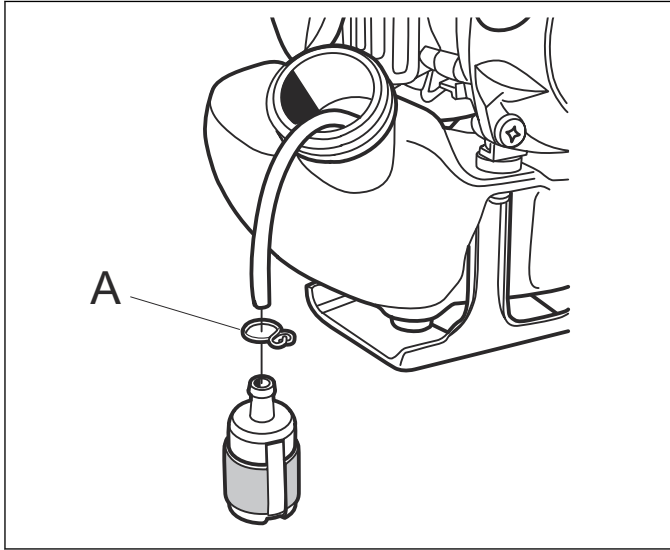


5. Attach the fuel tank cap to the fuel tank.

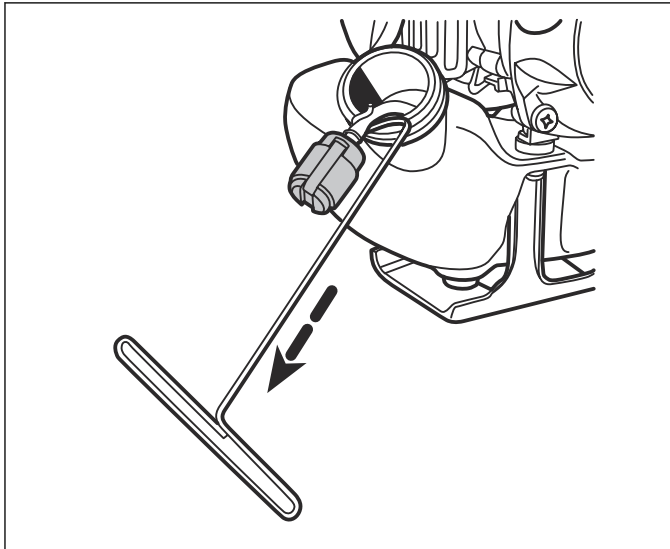
8.8 Fuel filter

8.8.1 To remove the fuel filter

1. Loosen the hose clamp (A).



2. Pull out the filter through the opening in the fuel tank with a hook. Refer to *Servicing tools for 967 84 33-xx and 967 84 32-xx* on page 18.



8.8.2 To clean and examine the fuel filter



CAUTION: Always replace a damaged fuel filter.

1. Examine the fuel filter. If the fuel filter is dirty, clean it with a brush.
2. If the fuel filter cannot be cleaned, replace the fuel filter.
3. Examine the fuel hose for cracks and leaks. Replace the fuel hose if it is damaged.

8.8.3 To attach the fuel filter

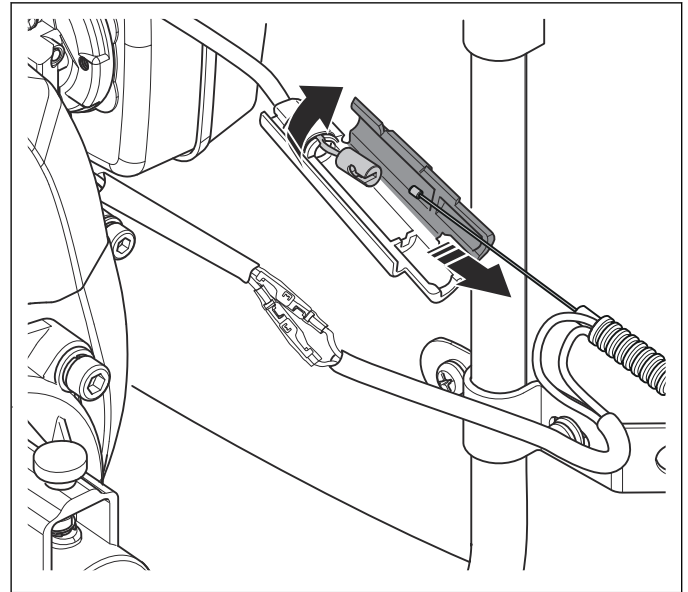
1. Attach the fuel filter to the fuel hose.
2. Make sure that you put the fuel filter as high up into the fuel hose as possible.

3. Tighten the hose clamp. Make sure that the filter cannot move off the tube.

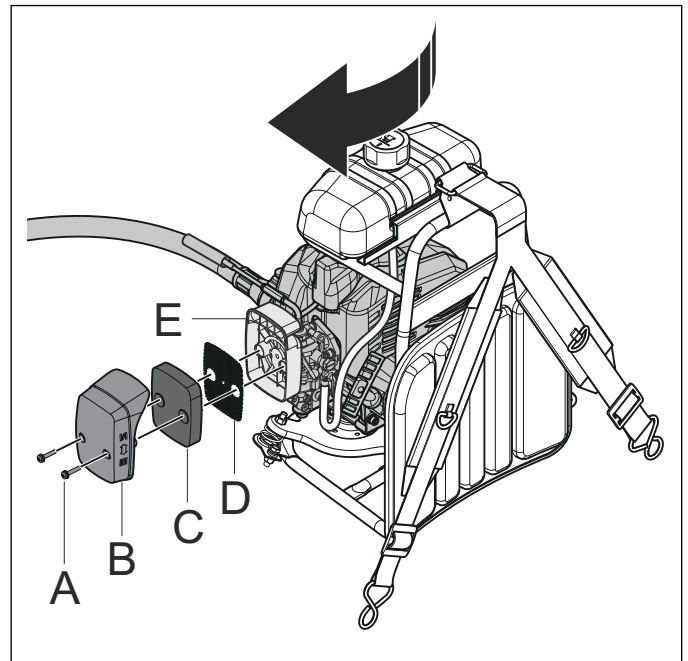
8.9 Carburetor on 967 84 33-xx

8.9.1 To disassemble the carburetor

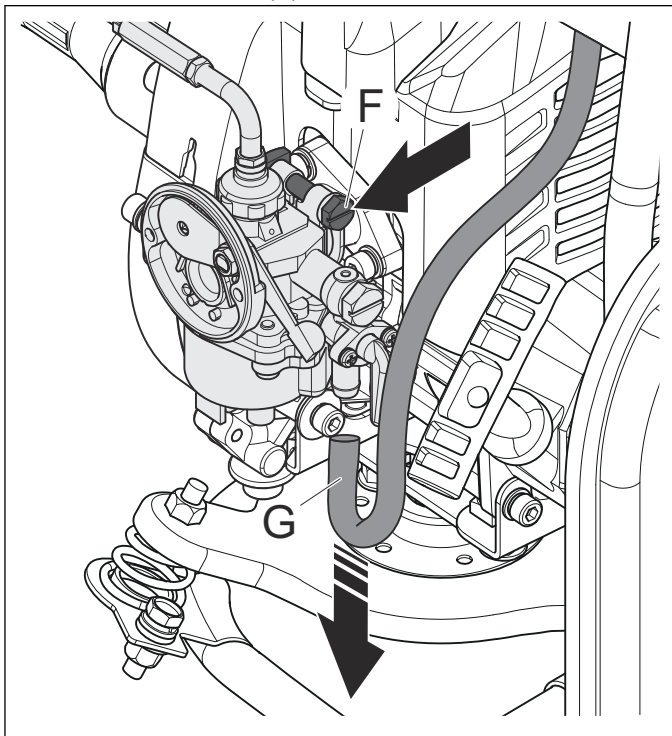
1. Remove the throttle wire.



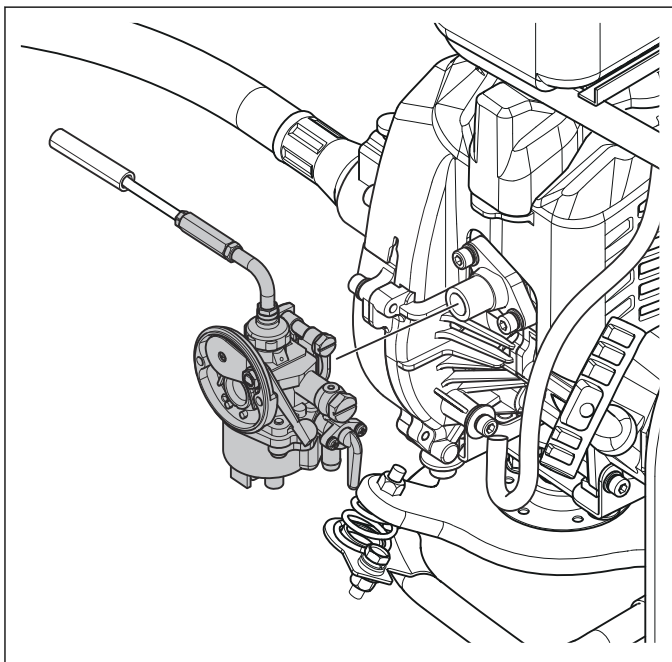
2. Turn the engine to get access to the air filter assembly. Remove the air filter assembly (A – E).



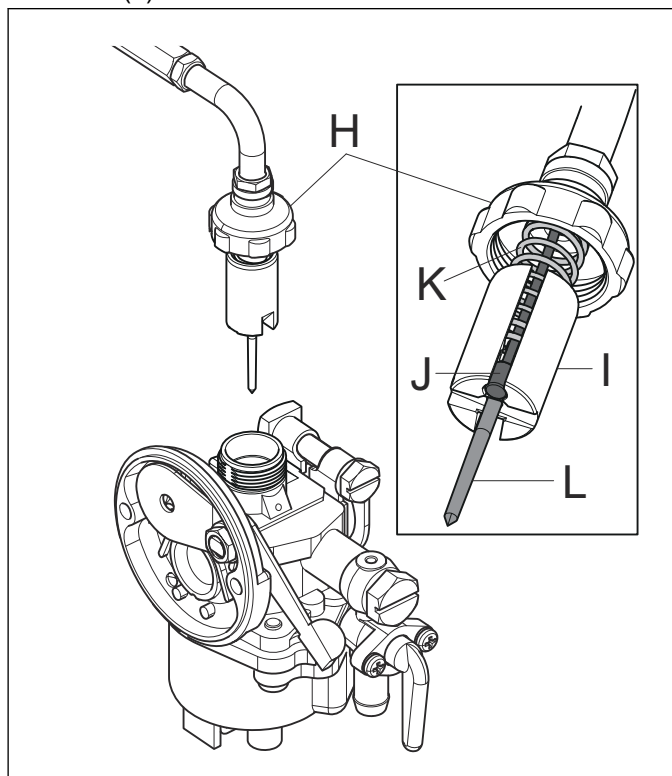
3. Remove the fuel hose from the carburetor (G).
Loosen the screw (F).



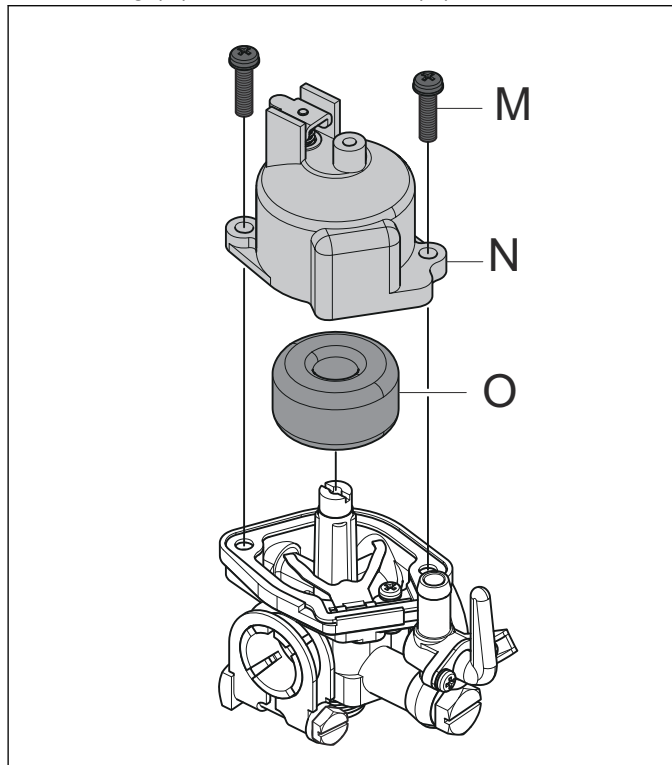
4. Pull out the carburetor.



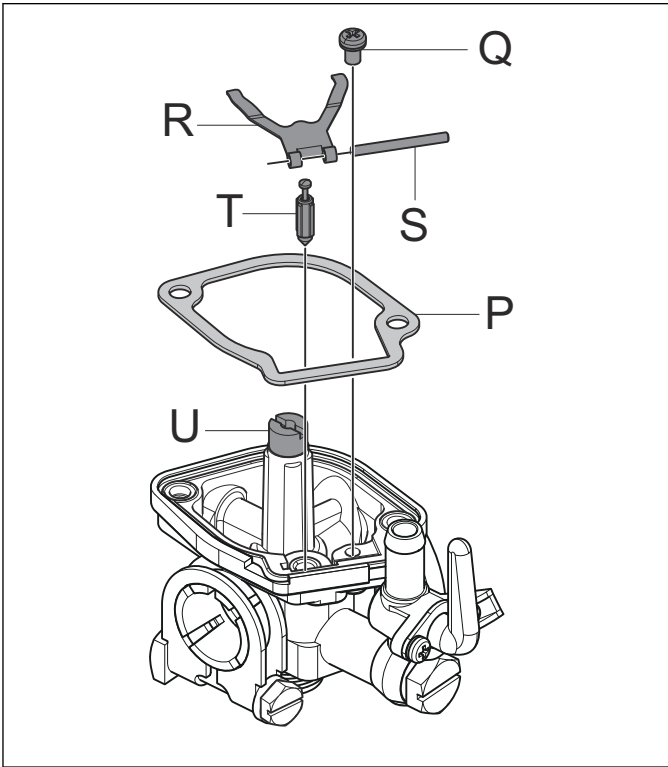
5. Loosen the top cap (H). Remove the piston valve (I),
the throttle wire (J) the spring (K) and the needle
valve (L).



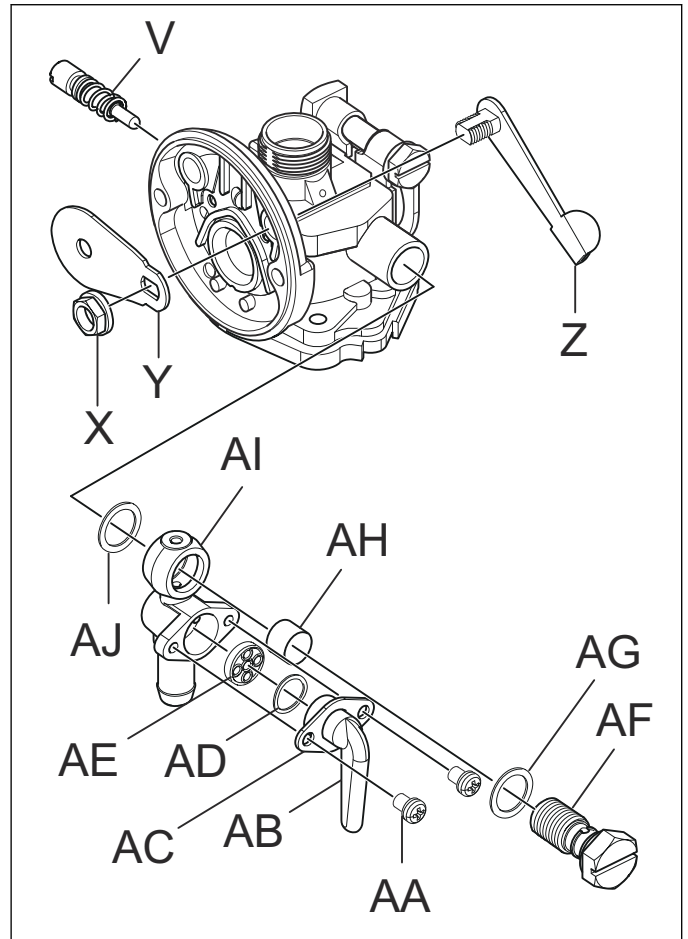
6. Remove the screws (M). Remove the float chamber
housing (N). Remove the float (O).



- Remove the gasket (P). Remove the screw (Q). Remove the lever (R), the axle (S) and the needle valve (T). Remove the main nozzle (U).

