



Water pump

TRANSLATION OF THE ORIGINAL OPERATING MANUAL



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Notes on printing All descriptions, technical data and illustrations refer to the design of the water pump at the time of printing.

We reserve the right to make modifications in terms of ongoing technical development. This operating manual does not include technical modifications that occurred after printing.

The colours in this operating manual do not always comply completely with the actual designs due to technical printing reasons.

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1 Directories

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2 About this manual

We would like to explain to you the safe and correct use of your water pump in the best possible way through this operating manual. To do this we have oriented ourselves to the new European standard DIN EN 82079-1 for preparing the user manuals.

It is absolutely essential for safe and appropriate use that you read through this manual very carefully and understand it before using the device for the first time.

Your adherence to it will create the foundations for:

- avoiding dangers for yourself and others,
- reducing repair costs and downtimes as well as
- increasing the reliability and service life of the water pump.

Apart from this manual, the laws, regulations, guidelines, and standards applicable in the country of use must also be adhered to.

This document only describes the safe operation of the Water pump when it is used as a complete unit. The following also includes detailed technical operating instructions that are binding with regard to using the device's specific components.

This documentation and also the product described in it are subject to a continuous improvement process. In doing this we ensure that the full product is compliant with the current safety requirements and the current state-of-the-art. The most up-to-date English version of the operating manual and the original operating manual can be found on our website

www.endressparts.com

2.1 Constituent parts of the documentation

Apart from these operating instructions, the following documents are needed to ensure that you have the all of the documentation for your device:

- EU Declaration of Conformity



NOTICE!

The complete documentation is an integral part of the device and you must adhere to it.

- ▶ All of the integral parts of the documentation must always be accessible to the operating personnel and they should be kept with the device.

2.2 Using this operating manual

In order to increase the legibility, comprehensibility and transparency of the document, certain information is highlighted or identified according a uniform system. The following particularly belong in this category:

signs warning about dangers to life and limb

Safety and warning notices are necessary at all locations where there is potential danger from the device which cannot be eliminated by design or operational measures. We restricted ourselves to the permitted minimum in order to place the required distinctive warning notices at the correct point in time without impairing the legibility and comprehensibility of the operating manual. This is according

to the regulations contained in the international standard DIN ISO 3864 describes a fixed rule for all safety and warning notices, as shown in the following example.

Examples:

Signal Word
 Hazard Type
 Hazard Consequence
 ► Hazard Avoidance

 **DANGER!**

Electrical voltage

Risk of suffering potentially deadly electrocution by touching live parts

- ▶ Only use undamaged connecting lines
- ▶ Avoid all damp / wetness when connecting consumers
- ▶ Never operate the power generator with an opened control panel

The standard mentioned classifies the safety risks according to different risk potentials. To understand and avoid dangers to one's health and even life, please be sure to read the explanations given in Chapter 4.1 .

Safety symbols

These warning notices are usually used in a safety symbol which also emphasises the type of danger; see next example. A list of the safety symbols used in this operating manual can be found in Chapter Fig. 3-1 . The safety symbols never stand alone.



Notices on avoidance of damage to the device

According to DIN ISO 3864, notices which warn against false operation and possible damage to the device or to the equipment used should be clearly distinguishable from previously named warning notices in as far there is no danger to health. An example of such a notice can be seen here:

Signal Word
 Type and Consequence of Improper Use
 ► Intended Use

NOTICE!

Use of wrong or outdated fuel damages or destroys the engine.

- ▶ Only use released fuel.
- ▶ Observe the shelf life of the fuel according to the supplier.
- ▶ Observe the Operating manual from the engine manufacturer

Symbols and formattings in the text

In order to increase the legibility, comprehensibility and transparency of the document, various information and activities are awarded uniformly repeating bullets or formattings. The following example shows presentation of a sequence of actions with established work steps:

Example:

- ✓ Prerequisites which must be fulfilled before starting any sequence of actions
1. Action steps according to a fixed sequence.
 2. The action steps must be fully completed.
 3. The sequence must be observed.

Results of the action which should be achieved after performing the sequence of action.



Additional notices for operation or for function of a unit are marked with the adjacent symbol.



NOTICE!

The adjacent symbol is situated anywhere where the supplier documentation must be read and observed and refers to,

- ▶ appropriate information,
 - ▶ tasks or
 - ▶ action steps.
-

References to details and components in figures are made with blue bordered position numbers in the text such as the example of CE signs on the type plate demonstrates, see Fig. 3-1 .

3 Product identification

3.1 Welcome to ENDRESS!

We are pleased that you have made the decision to purchase an ENDRESS Water pump. You have purchased a high-performance product into which we have embodied decades of our experience and have integrated many functions oriented on daily use. Through careful selection of high quality components and materials in combination with the proverbial Swabian engineering performance you have in your possession a device which will operate reliably for many years, also under the hardest of operating conditions.

3.2 Your product

Customer service

In order to precisely identify your device there is a type plate attached to the Water pump (see Fig. 3-1), which includes details about the device's name and the "S/N" serial number. If you have any questions about device details, functions or notices concerning operation, please contact our

Customer service: Tel. +49 7123 9737-44

Email: service@endress-stromerzeuger.de

You will find competent contact persons there, also concerning original spare parts and wear parts. (see also Chapter 12)

Type plate

The type plate shown below is a representation of the adhesive label placed on the device. Please be prepared, when contacting our service team, to assist us in exactly identifying your device.



Fig. 3-1 Example of a type plate

3.2.1 A device description and intended use

Your water pump has been designed solely to pump fresh water that is not intended for human consumption.

The complete device consists of a fresh water pump that is driven by a combustion engine that is bolted onto it. This unit is mounted in a stable tubular steel frame with vibration dampers to provide elastic and low-vibration support.

The water pump is only to be used outdoors and within the indicated voltage and nominal rpm ranges (see type plate).

The water pump must not to be used in potentially explosive environments.

The water pump is not to be used in environments where there is a risk of fire.

The water pump must be operated according to the specifications listed in the technical documentation.

Operator's responsibilities

It is the responsibility of the operator to provide the necessary safeguards in order to protect his personnel and his property. Familiarize yourself with how to stop the pump quickly in an emergency situation. Always switch off the engine if you have to leave the pump unattended for any reason. Familiarize yourself with using all of the controls and connections.

Ensure that anyone who will be operating the pump has received proper training. Never let children to operate the pump. Keep children and pets well away from the operating area.

Operating the pump

Only pump water that is not intended for human consumption. Never attempt to pump flammable liquids such as gasoline or heating oils as this might result in a fire or explosion and cause serious injuries. Pumping seawater, beverages, acids, chemical solutions or other liquids that might cause corrosion will damage the pump.

Any inappropriate use or any activities with the water pump that are not described in these instructions will be forbidden misuse that is outside the legally defined limits of the manufacturer's liability.

3.2.2 Foreseeable misuse

Apart from the description of appropriate use, the lawmaker also requires concrete references to the results of "reasonably foreseeable misuse". The manufacturer's EU Declaration of Conformity as well as the operating licence will lapse automatically in the event of the water pump being incorrectly used or handled inappropriately. For products with a manufacturer's warranty the manufacturer will reject any claims made under warranty for damages which were caused by misuse and its direct as well as indirect consequences.

In particular unauthorised misapplications include:

- operating the Water pump without making valid checks for
 - electrical safety
 - checking that the stipulated servicing and maintenance work has been done
- any constructional or electrical modifications that were made to the water pump
- inadequately trained operating personnel using the water pump
- ensuring that flammable or corrosive liquids are not being pumped. Corrosion will damage the pump's parts.

Furthermore at all costs avoid the following Misuses:

- Never refuel the water pump's own tank when the engine is running. The vibrations and strong exhaust streams during operation can lead to fuel spillage. This leads to an increased risk of explosion and fire and therefore danger to operating personnel, the environment and the device.
- Never refuel the water pump's own tank when it is hot. Overflowing fuel and exhaust fuel vapours can ignite on hot parts of the device.
- Never connect the water pump into other pumping systems.
- Never place the water pump in potentially explosive environments. The water pump's individual components have not been designed as Ex-protected components.
- Never operate the water pump in rooms, narrow pits or vehicles. The combustion exhaust gases contain poisonous substances including the odourless but deadly gas carbon monoxide (CO) which, when breathed in, can accumulate in cases of poor air circulation to reach deadly concentrations. Poor fresh air circulation will also lead to overheating and possibly damage the water pump to the point where it will be destroyed.
- For the same reasons of risk, never divert exhaust gases for the purposes of heating rooms or vehicles.
- Never use a high pressure cleaner or a strong jet of water to clean the water pump.
- Never allow water to get inside the water pump. Never pour water over the engine and never clean it using a water hose or a high pressure cleaner.

3.3 Scope of delivery of your water pump

Apart from the technical documentation mentioned in Chapter 2.1 the following articles are also Scope of delivery of your water pump:



Fig. 3-2 included in delivery

Item	Name
1	Hose coupling
2	Hose coupling sieve
3	Sieve
4	Sealing washer
5	Tool kit
6	Hose clamps

3.4 Markings on the water pump

An important part of the operating manual is in the form of labelling and notices on your water pump. This The label must not be removed and must always be maintained in a legible condition. In a case of damage to the Labels can be ordered from our customer service team. The following figures and tables show the stipulated attachment point and a short explanation about labels.

