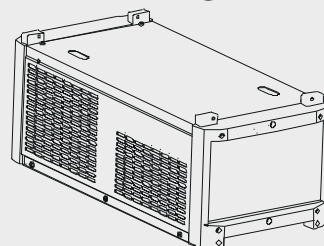
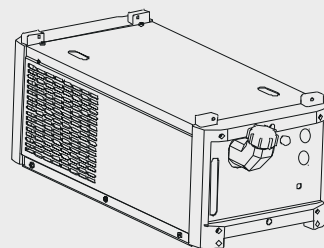


FK 9000 R

EN

Operating instructions

Cooling unit



42,0426,0019,EN 015-02062021

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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 wirespool, 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
- Irreparable 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, e.g. Insulation against conductive floor or insulation to conductive racks.

If 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
- Power, 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 correct mains connection, additional measures are necessary (e.g. use a suitable line filter).
2. Welding power leads
 - must be kept as short as possible
 - must run 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. Shielding, if necessary
 - Shield off other nearby devices
 - Shield off entire welding installation

EMF measures

Electromagnetic fields may pose as yet unknown risks to health:

- effects on the health of others in the vicinity, e.g. wearers of pacemakers and hearing aids
- wearers of pacemakers must seek advice from their doctor before approaching the device or any welding that is in progress
- for safety reasons, keep distances between the welding cables and the welder's head/torso as large as possible
- do not carry welding cables 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 wire-feed unit) 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 and/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 wire-feed unit (MIG/MAG and TIG devices).

If the wire-feed unit 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 accessories (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

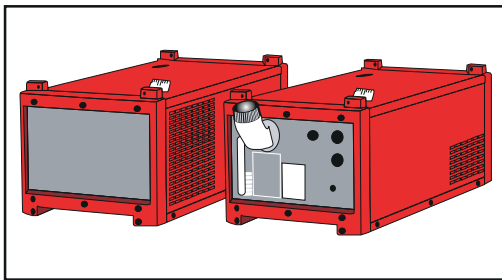
Equipment concept

The cooling unit FK 9000 R is especially suitable for high-capacity applications:

- parallel operation of two power sources TransSynergic 4000/5000 / TransPulsSynergic 4000/5000 of up to 900 A (power sharing)
- in connection with a TransSynergic / TransPulsSynergic 5000, e.g. for increased welding performance at high ambient temperature.
- in conjunction with a TransTig / MagicWave 4000 / 5000, e.g. plasma applications or major welding operations at high ambient temperatures

The cooling unit FK 9000 consists of two parts which are especially suitable for being installed on the stand-console.

- part 1 accommodates the cooling pump and the cooling tank
- part 2 includes the heat exchanger
- part 1 and part 2 are linked via a connecting line.



FK 9000 R in connection with two power sources

The division into two parts is advantageous as each part of the FK 9000 R is not wider than a power source. Depending on the application the two parts can be accommodated in a space-saving way.

- In connection with one power source: both parts of the FK 9000 R are stacked and positioned beneath the power source.
- In connection with two power sources: one part each of the FK 9000 R is located beneath a power source.

The cooling unit FK 9000 R is equipped with the following sensors as a standard:

- temperature controller: at a cooling return temperature of more than 70 °C the service code "Hot | H2O" is shown on the operating panel
- flow controller: at a flow of less than 0.7 l/min the service code "no | H2O" is shown on the operating panel
- water filter

In order to guarantee an optimum quality assurance, availability and protection of the equipment, the power source switches off as soon as the service codes "Hot | H2O" as well as "no | H2O" are displayed.

Information about the coolant



CAUTION!

Danger from using non-permitted coolant.

This can result in serious damage to property.

- ▶ Only use coolant available from the manufacturer.
- ▶ 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 coolant, Change Kit FCL10 must be used and the instructions provided must be followed.

Information on leaks

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. The leakage flow will normally sink back down to a low level after the warm-up phase. If this is not the case then contact After-Sales Service.

Area of Application

FK 9000 R for parallel operation of two power sources

The cooling capacity of the FK 9000 R is perfectly suitable for the parallel operation of two power sources TransSynergic 4000/5000 / TransPuls Synergic 4000/5000.

Parallel operation (power sharing) is carried out in the following cases:

- combination of two power sources TransSynergic / TransPuls Synergic 4000 with up to 720 A
- combination of two power sources TransSynergic / TransPuls Synergic 5000 with up to 900 A

The cooling unit FK 9000 R is configured for power sharing as a standard.

FK 9000 R in connection with Time TWIN digital

The cooling capacity of the FK 9000 R is perfectly suitable in connection with the Time TWIN digital process operating with up to 900 A .

FK 9000 R in connection with a TPS 5000

In connection with the power source TransSynergic / TransPulsSynergic 5000, the cooling unit FK 9000 R is especially used under the following conditions:

- high ambient temperature
 - high welding current
 - long operating time
-

FK 9000 R in conjunction with a TT 4000 / 5000

Use of the FK 9000 R cooling unit in conjunction with the TransTig / MagicWave 4000 / 5000 power source is recommended particularly when the application involves any of the following:

- high ambient air temperature
- high welding current
- long duty cycle
- plasma applications, e.g. in conjunction with PlasmaModule 10

Technical data

- General remarks** The cooling capacity of the cooling unit is a function of the
- ambient temperature
 - lift
 - flowrate Q (l/min)
- The flowrate Q is a function of the number and the length of the connecting hose packs or the hose diameter.

FK 9000 R

NOTE!

Together with the Autotrafo option the cooling device FK 9000 R is also suitable for a mains frequency of 60 Hz.

Supply voltage (supply via power source)	2 x 380-415 V, 50 Hz
current draw	1,3 A
fuse, time-lag	3,15 A
Cooling capacity: Q = 1 l/min + 25 °C (77 °F) Q = 1 l/min + 40 °C (104 °F) Q = max. + 25 °C (77 °F) Q = max. + 40 °C (104 °F)	1770 W (5800 BTU/hr.) 1100 W (3753 BTU/hr.) 3000 W (10236 BTU/hr.) 1900 W (6487 BTU/hr.)
max. flowrate (Qmax)	5 l / min (1.32 gal./min) [US]
max. pump pressure	6 bar (87 psi.)
max. lift	approx. 45 m (147.64 ft.)
pump	centrifugal pump
low controller switchpoint	0,7 l / min (0.185 gal / min) [US]
temperature controller switchpoint	70 °C (158 °F)
water filter	100 micrometer, CrNi sieve
coolant contents	9 l (2.38 gal.) [US]
enclosure protection	IP 23
measurements l x w x h	2x725x290x250 mm (2x28.54x11.24x9.85 in.)
weight (total weight without coolant)	28 kg (61.6 lbs.)

Option: Auto transformer conversion kit (FK 9000 R)

The optional auto transformer is required if the cooling unit is planned to be operated by a multi-voltage power source (MV).

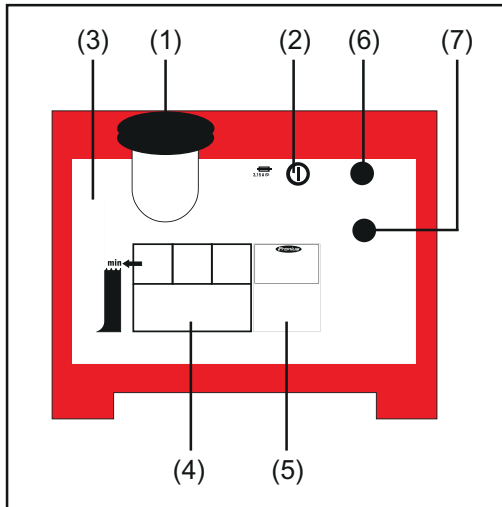
The multi-voltage power source is operated at an inlet voltage of 3 x 200-240 V / 3 x 380-460 V (+/- 10 %). The optional auto transformer transforms the voltage supplied by the power source for the respective the cooling unit.

IMPORTANT!

Together with the Autotrafo option the cooling device FK 9000 R is also suitable for a mains frequency of 60 Hz.

Control elements and connections

Part 1: Front view



FK 9000 R - Part 1: Front view

- (1) Screw cap / filler neck

- (2) Cooling pump fuse

- (3) Coolant guard window

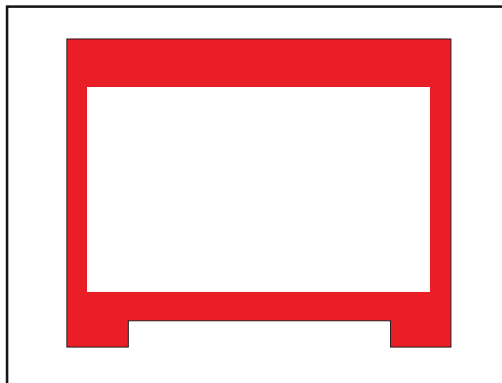
- (4) Notes regarding maintenance and operation

- (5) Data plate

- (6) Dummy cover

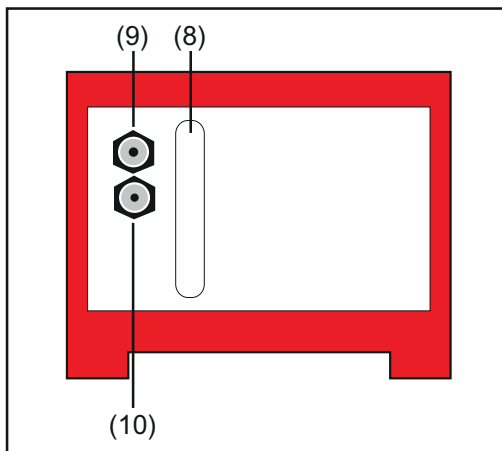
- (7) Dummy cover

Part 2: Front view



FK 9000 R - Part 2: Front view

Part 1: Rear view

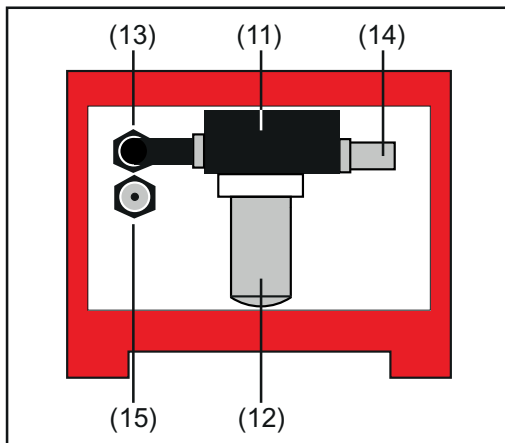


FK 9000 R - Part 1: Rear view

- (8) Water drain

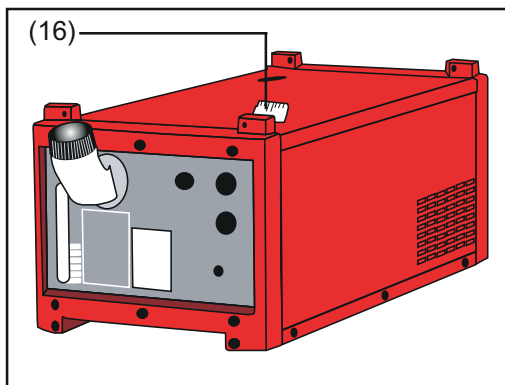
- (9) Plug-type connection (blue) ... for connection hose pack