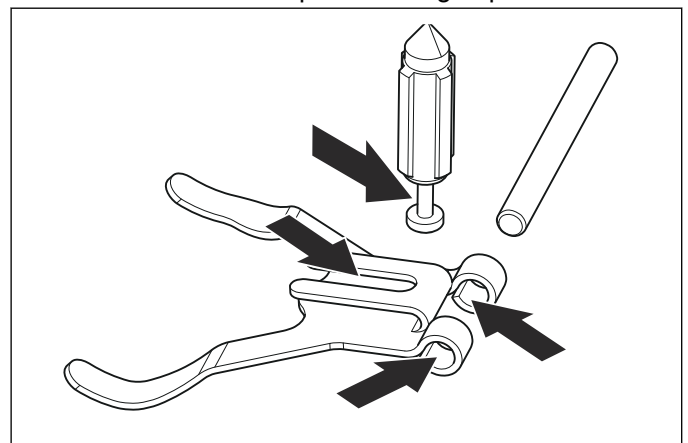


- Remove the idle mixture screw (V). Remove the nut (X), the choke plate (Y) and the choke lever (Z). Remove the screws (AA). Remove the fuel cock (AB) and the plate (AC). Remove the gasket (AD) and the packing (AE). Remove the screw (AF). Remove the washer (AG), the sleeve (AH), the fuel hose (AI) and gasket (AJ)



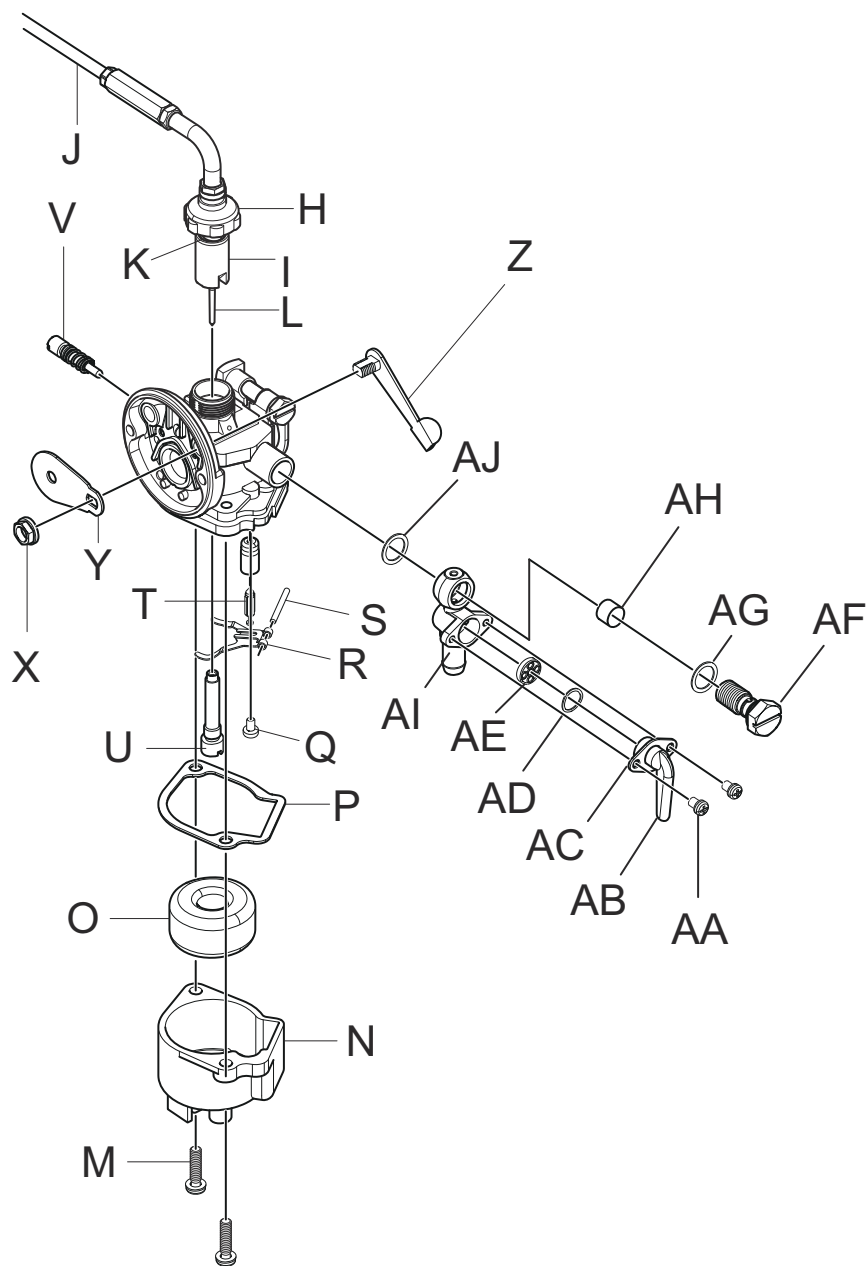
8.9.2 To clean and examine the carburetor

- Examine the wear to the lever arm and the wear of the needle valve. Replace damaged parts.



- Examine the other parts of the carburetor. Replace damaged parts.

8.9.3 Overview of the carburetor on 967 84 33-xx



- | | |
|--------------------------|-----------------------|
| H. Top cap | V. Idle mixture screw |
| I. Piston valve | X. Nut |
| J. Throttle wire | Y. Choke plate |
| K. Spring | Z. Choke lever |
| L. Needle valve | AA. Screws |
| M. Screws | AB. Fuel cock |
| N. Float chamber housing | AC. Plate |
| O. Float | AD. Gasket |
| P. Gasket | AE. Packing |
| Q. Screw | AF. Screw |
| R. Lever | AG. Washer |
| S. Axle | AH. Sleeve |
| T. Needle valve | AI. Fuel hose |
| U. Main nozzle | AJ. Gasket |

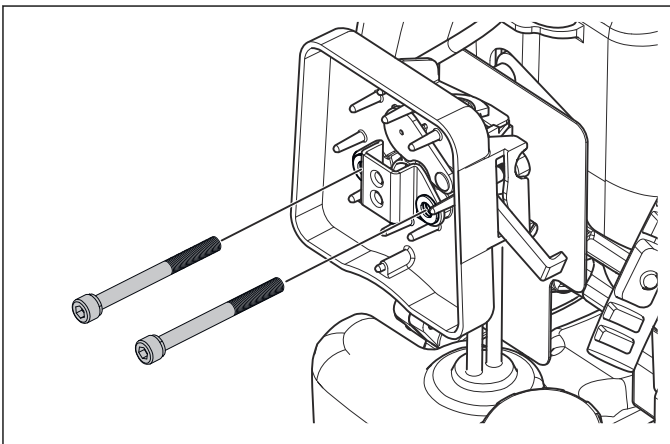
8.9.4 To assemble the carburetor

1. Assemble the carburetor in the opposite sequence of *To disassemble the carburetor on page 38*.

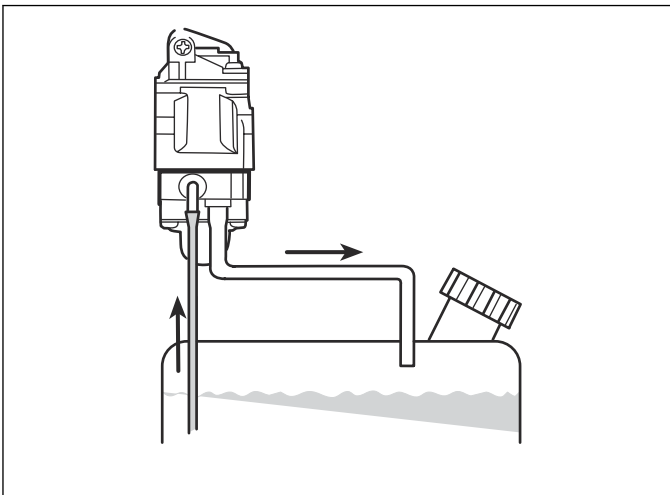
8.10 Carburetor on 967 84 32-xx

8.10.1 To disassemble the carburetor

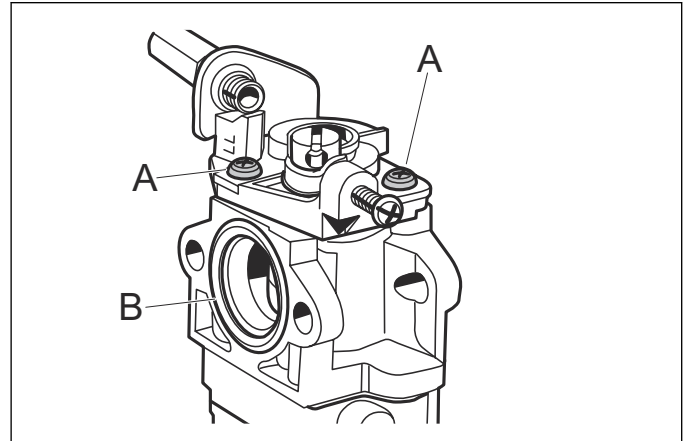
1. Remove the air filter cover and the air filter.
2. Close the choke valve and blow dirt off the carburetor.
3. Disconnect the throttle cable.
4. Disconnect the fuel hoses from the carburetor and make a note of how they are connected.
5. Remove the carburetor screws and the air filter holder.



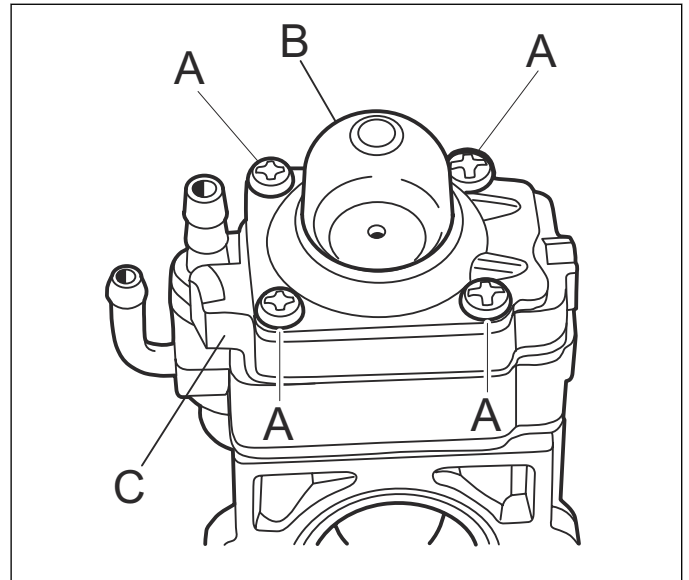
6. Push fuel through the carburetor with the bellows of the fuel pump. Fill all the pipes with fuel. This pushes out all the bubbles that cause blockages in the pipes.



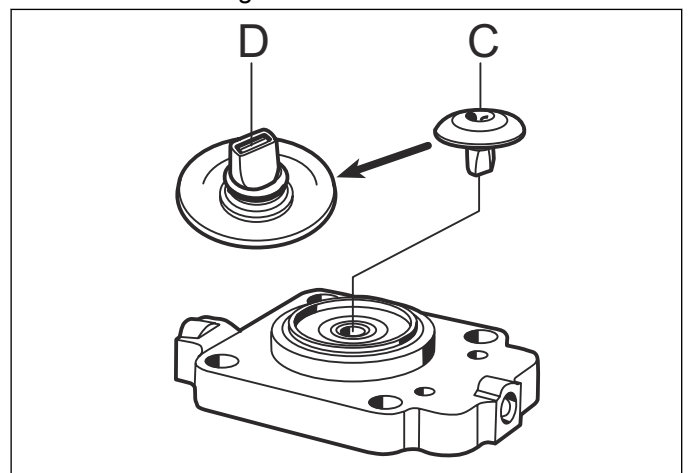
7. Remove the 2 screws (A) and lift off the throttle mechanism. Loosen the valve stop screw (B). Make sure that the sealing ring on the connection flange is not damaged.



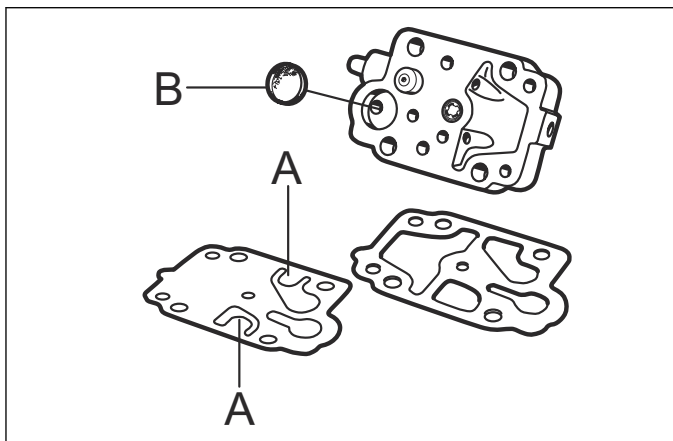
8. Remove the 4 screws (A). Remove the bellows of the fuel pump (B), the valve housing (C) and the control diaphragm.



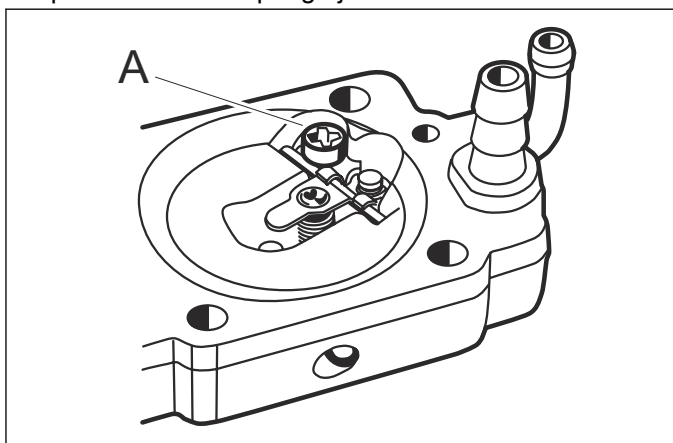
9. Carefully lift up check valve (C) using your nails. Clean the valve housing and make sure that the channels are open. Carefully push the short sides of the check valve (D) together to make sure that the seals are not damaged. Replace the valve if the seals are damaged.



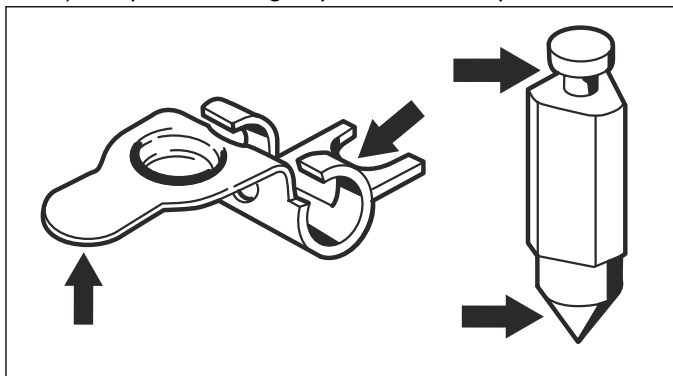
10. Carefully remove the pump diaphragm and its gasket. Examine the diaphragm for wear, where the illustration show (A). Hold the pump diaphragm up to the light to find holes in the material. Clean the fuel screen (B). Replace the fuel screen if it is damaged. Use a needle to remove the fuel screen.



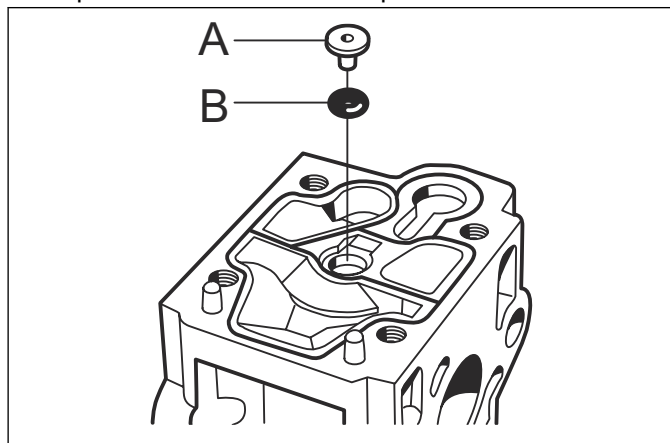
11. Loosen the screw (A) and remove the lever, the axle, the needle valve and the spring. Be careful to prevent that the spring ejects.



12. Examine the lever arm and the needle valve for wear.
- Examine the connection points against the control diaphragm for wear.
 - Examine the grooves for the needle valve for wear.
 - Examine the top of the needle valve for wear.
 - Examine the groove for the lever arm for wear.
 - Replace damaged parts with new parts.

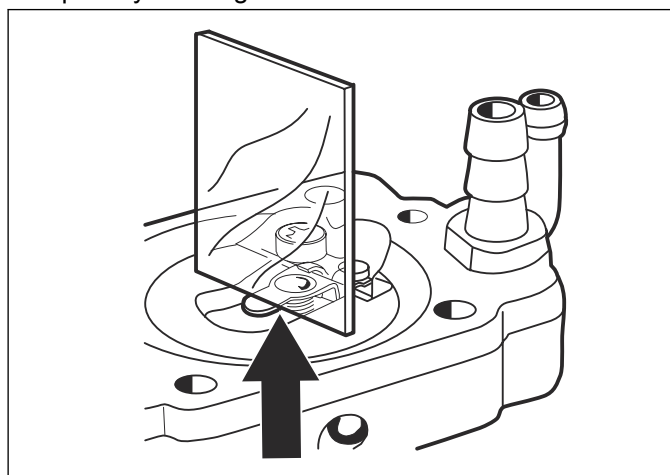


13. Push out the seat of the needle valve for replacement. Use a correct punch \varnothing 4.5 mm.

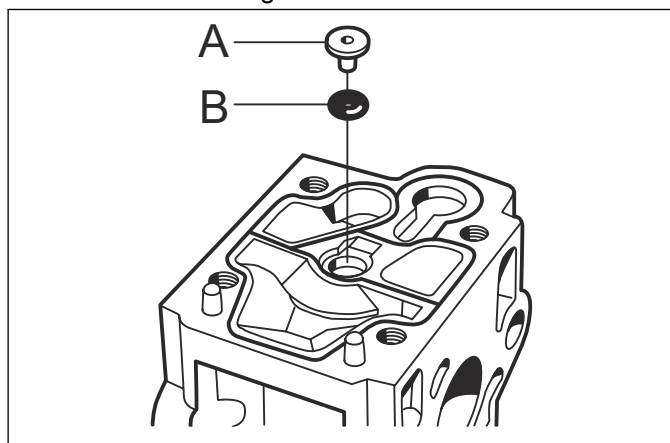


Note: Replace the seat, needle valve and lever arm at the same time. The seat of the needle valve must be pressed in level with the carburetor housing. Use a vise with soft jaw guards to prevent damage to the seat of the needle valve.