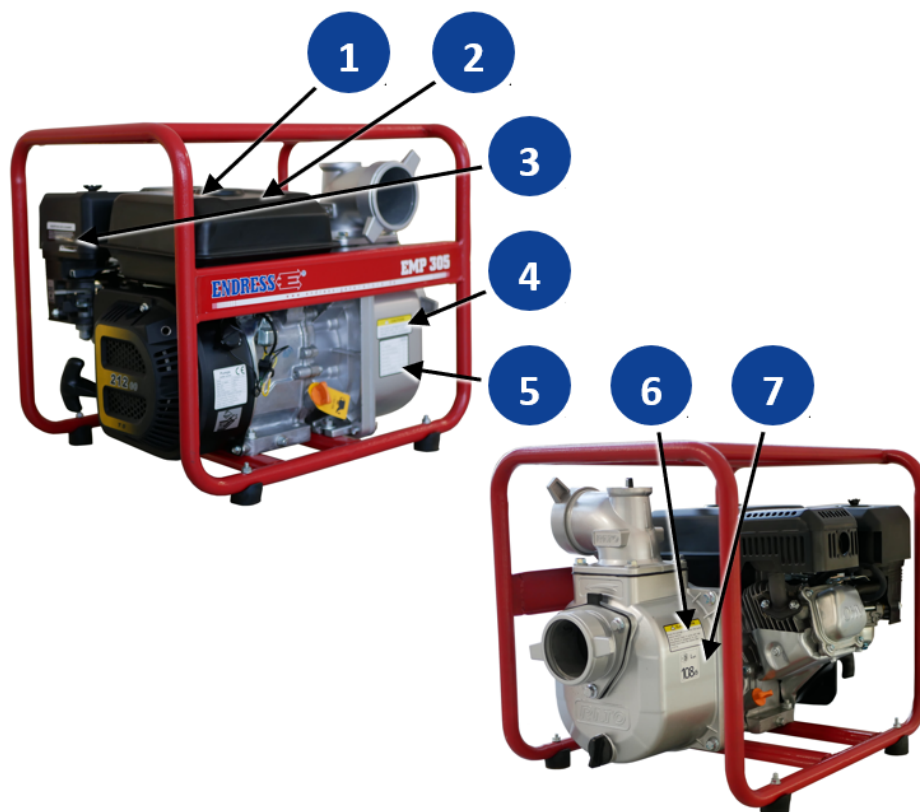


Fig. 3-3 Labels on the device

Item	Label	Significance																		
1		Warning about easily inflammable liquids																		
2		Mandatory sign Read the operating instructions before starting up																		
3		Maintenance instructions got the air filter																		
4		Warning Water quality																		
5	<table border="1" data-bbox="663 1245 943 1491"> <thead> <tr> <th>Type</th> <th>Centrifugal water pump</th> </tr> </thead> <tbody> <tr> <td>Net weight(kg)</td> <td>25.5</td> </tr> <tr> <td>Water Inlet Diameter(mm)</td> <td>76</td> </tr> <tr> <td>Water Outlet Diameter(mm)</td> <td>76</td> </tr> <tr> <td>Max.head(m)</td> <td>28</td> </tr> <tr> <td>Max.flow(m³/h)</td> <td>60</td> </tr> <tr> <td>Max.suction(m)</td> <td>8</td> </tr> <tr> <td>Engine power(kW/min⁻¹)</td> <td>3.8/3600</td> </tr> <tr> <td>Engine torque(N.m/min⁻¹)</td> <td>11/2500</td> </tr> </tbody> </table>	Type	Centrifugal water pump	Net weight(kg)	25.5	Water Inlet Diameter(mm)	76	Water Outlet Diameter(mm)	76	Max.head(m)	28	Max.flow(m ³ /h)	60	Max.suction(m)	8	Engine power(kW/min ⁻¹)	3.8/3600	Engine torque(N.m/min ⁻¹)	11/2500	Note Technical specifications
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Engine power(kW/min ⁻¹)	3.8/3600																			
Engine torque(N.m/min ⁻¹)	11/2500																			
6		Warning Fill the pump before starting it																		
7		Note Noise emissions																		

Tab. 3-1 Labels on the device

4 For your safety

The following chapter explains the basic Safety instructions for safely operating your water pump. Your device is a very high-performance electrical machine which is potentially dangerous when operated if it has not been installed, commissioned, used, serviced and repaired according to the operating manual. If necessary, the operating manual will also include different supplements that depend on the country of use, in addition to the present one.

Operation, use, servicing as well as any work with or on the water pump is only permitted to be undertaken by personnel who have read this chapter and have put its provisions into practice!

Specific warning notices can also be found regarding basic safety instructions further on in this operating manual. They are always placed in an explanatory text immediately before the description of work steps which can be dangerous if the warning notice is not observed. Read the following sections for correct and rapid understanding of these safety and warning notices. They describe their systematic structure as well as the meaning of markings and symbols.

4.1 Safety symbols

The safety symbol indicates graphically that a source of danger exists. We use the internationally valid safety symbols from ISO 7010 for rapid and unique classification of the respective dangerous situation. In the following there is a description of the warning symbols used in this operating manual with an explanation about the respective dangerous situations.



Warning of a general hazard

This warning symbol indicates activities where several causes can lead to risks. The concrete danger must be respectively more clearly specified by further notices.



Warning of a dangerous electrical voltage

This warning symbol indicates activities where the danger of electric shock exists, possibly with lethal consequences.



Warning of potentially explosive materials

This warning symbol indicates activities where the danger of an explosion exists, possibly with lethal consequences.



Warning of toxic substances

This warning symbol indicates activities where a risk of poisoning exists, possibly with lethal consequences.



Warning of corrosive substances

This warning symbol indicates activities where a risk of chemical burns to the environment as well as people exists, possibly with lethal consequences.



Warning of environmentally damaging substances

This warning symbol indicates activities where a risk of contaminating the environment exists, possibly with catastrophic consequences.



Warning of hot surfaces

This warning symbol indicates activities during which there is the danger of burns, possibly with lasting consequences.



Warning of a suspended load

This warning symbol indicates activities where the danger of falling loads exists, possibly with lethal consequences.



Warning of automatically starting machines

This warning symbol indicates activities where a danger of being injured by self-starting machines exists, possibly with lethal consequences.

4.2 General safety instructions

ENDRESS water pumps have been designed to pump water that is not intended for human consumption. Other uses can lead to severe injuries to operating personnel as well as persons nearby. There is also increased risk of damaging the water pump as well as further damage to equipment.



DANGER!

Mortal danger due to an electric shock if live parts are touched.

- ▶ Never operate the device if it is in a damaged condition.
- ▶ Never operate the device with wet hands.

The majority of injuries and damage to equipment can be avoided if all instructions given in this manual and all instructions attached to the device are followed.

The water pump must not be modified in any way, not even temporarily. This can lead to a mortal risk to operating and deployed personnel and damage to the unit as well as the consumers being used.

Operating company and Operating personnel are only to use the water pump according to regulations contained in the entire technical documentation (hereinafter referred to as appropriate use).

Every instance of inappropriate use as well as all water pump activities that are not described in these instructions are forbidden misuse and they are outside the legally defined limits of the manufacturer's liability. In return all claims for damages and claims made under warranty to ENDRESS-Elektrogerätebau GmbH which are associated with misuse are null and void.

4.3 Residual risks

As a manufacturer of EU-compliant machines, ENDRESS make great efforts to create designs which already eliminate possible risk potentials at the design stage. If this is not possible without significantly impairing the functions of a device, we implement suitable protective measures protect the user from injury.

If there are still some residual risks associated with working with the device, we clearly advise the user about these sources of danger, possible consequences as well as measures to avoid such dangers.

The residual dangers were analysed and Residual dangers identified by a risk analysis during the development and design of your Water pump according to the following: DIN EN 60204, DIN EN ISO 12100 and DIN EN ISO 8528-13.

References to general sources of danger can be found in Chapters 4 . From Chapter 5 one can find concrete warning notices placed before every action step which represents a residual risk.

The exact structure and contents of warning notices are defined in the ISO 3864 series of standards and follow an established identification marking required to immediately be able to estimate the degree of the respective danger. Exactly impress upon yourself the identification marking of the four different danger levels in order to be able to reliably assess the dangers associated with the individual operating states and action steps when reading the operating manual.


DANGER!

DANGER describes a danger which represents a high level of risk, which can lead to death or severe injuries, when not avoided.

- ▶ The individual points provide instructions and
- ▶ notices as aids to avoid the danger
- ▶ or to reduce the risk to an acceptable level.


WARNING!

WARNING describes a danger which represents a medium level of risk, which can lead to death or severe injuries, when not avoided.

- ▶ The individual points provide instructions and
- ▶ notices as aids to avoid the danger
- ▶ or to reduce the risk to an acceptable level.


CAUTION!

CAUTION describes a danger which represents a low level of risk, which can lead to minor or medium level injuries when not avoided.

- ▶ The individual points provide instructions and
- ▶ notices as aids to avoid the danger
- ▶ or to reduce the risk to an acceptable level.

NOTICE!

ATTENTION! describes a situation or action that might result in damage to equipment and/or malfunctions if it is not prevented.

- ▶ The individual points provide instructions and notices
- ▶ as an aid to avoid or prevent damage to equipment.



DANGER!

Engine exhaust gases contain poisonous and partially invisible gases such as carbon monoxide (CO) and carbon dioxide (CO₂).

Risk of death due to poisoning or asphyxiation.

- ▶ Ensure that there is good ventilation during the whole period of operation.
- ▶ The water pump must only be operated in the open air.
- ▶ Never direct the exhaust from the water pump into rooms or pits.

