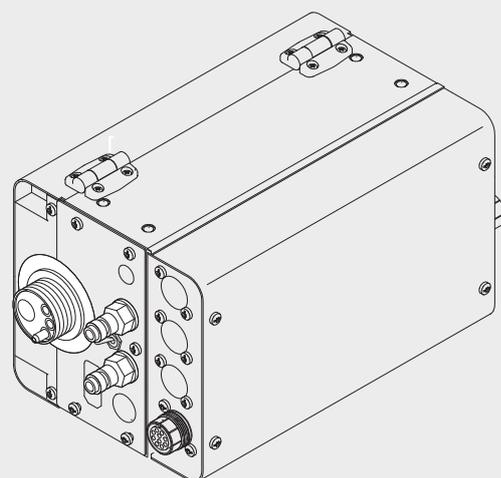


## KD 1500 D-11

Operating Instructions

EN

Wire-feed unit



42,0426,0033,EN 006-14052020



# Dear reader,

---

## Introduction

Thank you for the trust you have placed in our company and congratulations on buying this high-quality Fronius product. These instructions will help you familiarise yourself with the product. Reading the instructions carefully will enable you to learn about the many different features it has to offer. This will allow you to make full use of its advantages.

Please also note the safety rules to ensure greater safety when using the product. Careful handling of the product will repay you with years of safe and reliable operation. These are essential prerequisites for excellent results.

---

## 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.**

---



# Contents

Safety rules .....	7
General .....	7
Proper use .....	7
Environmental conditions .....	7
Obligations of the operator .....	8
Obligations of personnel .....	8
Mains connection .....	8
Protecting yourself and others .....	8
Noise emission values .....	9
Danger from toxic gases and vapours .....	9
Danger from flying sparks .....	10
Risks from mains current and welding current .....	10
Meandering welding currents .....	11
EMC Device Classifications .....	12
EMC measures .....	12
EMF measures .....	12
Specific hazards .....	13
Requirement for the shielding gas .....	14
Danger from shielding gas cylinders .....	14
Danger from escaping shielding gas .....	14
Safety measures at the installation location and during transport .....	15
Safety measures in normal operation .....	15
Commissioning, maintenance and repair .....	16
Safety inspection .....	16
Disposal .....	16
Safety symbols .....	16
Data protection .....	17
Copyright .....	17
General .....	18
Device concept .....	18
Application area .....	18
Warning notices on the device .....	18
Controls, connections and mechanical components .....	20
General .....	20
Cold wire feeder front .....	20
Cold wire feeder rear .....	21
Connect the cold wire feeder to the power source .....	23
General .....	23
Connect the cold wire feeder to the power source .....	23
Fitting the welding torch .....	25
Fit the welding torch .....	25
Inserting/replacing feed rollers .....	26
General .....	26
USA wirefeeders .....	26
inserting/replacing feed rollers .....	26
Feeding in the welding wire .....	27
Feeding in the welding wire .....	27
Set the contact pressure .....	28
Fitting wirefeeding hose for external welding wire .....	29
Fitting wirefeeding hose for external welding wire .....	29
Push-pull unit .....	30
General .....	30
Calibrating the push-pull unit .....	30
Service codes for push-pull calibration .....	32
Safety .....	32
Service codes shown when the drive units are disengaged (open-circuit calibration) .....	32
Service codes shown when the drive units are engaged (engaged calibration) .....	33
Service codes in conjunction with the cold wire feeder and digital gas control option .....	35
Service codes displayed in conjunction with the cold wire feeder .....	35
Service codes displayed in conjunction with the digital gas control option .....	37

Care, maintenance and disposal ..... 38  
    General ..... 38  
    Every start-up..... 38  
    Every 6 months ..... 38  
    Disposal ..... 38  
Technical data..... 39  
    KD 1500 D-11 ..... 39

# Safety rules

## 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 <sup>\*)</sup>
- Criteria with regard to the minimum short-circuit power requirement <sup>\*)</sup>

<sup>\*)</sup> 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 m<sup>3</sup> 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 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
  - 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/m<sup>3</sup>

---

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 m<sup>3</sup>/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.