- (10) Screwed connection for connection line part 1 - part 2

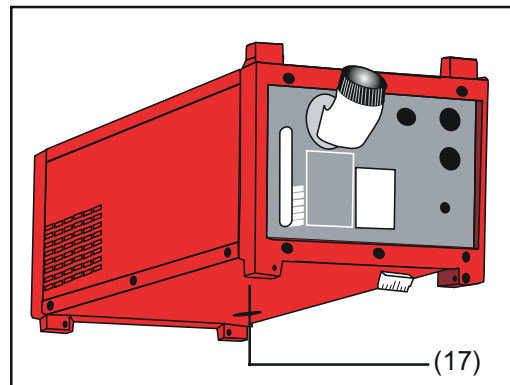
Part 2: Rear view

FK 9000 R - Part 2: Rear view

- (11) Filter mounting plate
- (12) Water filter
- (13) Plug-type connection water return line (red)
- (14) Plug-type connection water return line (red) ... at water filter (12), for connection hose pack
- (15) Screwed connection for connection line part 1 - part 2

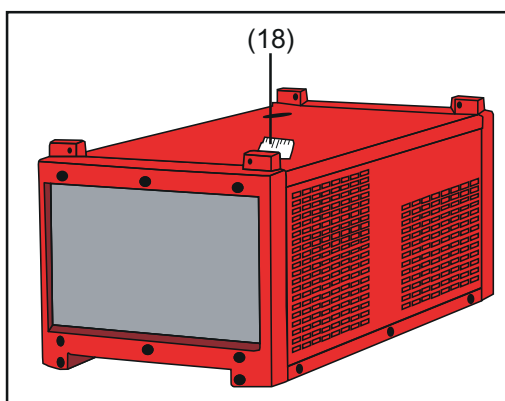
Part 1: Connection plug

Part 1: Connection plug at top casing panel



Part 2: Connection plug at bottom casing panel

- (16) Connection plug at casing top ... for power sources at parallel operation of two power sources
- (17) Connection plug at casing bottom ... for part 2 - only in the case of operation with one power source and the required installation of part 1 stacked on top of part 2

Part 2: Connecting plug

Part 2: Connection plug at casing top

- (18) Connection plug
 - for power source in the case of parallel operation of two power sources
 - for part 1 when being operated with one power source and the required installation of part 1 stacked on top of part 2

FK 9000 R for parallel operation of two power sources

Safety

WARNING!

Maloperation can cause severe damages to persons and objects.

The following work may only be carried out by skilled personnel trained by Fronius! Stick to the safety instructions.

WARNING!

An electric shock can be fatal.

Before opening up a machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

NOTE!

When connecting the cooling unit FK 9000 R with two power sources, always switch on both power sources.

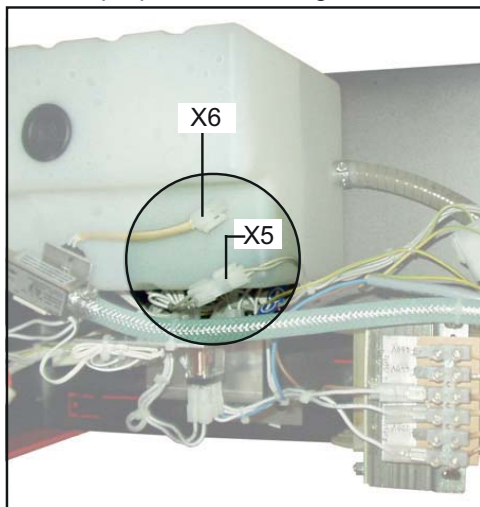
If not, the power source switches off at the start of welding and the service codes "Hot | H2O" or "No | H2O" are shown on the operating panel.

Prepare cooling unit for the operation with two power sources

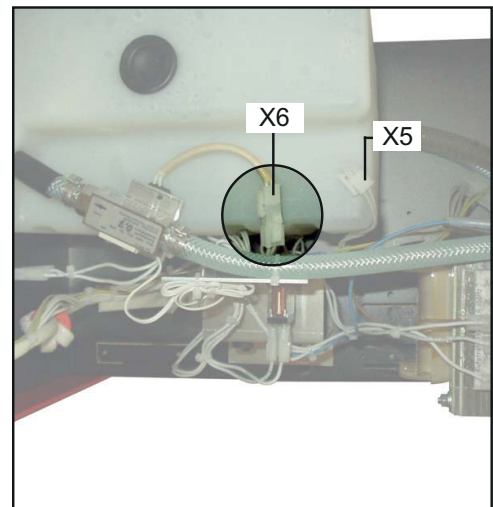
NOTE!

The cooling unit FK 9000 R is preconfigured for the operation with two power sources as a standard.

If the cooling unit has been configured previously for the operation with one power source, prepare the cooling unit as follows:



Part1: Disconnect 2-pole Molex-plug X9 from X6



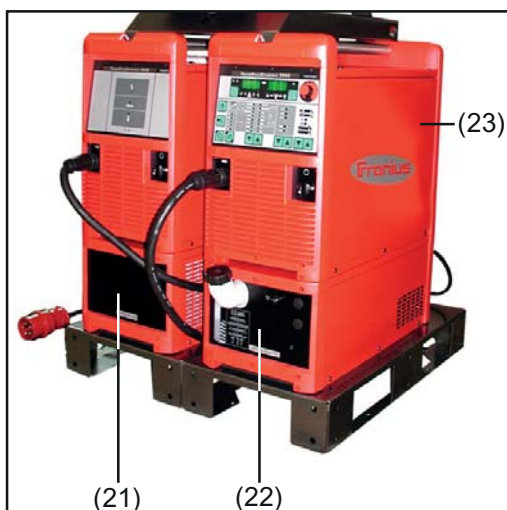
Part1: Connect 2-pole Molex-plug thermal controller at X6

- Dismantle casing panel of part 1 of the FK 9000 R
- Remove the 2-pole Molex plug X5 on the 2-pole Molex socket.
- Insert the 2-pole Molex plug X6 (for thermo control) on the 2-pole Molex socket.
- Mount casing panel of part 1 of the FK 9000 R

Mount part 1 and part 2 of the FK 9000 R to the stand-console

IMPORTANT!

The installation of the FK 9000 R in connection with two power sources is described by the example of the stand-console.



Correct installation of the power sources

NOTE!

Danger of overheating of the cooling unit in spite of thermal controller.

The cooling air outlets of part 2 (21) must always be on the outside. Seen from front, connect part 2 (21) of the FK 9000 R always with the left power source.

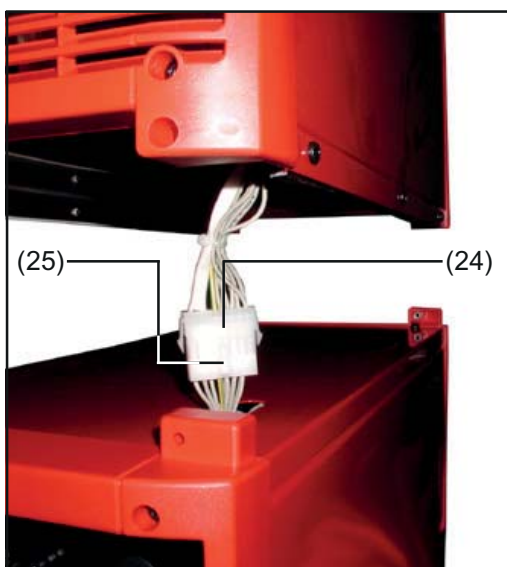
- Mount part 1 (22) and part 2 (21) of the FK 9000 R to the stand-console. The description of the installation is included in the installation instructions of the stand-console.

IMPORTANT!

Basically, the way the power sources are arranged is not important.

The following considerations are based on a connection of the Master power source (23) with part 1 (22) of the FK 9000 R.

Connect Master power source with part 1 of the FK 9000 R



Connect connection plug of power source with connection plug of part 1

- Pull out connection plug of Master power source (24) as far as possible of the opening at the bottom casing panel.
- Pull out connection plug of part 1 (25) as far as possible of the opening at the top casing panel.

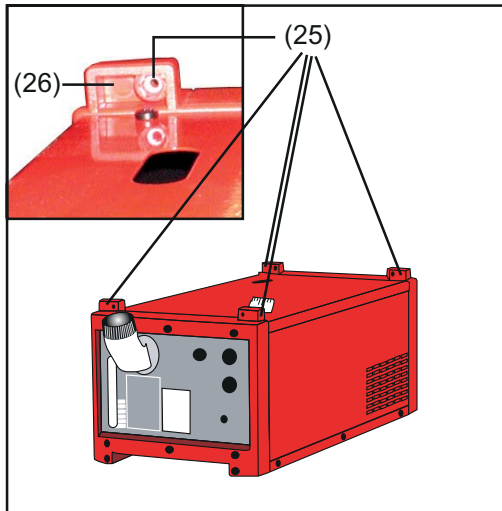
⚠ CAUTION!

Kinked or damaged cables can cause short circuits.

When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged

- Position Master power source on top of part 1 by means of suitable lifting device
- Connect connection plug of part 1 (25) with connection plug of Master power source (24)

Mount Master power source to part 1 of the FK 9000 R



Mount power source

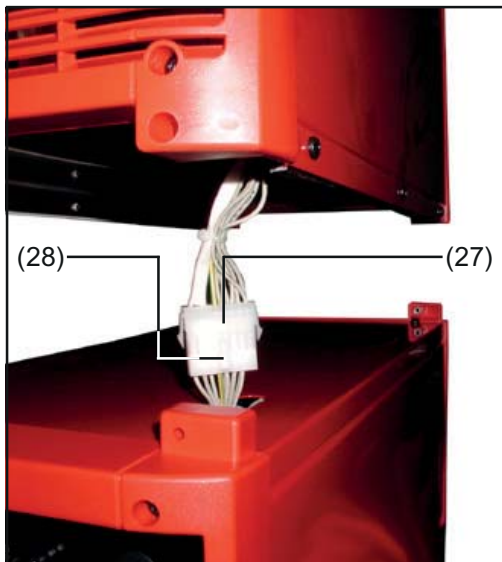
- Shift hexagon nut (25) attached to the top of part 1 from inside into the hexagon opening of the mounting frames (26).
- Place Master power source carefully onto part 1.
- Mount Master power source using the supplied Allen screws at the front and rear side of part 1.