**! DANGER!****Danger of severe or mortal injuries being incurred from falling loads.**

- ▶ Never stand under or close to a suspended load, also not to provide assistance.
- ▶ Ensure that there is no person in the area of swivel of the lifting device.
- ▶ Use all suitable measures to prevent the suspended load from swaying.

**! DANGER!****Leaking engine oil and fuel can burn or explode.**

A risk of suffering severe even deadly burns.

- ▶ Prevent engine oil or fuel from leaking out.
- ▶ Never open the tank cover during operation or when it is hot.
- ▶ Remove leaked operating fluids immediately and appropriately.
- ▶ Never use an additional starting aid.
- ▶ Smoking, naked flames and sparks are forbidden.

**! DANGER!****Hot parts can ignite flammable and explosive materials.**

A risk of suffering severe even deadly burns.

- ▶ Never operate the water pump in the vicinity of combustible or flammable materials.
- ▶ Never operate the water pump in potentially explosive environmental conditions.



 **CAUTION!**

Certain surfaces on the device can get very hot whilst it is running.

Risk of burns

- ▶ Never touch any engine parts (in particular the exhaust system) for a few minutes after ceasing operation.
- ▶ Always leave hot engine parts to cool down before touching them.



 **CAUTION!**

A high device weight. Risk of crushing from improper handling during operation or transport.



- ▶ Only lift the generator with the aid of all handles provided or by using a suitable hoist.
- ▶ During transport on vehicles, ensure that there is the prescribed load securing in place.
- ▶ With it in a raised condition, never come close to or stand under the generator.

**NOTICE!**

Leaking engine oil and operating fluids can contaminate the soil and groundwater.

- ▶ Ensure that the water pump is transported horizontally and mounted.
- ▶ Make all efforts, at all costs, to prevent escaping of operating fluids.
- ▶ Dispose of contaminated soil immediately and according to regulations.

**NOTICE!**

Use of wrong or outdated fuel damages or destroys the engine.

- ▶ Only use the fuel displayed on the sign (Tab. 3-1).
- ▶ Observe the possibly enclosed documentation for the fuel release of the engine manufacturer
- ▶ Observe the shelf life of the fuel according to the supplier.
- ▶ Observe the engine operating manual.

**NOTICE!**

Excessive heat or moisture can destroy the device.

- ▶ Always ensure that there is a good supply of air and heat removal.
- ▶ Never operate the generator in rooms or narrow pits.
- ▶ Never clean the device with the aid of a strong jet of water or high pressure cleaner.
- ▶ Never allow water to find its way inside the generator.

4.4 Authorised operating personnel – qualifications and obligations

Your Water pump is a complex machine and its operation and maintenance requires precise knowledge of its functions and potential dangers. Therefore any work with or on the device, of any kind, may only be performed by authorised and instructed operating personnel.

Quite apart from the authorisation which the operating company of the device must issue, only such persons may operate or service the device who fulfil the following criteria. They are designated in this operating manual as operating personnel.

The authorised operating personnel must:

- be of age
- be trained in first aid and be able to provide it
- be familiar with the accident prevention regulations and safety instructions relevant to the Water pump and be able to apply them
- have read Chapter 4 For your safety, have understood the contents and are able to use and implement them in practice
- be trained and instructed according to the rules of conduct in the case of malfunctions
- have the physical and mental abilities to carry out their responsibilities, tasks, and activities on the Water pump
- be trained and instructed in their responsibilities, tasks and activities on the Water pump
- have understood all of the technical documentation concerning their responsibilities, tasks and activities on the Water pump and be able to implement them in practice.

4.5 Danger zones and work areas

In order to be able to consider all of a machine's safety aspects and to comply with the safety and health protection requirements of the applicable standards and EU directives, we have assessed the use of your Water pump in all of the phases that it will go through during its product service life (product life cycle). The following zones were defined on the Water pump for this purpose: The danger zones and work places (work areas) around the Water pump are determined by the activities to be undertaken within the various phases within specific life cycles:

- **Working zone:** In this zone on and around the Water pump (approx. 2 metre radius) the trained operating personnel (see Chapter 4.4) may operate and inspect the device in compliance with all of the safety and operating instructions given in the technical documentation. All other people (especially minors and people with disabilities) must remain outside this working zone.
- **Danger zone:** This zone must be kept free of all personnel during all phases of use and service life of the device. Any work in this zone is only to be undertaken by specially trained specialists if it is essential for the fulfilling of the task and if all of the protective equipment (PPE) needed is used. You must always comply with the following limits:

Product's service life phase	Danger zone
Transport and installation	within a radius of 1m around or below the device
Operation	within the outer limits of the device
Service and maintenance	Within the outer limits of the device when the is switched on Water pump

Tab. 4-1 Danger zones around the Water pump

5 Description of the device

5.1 Views

The following section provides an overview of the names and locations of the most important components in your Water pump. It is important to ensure that you are familiar with these in order to further understand the described functions and operating steps and to be able to perform these safely. Severe or deadly personal injuries can result and/or damage to the water pump as well the attached power consuming equipment if these instructions are ignored.

In order to be able easily find the operating controls and components named in the following descriptions and instructions, the separate views of the water pump are named throughout in a way that can be taken from the following figure.



①	Suction side	②	Outlet side
③	Maintenance page	④	Engine side

5.2 Components on the engine and maintenance side



Fig. 5-1 Components on the engine and maintenance side

1	Pressure side connection	2	Ignition switch
3	Oil filling screw	4	Cable pull starter
5	fuel valve	6	Choke lever
7	Gas lever	8	Air filter
9	Tank cover		

5.3 Components on the inlet and outlet sides



Fig. 5-2 Components on the inlet and outlet sides

1	Venting pump	2	Silencer
3	Intake connection	4	Water discharge pump

6 Commissioning

The following chapter explains the basic procedure for initial or repeated Water pump start-ups in manual mode. Follow the working steps described below when you put your Water pump into operation for the first time or re-start it again after transporting it.

6.1 Initial start-up

You must carry out the following preparatory steps after you have unpacked your water pump from the delivery packaging and are going to run it for the first time:

Conditions

- ✓ The water pump has been completely unpacked.
 - ✓ Suitable engine oil must be ready for use (see Chapter 7.3).
 - ✓ Suitable fuel must be ready for use (see Chapter 6.7).
1. Check the external condition of the pump, e.g. whether all screws are tightly secured.
 2. Turn the oil filling screw counter-clockwise to release the filling opening.
 3. Fill the engine with the suitable engine oil (see Chapter 7.3).
 4. Turn the oil filling screw clockwise to reseal the opening.

The water pump is now ready to be started.

6.2 Transporting and positioning your water pump

The following requirements must be fulfilled before you can transport the Water pump:

Conditions

- ✓ the ground at the installation site must be even and capable of taking the load
- ✓ the Water pump is switched off
- ✓ the Water pump has cooled down



NOTICE!

Leaking engine oil and operating fluids can contaminate the soil and groundwater.

- ▶ Ensure that the water pump is transported horizontally and mounted.
- ▶ Make all efforts, at all costs, to prevent escaping of operating fluids.
- ▶ Dispose of contaminated soil immediately and according to regulations.

Selecting the installation site

Always take the following points into consideration when you select the installation site for your water pump:

- 1) Maximize the flow rate by placing the pump as close as possible to the water supply point.
- 2) Keep the length of the hose line as short as possible.
- 3) Always place the water pump as close as to the water level as possible.
- 4) The higher the overall height, the lower the flow rate will be.

Manual transporting



WARNING!

Danger due to the device's heavy weight.

Risk of crushing through sliding or a falling machine

- ▶ Take note of the empty weight up to 48 kg.
- ▶ Use personal protection equipment.
- ▶ Two people are needed to lift the water pump.
- ▶ Raise / lower the device evenly.
- ▶ Walk slowly.



Carrying the water pump

1. Lift the water pump's frame simultaneously and evenly from all four sides.
2. Carry the water pump slowly to its site.
3. Lower the device evenly.

The unit has been carried to its site and it has been positioned.

6.3 Filling your water pump

Proceed as follows to refill the Water pump tank .

Conditions

- ✓ Water pump is switched off
- ✓ Water pump has cooled down
- ✓ there must be an adequate air supply and air removal
- ✓ all power consuming equipment must be disconnected or switched off



DANGER!

Leaking engine oil and fuel can burn or explode.

A risk of suffering severe even deadly burns.

- ▶ Prevent engine oil or fuel from leaking out.
- ▶ Never open the tank cover during operation or when it is hot.
- ▶ Remove leaked operating fluids immediately and appropriately.
- ▶ Never use an additional starting aid.
- ▶ Smoking, naked flames and sparks are forbidden.



NOTICE!

Leaking fuel can contaminate soil and groundwater.

- ▶ Take note of the residual quantity in the tank and its maximum filling capacity.
- ▶ Always bear in mind that the fuel gauge reacts only after a time delay.
- ▶ Fill the tank to a maximum of 95%.
- ▶ Always use a filling aid (e.g. funnel).



NOTICE!

Use of wrong or outdated fuel damages or destroys the engine.

- ▶ Only use the fuel displayed on the sign (Tab. 3-1).
- ▶ Observe the possibly enclosed documentation for the fuel release of the engine manufacturer
- ▶ Observe the shelf life of the fuel according to the supplier.
- ▶ Observe the engine operating manual.

Filling the water pump

1. Unscrew the tank cover Fig. 5-1 .
2. Insert the filler nozzle into the filling opening.
3. Fill with fuel slowly and evenly.
4. Only fill the tank up to the flank on the fuel strainer.
5. Remove the filler nozzle.
6. Refit the tank cover.