---

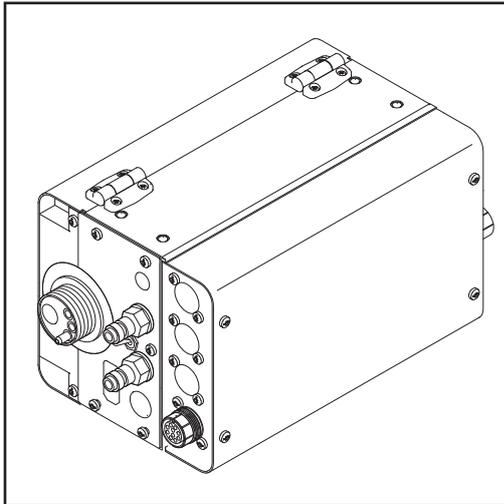
**Copyright**              Copyright of these operating instructions remains with the manufacturer.

---

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

## Device concept



The KD 1500 D-11 robot wirefeeder is provided as standard with a 4-roll drive with superb wirefeeding properties.

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

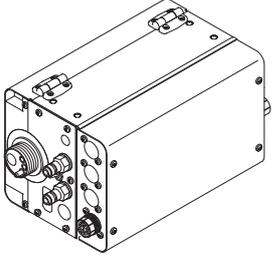
- TransTig 2200 / 2500 / 3000 Job
- TransTig 4000 / 5000 Job
- MagicWave 2200 / 2500 / 3000 Job
- MagicWave 4000 / 5000 Job

## Application area

The KD 1500 D-11 robot wirefeeder has been designed to be mounted on the robot arm. The cold wire feeder is suitable for all standard shielding gases.

## Warning notices on the device

The wire-feed unit has safety symbols on the rating plate. The 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.



 A-4600 Wels www.fronius.com	Type:	
	Art.No.:	
	Ser.No.:	
IEC 60 974-5	EN 50 199	IP 21
	U <sub>11</sub> 55 V	I <sub>11</sub> 4 A
	U <sub>12</sub> 24 V	I <sub>12</sub> 2 A
	0.1-11 m/min	I <sub>2</sub> 360A/100% 450A/60%
   		



Do not dispose of this device with normal domestic waste!



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

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



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
-

# Controls, connections and mechanical components

## General

### NOTE!

Due to firmware or software updates, you may find that your device has certain functions that are not described in these operating instructions or vice versa.

Certain illustrations may also differ slightly from the actual controls on your device, but these controls function in exactly the same way.



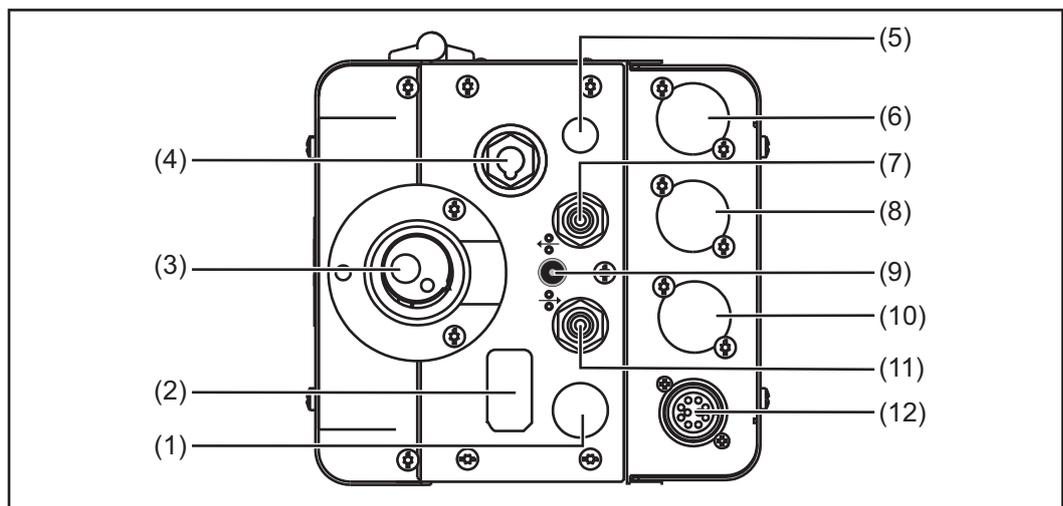
### WARNING!

