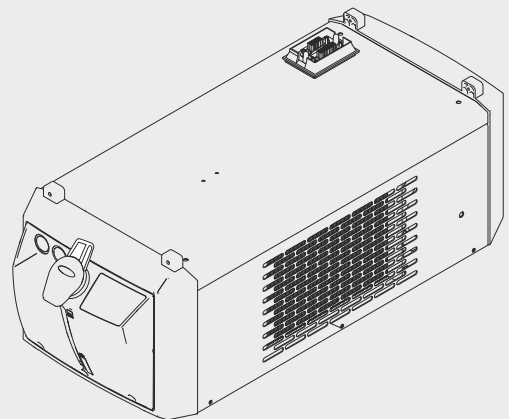




CU 800i
CU 1100i
CU 1200i
CU 1400i

Operating instructions

EN



42,0426,0115,EN 001-13012022

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Safety rules

Explanation of safety notices

DANGER!

Indicates **immediate danger**.

- ▶ If not avoided, death or serious injury will result.

WARNING!

Indicates a **potentially hazardous situation**.

- ▶ If not avoided, death or serious injury may result.

CAUTION!

Indicates a **situation where damage or injury could occur**.

- ▶ If not avoided, minor injury and/or damage to property may result.

NOTE!

Indicates a **risk of flawed results and possible damage to the equipment**.

General

The device is manufactured using state-of-the-art technology and according to recognised safety standards. If used incorrectly or misused, however, it can cause:

- injury or death to the operator or a third party,
- damage to the device and other material assets belonging to the operating company,
- inefficient operation of the device.

All persons involved in commissioning, operating, maintaining and servicing the device must:

- be suitably qualified,
- have sufficient knowledge of welding and
- read and follow these operating instructions carefully.

The operating instructions must always be at hand wherever the device is being used. In addition to the operating instructions, attention must also be paid to any generally applicable and local regulations regarding accident prevention and environmental protection.

All safety and danger notices on the device

- must be in a legible state,
- must not be damaged,
- must not be removed,
- must not be covered, pasted or painted over.

For the location of the safety and danger notices on the device, refer to the section headed "General" in the operating instructions for the device.

Before switching on the device, rectify any faults that could compromise safety.

This is for your personal safety!

Proper use

The device is to be used exclusively for its intended purpose.

The device is intended solely for the welding processes specified on the rating plate. Any use above and beyond this purpose is deemed improper. The manufacturer shall not be held liable for any damage arising from such usage.

Proper use includes:

- carefully reading and following all the instructions given in the operating instructions
 - studying and obeying all safety and danger notices carefully
 - performing all stipulated inspection and maintenance work.
-

Never use the device for the following purposes:

- Thawing out pipes
 - Charging batteries
 - Starting engines
-

The device is designed for use in industry and the workshop. The manufacturer accepts no responsibility for any damage caused through use in a domestic setting.

The manufacturer likewise accepts no liability for inadequate or incorrect results.

Environmental conditions

Operation or storage of the device outside the stipulated area will be deemed as not in accordance with the intended purpose. The manufacturer shall not be held liable for any damage arising from such usage.

Ambient temperature range:

- during operation: -10 °C to + 40 °C (14 °F to 104 °F)
 - during transport and storage: -20 °C to +55 °C (-4 °F to 131 °F)
-

Relative humidity:

- up to 50% at 40 °C (104 °F)
 - up to 90% at 20 °C (68 °F)
-

The surrounding air must be free from dust, acids, corrosive gases or substances, etc. Can be used at altitudes of up to 2000 m (6561 ft. 8.16 in.)

Obligations of the operator

The operator must only allow persons to work with the device who:

- are familiar with the fundamental instructions regarding safety at work and accident prevention and have been instructed in how to use the device
 - have read and understood these operating instructions, especially the section "safety rules", and have confirmed as much with their signatures
 - are trained to produce the required results.
-

Checks must be carried out at regular intervals to ensure that operators are working in a safety-conscious manner.

Obligations of personnel

Before using the device, all persons instructed to do so undertake:

- to observe the basic instructions regarding safety at work and accident prevention
 - to read these operating instructions, especially the "Safety rules" section and sign to confirm that they have understood them and will follow them.
-

Before leaving the workplace, ensure that people or property cannot come to any harm in your absence.

Mains connection

Devices with a higher rating may affect the energy quality of the mains due to their current consumption.

This may affect a number device types in terms of:

- Connection restrictions
- Criteria with regard to the maximum permissible mains impedance *)
- Criteria with regard to the minimum short-circuit power requirement *)

*) at the interface with the public grid
see "Technical data"

In this case, the plant operator or the person using the device should check whether the device may be connected, where appropriate by discussing the matter with the power supply company.

IMPORTANT! Ensure that the mains connection is earthed properly

Protecting yourself and others

Anyone working with the device exposes themselves to numerous risks, e.g.

- flying sparks and hot pieces of metal
- Arc radiation, which can damage eyes and skin
- Hazardous electromagnetic fields, which can endanger the lives of those using cardiac pacemakers
- Risk of electrocution from mains current and welding current
- Greater noise pollution
- Harmful welding fumes and gases

Suitable protective clothing must be worn when working with the device. The protective clothing must have the following properties:

- Flame-resistant
- Insulating and dry
- Covers the whole body, is undamaged and in good condition
- Safety helmet
- Trousers with no turn-ups

Protective clothing refers to a variety of different items. Operators should:

- Protect eyes and face from UV rays, heat and sparks using a protective visor and regulation filter
- Wear regulation protective goggles with side protection behind the protective visor
- Wear stout footwear that provides insulation even in wet conditions
- Protect the hands with suitable gloves (electrically insulated and providing protection against heat)
- Wear ear protection to reduce the harmful effects of noise and to prevent injury

Keep all persons, especially children, out of the working area while any devices are in operation or welding is in progress. If, however, there are people in the vicinity:

- Make them aware of all the dangers (risk of dazzling by the arc, injury from flying sparks, harmful welding fumes, noise, possible risks from mains current and welding current, etc.)
- Provide suitable protective equipment
- Alternatively, erect suitable safety screens/curtains.

Noise emission values

The device generates a maximum sound power level of <80 dB(A) (ref. 1pW) when idling and in the cooling phase following operation at the maximum permissible operating point under maximum rated load conditions according to EN 60974-1.

It is not possible to provide a workplace-related emission value during welding (or cutting) as this is influenced by both the process and the environment. All manner of different welding parameters come into play, including the welding process (MIG/MAG, TIG welding), the type of power selected (DC or AC), the power range, the type of weld metal, the resonance characteristics of the workpiece, the workplace environment, etc.

Danger from toxic gases and vapours

The fumes produced during welding contain harmful gases and vapours.

Welding fumes contain substances that cause cancer, as stated in Monograph 118 of the International Agency for Research on Cancer.

Use at-source extraction and a room extraction system.
If necessary, use a welding torch with an integrated extraction device.

Keep your face away from welding fumes and gases.

Fumes and hazardous gases

- must not be breathed in
- must be extracted from the working area using appropriate methods.

Ensure an adequate supply of fresh air. Ensure that there is a ventilation rate of at least 20 m³ per hour at all times.

Otherwise, a welding helmet with an air supply must be worn.

If there is any doubt about whether the extraction capacity is sufficient, the measured toxic emission values should be compared with the permissible limit values.

The following components are responsible, amongst other things, for the degree of toxicity of welding fumes:

- Metals used for the workpiece
- Electrodes
- Coatings
- Cleaners, degreasers, etc.
- Welding process used

The relevant material safety data sheets and manufacturer's specifications for the listed components should therefore be studied carefully.

Recommendations for trade fair scenarios, risk management measures and for identifying working conditions can be found on the European Welding Association website under Health & Safety (<https://european-welding.org>).

Flammable vapours (e.g. solvent fumes) should be kept away from the arc's radiation area.

Close the shielding gas cylinder valve or main gas supply if no welding is taking place.

Danger from flying sparks

Flying sparks may cause fires or explosions.

Never weld close to flammable materials.

Flammable materials must be at least 11 metres (36 ft. 1.07 in.) away from the arc, or alternatively covered with an approved cover.

A suitable, tested fire extinguisher must be available and ready for use.

Sparks and pieces of hot metal may also get into adjacent areas through small gaps or openings. Take appropriate precautions to prevent any danger of injury or fire.

Welding must not be performed in areas that are subject to fire or explosion or near sealed tanks, vessels or pipes unless these have been prepared in accordance with the relevant national and international standards.

Do not carry out welding on containers that are being or have been used to store gases, propellants, mineral oils or similar products. Residues pose an explosive hazard.

Risks from mains current and welding current

An electric shock is potentially life threatening and can be fatal.

Do not touch live parts either inside or outside the device.

During MIG/MAG welding and TIG welding, the welding wire, the weld pool, the feed rollers and all pieces of metal that are in contact with the welding wire are live.

Always set the wirefeeder up on a sufficiently insulated surface or use a suitable, insulated wirefeeder holder.

Make sure that you and others are protected with an adequately insulated, dry base or cover for the earth or ground potential. This base or cover must extend over the entire area between the body and the earth or ground potential.

All cables and leads must be secured, undamaged, insulated and adequately dimensioned. Replace loose connections and scorched, damaged, or inadequately dimensioned cables and leads immediately.

Use the handle to ensure the power connections are tight before every use.

In the case of power cables with a bayonet connector, rotate the power cable around the longitudinal axis by at least 180° and pretension.

Do not wrap cables or leads around the body or parts of the body.

The electrode (rod electrode, tungsten electrode, welding wire, etc.) must

- never be immersed in liquid for cooling
- Never touch the electrode when the power source is switched on.

Double the open circuit voltage of a power source can occur between the welding electrodes of two power sources. Touching the potentials of both electrodes at the same time may be fatal under certain circumstances.

Arrange for the mains cable to be checked regularly by a qualified electrician to ensure the ground conductor is functioning properly.

Protection class I devices require a mains supply with ground conductor and a connector system with ground conductor contact for proper operation.

Operation of the device on a mains supply without ground conductor and on a socket without ground conductor contact is only permitted if all national regulations for protective separation are observed.

Otherwise, this is considered gross negligence. The manufacturer shall not be held liable for any damage arising from such usage.

If necessary, provide adequate earthing for the workpiece.

Switch off unused devices.

Wear a safety harness if working at height.

Before working on the device, switch it off and pull out the mains plug.

Attach a clearly legible and easy-to-understand warning sign to the device to prevent anyone from plugging the mains plug back in and switching it on again.

After opening the device:

- Discharge all live components
- Ensure that all components in the device are de-energised.

If work on live parts is required, appoint a second person to switch off the main switch at the right moment.

Meandering welding currents

If the following instructions are ignored, meandering welding currents can develop with the following consequences:

- Fire hazard
- Overheating of parts connected to the workpiece
- Damage to ground conductors
- Damage to device and other electrical equipment

Ensure that the workpiece is held securely by the workpiece clamp.

Attach the workpiece clamp as close as possible to the area that is to be welded.

Position the device with sufficient insulation against electrically conductive environments, such as insulation against conductive floor or insulation to conductive racks.

If power distribution boards, twin-head mounts, etc., are being used, note the following: The electrode of the welding torch / electrode holder that is not used is also live. Make sure that the welding torch / electrode holder that is not used is kept sufficiently insulated.

In the case of automated MIG/MAG applications, ensure that only an insulated wire electrode is routed from the welding wire drum, large wirefeeder spool or wirespool to the wirefeeder.

EMC Device Classifications

Devices in emission class A:

- Are only designed for use in industrial settings
- Can cause line-bound and radiated interference in other areas

Devices in emission class B:

- Satisfy the emissions criteria for residential and industrial areas. This is also true for residential areas in which the energy is supplied from the public low-voltage mains.

EMC device classification as per the rating plate or technical data.

EMC measures

In certain cases, even though a device complies with the standard limit values for emissions, it may affect the application area for which it was designed (e.g. when there is sensitive equipment at the same location, or if the site where the device is installed is close to either radio or television receivers).

If this is the case, then the operator is obliged to take appropriate action to rectify the situation.

Check and evaluate the immunity to interference of nearby devices according to national and international regulations. Examples of equipment that may be susceptible to interference from the device include:

- Safety devices
- Network, signal and data transfer lines
- IT and telecommunications devices
- Measuring and calibrating devices

Supporting measures for avoidance of EMC problems:

1. Mains supply
 - If electromagnetic interference arises despite the correct mains connection, additional measures are necessary (e.g. use of a suitable line filter)
2. Welding power-leads
 - must be kept as short as possible
 - must be laid close together (to avoid EMF problems)
 - must be kept well apart from other leads
3. Equipotential bonding

4. Earthing of the workpiece
 - If necessary, establish an earth connection using suitable capacitors.
5. Shield, if necessary
 - Shield other devices nearby
 - Shield the entire welding installation

EMF measures

Electromagnetic fields may pose as yet unknown risks to health:

- Effects on the health of persons in the vicinity, e.g. those with pacemakers and hearing aids
- Individuals with pacemakers must seek advice from their doctor before approaching the device or any welding that is in progress
- For safety reasons, maintain as large a distance as possible between the welding power-leads and the head/torso of the welder
- Do not carry welding power-leads and hosepacks over the shoulders or wind them around any part of the body

Specific hazards

Keep hands, hair, clothing and tools away from moving parts. For example:

- Fans
- Cogs
- Rollers
- Shafts
- Wirespools and welding wires

Do not reach into the rotating cogs of the wire drive or into rotating drive components.

Covers and side panels may only be opened/removed while maintenance or repair work is being carried out.

During operation

- Ensure that all covers are closed and all side panels are fitted properly.
- Keep all covers and side panels closed.

The welding wire emerging from the welding torch poses a high risk of injury (piercing of the hand, injuries to the face and eyes, etc.).

Therefore, always keep the welding torch away from the body (devices with wirefeeder) and wear suitable protective goggles.

Never touch the workpiece during or after welding - risk of burns.

Slag can jump off cooling workpieces. The specified protective equipment must therefore also be worn when reworking workpieces, and steps must be taken to ensure that other people are also adequately protected.

Welding torches and other parts with a high operating temperature must be allowed to cool down before handling.

Special provisions apply in areas at risk of fire or explosion

- observe relevant national and international regulations.

Power sources for work in areas with increased electric risk (e.g. near boilers) must carry the "Safety" sign. However, the power source must not be located in such areas.

Risk of scalding from escaping coolant. Switch off cooling unit before disconnecting coolant flow or return lines.

Observe the information on the coolant safety data sheet when handling coolant. The coolant safety data sheet may be obtained from your service centre or downloaded from the manufacturer's website.

Use only suitable load-carrying equipment supplied by the manufacturer when transporting devices by crane.

- Hook chains or ropes onto all suspension points provided on the load-carrying equipment.
- Chains and ropes must be at the smallest angle possible to the vertical.
- Remove gas cylinder and wirefeeder (MIG/MAG and TIG devices).

If the wirefeeder is attached to a crane holder during welding, always use a suitable, insulated wirefeeder hoisting attachment (MIG/MAG and TIG devices).

If the device has a carrying strap or handle, this is intended solely for carrying by hand. The carrying strap is not to be used if transporting with a crane, counterbalanced lift truck or other mechanical hoist.

All lifting tackle (straps, handles, chains, etc.) used in connection with the device or its components must be tested regularly (e.g. for mechanical damage, corrosion or changes caused by other environmental factors).

The testing interval and scope of testing must comply with applicable national standards and directives as a minimum.

Odourless and colourless shielding gas may escape unnoticed if an adapter is used for the shielding gas connection. Prior to assembly, seal the device-side thread of the adapter for the shielding gas connection using suitable Teflon tape.

Requirement for the shielding gas

Especially with ring lines, contaminated shielding gas can cause damage to equipment and reduce welding quality.

Meet the following requirements regarding shielding gas quality:

- Solid particle size < 40 µm
 - Pressure condensation point < -20 °C
 - Max. oil content < 25 mg/m³
-

Use filters if necessary.