The Water pump has been filled.

6.4 Installing the intake hose

Use a commercially available hose with reinforced walls as the suction hose so that the resulting suction vacuum will not cause the hose to contract. Use the hose connection and the hose clamp included in the delivery to attach the intake hose to the water pump.

The intake hose should not be longer than necessary. The best pumping capacity will be realised if the pump is placed close to the water intake point and the hoses are short.

Do not use a hose whose diameter is smaller than the suction port on the pump. Always use hoses of at least the following sizes:

1. At least 50 mm for EMP 205
2. At least 76 mm for EMP 305

Proceed as follows to connect up the intake hose for the Water pump

Conditions

- ✓ Water pump is switched off
- ✓ Water pump has cooled down
- ✓ Hose with a reinforced wall is ready for use.
- ✓ Hose connection and hose clamp are ready for use.

Installing the intake hose

1. Fit the sealing washer and the hose coupling (included in the delivery) to the intake connection.
2. Use the hose clamping ring to fit the hose clamp on the intake hose.
3. Fit the strainer on the other end of the intake hose.
4. Use another hose clamp to secure the strainer in place.

The intake hose is now fitted on the water pump.

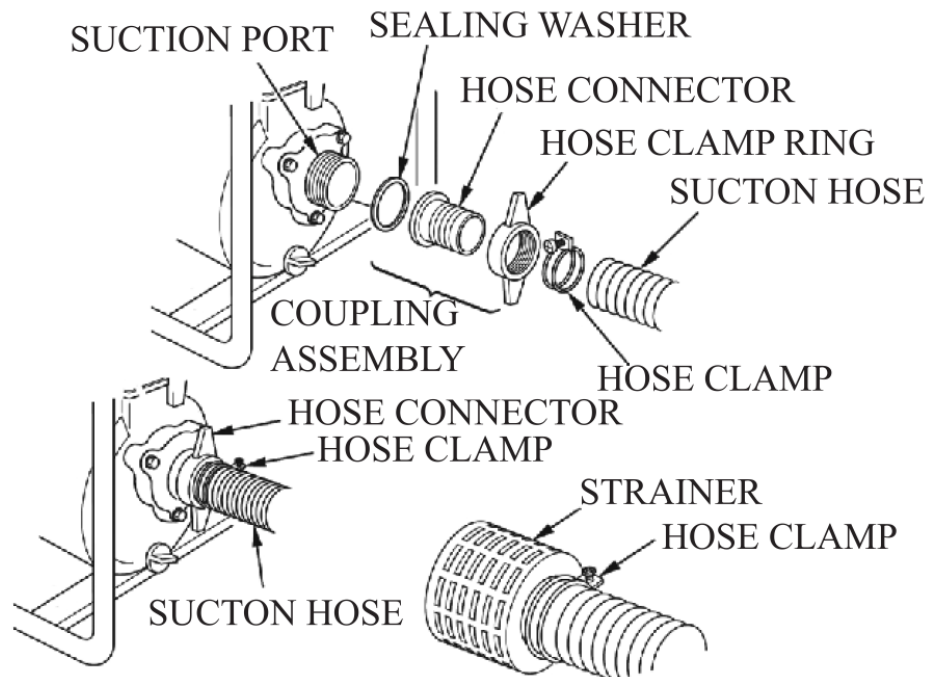


Fig. 6-1 Installing the intake hose

6.5 Installing the discharge hose

Use a commercially available hose and hose connector as the discharge hose as well as the hose clamp supplied by us. We recommended that you use the shortest possible hose with a large diameter to improve fluid friction and pump performance.

Proceed as follows to fit the discharge hose on the Water pump.

Conditions

- ✓ Water pump is switched off
- ✓ Water pump has cooled down
- ✓ A suitable discharge hose is ready for use

Installing the discharge hose

1. Fit the discharge hose on the hose connector.
2. Use a hose clamp to secure the discharge hose in place and prevent it from slipping off.

The discharge hose is now fitted on the water pump.

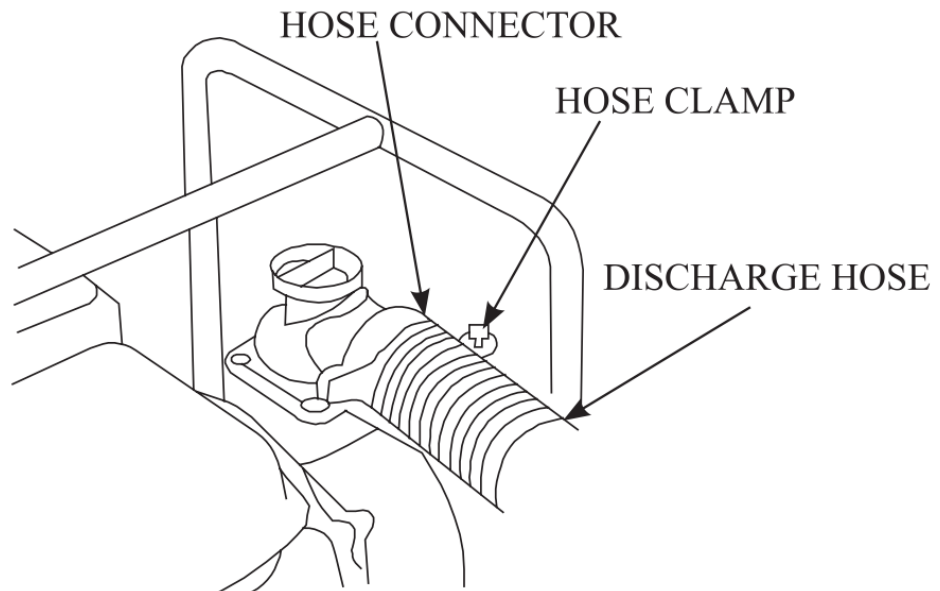


Fig. 6-2 Installing the discharge hose

6.6 Venting the pump

The pump can only draw in water through the intake side if there is no air present in the suction hose or in the pump chamber, which means that the intake side must be vented before you start the engine.



NOTICE!

Dry running the pump will destroy the pump seal.

Your pump or even other equipment might be damaged by this.

- ▶ Switch off the engine as soon as the pump starts sucking-in air.
- ▶ Let the pump cool down before you vent it again.

Proceed as follows to vent the pump before starting it .

Conditions

- ✓ Water pump is switched off
- ✓ Water pump has cooled down

Venting the water pump

- ✓ The intake and discharge hoses have been fitted
- 1. Remove the water filler cap from the pump chamber.
- 2. Fill the pump chamber so that it is full with water.
- 3. Replace the water filler cap on the pump chamber and then tighten it.

The pump has been vented and it is ready for operation.

6.7 Starting your water pump

How to start the water pump for manual operation with fuel supplied from its own tank is explained here.



! DANGER!

Leaking engine oil and fuel can burn or explode.

A risk of suffering severe even deadly burns.

- ▶ Prevent engine oil or fuel from leaking out.
- ▶ Never open the tank cover during operation or when it is hot.
- ▶ Remove leaked operating fluids immediately and appropriately.
- ▶ Never use an additional starting aid.
- ▶ Smoking, naked flames and sparks are forbidden.



! DANGER!

Engine exhaust gases contain poisonous and partially invisible gases such as carbon monoxide (CO) and carbon dioxide (CO₂).

Risk of death due to poisoning or asphyxiation.

- ▶ Ensure that there is good ventilation during the whole period of operation.
- ▶ The water pump must only be operated in the open air.
- ▶ Never direct the exhaust from the water pump into rooms or pits.



Fig. 6-3 Starting the water pump

Proceed as follows to start the Water pump manually and directly from the device:

Conditions

- ✓ the fuel tank is sufficiently full.
- ✓ oil level is sufficient (fill with engine oil before initial use, see Chapter 7.3.1 and the engine operating and maintenance instructions).

- ✓ there is an adequate air supply and air removal.
 - ✓ Intake hose has been fitted.
 - ✓ Discharge hose has been fitted.
 - ✓ The water pump has been vented (see Chapter 6.6)
1. Turn the lever on the fuel valve **3** into the "ON" position (open).
 2. Slowly press the choke lever in **2** into the left "SHUT" position.
 3. Turn the speed lever **1** to on.
 - a) Move the gas lever approx. 1/3 away from "SLOW" towards the "FAST" position
 4. Move the ignition switch **5** into the "ON" position.
 5. Pull the cable-pull starter **4** out until you feel some resistance and then pull it out vigorously.

The engine will start. Let the cable-pull starter slide slowly back into the housing to avoid damage or injuries.
 6. Move the choke lever **2** slowly back into the "OPEN" position after the engine has warmed up.

The engine has started.



NOTICE!

The automatic low-oil system will not let the engine start if the oil level is too low.

- ▶ First refill up to the engine oil level (see Chapter 7.3.2), before you restart the engine.
- ▶ The automatic low-oil system cannot stop the engine from being damaged due to a low oil level in all cases. Never start the engine without checking the oil level beforehand!

After the engine has started, you should move the gas lever into the "FAST" position to start the intake process. Check the delivery rate from the discharge hose.

Adjust the engine speed to control the delivery rate. The delivery rate will be increased if the gas lever is moved towards "FAST". The delivery rate will be reduced if the gas lever is moved towards "SLOW".

6.8 Switching off your water pump

Proceed as follows to switch off your water pump:



CAUTION!