**Operating the equipment incorrectly can cause serious injury and damage.**

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

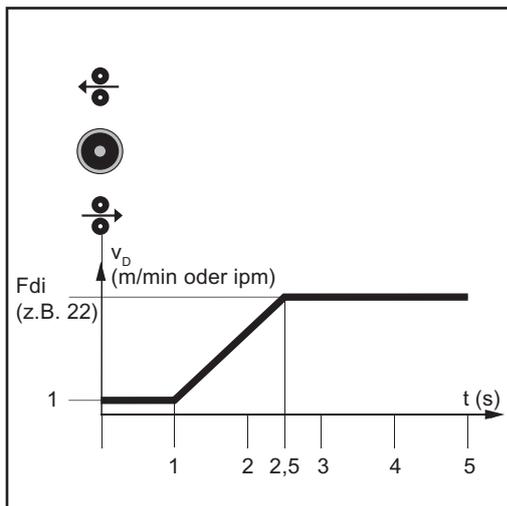
- ▶ these operating instructions
- ▶ all the operating instructions for the system components, especially the safety rules

## Cold wire feeder front



Item	Designation
(1)	Blanking cover
(2)	Blanking cover
(3)	Wirefeeding connection
(4)	Welding torch connection for connecting a TIG welding torch
(5)	Blanking cover
(6)	Blanking cover
(7)	Water return connection (red)
(8)	Blanking cover (optional KD drive)
(9)	"Feeder inching/feeder backward" button - Feeder inching: Push button downwards - Feeder backward: Push button upwards

**IMPORTANT!** 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:



- Hold the button for up to one second ... Irrespective of what value has been set, the wirefeed 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, the wirefeed speed increases at a uniform rate over the next 1.5 seconds.
- Hold the button for more than 2.5 seconds ... After 2.5 seconds, the wire is fed at a constant rate equal to the wirefeed speed set for the Fdi welding parameter.

**IMPORTANT!** For more information about the Fdi parameter, refer to the power source operating instructions.

If the welder releases the wire threading button (9) before 1 second has elapsed and then presses 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 necessary.

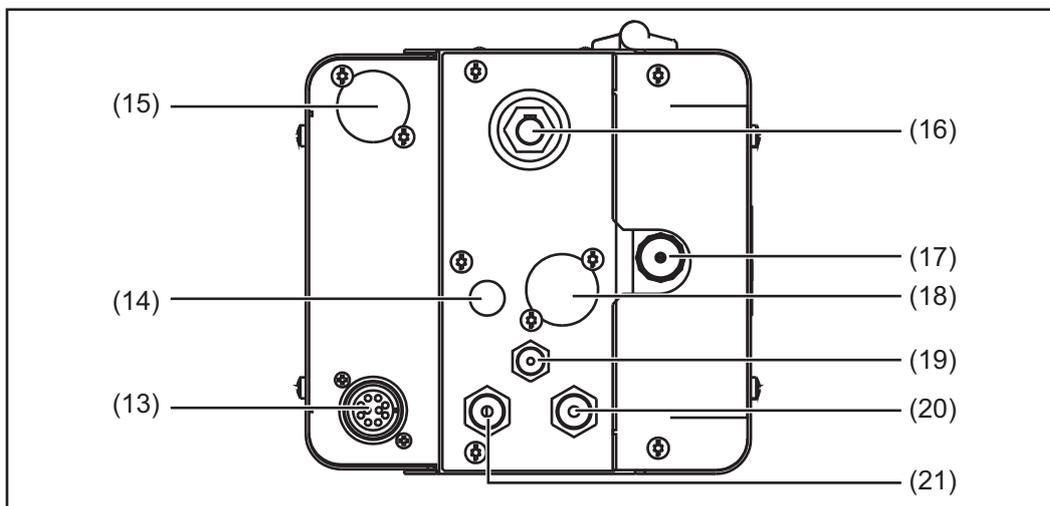
(10) **Blanking cover**

(11) **Water flow connection** (blue)