14. Assemble the parts in the opposite sequence as set out for disassembling. Make sure that the lever arm is flush with the diaphragm housing. If the lever arm is set too high, too much fuel goes into the carburetor. If the lever arm is set too low, a too small quantity of fuel goes into the carburetor.

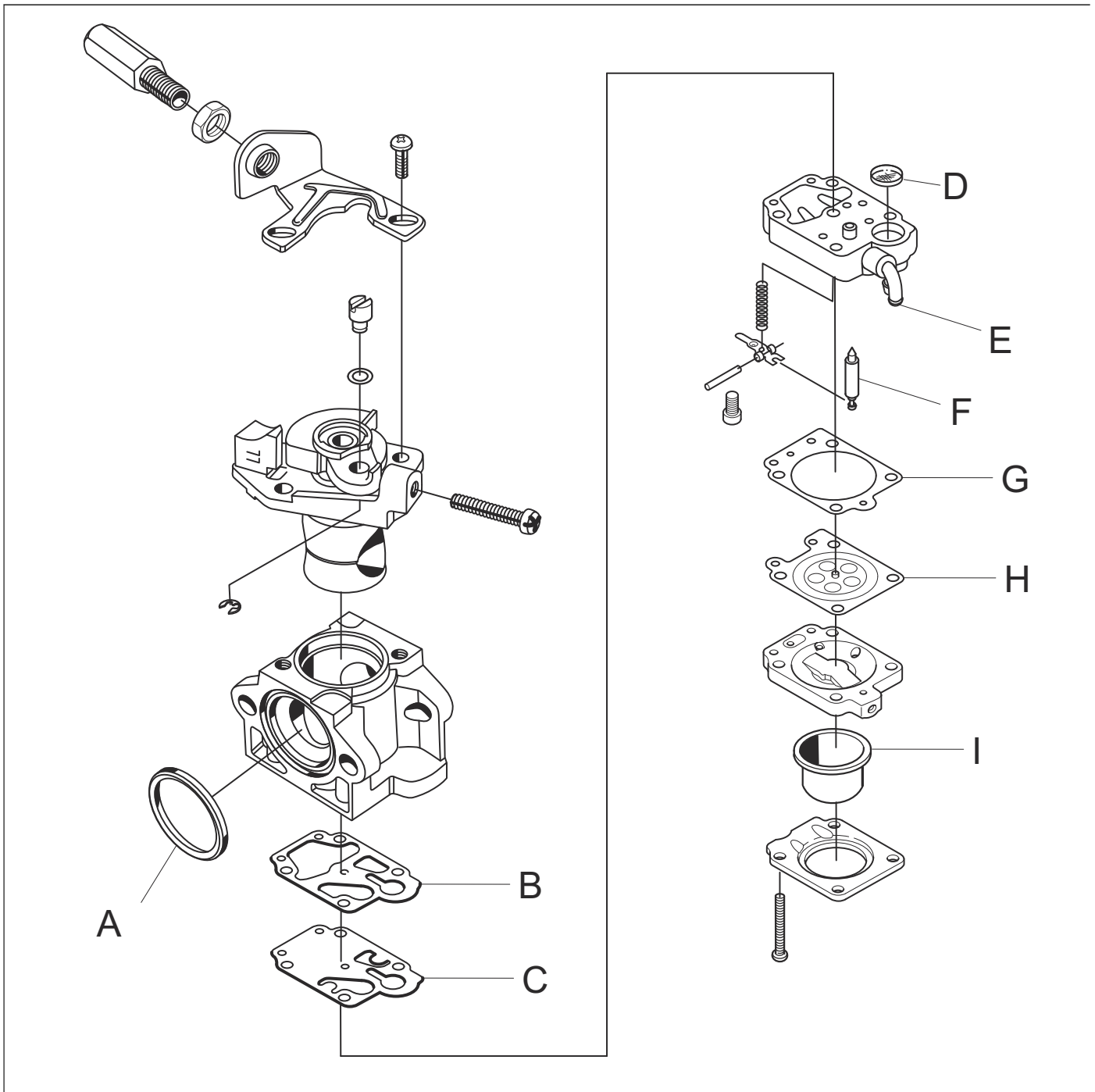


15. Replace the nozzle of the carburetor if it is damaged. Use a small screwdriver to remove the nozzle (A) and the small O-ring (B) from the carburetor housing.



Note: Do not disassemble the plastic pipe in the valve housing.

8.10.2 Overview of the carburetor on 967 84 32-xx



- A. Sealing ring
- B. Gasket
- C. Diaphragm
- D. Screen
- E. Fuel inlet
- F. Valve, inlet
- G. Gasket
- H. Diaphragm
- I. Pump

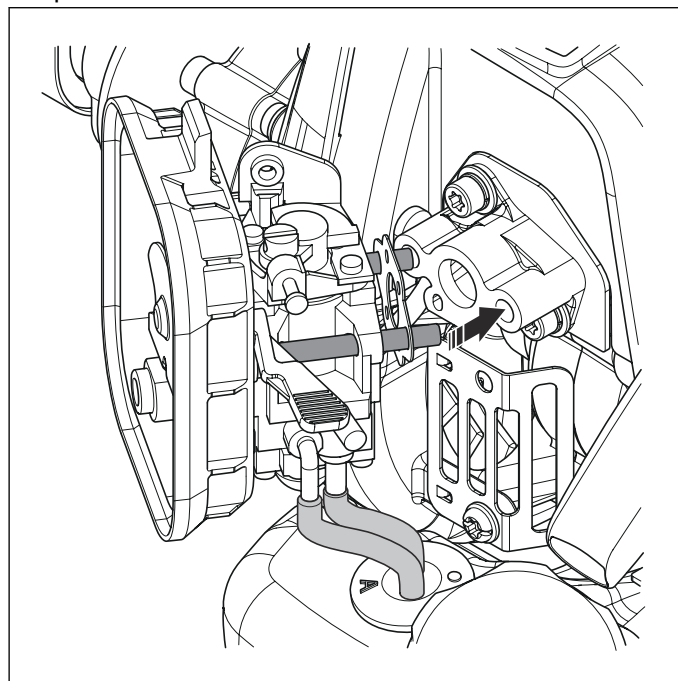
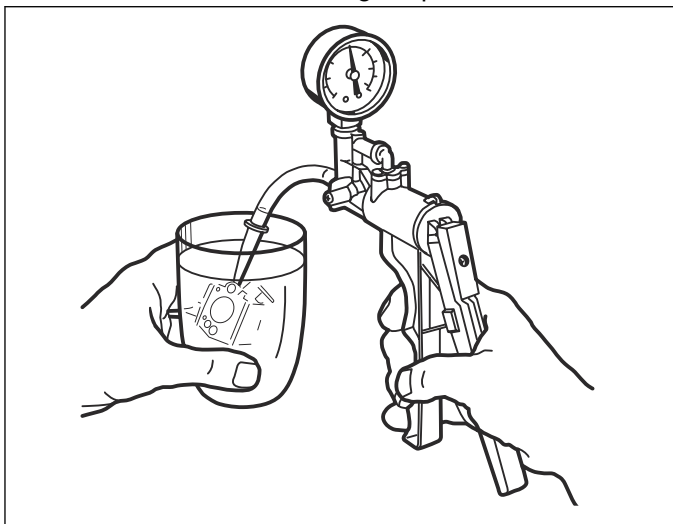
8.10.3 To assemble the carburetor

See *Overview of the carburetor on 967 84 32-xx on page 44* for an overview of how the parts of the carburetor connects.

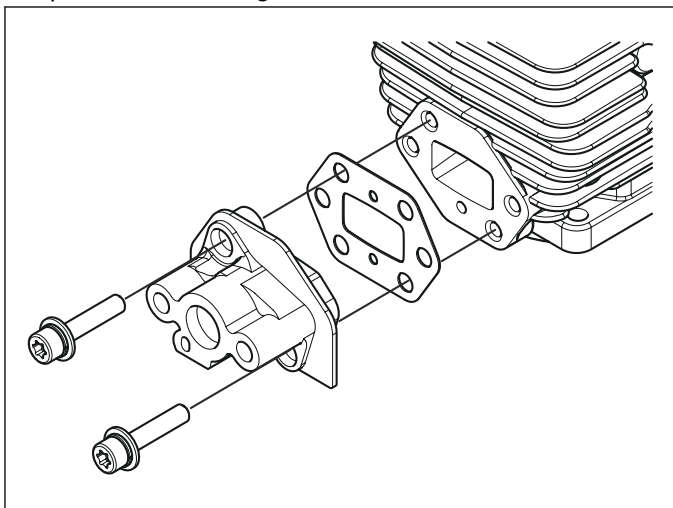
1. Assemble the carburetor in the opposite sequence to how it was disassembled. Make sure that the sealing ring has its wide edge against the carburetor housing. Make sure that the screen is clean and not damaged.
2. Do a pressure test of the carburetor:
 - a) Make sure that the carburetor is sealed.

- b) Connect a pressure tester to the fuel inlet on the carburetor. Refer to *Servicing tools for 967 84 33-xx and 967 84 32-xx on page 18*.
- c) Pump up the pressure to 0.5 bar.
- d) Lower the carburetor in a container with gasoline to find leaks. No leakage is permitted.

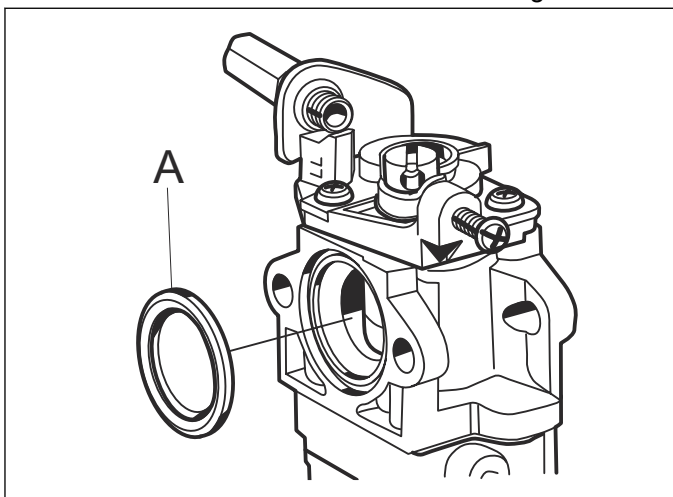
- 5. Connect the fuel hoses and make sure that they are attached correctly. Hold the air filter in position and put the carburetor screws through the air filter holder and carburetor. Put the carburetor gasket in position and attach the carburetor tightly to the distance piece with the screws.



- 3. Examine the distance piece for cracks and damage that can result in leakage. Replace the distance piece if it is damaged.



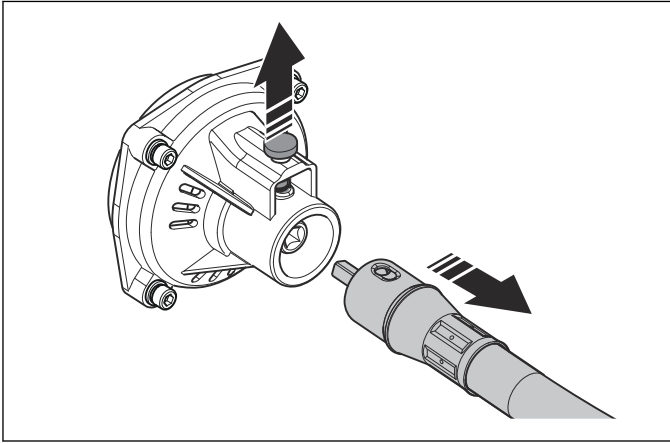
- 4. Make sure that the sealing ring (A) is attached correctly on the carburetor before the carburetor is attached on the engine. The wide edge on the ring must be nearest to the carburetor housing.



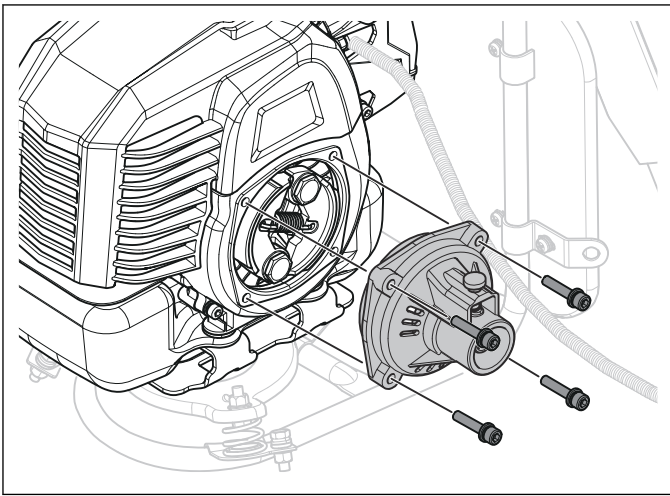
8.11 Centrifugal clutch

8.11.1 To disassemble the clutch

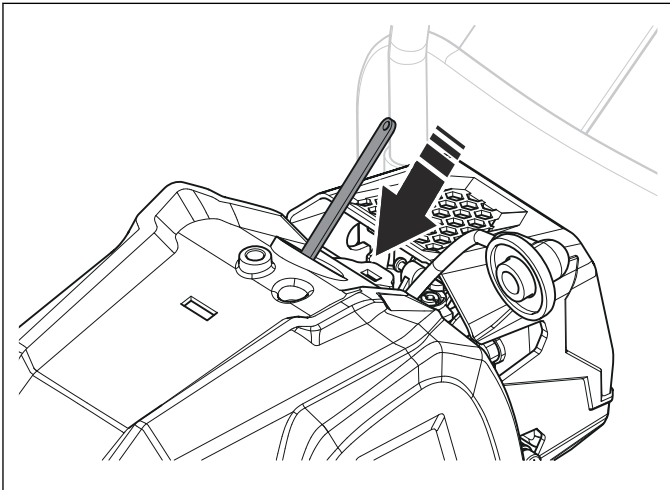
1. Pull up the knob and remove the shaft.



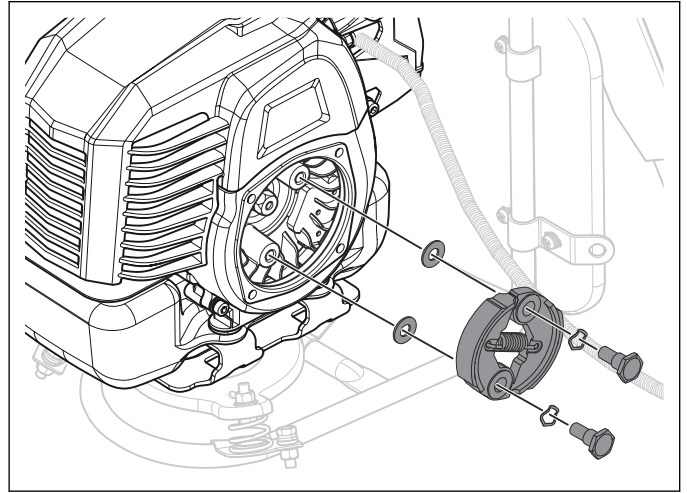
2. Remove the 4 screws. Remove the clutch drum assembly.



3. Put a piston stop in the spark plug hole to prevent movement of the piston.

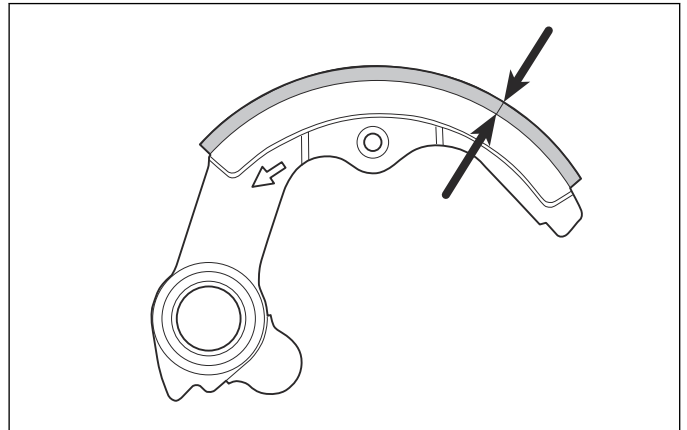


4. Remove the 2 screws that hold the centrifugal clutch. Remove the clutch. Remove the flat washers that are behind the clutch shoes.