⚠ CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat.

Connect Slave power source with part 2 of the FK 9000 R



Connect connection plug power source with connection plug part 2

- Pull out connection plug of Slave power source (27) as far as possible of the opening at the bottom casing panel.
- Pull out connection plug of part 2 (28) as far as possible of the opening at the top casing panel.

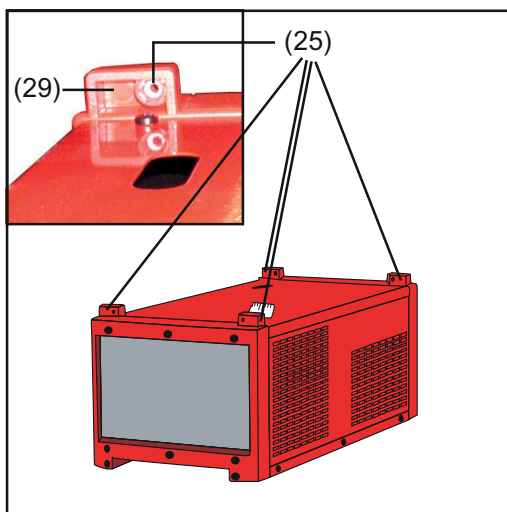
⚠ CAUTION!

Kinked or damaged cables can cause short circuits.

When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged.

- Position Slave power source on top of part 2 by means of suitable lifting device
- Connect connection plug of part 2 (28) with connection plug of Slave power source (27)

Mount Slave power source to part 2 of the FK 9000 R



- Shift hexagon nut (25) supplied with part 2 from inside into the hexagon opening of the mounting frames (29)
- Place Slave power source carefully onto part 2
- Mount Slave power source using the supplied Allen screws at the front and rear side of part 2

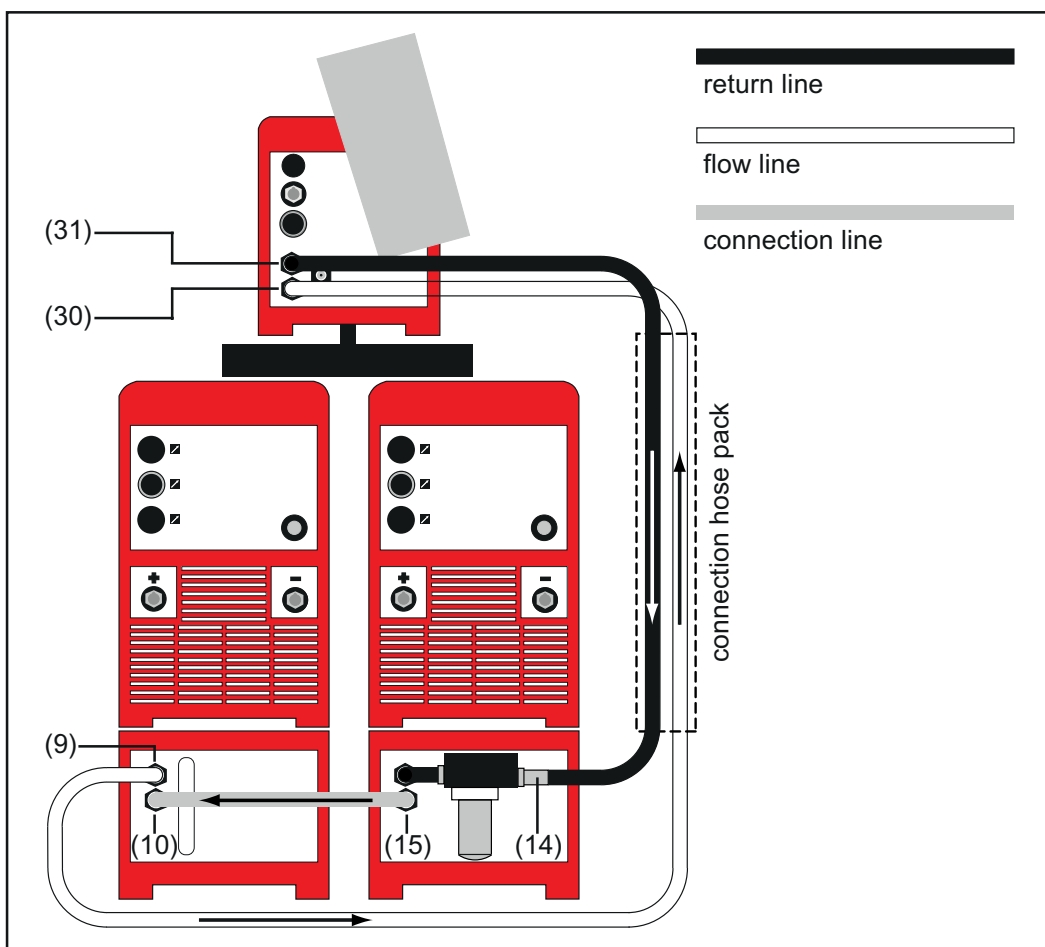
⚠ CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat..

Mount power source

Coolant connections



Connect cooling connections

- Connect connection hoses with screwed connection of part 1 (10) and screwed connection of part 2 (15)
- Connect flow line of the connection hose pack
 - at plug-type connection of water flow of part 1 (9) - blue
 - at plug-type connection of water flow (30) of the wire feeder
- Connect return line of the connection hose pack
 - at plug-type connection of water return of part 2 (14)
 - at plug-type connection of water return (31) of the wire feeder

FK 9000 R in connection with Time TWIN digital

Safety

WARNING!

Maloperation can cause severe damages to persons and objects.

The following work may only be carried out by skilled personnel trained by Fronius! Stick to the safety instructions.

WARNING!

An electric shock can be fatal.

Before opening up a machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

NOTE!

When connecting the cooling unit FK 9000 R with two power sources, always switch on both power sources.

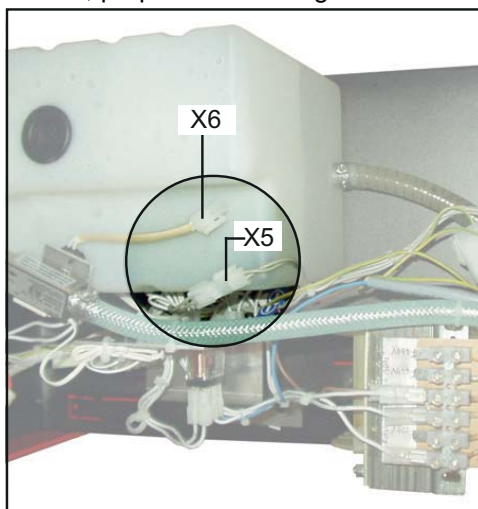
If not, the power source switches off at the start of welding and the service codes "Hot | H2O" or "No | H2O" are shown on the operating panel.

Prepare cooling unit for the operation with two power sources

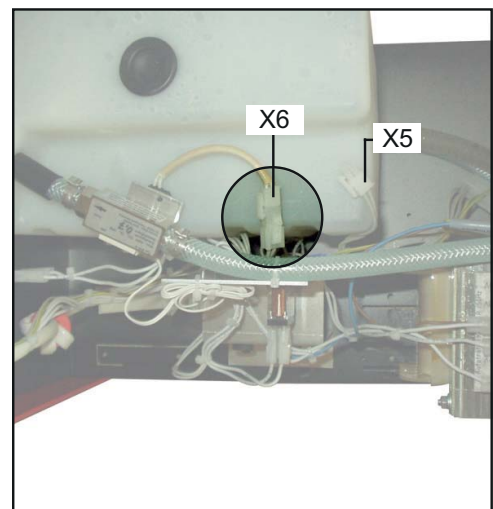
IMPORTANT!

The cooling unit FK 9000 R is preconfigured for the operation with two power sources as a standard.

If the cooling unit has been configured previously for the operation with one power source, prepare the cooling unit as follows:



Part1: Disconnect 2-pole Molex-plug X9 from X6



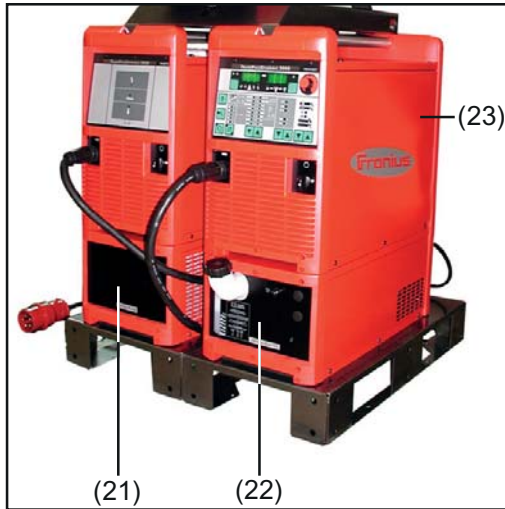
Part1: Connect 2-pole Molex-plug thermal controller at X6

- Dismantle casing panel of part 1 of the FK 9000 R
- Remove the 2-pole Molex plug X5 on the 2-pole Molex socket.
- Insert the 2-pole Molex plug X6 (for thermo control) on the 2-pole Molex socket.
- Mount casing panel of part 1 of the FK 9000 R

Mount part 1 and part 2 of the FK 9000 R at the stand-console

IMPORTANT!

The installation of the FK 9000 R in connection with two power sources is described by the example of the stand-console.



Correct installation of the power sources

NOTE!

Danger of overheating of the cooling unit in spite of thermal controller.

The cooling air outlets of part 2 (21) must always be on the outside. Seen from front, always connect part 2 (21) of the FK 9000 R with the left power source.

