

WP 230

STIHL



2 - 15 Instruction Manual



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1 Introduction

Dear Customer,

Thank you for choosing STIHL. We develop and manufacture our quality products to meet our customers' requirements. The products are designed for reliability even under extreme conditions.

STIHL also stands for premium service quality. Our dealers guarantee competent advice and instruction as well as comprehensive service support.

STIHL expressly commit themselves to a sustainable and responsible handling of natural resources. This user manual is intended to help you use your STIHL product safely and in an environmentally friendly manner over a long service life.

We thank you for your confidence in us and hope you will enjoy working with your STIHL product.



Dr. Nikolas Stihl

IMPORTANT! READ BEFORE USING AND KEEP IN A SAFE PLACE FOR REFERENCE.

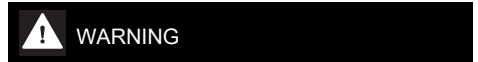
2 Guide to Using this Manual

2.1 Applicable Documentation

Local safety regulations apply.

- ▶ Read, understand and save the following documents in addition to this instruction manual:
 - Instructions and packaging supplied with the hose you are using

2.2 Symbols used with warnings in the text



- This symbol indicates dangers that can cause serious injuries or death.
 - ▶ The measures indicated can avoid serious injuries or death.



- This symbol indicates dangers that can cause damage to property.
 - ▶ The measures indicated can avoid damage to property.

2.3 Symbols in Text



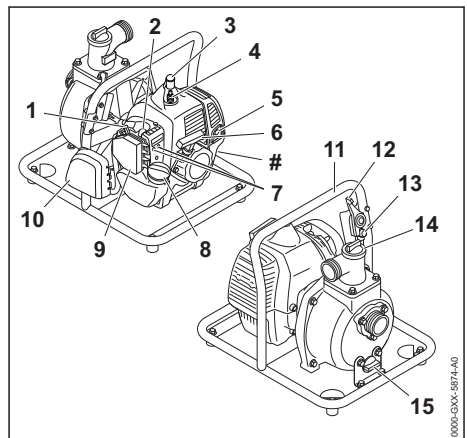
This symbol refers to a chapter in this instruction manual.



A video is available for this chapter

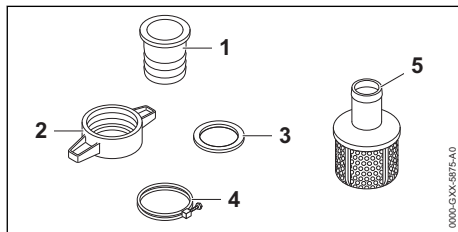
3 Overview

3.1 Water Pump



- 1 Choke Lever**
Helps start the engine.
 - 2 Manual Fuel Pump**
Eases engine starts.
 - 3 Spark Plug Boot**
Connects ignition lead to spark plug
 - 4 Spark Plug**
Ignites fuel-air mixture in the engine.
 - 5 Muffler**
Reduces engine noise emissions.
 - 6 Starter Grip**
Serves to crank the engine.
 - 7 Carburetor Adjusting Screws**
For tuning the carburetor.
 - 8 Fuel Tank Cap**
Closes the fuel tank.
 - 9 Air Filter**
Filters the air entering the engine.
 - 10 Filter Cover**
Covers the air filter.
 - 11 Handle**
For transporting the water pump.
 - 12 Throttle Lever**
Controls engine speed.
 - 13 Stop Switch**
Shuts off the engine.
 - 14 Screw Cap**
Seals filler opening for water.
 - 15 Screw Cap**
Seals opening for draining water from pump.
- # Rating Label with Serial Number

3.2 Components for Connecting Hoses

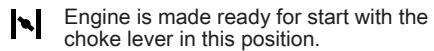
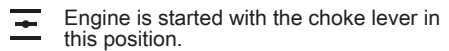
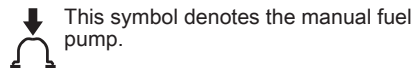
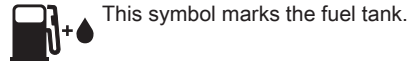


- 1 Nipple**
Serves to connect a hose.
- 2 Union Nut**
Secures the nipple to the water pump.
- 3 Gasket**
Seals the nipple.

- 4 Clamp**
Secures hose to nipple.
- 5 Strainer**
Filters the incoming water.

3.3 Symbols

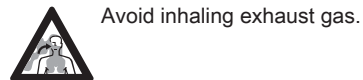
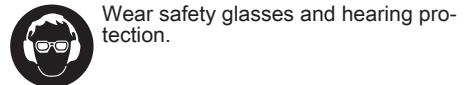
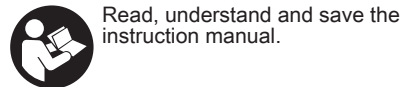
Meanings of symbols that may be on the water pump:



4 Safety Precautions

4.1 Warning Symbols

Meanings of warning signs on the water pump:



4.2 Intended Use

The STIHL WP 230 water pump is designed for pumping freshwater to a maximum height of 27 meters and from a maximum depth of 8 meters. The STIHL WP 230 water pump is not designed for the following applications:

- Pumping gasoline, oil, thinners, solvents and similar substances.
- Pumping acids, alkaline solutions, bases and similar substances.
- Pumping liquid foodstuffs.
- Pumping saltwater.
- Pumping water at a temperature of over 40°C.

▲ WARNING

- Using the water pump for purposes for which it is not designed may result in serious or fatal injuries and damage to property.
 - ▶ Use the water pump as described in this instruction manual.