Danger from shielding gas cylinders

Shielding gas cylinders contain gas under pressure and can explode if damaged. As the shielding gas cylinders are part of the welding equipment, they must be handled with the greatest of care.

Protect shielding gas cylinders containing compressed gas from excessive heat, mechanical impact, slag, naked flames, sparks and arcs.

Mount the shielding gas cylinders vertically and secure according to instructions to prevent them falling over.

Keep the shielding gas cylinders well away from any welding or other electrical circuits.

Never hang a welding torch on a shielding gas cylinder.

Never touch a shielding gas cylinder with an electrode.

Risk of explosion - never attempt to weld a pressurised shielding gas cylinder.

Only use shielding gas cylinders suitable for the application in hand, along with the correct and appropriate accessories (regulator, hoses and fittings). Only use shielding gas cylinders and accessories that are in good condition.

Turn your face to one side when opening the valve of a shielding gas cylinder.

Close the shielding gas cylinder valve if no welding is taking place.

If the shielding gas cylinder is not connected, leave the valve cap in place on the cylinder.

The manufacturer's instructions must be observed as well as applicable national and international regulations for shielding gas cylinders and accessories.

Danger from escaping shielding gas

Risk of suffocation from the uncontrolled escape of shielding gas

Shielding gas is colourless and odourless and, in the event of a leak, can displace the oxygen in the ambient air.

- Ensure an adequate supply of fresh air with a ventilation rate of at least 20 m³/hour.
- Observe safety and maintenance instructions on the shielding gas cylinder or the main gas supply.
- Close the shielding gas cylinder valve or main gas supply if no welding is taking place.
- Check the shielding gas cylinder or main gas supply for uncontrolled gas leakage before every start-up.

Safety measures at the installation location and during transport

A device toppling over could easily kill someone. Place the device on a solid, level surface such that it remains stable

- The maximum permissible tilt angle is 10°.

Special regulations apply in rooms at risk of fire or explosion

- Observe relevant national and international regulations.

Use internal directives and checks to ensure that the workplace environment is always clean and clearly laid out.

Only set up and operate the device in accordance with the degree of protection shown on the rating plate.

When setting up the device, ensure there is an all-round clearance of 0.5 m (1 ft. 7.69 in.) to ensure that cooling air can flow in and out freely.

When transporting the device, observe the relevant national and local guidelines and accident prevention regulations. This applies especially to guidelines regarding the risks arising during transport.

Do not lift or transport operational devices. Switch off devices before transport or lifting.

Before transporting the device, allow coolant to drain completely and detach the following components:

- Wirefeeder
- Wirespool
- Shielding gas cylinder

After transporting the device, the device must be visually inspected for damage before commissioning. Any damage must be repaired by trained service technicians before commissioning the device.

Safety measures in normal operation

Only operate the device when all safety devices are fully functional. If the safety devices are not fully functional, there is a risk of

- injury or death to the operator or a third party
- damage to the device and other material assets belonging to the operator
- inefficient operation of the device

Any safety devices that are not functioning properly must be repaired before switching on the device.

Never bypass or disable safety devices.

Before switching on the device, ensure that no one is likely to be endangered.

Check the device at least once a week for obvious damage and proper functioning of safety devices.

Always fasten the shielding gas cylinder securely and remove it beforehand if the device is to be transported by crane.

Only the manufacturer's original coolant is suitable for use with our devices due to its properties (electrical conductivity, anti-freeze agent, material compatibility, flammability, etc.).

Only use suitable original coolant from the manufacturer.

Do not mix the manufacturer's original coolant with other coolants.

Only connect the manufacturer's system components to the cooling circuit.

The manufacturer accepts no liability for damage resulting from use of other system components or a different coolant. In addition, all warranty claims will be forfeited.

Cooling Liquid FCL 10/20 does not ignite. The ethanol-based coolant can ignite under certain conditions. Transport the coolant only in its original, sealed containers and keep well away from any sources of ignition.

Used coolant must be disposed of properly in accordance with the relevant national and international regulations. The coolant safety data sheet may be obtained from your service centre or downloaded from the manufacturer's website.

Check the coolant level before starting to weld, while the system is still cool.

**Commissioning,
maintenance and
repair**

It is impossible to guarantee that bought-in parts are designed and manufactured to meet the demands made of them, or that they satisfy safety requirements.

- Use only original spare and wearing parts (also applies to standard parts).
 - Do not carry out any modifications, alterations, etc. to the device without the manufacturer's consent.
 - Components that are not in perfect condition must be replaced immediately.
 - When ordering, please give the exact designation and part number as shown in the spare parts list, as well as the serial number of your device.
-

The housing screws provide the ground conductor connection for earthing the housing parts.

Only use original housing screws in the correct number and tightened to the specified torque.

Safety inspection

The manufacturer recommends that a safety inspection of the device is performed at least once every 12 months.

The manufacturer recommends that the power source be calibrated during the same 12-month period.

A safety inspection should be carried out by a qualified electrician

- after any changes are made
 - after any additional parts are installed, or after any conversions
 - after repair, care and maintenance has been carried out
 - at least every twelve months.
-

For safety inspections, follow the appropriate national and international standards and directives.

Further details on safety inspection and calibration can be obtained from your service centre. They will provide you on request with any documents you may require.

Disposal

Do not dispose of this device with normal domestic waste! To comply with the European Directive on Waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer require must either be returned to your dealer or given to one of the approved collection and recycling facilities in your area. Ignoring this European Directive may have potentially adverse effects on the environment and your health!

Safety symbols

Devices with the CE mark satisfy the essential requirements of the low-voltage and electromagnetic compatibility directives (e.g. relevant product standards of the EN 60 974 series).

Fronius International GmbH hereby declares that the device is compliant with Directive 2014/53/EU. The full text on the EU Declaration of Conformity can be found at the following address: <http://www.fronius.com>

Devices marked with the CSA test mark satisfy the requirements of the relevant standards for Canada and the USA.

Data protection

The user is responsible for the safekeeping of any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

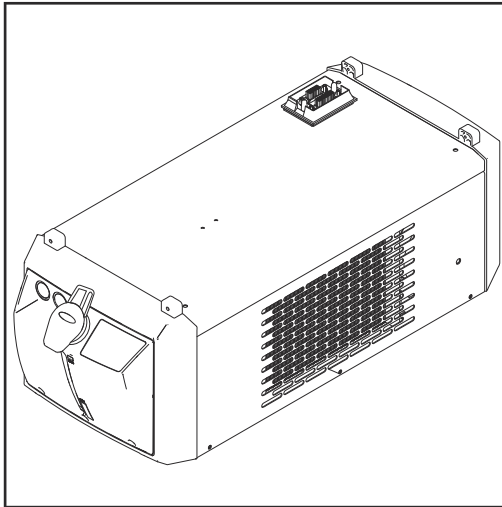
Copyright

Copyright of these operating instructions remains with the manufacturer.

The text and illustrations are all technically correct at the time of printing. We reserve the right to make changes. The contents of the operating instructions shall not provide the basis for any claims whatsoever on the part of the purchaser. If you have any suggestions for improvement, or can point out any mistakes that you have found in the instructions, we will be most grateful for your comments.

General information

Device concept



The cooling unit and the power source form a unit. As with the standalone power source, the power source/cooling unit combination can be mounted on the trolley.

Device versions

Cooling unit description	Cooling unit compatible with
CU 800i (standard version) <ul style="list-style-type: none"> - For single-shift operation - The coolant pump and fan are switched on and off automatically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 270i C power sources
CU 800i /460 V (standard version for 460 V operation) <ul style="list-style-type: none"> - For single-shift operation - The coolant pump and fan are switched on and off automatically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 270i C power sources
CU 800i Pro (professional version) <ul style="list-style-type: none"> - For multi-shift operation, multivoltage operation, 600 V operation - The coolant pump and fan are switched on and off automatically as standard (if the OPT/i CU flow temperature sensor option has been selected, the coolant pump and fan are controlled electronically). The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 270i C power sources
CU 1100i (standard version) <ul style="list-style-type: none"> - For single-shift operation - The coolant pump and fan are switched on and off automatically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 320i - 600i power sources - iWave 300i - 500i power sources (not compatible with Multivoltage power sources of the iWave series)

Cooling unit description	Cooling unit compatible with
<p>CU 1100i /460 V (standard version for 460 V operation)</p> <ul style="list-style-type: none"> - For single-shift operation - The coolant pump and fan are switched on and off automatically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 320i - 600i power sources
<p>CU 1100i /MV, CU 1100i /MV RVP (multivoltage version)</p> <ul style="list-style-type: none"> - For single-shift and multivoltage operation - The coolant pump and fan are switched on and off automatically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes 	<ul style="list-style-type: none"> - TPS 320i - 600i power sources
<p>CU 1200i Pro /MC (professional version)</p> <ul style="list-style-type: none"> - For single- and multi-shift operation, multivoltage operation, 600 V operation - Coolant pump is electronically controlled as standard. The fan is switched on and off automatically. The operating status of the cooling unit can be manually changed by selecting different operating modes. <p>To operate the cooling unit with the iWave 300i - 500i power sources, the "OPT/i TIG 2nd NT242" option must be installed in the power sources.</p>	<ul style="list-style-type: none"> - TPS 320i - 600i power sources - iWave 300i - 500i power sources
<p>CU 1400i Pro /MC (professional version)</p> <ul style="list-style-type: none"> - For multi-shift operation, multivoltage operation, 600 V operation - The coolant pump and fan are controlled electronically as standard. The operating status of the cooling unit can be manually changed by selecting different operating modes. <p>To operate the cooling unit with the TPS 320i - 600i power sources, the "OPT/i TPS 2. NT241 CU 1400i" option must be installed in the power sources.</p> <p>To operate the cooling unit with the iWave 300i - 500i power sources, the "OPT/i TIG 2nd NT242" option must be installed in the power sources.</p>	<ul style="list-style-type: none"> - TPS 320i - 600i power sources - iWave 300i - 500i power sources

Scope of supply

The scope of supply comprises:

- Cooling unit
- 5 l coolant in a canister
- Four 5x25 mm self-tapping screws
- Coolant return filter
- Operating Instructions

Validity of 'General Delivery and Payment Conditions'

With respect to cooling units, the "General Delivery and Payment Conditions" as stated in the price list only apply under the conditions listed below.

CU 800i, CU 800i /460 V, CU 1100i, CU 1100i /460 V, CU 1100i /MV, CU 1100i /MV RVP:

- max. 8 hrs operation per day (single-shift operation)
- only original Fronius coolant is used
- with regular maintenance and regular coolant change

CU 800i Pro, CU 1200i Pro /MC, CU 1400i Pro /MC:

- for multi-shift operation
- only original Fronius coolant is used
- with regular maintenance and regular coolant change

Firmware updates

As a result of firmware updates, you may find that your device has certain functions that are not described in these operating instructions, or vice versa. Certain illustrations may also differ slightly from the actual controls on your device, but these controls function in exactly the same way.

Information on leaks

The following information on leaks does not apply to the CU 800i Pro, CU 1200i Pro/MC, or CU 1400i Pro/MC.

The shaft sealing surfaces inside the coolant pump are lubricated by the coolant, meaning that a certain leakage flow should always be expected. A low leakage flow is permitted.

The coolant pump requires a certain warm-up time after being started for the first time or upon restarting after a long period of downtime. An increased leakage flow can occur during this warm-up phase. After the run-in period, the leakage flow normally drops again to a low level. If this is not the case, contact the after-sales service.

Information about the coolant



CAUTION!

Danger from using non-permitted coolant.

This can result in severe damage to property.

- ▶ Only use coolant available from the manufacturer. Other coolants are not recommended for electrical conductivity and material compatibility reasons.
- ▶ Do not mix different coolants.
- ▶ When changing the coolant, make sure all the coolant is replaced.
- ▶ When switching from ethanol-based coolant to FCL 10/20 coolant, Change Kit FCL10 must be used and the instructions provided must be followed.
- ▶ Operate the CU1200i Pro /MC exclusively with Cooling Liquid FCL10/20.

Options

OPT/i CU flow temperature sensor

This option is available for the following devices:

- CU 800i
- CU 800i /460 V
- CU 800i Pro

The OPT/i CU flow temperature sensor option offers monitoring of the coolant temperature and flow rate.

Coolant temperature monitoring and flow monitoring are parts of an installation set and cannot be ordered separately.

The CU 1100i, CU 1100i /460V, CU 1100i /MV, CU 1100i / MV RVP, CU 1200i Pro /MC and CU 1400i Pro /MC cooling units have this option installed as standard.

Coolant temperature monitoring

A temperature sensor monitors the coolant return temperature during welding.

How it works:

- If the temperature of the coolant reaches 68 °C (154.4 °F)
 - The power source outputs a warning
 - The welding current is not interrupted
 - The cooling unit remains operational
- If the temperature of the coolant exceeds 70 °C (158 °F)
 - The power source outputs an error message
 - The temperature sensor interrupts the welding current
 - The cooling unit remains operational
- The temperature sensor restores the welding current when the coolant temperature falls to 65 °C (149 °F)

Flow monitoring

A flow sensor monitors the coolant flow during welding.

How it works:

- If the coolant flow falls to between 1 and 0.7 l/min (0.26 - 0.18 gal./min [US])
 - The power source outputs a warning
 - The welding current is not interrupted
 - The cooling unit remains operational
 - If the coolant flow drops below 0.7 l/min (0.18 gal./min [US])
 - The power source outputs an error message
 - Flow monitoring interrupts the welding current
 - The cooling unit remains operational
 - If the coolant flow drops below 0.4 l/min (0.11 gal./min [US])
 - The power source outputs an error message
 - Flow monitoring interrupts the welding current
 - The cooling unit is switched off
-

OPT/i CU level sensor

This option is available for the following devices:

- CU 1100i
- CU 1100i /460 V
- CU 1100i /MV
- CU 1100i /MV RVP
- CU 1200i Pro /MC

The option is installed as standard on the CU 1400i Pro/MC cooling unit.

The level sensor monitors the level of coolant in the cooling unit.

If both the OPT/i CU flow temperature sensor and the OPT/i CU level sensor options are installed in the cooling unit, the level sensor works as follows:

- If the coolant drops below the minimum level:
 - the power source outputs a warning
 - the welding current is not interrupted
 - the cooling unit remains operational

If just the OPT/i CU level sensor option is installed in the cooling unit, the level sensor works as follows:

- If the coolant drops below the minimum level:
 - the power source outputs an error message
 - the level sensor interrupts the welding current
 - the cooling unit switches off
-

OPT CU front coolant connections

This option is available for the following devices:

- CU 1100i
- CU 1100i /460 V
- CU 1100i /MV
- CU 1100i /MV RVP
- CU 1200i Pro /MC
- CU 1400i Pro /MC

The option can be used in conjunction with the following power sources:

- TPS 320i C
 - iWave 300i - 500i
-

OPT/i CU Torch deflate

This option is available for the following devices:

- CU 1100i
- CU 1100i /460 V
- CU 1100i /MV
- CU 1100i /MV RVP
- CU 1200i Pro /MC
- CU 1400i Pro /MC

Prerequisites for using the OPT/i CU Torch deflate option:

- OPT/i CU flow temperature sensor installed in the cooling unit
- OPT CU coolant connections installed in the front of the cooling unit

The option facilitates emptying/filling the torch hosepack, e.g. when changing the torch body.

The power source does not have to be switched off during this process.

