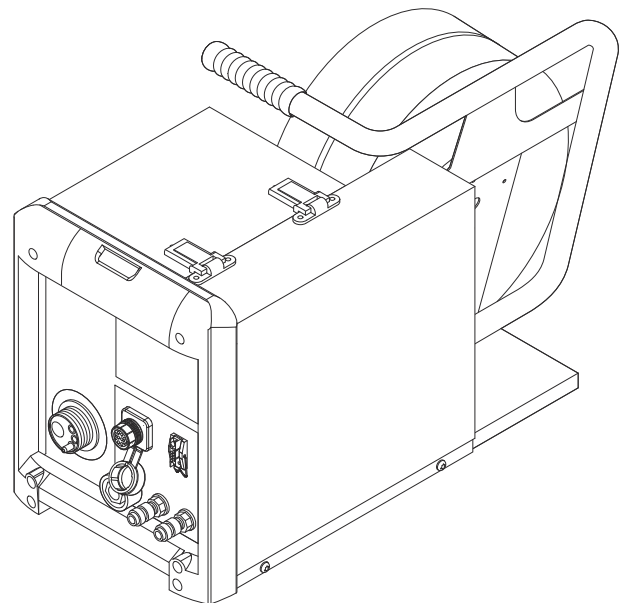


Operating Instructions

KD 4000 D-11



EN | Operating Instructions



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Safety rules

Explanation of warnings and safety instructions

The warnings and safety instructions in these instructions are intended to protect people from possible injury and the product from damage.



DANGER!

Indicates an immediately dangerous situation

Serious injury or death will result if appropriate precautions are not taken.

- ▶ Action step to escape the situation



WARNING!

Indicates a potentially dangerous situation

Death or serious injury may result if appropriate precautions are not taken.

- ▶ Action step to escape the situation



CAUTION!

Indicates a potentially dangerous situation

Minor or moderate injury may result if appropriate precautions are not taken.

- ▶ Action step to escape the situation

NOTE!

Indicates impaired work results and/or damage to the device and components

The warnings and safety instructions are an integral part of these instructions and must always be observed to ensure the safe and proper use of the product.

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.

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.

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.

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 wire spool, 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 be touched when the welding system is switched on.

Double the open circuit voltage of a welding system can occur between the welding electrodes of two welding systems. 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.

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, have a second person 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 wirepool 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
- Wire spools 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 facing 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.

Welding machines for work in areas with increased electrical risk (e.g. near boilers) must carry the 'Safety' sign. However, the welding machine 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 suitable load-carrying equipment.
- Chains or 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).

Welding with the device during crane transport is only permitted if this is clearly stated in the intended use of the device.

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, counter-balanced 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 and disconnect devices from the grid 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.

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 be performed at least once every 12 months.

The manufacturer recommends that the welding machines be calibrated at the same 12-monthly interval.

A safety inspection should be carried out by a qualified electrician

- after any additional parts are installed, or after any conversions
- after repair, care and maintenance are carried out

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

Further details on the safety inspection and calibration can be obtained from your Fronius branch or your Fronius partner. They will provide you with any documents you may require, on request.

Disposal

Waste electrical and electronic equipment must be collected separately and recycled in an environmentally responsible manner in accordance with the EU Directive and national law. Used equipment must be returned to the distributor or through a local, authorised collection and disposal system. Correct disposal of the used device promotes sustainable recycling of resources and prevents negative effects on health and the environment.

Packaging materials

- Collect separately
- Observe locally valid regulations
- Compress the cardboard box to reduce volume

Safety symbols

Devices with the CE mark meet the requirements of all valid EU directives, such as:

- Directive 2014/30/EU on Electromagnetic Compatibility
- Directive 2014/35/EU Low Voltage Directive
- Directive 2014/53/EU Radio Equipment Directive
- EN IEC 60974 Arc welding equipment
- And so on

The full text of the EU Declaration of Conformity can be found at <https://www.fronius.com>.

Devices with the CSA mark satisfy the requirements of the relevant standards in Canada and the USA.

Data security

With regard to data security, the user is responsible for:

- backing up any changes made to the factory settings
- saving and retaining personal settings

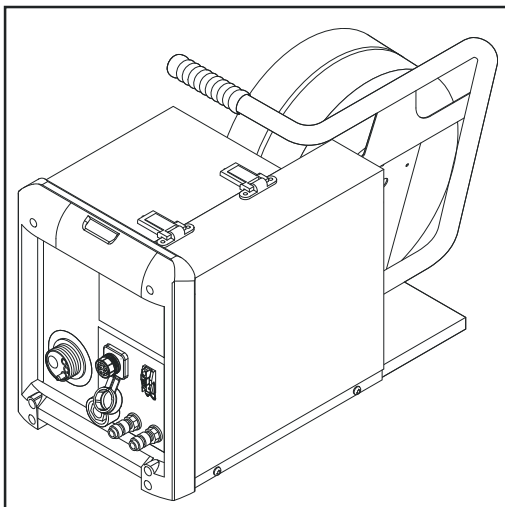
Copyright

Copyright of these operating instructions remains with the manufacturer.

Text and illustrations were accurate at the time of printing, subject to change. We are grateful for suggestions for improvement and information regarding any discrepancies in the operating instructions.

General

Device concept



Cold wire feeder KD 4000 D-11

The cold wire feeder is designed to be used with wire spools of max. 300 mm (11.81 in) diameter. The standard 4-roller drive has good wirefeeding properties. The cold wire feeder is also suitable for long hosepacks and, due to its compact size, can be used in many different ways.

The cold wire feeder can be used with the following power sources:

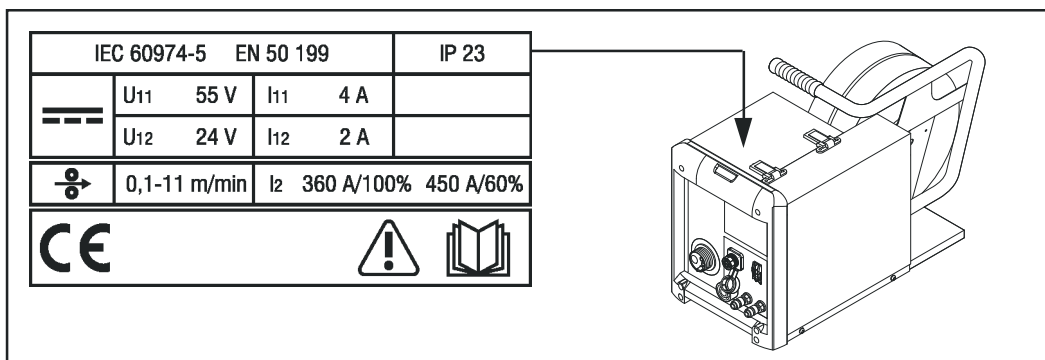
- TransTig 2200 / 2500 / 3000 Job
- TransTig 4000 / 5000 Job
- MagicWave 2200 / 2500 / 3000 Job
- MagicWave 4000 / 5000 Job

Application area

The KD 4000 D can be used for all types of TIG welding and is especially suited to robot applications and automated tasks. The cold wire feeder is suitable for all standard shielding gases.

Warning notices on the device

The cold wire feeder has safety symbols on the rating plate. These safety symbols must not be removed or painted over. The symbols warn against operating the equipment incorrectly, as this may result in serious injury and damage.



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

- These Operating Instructions
- All the Operating Instructions for the system components, especially the safety rules



Welding is dangerous. The following basic requirements must be met:

- welders must be sufficiently qualified
- use appropriate protective equipment
- all persons not involved in the welding process must be kept at a safe distance

Control elements and connections

General

Owing to software updates, you may find that your machine 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.