(12) **LocalNet connection socket**

standardised connection socket for the system add-ons

**Cold wire feeder rear**



**Item Designation**

(13) **LocalNet connection for interconnecting hosepack**

(14) **Blanking cover**

(15) **Blanking cover for optional wire-end connector**

(16) **(-) - socket with bayonet latch for interconnecting hosepack**

<b>Item</b>	<b>Designation</b>
<b>(17)</b>	<b>Wire infeed tube</b>
<b>(18)</b>	<b>Blanking cover</b>
<b>(19)</b>	<b>Shielding gas connection</b>
<b>(20)</b>	<b>Water return connection (red)</b>
<b>(21)</b>	<b>Water flow connection (blue)</b>

# Connect the cold wire feeder to the power source

## General

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

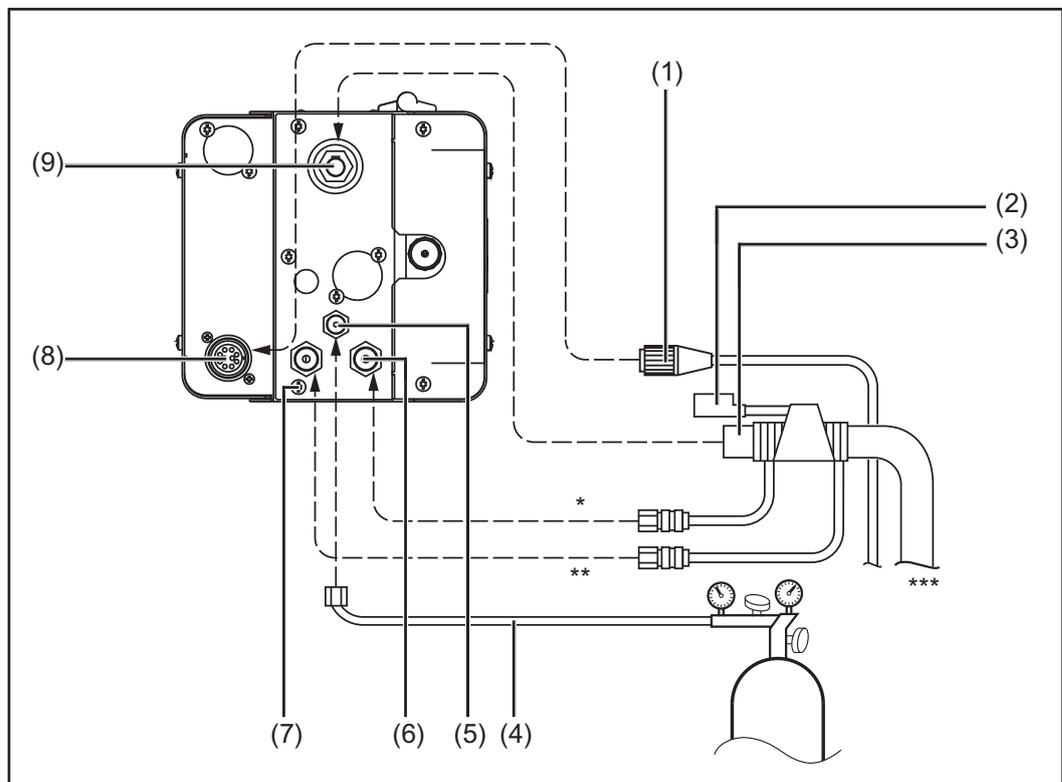
### NOTE!

**Risk of damage to the wirefeeding hose if it is attached to the hosepack.**  
Do not attach the wirefeeding hose to the hosepack under any circumstances.

## Connect the cold wire feeder to the power source

### ⚠ WARNING!

**Fitting the equipment incorrectly can cause serious injury and damage.**  
Do not carry out the steps described here until you have read and completely understood all the operating instructions.