4.3 The Operator

▲ WARNING

- Users without adequate training or instruction cannot recognize or assess the risks involved in using the water pump. The user or other persons may sustain serious or fatal injuries.



- ▶ Read, understand and save the instruction manual.

- ▶ If the water pump is passed on to another person: Always give them the instruction manual.
- ▶ Make sure the user meets the following requirements:
 - The user must be rested.
 - The user must be in good physical condition and mental health to operate and work with the water pump. If the user's physical, sensory or mental ability is restricted, he or she may work only under the supervision of or as instructed by a responsible person.
 - The user is able to recognize and assess the risks involved in using the water pump.
 - The user must be of legal age or is being trained in a trade under supervision in accordance with national rules and regulations.
 - The user has received instruction from a STIHL servicing dealer or other experienced user before working with the water pump for the first time.
 - The user must not be under the influence of alcohol, medication or drugs.
- ▶ If you have any queries: Contact a STIHL servicing dealer for assistance.
- The water pump's ignition system produces an electromagnetic field. This field may interfere with some pacemakers. This can result in serious or fatal injuries.
 - ▶ If the user has a pacemaker: Make sure the pacemaker is not affected.

4.4 Clothing and Equipment

▲ WARNING

- Long hair may be sucked into the water pump during operation. This may result in serious injury to the user.
 - ▶ Long hair should be securely tied back above your shoulders.
- The user may come into contact with contaminated water during operation or water may spray out of the water pump or the hoses. This could result in injury to the user.



- ▶ Wear close-fitting safety glasses. Suitable safety glasses are tested in accordance with EN 166 or national regulations and available commercially with the corresponding marking.

- Noise is generated during operation. Noise can damage your hearing.



- ▶ Wear ear protection.

- Inappropriate clothing can snag on the water pump. Users not wearing suitable clothing are at risk of serious injury.
 - ▶ Wear close-fitting clothing.
 - ▶ Remove scarves and jewelry.
- Wearing unsuitable footwear may cause the user to slip. This may result in injury to the user.
 - ▶ Wear sturdy, closed-toed footwear with high-grip soles.

4.5 Work Area and Surroundings

▲ WARNING

- Bystanders, children and animals cannot recognize or assess the dangers of the water pump. Innocent bystanders, children and animals may be seriously injured and damage to property may occur.
 - ▶ Keep bystanders, children and animals away from the work area.
 - ▶ Do not leave the water pump unattended.
 - ▶ Make sure that children cannot play with the water pump.
- Hot exhaust gas is emitted through the muffler while the engine is running. Hot exhaust gas can ignite easily flammable materials and cause a fire.
 - ▶ Keep exhaust gas well away from easily flammable materials.

4.6 Safe condition

The water pump is in a safe condition if the following points are observed:

- The water pump is not damaged.
- There is no fuel leaking from the water pump.
- The fuel tank cap is closed.
- The water pump is clean.
- The controls function properly and have not been modified.
- Hoses suitable for use with water pumps are fitted.
- The hoses are properly fitted.
- Only genuine STIHL accessories designed for this water pump model are fitted.
- The accessories are correctly attached.

▲ WARNING

- If not in safe condition, components may no longer operate correctly, safety devices may be disabled and fuel leakage may occur. There is a risk of serious or fatal injury.
 - ▶ Work only with an undamaged water pump.
 - ▶ If fuel is leaking from the water pump: Do not use the water pump and contact a STIHL dealer for assistance.
 - ▶ Close the fuel tank cap.
 - ▶ If the water pump is dirty: Clean the water pump.
 - ▶ Do not modify the water pump.
 - ▶ If the controls do not function properly: Do not use your water pump.
 - ▶ Only fit hoses that are suitable for use with water pumps.
 - ▶ Only fit genuine STIHL accessories designed for this water pump model.
 - ▶ Mount hoses and accessories as described in this instruction manual or the instructions supplied with the accessory.
 - ▶ Never insert objects in the water pump's openings.
 - ▶ Replace worn or damaged labels.
 - ▶ If you have any doubts, be sure to consult a STIHL dealer.

4.7 Fuel Mixture and Refueling

▲ WARNING

- This water pump requires a fuel mixture of gasoline and two-stroke engine oil. Mixed fuel and gasoline are extremely flammable. If fuel mixture or gasoline make contact with open fire or hot objects, they can cause a fire or explosions. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ Protect fuel mixture and gasoline from heat and fire.
 - ▶ Do not spill fuel mixture or gasoline.
 - ▶ If fuel has been spilled: Wipe up the fuel with a cloth and do not attempt to start the engine until all parts of the water pump and the area around it are dry.
 - ▶ Do not smoke.
 - ▶ Never refuel near a fire.
 - ▶ Shut off the engine and allow it to cool down before refueling.
- Inhaling fuel fumes and gasoline fumes can have toxic effects.
 - ▶ Avoid inhaling fuel fumes or gasoline fumes.
 - ▶ Refuel in a well-ventilated location.
- The water pump becomes hot during operation. The fuel expands and excess pressure can build up in the tank. Fuel can escape as a spray when the fuel tank cap is opened. The escaping fuel can ignite. This may result in serious injury to the user.
 - ▶ Allow the water pump to cool down first and then open the fuel tank cap carefully.
- Clothing that has been in contact with fuel or gasoline will ignite more easily. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ If your clothing comes into contact with fuel or gasoline: Change your clothing.
- Fuel mix, gasoline and two-stroke engine oil can harm the environment.
 - ▶ Do not spill fuel, gasoline or two-stroke engine oil.
 - ▶ Dispose of fuel mix, gasoline and two-stroke engine oil in accordance with local regulations and environmental requirements.
- Fuel, gasoline or two-stroke engine oil can cause irritation if they come into direct contact with the skin or eyes.
 - ▶ Avoid contact with fuel, gasoline and two-stroke engine oil.
 - ▶ If skin contact occurs: Wash affected areas of skin with plenty of water and soap.
 - ▶ In the event of contact with eyes: Rinse eyes with plenty of water for at least 15 minutes and consult a doctor.
- The water pump's ignition system produces sparks. Unconfined sparks may cause a fire or an explosion in an easily combustible or explosive environment. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ Use the spark plugs described in this instruction manual.

