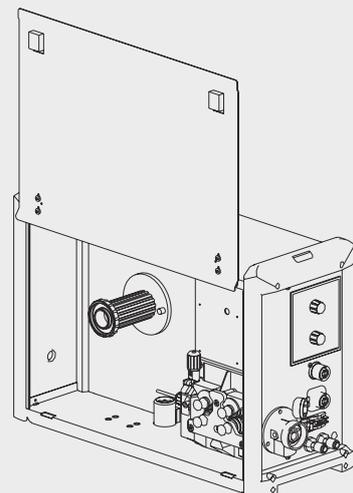


VR 7000
VR 7000-11
VR 7000-30
VR 7000 CMT

EN

Operating instructions

Wire-feed unit



42,0426,0015,EN 006-21092021

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Safety rules

Explanation of safety notices

DANGER!

Indicates **immediate danger**.

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

WARNING!

Indicates a **potentially hazardous situation**.

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

CAUTION!

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

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

NOTE!

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

General

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

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

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

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

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

All safety and danger notices on the device

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

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

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

This is for your personal safety!

Proper use

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

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

Proper use includes:

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

Never use the device for the following purposes:

- Thawing out pipes
 - Charging batteries
 - Starting engines
-

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

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

Environmental conditions

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

Ambient temperature range:

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

Relative humidity:

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

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

Obligations of the operator

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

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

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

Obligations of personnel

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

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

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

Mains connection

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

This may affect a number device types in terms of:

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

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

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

IMPORTANT! Ensure that the mains connection is earthed properly

Protecting yourself and others

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

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

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

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

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

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

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

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

Noise emission values

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

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

Danger from toxic gases and vapours

The fumes produced during welding contain harmful gases and vapours.

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

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

Keep your face away from welding fumes and gases.

Fumes and hazardous gases

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

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

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

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

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

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

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

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

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

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

Danger from flying sparks

Flying sparks may cause fires or explosions.

Never weld close to flammable materials.

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

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

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

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

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

Risks from mains current and welding current

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

If necessary, provide adequate earthing for the workpiece.

Switch off unused devices.

Wear a safety harness if working at height.

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

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

After opening the device:

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

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

Meandering welding currents

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

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

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

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

Position the device with sufficient insulation against electrically conductive environments, e.g. Insulation against conductive floor or insulation to conductive racks.

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

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

EMC Device Classifications

Devices in emission class A:

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

Devices in emission class B:

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

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

EMC measures

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

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

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

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

Supporting measures for avoidance of EMC problems:

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

5. Shielding, if necessary
 - Shield off other nearby devices
 - Shield off entire welding installation

EMF measures

Electromagnetic fields may pose as yet unknown risks to health:

- effects on the health of others in the vicinity, e.g. wearers of pacemakers and hearing aids
- wearers of pacemakers must seek advice from their doctor before approaching the device or any welding that is in progress
- for safety reasons, keep distances between the welding cables and the welder's head/torso as large as possible
- do not carry welding cables and hosepacks over the shoulders or wind them around any part of the body

Specific hazards

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

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

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

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

During operation

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

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

Therefore always keep the welding torch away from the body (devices with wire-feed unit) and wear suitable protective goggles.

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

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

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

Special provisions apply in areas at risk of fire or explosion - observe relevant national and international regulations.

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

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

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

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

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

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

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

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

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

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

Requirement for the shielding gas

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

Meet the following requirements regarding shielding gas quality:

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

Use filters if necessary.

Danger from shielding gas cylinders

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

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

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

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

Never hang a welding torch on a shielding gas cylinder.

Never touch a shielding gas cylinder with an electrode.

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

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

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

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

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

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

Danger from escaping shielding gas

Risk of suffocation from the uncontrolled escape of shielding gas

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

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

Safety measures at the installation location and during transport

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

- The maximum permissible tilt angle is 10°.

Special regulations apply in rooms at risk of fire or explosion

- Observe relevant national and international regulations.
-

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

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

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

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

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

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

- Wirefeeder
 - Wirespool
 - Shielding gas cylinder
-

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

Safety measures in normal operation

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

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

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

Never bypass or disable safety devices.

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

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

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

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

Only use suitable original coolant from the manufacturer.

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

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

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

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

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

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

Commissioning, maintenance and repair

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

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

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

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

Safety inspection

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

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

A safety inspection should be carried out by a qualified electrician

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

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

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

Disposal

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

Safety symbols

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

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

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

Data protection

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

Copyright

Copyright of these operating instructions remains with the manufacturer.