Service life of the coolant pumps

Coolant pump service life in cooling units for single-shift operation

Cooling units	Information on the service life of the coolant pump
<ul style="list-style-type: none"> - CU 800i, 1100i - CU 800i /460 V, 1100i /460 V - CU 1100i /MV - CU 1100i /MV RVP 	<p>If used properly, the coolant pump will have a service life of approx. 10,000 operating hours. After the end of its nominal service life, the coolant pump could develop a fault. To avoid a lengthy period of work disruption, the pump should be scheduled for replacement after approx. 10,000 operating hours.</p>

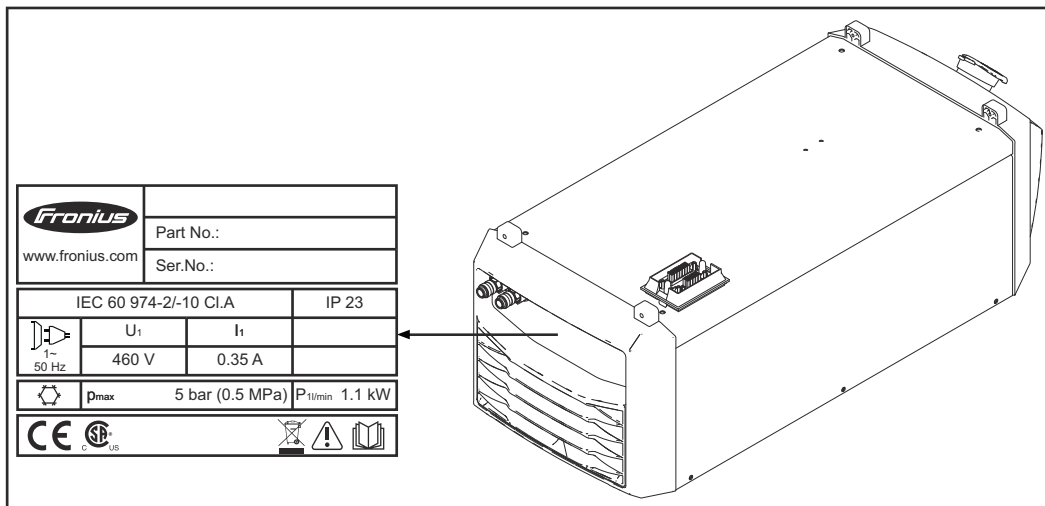
Coolant pump service life in cooling units for multi-shift operation

Cooling units	Information on the service life of the coolant pump
<ul style="list-style-type: none"> - CU 800i Pro - CU 1200i Pro /MC 	<p>If used properly, the coolant pump will have a service life of approx. 20,000 operating hours. After the end of its nominal service life, the coolant pump could develop a fault. To avoid a lengthy period of work disruption, the pump should be scheduled for replacement after approx. 20,000 operating hours.</p>
<ul style="list-style-type: none"> - CU 1400i Pro /MC 	<p>If used properly, the coolant pump will have a service life of approx. 30,000 operating hours. After the end of its nominal service life, the coolant pump could develop a fault. To avoid a lengthy period of work disruption, the pump should be scheduled for replacement after approx. 30,000 operating hours.</p>

Warning notices on the device

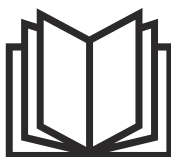
Overview

The cooling unit displays safety symbols and has a rating plate. The rating plate and safety symbols must not be removed or painted over. The symbols warn against operating the equipment incorrectly, as this could result in serious injury or damage to property.



Welding is dangerous. The following basic requirements must be met to ensure the equipment is used properly:

- Welders must be sufficiently qualified
- Suitable protective equipment must be used
- All persons not involved must be kept at a safe distance from the cooling unit and the welding process



Do not use the functions described here until you have fully read and understood the following documents:

- This document
- All safety rules and user documentation for this device and all system components

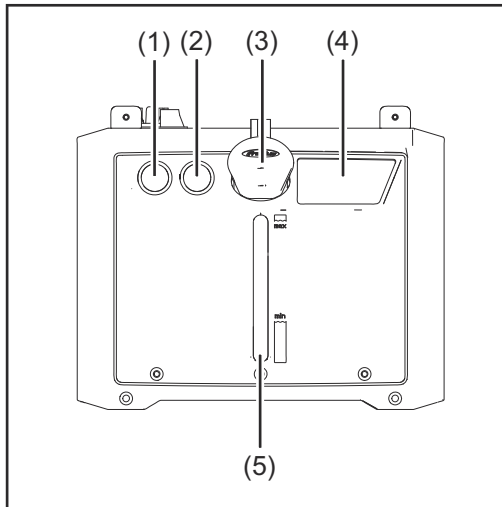


Do not dispose of used devices with domestic waste. Dispose of them according to the safety rules.

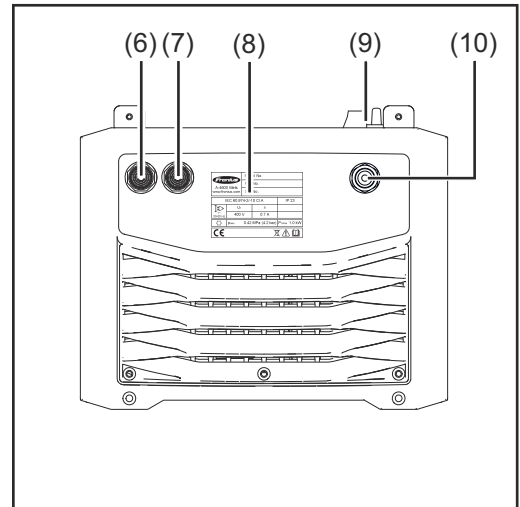
Connections and mechanical components

Connections and mechanical components

Connections and mechanical components: CU 1100i, CU 1200i, CU 1400i



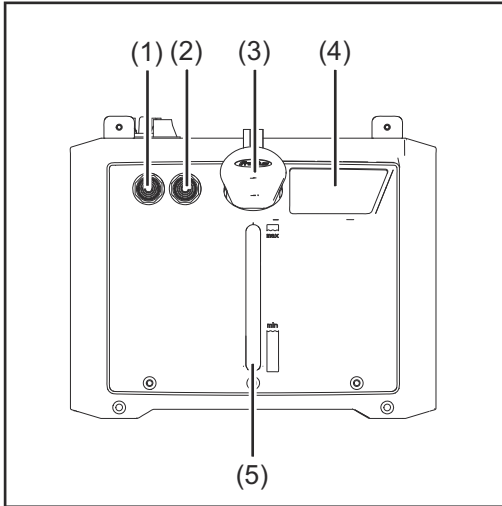
Front of cooling unit



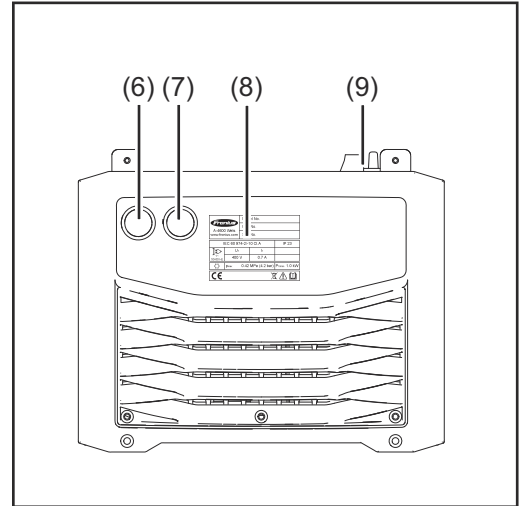
Rear of cooling unit

- | | |
|------|--|
| (1) | Coolant flow connection blanking cover (blue) |
| (2) | Coolant return connection blanking cover (red) |
| (3) | Screw cap for coolant tank |
| (4) | Important notes on maintenance and operation |
| (5) | Coolant viewing window |
| (6) | Coolant return connection (red) |
| (7) | Coolant flow connection (blue) |
| (8) | Rating plate |
| (9) | Power source connection |
| (10) | Gas connection <ul style="list-style-type: none"> - Maximum 20 l/min (5.28 gal./min [US]) gas flow at gas pressure regulator - Maximum 4 bar (58.02 psi) |

Connections and mechanical components: CU 800i



Front of cooling unit



Rear of cooling unit

- | | |
|-----|--|
| (1) | Coolant flow connection (blue) |
| (2) | Coolant return connection (red) |
| (3) | Screw cap for coolant tank |
| (4) | Important notes on maintenance and operation |
| (5) | Coolant viewing window |
| (6) | Blanking cover |
| (7) | Blanking cover |
| (8) | Rating plate |
| (9) | Power source connection |

Installation and commissioning

Before installation and commissioning

Safety

WARNING!

Danger from incorrect operation and work that is not carried out properly.

This can result in serious personal injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by technically trained and qualified personnel.
- ▶ Read and understand this document in full.
- ▶ Read and understand all safety rules and user documentation for this device and all system components.

Setup regulations

WARNING!

Danger from machines toppling over or falling.

This can result in serious personal injury and damage to property.

- ▶ Set up the device securely on an even, solid surface.
- ▶ Check all screw connections are tightly fastened after installation.

WARNING!

Danger from electric current.

This can result in serious personal injury and damage to property.

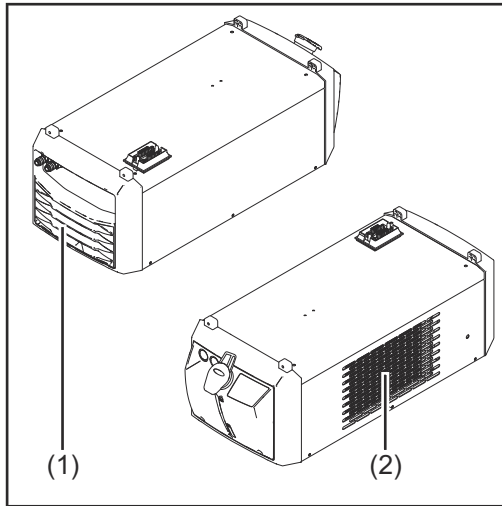
- ▶ Ensure the cooling unit is properly insulated.
- ▶ Always ensure that there is no electrically conductive connection between the base plate of the cooling unit and the surface.
- ▶ Before installing the cooling unit, remove all electrically conductive parts between the base plate of the cooling unit and the surface.

The device is tested to IP 23 protection, meaning:

- Protection against penetration by solid foreign bodies with diameters greater than 12.5 mm (0.49 in.)
- Protection against spraywater at any angle up to 60° to the vertical

Cooling air

The system must be set up in such a way that the cooling air can flow unimpeded through the slots in the side panels. Ensure that there is always an all-round clearance of 0.5 m (1 ft. 7.69 in.) around the device.



Air inlet openings and air outlet openings

⚠ CAUTION!

Danger from insufficient cooling air supply.

This can result in severe damage to property.

- ▶ Air inlet openings (1) and outlet openings (2) must never be covered, not even partially.

Dust

Ensure that any metallic dust, for example from grinding work, is not sucked into the system by the fan.

Outdoor operation

The device can be set up and operated outdoors in accordance with degree of protection IP23. Avoid direct wetting (e.g. from rain).

Guarantee provisions regarding the coolant pump

The coolant pump may only be used with original coolant supplied by the manufacturer. Do not allow the coolant pump to run dry (even for a very short time), as this will destroy the coolant pump. The manufacturer accepts no liability for damage caused in such cases.

Intended use

The device is intended solely for use in conjunction with Fronius system components.

The device is to be used exclusively for its intended purpose.

Any use above and beyond this purpose is deemed improper. The manufacturer is not liable for any damage, or unexpected or incorrect results arising out of such misuse.

Proper use also includes:

- Fully reading and understanding these Operating Instructions
- Following all the instructions and safety rules in these Operating Instructions
- Performing all stipulated inspection and servicing work

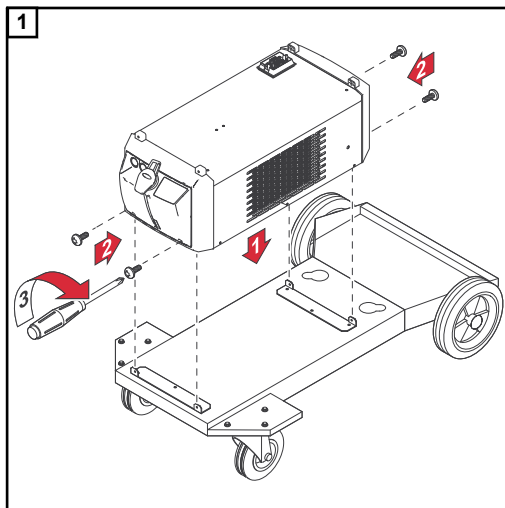
The device is designed for use in industry and the workshop. The manufacturer accepts no responsibility for any damage caused through use in a domestic setting.

Fitting the cooling unit to the trolley

General

The welding system can be fitted to a trolley to make the system (incl. cooling unit) more mobile.

Screwing the cooling unit to the trolley



WARNING!

Danger due to devices toppling over.

This can result in serious personal injury and damage to property.

- ▶ If the welding system is not equipped with an auto-transformer, the cooling unit must be installed right at the bottom.
- ▶ Please see the user documentation for the respective trolley for more information about the trolley.

Use the screws supplied with the trolley to secure the cooling unit to the trolley.

Connecting the cooling unit to the power source

Safety

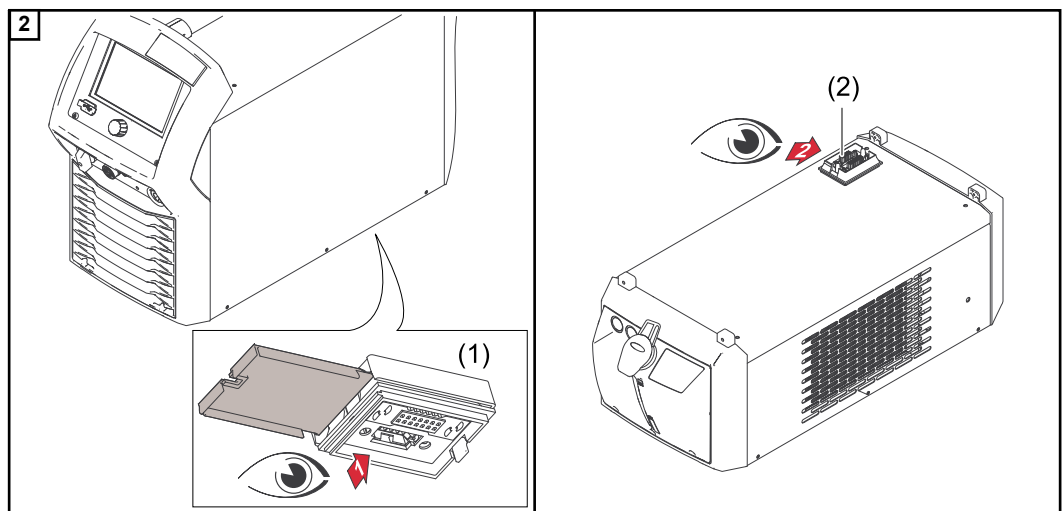
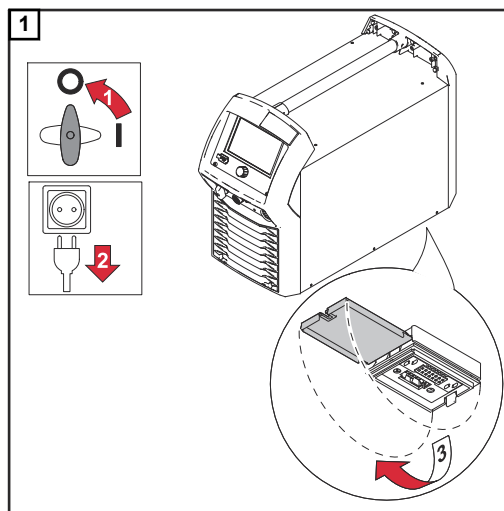
WARNING!

Danger from electrical current.