Safety



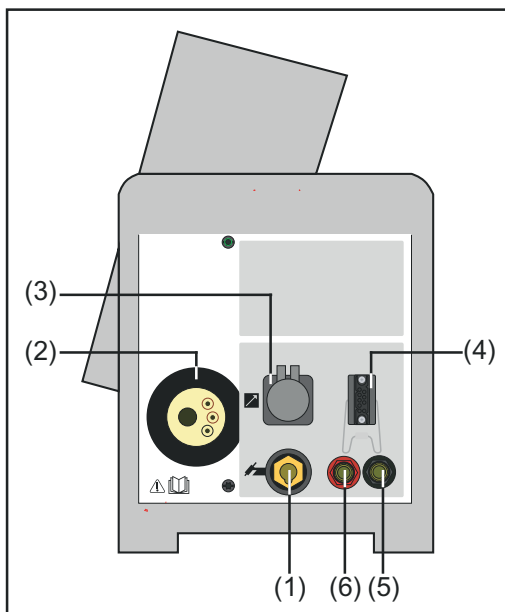
WARNING!

Danger due to incorrect operation and incorrectly performed work.

This can result in serious 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.
- ▶ Fully read and understand this document.
- ▶ Read and understand all safety rules and user documentation for this device and all system components.

Cold wire feeder front



Front

(1) **Welding torch / (-) current socket connection**

in conjunction with a MagicWave power source for connecting:

- a TIG welding torch
- the electrode cable for manual metal arc welding

in conjunction with a TransTig power source for connecting:

- a TIG welding torch
- the electrode cable or grounding cable during MMA welding (depending on the type of electrode used)

(2) **Wirefeeding connection**

(3) **LocalNet connection**

standardised connection socket for system extensions (e.g. remote control, JobMaster welding torch, etc.)

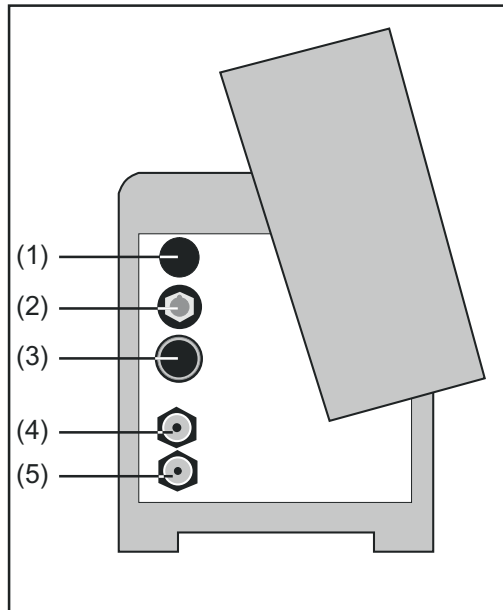
(4) **Torch control connection**

for connecting the torch control plug

(5) **Water flow connection (blue)**

(6) **Coolant return-flow connection socket (red)**

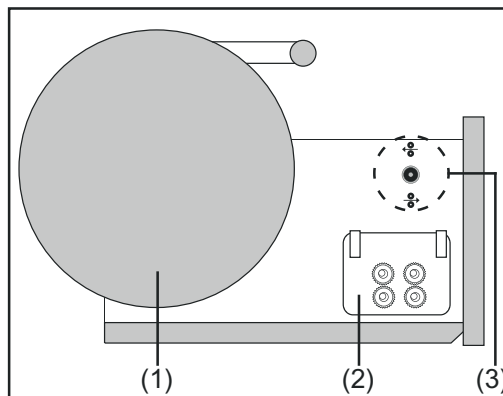
Cold wire feeder rear



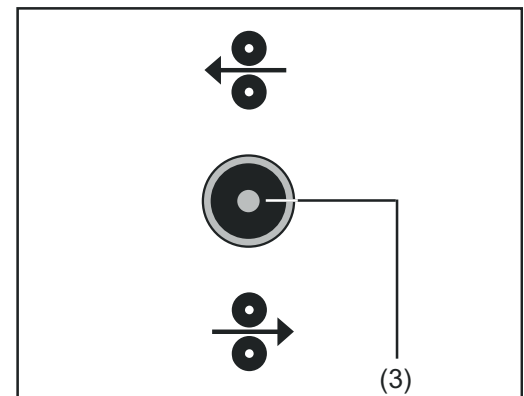
Rear

- | | |
|------------|--|
| (1) | Bushing for control socket
for connecting a welding torch with a conventional control plug |
| (2) | (+) socket with bayonet latch |
| (3) | LocalNet connection
Interconnecting hosepack |
| (4) | Coolant return-flow connection socket (red)
Interconnecting hosepack |
| (5) | Water flow connection (blue)
Interconnecting hosepack |

Cold wire feeder right side



Side view

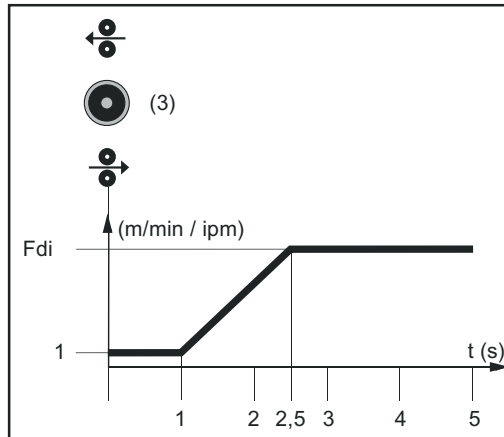


Detailed view of "feeder inching/feeder backward" button

- | | |
|------------|---|
| (1) | Welding torch / (-) current socket connection
for attaching standardised welding wire spools up to max.16 kg (35.27 lbs.) and with a maximum diameter of 300 mm (11.81 in.) |
| (2) | 4-roller drive |
| (3) | "Feeder inching/feeder backward" button <ul style="list-style-type: none"> - Wire threading: Push button downwards - Feeder backward Push button upwards |

To facilitate exact positioning of the welding wire, the following sequence is executed when the welder presses and holds the wire threading / wire retract button (3):

- Hold the button for up to **one second**
Irrespective of what value has been set, the wire speed remains at 1 m/min or 39.37 ipm for the first second.
- Hold the button for up to **2.5 seconds**
After one second has elapsed, the wire speed increases at a uniform rate over the next 1.5 seconds.
- Hold the button for **longer than 2.5 seconds**
After 2.5 seconds, the wire is fed at a constant rate equal to the wire speed set for the Fdi welding parameter.

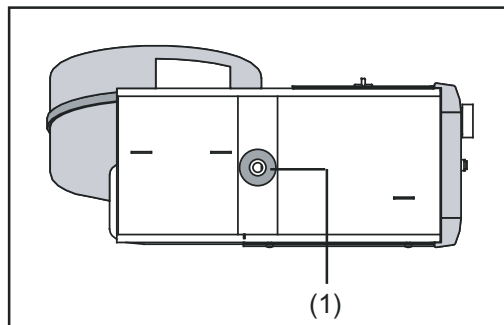


Time-path of the wirespeed when the feeder inching/backward button is pressed and held down

IMPORTANT! For more detailed information on the Fdi parameter, please refer to the Operating Instructions for the power source.

If the wire threading button is released (1) before one second has elapsed and then press it again, the sequence starts again from the beginning. This makes it possible to position the wire continuously at the low wire speed of 1 m/min or 39.37 ipm when needed.

Cold wire feeder underside



Bottom view

-
- (1) Receiving socket for receptor pin**
for placing the cold wire feeder on the wirefeeder receptor pin
-

Placing the cold wire feeder on the power source

General

If the TransTig 4000/5000 and MagicWave 4000/5000 power sources have been fixed onto a trolley with cooling unit, the cold wire feeder can be placed on the optional wirefeeder holder on the trolley.

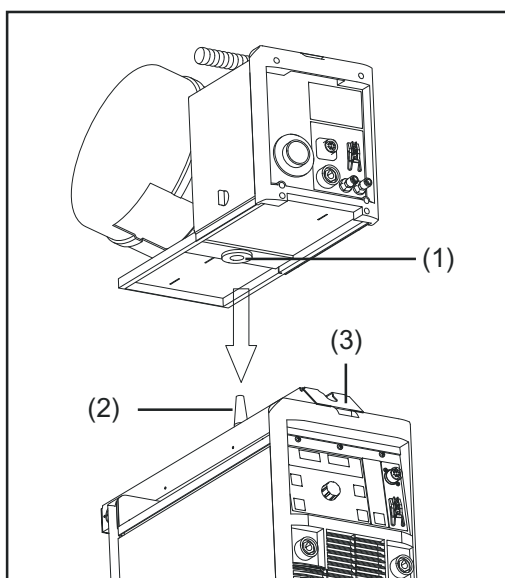
Placing the cold wire feeder on the power source

CAUTION!