\* red

\*\* blue

\*\*\* "Wirefeeder end" of interconnecting hosepack

- 1 turn the power source mains switch to the "O" position
- 2 Attach the interconnecting hosepack strain relief device if hosepack holder provided
- 3 Connect LocalNet plug (1) of interconnecting hosepack to LocalNet connection socket (8)
- 4 Tighten union nut on LocalNet plug
- 5 Insert welding potential bayonet plug (3) in (-) socket (9)
- 6 Turn welding potential bayonet plug to fasten it

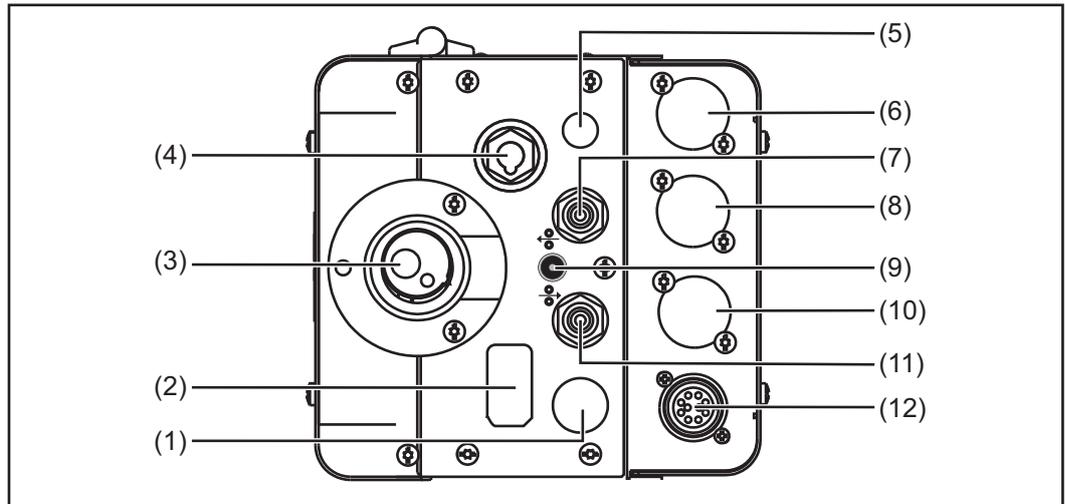
- 7 Plug gas hose (4) from gas cylinder pressure regulator into shielding gas connection (6)

**IMPORTANT!** If a CrashBox is fitted, insert control plug (2) into the socket provided on the welding torch.

- 8 Attach the colour-coded water return (blue) and water flow (red) hoses of the interconnecting hosepack to the appropriate connections (5) and (7)
- 9 Tighten union nuts on water feed and return hoses

# Fitting the welding torch

## Fit the welding torch



- 1** turn the power source mains switch to the "O" position
- 2** If present: connect colour-coded external water connections for water flow (11) and return (7)
- 3** Plug welding potential bayonet plug into current socket (4) and turn to fasten it
- 4** Insert the wirefeed, infeed tube first, into the wirefeeding connection (3)
- 5** Tighten the union nut by hand to fix in place

# Inserting/replacing feed rollers

## General

In order to achieve the best welding wire feed, the feed rollers must be suitable for the diameter and alloy of the wire being welded.

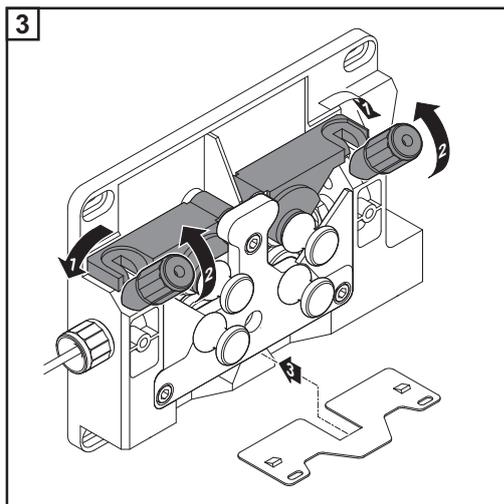
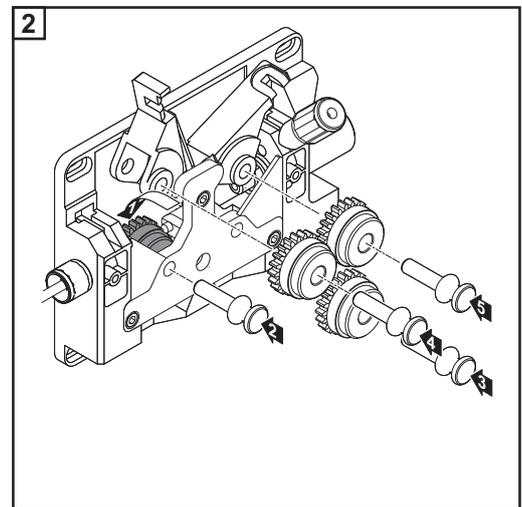
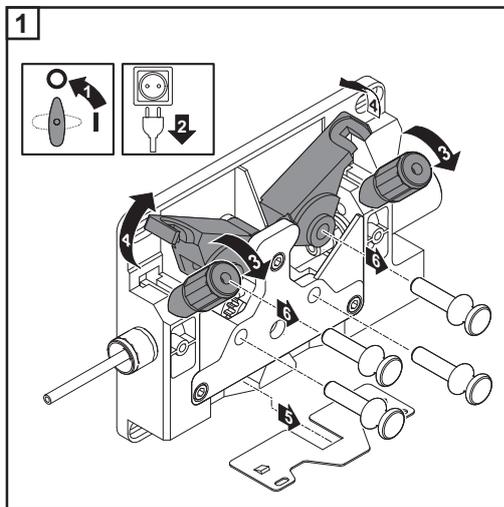
**IMPORTANT!** Use only feed rollers that are suitable for the welding wire in question.