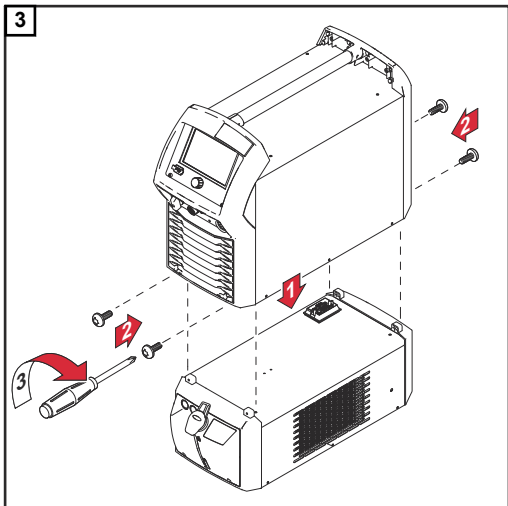
This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

Connecting the cooling unit to the power source

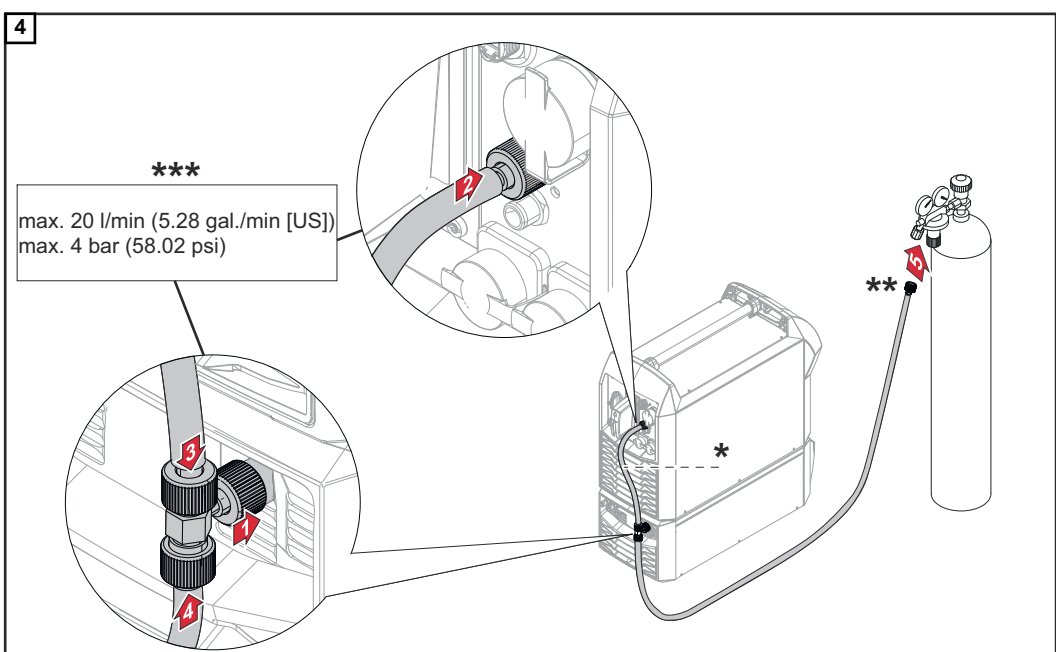


Ensure that the cooling unit connection (1) and the power source connection (2) are clean and undamaged



Use the screws supplied with the cooling unit to secure the power source to the cooling unit.

Only if the cooling unit has the OPT/i CU Torch deflate option:



- * Gas hose from the scope of delivery of the cooling unit (gas hose is only supplied if the OPT/i CU Torch deflate option is installed in the cooling unit)
- ** For gas supply
- *** Maximum 20 l/min (5.28 gal./min) gas flow at gas pressure regulator/maximum 4 bar (58.02 psi)

Connecting the coolant return filter and coolant hoses

Safety

WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

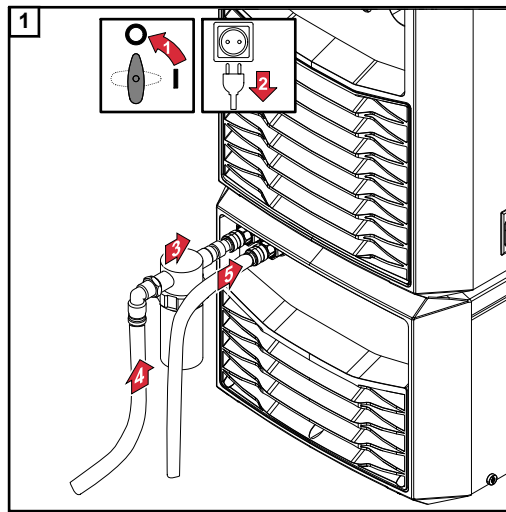
- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

Connecting the coolant return filter and coolant hoses

Depending on the system configuration, connect the coolant filter and coolant hoses to either the front or rear of the cooling unit:

- Interconnecting hosepack = rear of the cooling unit
- Welding torch hosepack = front of the cooling unit (only possible if the welding torch hosepack has separate coolant hoses and in conjunction with power sources TPS 270i C, TPS 320i C, iWave 300i - 500i)

Connecting the coolant return filter and coolant hoses from the interconnecting hosepack to the rear of the cooling unit:



CAUTION!

Danger due to work that has been carried out incorrectly.

This can result in severe damage to property.

- ▶ Always connect the coolant return filter to the coolant return connection (red).

Connecting the coolant return filter and coolant hoses from the welding torch hosepack to the front of the cooling unit:

- 1 Carry out the work in the same way as on the rear of the cooling unit

CAUTION!

Danger due to work that has been carried out incorrectly.

This can result in severe damage to property.

- ▶ Always connect the coolant return filter to the coolant return connection (red).

Filling and starting up the cooling unit

Filling the cooling unit

WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

WARNING!

Danger from coolant leakage.

This can result in serious personal injury and damage to property.

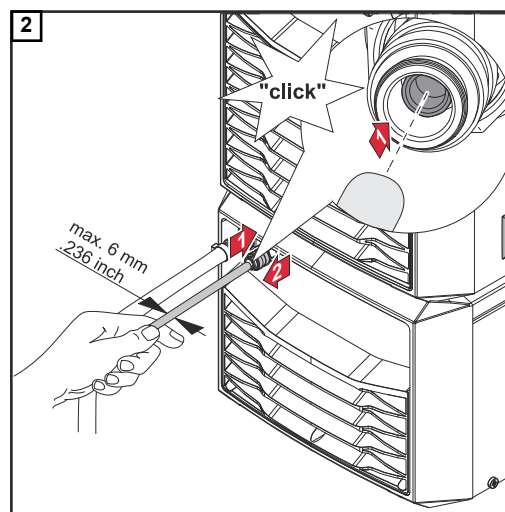
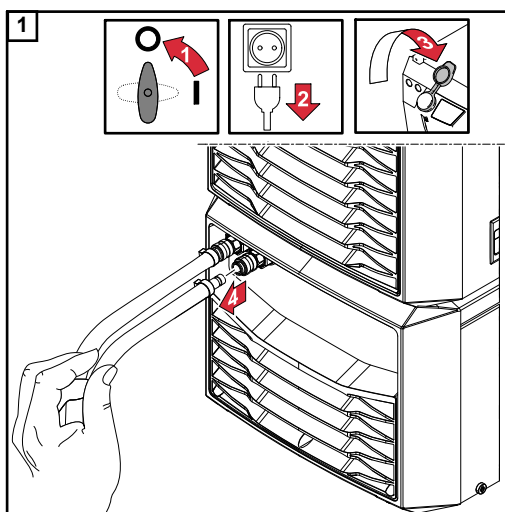
- ▶ If there is any coolant on the exterior of the cooling unit, remove it immediately.
- ▶ Make sure that no coolant gets into the interior of the cooling unit.

CAUTION!

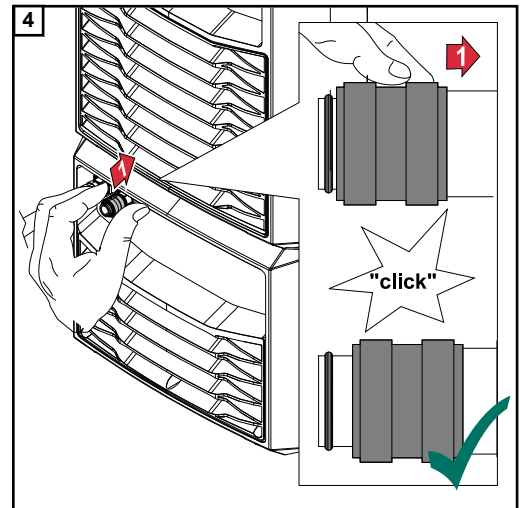
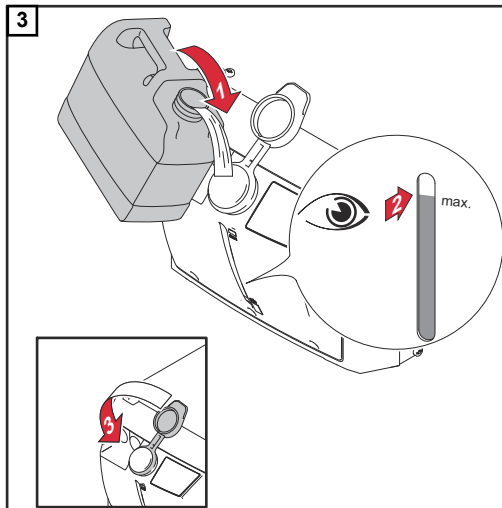
Danger due to work that has been carried out incorrectly.

This can result in severe damage to property.

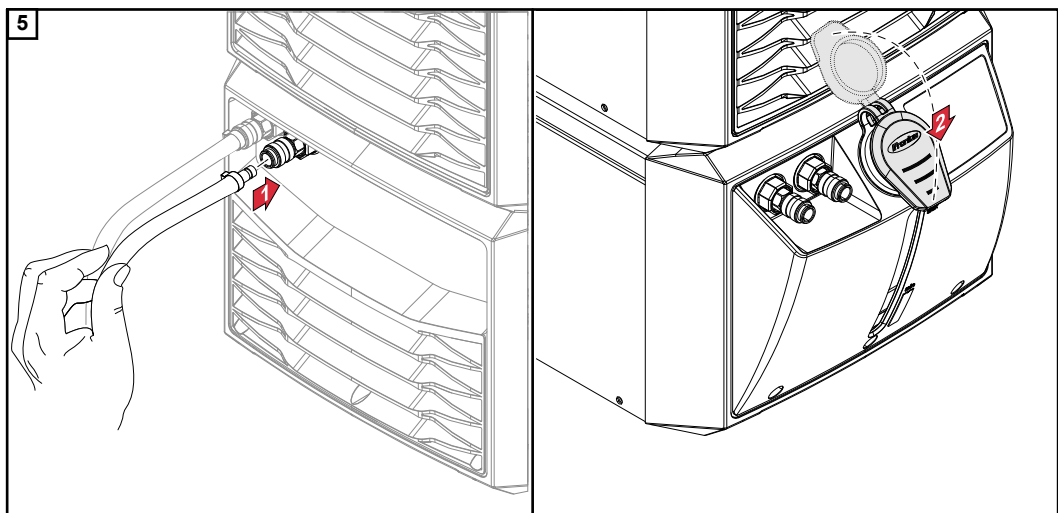
- ▶ If the coolant connections are on the front of the cooling unit, carry out the following steps as shown – but at the front coolant flow connection (blue).



Push the sealing cone in the coolant flow connection backwards



Push the locking ring backwards until the sealing cone returns to its original position and release the locking ring again



Starting up the cooling unit

CAUTION!

Danger from insufficient coolant in the cooling unit.

This can result in severe damage to property.

- ▶ Before starting up the cooling unit, first check that it contains an adequate amount of coolant and that the coolant is clean and uncontaminated.

CAUTION!

Danger from inadequate coolant flow.

This can result in severe damage to property.

- ▶ During welding, check the coolant flow at regular intervals.
- ▶ You should be able to see a steady return flow of coolant to the coolant tank.

 **CAUTION!**

Danger from insufficient coolant when starting the cooling unit for the first time.

This can result in severe damage to property.

- ▶ If the cooling unit is fitted with an OPT/i CU level sensor, the OPT/i CU level sensor may cause an error message to be output if long hosepacks are being used when starting for the first time.
- ▶ If this happens, top up the coolant.

The cooling unit is powered and controlled by the power source. If the power source mains switch is turned to position - I - the cooling unit will start to operate as described below:

- The fans run for approx. 5 seconds
- The coolant pump runs for approx. 3 minutes. The coolant pump switches off again if welding does not start after around 3 minutes

The operating status of the cooling unit can be manually changed by selecting different operating modes. For more information, see [Available operating modes](#) on page 42.

OPT/i CU Torch deflate: Emptying/filling the torch hosepack

Mode of operation of the OPT/i CU Torch deflate:

When using OPT/i CU Torch deflate option, the "Empty/fill torch hosepack" setup parameter is available in the power source setup menu under the component settings for the auto and eco operating modes.

This function can be used to return the coolant in the torch hosepack to the coolant tank, for example when changing the torch body.

The power source does not have to be turned off during this process.

 **WARNING!**

When emptying hosepacks that are longer than 8 m (26 ft. 2.96 in.), a fully filled coolant tank can overflow.

This can result in serious injury and damage to property.

- ▶ Ensure that overflowing coolant is collected properly and does not get onto the outside of the unit or into the interior of the unit.

If the coolant temperature is less than 50 °C (122 °F), the emptying process is started from the power source setup menu or the welding torch and takes a maximum of 60 seconds.

After the torch body has been successfully changed, the torch hosepack can be filled with coolant.

Procedure for filling welding torch hosepacks that are longer than 8 m (26 ft. 2.96 in.):

- 1 Connect the hosepack to the power source
- 2 Fill cooling unit to the maximum level - see section [Filling the cooling unit](#) described on page 39
- 3 Fill hosepack with coolant - see Operating Instructions for the power source
- 4 Do not top up the coolant tank, otherwise the tank could overflow when the torch hosepack is emptied.

Further information about emptying/filling the torch hosepack can be found in the Operating Instructions for the power source.

Operating modes

Available operating modes

The individual operating modes can be selected on the power source.

Operating mode	Description
<p>on</p>	<p>Available on: All cooling units</p> <p>Operating status on CU 800i, CU 800i /460 V, CU 800i Pro, CU 1100i, CU 1100i /460 V, CU 1100i /MV, CU 1100i /MV RVP: Continuous. As soon as the power source is switched on, the cooling unit starts to work. Fan and coolant pump run continuously.</p> <p>Operating status on CU 1200i Pro /MC, CU 1400i Pro /MC: Continuous. As soon as the power source is switched on, the cooling unit starts to work. Fan and coolant pump run continuously. The coolant pump regulates to a minimum coolant flow of 1.1 l/min (0.29 gal./min [US]). When the coolant temperature rises, the pump speed and the coolant flow rate are automatically increased.</p>
<p>off</p>	<p>Available on: All cooling units</p> <p>Operating status: Inoperative, even when welding starts.</p>
<p>auto (= factory default)</p>	<p>Available on: All cooling units</p> <p>Operating status on CU 800i, CU 800i /460 V, CU 800i Pro, CU 1100i, CU 1100i /460 V, CU 1100i /MV, CU 1100i /MV RVP: When welding starts, the cooling unit begins to operate, fan and coolant pump run. At the end of welding, the cooling unit continues to run for another 2 minutes. The cooling unit switches off after these 2 minutes.</p> <p>Operating status on CU 1200i Pro /MC, CU 1400i Pro /MC: When welding starts, the cooling unit begins to operate, fan and coolant pump run. The coolant pump regulates to a minimum coolant flow of 1.1 l/min (0.29 gal./min [US]), which is kept constant. After the end of welding, the cooling unit continues to operate for 2 minutes. The cooling unit switches off after these 2 minutes.</p>

Operating mode	Description
eco	<p>Available on: CU 1200i Pro /MC, CU 1400i Pro /MC</p> <p>Operating status on CU 1200i Pro /MC: When welding starts, the cooling unit begins to operate, fan and coolant pump run. The coolant pump regulates to a minimum coolant flow of 1.0 l/min (0.26 gal./min [US]). When the coolant temperature rises, the pump speed and the coolant flow rate are automatically increased. After the end of welding, the coolant pump and fans continue to run for another 2 minutes subject to the return temperature. After these 2 minutes have passed, the fans and coolant pump are switched off.</p> <p>Operating status on CU 1400i Pro /MC: The coolant pump starts to run when welding starts and is electronically controlled subject to the coolant return temperature. The fans start up at a return temperature of 40 °C (104 °F) and are electronically controlled subject to the return temperature. After the end of welding, the coolant pump and fans continue to run for another 2 minutes subject to the return temperature. After these 2 minutes have passed, the fans and coolant pump are switched off.</p>

Recommended application of the operating modes

Operating mode	Recommended application
on	For high performance welding (maximum cooling power of the cooling unit)
eco	<p>For energy-efficient cooling:</p> <ul style="list-style-type: none"> - Longer service life of the coolant pump - Less soiling of the cooler in the cooling unit - Lower noise emissions - Reduced power consumption

Disconnect the cooling unit from the power source

Safety

WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

WARNING!