Danger from falling cold wire feeder.

This can result in serious injury and damage to property.

- Check that the cold wire feeder is securely placed on the receptor pin.



Wirefeeder holder (3)

- 1** Position the cold wire feeder over the power source using a suitable lifting device
- 2** Lower cold wire feeder onto the receptor pin (2), so that the socket (1) is sitting firmly on receptor pin (2)
- 3** Check that the cold wire feeder can move and is securely in place

Connect the cold wire feeder to the power source

General

The cold wire feeder is connected to the power source using the interconnecting hosepack.

Connect the cold wire feeder to the power source

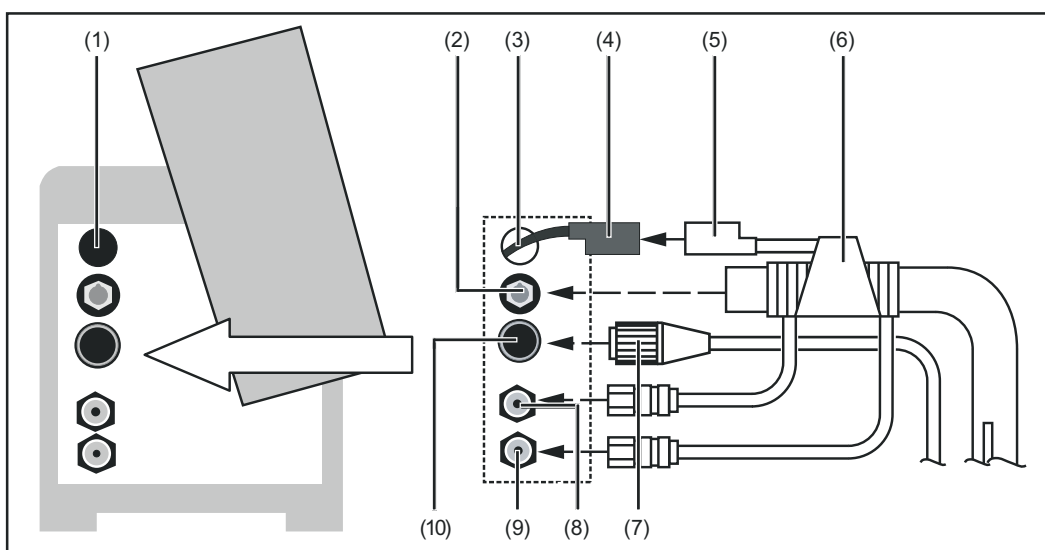


WARNING!

Danger from incorrect installation

This can result in serious injury and damage to property.

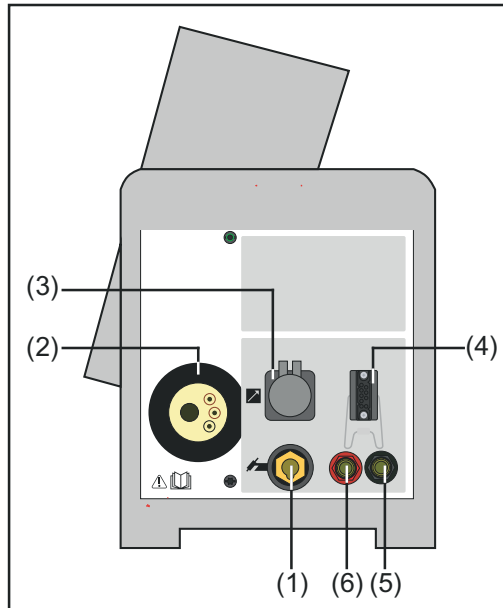
- Do not carry out the steps described here until you have read and completely understood all the Operating Instructions



- 1 Switch the power source mains switch to the "Off" position
- 2 Open right side panel of the wirefeeder:
 - Loosen the 2 screws
 - Swing side panel upwards
- 3 If the welding torch has a conventional control plug instead of a LocalNet connection socket:
 - Remove blanking cover (1) for bushing (3)
- 4 Feed control socket (4) through bushing (3)
 - Remove blanking cover (1) for bushing (3)
- 5 Plug control plug (5) into torch control connection (4)
- 6 Plug welding potential bayonet plug (6) into current socket (2) and turn to fasten it
- 7 Plug LocalNet (7) plug into LocalNet port (10)
- 8 Tighten union nut on LocalNet plug (7)
- 9 If available, connect water flow and water return hoses to plug connectors (8) and (9), ensuring that colours are matched
- 10 Close right side panel of the cold wire feeder:
 - Swing side panel down
 - Fix side panel in place with 2 screws

Fitting the welding torch

Fit the welding torch



Welding torch and torch control connections

- 1** Switch the power source mains switch to the "Off" position
- 2** Connect welding torch control plug to the LocalNet port (3) or torch control connection (4) and fasten
- 3** If present: connect colour-coded external water connections for water flow (5) and return (6)
- 4** Plug welding potential bayonet plug into current socket (1) and turn to fasten it
- 5** Insert the wire feeder, infeed tube first, into the wirefeeder connection (2)
- 6** Tighten the union nut by hand to fix in place

Inserting the wirepool

Safety



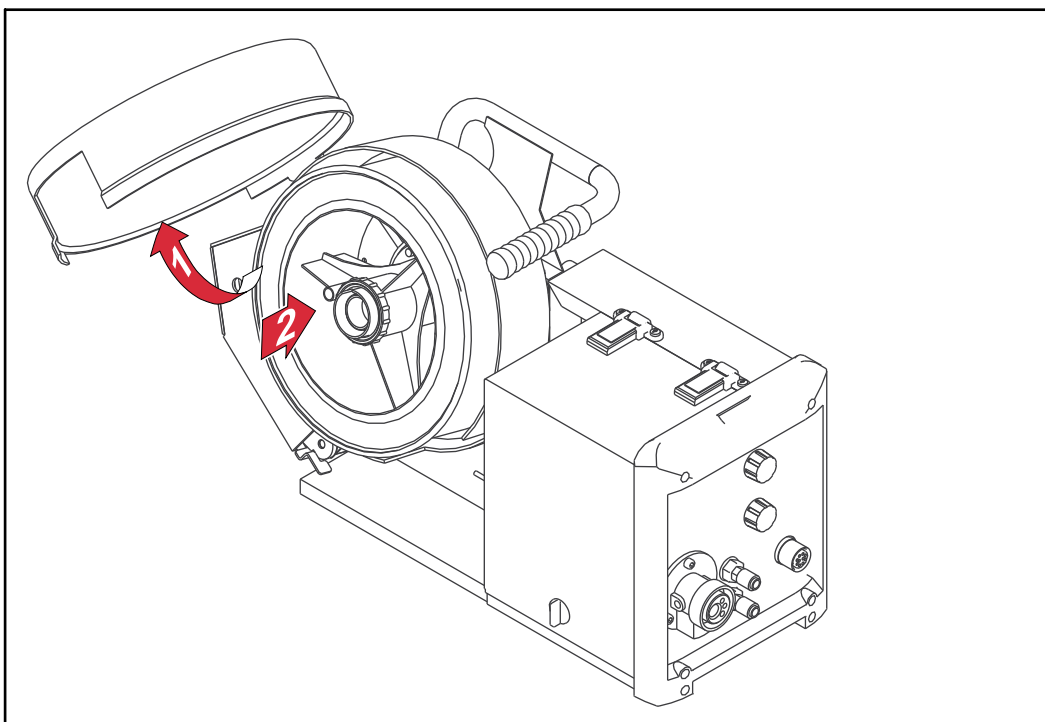
CAUTION!

Risk of injury from springiness of spooled welding wire.

This can result in serious injury and damage to property.