8.11.2 To clean and examine the clutch

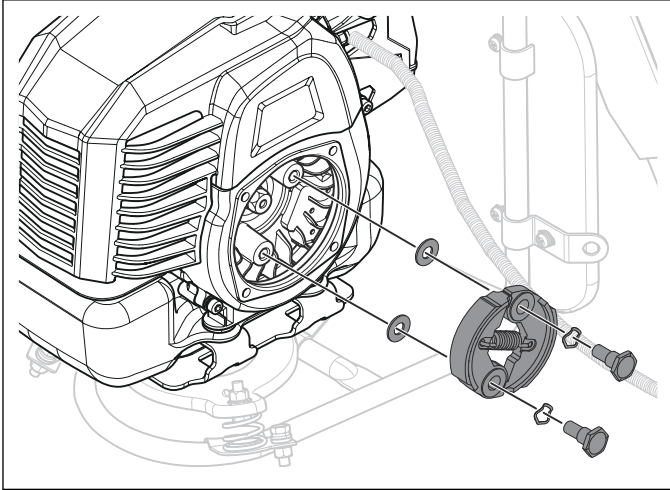
1. Remove the clutch parts and examine for damage.
2. Examine the spring and outer edge for wear and damage. The thickness of the outer edge must be minimum 1.0 mm at the most worn point.



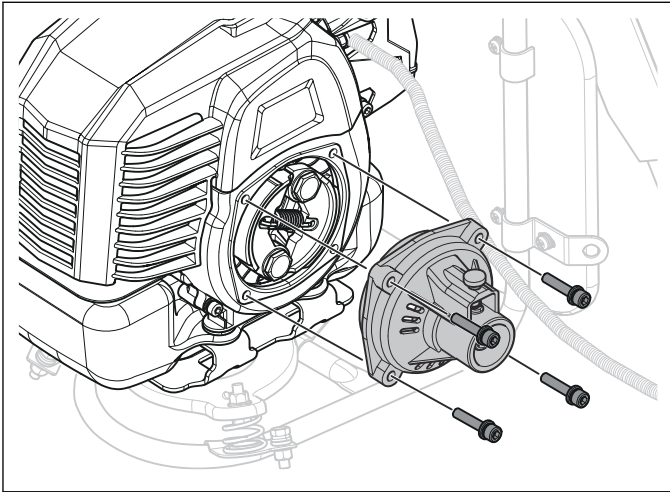
3. Replace damaged parts.

8.11.3 To assemble the clutch

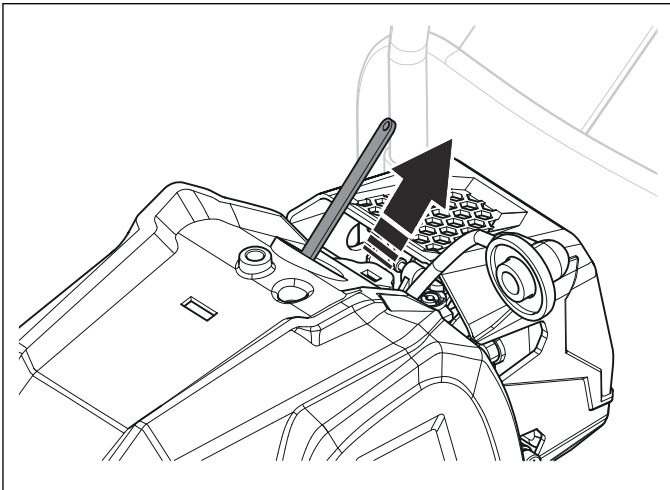
1. Connect the clutch shoes together with the spring. Attach the clutch and the washers on the flywheel. See the turn arrows on the clutch shoes.



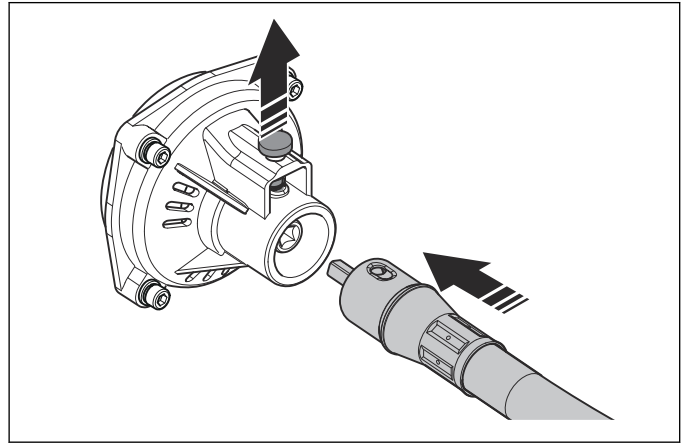
2. Attach the clutch drum assembly.



3. Remove the piston stop.

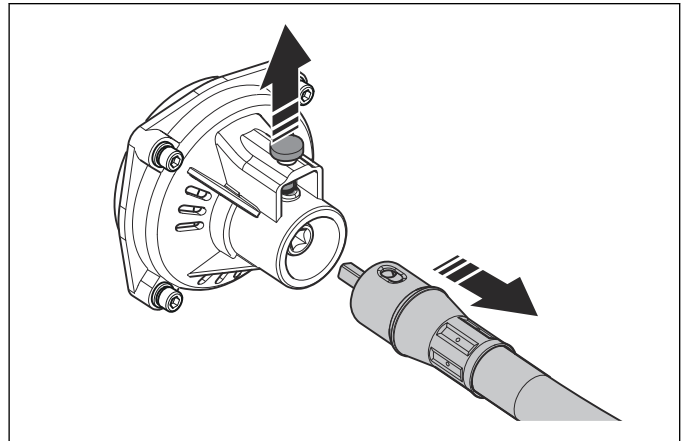


4. Pull up the knob and attach the shaft.

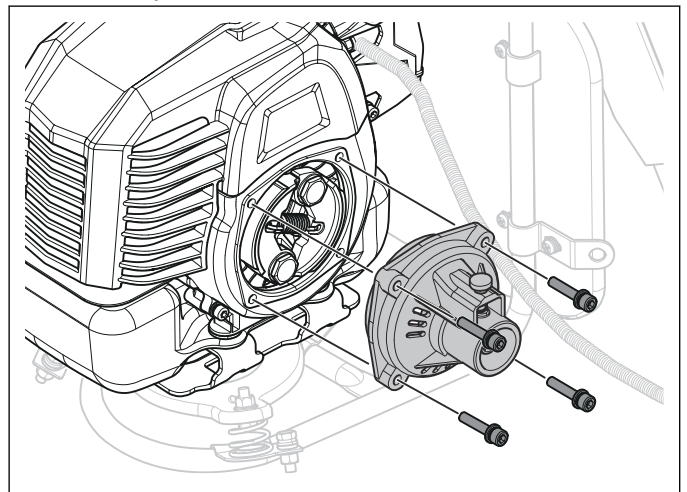


8.11.4 To disassemble the clutch drum

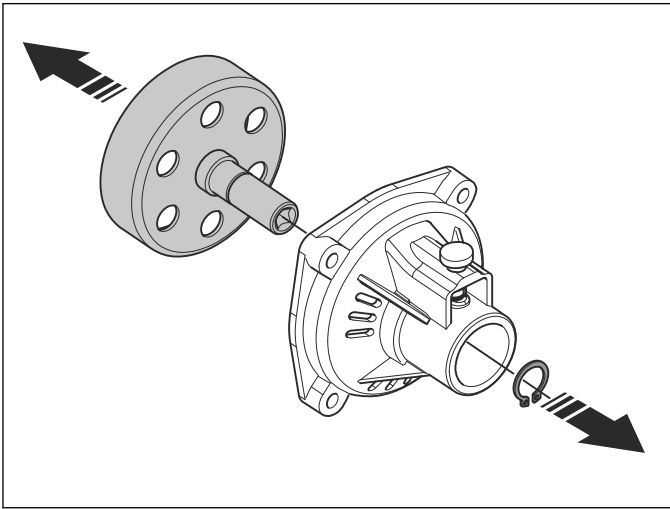
1. Pull up the knob and release the shaft.



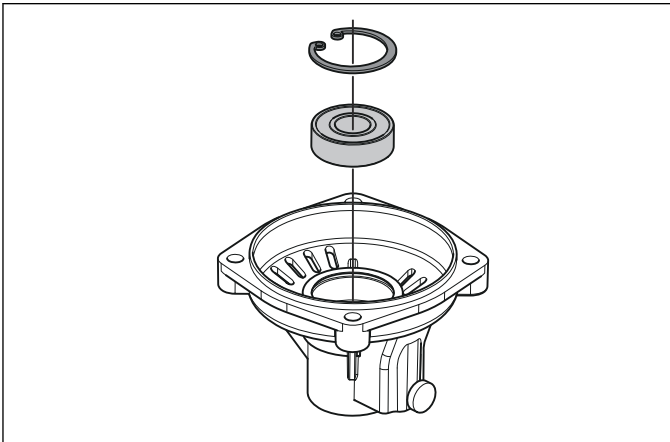
2. Remove the 4 screws. Remove the clutch drum assembly.



3. Use pliers to remove the small snap ring. Remove the clutch drum.

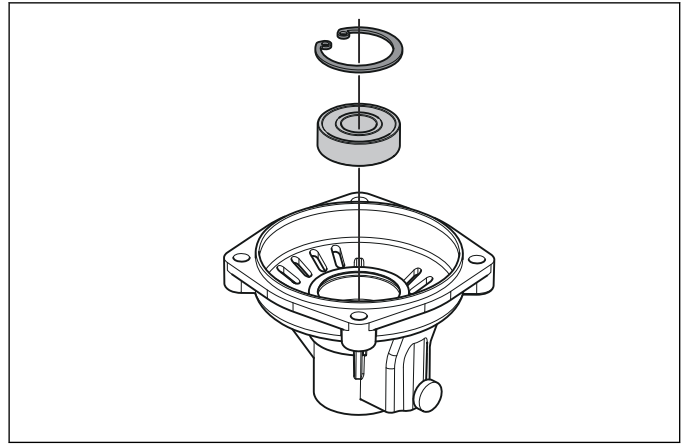


4. Use pliers to remove the large snap ring. Remove the bearing.

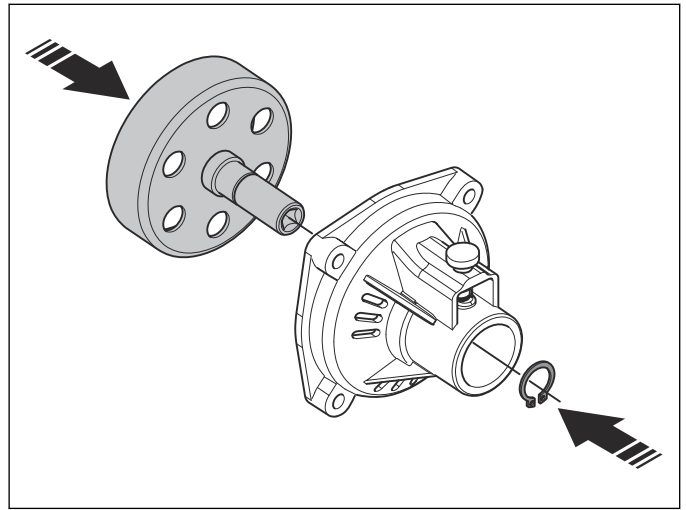


8.11.5 To assemble the clutch drum

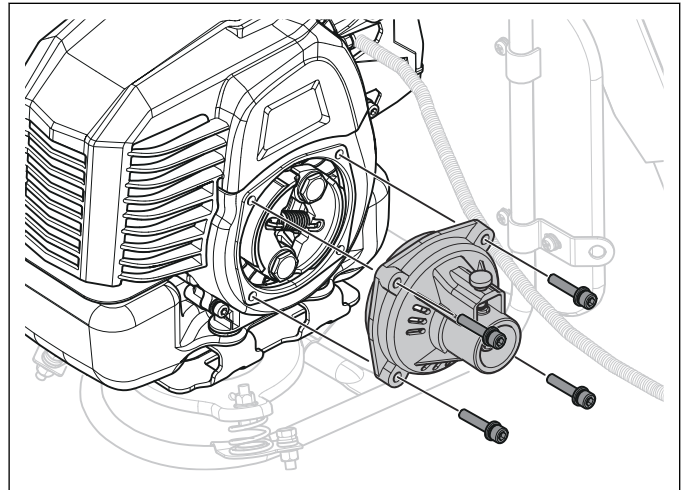
1. Attach the bearing. Attach the large snap ring.



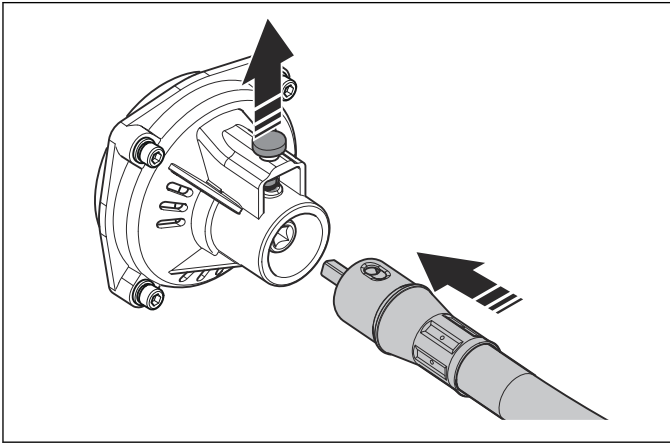
2. Attach the clutch drum. Attach the small snap ring.



3. Attach the clutch drum assembly.



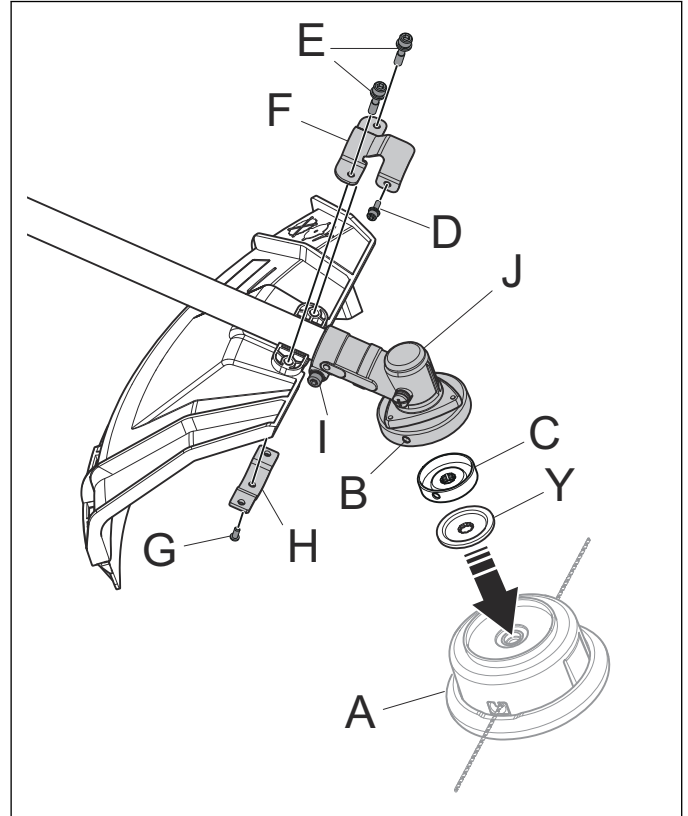
4. Pull up the knob and attach the shaft.



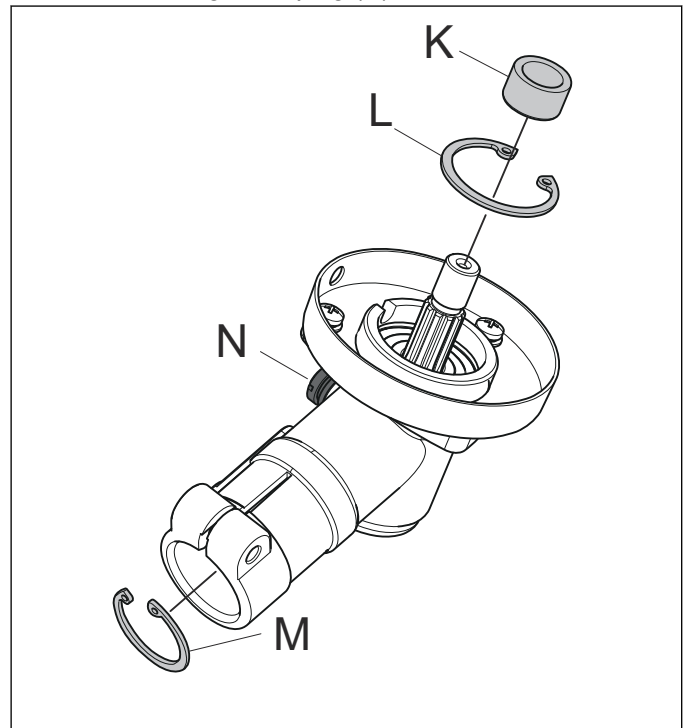
8.12 Bevel gear

8.12.1 To disassemble the bevel gear

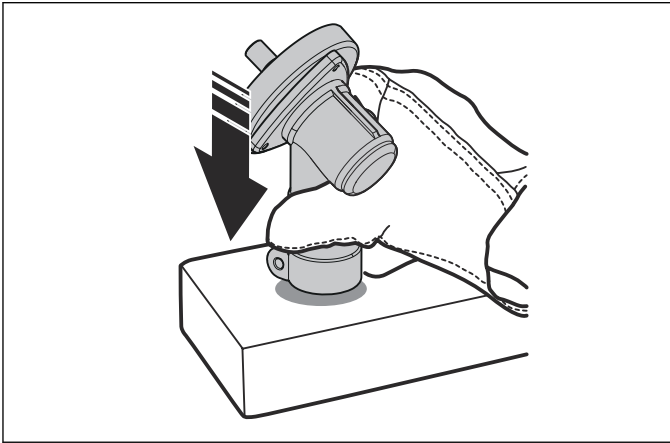
1. Remove the trimmer head (A). Remove the support flange (Y). Put a rod through the hole (B) to lock the axle. Remove the protective plate (C). Remove the screw (D), the screws (E) and the bracket (F). Remove the screw (G) and the bracket (H). Remove the screw (I) and pull out the gear housing (J).