Danger from hot coolant.

This can result in serious burns or scalding.

- ▶ Before carrying out any work, allow the coolant to cool to +25 °C / +77 °F.

WARNING!

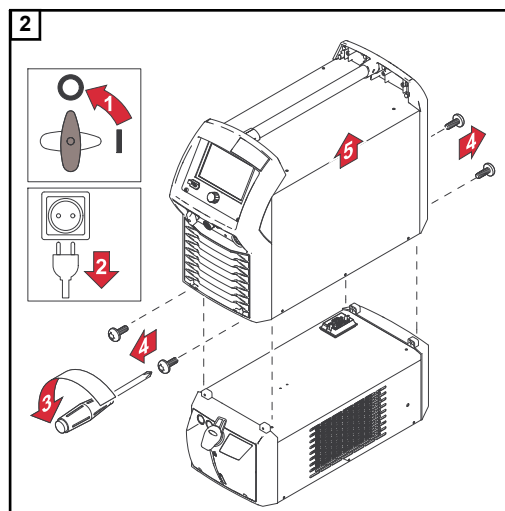
Danger from coolant leakage.

This can result in serious personal injury and damage to property.

- ▶ If there is any coolant on the exterior of the cooling unit, remove it immediately.
- ▶ Make sure that no coolant gets into the interior of the cooling unit.

Disconnecting the cooling unit from the power source

- 1 Disconnect the coolant hoses from the cooling unit

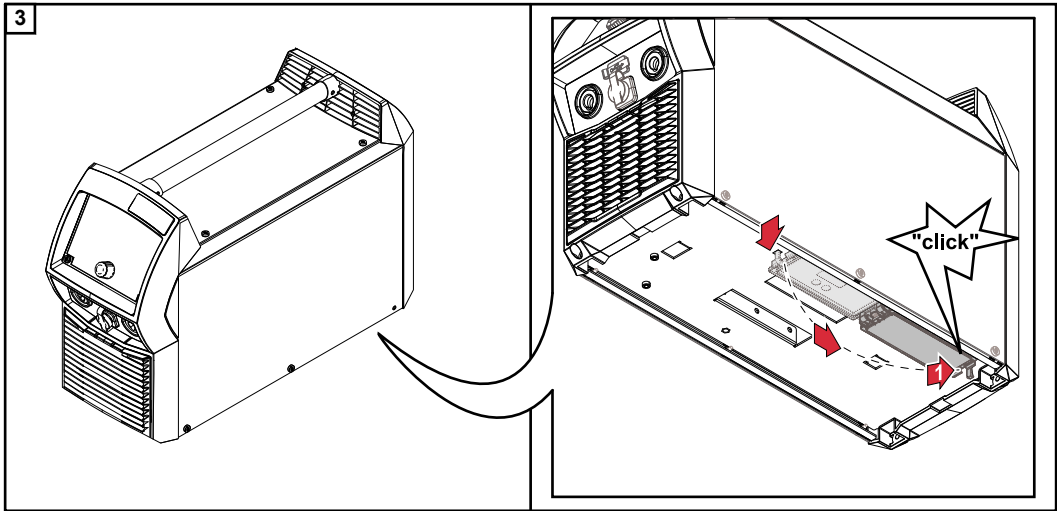


WARNING!

Danger from short circuits.

This can result in serious personal injury and damage to property.

- ▶ Dirt and damage can cause short circuits on the cooling unit connection.
- ▶ After dismantling the power source, always close the cooling unit connection cover on the underside of the power source.



Close the cover on the cooling unit connection

Troubleshooting

Troubleshooting

Safety

WARNING!

Danger from incorrect operation and work that is not carried out properly.

This can result in serious personal injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by technically trained and qualified personnel.
- ▶ Read and understand this document in full.
- ▶ Read and understand all safety rules and user documentation for this device and all system components.

WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

WARNING!

Danger due to insufficient ground conductor connection.

This can result in serious personal injury and damage to property.

- ▶ The housing screws provide a suitable ground conductor connection for grounding the housing.
- ▶ The housing screws must not under any circumstances be replaced by other screws without a reliable ground conductor connection.

WARNING!

Danger from coolant leakage.

This can result in serious personal injury and damage to property.

- ▶ If there is any coolant on the exterior of the cooling unit, remove it immediately.
- ▶ Make sure that no coolant gets into the interior of the cooling unit.

WARNING!

Danger from hot coolant.

This can result in serious burns or scalding.

- ▶ Before carrying out any work, allow the coolant to cool to +25 °C / +77 °F.

Troubleshooting

Make a note of the serial number and configuration of the device and contact our After-Sales Service team with a detailed description of the error, if

- errors occur that are not listed below
- the troubleshooting measures listed are unsuccessful

Insufficient or no coolant flow

Cause: Coolant level too low

Remedy: Top up coolant. Attention when using OPT/i CU Torch deflate - see section [OPT/i CU Torch deflate: Emptying/filling the torch hosepack](#) from page [41](#)

Cause: Constriction or foreign body in cooling circuit

Remedy: Remove constriction or foreign body

Cause: Coolant contaminated

Remedy: Change the coolant and then bleed the cooling unit

Cause: Coolant return filter and / or coolant pre-filter (only with CU 1200i Pro /MC) installed

Remedy: Clean coolant filter using clean tap water or change filter element

Cause: Coolant pump defective

Remedy: Contact After-Sales Service

Insufficient or no coolant flow (with CU 800i, CU 1100i, CU 1100i /MV):

Cause: Coolant pump sticking

Remedy: Turn coolant pump shaft (see section [Turning the coolant pump shaft](#) on page [52](#)). Contact After-Sales Service if the coolant pump shaft proves impossible to turn

Coolant pump does not work after turning the coolant pump shaft (with CU 800i, CU 1100i, CU 1100i /MV):

Cause: Temperature switch on coolant pump has tripped

Remedy: Wait until the end of the coolant pump's cooling phase (2 - 3 minutes)

Insufficient or no coolant flow (with CU 800i Pro, CU 1100i /460 V, CU 1100i /MV RVP, CU 1200i Pro /MC, CU 1400i Pro /MC):

Cause: Coolant pump sticking

Remedy: Contact After-Sales Service

Insufficient cooling power

Cause: Cooler contaminated

Remedy: Gas purge cooler with dry compressed air (see section [Gas purging the cooler](#) on page [60](#))

Cause: Faulty fan

Remedy: Contact After-Sales Service

Cause: Coolant pump defective

Remedy: Contact After-Sales Service

High operating noise level

Cause: Coolant level too low

Remedy: Top up coolant. Attention when using OPT/i CU Torch deflate - see section [OPT/i CU Torch deflate: Emptying/filling the torch hosepack](#) from page [41](#)

Cause: Coolant pump defective

Remedy: Contact After-Sales Service

Welding torch gets very hot (with CU 800i, CU 1100i Basic, CU 1100i, CU 1100i / MV):

Cause: The specification of the cooling unit is inadequate

Remedy: Observe the duty cycle and loading limits

Cause: Welding torch is inadequately dimensioned

Remedy: Observe the duty cycle and loading limits

Cause: Inadequate coolant flow

Remedy: Check coolant level. Top up the coolant if necessary. Attention when using OPT/i CU Torch deflate - see section [OPT/i CU Torch deflate: Emptying/filling the torch hosepack](#) from page 41.

Check coolant for contamination. Change the coolant if necessary

Cause: Inadequate coolant flow

Remedy: Coolant pump sticking: Turn coolant pump shaft (see section [Turning the coolant pump shaft](#) on page 52). Contact After-Sales Service if the coolant pump shaft proves impossible to turn

Welding torch becomes very hot (with CU 800i /460 V, CU 800i Pro, CU 1100i /460 V, CU 1100i /MV RVP, CU 1200i Pro /MC, CU 1400i Pro /MC):

Cause: The specification of the cooling unit is inadequate

Remedy: Observe the duty cycle and loading limits

Cause: Welding torch is inadequately dimensioned

Remedy: Observe the duty cycle and loading limits

Cause: Inadequate coolant flow

Remedy: Check coolant level. Top up the coolant if necessary. Attention when using OPT/i CU Torch deflate - see section [OPT/i CU Torch deflate: Emptying/filling the torch hosepack](#) from page 41.

Check coolant for contamination. Change the coolant if necessary

Cause: Inadequate coolant flow

Remedy: Coolant pump sticking: Contact After-Sales Service

Turning the coolant pump shaft on the CU 800i, CU 1100i, CU 1100i /MV

Safety



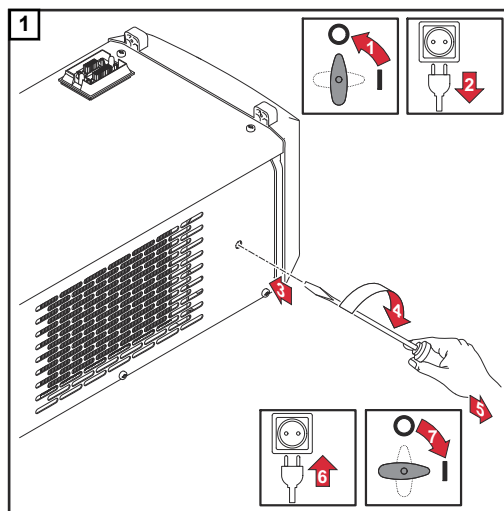
WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

Turning the coolant pump shaft



Care, maintenance and disposal

Safety

WARNING!

Danger from incorrect operation and work that is not carried out properly.

This can result in serious personal injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by technically trained and qualified personnel.
- ▶ Read and understand this document in full.
- ▶ Read and understand all safety rules and user documentation for this device and all system components.

WARNING!

Danger from electrical current.

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.
- ▶ After opening the device, use a suitable measuring instrument to check that electrically charged components (such as capacitors) have been discharged.

WARNING!

Danger due to insufficient ground conductor connection.

This can result in serious personal injury and damage to property.

- ▶ The housing screws provide a suitable ground conductor connection for grounding the housing.
- ▶ The housing screws must not under any circumstances be replaced by other screws without a reliable ground conductor connection.

WARNING!

Danger from coolant leakage.

This can result in serious personal injury and damage to property.

- ▶ Immediately remove any coolant that enters the device or spills onto its exterior during the work described in the following.

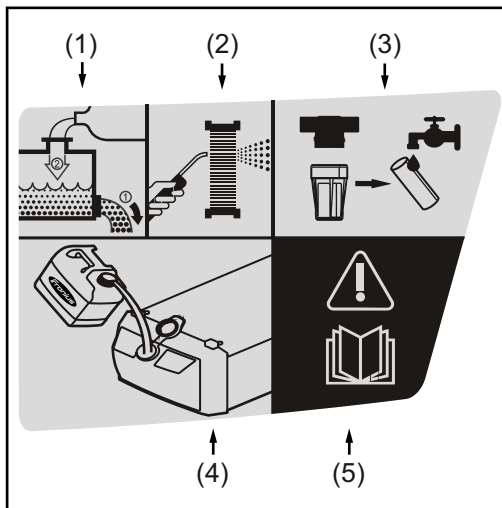
WARNING!

Danger from hot coolant.

This can result in serious burns or scalding.

- ▶ Before carrying out any work, allow the coolant to cool to +25 °C / +77 °F.

Symbols for care and maintenance of the cooling unit



- (1) Change the coolant
- (2) Gas purge the cooler
- (3) Clean the coolant return filter on the outside of the unit and the coolant pre-filter inside the unit and replace the filter element if necessary
- (4) Only use original coolant from the manufacturer (Cooling Liquid FCL 10/20 oder ethanolbasiertes Kühlmittel)
- (5) Read this document

The relevant maintenance intervals and work are described in detail in the following pages.

Maintenance intervals, maintenance work

⚠ CAUTION!

Danger due to starting up without coolant.

This can result in severe damage to property.

- ▶ Only operate the cooling unit after it has been filled with coolant.
- ▶ If water-cooled system components are put into operation without coolant, this usually results in a defect of the system components.
The manufacturer is not liable for any resulting damage, and all warranty claims are voided

⚠ CAUTION!

Danger from non-permitted coolant.

This can result in severe damage to property.

- ▶ Use only original coolant from the manufacturer (Cooling Liquid FCL 10/20 or ethanol-based coolant) when filling the cooling unit.
- ▶ Other coolants are not recommended for electrical conductivity and material compatibility reasons.

At every start-up

- Ensure that all hosepacks and welding torches are undamaged
- Check that there is an all-round clearance of 0.5 m (1 ft. 7.69 in.) to ensure that cooling air can flow in and out freely
- Check the screw connections between all system components of the welding system for tightness
- Check all the coolant connections of the welding system for tightness
- Monitor the coolant return flow in the coolant tank
 - If no coolant is returning to the container, identify and remedy the cause

Once a week

- Check coolant level. If the coolant level is below the "min" mark, top up with coolant. Attention when using OPT/i CU Torch deflate - see section [OPT/i CU Torch deflate: Emptying/filling the torch hosepack](#) from page 41.
- Check the purity of the coolant. Change the coolant if necessary

Every 2 months

- If present: clean the coolant return filter on the outside of the unit and replace the filter element if necessary

Every 6 months

- Gas purge the cooler

Every 6 months in 3-shift operation with ethanol-based coolant

- Gas purge the cooler
- Change the coolant

Every 12 months in single-shift operation with ethanol-based coolant

- Change the ethanol-based coolant

Every 12 months in 3-shift operation with FCL 10/20 coolant

- Change the coolant
- CU1200i Pro /MC only: clean the coolant pre-filter in the interior of the unit and replace the filter insert if necessary

Every 24 months in single-shift operation with FCL 10/20 coolant

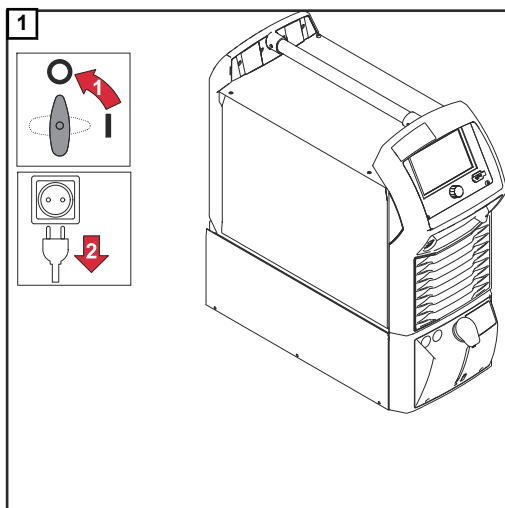
- Change the coolant

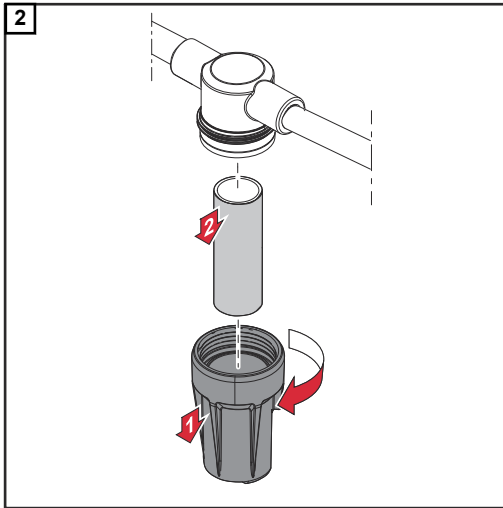
Cleaning the coolant return filter on the outside of the unit

**WARNING!****Danger from welding current and accidental ignition of an arc.**

This can result in serious injury and damage to property.