- ▶ Insert and tighten down the spark plug.
- ▶ Connect the spark plug boot and press it down firmly.
- The water pump can be damaged if it is run on a fuel mixture consisting of unsuitable gasoline or an unsuitable two-stroke engine oil or if an incorrect mix ratio of gasoline and two-stroke engine oil is used.
 - ▶ Mix the fuel as described in this User Manual.
- The mixture of gasoline and two-stroke engine oil can separate or age if it is stored for a long period. The water pump can be damaged if it is used with a fuel mix that has separated or has aged.
 - ▶ Before refueling the water pump: Thoroughly mix the fuel.
 - ▶ Use a mixture of gasoline and two-stroke engine oil that is not older than 30 days (STIHL MotoMix: 5 years).

4.8 Working

▲ WARNING

- The user may lose control of the water pump if they do not start the engine correctly. This may result in serious injury to the user.
 - ▶ Start the engine as described in this instruction manual.
- If the water pump is operated without the hoses attached, the user's hands may get caught in the suction and outlet openings. This may result in serious injury to the user.
 - ▶ Only operate the water pump with the hoses attached.
 - ▶ Do not put your hands in the suction or outlet openings.
- Exhaust fumes are produced when the engine is running. Breathing in exhaust fumes may result in poisoning.
 - ▶ Do not breathe in exhaust fumes.



- ▶ Use the water pump in a well-ventilated place.
- ▶ Do not work in a well with the water pump.
- ▶ If nausea, headaches, vision problems, hearing problems or dizziness occur: stop working and consult a doctor.
- If the user is wearing hearing protection and the engine is running, their perception and assessment of noise may be limited.
 - ▶ Work calmly and carefully.
- If the water pump changes or starts to behave differently when working, it may not be in safe

condition. This may result in serious injury to people and damage to property.

- ▶ Stop working and consult a STIHL specialist dealer.
- Water can freeze on the floor and in components of the water pump at temperatures below 0 °C. This may result in the user slipping, falling and becoming seriously injured. It may also result in damage to property.
 - ▶ Do not use the water pump at temperatures below 0 °C.
- If the suction hose or pressure hose is pulled, the water pump may move and fall over. This may result in damage to property.
 - ▶ Do not pull on the suction hose or pressure hose.
- If the water pump is placed on a sloping, uneven or unpaved surface, it may move and fall over. This may result in damage to property.
 - ▶ Place the water pump on a horizontal, level and paved surface.
 - ▶ Secure the water pump so it cannot move.
- Taking in highly inflammable and explosive liquids may cause fires and explosions. This may result in serious or fatal injury to people and damage to property.
 - ▶ Do not take in or discharge highly inflammable or explosive liquids.
- Taking in irritating, corrosive and toxic liquids may endanger health and damage components of the water pump. This may result in serious or fatal injury to people and damage to property.
 - ▶ Do not take in or discharge irritating, corrosive or toxic liquids.
- The water pump is not sterile or food-safe. If liquid food products are taken in, they will be contaminated.
 - ▶ Do not take in or discharge liquid food products.
- If the water pump is not filled with water before starting the engine, this may result in damage to the water pump.
 - ▶ Fill the water pump with water before starting the engine.
- If the suction strainer is not attached, objects may be sucked into the water pump. The water pump may become clogged or damaged.
 - ▶ Attach the suction strainer.
- The engine of the water pump is not waterproof. If the water pump is placed in water, the engine may be damaged.
 - ▶ Operate the water pump on a dry surface.

- Badly routed hoses may become damaged and people may trip over them. This may result in injury to people and damage to the hoses.
 - ▶ Route and mark the hoses so people cannot trip over them.
 - ▶ Route the hoses so they are not stretched or tangled.
 - ▶ Route the hoses so they do not become damaged, kinked or crushed or chafe.
 - ▶ Protect the hoses from heat, oil and chemicals.

4.9 Transporting

▲ WARNING

- The water pump may tip over or move during transport. This may result in injury to people and damage to property.
 - ▶ Stop the engine.
 - ▶ Secure the water pump with lashing straps, belts or a net so it cannot tip over and move.
- The muffler and engine may be hot after the engine has been running. This may result in the user burning themselves.
 - ▶ Carry the water pump by the frame with the muffler pointing away from the body.
- Water can freeze in components of the water pump at temperatures below 0 °C. This may result in damage to the water pump.
 - ▶ Drain the water pump.

4.10 Storing

▲ WARNING

- Children are not aware of and cannot assess the dangers of a water pump and can be seriously injured.
 - ▶ Shut off the engine.
 - ▶ Store the water pump out of the reach of children.
- Dampness can corrode the electrical contacts on the water pump and metal components. This can damage the water pump.
 - ▶ Store your water pump in a clean and dry condition.
- Water can freeze in water pump components at temperatures below 0°C. This can damage the water pump.
 - ▶ Drain the water pump.