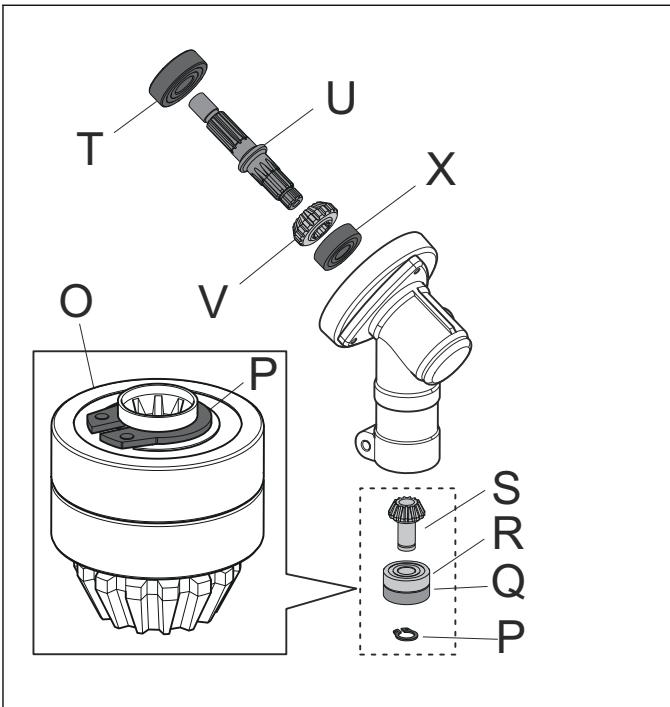
2. Remove the bushing (K). Remove the snap ring (L) with pliers. Remove the snap ring (M) with pliers. Remove the grease plug (N).



- Put on protective gloves. Use a hot air gun to increase the temperature of the angle gear to approximately 110°C - 140°C. Hit the gear housing against a wooden block. Disassemble the input shaft assembly (O).

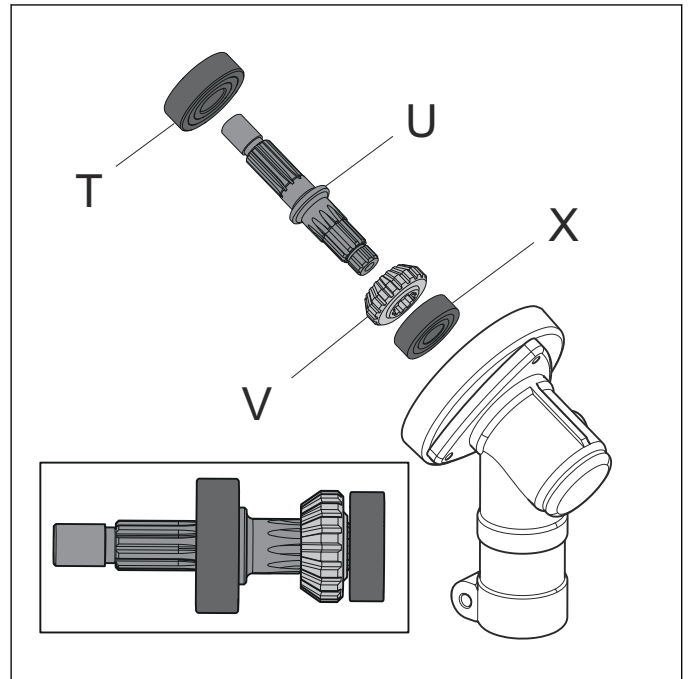


- Increase the temperature of the gear housing to approx. 140°C. Disassemble the bearing (T) on the output shaft. If it is necessary, hit the gear housing against a wooden block until the bearing falls out. Disassemble the cogwheel (V) and bearing (X) from the output shaft (U). If it is necessary to replace the bearings (R and Q), remove the snap ring (P) from the input shaft (S).

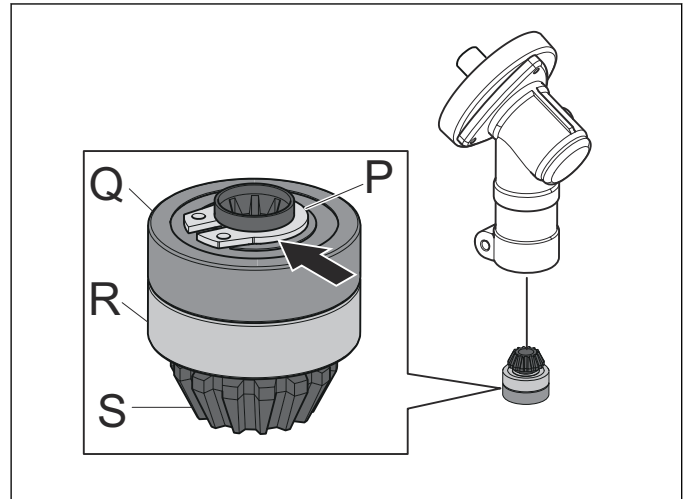


8.12.2 To assemble the bevel gear

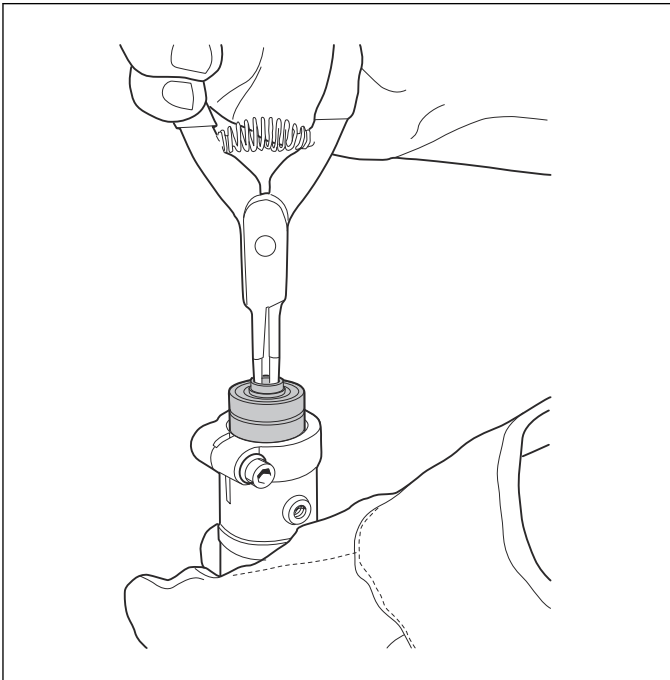
- Put the cogwheel (V) on the output shaft (U). Attach the 2 bearings (T and X). Increase the temperature of the gear housing to approximately 140°C with a hot air gun. Put the output shaft into the gear housing (J). Make sure that the bearings are in their correct positions. If it is necessary, use a sufficient punch.



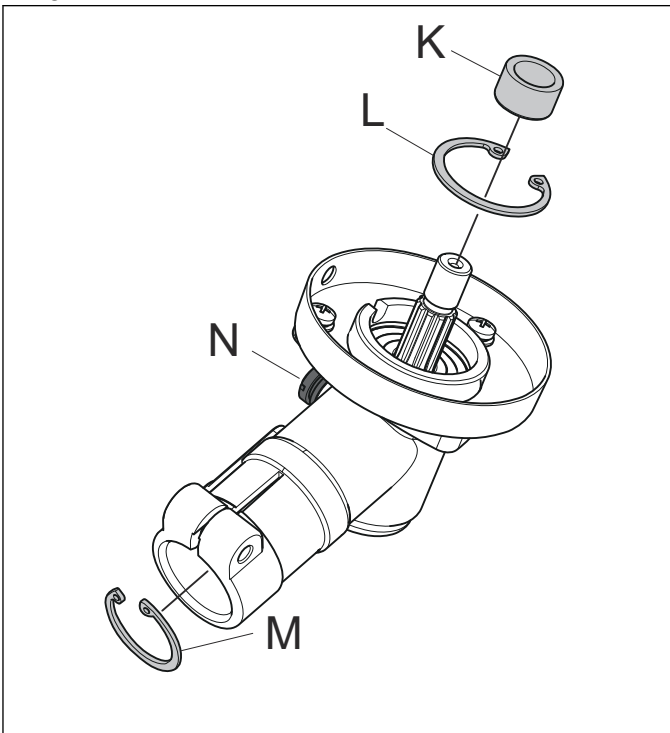
- Make sure the output shaft is attached to the gear housing. Attach the bearings (R and Q) on the input shaft. Make sure that the snap ring (P) that holds the ball bearings in position is attached. Make sure that the gear housing is approximately 110°C.



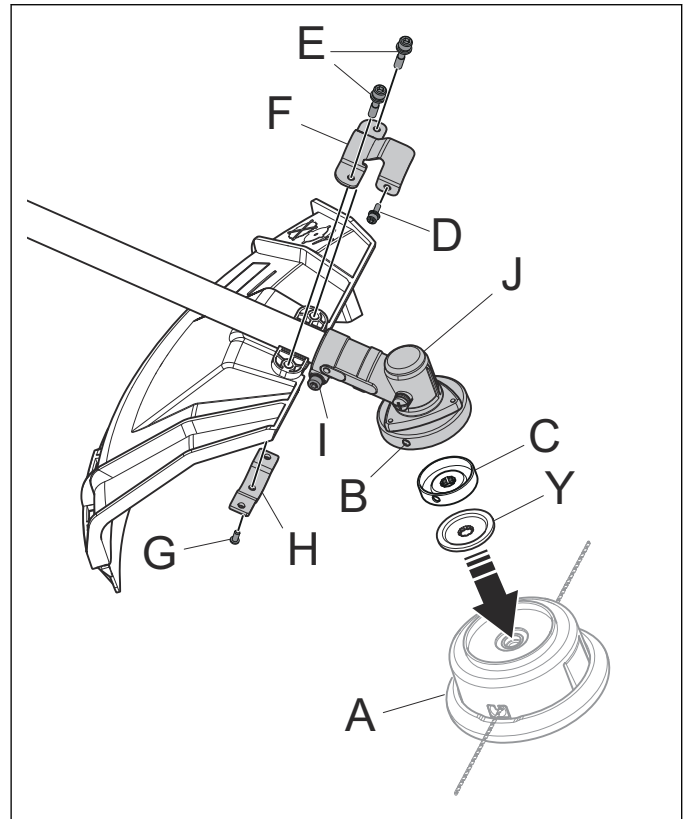
- Put the input shaft assembly (O) into the housing with a pair of pliers or a sleeve.



- Attach the snap ring (L) for the bearing on the output shaft. Attach the bushing (K) on the output shaft. Attach the grease plug (N). Attach the snap ring (M) for the bearings on the input shaft. Fill the gear with grease.



- Attach the gear housing (J) on the shaft and tighten the screw (I). Attach the bracket (H) and tighten the screw (G). Attach the bracket (F) and tighten the screw (E). Tighten the screw (D). Attach the protective plate (C). Remove the rod from the hole (B) to unlock the axle. Attach the support flange (Y). Attach the trimmer head (A).



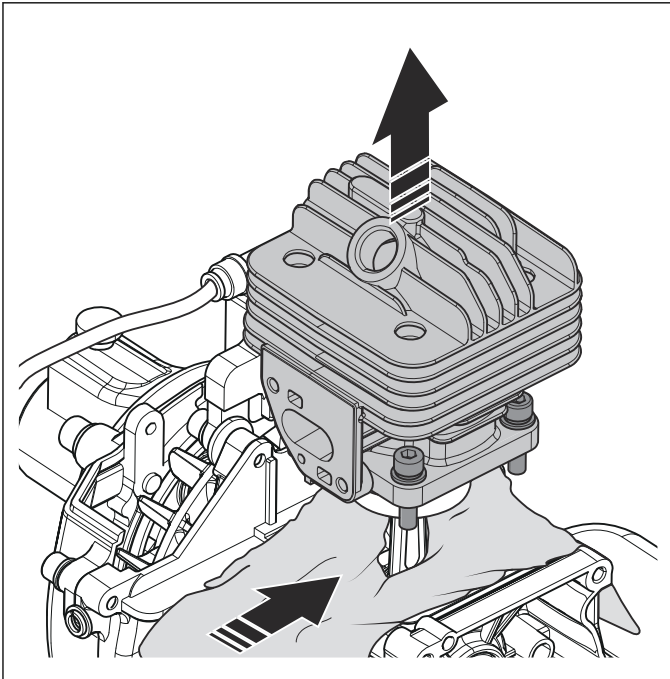
8.13 Cylinder and piston

8.13.1 To get access to the cylinder and piston

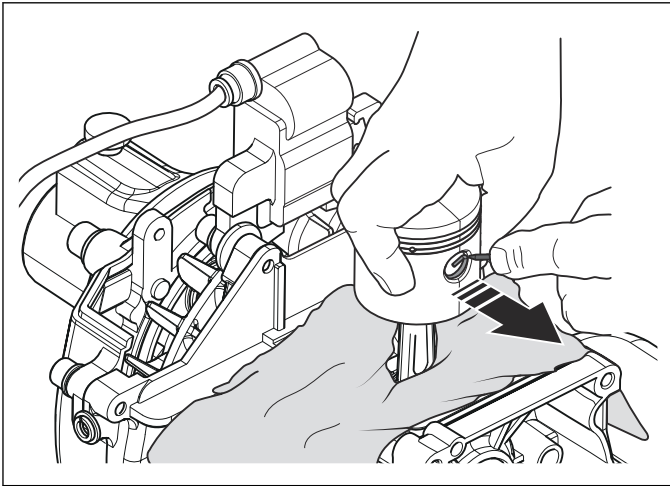
- Remove the shaft.
- Remove the spark plug cover and the spark plug.
- Remove the cylinder cover.
- Remove the starter.
- Remove the muffler and heat shield.
- Remove the air filter cover, the air filter and the air filter holder.
- Remove the carburetor, the distance piece and the heat shield.

8.13.2 To disassemble the cylinder and piston

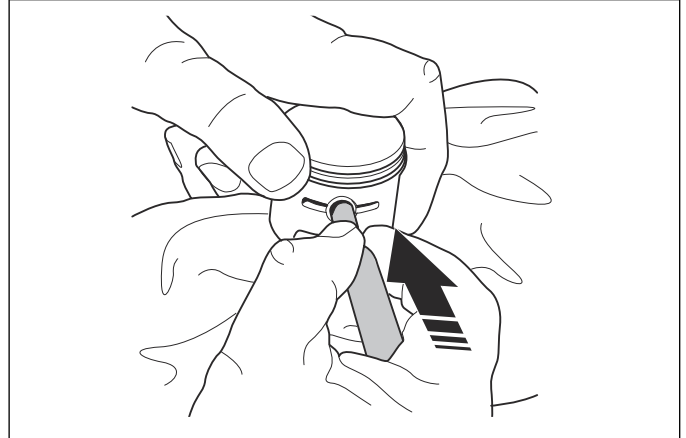
1. Remove parts as given in *To get access to the cylinder and piston on page 51* to get access to the cylinder and piston.
2. Loosen the 4 bolts. Pull the cylinder up. Make sure no dirt goes into the crankcase. Put a cloth on top of the crankcase opening.



3. Use a pointed tool to remove the wrist pin snap rings. Hold down the snap ring with your thumb to make sure the snap ring does not eject.

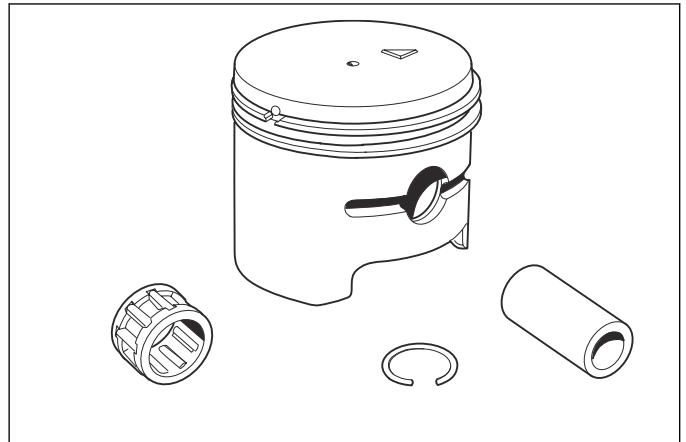


4. Push the wrist pin from the piston with a punch of the correct dimension. If the wrist pin is too tight, increase the temperature of the piston with a hot air gun.