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

## USA wirefeeders

In the USA, all cold wire feeders are delivered without feed rollers. After inserting the wire-spool the feed rollers must be inserted in the cold wire feeder.

## inserting/replacing feed rollers



# Feeding in the welding wire

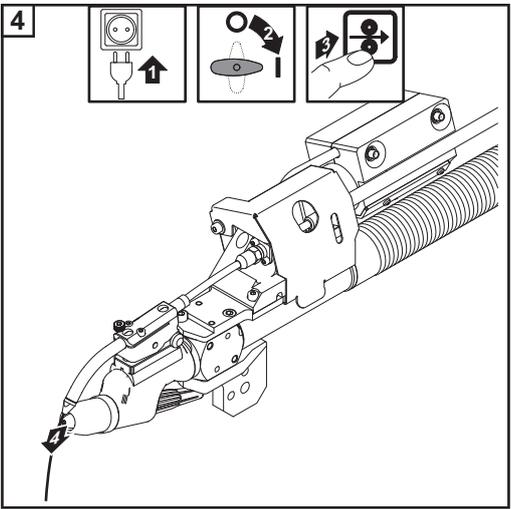
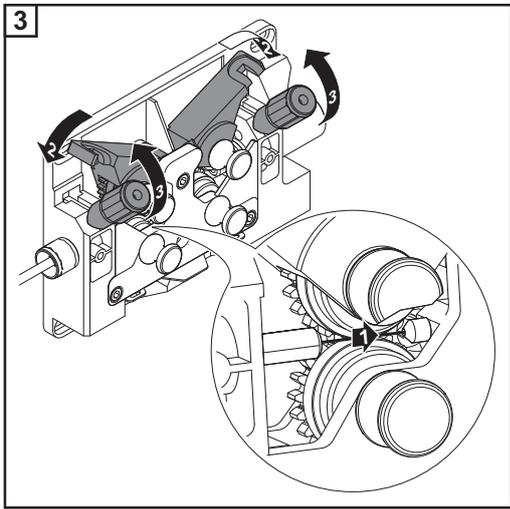
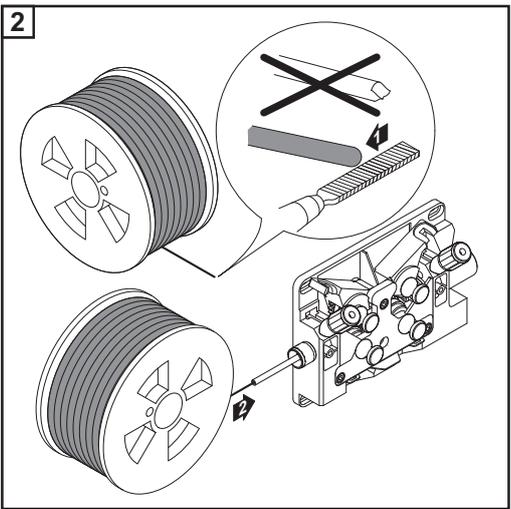
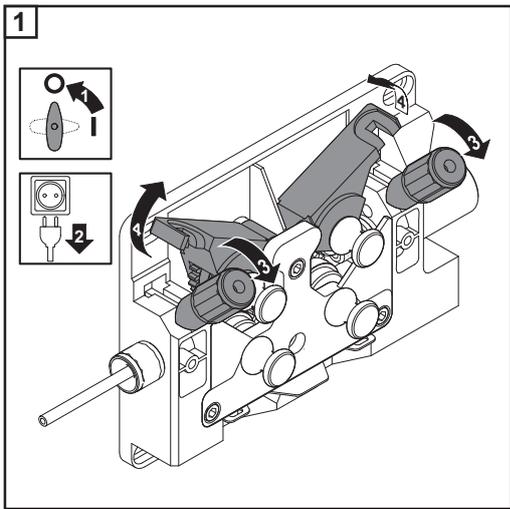
## Feeding in the welding wire