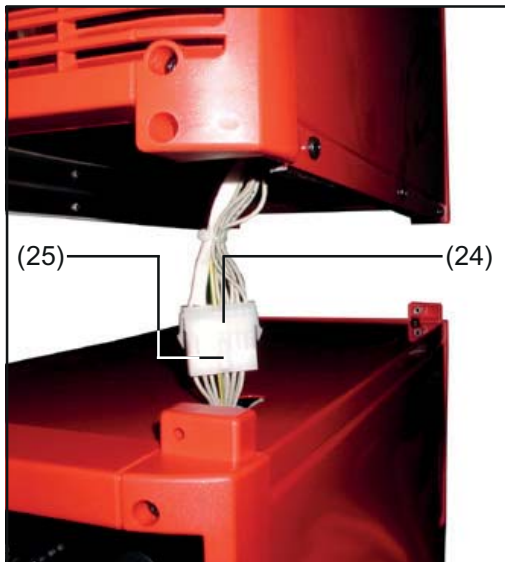
- Mount part 1 (22) and part 2 (21) of the FK 9000 R to the stand-console. The description of the installation is included in the installation instructions of the stand-console.

IMPORTANT!

Basically, the way the power sources are arranged is not important.

The following considerations are based on a connection of the Master power source (23) with part 1 (22) of the FK 9000 R.

Connect Master power source with part 1 of the FK 9000 R



Connect connection plug of power source with connection plug of part 1

- Pull out connection plug of Master power source (24) as far as possible of the opening at the bottom casing panel.
- Pull out connection plug part 1 (25) as far as possible of the opening at the top casing panel.

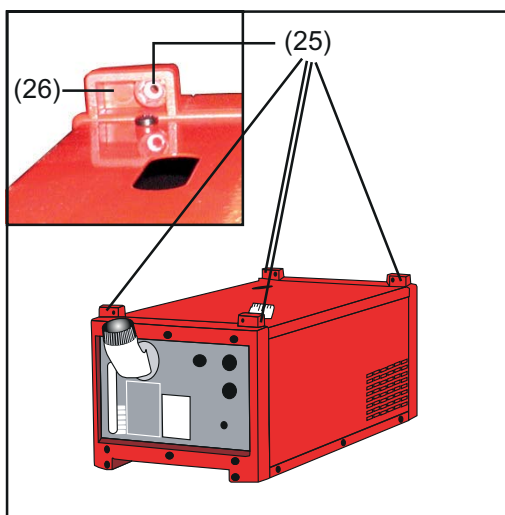
⚠ CAUTION!

Kinked or damaged cables can cause short circuits.

When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged.

- Position Master power source ahead of part 1 by means of suitable lifting device
- Connect connection plug of part 1 (25) with connection plug of Master power source (24)

Mount Master power source to part 1 of the FK 9000 R



Mount power source

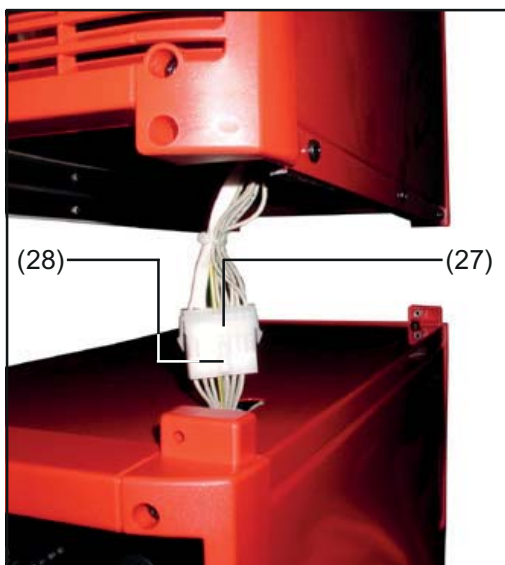
- Shift hexagon nut (25) supplied with part 1 from inside into the hexagon opening of the mounting frames (26)
- Place Master power source carefully onto part 1
- Mount Master power source using the supplied Allen screws at the front and rear side of part 1

⚠ CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat.

Connect slave power source with part 2 of the FK 9000 R



Connect connection plug of power source with connection plug of part 2

- Pull out connection plug of Slave power source (27) as far as possible of the opening at the bottom casing panel.
- Pull out connecting plug part 2 (28) as far as possible of the opening at the top casing panel.

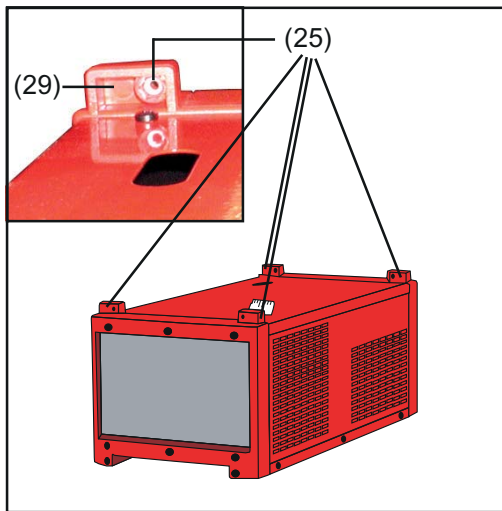
⚠ CAUTION!

Kinked or damaged cables can cause short circuits.

When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged.

- Position Slave power source on top of part 2 by means of suitable lifting device
- Connect connection plug of part 2 (28) with connection plug of Slave power source (27)

Mount Slave power source to part 2 of the FK 9000 R



- Shift hexagon nut (25) supplied with part 2 from inside into the hexagon opening of the mounting frames (29)
- Place Slave power source carefully on part 2
- Mount Slave power source using the supplied Allen screws at the front and rear side of part 2

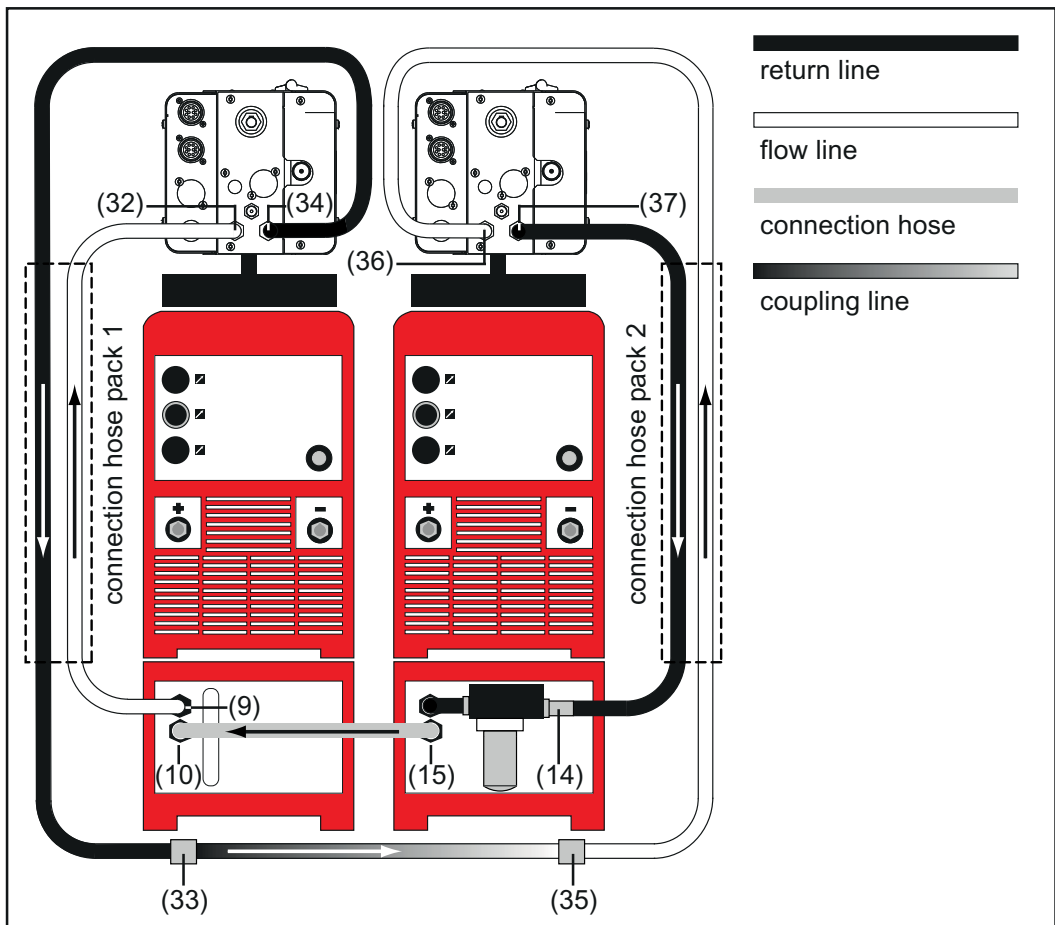
⚠ CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat.

Mount power source

Coolant connections



Connect coolant connections

- Connect connection hose with screwed connection of part 1 (10) and screwed connection of part 2 (15)
- Connect flow line of the connection hose pack 1
 - at plug-type connection of water flow part 1 (9) - blue
 - at plug-type connection of water flow (32) of the wire feeder 1
- Connect return line of the connection hose pack 1
 - at plug-type connection (33) of coupling line
 - at plug-type connection of water return (34) of the wire feeder 1
- Connect water flow line of the connection hose pack 2
 - at plug-type connection (35) of coupling line
 - at plug-type connection of water flow (36) of wire feeder 2
- Connect water return line of the connection hose pack 2
 - at plug-type connection water return of part 2 (14)
 - at plug-type connection water return (37) of wire feeder 2

FK 9000 R in connection with one power source

Safety

WARNING!

Maloperation can cause severe damages to persons and objects.

The following work may only be carried out by skilled personnel trained by Fronius! Stick to the safety instructions.

WARNING!

An electric shock can be fatal.

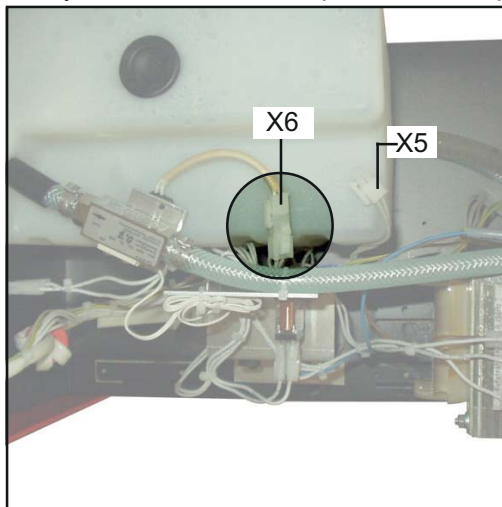
Before opening up the machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

Prepare cooling unit for the operation with two power sources

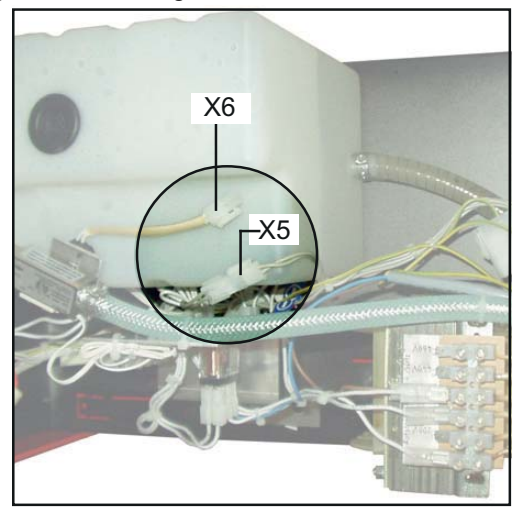
IMPORTANT!