4.11 Cleaning, Maintenance and Repair







▲ WARNING

- The water pump may inadvertently start if the engine is running during cleaning, maintenance or repair. This may result in serious injury to people and damage to property.
 - ▶ Stop the engine.
- The muffler and engine may be hot after the engine has been running. This may result in people burning themselves.
 - ▶ Wait until the muffler and engine have cooled down.
- Abrasive cleaning agents or using a water jet or sharp objects for cleaning may result in damage to the water pump or hoses. If the water pump or hoses are not cleaned correctly, components may no longer operate correctly and safety devices may be disabled. This may result in serious injury to people.
 - ▶ Clean the water pump as described in this instruction manual.
 - ▶ Clean the hoses as described in this instruction manual.
- If the water pump or hoses are not maintained or repaired correctly, components may no longer operate correctly and safety devices may be disabled. This may result in serious or fatal injury to people.
 - ▶ Do not maintain or repair the water pump yourself.
 - ▶ If the water pump needs to be maintained or repaired: consult a STIHL specialist dealer.
 - ▶ Maintain hoses as described in the instruction manual for the hoses used.

5 Preparing Water Pump for Operation

5.1 Preparing the Water Pump for Operation

The following steps must be performed before commencing work:

- ▶ Remove the packaging material and transport fastenings.
- ▶ Make sure the water pump is in a safe condition,  4.6.
- ▶ Clean the water pump,  14.1.
- ▶ Connect water pump to a water supply,  6.1.
- ▶ Fill water pump with water,  6.2.
- ▶ Refuel the water pump,  7.2.
- ▶ Check the controls,  9.1.

- ▶ If you cannot carry out these steps: Do not use your water pump and contact your STIHL servicing dealer for assistance.

6 Connecting to a water source

6.1 Connecting Water Pump to a Water Supply

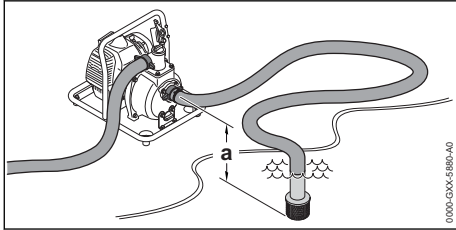


A video is available for this chapter



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The water pump can draw water from rain barrels, cisterns, flowing or stagnant waters.



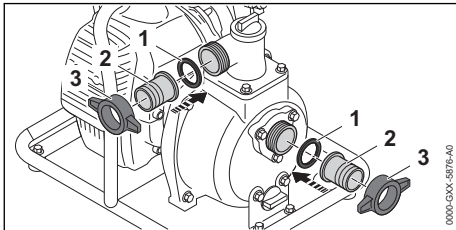
Water can be drawn in only if the height difference between the water pump and water source does not exceed the maximum suction height (a), 18.1.

The suction hose must be dimensionally stable and have a suitable pressure rating.

The strainer must be used.

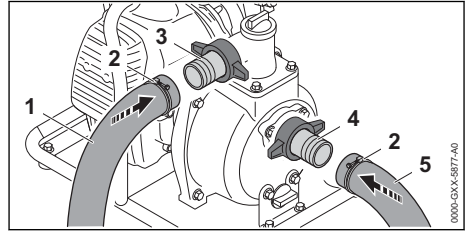
Mounting the hose fittings

- ▶ Shut off the engine.

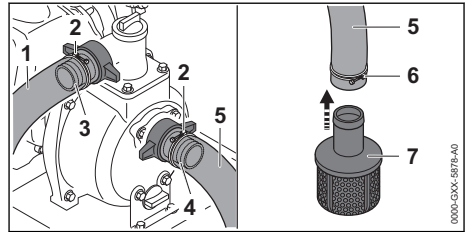


- ▶ Mount the union nuts (3) together with the gaskets and the nipples (2).

Fitting the hoses



- ▶ Push the clamps (2) onto the delivery hose (1) and the suction hose (5).
- ▶ Push the hose (1) onto the nipple (3).
- ▶ Push the hose (5) onto the nipple (4).



- ▶ Position the clamps (2) in the center of the nipples (3 and 4).
- ▶ Tighten down the screws on the clamps (2) firmly.
Delivery hose (1) and suction hose (5) are now firmly attached to the water pump.
- ▶ Push the clamp (6) onto the other end of the suction hose (5).
- ▶ Push the end of the hose (5) onto the nipple on the strainer (7).
- ▶ Position the clamp (6) in the center of the nipple (7).
- ▶ Tighten down the screw on the clamp (6) firmly.
The strainer (7) is now firmly connected to the suction hose (5).
- ▶ Hang the strainer (7) in the water source so that it does not touch the bottom.

6.2 Filling Water Pump with Water

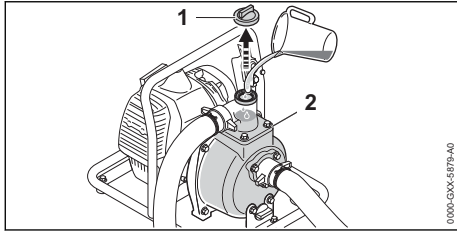


A video is available for this chapter



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As the water pump is not self-priming, it must be filled with water.



- ▶ Unscrew the cap (1) counterclockwise.
- ▶ Fill water pump with water – at least up to housing edge (2).
- ▶ Fit the screw cap (1).
- ▶ Turn the screw cap (1) clockwise and tighten it down firmly by hand.

7 Mixing Fuel and Refueling the Water Pump

7.1 Mixing fuel



A video is available for this chapter.