8.13.3 To clean and examine the cylinder and piston

1. Remove carbon particles from the top of the piston, from the combustion chamber of the cylinder and from the exhaust port of the cylinder.

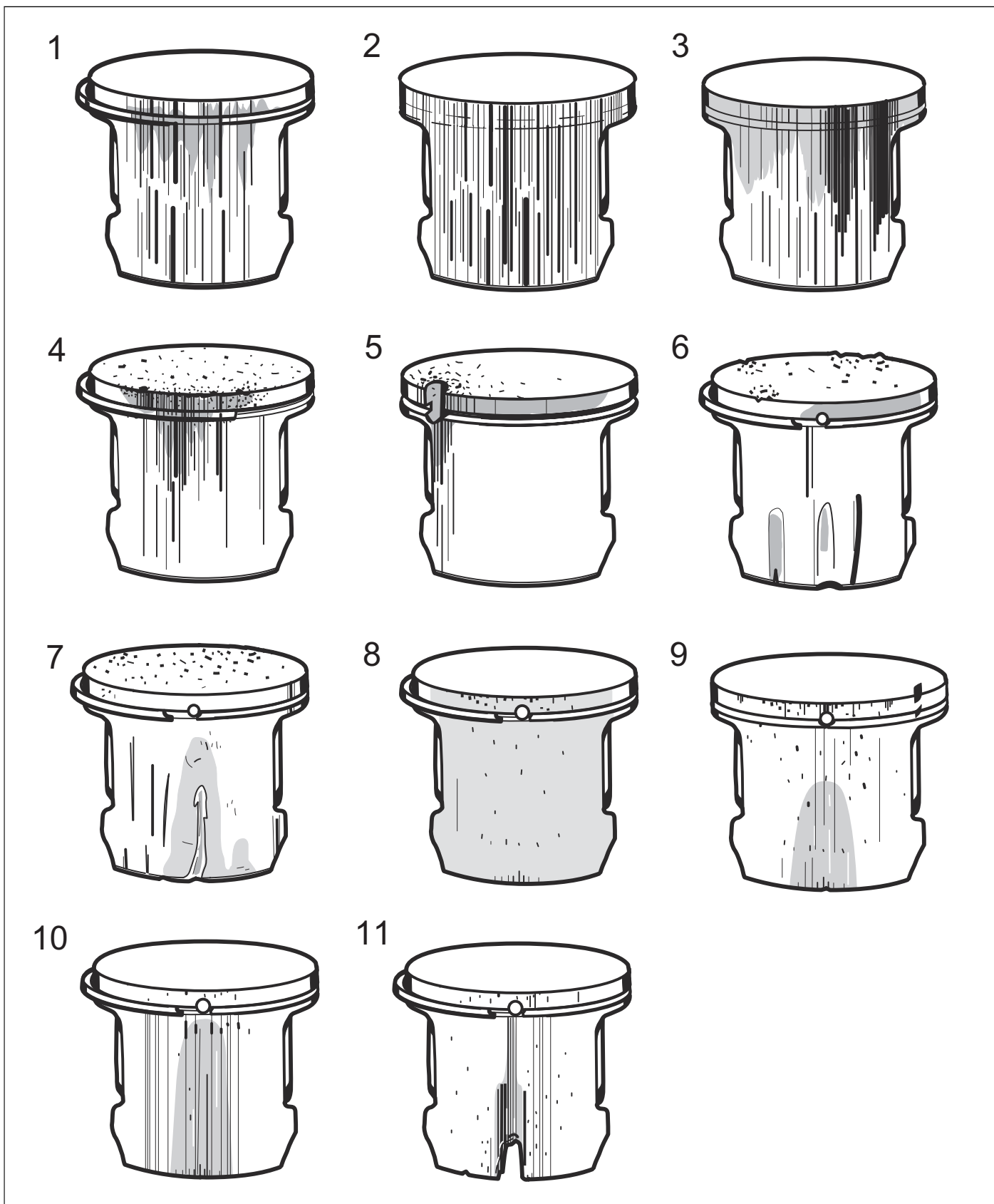


CAUTION: Clean carefully to not cause damage to the soft metal parts.

2. Clean all the components with water.
3. Examine the components for damage and wear.
 - a) Examine the piston and cylinder for damage and wear. Refer to *Faults and causes on page 53*.
 - b) Examine the piston rings for wear and damage. Refer to *Faults and causes on page 53*.
 - c) Examine the wrist pin. Replace the wrist pin if it is blue. Replace the piston and the wrist pin if the piston moves too easily.
 - d) Examine the needle bearing. Replace the needle bearing if it has discoloration or damages.
 - e) Examine the snap rings. Replace the snap rings if they have cracks or discoloration.
 - f) Examine the distance piece for cracks and other damage.

8.13.4 Faults and causes

8.13.4.1 Piston damages



Item	The piston is not sufficiently lubricated, example 1	Cause	Procedure
1	The piston has small to moderate score marks usually in front of the exhaust port. Very high temperature makes the piston material come off along the piston skirt and cylinder bore. Usually the piston ring is not damaged and moves freely in the ring groove. There can also be scores on the inlet side of the piston.	The carburetor is incorrectly adjusted.	Examine and adjust the carburetor.
		The engine speed is higher than the recommended max. speed.	
		Incorrect oil mixture in the fuel.	Change to a fuel with the correct oil mixture.
		Too low octane fuel.	Change to a higher octane fuel.

Item	The piston is not sufficiently lubricated, example 2	Cause	Procedure
2	A piston ring that is almost blocked or fully blocked in its groove does not seal against the cylinder wall. This results in intense temperature increases in the piston. There can also be scores along the piston skirt on the inlet and on the exhaust sides.	Incorrect oil mixture in the fuel.	Change to a fuel with the correct oil mixture.
		Too low octane fuel.	Change to a higher octane fuel.
		Air leaks. Damaged fuel hose. Inlet gasket leaks. Damaged distance piece or inlet manifold.	Replace the damaged parts.
		Air leakage in the engine body. Crankshaft seals leaks. Cylinder and crankcase gaskets leaks.	Replace damaged gaskets and shaft seals.
		Unsatisfactory maintenance. Dirty cooling fins on the cylinder. Blocked air intake on the starter.	Clean the cooling fins and the air intake.
		Blocked spark arrester screen in the muffler.	Clean or replace the spark arrester screen.

Item	Scores on the piston because of heavy carbon contamination	Cause	Procedure
3	This piston damage starts at the exhaust port. Carbon particles loosen and stay between the piston and the cylinder wall. Typical for this piston damage is brown or black discoloration of the piston skirt.	Incorrect type of two-stroke oil or gasoline.	Replace the fuel.
		Incorrect oil mixture in the fuel.	Change to a fuel with the correct oil mixture.
		The carburetor is incorrectly adjusted.	Adjust the carburetor.

Item	Piston damage because of a too high engine speed
	<p>Too high engine speed can cause damage to the piston rings, the snap ring on the wrist pin and the bearings. Too high engine speed can also loosen the guide pin for the piston ring.</p> <p>A too lean carburetor setting results in too high speed and a high piston temperature. If the piston temperature increases too much, the piston ring is blocked and does not go down sufficiently in its groove. The edges of the piston ring can then hit the top edge of the exhaust port and break and cause piston damage. A too high engine speed also causes damage to the piston ring and play in the piston ring groove, usually in front of the exhaust port. The wear can cause the piston ring to catch in the exhaust port and cause damage to the piston.</p>
4	The figure shows the exhaust side damaged by a broken piston ring. The piston ring parts damage the top section and cause score marks.
5	A too high engine speed causes the ends of the piston ring to hit the guide pin again and again. This can push the pin through the top of the piston and cause damage to the cylinder.
6	A too high engine speed causes vibration to the snap rings of the wrist pin. The snap ring pulls out of its groove and the tension of the snap ring decreases. The snap ring becomes loose and causes damage to the piston.
7	Failure of the crankshaft bearing or on the connecting rod bearing is usually caused by a too high engine speed. This results in the overload to the bearing or that the bearing becomes too hot. Overload to the bearing can prevent rotation of the bearing rollers and break the roller or ball retainer. The broken material causes a blockage between the piston and cylinder wall and causes damage to the piston skirt. Unwanted material can also move through the supply channels of the cylinder. This causes damage to the combustion chamber of the cylinder and to the top and sides of the piston.

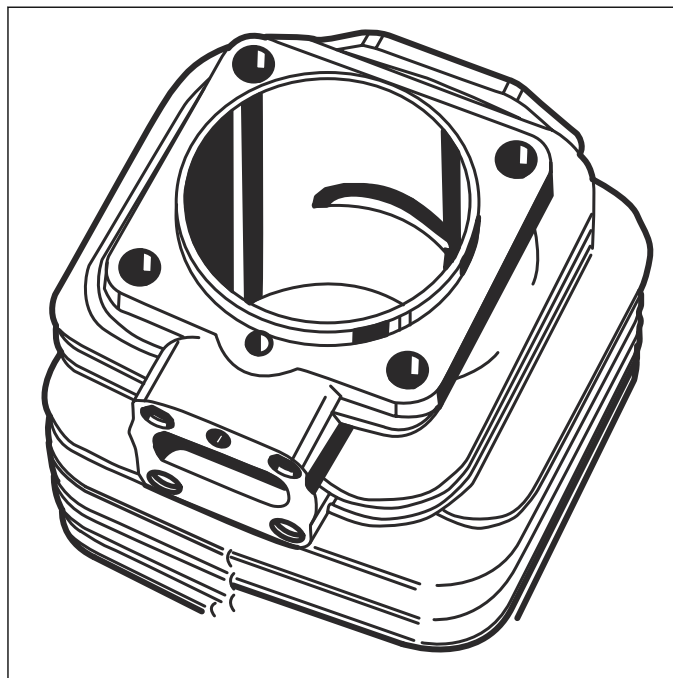
Item	Particles of unwanted material	Cause	Procedure
	Unsatisfactorily filtered air that moves through the carburetor and into the engine causes damage to the cylinder and piston. The increased wear is seen on the inlet side of the piston. The wear starts at the lower edge of the piston skirt.		
8	Small score marks and a matt, gray surface from small dirt particles on the inlet side of the piston.	Defective air filter. Small dirt particles move through the filter.	Attach a new filter of correct type.
		The filter is worn out because of too much cleaning and small holes show in the material.	Examine the filter carefully for holes and damage after cleaning. Replace the filter if it is necessary.
		Incorrect filter maintenance, such as incorrect procedure or incorrect cleaning agent. Air filter material becomes loose and holes show.	Clean more carefully and use the correct cleaning agent, for example warm soap water. Replace the filter.
		Air filter incorrectly attached.	Attach the filter correctly.
		Air filter damaged or missing.	Attach a new air filter.
9	Inlet side. Dirt from particles on the top of the piston and in the piston ring groove. The piston ring is held tightly in the groove. Piston material is worn off. The lower part of the piston skirt is thinner on the inlet side than on the exhaust side.	Defective air filter. Small dirt particles move through the filter.	Attach a new filter of correct type.
		The filter is worn out because of too much cleaning and small holes show in the material.	Examine the filter carefully for holes and damage after cleaning. Replace the filter if it is necessary.
		Incorrect filter maintenance, such as incorrect procedure or incorrect cleaning agent. Air filter material becomes loose and holes show.	Clean more carefully and use the correct cleaning agent, for example warm soap water. Replace the filter.
		Air filter incorrectly attached.	Attach the filter correctly.
		Air filter damaged or missing.	Attach a new air filter.
10	Larger, softer particles that enter the engine cause damage to the piston skirt below the piston ring.	Air filter incorrectly attached.	Attach the air filter correctly.
		Air filter damaged or missing.	Attach a new air filter.
11	Larger, harder particles that enter the engine cause damage to the bottom of the piston skirt.	Air filter damaged or missing.	Attach a new air filter.
		Parts from the carburetor or inlet system have come loose and entered the engine.	Do maintenance regularly.

Other damages on the cylinder/piston	Procedure
Broken cooling fins, damaged threads or broken bolts by the exhaust port.	Repair the threads with a thread repair kit. Replace the cylinder if it cannot be repaired.
Score marks in the cylinder bore, especially by the exhaust port.	Polish the damaged area with an emery cloth of fine grade to remove the coating of aluminum. Replace the piston and cylinder if the score marks are large.
Surface layer in the cylinder bore worn out, especially at the top of the cylinder.	Replace the cylinder and piston.
The piston shows signs of seizure score marks.	Carefully polish the damaged area with an emery cloth of fine grade. Before the piston is attached to the cylinder, the piston must be polished as above. Replace the cylinder and piston if the score marks are large.
The piston ring is burned in its groove.	Carefully loosen the piston rings and clean the groove before attaching them. Carbon particles in the groove decrease the heat supply between the piston and cylinder. Be careful with the lower edge of the piston ring groove. If this is damaged, or if there are carbon particles, the compression pressure can leak through. To examine the wear on the piston ring, put it in the lower part of the cylinder bore.
Bolts much too tight in the metal material.	Put an applicable punch on the bolt head and hit the punch hard with a hammer. If the bolt does not loosen, do the procedure again.

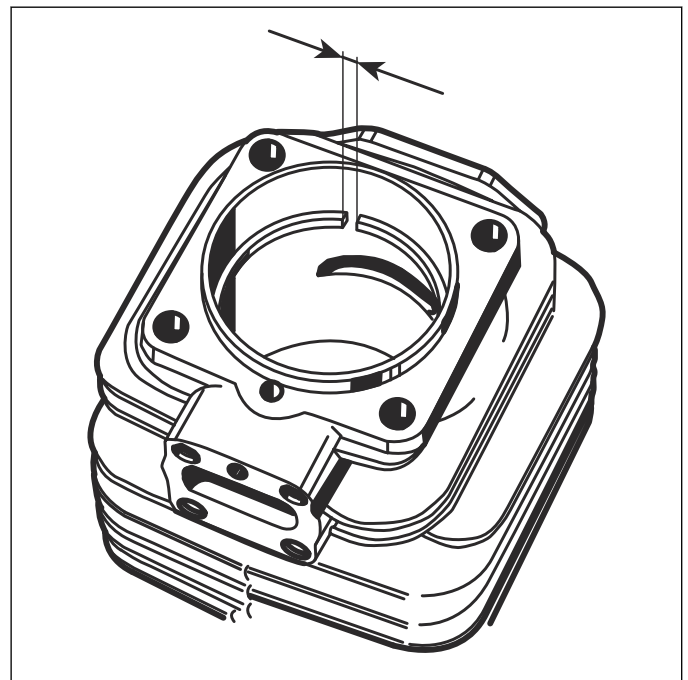
8.13.5 Wear tolerance

8.13.5.1 Cylinder bore

Examine the cylinder bore. Replace the cylinder bore if the surface layer is worn and aluminum shows.



of the cylinder. Replace the cylinder bore if the space is more than 1.0 mm.

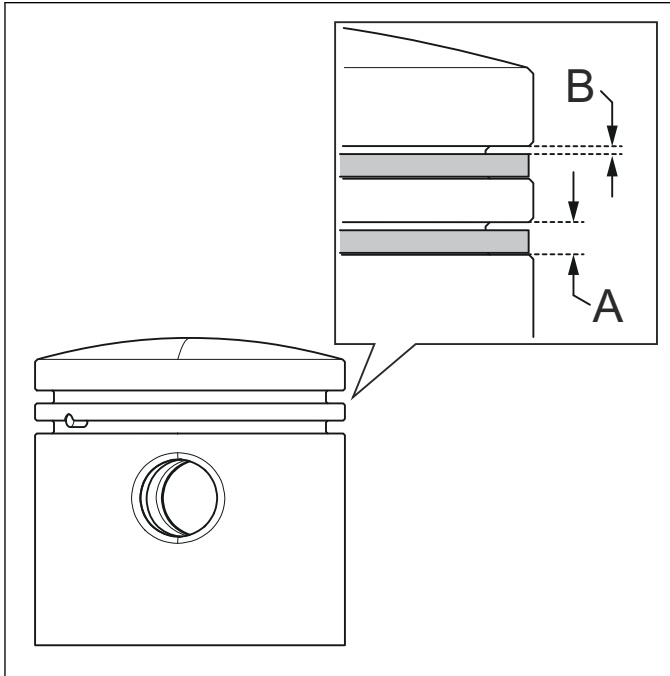


8.13.5.2 Piston ring space

Measure the piston ring space. The space must not be larger than 1.0 mm with the piston ring in the lower part

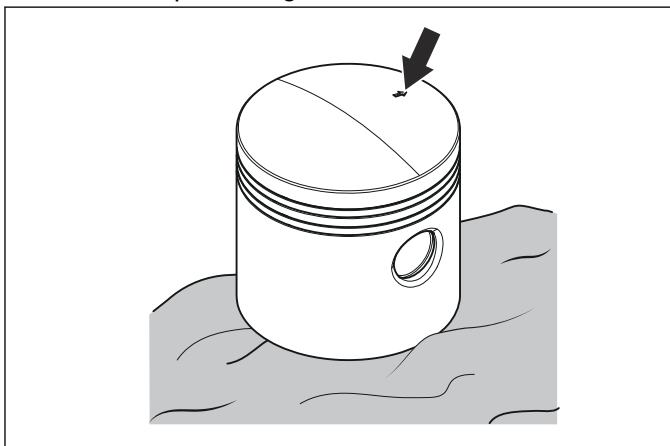
8.13.5.3 To measure the piston ring groove and piston ring play

1. Clean and measure the the piston ring groove (A). The groove must not be larger than 1.6 mm. Replace the piston if the groove is larger than 1.6 mm.
2. Clean the piston ring groove and measure the piston ring play (B). The piston ring play must not be larger than. 0.15 mm. Replace the piston ring if the piston ring play is larger than 0.15 mm.