The cooling unit FK 9000 R is preconfigured for the operation with two power sources as a standard.

If only connected with one power source, prepare the cooling unit as follows:



Part 1: Connect 2-pole Molex plug temperature controller at X6



Connect 2-pole Molex plug X9 at X6

- Dismantle casing panel of part 1 of the FK 9000 R
- Remove the 2-pole Molex plug X6 on the 2-pole Molex socket.
- Insert the 2-pole Molex plug X5 (for thermo control) on the 2-pole Molex socket.

IMPORTANT!

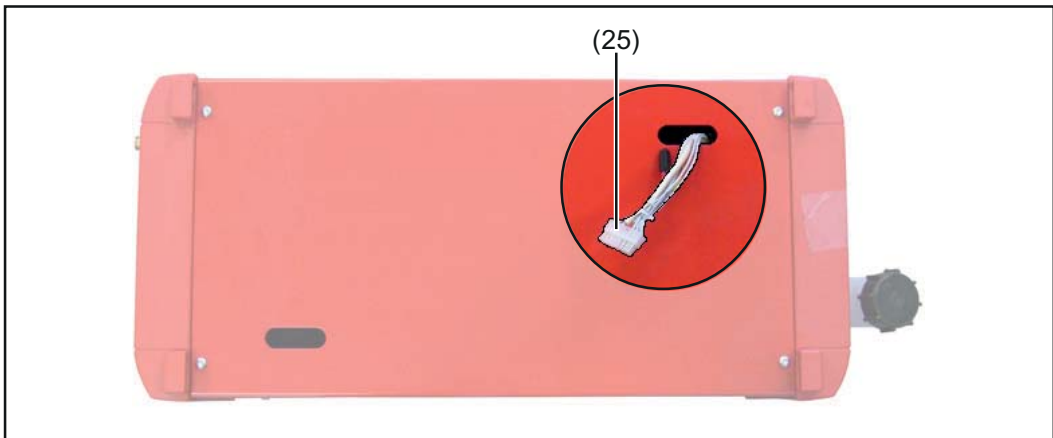
Do not yet mount the casing panel of part 1 of the FK 9000 R.

For carrying out the steps described in the chapter "Connect part 1 and part 2 of the FK 9000 R", it is required that the casing of part 1 is open.

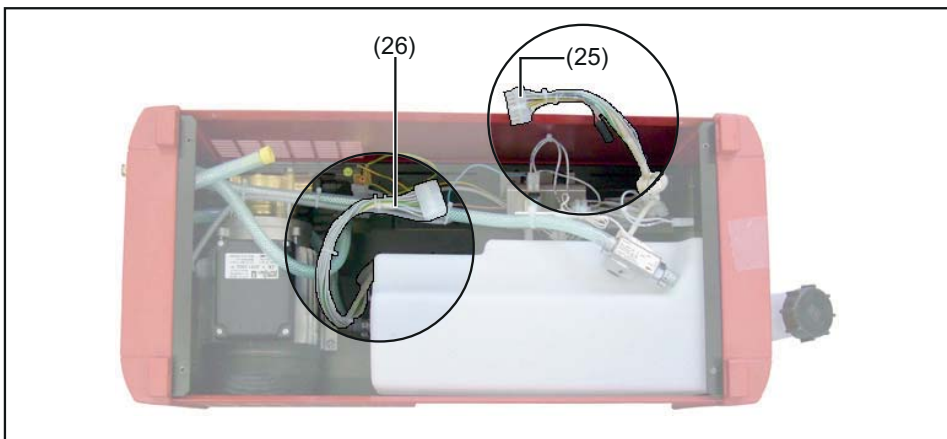
The pre-installed cable harness is only required if using a TransTig / MagicWave 4000 / 5000 power source. See the following section for more information.

Preparing the cooling unit for use with a TransTig / MagicWave 4000 / 5000 power source

The TransTig / MagicWave 4000 / 5000 power sources have water connections on the front of the housing. This means that both parts of the FK 9000 R underneath the power source have to be rotated through 180°. In addition to the contents of the section „Prepare cooling unit for use with a power source“, the following measures also need to be taken on part 1 of the FK 9000 R:

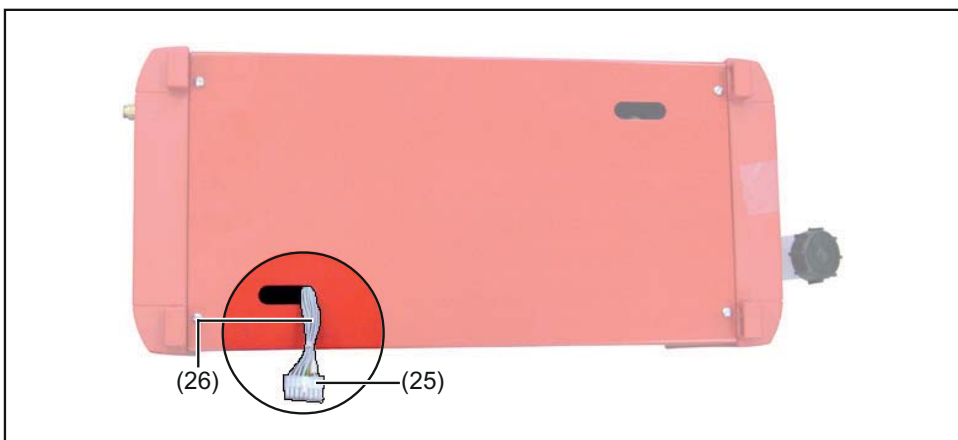


Original position of connector

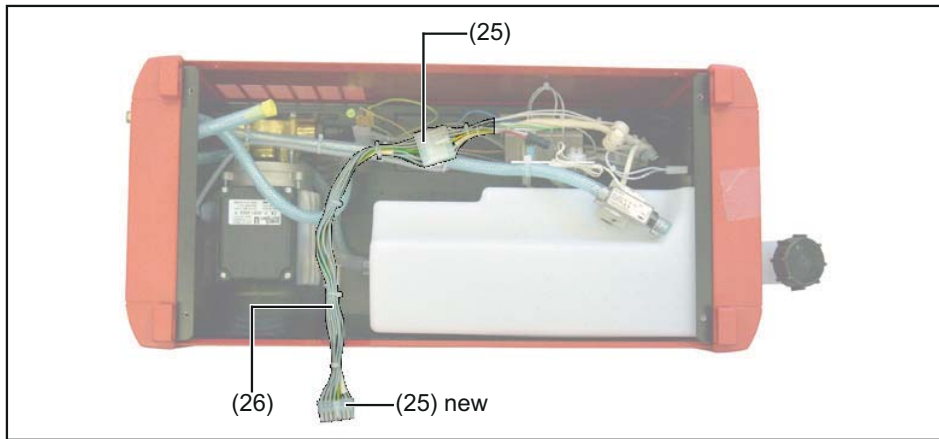


Pre-installed cable harness

- Connect the pre-installed cable harness (26) to the connector (25) that was wired up to one of the openings in the housing cover



New position of cable harness with housing cover closed



Routing the cable harness

The other end of the cable harness (26) will be used as a new connector (25) in the opening that lies diagonally opposite.

- Route the cable harness (26) accordingly, but do not fit the housing cover yet

Fitting the extension for the gas bottle mount

IMPORTANT!

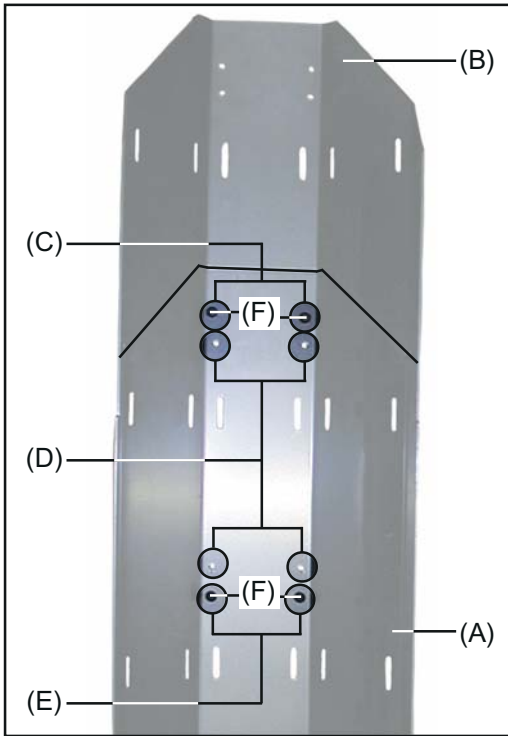
The installation of the FK 9000 R in connection with a power source is shown by the example of the installation on the carriage (pick-up).

To fit both parts of FK 9000 R described here, one above the other, you require the option „Extension bottle mount Autotrafo“.

⚠ CAUTION!

Danger from machines falling or toppling over.

It is not permitted to install TransTig / MagicWave 4000 / 5000 power sources on a trolley with both parts of the FK 9000 R stacked on top of each other. This type of configuration may only be carried out on an upright console that is bolted securely to the floor.



Extension bottle mount Autotra

- Remove the safety strip from the gas bottle mount (A)
- Place the extension (B) on the gas bottle mount (A), so that the drill holes (C), (D) and (E) are above one another.

NOTE!