**⚠ CAUTION!**

**Risk of injury from the spring effect of the coiled welding wire.**  
While inserting the welding wire into the 4 roller drive, hold the end of the wire firmly to avoid injuries caused by the wire springing back.

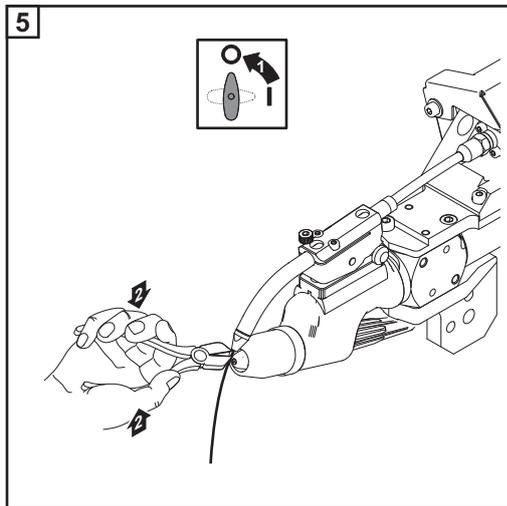
**⚠ CAUTION!**

**Risk of damage to the welding torch from sharp end of welding wire.**  
Thoroughly deburr the end of the welding wire before threading.