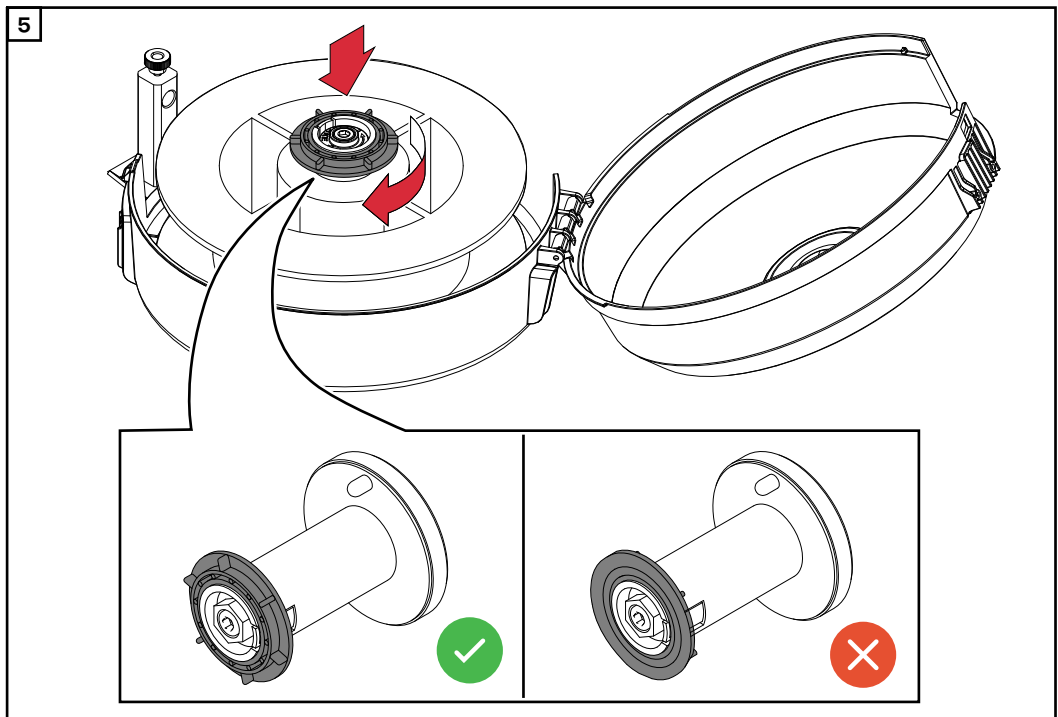
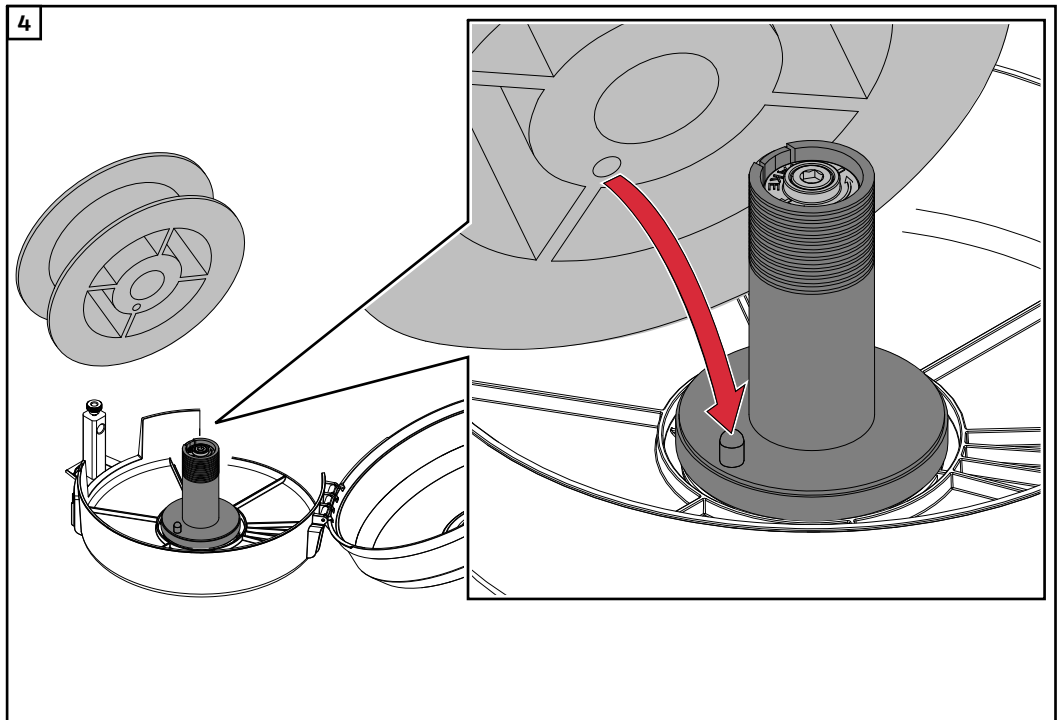
- When threading in the welding wire, hold the end of it firmly, to prevent any injuries that might be caused by the wire flicking back.

Inserting the wirepool



Insert the wirepool

- 1** Switch the power source mains switch to the "Off" position
- 2** Open left side panel of the wirefeeder:
- 3** Place the wirepool and wirepool holder on the correct side



6 Close left side panel of the cold wire feeder again

Always adjust the brake so that the wirepool does not continue unreeling after the end of welding - but without overtightening the clamping screw, as this might cause motor overload.

⚠ WARNING!

Danger from incorrect installation

This can result in serious injury and damage to property.

- Do not carry out the steps described here until you have read and completely understood all the Operating Instructions

Inserting/replacing feed rollers

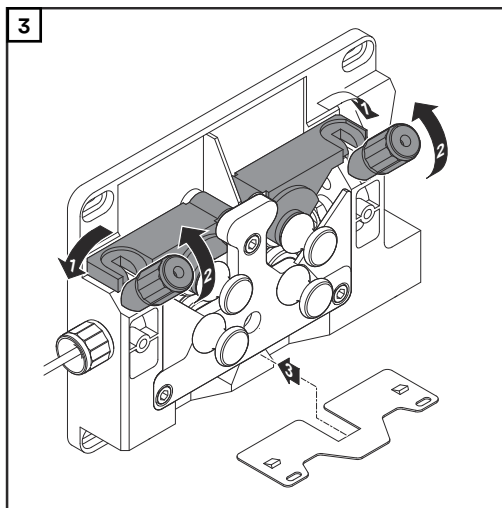
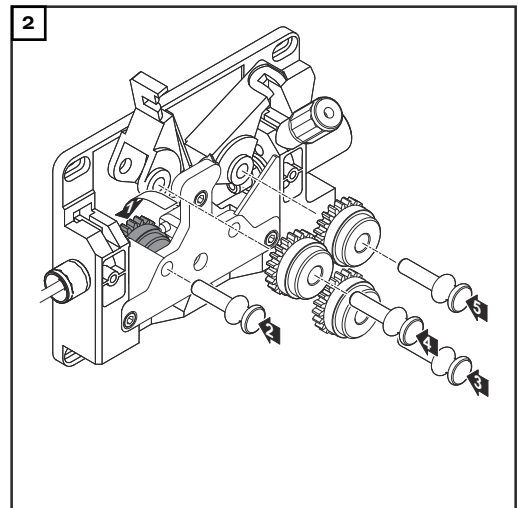
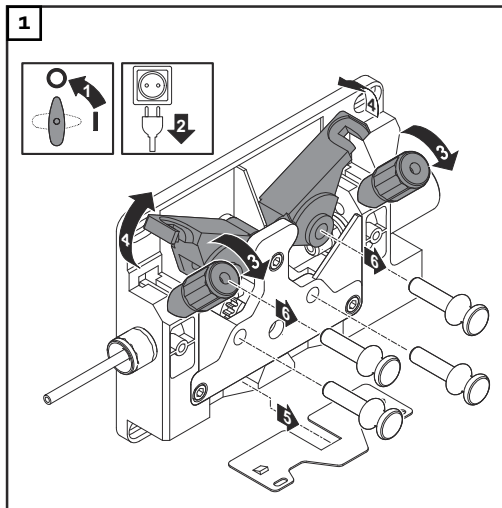
General remarks In order to achieve optimum wire electrode feed, the feed rollers must be suitable for the diameter and alloy of the wire being welded.