- ▶ Disconnect the ground earth connection between the welding system and the work-piece.
- ▶ Remove the wire electrode from the welding torch being used.
- ▶ Depending on the system, remove the wire spool or the basket-type spool from the power source or the wirefeeder.



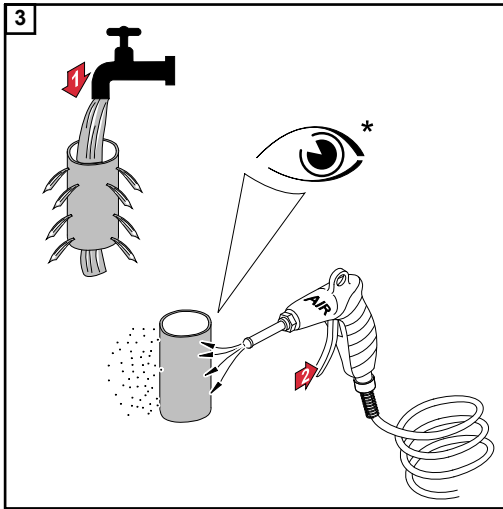


⚠ WARNING!

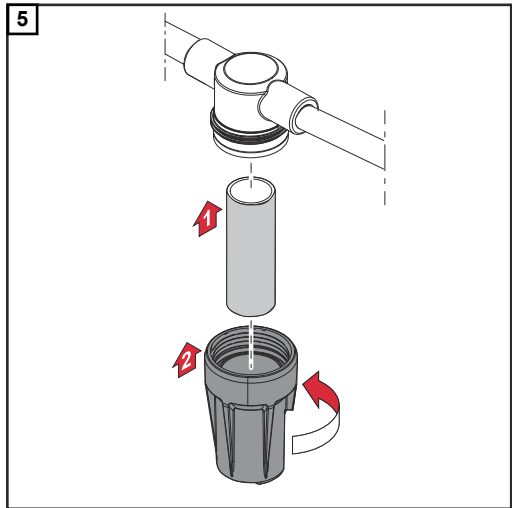
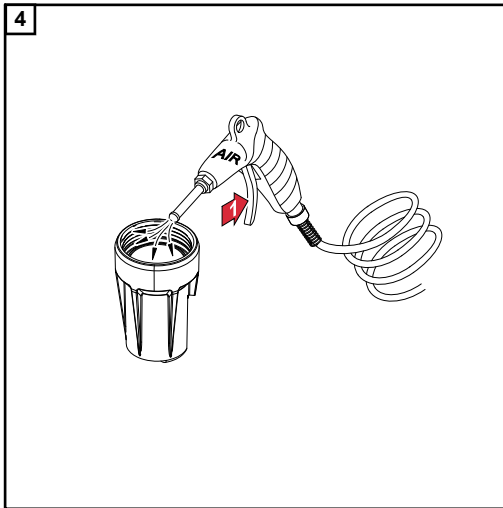
Danger from coolant leakage.

This can result in serious personal injury and damage to property.

- ▶ If there is any coolant on the exterior of the cooling unit, remove it immediately.
- ▶ Make sure that no coolant gets into the interior of the cooling unit.



* If the filter insert can no longer be cleaned without tools, replace the filter insert.



6 Ensure that there is no coolant inside on the device exterior

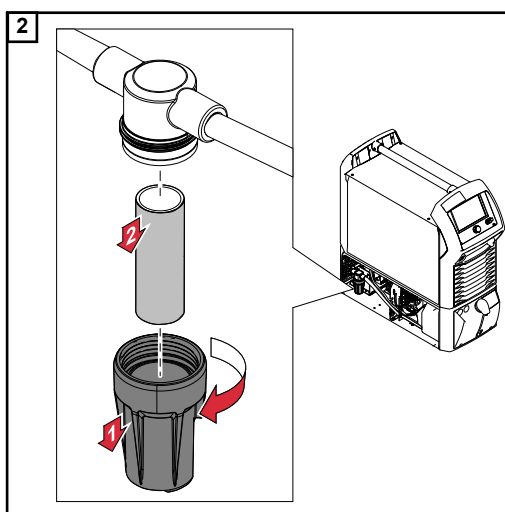
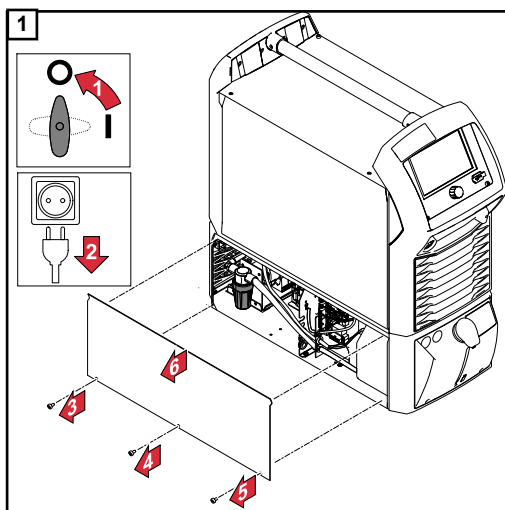
Cleaning the coolant pre-filter inside the unit (CU 1200i Pro /MC only)

⚠ WARNING!

Danger from welding current and accidental ignition of an arc.

This can result in serious injury and damage to property.

- ▶ Disconnect the ground earth connection between the welding system and the work-piece.
- ▶ Remove the wire electrode from the welding torch being used.
- ▶ Depending on the system, remove the wirespool or the basket-type spool from the power source or the wirefeeder.

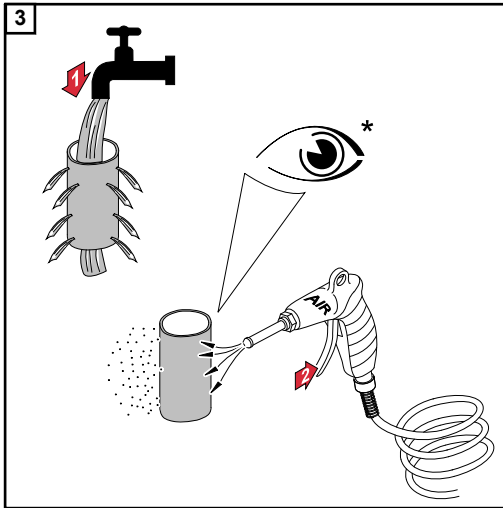


⚠ WARNING!

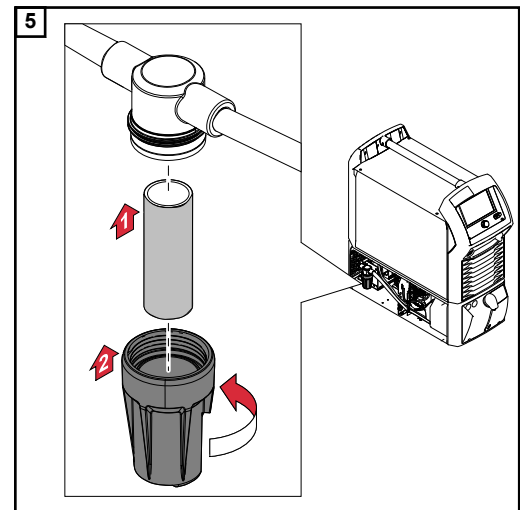
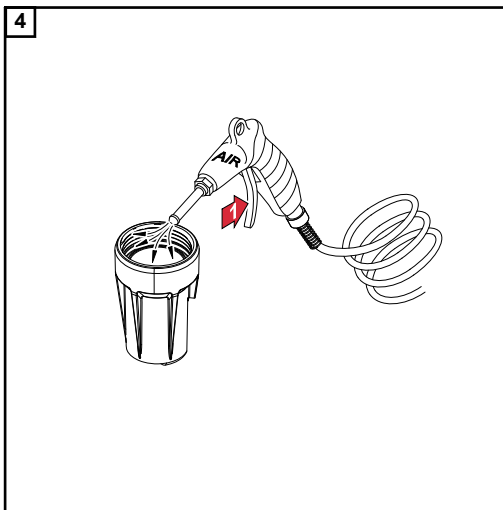
Danger from coolant leakage.

This can result in serious personal injury and damage to property.

- ▶ Immediately remove any coolant that enters the device and / or spills onto its exterior.

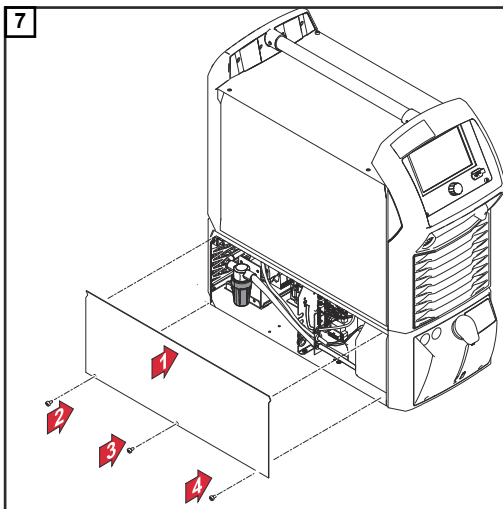


* If the filter insert can no longer be cleaned without tools, replace the filter insert.



6 Ensure that there is no coolant inside the device or on its exterior

Tightening torque of housing screws = 3 Nm (2.21 ft-lb)



Gas purging the cooler

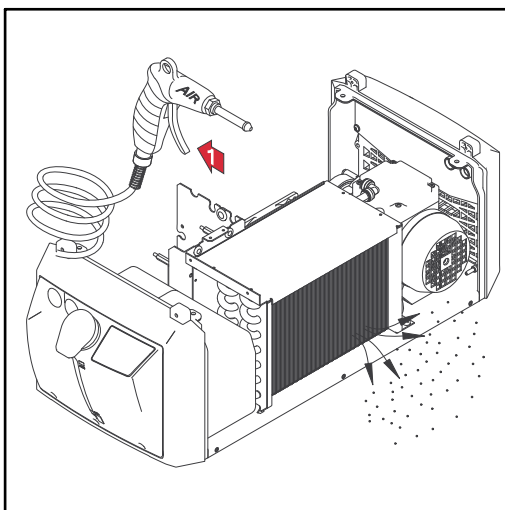
CAUTION!

Danger due to compressed air.

This may result in damage to electronic components.

- ▶ Always follow the instructions in the section **Safety** from page 55.
- ▶ Do not bring the air nozzle too close to electronic components.

For the sake of clarity, the cooling unit is shown in the following figures without the power source. However, the power source can remain on the cooling unit when gas purging the cooler.



- Remove device side panels and clean inside of cooler with dry, reduced compressed air
- With heavy dust deposits, additionally clean inside of device with dry, reduced compressed air

Changing coolant
(CU 800i, 1100i,
and 1400i)

⚠ WARNING!

Danger from welding current and accidental ignition of an arc.

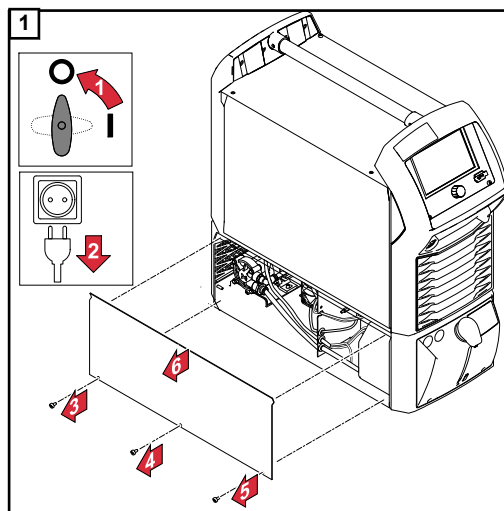
This can result in serious injury and damage to property.

- ▶ Disconnect the ground earth connection between the welding system and the work-piece.
- ▶ Remove the wire electrode from the welding torch being used.
- ▶ Depending on the system, remove the wirespool or the basket-type spool from the power source or the wirefeeder.

NOTE!

To avoid environmental pollution due to improper coolant disposal:

- ▶ The coolant must not be disposed of in the public sewage system.
- ▶ Dispose of coolant in accordance with the applicable local and national regulations.

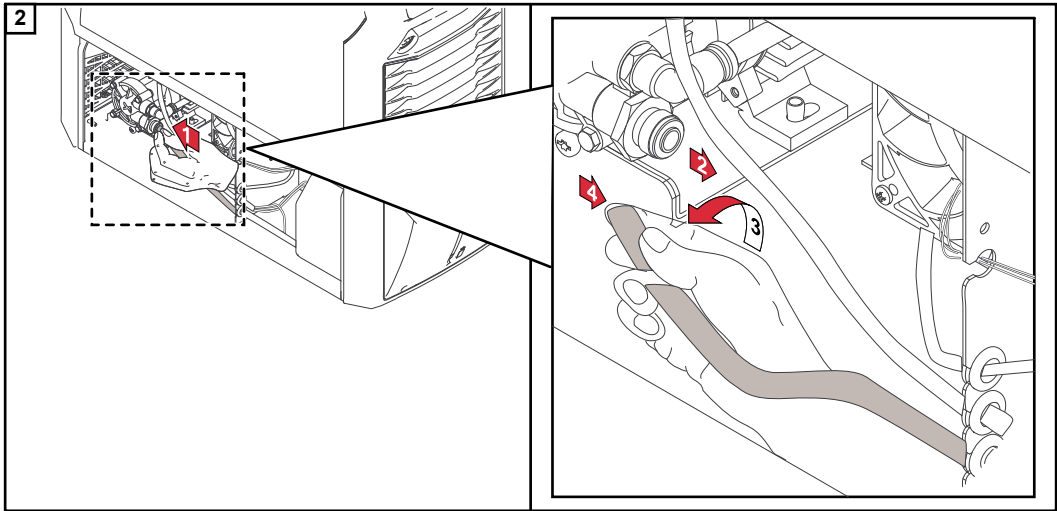


⚠ WARNING!

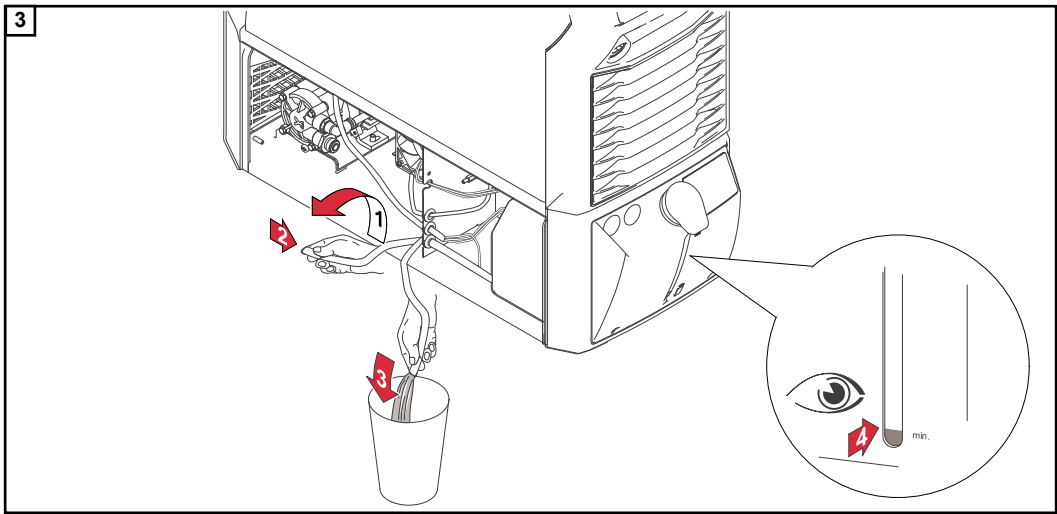
Danger from coolant leakage.

This can result in serious personal injury and damage to property.