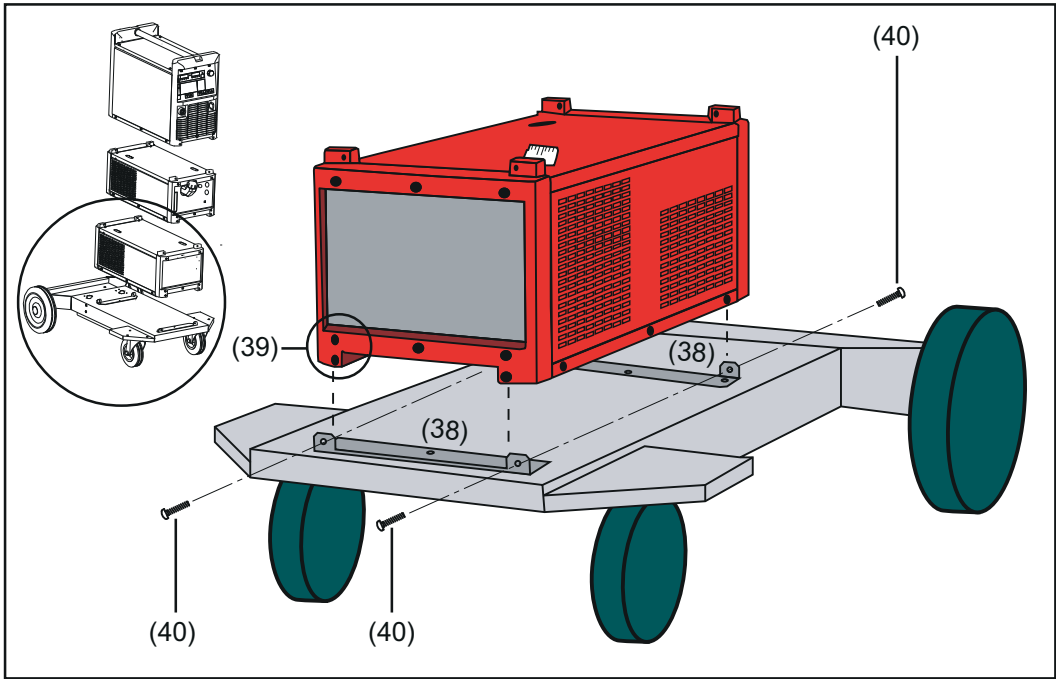
The screws for fastening the extension plate to the gas bottle mount must be inserted in the direction of the power source.

- Insert the two enclosed screws „Extrude-Tite“ (F) in both of the top most drill holes (C) and on both of the bottom most drill holes (E).
- Tighten extension (B) to the gas bottle mount (A) using the screws (F)

Mount part 2 of the FK 9000 R to the carriage

IMPORTANT!

On the TransTig / MagicWave 4000 / 5000 power sources, both parts of the cooling unit must be fitted rotated through 180° compared to the illustrations below.



Mount part 2 of the FK 9000 R to the carriage

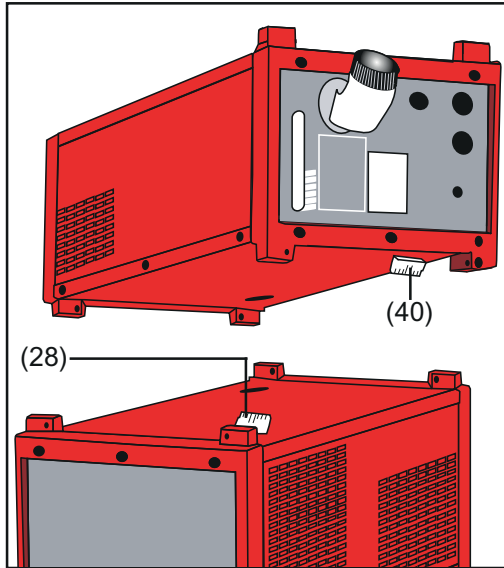
- Assemble carriage, mount mounting angle (38) to carriage bottom plate
- Position cooling unit on carriage bottom or on mounting angle (38)

IMPORTANT!

The mounting angles (38) must be located inside the plastic legs (39) of the cooling unit.

- Screw cooling unit by means of supplied "Extrude-Tite" screws (40) twice, at the front and the rear side to the mounting angles (38).

Connect part 1 and part 2 of the FK 9000 R



- Pull connection plug of part 2 (28) as far as possible through the opening at the top casing panel.

NOTE!

The connection plug of part 1 (40) must not protrude (as shown in fig. 31) from the opening at the top casing panel.

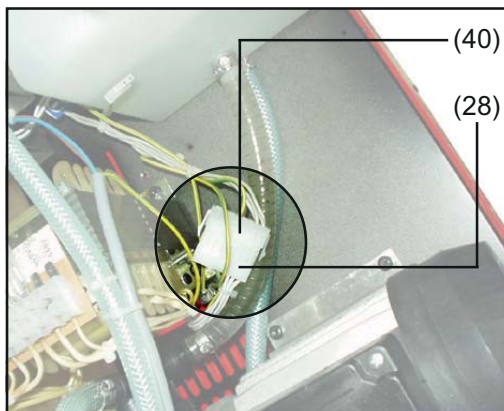
- If necessary, accommodate the connection plug part 1 (40) in the casing inside of part 1

Connection plug of part 1 and part 2 of the FK 9000 R

⚠ CAUTION!

Kinked or damaged cables can cause short circuits.

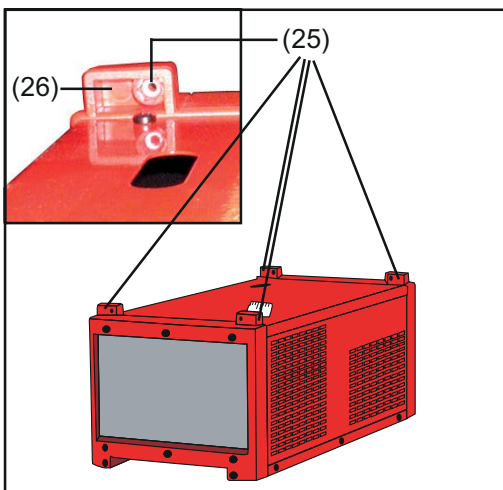
When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged.



- Position part 1 above part 2 by means of suitable lifting device
- Pull connection plug of part 2 of the FK 9000 R as far as possible through the opening at the bottom casing panel of part 1
- Connect connection plug of part 1 (28) at the connection plug of part 1 (40) in the casing inside of part 1
- Fit the housing cover of part 1 of the FK 9000 R

Connect connection plugs of part 1 and part 2 of the FK 9000 R

Mount part 1 onto part 2 of the FK 9000 R



Mount part 1

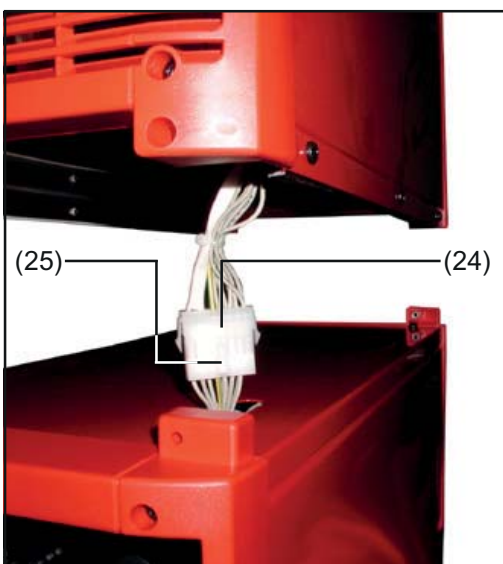
- Shift hexagon nut (25) supplied with part 2 from inside into the hexagon opening of the mounting frames (26)
- Place part 1 of the FK 9000 R carefully onto part 2
- Mount part 1 using the supplied Allen screws at the front and rear side of part 2

CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat.

Connect power source with part 1 of the FK 9000 R



Connect connection plug of power source with connection plug of part 1

- Pull connection plug of power source (24) as far as possible through the opening at the casing bottom
- Pull connection plug of part 1 (25) as far as possible through the opening at the casing top

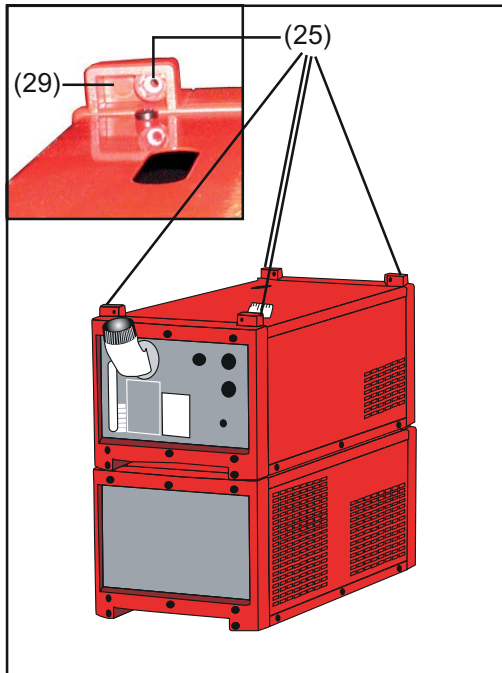
CAUTION!

Kinked or damaged cables can cause short circuits.

When positioning the power source, prevent the connection plug and the cable from getting kinked or damaged.

- Position power source on top of part 1 of the FK 9000 R by means of suitable lifting device
- Connect connection plug of part 1 (25) with connection plug of power source (24)

Mount power source onto part 1 of the FK 9000 R



Mount power source

- Shift hexagon nut (25) supplied with part 2 from inside into the hexagon opening of the mounting frames (29)
- Place power source carefully onto part 1 of the FK 9000 R
- Mount Slave power source using the supplied Allen screws at the front and rear side of part 1

⚠ CAUTION!

Danger caused by over-turning or falling devices.

Check all screwed connections for tight seat.

Coolant connections



Adhesive warning sign for water flow

NOTE!

Danger of damage to components that are not suitable.

The pressure at the water flow connection part 1 (9) - blue - (fig.39) can be up to 6 bar (87 psi.). Any components connected must be designed for this pressure.