Certain surfaces on the device can get very hot whilst it is running.

Risk of burns

- ▶ Never touch any engine parts (in particular the exhaust system) for a few minutes after ceasing operation.
- ▶ Always leave hot engine parts to cool down before touching them.

Switching off the water pump

1. Move the gas lever into the "SLOW" position.
2. Turn the ignition switch into the "OFF" position

3. Turn the fuel valve into the “OFF” position (shut).
The water pump has been switched off.
4. Remove the water drainage screw.
5. Remove the filler cap and then use clean water to flush out the pump chamber.
6. Drain all of the water out of the pump chamber.
7. Replace the filler cap and the water drainage screw.
The remaining water has been drained out of the pump chamber.
The water pump is switched off and secured.

**DANGER!****Leaking engine oil and fuel can burn or explode.**

A risk of suffering severe even deadly burns.

- ▶ Prevent engine oil or fuel from leaking out.
- ▶ Never open the tank cover during operation or when it is hot.
- ▶ Remove leaked operating fluids immediately and appropriately.
- ▶ Never use an additional starting aid.
- ▶ Smoking, naked flames and sparks are forbidden.

6.9 Switching off your water pump in an EMERGENCY

You can use the ignition switch to switch the water pump off in an emergency. It enables you to switch off the water pump abruptly, but only in an emergency. It is located on the left at the top of the control panel (see Fig. 6-3 -5).

Proceed as follows to switch off your water pump in an EMERGENCY:



NOTICE!

Using this emergency function might result in the connected consumers malfunctioning.

- ▶ Switch off the Water pump using emergency stop function only in an emergency.

Conditions

Actuating the emergency stop function must always be possible without any pre-conditions. Ensure that the ignition switch is easily accessible at all times.

EMERGENCY-STOP

1. Move the ignition switch (Fig. 6-3 Starting the water pump -5) into the "OFF" position

The engine will be stopped.

Ensure that all of the hazards have been eliminated before you switch the water pump back on again. Proceed as follows and as described in 6.7 Starting your water pump to restart the engine.

7 Maintenance

Maintenance of your Water pump is described in this section. It is only to be undertaken by authorised and qualified specialists.

Maintenance, repair and adjustment work that is neither described in this operating manual nor in any of the operating and maintenance instructions provided in the package is only to be undertaken by service personnel authorised by the manufacturer. This applies in particular to installed software versions and configuration files.

7.1 Maintenance plan

Various maintenance work must be carried out periodically on your water pump in order to ensure its readiness for use and reliability over a long period. This work is only to be undertaken by trained specialist personnel. Contact your dealer or our

service hotline at: +49 7123 9737-44

or via e-mail at: service@endress-stromerzeuger.de



NOTICE!

Please note that, in the case of a concluded warranty agreement, you will lose all rights to make claims if your water pump is not serviced in compliance with the manufacturer's regulations.

You can find an overview of the time plan and scope of the required maintenance work in the following maintenance schedule.

Item	Maintenance work	Maintenance interval according to time or operating hours [h]			
		Daily / 8h	After one month / 20h	After 3 months / 50h	Annual-ly / 300h
Engine oil	Check fill level	X			
	Change		X	X	
Air filter ¹	Check	X			
	Cleaning		X		
	Change			X	
Spark plug	Check, clean; change when necessary				X
Spark catcher	Cleaning			X	
Idle speed ²	Check, adjust				X
Valve gap ²	Check, adjust				X
Maintenance work should be performed by your service partner.					

Item	Maintenance work	Maintenance interval according to time or operating hours [h]			
		Daily / 8h	After one month / 20h	After 3 months / 50h	Annual-ly / 300h
Cylinder head and piston head ²	Remove any carbon residue		Every 125 hours ²		
Fuel tank and fuel filter ²	Cleaning; change when necessary		every 2 years ²		
Fuel lines ²	Check for cracks and damage; replace if necessary		every 2 years ²		
1) Maintain more frequently if used in a dusty environment.					
2) It should only be maintained in one of our authorised workshops.					
Maintenance work should be performed by your service partner.					

Tab. 7-1 Water pump maintenance plan

7.2 Maintenance work

Only authorised personnel are allowed to carry out maintenance tasks. Carry out all of the maintenance work listed in the maintenance plan according to the instructions.



CAUTION!

Certain surfaces on the device can get very hot whilst it is running.

Risk of burns

- ▶ Never touch any engine parts (in particular the exhaust system) for a few minutes after ceasing operation.
- ▶ Always leave hot engine parts to cool down before touching them.

7.3 Engine oil

The drive motor in your Water pump, like every internal combustion engine, needs suitable engine oil for lubricating and internal cooling. It is also very important to use the correct engine oil, both for refilling and when changing the oil, and to adhere the stipulated maintenance intervals.

Always use a commercially available multigrade oil with a viscosity of 10W-30 for four-stroke engines when refilling or changing the oil. This applies when using the water pump in temperate climates. At very low or very high outside temperatures it may well be necessary to use an engine oil of another viscosity. More precise information can be found in the following info-graphic.

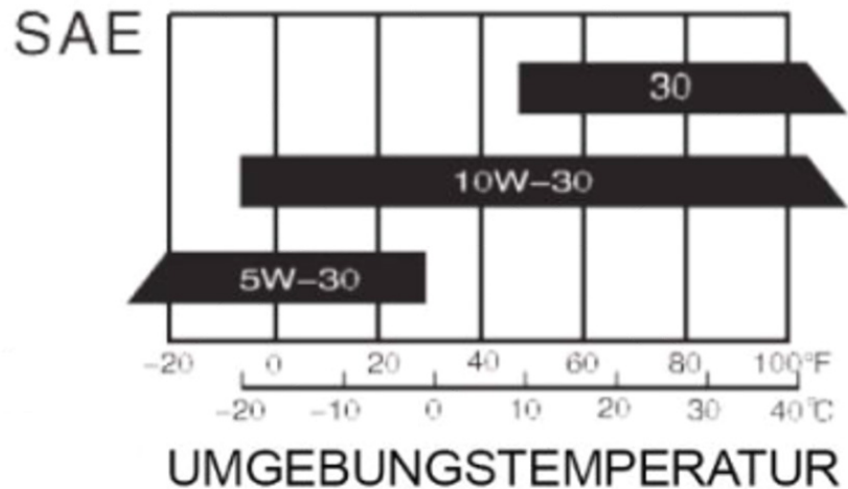


Fig. 7-1 Selection of the correct engine oil

7.3.1 Checking the oil level

Check the engine oil level before every start in order to avoid delays and interruptions during operation.

Conditions

Ensure that the following prerequisites are met before you check:

- ✓ Ensure that the water pump is mounted horizontally.
- ✓ Wait after previous operation for about five minutes before checking until the engine oil has gathered again in the oil sump to obtain a correct measurement.



CAUTION!

The engine and operating equipment on the water pump can get very hot whilst it is running.

Risk of burns

- ▶ Never touch any engine parts (in particular the exhaust system) for a few minutes after ceasing operation.
- ▶ Allow the engine to cool off for at least five minutes before changing or checking the engine oil.

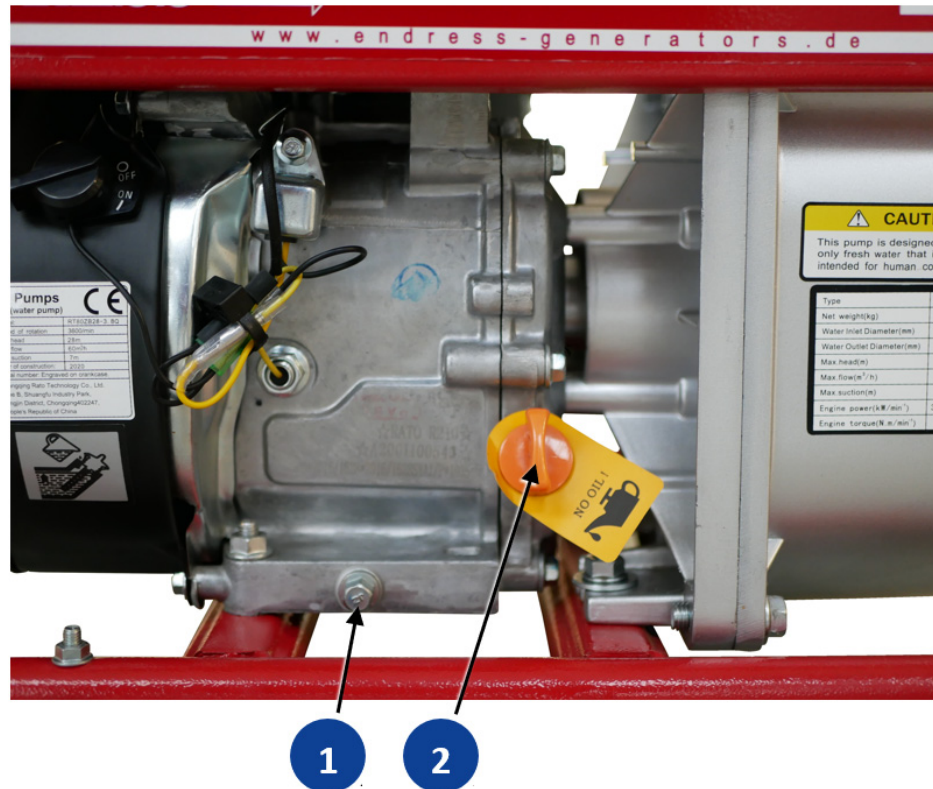


Fig. 7-2 Checking and changing engine oil

Checking the oil level

1. Undo the orange locking screw **2** and remove it from the filling opening. **ATTENTION!** The oil dipstick attached to the screw is wetted with oil.
2. Use a lint-free cloth to remove the oil from the dipstick.
3. Screw the clean dipstick completely back in and then immediately back out.
4. Read off the oil level on the dipstick. It should not be lower than the middle in-between the “L” and “H” markings and never above the “H” marking (see Image Fig. 7-3 Check the engine oil level).