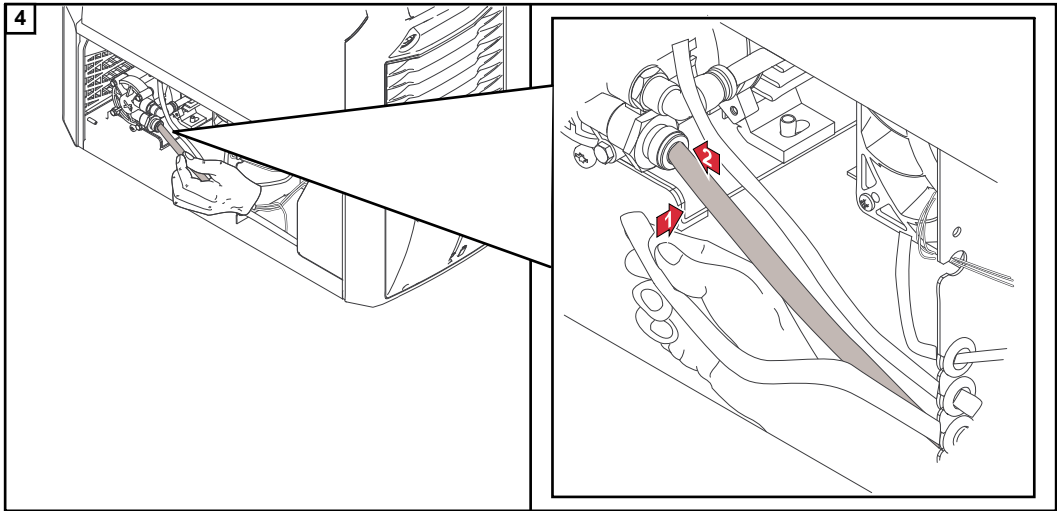
- ▶ Seal off the coolant hose as soon as it is pulled out of the coolant pump connection.
- ▶ Immediately remove any coolant that does get into the device or spills onto the exterior of the device.



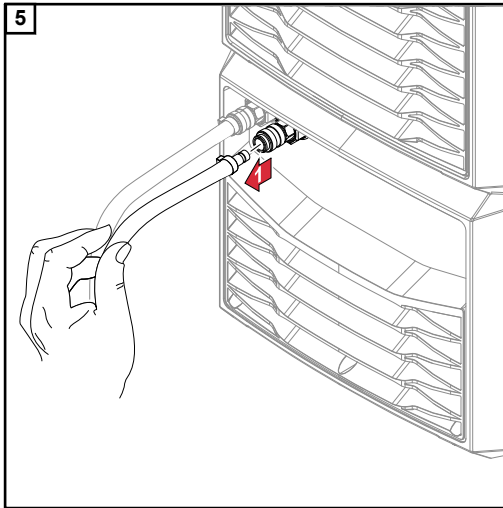
Push back the Push-in connection on the coolant pump and pull the coolant hose out of the coolant pump at the same time



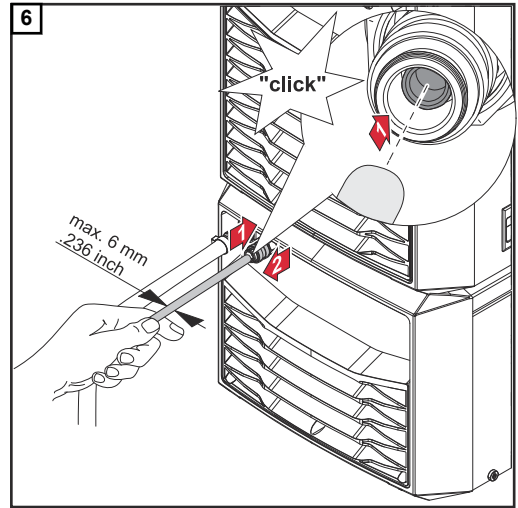
Drain the coolant



Insert the coolant hose into the coolant pump



5
Disconnect the coolant hose from the coolant supply connection



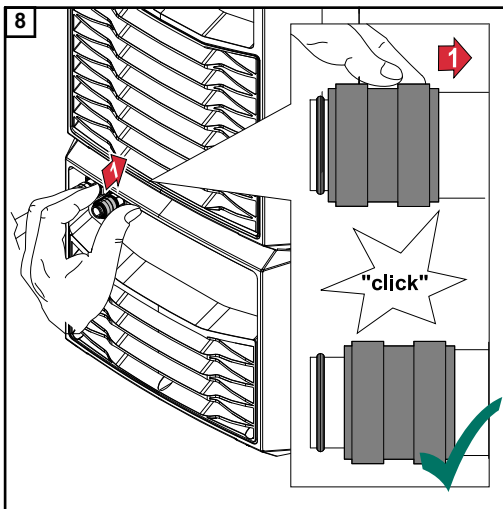
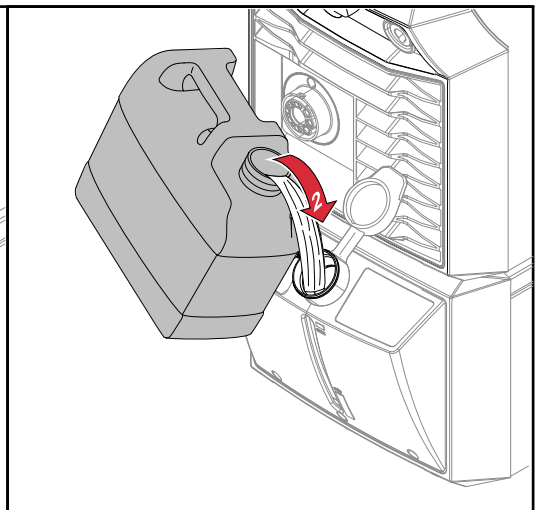
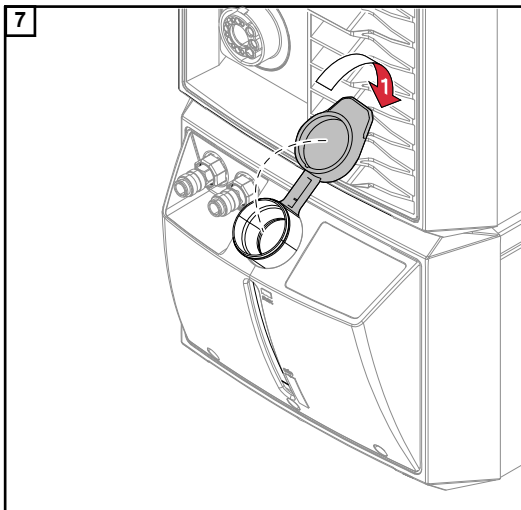
6
Push the sealing cone in the coolant flow connection backwards

⚠ CAUTION!

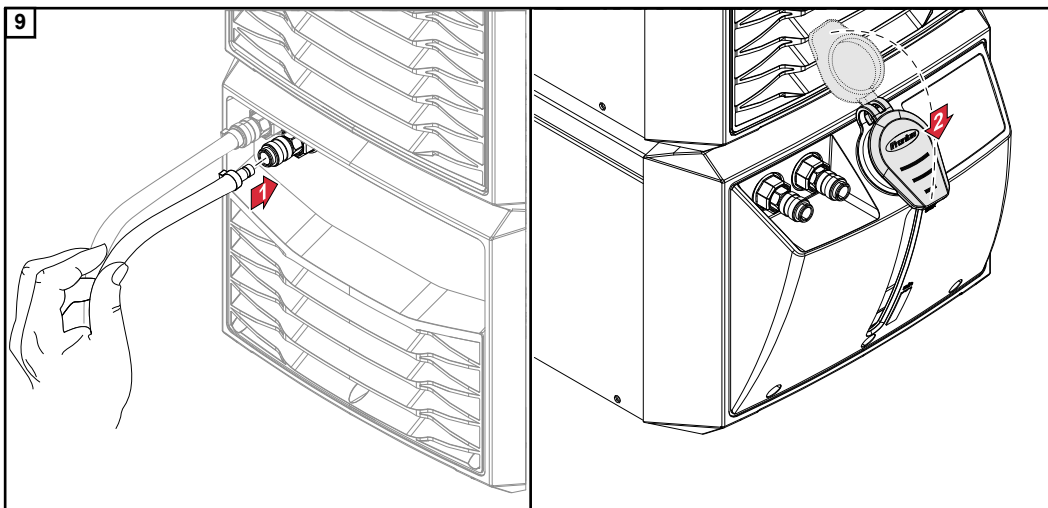
Danger from using non-permitted coolants.

This can result in severe damage to property.

- Use only original coolant from the manufacturer when refilling the cooling unit - refer also to section [Information about the coolant](#) on page 21.

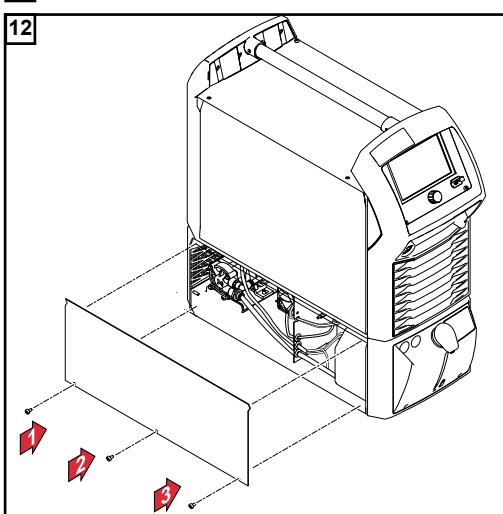


8
Push the locking ring backwards until the sealing cone returns to its original position and release the locking ring again



10 Ensure that all hose connections are properly established and are not leaking

11 Ensure that there is no coolant inside the device or on its exterior



Tightening torque of housing screws =
3 Nm (2.21 ft-lb)

Changing coolant (CU 1200i)

WARNING!

Danger from welding current and accidental ignition of an arc.

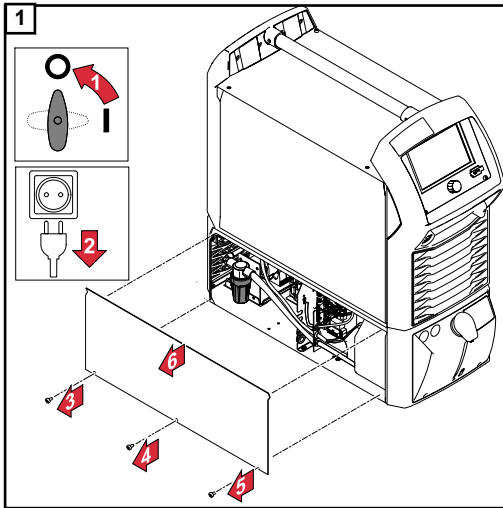
This can result in serious injury and damage to property.

- ▶ Disconnect the ground earth connection between the welding system and the work-piece.
- ▶ Remove the wire electrode from the welding torch being used.
- ▶ Depending on the system, remove the wirespool or the basket-type spool from the power source or the wirefeeder.

NOTE!

To avoid environmental pollution due to improper coolant disposal:

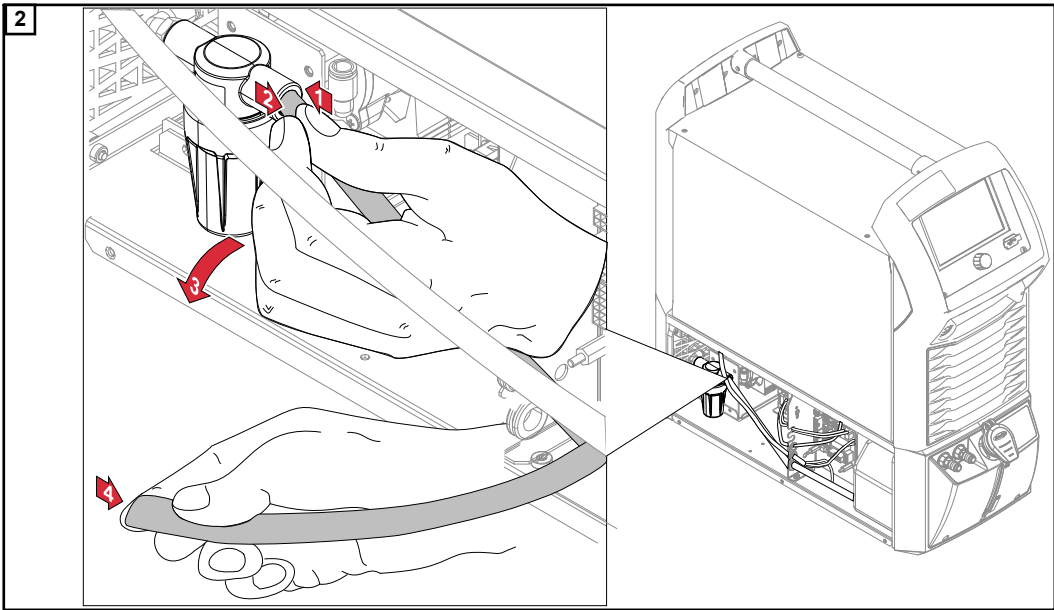
- ▶ The coolant must not be disposed of in the public sewage system.
- ▶ Dispose of coolant in accordance with the applicable local and national regulations.



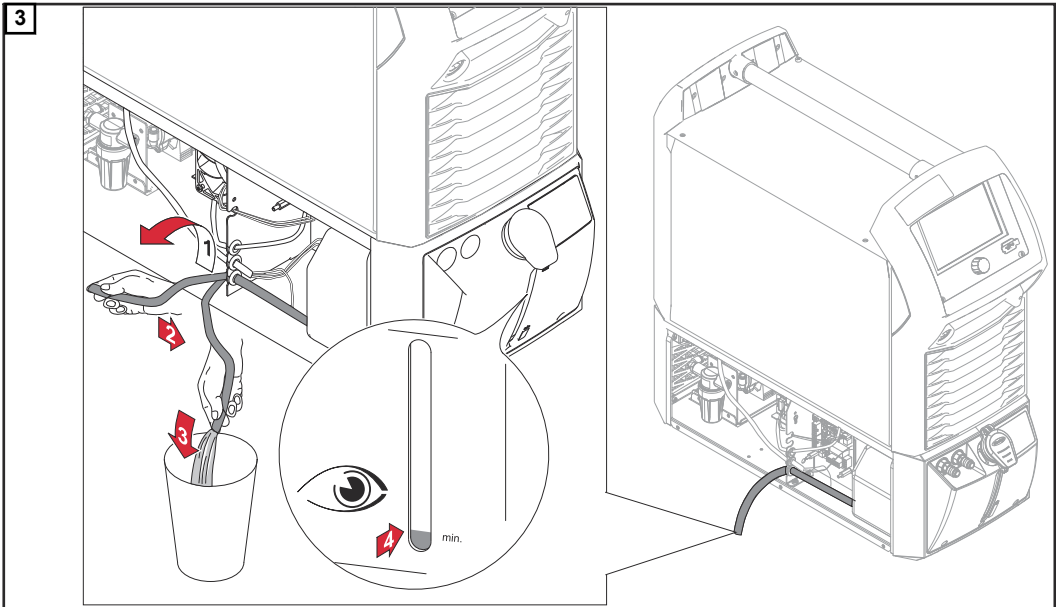
⚠ WARNING!

Danger from coolant leakage.

- This can result in serious personal injury and damage to property.
- ▶ Seal off the coolant hose as soon as it is pulled out of the coolant pump connection.
 - ▶ Immediately remove any coolant that does get into the device or spills onto the exterior of the device.