With a TransSynergic / TransPuls Synergic 4000 / 5000 power source as shown in Fig. 1:

- Connect connection hose with screwed connection of part 1 (10) and screwed connection of part 2 (15)
- Connect flow line of the connection hose pack
 - at plug-type connection of water flow part 1 (9) - blue
 - at plug-type connection of water flow (32) of the wire feeder
- Connect return line of the connection hose pack
 - at plug-type connection of water flow of part 2 (14)
 - at plug-type connection of water return (34) of the wire feeder

With a TransTig / MagicWave 4000 / 5000 power source as shown in Fig. 2:

- Connect the connecting cable to the screw connector on part 1 (10) and to the screw connector on part 2 (15)
- Connect the welding torch flow line
 - to the water flow part 1 plug connection (9) - blue
- Connect the welding torch return line
 - to the water return part 2 plug connection (14)

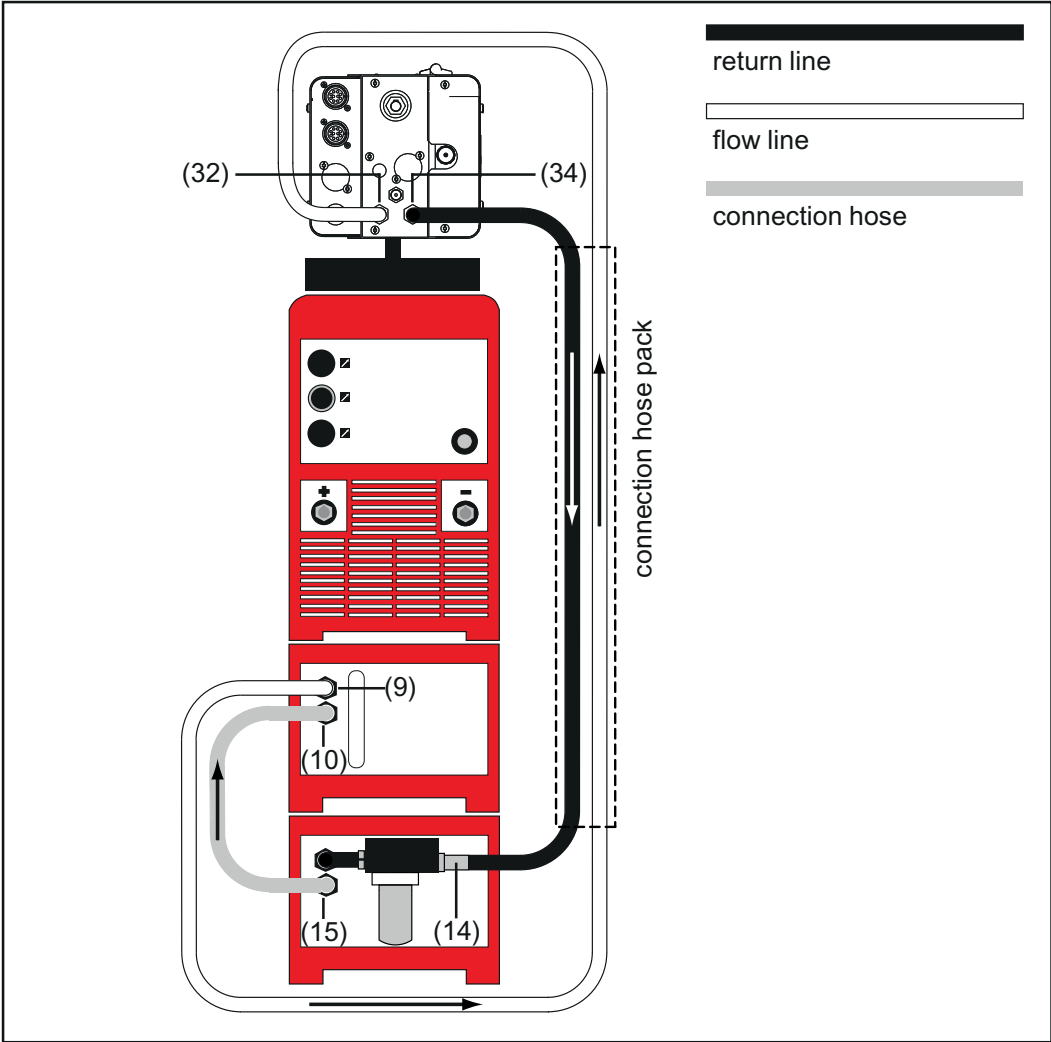


Fig.1 Coolant connections on TS / TPS 4000 / 5000 (rear view)

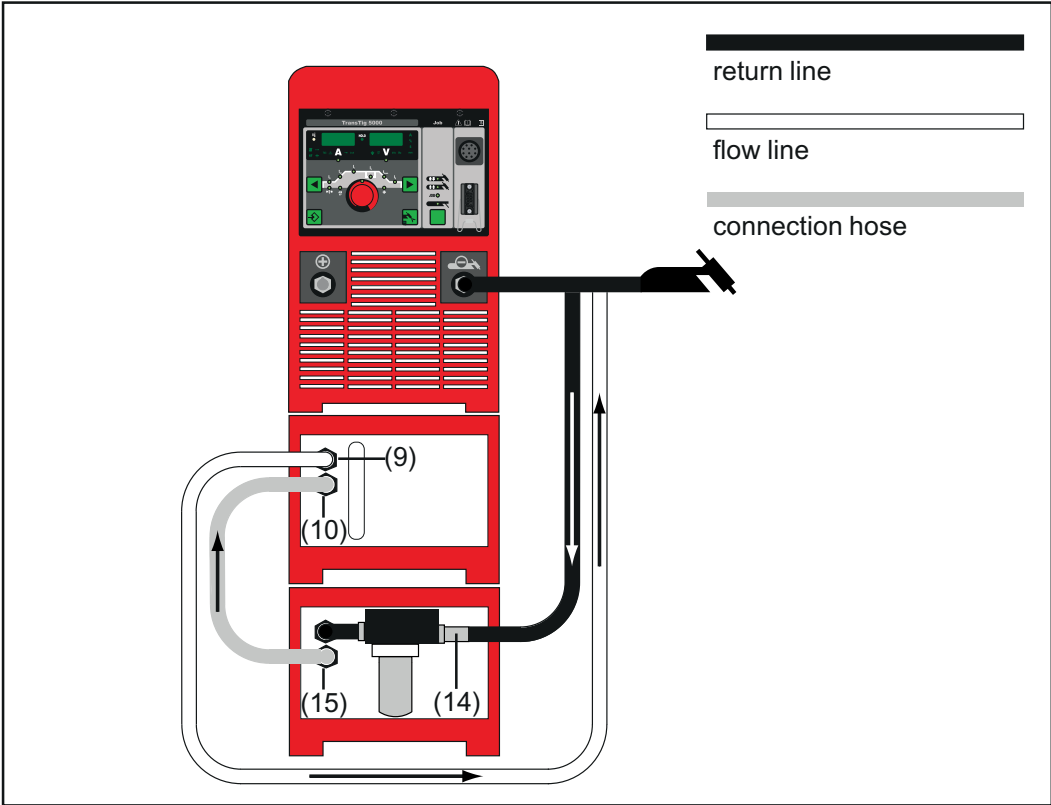


Fig.2 Coolant connections on TT / MW 4000 / 5000 (front view)

Putting the cooling unit into service

General remarks

NOTE!

The cooling unit is supplied dry, i. e. without coolant. The coolant is supplied separately in two 5l canisters. Fill in the coolant into the cooling unit before the start-up!

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.

Information on the coolant

NOTE!

Only use original Fronius coolant for the filling of the cooling unit. Other antifreezers cannot be recommended due to their electric conductivity or compatibility.

Filling of coolant

- 1 Switch mains switch of the power source in position "OFF"
- 2 Unscrew screw cap (1)
- 3 Fill in coolant
- 4 Screw screw cap (1) again - the cooling unit is ready for operation.

NOTE!

When the cooling unit is filled with the coolant for the first time, it is required to purge the cooling unit before the start-up.

Purge cooling unit

Purge the cooling unit

- after the first filling,
- if there is no coolant circulation although the cooling pump works.

Purge cooling unit:

- 1 Connect supply of power source(s)
- 2 Switch mains switch of the power source(s) in position "ON" - the cooling pump starts operation.
- 3 Part 1 of the FK 9000 R: shift back the safety ring on the plug-type connection of water flow (blue) (9)
- 4 Disconnect water flow hose
- 5 Press in carefully and hold conical nipple in the centre of the plug-type connection of the water flow (9) by means of a wooden or plastic pin
- 6 Loosen conical nipple as soon as the coolant comes out
- 7 Reconnect water flow hose

- 8 Check water connections for tightness

Repeat purge until proper return flow to the filler neck is ensured.

Start operation of cooling unit

NOTE!

Before any start-up of the cooling unit, check the coolant level as well as the coolant purity.

- 1 Connect supply of power source(s)
- 2 Switch mains switch of the power source(s) in position "ON" - the cooling pump starts operation.
- 3 Check coolant flow until proper flow is ensured. If necessary, deairate coolant circulation.

NOTE!

During welding check coolant flow at regular intervals - a proper return flow must be visible in the filler neck.

Changing the welding torch

CAUTION!

Excess pressure will damage the cooling unit.

Before blowing out the welding torch with compressed air, undo the screw cap on the fill nozzle.

Configuration of the cooling unit for multi-voltage power sources

General remarks The multi-voltage power sources TS 4000 MV / 5000 MV and TPS 2700 MV / 4000 MV / 5000 MV can be operated at a supply voltage of 3 x 200-240V / 3 x 380-460 V (+/- 10%) as a standard. The auto transformer automatically switches between the supply voltage values, separated by the slash, as required.

The optional auto transformer is required to operate the cooling unit FK 9000 R in connection with the multi-voltage power sources.

IMPORTANT!

Together with the Autotrafo option the cooling device FK 9000 R is also suitable for a mains frequency of 60 Hz.

Cooling unit configuration

WARNING!

An electric shock can be fatal.

Before opening up the machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

NOTE!

For the configuration of the cooling unit FK 9000 R for multi-voltage power sources it is required that the optional auto transformer is installed in part 1 of the FK 9000 R.