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The fuel required for this water pump is a mixture of two-stroke engine oil and gasoline, in a mixing ratio of 1:50.

STIHL recommends you use STIHL MotoMix.

If you mix the fuel yourself, use only STIHL two-stroke engine oil or another high-performance engine oil classified as JASO FB, JASO FC, JASO FD, ISO-L-EGB, ISO-L-EGC or ISO-L-EGD.

STIHL specifies STIHL HP Ultra two-stroke engine oil or an equivalent high-performance engine oil in order to maintain emission limits over the machine's service life.

- ▶ Make sure that the octane number of the gasoline is at least 90 RON and the ethanol content is not more than 10% (for Brazil: 27%).
- ▶ Make sure the two-stroke engine oil you are using meets requirements.
- ▶ Depending on the desired amount of fuel, determine the correct amounts of two-stroke engine oil and gasoline in a mixing ratio of 1:50. Examples for fuel mixes:
 - 20 ml Two-stroke engine oil, 1 l gasoline
 - 60 ml Two-stroke engine oil, 3 l gasoline
 - 100 ml Two-stroke engine oil, 5 l gasoline

- ▶ Pour two-stroke engine oil into a clean approved fuel canister first and then add gasoline.
- ▶ Mix the fuel before topping up.

7.2 Refueling the Water Pump

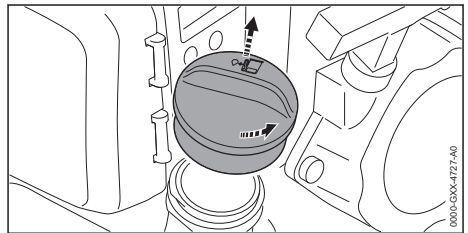


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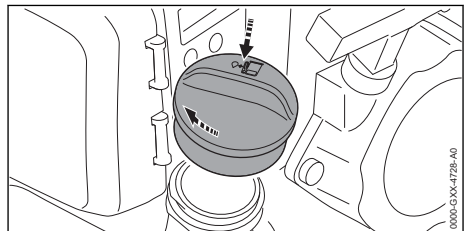
- ▶ Shut off the engine.
- ▶ Place your water pump on a level surface so that the fuel tank cap faces up.
- ▶ Use a damp cloth to clean the fuel tank cap and the area around it.



- ▶ Turn the tank cap counterclockwise until it can be removed.
- ▶ Remove the fuel tank cap.

NOTICE

- Exposure to light, direct sunlight and extreme temperatures may accelerate fuel separation or aging. The water pump can be damaged if it is used with a fuel mix that has separated or has aged.
 - ▶ Mix the fuel before topping up.
 - ▶ Do not top up with fuel stored for more than 30 days (STIHL MotoMix: 5 years).
- ▶ When topping up, ensure that no fuel is spilled and that the fuel level remains at least 15 mm under the edge of the tank.



- ▶ Fit the fuel tank cap on the tank opening.



- ▶ Turn the tank cap clockwise and tighten it down firmly by hand.
The fuel tank is closed.

8 Starting and Stopping the Engine

8.1 Selecting the correct starting procedure


When must the engine be prepared for starting?

The engine must be prepared for starting if one of the following conditions apply:

- The engine is at ambient temperature.
- The engine stopped when accelerated for the first time.
- The engine stopped because the fuel tank was empty.
- ▶ Prepare engine for start,  8.2 and then start the engine,  8.3.

When can the engine be started without preparation?

The engine can be started without preparation if it has been running for at least 1 minute and only shut down for a short work break.

- ▶ Starting the engine,  8.3.

8.2 Preparing Engine for Start

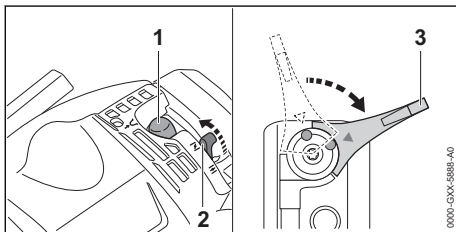


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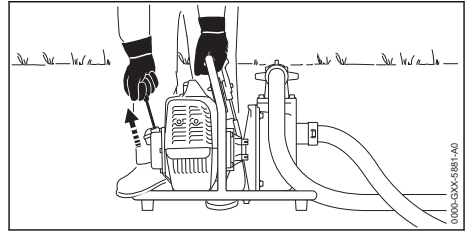


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- ▶ Select the correct starting procedure.
- ▶ Stand the water pump on a level surface.



- ▶ Press the manual fuel pump bulb (1) at least five times.
- ▶ Move the choke lever (2) to position **N**.
- ▶ Turn the throttle lever (3) clockwise as far as stop.



- ▶ Press the water pump down on the ground with your left hand on the handlebar and step on the carrying frame with your left foot.
- ▶ Pull the starter grip slowly with your right hand until you feel it engage.
- ▶ Pull the starter grip quickly and allow the starter rope to rewind several times until the engine fires and stops.
- ▶ If the engine does not stop: Move the choke lever (2) to position **III** so that the engine does not flood.
The engine stops.

8.3 Starting the Engine

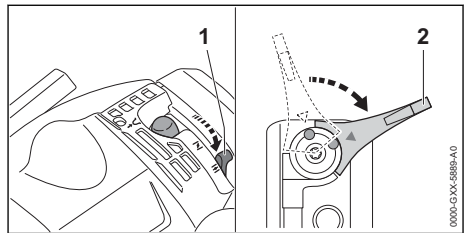


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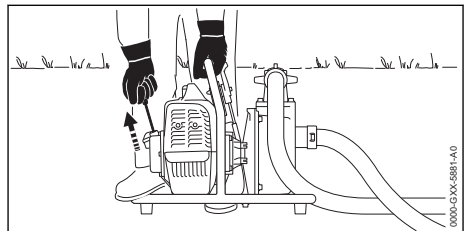


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- ▶ Select the correct starting procedure.
- ▶ Stand the water pump on a level surface.