IMPORTANT! Only use feed rollers that match the wire electrode.

An overview of the feed rollers available and their possible areas of use can be found in the spare parts lists.

USA wirefeeders In the USA, all wirefeeders are delivered without feed rollers. After inserting the wirespool, the feed rollers must be inserted into the wirefeeder.

inserting/replacing feed rollers



Inserting the wirepool, inserting the basket-type spool

Safety



CAUTION!

Danger from springiness of spooled wire electrode.

This can result in severe injuries.

- When inserting the wirepool/basket-type spool, hold the end of the wire electrode firmly to avoid injuries caused by the wire electrode springing back.



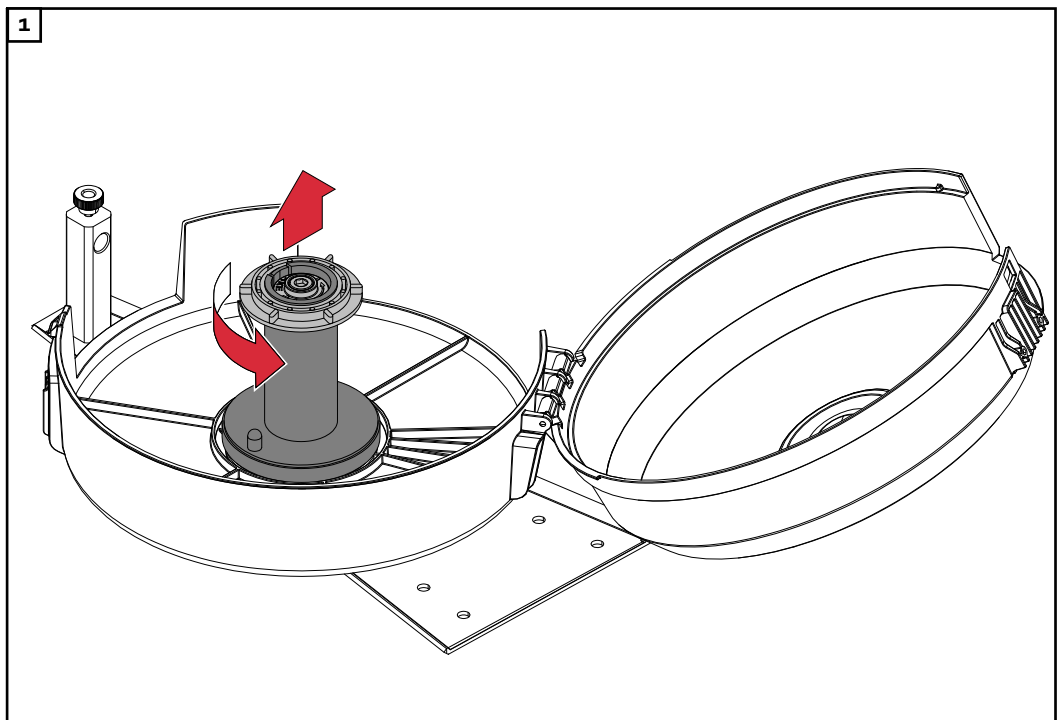
CAUTION!

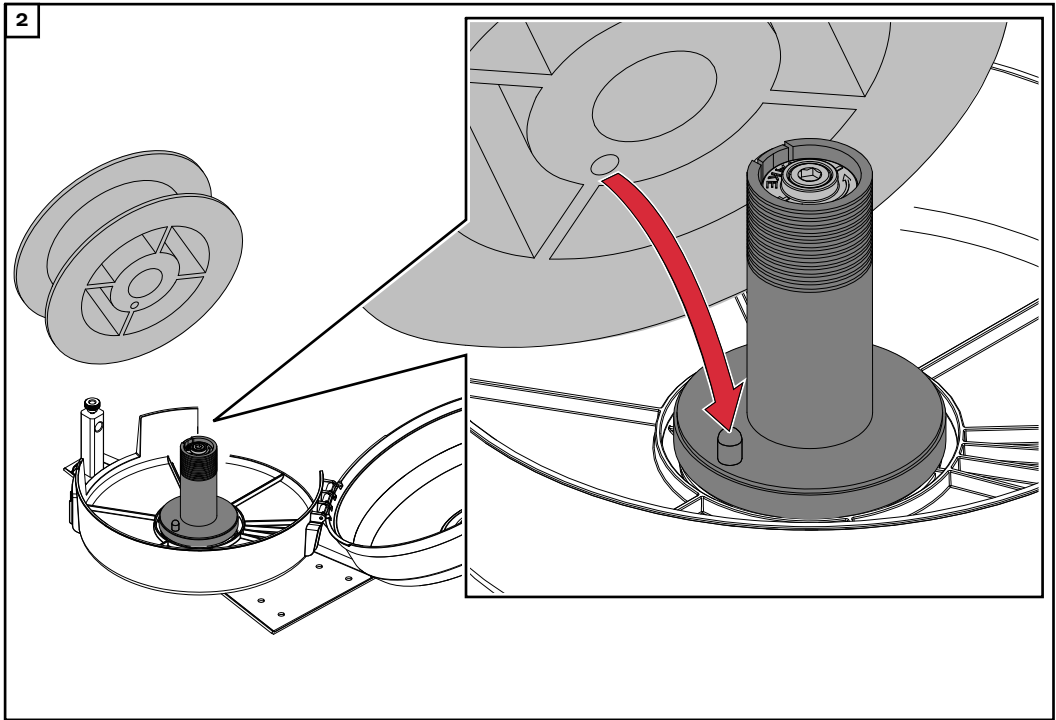
Danger from falling wirepool/basket-type spool.

This can result in severe injuries.

- Make sure that the wirepool or basket-type spool with adapter is fitted securely to the wirepool holder.

Inserting the wirepool



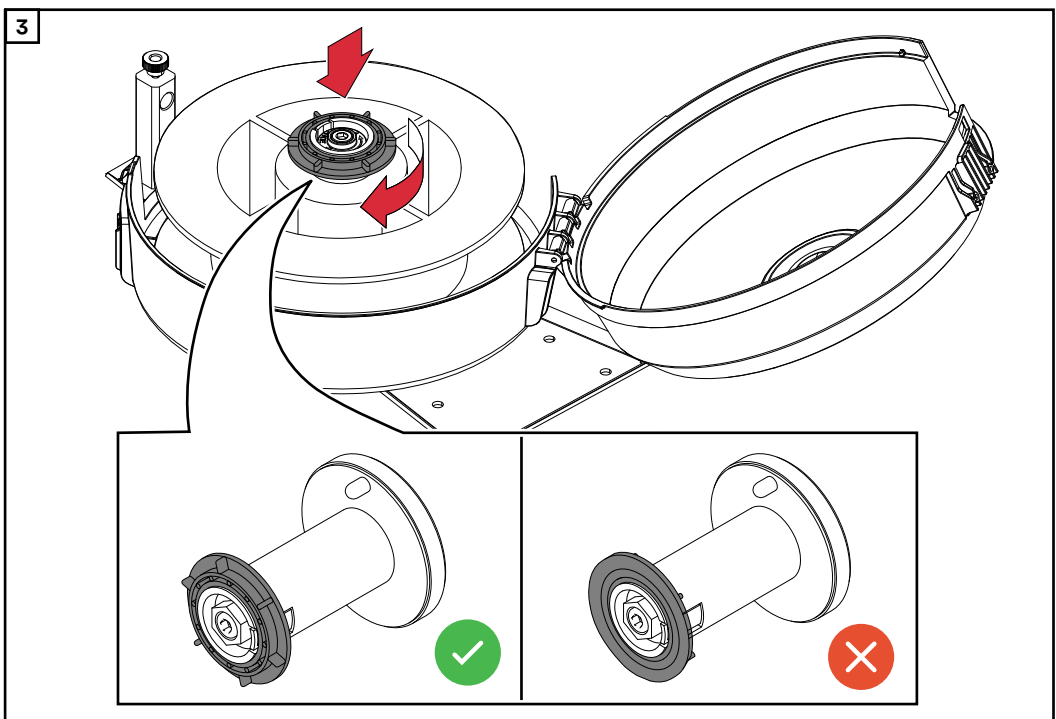


WARNING!