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

General

Device concept



VR 7000 / VR 7000-11 / VR 7000-30 wirefeeder



VR 7000 CMT wire-feed unit

The wirefeeders of the VR 7000 series are designed to be used with wirespools of max. 300 mm (11.81 in.) diameter. The wirespool holder is located inside the wirefeeder housing. The wirespool is thus protected from soiling.

The standard 4 roller drive has good wire feeding properties. The VR 7000-series wirefeeders are also suitable for use with long hosepacks.

Thanks to their compact overall design, the VR 7000 wirefeeders can be used in a wide variety of different situations.

REQUIREMENTS

The VR 7000 wirefeeders can be operated with the following power sources:

- TransSynergic 4000 / 5000 / 7200 / 9000
- TransPuls Synergic 3200 / 4000 / 5000 / 7200 / 9000
- TransPuls Synergic 2700 Duo
- TransPuls Synergic 2700 Duo TIG

The "CMT (Cold Metal Transfer)" welding process is only possible with the VR 7000 CMT in conjunction with an appropriate CMT power source and CMT drive unit.

Application area

- VR 7000: for all types of MIG/MAG welding
- VR 7000-11, VR 7000-30: primarily used with TS/TPS 7200 and TS/TPS 9000 high-performance power sources
- VR 7000-11: also for flux core wire applications
- VR 7000 CMT: for "CMT" welding process, for all types of MIG/MAG welding

All variants of the VR 7000 are suitable for all standard shielding gases.

NOTE!

The VR 7000-11 and VR 7000-30 wirefeeders have a water-cooled electric motor with shrunk-on-disc rotor, and may only be operated in conjunction with an appropriate cooling unit.

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.

IEC 60974-5		EN 50 199		IP 23	
=	U ₁₁	55 V	I ₁₁	4 A	
	U ₁₂	24 V	I ₁₂	2 A	
⊘	0,5-22 m/min		I ₂ 360 A/100% 450 A/60%		
CE		!		📖	




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

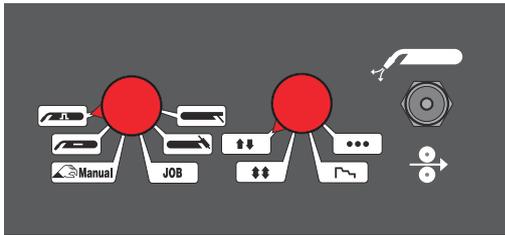


Welding is dangerous. The following basic requirements must be met:

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

Options

"Mode" switch option



Detailed view of "Mode" switch option

The "mode" switch enables the processes and modes to be selected on site; the "gas test" and "wire threading" functions can also be carried out on site.

NOTE!

The "Mode" switch option cannot be used:

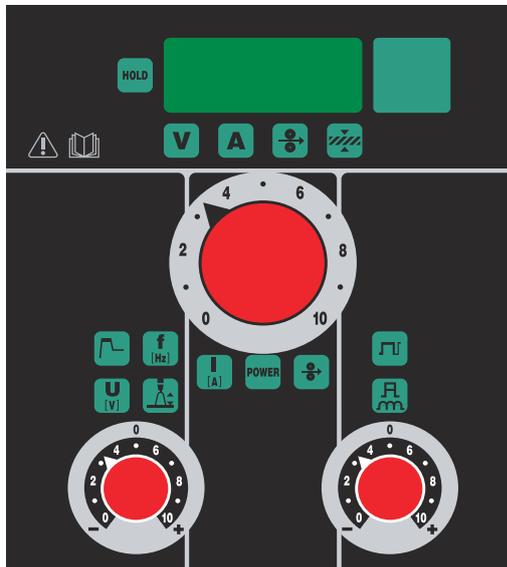
- ▶ if the wirefeeder is fitted with the VR 4000 digital display.
- ▶ on the VR 7000 CMT.