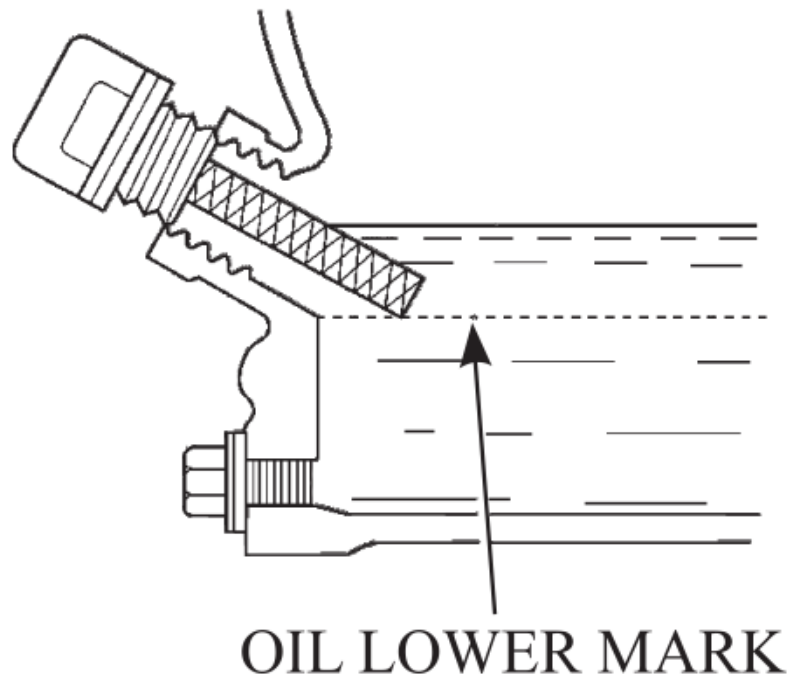


Fig. 7-3 Check the engine oil level

Refilling with engine oil

If the oil level is too low, instigate the next steps to correct the level.

1. Make ready the engine oil to top up with.
2. Put the filling funnel into the engine's previously opened filling opening **2** Fig. 7-2 Checking and changing engine oil.
3. Just put a small amount of engine oil in the funnel and wait until the oil has drained down completely.
4. Remove the filling funnel.
5. Compare the oil level against the image Fig. 7-3 Check the engine oil level and repeat steps 2 to 4 until the engine oil has reached the top of the filling opening.
6. Clean the oil dipstick using a lint-free cloth and turn it clockwise in the filling opening and up to the stop.

The oil level has been checked and topped up.

7.3.2 Changing the engine oil

Your water pump's drive motor needs its engine oil and the oil filter to be changed at regular intervals. The first oil change is due after 20 hours and then every 100 hours under normal operating conditions (see Chapter 7.1). The maintenance intervals must be shortened accordingly if used in difficult operating conditions (e.g. dusty environment, extreme ambient conditions, etc.).



CAUTION!

The engine and operating equipment on the water pump can get very hot whilst it is running.

Risk of burns

- ▶ Never touch any engine parts (in particular the exhaust system) for a few minutes after ceasing operation.
- ▶ Allow the engine to cool off for at least five minutes before changing or checking the engine oil.



NOTICE!

Leaking engine oil contaminates the soil and groundwater.

- ▶ Use a suitable oil catching receptacle.
- ▶ Old oil is a special waste and may only be disposed of over suitably qualified collection points.

Draining the engine oil

Proceed as follows to drain off the old oil after implementing the preceding steps in accordance with the engine manufacturer's maintenance instructions:

Conditions

- ✓ The water pump has been switched off
 - ✓ When it is still hot: Wait until the engine oil has cooled down to approx. 30°C – 50°C.
 - ✓ When it is cold: Run the engine until it has heated up accordingly.
1. Place a suitable oil collecting container under the water pump.
 2. Open the oil filling opening for better venting **2**.
 3. Unscrew the oil drainage screw **1** by using the supplied tool (3.3 Scope of delivery of your water pump - **5**).
 4. The oil will drain out after it has been unscrewed.
Tip the water pump slightly to ensure that all of the oil drains out. You must also ensure that no petrol can escape from the carburettor.
 5. Use a lint-free cloth to wipe away any remaining oil.
 6. Screw the locking screw **2** and the oil drainage screw **1** back in.

The engine's old oil has now been drained off.



NOTICE!

The other procedures for changing the engine oil correspond with the details given in the engine's operating and maintenance instructions. Take note of the other maintenance and disposal of operating equipment instructions that can be found there.

Refilling with fresh engine oil

- ✓ The old engine oil has to be fully drained off.
 - ✓ The oil drainage screw **1** must be screwed back in.
1. Proceed as described in Chapter 7.3.1 Checking the oil level to refill with fresh engine oil. Abide by the instructions covering the selection of a suitable oil. The amount of oil needed is 0.5 litres.
 2. Use the locking screw to relock the filling opening **2**.

The engine oil has been changed and the water pump is now ready for use again.

7.4 Air filter

The air filter insert must be cleaned every 50 operating hours and also changed if necessary. Operation with a dirty filter increases fuel consumption, pollutant emissions and engine wear. A damaged or missing air filter can destroy the engine.

Proceed as follows to service the air filter.

Conditions

- ✓ The water pump has been switched off.
- ✓ The engine is cooled down sufficiently.
- ✓ A new air filter insert is ready to use.



Fig. 7-4 Cleaning the air filter

Change the air filter insert

1. Remove the butterfly screw 2 from the housing.
2. Remove the air filter housing 1 so that you can access the air filter insert 4.
3. Remove the butterfly screw 3 from the air filter insert so that the insert can be removed.
4. Carefully remove the air filter insert and decide if it needs changing after making an appraisal:
 - a) in a case of minor soiling remove loose dirt particles from the air filter insert.
 - b) in a case of strong soiling use a new air filter insert.
5. Clean the air filter housing and cover, especially the intake opening, using a lint-free, slightly damp cloth.
6. Apply a few drops of new engine oil to the cleaned or new air filter insert.
Protect your hands from contact with engine oil.
7. Knead the air filter insert in order to distribute the oil evenly into the foam.
8. Press out the air filter insert strongly afterwards to remove any excessive oil.
9. Insert the air filter insert and then use the butterfly screw to secure it in place.
10. Replace the air filter housing on the air filter insert and then use the butterfly screw to secure it in place.
11. Dispose of a soiled air filter insert according to regulations.
Maintenance of the air filter is complete.

7.5 Spark plug

The spark plug must be checked every 100 operating hours, at least however once a year, and replaced if necessary. Wrong adjusted, soiled or worn spark plugs can have a negative effect on the starting behaviour, engine running, fuel consumption and pollutant emissions.



NOTICE!

When replacing the spark plug, only use the following types:

- ▶ F7RTC or comparable

Proceed as follows to perform spark plug servicing.

Conditions

- ✓ The water pump has been switched off
- ✓ The engine is cooled down sufficiently
- ✓ A new spark plug is ready to use

One has the required tool

- A spark plug wrench (in the scope of delivery)
- Setting gauge for the electrode gap

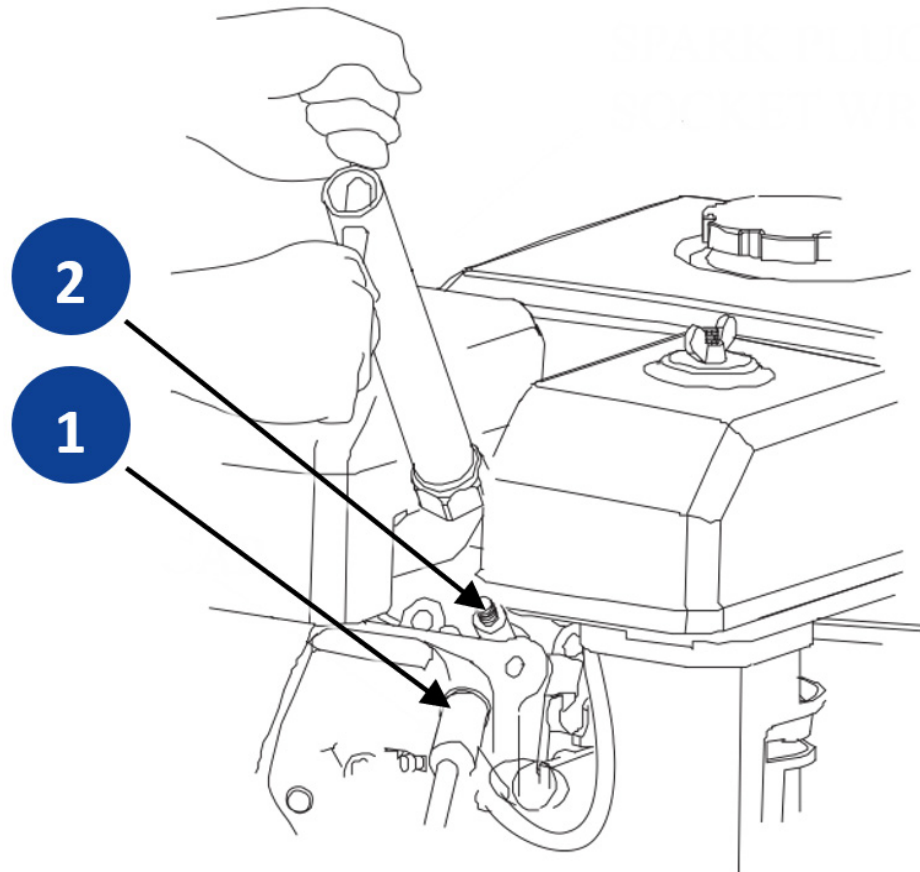


Fig. 7-5 Remove spark plug

Remove spark plug

1. Pull the spark plug connector Fig. 7-5 - **1** of the spark plug. To do this always pull directly on the plug, never on the ignition cable!
2. Place the spark plug wrench on the spark plug Fig. 7-5 - **2** and loosen this by turning anti-clockwise.