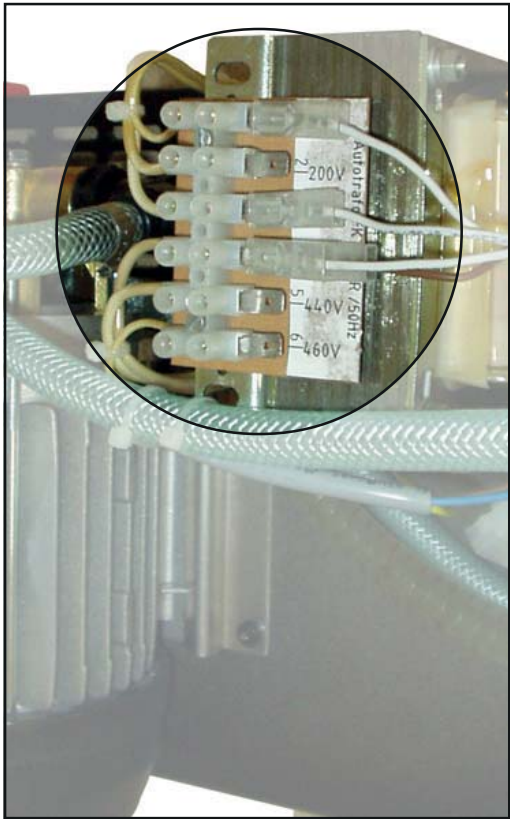
The auto transformer in part 1 of the cooling unit FK 9000 R can be configured for the following supply voltages:

- 3 x 200 / 400 V
- 3 x 200 / 440 V
- 3 x 200 / 460 V
- 3 x 230 / 400 V (factory configuration)
- 3 x 230 / 440 V
- 3 x 230 / 460 V

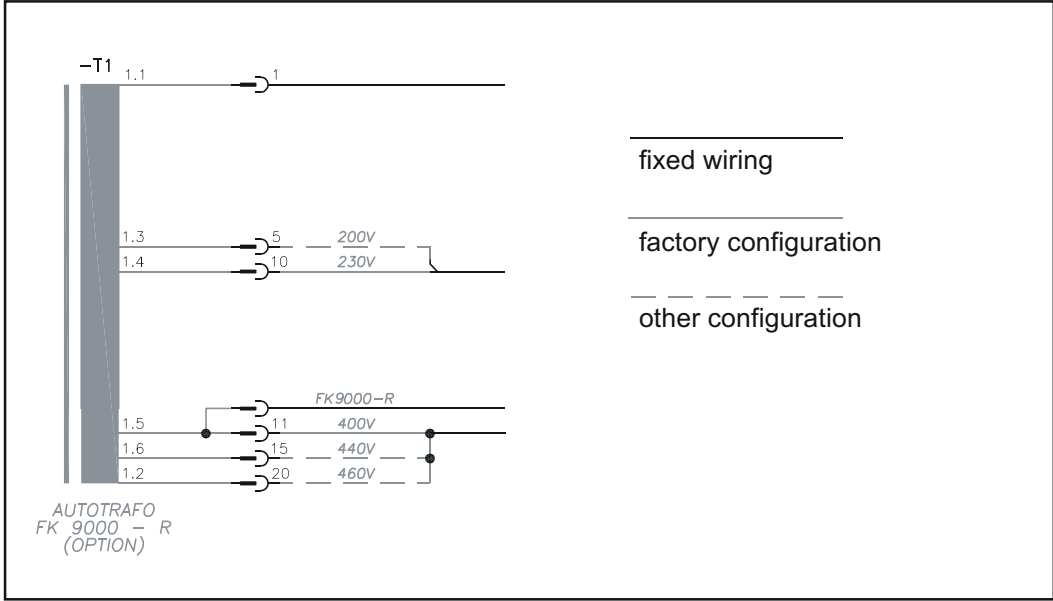
The auto transformer automatically switches between the supply voltage values, separated by the slash, as required. The supply voltage is 50 and 60 Hz respectively. The supply voltage tolerance ranges between +/- 10 %.

Apart from the possible configuration of the auto transformer the cooling unit FK 9000 R also disposes of the factory set voltage of 3 x 400 V.

- Dismantle casing panels of part 1 of the FK 9000 R
- Change terminals of auto transformer of the respective supply voltage according to the wiring schematic.



Configuration of the supply voltage: view of the auto transformer



Configuration of the supply voltage: change terminals of the supply voltages

Care, maintenance and disposal

General remarks Under normal operating conditions the cooling unit requires only a minimum of care and maintenance. However, it is indispensable to follow some important points to ensure the operability of the welding machine for many years.

Safety

WARNING!

An electric shock can be fatal.

Before opening up the machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

CAUTION!

Danger of scalding from hot coolant fluid.

Do not inspect the coolant connection points until the coolant has been allowed to cool.

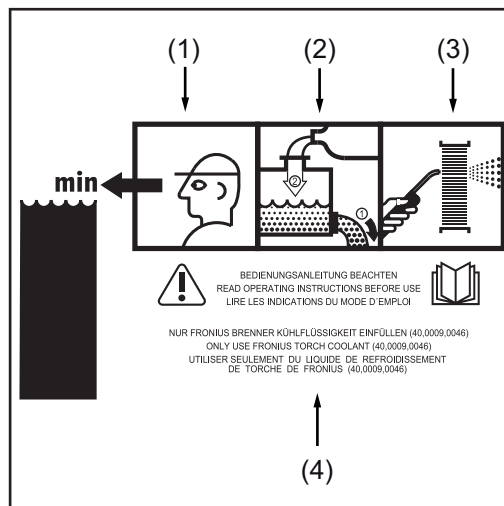
IMPORTANT!

The coolant must not be disposed of via the sewerage!

NOTE!

For refilling the cooling unit only use coolant of the manufacturer.

Symbols for care and maintenance of the cooling unit



- (1) Check coolant level
- (2) Change the coolant
- (3) Gas purge the cooler
- (4) Read operating instructions

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

Every start-up

- Check welding torch, interconnection cable assembly and bondings for damage
- Check whether the allround distance of 0.5 m (1.6 ft.) is kept to ensure that the cooling air can easily flow and escape.

NOTE!

Furthermore, air inlets and outlets must in no case be covered, not even covered partly.

⚠ CAUTION!**Danger of scalding from hot coolant fluid.**

Do not inspect the coolant connection points until the coolant has been allowed to cool.

If water-cooled welding torch is used:

- Check water connections for tightness
- Control water return flowrate in coolant container
- If there is no water return flow, check cooling unit and purge if necessary

NOTE!**If water-cooled welding torches are operated without cooling water, this mostly causes a defect of the torch body or the hose pack.**

The manufacturer does not accept responsibility for any consequential damages. Any warranty claims expire.

Every week

- 1 Check the coolant level as well as the coolant purity.
- 2 If the coolant level drops below the “min” mark ... refill coolant.

Every 2 months

- 1 Check the coolant level as well as the coolant purity.
- 2 If the coolant level drops below the “min” mark ... refill coolant.

Every 6 months

- 1 Dismantle machine side panels and clean machine inside with dry reduced compressed air

NOTE!**Risk of damage to electronic components.**

Clean electronic components from a certain distance only.

- 1 Clean also the water coolers in the case of excessive dust

Every 12 months

- 1 Change the coolant
- 2 Dispose of used coolant correctly.

Applicability of the “General Terms of Delivery and Payment”

With respect to cooling units, the warranty provisions of the “General Terms of Delivery and Payment” referred to in the pricelist shall only apply where the following conditions are fulfilled:

- max. 8 operating hours per day (single-shift operation)
- only Fronius coolant may be used
- the unit is given regular maintenance and the coolant is changed regularly

Disposal

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

Troubleshooting

- General remarks** The cooling unit FK 9000 R is equipped with the following sensors as a standard:
- Temperature controller: at a coolant return temperature of more than 70 °C the service code "Hot | H2O" is shown on the operating panel
 - Flow controller: at a flow of less than 0.7 l/min the service code "no | H2O" is shown on the operating panel

In order to guarantee an optimum quality assurance, availability and protection of the equipment, the power source switches off as soon as the service codes "Hot | H2O" as well as "no | H2O" are displayed.

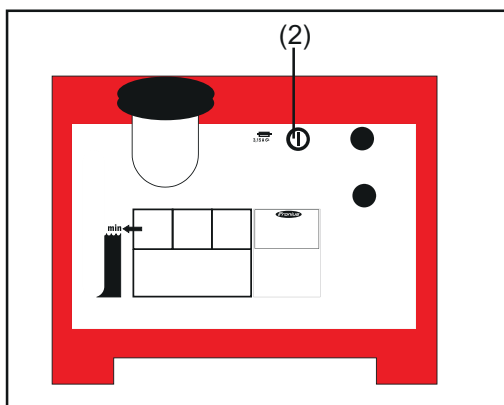


WARNING!

An electric shock can be fatal.

Before opening up the machine, switch it off, unplug it from the mains and put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching the machine back on again. The casing screws are a suitable protective conductor connection for grounding the casing. The screws must not be replaced by other screws without reliable protective conductor connection.

Cooling unit fusing

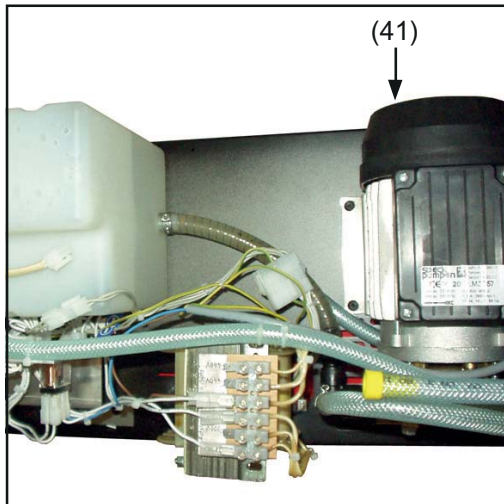


FK 9000 R - Part 1: Cooling pump fusing

The following fuse is located at the front side of part 1 of the FK 9000 R:

- cooling pump fuse (2) ... is blown in the event of a cooling pump overload or blocking

Start rotation of the cooling pump



FK 9000 R - Part 1: Starting rotation of the cooling pump

If the cooling pump is blocked

- insert suitable screw driver through ventilation grid (41) of the cooling pump and rotate the impeller
- replace cooling pump fuse (2)

Troubleshooting

Coolant flow too low or no flow

Cause: Coolant level too low

Remedy: Refill coolant

Cause: Throat or foreign substance in the cooling circulation

Remedy: Remove throat or foreign substance

Cause: Cooling pump fuse defective

Remedy: Replace coolant pump fuse according to Chapter "Cooling unit fuse"

Cause: Cooling pump defective

Remedy: Replace cooling pump

Cause: Cooling pump blocked

Remedy: Start rotation of cooling pump according to Chapter "Start rotation of cooling pump"

Cause: Cooling filter at plug-type connection of water return line clogged

Remedy: Clean cooling filter with clean tap water or replace filter insert

Cooling capacity too low

Cause: Fan defective

Remedy: Replace fan

Cause: Cooling pump defective

Remedy: Replace coolant pump

Cause: Cooler contaminated

Remedy: Clean cooler with dry compressed air

Cause: Cooling capacity of cooling unit too low

Remedy: Use cooling unit with higher cooling capacity

High operating noise level

Cause: Coolant level too low

Remedy: Refill coolant

Cause: Cooling pump defective

Remedy: Replace coolant pump

no | H2O

The flow watchdog (option) or flow sensor in the cooling unit has tripped. The error message is displayed on the operating panel of the power source.

Cause: Cooling flow error

Remedy: Check cooling unit; if necessary, refill coolant and purge water flow line according to the Chapter "Start operation of the cooling unit"

Cause: Water filter clogged

Remedy: Clean or replace water filter

hot | H2O

The thermal controller of the cooling unit has responded. The error message is displayed on the operating panel of the power source.

Cause: Excessive coolant temperature

Remedy: Wait the cooling-down time until hot | H2O is no longer displayed.
ROB 5000 or fieldbus coupler for robot control: before welding is started again, reset signal "source error reset".

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