Danger from falling wirespool/basket-type spool.

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

- Ensure that the wirespool/basket-type spool including basket-type spool adapter is always firmly seated on the wirespool holder.



Inserting the basket-type spool

NOTE!

When working with basket-type spools, use only the basket-type spool adapter supplied with the wire-feed unit! USA wire-feed units are supplied without basket-type spool adapters.

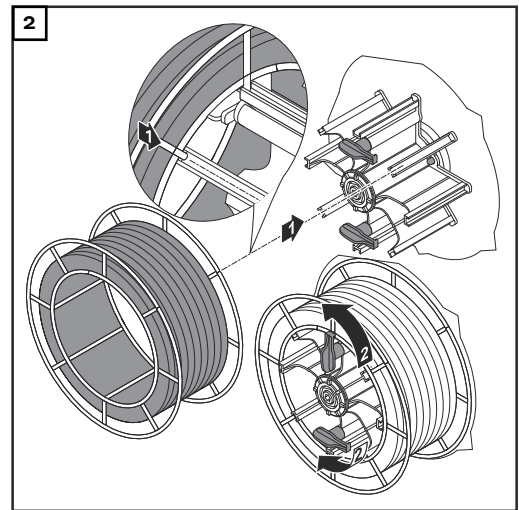
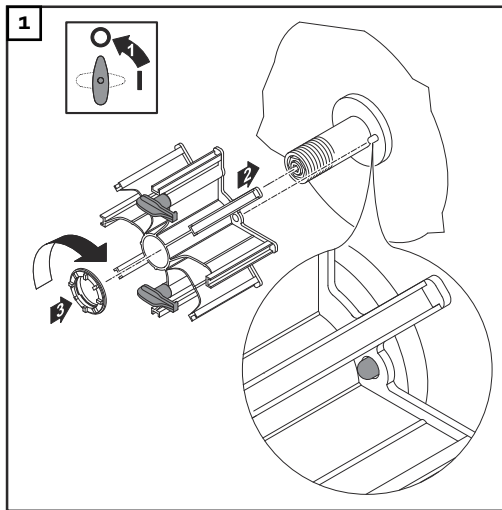


CAUTION!

Danger from falling basket-type spool.

This can result in serious injury and damage to property.

- Place the basket-type spool on the adapter provided in such a way that the bars on the spool are inside the adapter guideways.



Feeding in the wire electrode

Feeding in the wire electrode

CAUTION!

Danger from elasticity of the spooled wire electrode.

This can result in serious injury and damage to property.

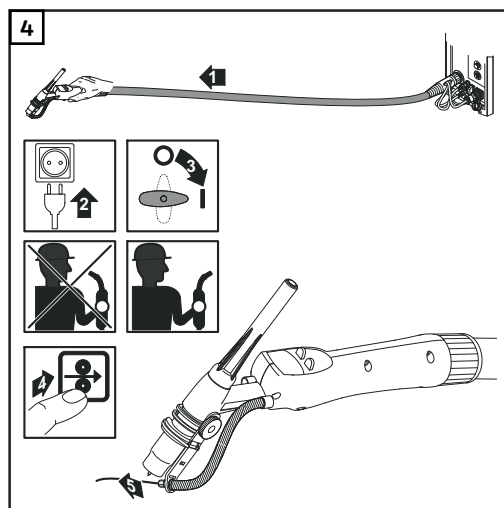
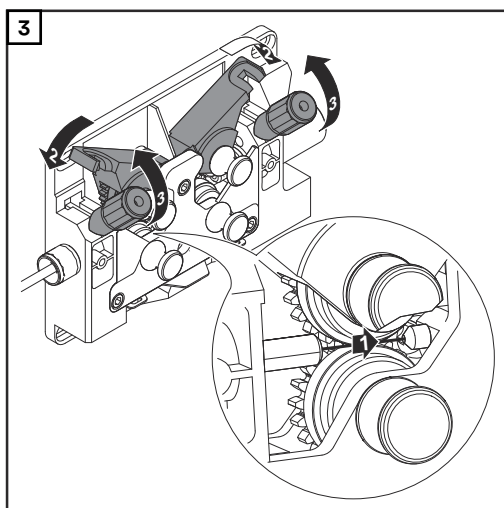
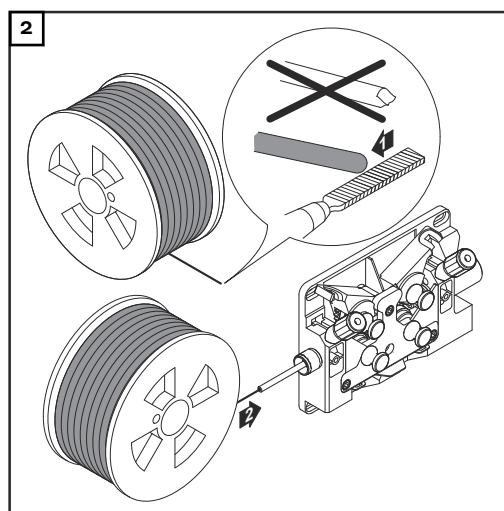
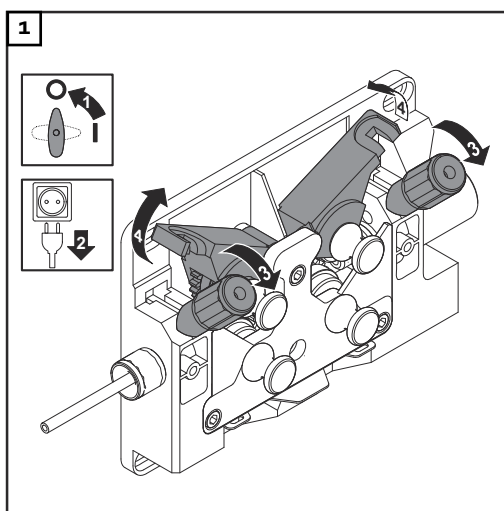
- ▶ When inserting the wire electrode into the 4-roller drive, hold the end of the wire electrode firmly to avoid injuries caused by the wire springing back.

CAUTION!

Danger from sharp end of wire electrode.

This may result in damage to the welding torch.

- ▶ Deburr the end of the wire electrode well before threading in.

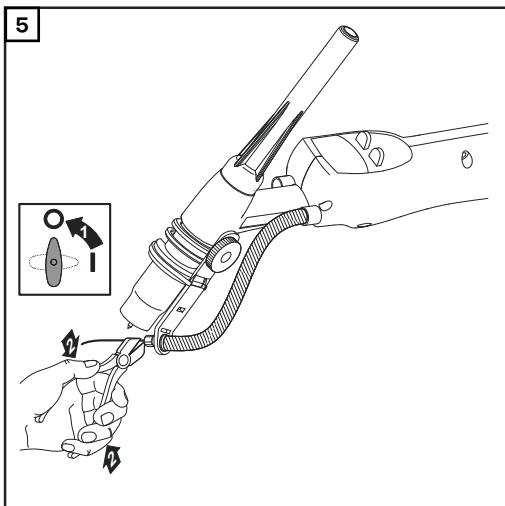


⚠ CAUTION!

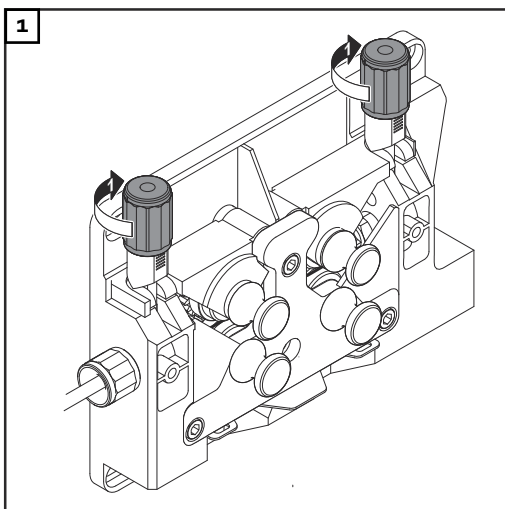
Risk of injury from emerging wire electrode.