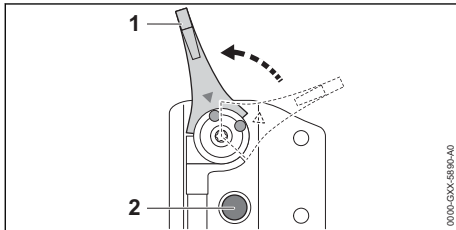


- ▶ Move the choke lever (1) to position **III**.
- ▶ Turn the throttle lever (2) clockwise as far as stop.



- ▶ Press the water pump down on the ground with your left hand on the handlebar and step on the carrying frame with your left foot.
- ▶ Pull the starter grip slowly with your right hand until you feel it engage.
- ▶ Pull the starter grip quickly and allow the starter rope to rewind several times until the engine runs.
- ▶ If the engine does not start: Prepare the engine for the start and then try again to start the engine.

8.4 Stopping the Engine



- ▶ Turn the throttle lever (1) counterclockwise as far as stop.
The engine runs at idling speed.
- ▶ Depress the stop switch (2).
The engine stops.
- ▶ If the engine does not stop:
 - ▶ Move the choke lever to position **II**.
The engine stops.
 - ▶ Do not use your water pump and contact your STIHL servicing dealer for assistance.
The stop switch is defective.

9 Checking the Water Pump

9.1 Checking the Controls

- ▶ Start the engine.
- ▶ Depress the stop switch.
The engine stops.
- ▶ If the engine does not stop:
 - ▶ Move the choke lever to position **II**.
The engine stops.
 - ▶ Do not use your water pump and contact your STIHL servicing dealer for assistance.
The stop switch is defective.

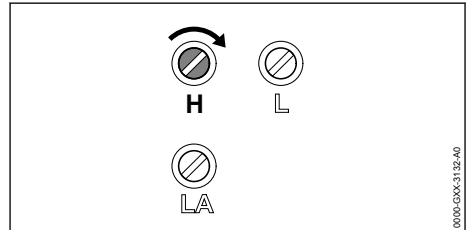
10 Working with the Water Pump

10.1 Adjusting Carburetor for Operation at High Altitude

If you use the water pump at high altitude, the engine will not deliver optimum power. The car-

buretor setting can be adjusted to obtain optimum engine power.

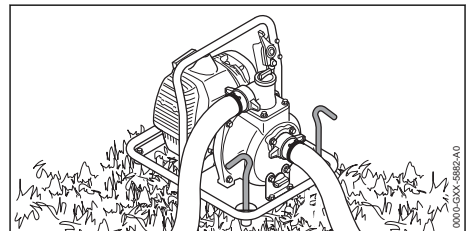
- ▶ Start the engine.
- ▶ Warm up the engine by opening and closing the throttle for about 1 minute.



NOTICE

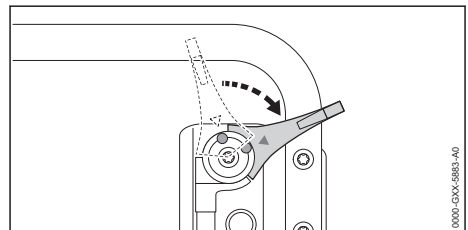
- The engine may overheat if the water pump is used after returning to a low altitude.
 - ▶ Carry out the standard setting.
- ▶ Rotate the high speed screw (H) clockwise until the engine delivers optimum power.

10.2 Securing the Water Pump in Position



- ▶ Anchor the water pump so that it cannot move.

10.3 Pumping



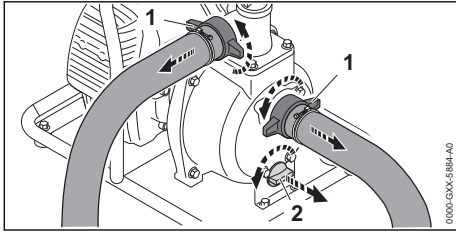
- ▶ Pump water at full throttle.

11 After Finishing Work

11.1 After Finishing Work

- ▶ Connect water pump to a water source that cannot draw in sand or dirt.

- ▶ Start the engine.
Sand and dirt are rinsed out of the water pump and hoses.
- ▶ Shut off the engine.
- ▶ Allow water pump to cool down.



- ▶ Unscrew the union nuts (1).
Remove the hoses.
- ▶ Rotate the screw cap (2) counterclockwise until it can be removed.
Water flow from the water pump.
- ▶ Fit the screw cap (2).
- ▶ Turn the screw cap (2) clockwise and tighten it down firmly by hand.
- ▶ If the water pump is wet: Allow water pump to dry.
- ▶ Clean the water pump.
- ▶ Clean the air filter.

12 Transporting

12.1 Transporting the Water Pump

- ▶ Stop the engine.

Carrying the water pump

- ▶ Carry the water pump by the frame with the muffler pointing away from the body.

Transporting the water pump in a vehicle

- ▶ Secure the water pump in an upright position so it cannot tip over or move.