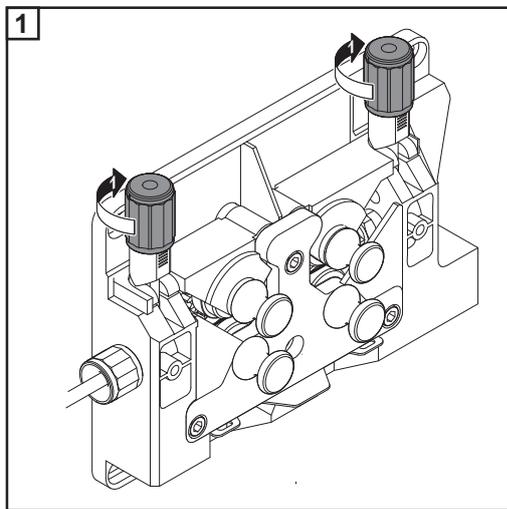


**⚠ CAUTION!**

**Risk of injury from emerging welding wire.**  
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 wire-feeding.

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	-

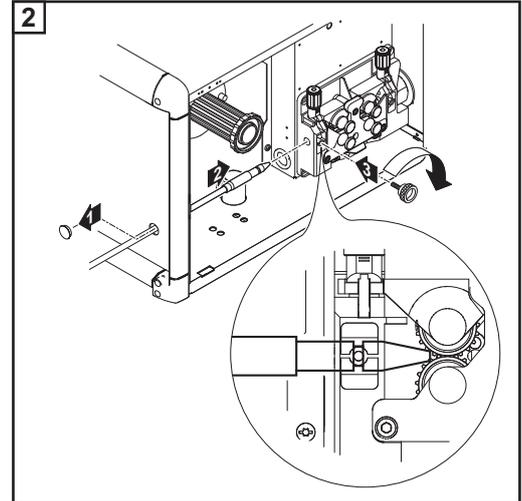
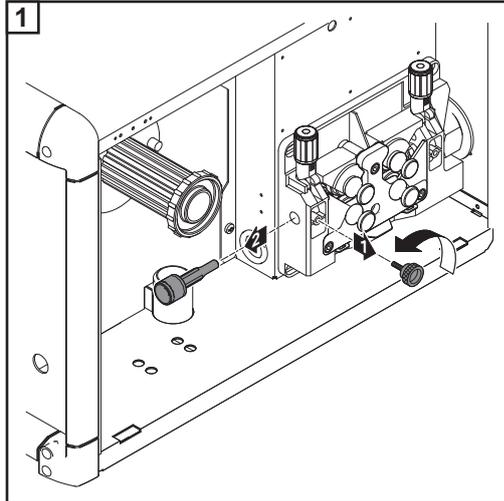
# Fitting wirefeeding hose for external welding wire

## Fitting wirefeeding hose for external welding wire

The wirefeeding hose option serves to protect the external welding wire while it is being conveyed to the 4 roller drive of the cold wire feeder.

The wirefeeding hose is available in two versions:

- for steel (blue)
- for aluminium (white)



# 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 wire-feeder 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!

**An electric shock can be fatal.**

Before opening the device:

- ▶ Move the mains switch to the "O" position
- ▶ Unplug the device from the mains
- ▶ Put up an easy-to-understand warning sign to stop anybody inadvertently switching it back on again
- ▶ Using a suitable measuring device, check that electrically charged parts (e.g. capacitors) have been discharged



### CAUTION!

**Inadequate PE conductor connections can cause serious injury and damage.**

The housing screws provide a suitable PE conductor connection for earthing (grounding) the housing and must NOT be replaced by any other screws which do not provide a reliable PE 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 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.

---

### St1 | E 2

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.

---

### St1 | E 3

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.

---

### St1 | E 4

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.

---

**St1 | E 5**

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.

**St1 | E 6**

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.

**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 | 8.1**

- 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 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 wirespool and feed the wire electrode into the hosepack;  
acknowledge Err | 056 by pressing the Store button

Cause: Additional fan filter of the VR 1500 - 11 / 12 / 30 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: Excessive ambient temperature on the VR 1500 - 11 / 12 / 30

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 VR 1500 - 11 / 12 / 30, e.g. due to wire feed problems or an adequately dimensioned wire-feed unit

Remedy: Check wire feed conditions, rectify errors;  
acknowledge Err | 056 by pressing the Store button

Cause: VR 1530 wire-feed unit cover open or interlock release handles not snapped into place

Remedy: Close VR 1530 wire-feed unit cover properly  
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

Under normal operating conditions the cold wire feeder 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!

#### An electric shock can be fatal.

Before opening the device:

- ▶ Shift the mains switch to the "Off" position
  - ▶ Unplug the device from the mains
  - ▶ Put up an easy-to-understand warning sign to stop anybody inadvertently switching it back on again
  - ▶ Using a suitable measuring instrument, check to make sure that electrically charged components (e.g. capacitors) have been discharged.
- 

## Every start-up

- Check welding torch, interconnecting hosepack and grounding (earthing) connection for signs of damage
  - Check feed rollers and inner liners for signs of damage
  - Check contact pressure of feed rollers and adjust if necessary
  - Check that all screw connections between the robot, wirefeeder mount and wire-feed unit are secure
- 

## Every 6 months

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

### NOTE!

#### Risk of damage to electronic components.

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 1500 D-11

Supply voltage	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.)
Degree of protection	IP 23
Dimensions l x w x h	400 x 300 x 205 mm 15.75 x 11.81 x 8.07 in.
Weight	8 kg (174.64 lb)
Maximum shielding gas pressure	7 bar (101 psi)
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar (87 psi)

**FRONIUS INTERNATIONAL GMBH**

Froniusstraße 1  
A-4643 Pettenbach  
AUSTRIA  
contact@fronius.com  
**www.fronius.com**

Under **www.fronius.com/contact** you will find the addresses  
of all Fronius Sales & Service Partners and locations.



Find your  
spareparts online



spareparts.fronius.com