The spark plug is removed and must now be assessed.

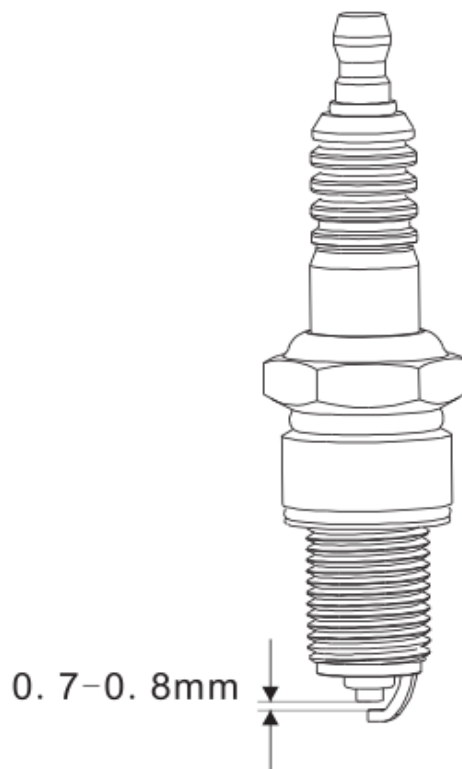


Fig. 7-6 Checking the spark plug

Checking the spark plug

1. Check the spark plug for damage and clean it using a suitable brush, if it can be used again.
2. Check the condition and gap of the electrodes, also when using a new spark plug. Adjust the gap to the correct value if necessary (see Fig. 7-6 Checking the spark plug).

The spark plug is ready to be installed.

Installing the spark plug

1. Turn the checked spark plug clockwise **by hand** in the spark plug thread in the engine Fig. 7-5 . Ensure that the spark plug is inserted without it tilting, so that the thread is not damaged.
2. Tighten the spark plug using the spark plug wrench supplied.
3. Press the spark plug connector firmly onto the spark plug.

The spark plug has been serviced in an orderly manner.

The water pump is now ready to be used again.

8 Storage

It is important to store your Water pump in a suitable storage location as soon as your device will no longer be used.

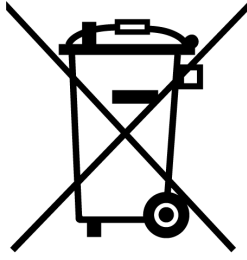
- The storage location must be roofed and must not be subjected to standing water, aggressive vapours or soiling as well as major accumulation of dust.
- Protect your device with a cover made out of breathable material.
- Ensure that the storage temperature and air humidity lie within the specified limits (see Technical data).



NOTICE!

Due to the limited shelf life of the different operating fluids, it is important for decommissioning for more than one month that additional measures for storage are taken. While doing this observe the instructions given in the attached operating and maintenance instructions from the engine manufacturer.

9 Disposal



Your device, which is an electrical or electronic device, is subject to European Directive 2012/19/EU (“WEEE directive”) which is implemented in Germany in national law through the decree regulating the use of dangerous substances in electrical and electronic equipment (ElektroStoffV). This regulates disposal and use of recycling waste electrical equipment. The adjacent icon with a crossed-out wastebasket on your device states that it must not be disposed of in the household waste at the end of its service life.

As a private end-user (a so-called b2c customer) there are free collecting points (recycling centre) near you for electrical equipment as well as possible also other collection points available for reuse of devices. The addresses can be obtained from your city or communal authority. In as far as the old electrical and electronic equipment contains personal data, you are responsible yourself for its deletion before giving it back.

Pure b2b devices (devices which, for appropriate use, or exclusively are only used the commercial area) must not be disposed of over public collecting points in Germany and further EU countries. Speak to your authorised ENDRESS generator dealer about handing back your recycling waste electrical equipment. The dealer is also your point of contact for any differing regulations on the respective country of deployment. There are also possible agreements in the purchase contract to observe.

Please observe the pertinent environmental protection regulations when disposing of the old oil. We recommend bringing the oil in a closed container to an old oil collection centre for disposal. Never put used engine oil in the domestic waste. Storage or introduction of old oil into nature is associated with very high fines.

An inappropriately disposed of battery can greatly damage the environment. Give back your old battery directly free of charge to your dealer when purchasing a new one.

Always observe the valid local regulations and laws concerning correct disposal of all old parts and operating materials. Please contact your ENDRESS service partner for a replacement.

10 Troubleshooting

The following table is an aid for you to use in a case where faults arise during use. Based on experience a number of malfunctions can already be removed by operating personnel or the possible causes limited. In all other cases contact your service partner as described in the table. The same applies for faults which are not listed in the table.

If a fault cannot be rectified using the measures described here, you must shut down your Water pump and secure it against further use. Contact your service partner and give him an explanation, not only of the symptoms but also the possible causes which you can already exclude based upon the table. The fault can often be identified over the telephone or through a written exchange with our specialists.



NOTICE!

The following table does not make any claims to completeness and does not mention any faults which can be caused by operating error.

- ▶ In order to avoid operating errors, please exactly follow the instructions in the existing and delivered documentation.
- ▶ See the event and error lists in the Appendix.

Malfunction	Possible cause	Correction
Engine does not start	Fuel valve off	Turn the fuel valve lever into the "ON" position
	Choke open	Move the choke lever into the "SHUT" position, unless the engine is warm
	Ignition switch off	Switch on the ignition switch.
	Fuel tank is empty	Refill with fuel
	Poor or old fuel	Empty the fuel tank and carburettor and refill with fresh fuel
	Spark plug is defective or dirty	Remove the spark plug and inspect it. Fit a new spark plug if needed.
	Fuel filter is clogged	Replace defective components or repair if necessary.

Malfunction	Possible cause	Correction
Engine pump is not pumping out water	Pump has not been vented	Vent the pump
	Hose has collapsed or it is damaged	Replace the intake hose
	Strainer is not fully submerged in the water	Lower the strainer on the end of the intake hose until it is completely submerged in the water
	Hose connection leaking	Change the sealing washer. Retighten the intake hose connection and the clamp.
	Strainer is blocked	Clean the dirt off of the strainer
	Excessive height	Reposition the pump and hoses to reduce the height.
	Engine lacks power	Contact our service department
Engine pump is only pumping out a little water	Hose has collapsed, is damaged or else it is too long	Replace the intake and discharge hoses
	Air leak at a connection	Change the sealing washer. Retighten the hose connection and the clamp
	Strainer is blocked	Clean the dirty strainer.
	Delivery height at its limit	Reposition the pump and hoses so that the height is reduced
	Engine lacks power	Contact our service department

Tab. 10-1 Troubleshooting

Please contact our customer service for further fault diagnosis as well as procurement of original spare parts and wear parts at

customer service - Tel. +49 7123-9737-44

Email: service@endress-stromerzeuger.de

Have the item and serial number of your device ready for identification. You will find these details on the type plate (see Fig. 3-1).