This can result in serious injury.

- When pressing the wire threading button or the torch trigger, keep the welding torch away from your face and body, and wear suitable protective goggles.



Set the contact pressure



NOTE!

Set the contact pressure in such a way that the wire electrode is not deformed but nevertheless ensures proper wirefeeding.

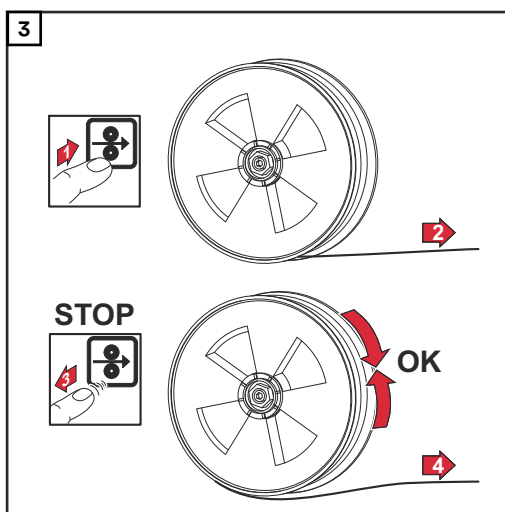
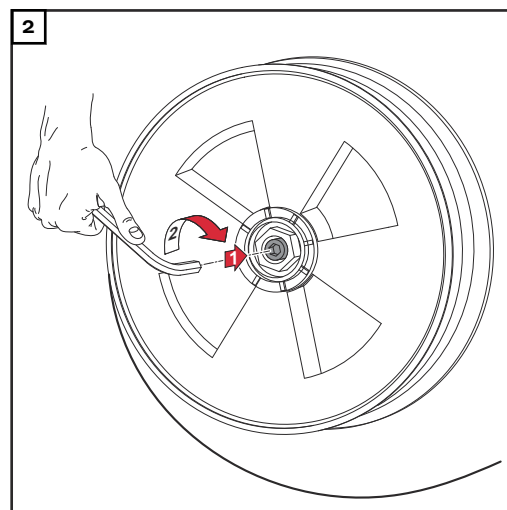
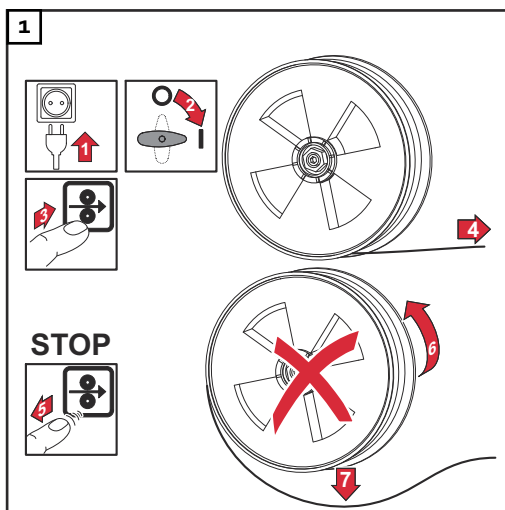
Contact pressure standard values	Semi-cylindrical rolls	Trapeze rolls	Plastic rollers
Aluminium	1.5	-	3.5 - 4.5
Steel	3 - 4	1.5	-
CrNi	3 - 4	1.5	-

Adjust the brake

Adjusting the brake

NOTE!

After releasing the torch trigger the wirespool should stop unreeling. Adjust brake if necessary.



Push-pull unit

General

The push-pull unit must be calibrated prior to each initial start-up and each time the cold wire feeder software is updated. If the push-pull unit is not calibrated, the default parameters will be used - which may result in unsatisfactory welding results.

Calibrating the push-pull unit



- 1** In the power source setup menu, select the "PPU" function - level 2: TIG setup parameters (see power source operating instructions)

For an overview of the error messages that may occur during calibration of the push-pull unit, please refer to "Service codes for push-pull calibration".



- 2** On the power source adjusting dial, select the appropriate push-pull unit from the following list:

- 0 Fronius KD7000/VR1530KD Drive 22 m/min or 866 ipm *)
- 2 Fronius Torch Drive 10 m/min or 394 ipm *)
- 3 Fronius Torch Drive 22 m/min or 866 ipm *)
- 15 Fronius KD7000/VR1530KD Drive 10 m/min or 394 ipm
- 18 Fronius Torch Drive 5 m/min or 197 ipm
- 19 Fronius KD4010 10 m/min or 394 ipm
- 21 Binzel Torch Drive IWG 8 m/min or 315 ipm **)
- 25 Fronius KD4000/KD7000 Drive 11 m/min or 433 ipm *)

*) No calibration under load (St2) is required

***) Motor and gear tolerances may cause functional anomalies. Calibration may have to be carried out by Fronius



- 3** Press the feeder inching or gas test button
- 4** Disengage the drive units of both wirefeeder motors (e.g. welding torch and cold wire feeder) - the wirefeeder motors must not be under load (push-pull calibration - open circuit)



CAUTION!

Risk of injury from rotating cogs and drive parts.

Keep hands away from rotating cogs and the wire drive.



- 5** Press the feeder inching or gas test button

The wirefeeder motors are calibrated while not under load; during calibration, the right-hand display will read "run".



As soon as calibration - in the unloaded state - is complete, the display will read "St2".

- 6** Engage the drive units of both wirefeeder motors (e.g. welding torch and cold wire feeder) once again - the wirefeeder motors must be under load (push-pull calibration - engaged)



CAUTION!

Risk of injury from welding wire emerging at speed and from rotating cogs and drive parts.

Keep the welding torch away from your face and body. Keep hands away from rotating cogs and the wire drive.



- 7** Press the feeder inching or gas test button

The wirefeeder motors are calibrated while under load; during calibration, the right-hand display will read "run".

If the push-pull unit does not need to be calibrated while under load (St2), the previously set values (e.g. "PPU" and "2") will appear in the display when you press the feeder inching or gas test button.



Calibration of the push-pull unit is complete when the previously set values - e.g. "PPU" and "2" - reappear on the display.

- 8** Press the Store button twice to exit from the Setup menu

Service codes for push-pull calibration

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.
- ▶ 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.

Service codes shown when the drive units are disengaged (open-circuit calibration)

Err | Eto

Cause: Incorrect measurement during push-pull calibration

Remedy: Repeat push-pull calibration

St1 | E 1

Cause: At minimum wire speed, the cold wire feeder motor does not deliver any actual rotational speed value.

Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.

St1 | E 2

Cause: At maximum wire speed, the cold wire feeder motor does not deliver any actual rotational speed value.

Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.

St1 | E 3

Cause: At minimum wire speed, the cold wire feeder motor does not deliver any actual rotational speed value.

Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.

St1 | E 4

Cause: At minimum wire feed speed, the motor of the push-pull unit does not deliver any actual rotational speed value.

Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.