13 Storing

13.1 Storing the Water Pump

- ▶ Shut off the engine.
- ▶ Check the following points when storing the water pump:
 - The water pump is out of the reach of children.
 - The water pump is clean and dry.
- ▶ If you store the water pump for more than 30 days:
 - ▶ Open the fuel tank cap.
 - ▶ Drain the fuel tank.
 - ▶ Close the fuel tank.
 - ▶ If a manual fuel pump is fitted: Press the manual fuel pump at least 5 times.

- ▶ Start the engine and run it at idling speed until it stops.

14 Cleaning

14.1 Cleaning the Water Pump

- ▶ Shut off the engine.
- ▶ Allow water pump to cool down.
- ▶ Clean the water pump with a damp cloth or STIHL resin solvent.
- ▶ Clean cooling air slots with a soft brush.

14.2 Cleaning the Strainer

- ▶ Shut off the engine.
- ▶ Rinse the strainer under running water.

14.3 Cleaning the Hoses

- ▶ Shut off the engine.
- ▶ Clean the hoses with a damp cloth.
- ▶ Rinse the hoses with water.

14.4 Cleaning the Air Filter

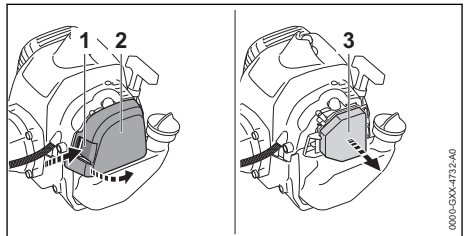


A video is available for this chapter

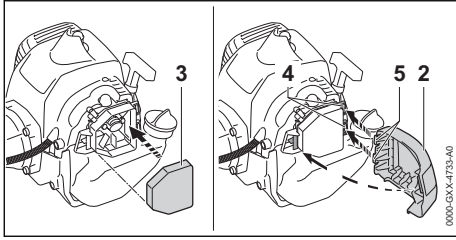


www.stihl.com/sx1rhi

- ▶ Shut off the engine.



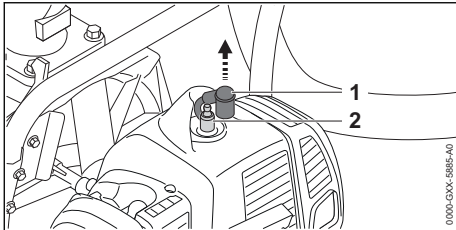
- ▶ Depress the locking tab (1) and remove the cover (2).
- ▶ Clean the area around the air filter (3) with a damp cloth or a soft brush.
- ▶ Take out the air filter (3).
- ▶ Knock out the filter (3).
- ▶ If the air filter (3) is damaged. Install a new air filter (3).
- ▶ Wash the air filter (3) in warm soapy water.
- ▶ Rinse the air filter (3) under running water.
- ▶ Allow air filter (3) to dry in the air.
- ▶ Impregnate the air filter evenly with 5 ml of two-stroke engine oil



- ▶ Install the air filter (3).
- ▶ Fit the filter cover (2) so that the tabs (5) engage the recesses (4).
- ▶ Close the filter cover (2).
The filter cover (2) snaps into place.

14.5 Cleaning the Spark Plug

- ▶ Shut off the engine.
- ▶ Allow water pump to cool down.



- ▶ Pull off the spark plug boot (1).
- ▶ If the area around the spark plug (2) is soiled: Clean the spark plug (2) with a cloth.

- ▶ Unscrew the spark plug (2).
- ▶ Clean the spark plug (2) with a cloth.
- ▶ If the spark plug (2) is corroded: Install a new spark plug (2).
- ▶ Insert and tighten down the spark plug (2) firmly.
- ▶ Press the spark plug boot (1) firmly home.

15 Maintenance

15.1 Maintenance intervals

Maintenance intervals depend on the ambient conditions and the operating conditions. STIHL recommends the following maintenance intervals:

After every 100 hours of operation

- ▶ Replace the spark plug.

Monthly

- ▶ Have the fuel tank cleaned by a STIHL dealer.
- ▶ Have the pickup body in the fuel tank cleaned by a STIHL dealer.

Annually

- ▶ Have the pickup body in the fuel tank replaced by a STIHL dealer.

16 Repairing

16.1 Repairing the Water Pump

The water pump cannot be repaired by the user.

- ▶ If the water pump is damaged: Do not use your water pump and contact your STIHL servicing dealer for assistance.


17 Troubleshooting

17.1 Troubleshooting Water Pump

Most malfunctions have the same causes.

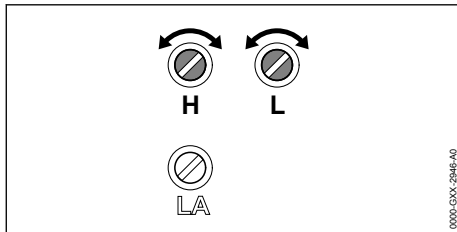
- ▶ Perform the following operations:
 - ▶ Clean the air filter.
 - ▶ Clean or replace the spark plug.
 - ▶ Carry out the standard setting.
 - ▶ Adjust idle speed.
 - ▶ Adjust carburetor for operation at high altitude.
- ▶ If the malfunction still exists: Take the action described in the following table.

Condition	Cause	Remedy
Engine does not start.	Insufficient fuel in the tank.	▶ Mix fuel and refuel the water pump.
	Carburetor is too hot.	▶ Allow water pump to cool down. ▶ Before starting the engine: Depress the manual fuel pump bulb at least ten times.
	Carburetor is iced up.	▶ Allow water pump to warm up to +10°C.
	Engine is flooded.	▶ Clear the combustion chamber.