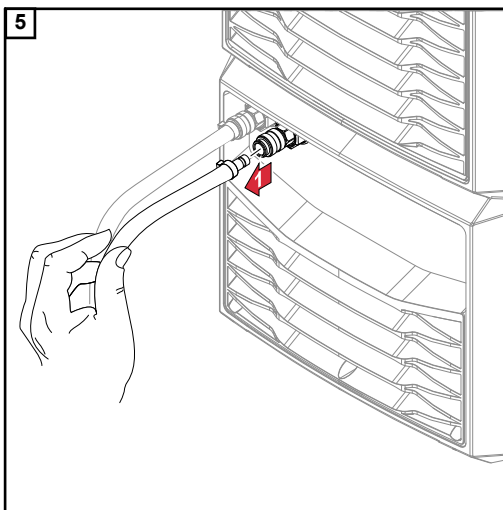
Push back the Push-in connection on the coolant pre-filter and pull the coolant hose out of the coolant pre-filter at the same time



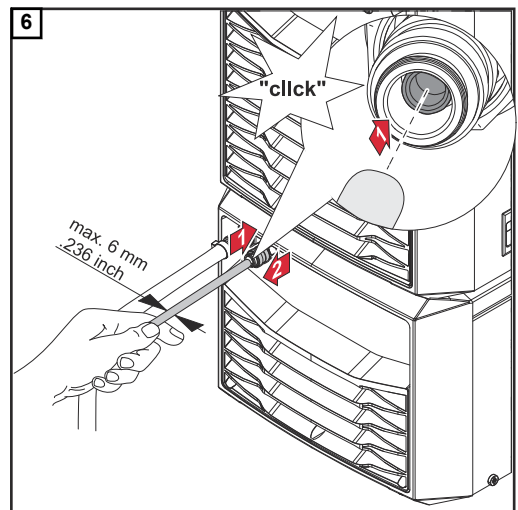
3
Drain the coolant



4
Insert the coolant hose into the coolant pre-filter



5
Disconnect the coolant hose from the coolant supply connection



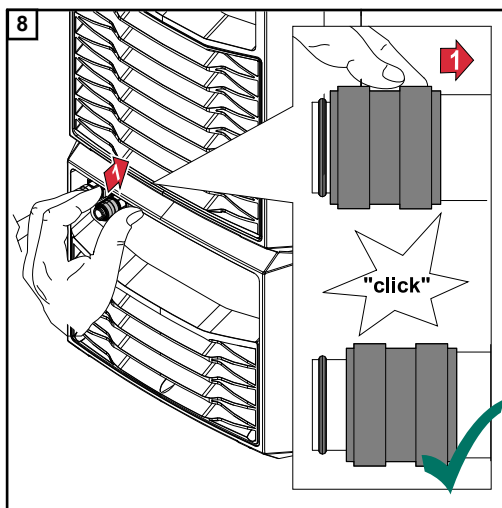
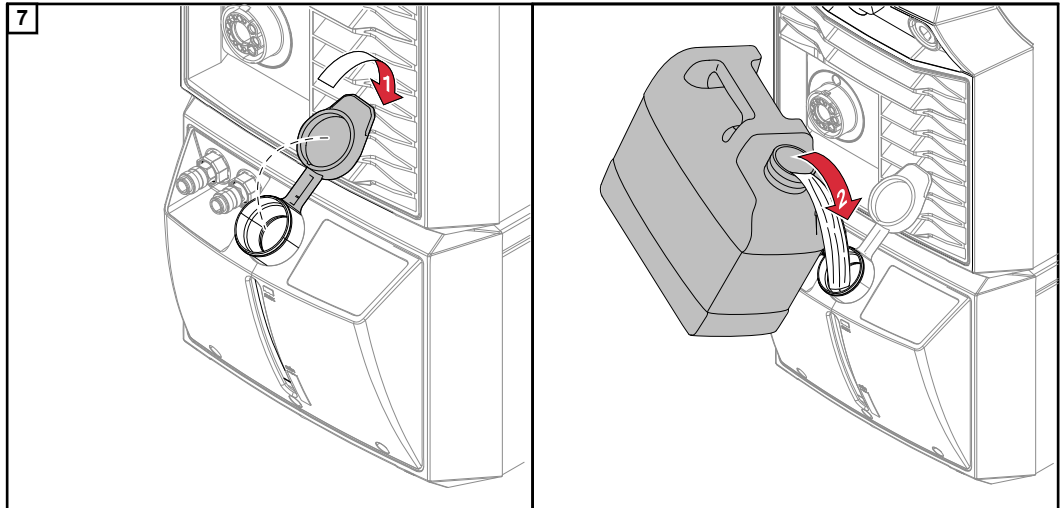
6
Push the sealing cone in the coolant flow connection backwards

⚠ CAUTION!

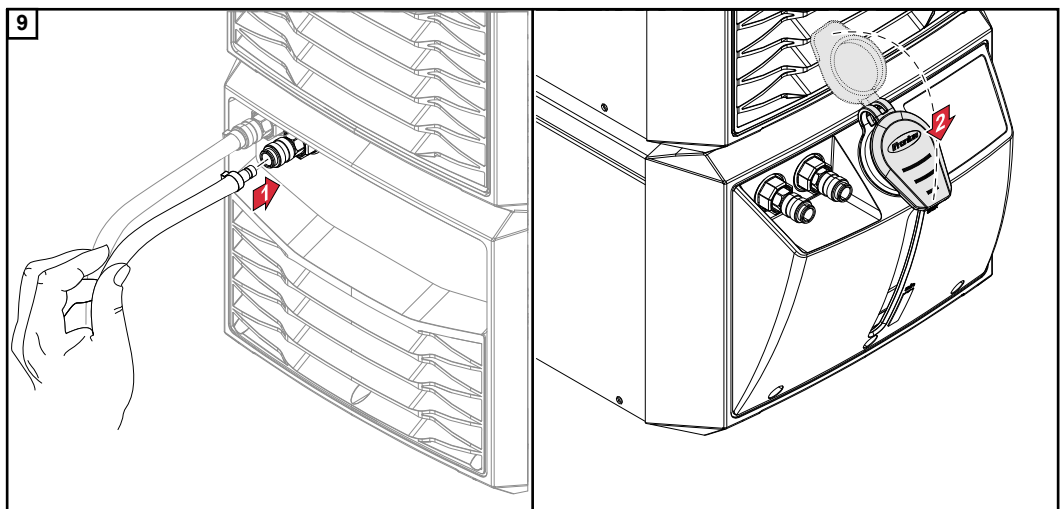
Danger from using non-permitted coolants.

This can result in severe damage to property.

- ▶ Use only original coolant from the manufacturer when refilling the cooling unit - refer also to section **Information about the coolant** on page 21.

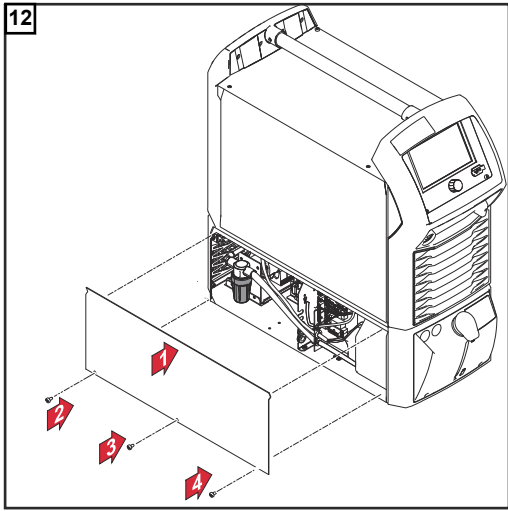


Push the locking ring backwards until the sealing cone returns to its original position and release the locking ring again



10 Ensure that all hose connections are properly established and are not leaking

11 Ensure that there is no coolant inside the device or on its exterior



Tightening torque of housing screws = 3 Nm (2.21 ft-lb)

Disposal

Dispose of in accordance with the applicable national and local regulations.

Technical data

Technical data

General

The cooling capacity of a cooling unit depends on

- Ambient temperature
- Delivery head
- Flow rate Q (l/min) - The flow rate Q depends on the length of the interconnecting hosepack and the diameter of the hose.

CU 800i, CU 800i /460 V

	CU 800i
Mains voltage	400 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	0.7 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	800 W
Q = 1l / min. + 40 °C (104 °F)	500 W
Q = max. + 25 °C (77 °F)	1160 W
Q = max. + 40 °C (104 °F)	730 W
Max. delivery head	35 m (114 ft. 9.95 in.)
Max. delivery rate	3.5 l/min (0.92 gal./min [US])
Max. pump pressure	4.2 bar (60.92 psi)
Pump	Centrifugal pump
Pump service life	approx. 10,000 hrs
Coolant capacity	4.5 l (1.19 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	706/260/219 mm (27.8/10.24/8.62 in.)
Weight (without coolant)	11.2 kg (24.69 lb.)
Flow monitoring* (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring*	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Mark of conformity	CE

* Optional

CU 800i /460 V	
Mains voltage	460 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	0.35 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	800 W
Q = 1 l/min. + 40 °C (104 °F)	500 W
Q = max. + 25 °C (77 °F)	1160 W
Q = max. + 40 °C (104 °F)	730 W
Max. delivery head	45 m (147 ft. 7.65 in.)
Max. delivery rate	2 l/min (0.53 gal./min [US])
Max. pump pressure	5 bar (72.52 psi)
Pump	Vane pump
Pump service life	approx. 10,000 hrs
Coolant capacity	4.5 l (1.19 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	706/260/219 mm (27.8/10.24/8.62 in.)
Weight (without coolant)	13.9 kg (30.64 lb.)
Flow monitoring* (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring*	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Mark of conformity	CE, CSA

* Optional

CU 800i Pro

If a TPS 270i C power source is used with a CU 800i Pro cooling unit, the cooling unit will not benefit from the maximum pump power.

	CU 800i Pro
Supply voltage	24 V DC
Current consumption	4.4 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	850 W
Q = 1l / min. + 40 °C (104 °F)	510 W
Q = max. + 25 °C (77 °F)	1200 W
Q = max. + 40 °C (104 °F)	750 W
Max. delivery head	35 m (114 ft. 9.95 in.)
Max. delivery rate	3.5 l/min (0.92 gal./min [US])
Max. pump pressure	4 bar (58.02 psi)
Pump	Centrifugal pump
Pump service life	up to 20,000 hrs
Coolant capacity	4.5 l (1.19 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	706/260/219 mm (27.8/10.24/8.62 in.)
Weight (without coolant)	9.4 kg (20.72 lb.)
Flow monitoring* (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring*	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Mark of conformity	CE, CSA

* Optional

**CU 1100i,
CU 1100i /460 V**

	CU 1100i
Mains voltage	400 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	0.7 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	1100 W
Q = 1l / min. + 40 °C (104 °F)	800 W
Q = max. + 25 °C (77 °F)	1500 W
Q = max. + 40 °C (104 °F)	1100 W
Max. delivery head	35 m (114 ft. 9.95 in.)
Max. delivery rate	3.5 l/min (0.92 gal./min [US])
Max. pump pressure	4.2 bar (60.92 psi)
Pump	Centrifugal pump
Pump service life	approx. 10,000 hrs
Coolant capacity	6 l (1.59 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm (27.95/11.81/9.06 in.)
Weight (without coolant)	13.6 kg (29.98 lb.)
Flow monitoring (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Level sensor* (functionality depends on the options in- stalled in the device)	Warning or error message
Mark of conformity	CE

* Optional

CU 1100i /460 V	
Mains voltage	460 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	0.35 A
Cooling power at	
Q = 1 l/min + 25 °C (77 °F)	1100 W
Q = 1 l/min + 40 °C (104 °F)	800 W
Q = max. + 25 °C (77 °F)	1500 W
Q = max. + 40 °C (104 °F)	1100 W
Max. delivery head	45 m 147 ft. 7.65 in.
Max. delivery rate	2 l/min 0.53 gal./min [US]
Max. pump pressure	5 bar 72.52 psi
Pump	Vane pump
Pump service life	approx. 10,000 hrs
Coolant capacity	6 l 1.59 gal. [US]
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm 27.95/11.81/9.06 in.
Weight (without coolant)	16.3 kg 35.94 lb.
Flow monitoring (sensor)	Warning between 1 and 0.7 l/min (0.26 - 0.18 gal./min [US]), error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F), error message above 70 °C (158 °F)
Level sensor* (functionality depends on the options installed in the device)	Warning or error message
Mark of conformity	CE, CSA

* Optional

**CU 1100i /MV,
CU 1100i /MV
RVP**

	CU 1100i /MV
Mains voltage	200 - 230 V AC / 400 - 460 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	1.4 A / 0.7 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	1100 W
Q = 1l / min. + 40 °C (104 °F)	800 W
Q = max. + 25 °C (77 °F)	1500 W
Q = max. + 40 °C (104 °F)	1100 W
Max. delivery head	35 m (114 ft. 9.95 in.)
Max. delivery rate	3.5 l/min (0.92 gal./min [US])
Max. pump pressure	4.2 bar (60.92 psi)
Pump	Centrifugal pump
Pump service life	approx. 10,000 hrs
Coolant capacity	6 l (1.59 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm (27.95/11.81/9.06 in.)
Weight (without coolant)	16.5 kg (36.38 lb.)
Flow monitoring (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Level sensor* (functionality depends on the options in- stalled in the device)	Warning or error message
Mark of conformity	CE, CSA

* Optional

CU 1100i /MV RVP	
Mains voltage	200 - 230 V AC / 400 - 460 V AC
Mains voltage tolerance	-10% / +10%
Grid frequency	50/60 Hz
Current consumption	0.8 A / 0.35 A
Cooling power at	
Q = 1 l/min + 25 °C (77 °F)	1100 W
Q = 1 l/min + 40 °C (104 °F)	800 W
Q = max. + 25 °C (77 °F)	1500 W
Q = max. + 40 °C (104 °F)	1100 W
Max. delivery head	45 m 147 ft. 7.65 in.
Max. delivery rate	2 l/min 0.53 gal./min [US]
Max. pump pressure	5 bar 72.52 psi
Pump	Vane pump
Pump service life	approx. 10,000 hrs
Coolant capacity	6 l 1.59 gal. [US]
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm 27.95/11.81/9.06 in.
Weight (without coolant)	16.5 kg 39.68 lb.
Flow monitoring (sensor)	Warning between 1 and 0.7 l/min (0.26 - 0.18 gal./min [US]), error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F), error message above 70 °C (158 °F)
Level sensor* (functionality depends on the options in- stalled in the device)	Warning or error message
Mark of conformity	CE, CSA

* Optional

CU 1200i Pro /MC

	CU 1200i Pro /MC
Supply voltage	24 V DC
Current consumption	2.1 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	1200 W
Q = 1l / min. + 40 °C (104 °F)	800 W
Q = max. + 25 °C (77 °F)	1400 W
Q = max. + 40 °C (104 °F)	1100 W
Max. delivery head	50 m (164 ft. 0.5 in.)
Max. delivery rate	1.8 l/min (0.47 gal./min [US])
Max. pump pressure	5 bar (72.51 psi)
Pump	Gear pump
Pump service life	up to 20,000 hrs
Coolant capacity	6 l (1.59 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm (27.95/11.81/9.06 in.)
Weight (without coolant)	12 kg (26.46 lb.)
Flow monitoring (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Level sensor* (functionality depends on the options in- stalled in the device)	Warning or error message
Mark of conformity	CE, CSA

* Optional

CU 1400i Pro /MC If a TPS 320i C power source is used with a CU 1400i Pro /MC cooling unit, the cooling unit will not benefit from the maximum pump power.

CU 1400i Pro /MC	
Supply voltage	24 V DC
Current consumption	4.4 A
Cooling capacity at Q=1 l/min. + 25 °C (77 °F)	1400 W
Q = 1l / min. + 40 °C (104 °F)	900 W
Q = max. + 25 °C (77 °F)	1700 W
Q = max. + 40 °C (104 °F)	1250 W
Max. delivery head	45 m (147 ft. 7.65 in.)
Max. delivery rate	3 l/min (0.79 gal./min [US])
Max. pump pressure at 4750 rpm	4 bar (58.02 psi)
Pump	Centrifugal pump
Pump service life	up to 30,000 hrs
Coolant capacity	6 l (1.59 gal. [US])
Degree of protection	IP 23
Dimensions l/w/h	710/300/230 mm (27.95/11.81/9.06 in.)
Weight (without coolant)	12 kg (26.46 lb.)
Flow monitoring (sensor)	Warning at 1 - 0.7 l/min (0.26 - 0.18 gal./min [US]) Error message below 0.7 l/min (0.18 gal./min [US])
Coolant temperature monitoring	Warning above 68 °C (154.4 °F) Error message above 70 °C (158 °F)
Level sensor (function depends on the options installed in the device)	Warning or error message
Mark of conformity	CE, CSA



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