St1 | E 5

- Cause: At maximum wire speed, the cold wire feeder motor does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St1 | E 6

- Cause: At maximum wire feed speed, the motor of the push-pull unit does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

Service codes shown when the drive units are engaged (engaged calibration)

St1 | E 16

- Cause: Push-pull calibration was interrupted: Quick-stop was activated by pressing the torch trigger.
- Remedy: Repeat push-pull calibration
-

St2 | E 7

- Cause: "Push-pull calibration - open-circuit" has not been carried out
- Remedy: Carry out "push-pull calibration - open-circuit"
-

St2 | E 8

- Cause: At minimum wire feed speed, the wire-feed unit motor does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 9

- Cause: At minimum wire feed speed, the motor of the push-pull unit does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 10

- Cause: At minimum wire feed speed, the motor current of the wire-feed unit motor is outside the permitted range. Possible reasons are disengaged wire-feed unit motors or wire feed problems.
- Remedy: Engage the drive units of both wire-feed unit motors, arrange the hosepack in as straight a line as possible; check the inner liner for kinks or soiling; check the contact pressure on the 2-roller or 4-roller drive of the push-pull unit. Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 11

- Cause: At minimum wire feed speed, the motor current of the push-pull unit is outside the permitted range. Possible reasons are disengaged wire-feed unit motors or wire feed problems.
- Remedy: Engage the drive units of both wire-feed unit motors, arrange the hosepack in as straight a line as possible; check the inner liner for kinks or soiling; check the contact pressure on the 2-roller or 4-roller drive of the push-pull unit. Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 12

- Cause: At maximum wire feed speed, the wire-feed motor does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 13

- Cause: At maximum wire feed speed, the motor of the push-pull unit does not deliver any actual rotational speed value.
- Remedy: Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service (faulty actual-value pick-up)
-

St2 | E 14

- Cause: At maximum wire feed speed, the motor current of the wire-feed unit motor is outside the permitted range. Possible reasons are disengaged wire-feed unit motors or wire feed problems.
- Remedy: Engage the drive units of both wire-feed unit motors, arrange the hosepack in as straight a line as possible; check the inner liner for kinks or soiling; check the contact pressure on the 2-roller or 4-roller drive of the push-pull unit. Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service
-

St2 | E 15

- Cause: At maximum wire feed speed, the motor current of the push-pull unit is outside the permitted range. Possible reasons are disengaged wire-feed unit motors or wire feed problems.
- Remedy: Engage the drive units of both wire-feed unit motors, arrange the hosepack in as straight a line as possible; check the inner liner for kinks or soiling; check the contact pressure on the 2-roller or 4-roller drive of the push-pull unit. Repeat the push-pull calibration. If the error message re-appears: Contact After-Sales Service.
-

St2 | E 16

- Cause: Push-pull calibration was interrupted: Quick-stop was activated by pressing the torch trigger.
- Remedy: Repeat push-pull calibration
-

Service codes in conjunction with the cold wire feeder and digital gas control option

Service codes displayed in conjunction with the cold wire feeder

EFd | xx.x

Cause: Fault in the wire feed system (overcurrent in wire-feed unit drive)
Remedy: Arrange the hosepack in as straight a line as possible; check that there are no kinks or dirt in the inner liner; check the contact pressure on the 2-roller (or 4-roller) drive

Cause: Wire-feed unit motor is sticking or defective
Remedy: Check or replace the wire-feed unit motor

EFd | 8.2

Cause: Fault in the wirefeed system (overcurrent in push-pull unit drive)
Remedy: Arrange the hosepack in as straight a line as possible; check that there are no kinks or dirt in the inner liner; check the contact pressure on the 2-roller or 4-roller drive of the push-pull unit

EFd | 8.2

Cause: Fault in the wire feed system (overcurrent in wire-feed unit drive)
Remedy: Arrange the hosepack in as straight a line as possible; check that there are no kinks or dirt in the inner liner; check the contact pressure on the 2-roller (or 4-roller) drive

EFd | 9.1

Cause: The external supply voltage has dropped below the tolerance range
Remedy: Check the external supply voltage

Cause: Wire-feed unit motor is sticking or defective
Remedy: Check or replace the wire-feed unit motor

EFd | 9.2

Cause: The external supply voltage has exceeded the upper limit of the tolerance range
Remedy: Check the external supply voltage

EFd | 12.1

Cause: No actual rotational speed value from the wire-feed unit motor
Remedy: Check the actual-value pick-up and the cable connections to and from it, and replace if necessary

EFd | 12.2

Cause: No actual value rotational speed from the push-pull unit motor
Remedy: Check the actual-value pick-up and the cable connections to and from it, and replace if necessary

EFd | 15.1**Wire buffer empty**

Cause: Counter lever on main wire-feed unit open
Remedy: Close counter lever on main wire-feed unit
Acknowledge service code using Feeder inching button

Cause: Main wire-feed unit slipping
Remedy: Check wearing parts on wire-feed unit
Use suitable feed rollers
Decrease wire braking force
Increase contact pressure on main wire-feed unit
Acknowledge service code using Feeder inching button

Cause: End of wire reached
Remedy: Check whether sufficient wire is available
Acknowledge service code using Feeder inching button

EFd | 15.2**Wire buffer full**

Cause: Counter lever on push-pull unit open
Remedy: Close counter lever on push-pull unit
Acknowledge service code using Feeder inching button

Cause: Push-pull unit slipping
Remedy: Check wearing parts for wire feeding
Use suitable feed rollers
Increase contact pressure on the push-pull unit
Acknowledge service code using the Feeder inching button"

Cause: Arc not igniting due to inadequate ground (earth) connection
Remedy: Check the ground (earth) connection
Acknowledge service code using the Feeder inching button

Cause: Arc not igniting due to the wrong welding program setting
Remedy: Select wire diameter and material type in accordance with the material used (select a suitable welding program). Acknowledge service code using the Feeder inching button

EFd | 15.3**No wire buffer available**

Cause: Connection to wire buffer missing
Remedy: Check connection to wire buffer, check wire buffer control line

Err | 056

- Cause: The "Wire-end check" option has detected the end of the wire electrode
- Remedy: Insert a new wirepool and feed the wire electrode into the hosepack; acknowledge Err | 056 by pressing the Store button
-
- Cause: Additional fan filter of the KD 4000 D-11 is contaminated
air supply for the additional fan is no longer sufficient to cool the power electronics - the power electronics temperature switch has tripped
- Remedy: Clean filter or replace;
acknowledge Err | 056 by pressing the Store button
-
- Cause: Ambient temperature too high on the KD 4000 D-11
- Remedy: Reduce ambient temperature
if necessary position and operate welding machine at a cooler location;
acknowledge Err | 056 by pressing the Store button
-
- Cause: Excessive motor current on the KD 4000 D-11, e.g. due to wirefeed problems or an inadequately dimensioned wirefeeder for the application
- Remedy: Check wire feed conditions, rectify errors;
acknowledge Err | 056 by pressing the Store button
-

**Service codes
displayed in conjunction with the
digital gas control option**

Err | 70.X

- Cause: Fault in digital gas sensor
Err 70.1 ... Gas sensor not found
Err 70.2 ... No gas
Err 70.3 ... Calibration error
Err 70.4 ... Solenoid valve faulty
Err 70.5 ... Solenoid valve not found
- Remedy: Check gas supply
-

no | GAS

- Cause: The "Gas watchdog" option has detected that there is no gas pressure
- Remedy: Connect a new gas cylinder and open the gas cylinder valve/pressure regulator;
Acknowledge no | GAS by pressing the Store button
-

Care, maintenance and disposal

General remarks Under normal operating conditions, the wire-feed unit requires only a minimum of care and maintenance. However, some important points must be noted to ensure that the welding system remains in a usable condition for many years.



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.

Every start-up

- Check welding torch, interconnecting hosepack and ground earth connection for signs of damage
- Perform a visual check on the feed rollers and inner liners for signs of damage
- Check contact pressure of feed rollers and adjust if necessary
- Check brake and adjust if necessary

Every 6 months

- Dismantle device side panels and clean inside of device with dry, reduced compressed air



CAUTION!

Danger due to the effect of compressed air.

This can result in damage to property.

- ▶ Do not bring the air nozzle too close to electronic components.

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

Technical data

KD 4000 D-11	Supply voltage (supply from the power source)	55 V
	Current consumption	4 A
	Wire speed	0.1 - 11 m/min 3.94 - 433.07 ipm
	Wire drive	4-roller drive
	Wire diameter	0.8 - 3.2 mm 0.03 - 0.13 in.
	Wirespool diameter	max. 300 mm max. 11.81 in.
	Wirespool weight	max. 16 kg max. 35.27 lb.
	Wirespool types	all standardised wirespools
	Degree of protection	IP 23
	Dimensions l x w x h	650 x 290 x 410 mm 25.59 x 11.42 x 16.14 in.
	Weight	15.7 kg 34.61 lbs.
	Maximum shielding gas pressure	7 bar 101 psi
	Coolant	Original Fronius
	Maximum coolant pressure	6 bar 87 psi



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