Condition	Cause	Remedy
Engine idles erratically.	Carburetor is iced up.	▶ Allow water pump to warm up to +10°C.
Engine stops while idling	Carburetor is iced up.	▶ Allow water pump to warm up to +10°C.
Water pump does not pump water.	Strainer or hoses are blocked.	▶ Clean the strainer and hoses.
	Insufficient water.	▶ Make sure an adequate amount of water is available.
	There is no water in the water pump.	▶ Connect water pump to a water source.
		▶ Fill water pump with water.
	Maximum delivery head or maximum suction head has been exceeded.	▶ Observe the maximum delivery head or maximum suction head.  18.1
	Suction hose has collapsed.	▶ Use a dimensionally stable suction hose of suitable pressure rating.

17.2 Standard Setting

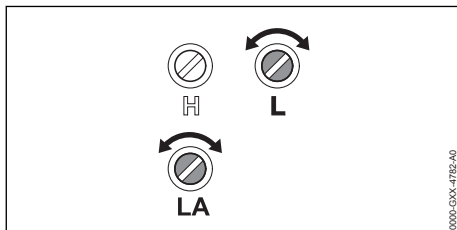
- ▶ Shut off the engine.



- ▶ Turn the high speed screw (H) counterclockwise as far as stop.
- ▶ Turn the low speed screw (L) clockwise as far as stop.
- ▶ Turn the low speed screw (L) 3/4 of a turn counterclockwise.

17.3 Adjusting Idle Speed

- ▶ Carry out the standard setting.
- ▶ Connect water pump to a water source.
- ▶ Fill water pump with water.
- ▶ Start the engine.
- ▶ Warm up the engine by opening and closing the throttle for about 1 minute.



Engine stops while idling

- ▶ Turn the idle speed screw (LA) clockwise until the water pump begins to pump water.
- ▶ Turn the idle speed screw (LA) one full turn counterclockwise.

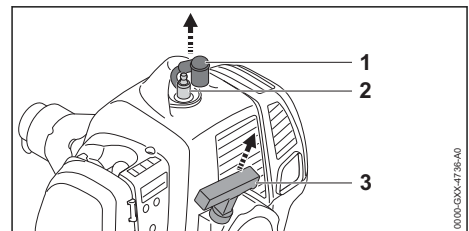
Erratic idling behavior or poor acceleration

- ▶ Turn the low speed screw (L) clockwise or counterclockwise until the engine runs and accelerates smoothly.

Water pump continues to pump water at idle speed

- ▶ Turn the idle speed screw (LA) counterclockwise until no more water is pumped.
- ▶ Turn the idle speed screw (LA) one full turn counterclockwise.

17.4 Clearing the Combustion Chamber



- ▶ Pull off the spark plug boot (1).
- ▶ Unscrew the spark plug (2).
- ▶ Dry the spark plug (2).

**WARNING**

- Unconfined sparks may occur if the starter grip is pulled after the spark plug boot has been removed. Sparks may cause a fire or an explosion in an easily combustible or explosive environment. This can result in serious or fatal injuries and damage to property.
 - ▶ Depress the stop switch and keep it depressed before pulling the starter grip.

- ▶ Depress the stop switch and hold it in that position.
- ▶ Pull the starter grip (3) several times and guide it back slowly. The combustion chamber is cleared.
- ▶ Insert and tighten down the spark plug (2) firmly.
- ▶ Press the spark plug boot (1) firmly home.

18 Specifications

18.1 STIHL WP 230 Water Pump

- Displacement: 36.3 cm³
- Engine power to ISO 8893: 1.48 kW (2.0 bhp) at 9,000 rpm
- Idle speed : 2,800 rpm
- Approved spark plug: Bosch WSR 6 F from STIHL
- Electrode gap of the spark plug: 0.5 mm
- Dry weight: 11.3 kg
- Max. fuel tank capacity: 810 cm³ (0.81 l)
- Hose connector diameter: 38 mm (1.5 in)
- Maximum delivery head: 27 m
- Maximum suction lift: 8 m
- Maximum delivery rate: 15.6 m³/h

18.2 Noise and Vibration Data

- K-value for sound pressure level is 2 dB(A). K-value for sound power level is 2 dB(A).
- Sound pressure level L_{pA} measured according to ISO 20361: 92 dB(A)
 - Sound power level L_w measured according to ISO 20361: 104 dB(A)

18.3 Exhaust Emissions

The CO₂ value measured in the EU type approval procedure is specified at www.stihl.com/co2 in the product-specific technical data.


The measured CO₂ value was determined on a representative engine in accordance with a standardised test procedure under laboratory conditions and does not represent either an

explicit or implied guarantee of the performance of a specific engine.

The applicable exhaust emission requirements are fulfilled by the intended usage and maintenance described in this instruction manual. The type approval expires if the engine is modified in any way.

19 Spare Parts and Accessories

19.1 Spare parts and accessories

STIHL  These symbols indicate original STIHL spare parts and original STIHL accessories.

STIHL recommends the use of original STIHL spare parts and accessories.

Despite ongoing market observation, STIHL is unable to judge the reliability, safety and suitability of other manufacturers' spare parts and accessories; accordingly, STIHL cannot warrant for the use of those parts.

Original STIHL spare parts and original STIHL accessories are available from STIHL dealers.

20 Disposal

20.1 Disposing of the Water Pump

Information on disposal is available from your local authority or from a STIHL dealer.

Improper disposal may be harmful to health and pollute the environment.

- ▶ Take STIHL products including packaging to a suitable collection point for recycling in accordance with local regulations.
- ▶ Do not dispose of the product with domestic waste.

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