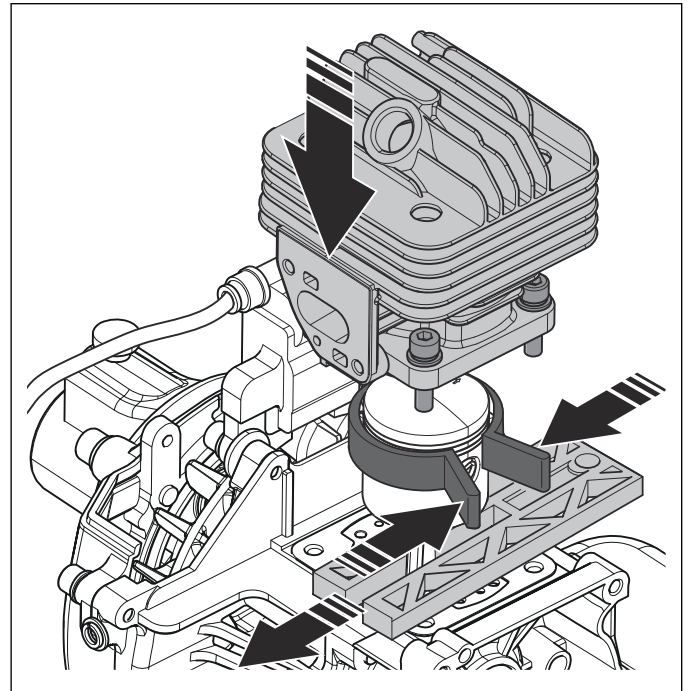
8.13.6 To assemble the cylinder and piston

1. Lubricate the needle bearing of the wrist pin with some drops of engine oil.
2. Point the arrow on the top of the piston in the direction of the exhaust port. Push the wrist pin and attach the piston rings.



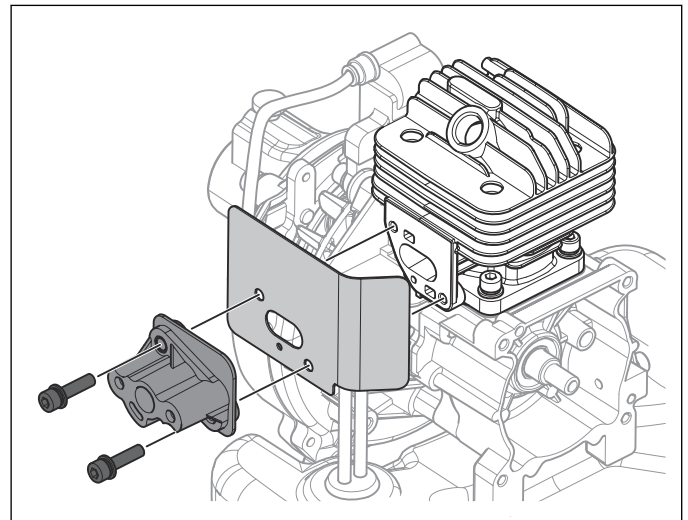
Note: Put a cloth in the crankcase opening to make sure that the piston rings do not fall into the crankcase. Make sure that the piston rings are correctly attached in the grooves.

3. Make sure that the pulse channel in the cylinder is open. Put a new cylinder base gasket on the crankcase. Lubricate the piston and the large end bearing with some drops of engine oil. Use the piston ring compressor and carefully move the cylinder into position.



CAUTION: Do not turn the cylinder. The piston rings break easily.

4. Tighten the 4 screws diagonally.
5. Assemble the distance piece and heat shield on the cylinder.



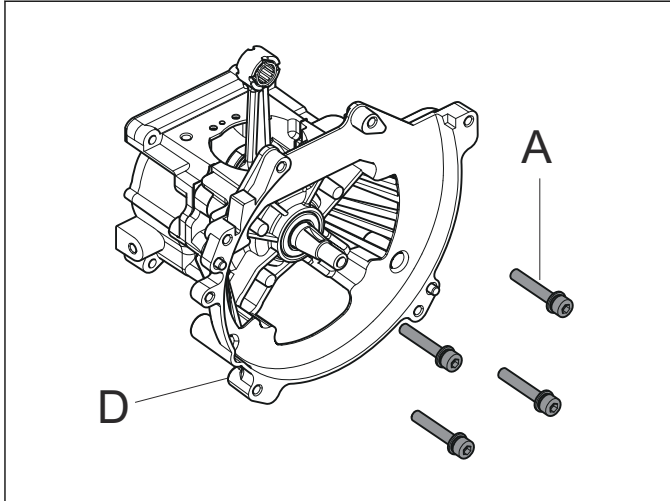
6. Assemble remaining parts in the opposite sequence as set out for disassembling. Refer to *To get access to the cylinder and piston on page 51*

8.14 Crankshaft and crankcase

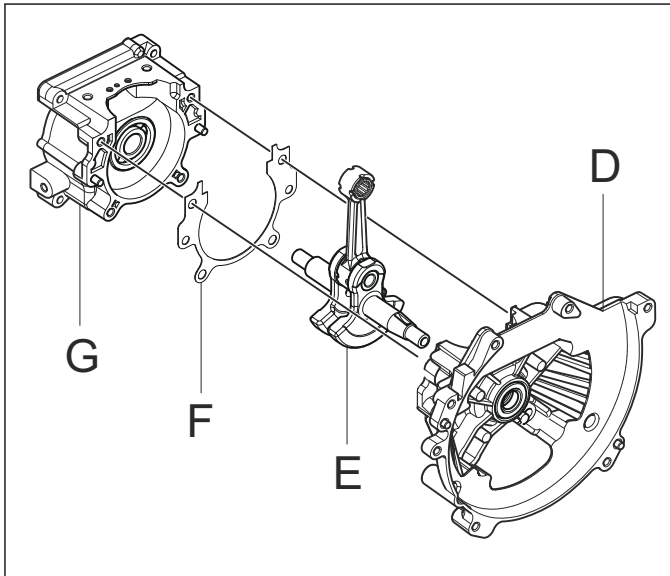
8.14.1 To disassemble the crankshaft and crankcase

To get access to the crankshaft and crankcase, you must remove all components of the product. Refer to the manual section for each component for instructions.

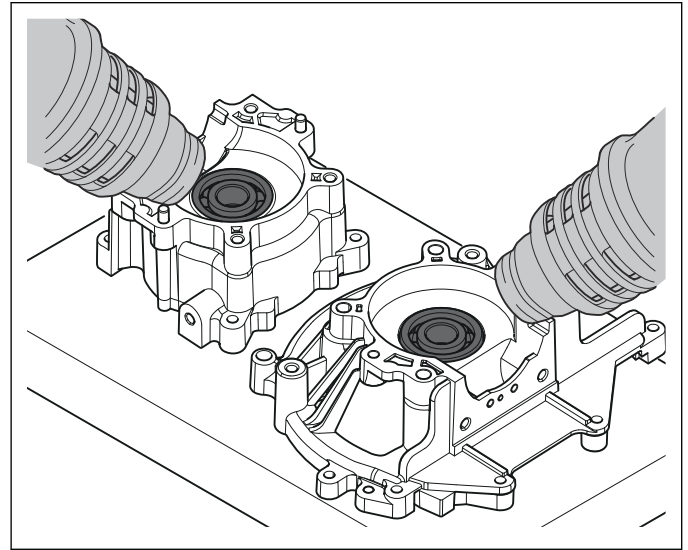
1. Remove the key for the flywheel.
2. Remove the 4 screws (A) from the crankcase cover (D).



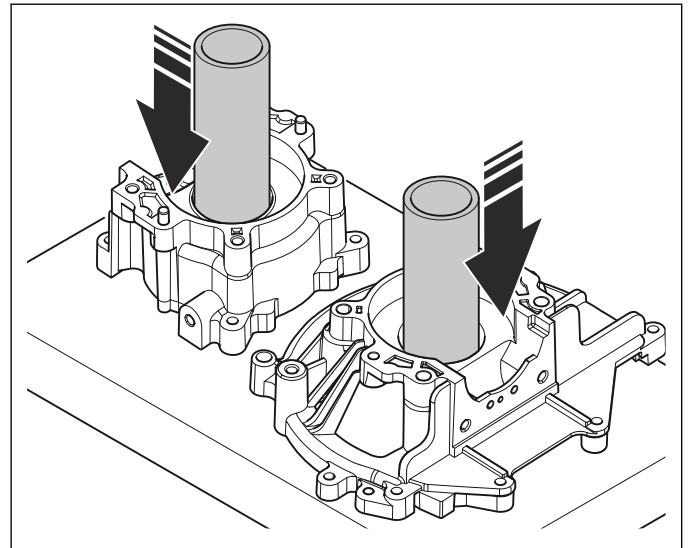
3. Remove the crankcase cover (D). Remove the crankshaft (E) from the crankcase (G). Remove the crankcase gasket (F).



4. Use a hot air gun to increase the temperature of the crankcase and the crankcase cover to 110°C. Hit the crankcase and the crankcase cover against a wooden block to make the bearings fall out.



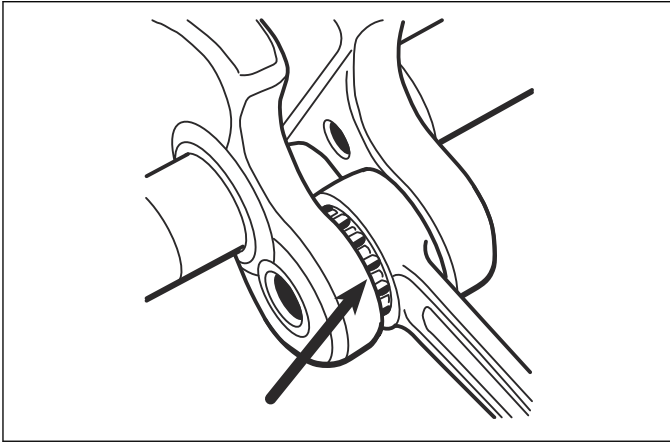
5. While the crankcase half is warm, use a hammer and an applicable punch to hit out the sealing rings.



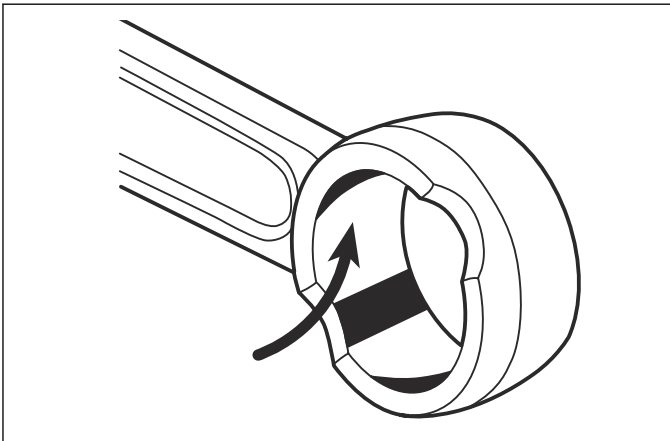
8.14.2 To clean and examine the crankshaft and crankcase

The crankshaft can not be repaired, it must be replaced if it is worn or damaged.

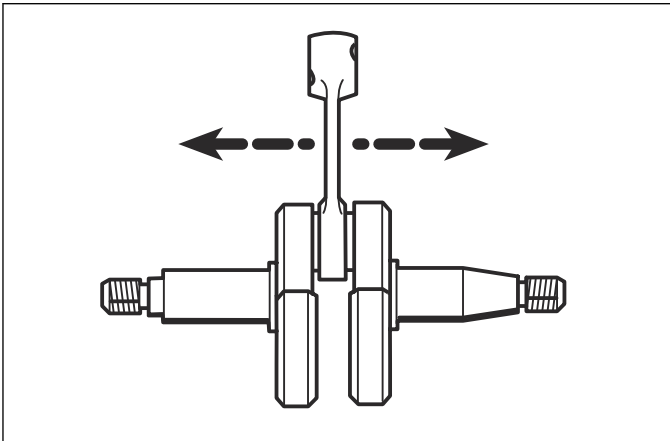
1. Examine the large end of the connecting rod. Replace the crankshaft if you see scratch marks, discoloration on the sides or damaged needle holders.



2. Examine the small end of the connecting rod. Replace the crankshaft if you see scratch marks or discoloration in the bearing track.



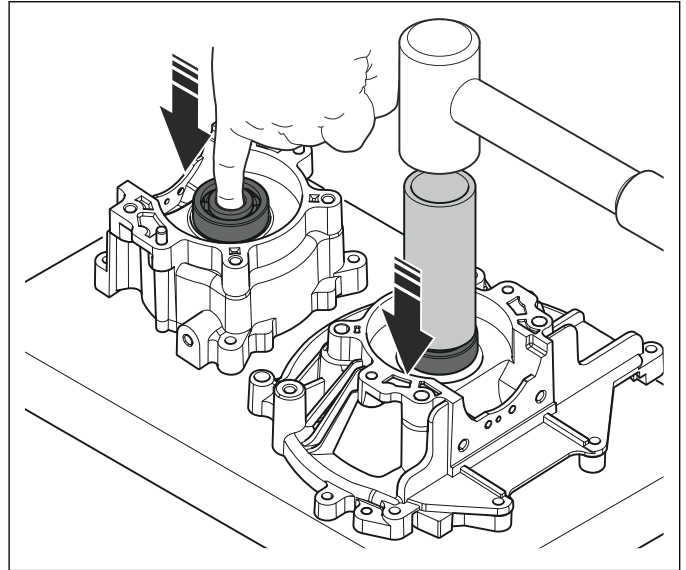
3. Examine the bearing. Make sure the connecting rod does not have radial play. Make sure the connecting rod have axial play. Axial play is necessary for lubrication of the bearing.



8.14.3 To assemble the crankshaft and crankcase

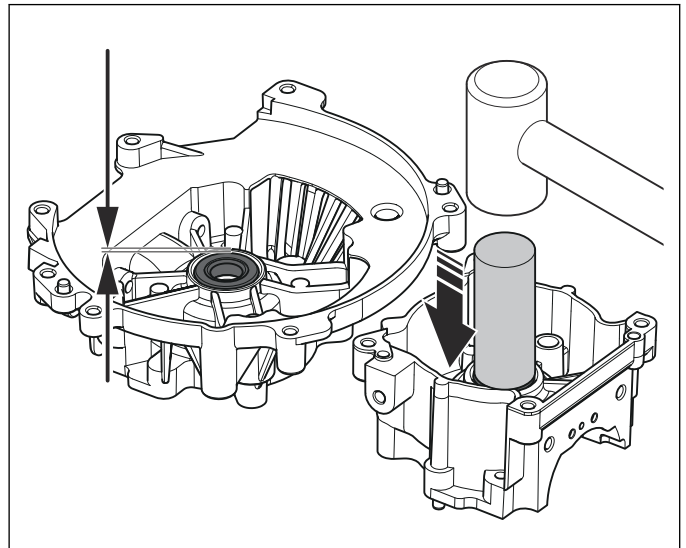
1. Attach the bearing.

- a) Put the bearing in the crankcase and the crankcase cover.
- b) Use a hot air gun to increase the temperature of the crankcase and crankcase cover to 110°C.
- c) Use a hammer and an applicable punch to hit the bearings into position.
- d) Make sure that the bearings is against the shoulder in the bearing seat.



2. Attach the sealing rings.

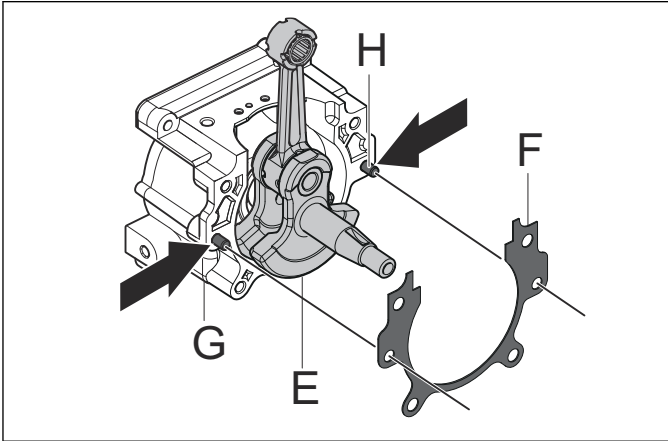
- a) Attach the sealing rings in the crankcase and the crankcase cover with an applicable punch.
- b) Turn the sealing rings so the abraded edge faces inwards.
- c) The sealing ring on the flywheel side must be 5 mm below the edge of the bearing seating. Make sure the sealing ring levels with the crankcase on the starter side.