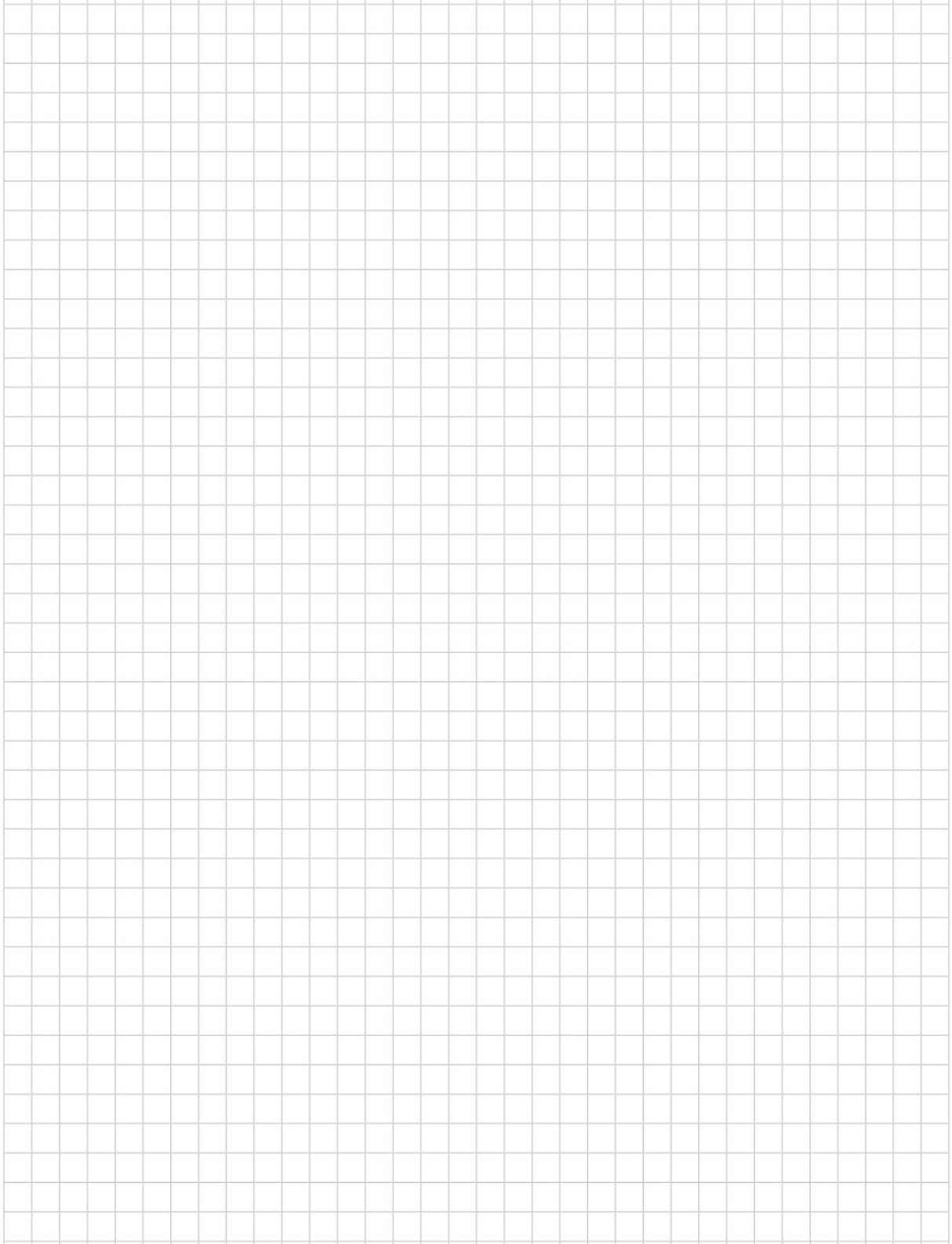
11 Technical data

You can find the relevant technical data for your water pump in the following table.

Name	Value				Unit
	EMP 205	EMP 305	EMP 305 ST	EMP 405 ST	
Intake and discharge	2" / 2"	3" / 3"	3" / 3"	4" / 4"	[Ø in inches]
Max. flow rate	36	60	66	100	[m ³ /h]
Max. flow rate	600	1,000	1,100	1,666	[l/min]
Max. suction lift	8	8	7	8	[m]
Max. delivery height	28	28	26	30	[m]
Solids	4.5	6	28	25	[Ø in mm]
Seal	Carbon ceramic		Silicon carbide		
Output at 3600 rpm	4.4	4.4	4.4	7.6	[kW]
Empty weight (approx.)	24	26	35	48	[kg]
EngineOil quantity (including oil filter)	0.55	0.55	0.55	1.1	[l]
Own tank content	3.6	3.6	3.6	6.5	[l]
Fuel consumption (at a 75% load) ²⁾	1.8	1.8	1.8	3.1	[l/h]
Running time (at 75% load) approx. ²⁾	2	2	2	2	[h]
Length	477	500	552	640	[mm]
Width	395	395	432	480	[mm]
Height	410	445	450	540	[mm]
Noise pressure level at the workplace L _{pA} ³⁾	80	86	87	87	[db (A)]
Sound power level L _{WA} ³⁾	102	108	109	109	[db (A)]
¹⁾ Measured under standard reference conditions					
²⁾ Average value; deviations might occur in specific cases, therefore they are non-binding					
³⁾ Measured at a distance of 1 m and a height of 1.6 m in accordance with ISO 3744 (Part 10)					
⁴⁾ Measured in accordance with ISO 3744 (Part 10)					

Tab. 11-1 Water pump's technical data

NOTES



12 Replacement parts

Maintenance and replacement parts can be obtained quickly and easily from your responsible ENDRESS service partner or ENDRESS dealer. You can alternatively obtain support from our central customer service

by telephone: +49 (0) 71239737-44

by email: service@endress-stromerzeuger.de

Have the item and serial number of your device ready for identification.

As a registered user you can obtain rapid and uncomplicated access to a range of services over our home page to obtain suitable original spare parts for maintenance and repair work. Using your internet browser please go to

<https://endressparts.com>

and click on the area “Documentation and replacement parts“.

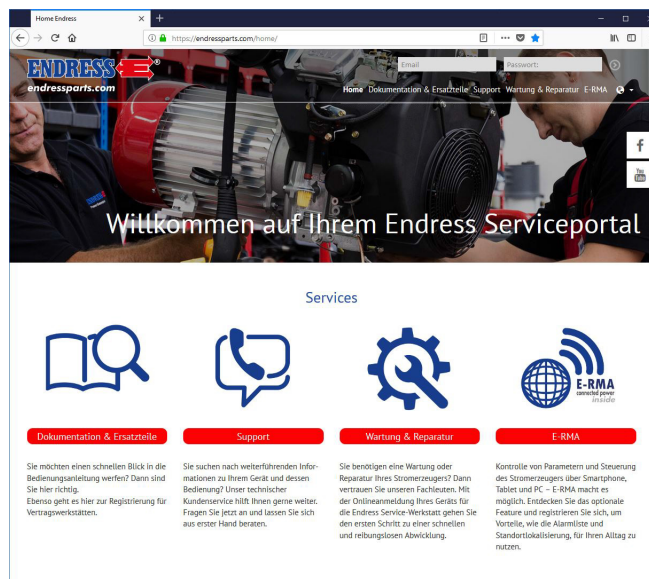
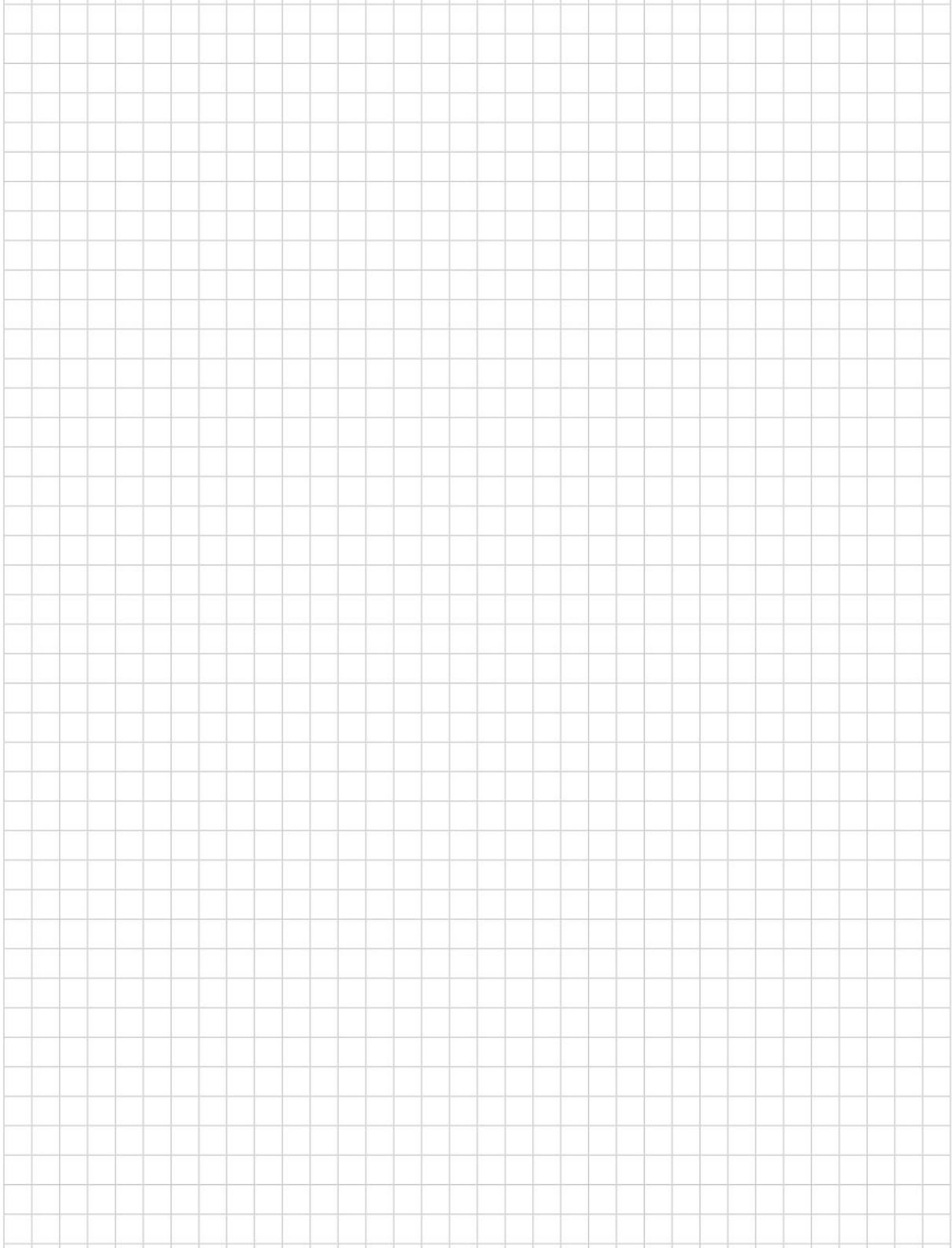


Fig. 12-1 Spare parts over endressparts.com

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