3. Attach the crankshaft.

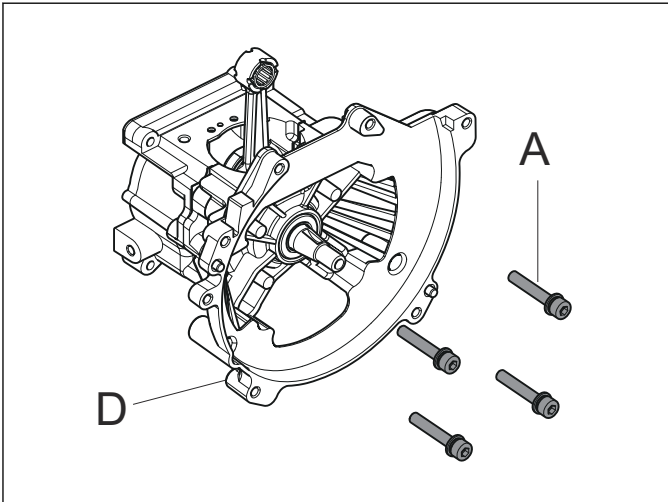
- a) Lubricate the stub axle with some oil and carefully move the crankshaft (E) into the bearing in the crankcase (G).
- b) Make sure that the 2 guide bushings (H) are in position in the crankcase.

- c) Put a new crankcase gasket (F) on the crankcase. Use grease to make sure the gasket stays in position.



4. Prepare the crankshaft.

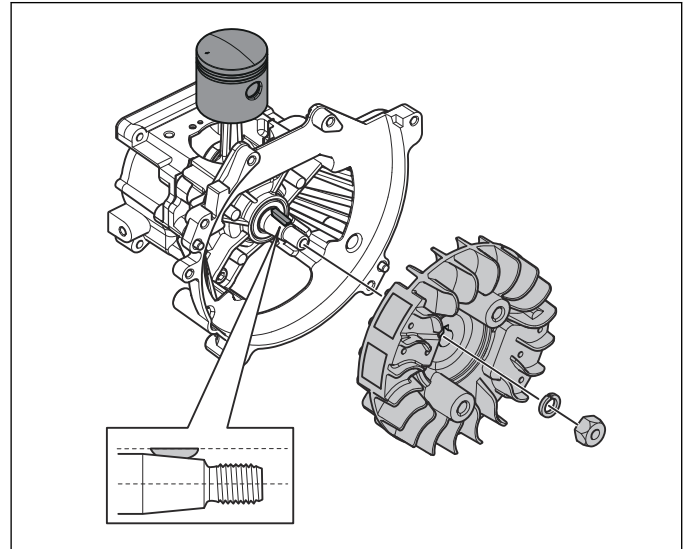
- Lubricate the crankshaft journal with some drops of oil and move the crankcase cover (D) into position.
- Tighten the 4 screws (A) crosswise. Make sure that the crankshaft rotates easily.



5. Attach the piston and the flywheel.

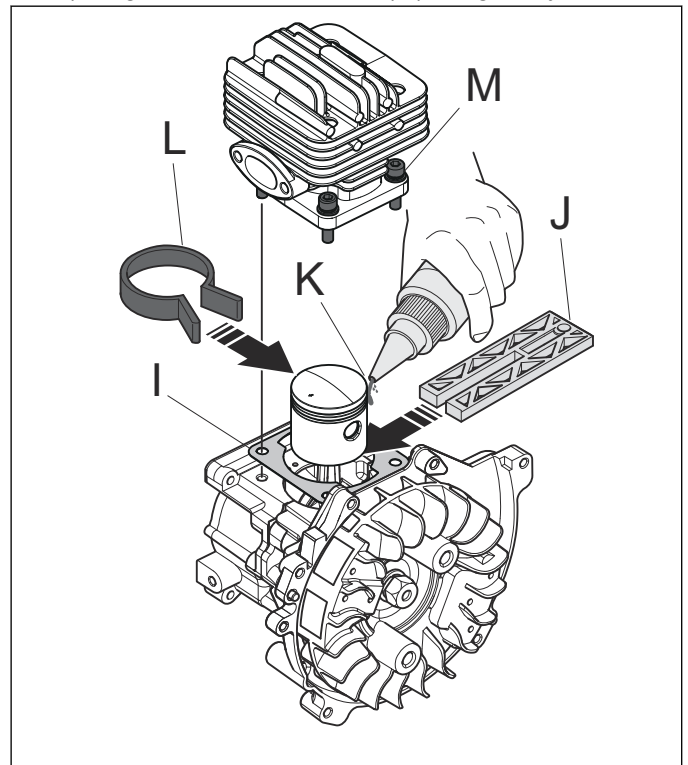
- Assemble the piston on the connecting rod. Make sure that the arrow on the piston points in the direction of the exhaust port.
- Put the spacers between the piston and the needle bearing.
- Make sure to put wrist pin snap ring correctly in the slots.
- Put the flywheel key in position in the crankcase keyway. Make sure that the flat surface is parallel to the center line of the crankshaft.

- e) Attach the flywheel.



6. Attach and lubricate the cylinder.

- Put the cylinder base gasket (I) in the correct position.
- Put a piston assembly kit (J) below the piston to make sure the piston is stable.
- Lubricate the piston and piston rings (K) with some oil.
- Use the piston ring compressor (L) and carefully move the cylinder into position.
- Tighten the four screws (M), diagonally.

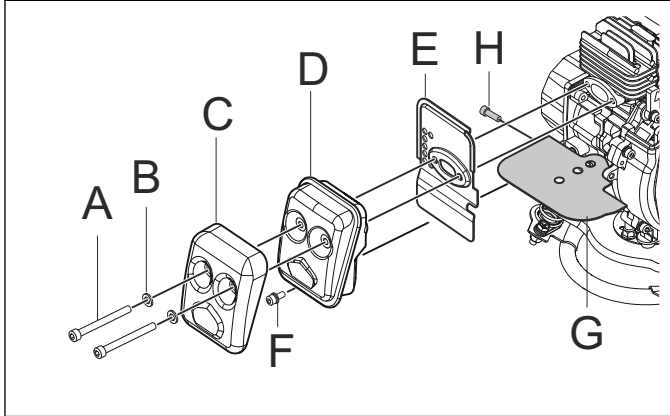


7. Assemble the remaining parts in the opposite sequence to how they were disassembled.

8.15 Muffler

8.15.1 To disassemble the muffler

1. Remove the 2 screws (A), the washers (B) and the screw (F).
2. Remove the muffler cover (C), the muffler (D) and the heat shield (E).
3. Remove the screw (H) and the protective plate (G).



8.15.2 To clean and examine the muffler



WARNING: Risk of burn injury or fire. Mufflers with catalytic converters become very hot during operation.



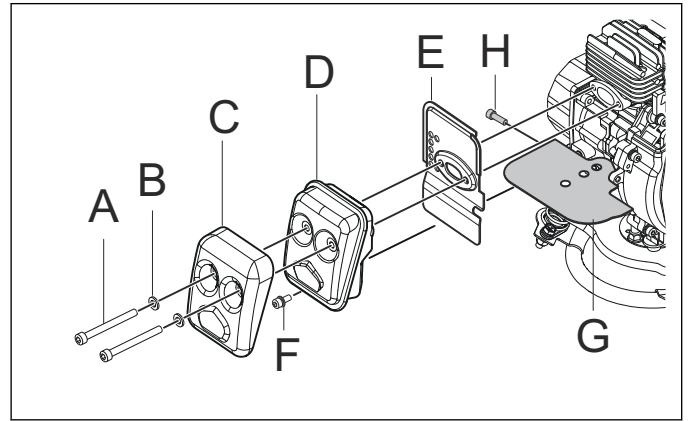
WARNING: Risk of fire. The exhaust gases are hot and can contain sparks.

1. Clean all parts. Clean the spark arrester screen with a wire brush.
2. Examine the muffler for wear and damage. Replace the muffler if it is damaged.
3. Examine the spark arrester screen. Replace the spark arrester screen if it is damaged.
4. Examine the remaining parts. Replace worn or damaged parts with new ones.
5. Make sure that the muffler is correctly attached to the product.

8.15.3 To assemble the muffler

1. Attach the protective plate (G) with the screw (H).
2. Hold the heat shield (E) in position and attach the muffler (D) and the muffler cover (C).

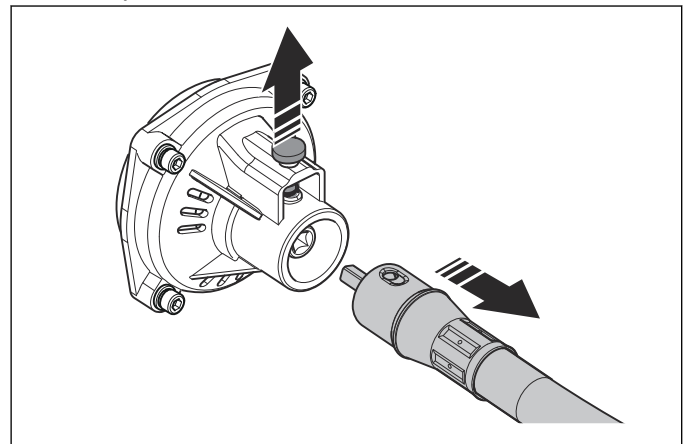
3. Attach the screw (F), the washers (B) and the 2 screws (A).



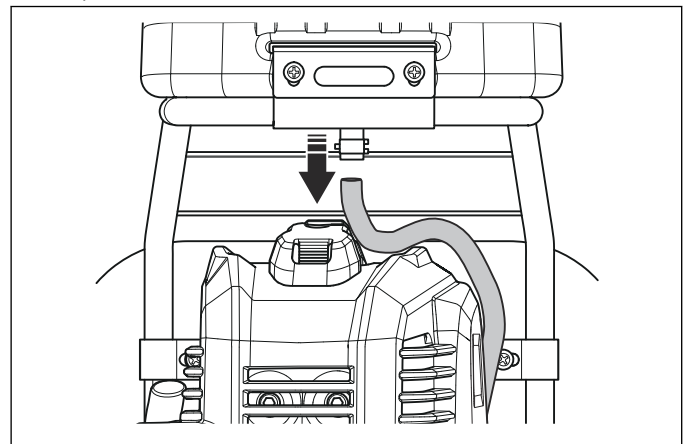
8.16 Harness frame

8.16.1 To disassemble the harness frame

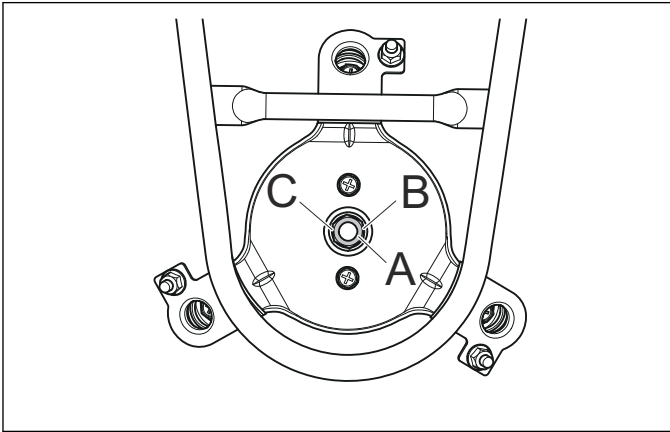
1. Pull up the knob and remove the shaft.



2. Remove the fuel hose (only on the model 967 84 33-xx).



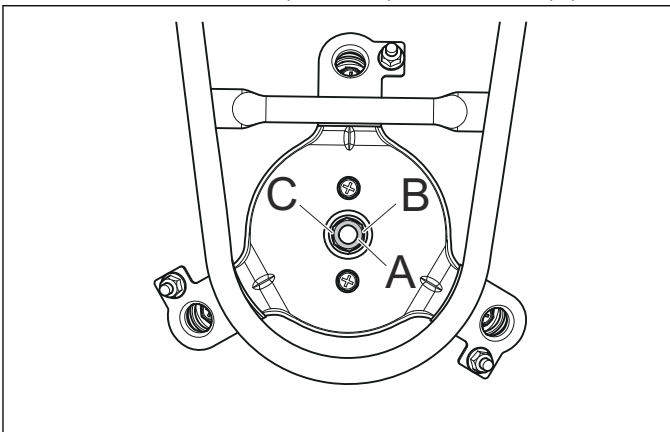
3. Remove the nut (A) and the washers (B and C).



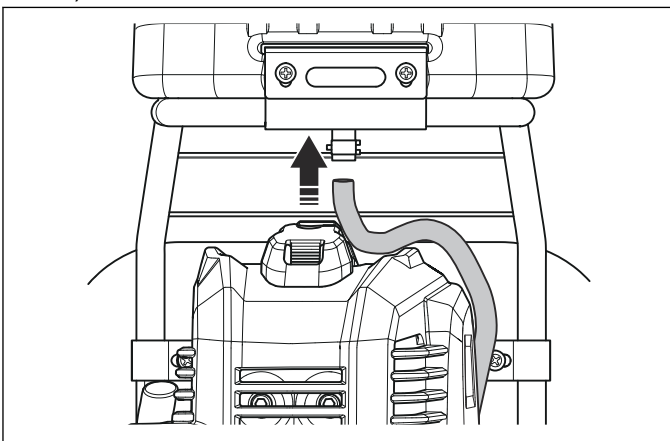
4. Remove the engine from the support plate on the harness frame.

8.16.2 To assemble the harness frame

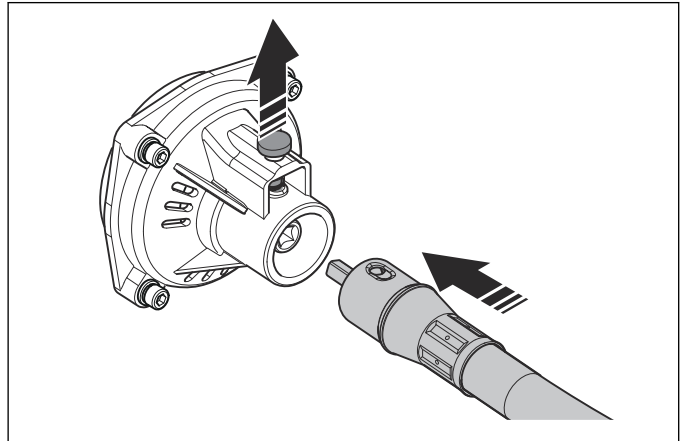
1. Attach the engine to the support plate on the harness frame.
2. Attach the washers (B and C) and the nut (A).



3. Attach the fuel hose (only on the model 967 84 33-xx).



4. Pull up the knob and attach the shaft.



9 Troubleshooting

9.1 Troubleshooting

Starting	
The engine is hard to start	The stop screw for the throttle does not operate correctly
	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	Incorrect/unsatisfactory fuel
	The needle valve is defective
	The lever arm of the needle valve is damaged
	The lever arm of the needle valve does not operate correctly
	The control diaphragm is damaged
	The control diaphragm has a defective seal
	Blocked needle valve
	The needle valve is worn
	Object in the needle valve guide
Idle speed (low speed)	
The engine does not operate on idle speed	The stop screw for the throttle does not operate correctly
	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	The carburetor is not attached correctly
	The lever arm of the needle valve does not operate correctly
The idle speed is too low	Defective heat insulation seal
	The lever arm of the needle valve is damaged
	The lever arm of the needle valve is too high
	The lever arm of the needle valve does not operate correctly
	The needle valve is worn
	Object in the needle valve guide

Idle speed (low speed)	
The idle speed does not become stable	The stop screw for the throttle does not operate correctly
	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	Incorrect/unsatisfactory fuel
	The needle valve is defective
	The carburetor is not attached correctly
	The lever arm of the needle valve does not operate correctly
	The needle valve spring is not attached correctly
	The control diaphragm is damaged
	The needle valve is worn
	Object in the needle valve guide
The engine stops when idling	The stop screw for the throttle does not operate correctly
	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	The needle valve is defective
	Defective heat insulation seal
	The lever arm of the needle valve is too high
	The lever arm of the needle valve does not operate correctly
	The spring of the needle valve is damaged
	The needle valve spring is not attached correctly
	The needle valve is worn
	Object in the needle valve guide

High speed	
Unsatisfactory performance at high speed	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	Incorrect/unsatisfactory fuel
	Vacuum pulse leakage
	Blocked vacuum pulse pipe
	Loose screws on the pump cover
	Defective pump diaphragm
	The needle valve is defective
	The carburetor is not attached correctly
	The lever arm of the needle valve is damaged
	The lever arm of the needle valve does not operate correctly
	The spring of the needle valve is damaged
	The needle valve spring is not attached correctly
	The control diaphragm is damaged
	The control diaphragm has a defective seal
The needle valve is worn	
Object in the needle valve guide	

Increasing and decreasing speed	
The engine does not increase speed	Blocked fuel filter
	Blocked fuel hose
	Air in fuel pipes
	Vacuum pulse leakage
	Blocked vacuum pulse pipe
	Loose screws on the pump cover
	Defective pump diaphragm
	The needle valve is defective
	The carburetor is not attached correctly
	The lever arm of the needle valve is damaged
	The lever arm of the needle valve is too low
	The lever arm of the needle valve does not operate correctly
	The needle valve spring is not attached correctly
	The control diaphragm is damaged
Blocked needle valve	
The engine stops when decreasing speed	Defective pump diaphragm
	The lever arm of the needle valve is too high
	The lever arm of the needle valve does not operate correctly
	The needle valve is worn
Can not increase speed	Object in the needle valve guide
	Defective heat insulation seal



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