VR 4000 Ci control panel option and VR 4000 digital display option

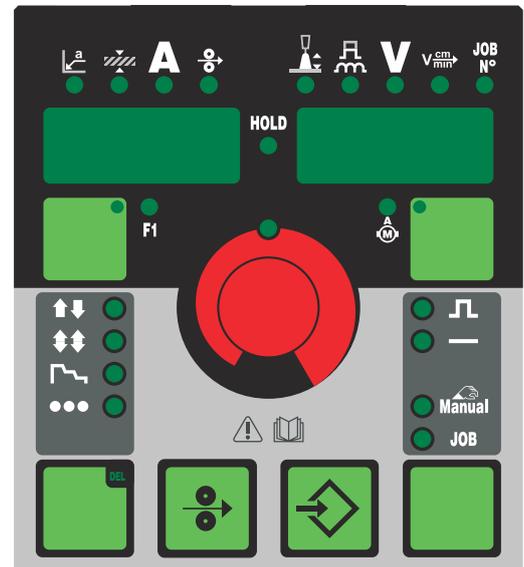
The wirefeeder can be fitted with the following control panels as an alternative to the "Standard" control panel:

- VR 4000 Ci control panel
- VR 4000 digital display

Please refer to the installation instructions for a detailed description of the optional control panels



VR 4000 Ci control panel option



VR 4000 digital display option

IMPORTANT! On the VR 7000 CMT, the optional VR 4000 Ci and VR 4000 control panels are used exclusively to display actual values. Parameters cannot be adjusted via the optional control panels and the RCU 5000i remote control.

Optional installation and conversion kits

Robacta Drive installation kit

for retrofitting a connection socket for the Robacta Drive robot welding torch
Standard on VR 7000 CMT

Push-pull unit installation kit

for subsequent installation of a push-pull unit
Standard on VR 7000 CMT

Digital gas control

for subsequent installation of the digital gas control

900 A installation kit

so subsequent retrofitting, so that the VR 7000-11 and VR 7000-30 are suitable for a welding current of 900 A
VR 7000-11 and VR 7000-30 only

Gas economiser valve installation kit

for subsequent installation of a gas economiser valve

Plastic-to-metal adapter installation kit

for subsequent changeover from plastic to metal connection sockets

Gas test/wire threading installation kit

for retrofitting of a rocker switch for gas test and wire threading
Standard on VR 7000 CMT

Trabant

for installing the wire-feed unit on the Trabant trolley

Fixable tensioning lever installation kit

for retrofitting a fixable tensioning lever so that contact pressure cannot be accidentally adjusted

Gas nozzle touch sensor installation kit

for retrofitting with the gas nozzle touch sensor option (recognises when gas nozzle touches workpiece, used mainly in robot welding)

Wire-end connector installation kit

for subsequent installation of the optional wire-end connector (power source switches off at the end of the wire)

Wire-end check installation kit

retrofitting of wire end monitoring (advance warning before end of wire electrode)

VR 143-2 intermediate drive adapter installation kit:

for retrofitting an adapter for the VR 143-2 intermediate drive in conjunction with the push-pull unit
VR 7000, VR7000-11 and VR7000-30 only

Torch blow-off basic installation kit:

for retrofitting with torch blow-off basic option (blowing the welding torch with compressed air during cleaning mode)

Torch blow-off High End installation kit:

for retrofitting with torch blow-off High End option (blowing the welding torch with compressed air (15 bar) during cleaning mode)

VR mount for upright console

to hold wire-feed unit when power source is fastened to an upright console

QuickConnect option

for simple installation of a wirefeeding hose between external wire electrode and wire-feed unit 4-roller drive

Wirefeeding hose option

for protected transport of the wire electrode to the wirefeeder 4-roller drive

Controls and indicators

Safety



WARNING!

Danger due to incorrect operation and incorrectly performed work.

This can result in serious injury and damage to property.

- ▶ Read and understand this document.
- ▶ Read and understand all the Operating Instructions for the system components, especially the safety rules.

General

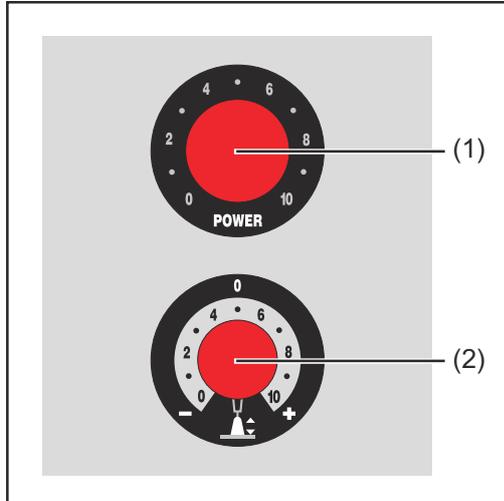
Setting parameters at control panels is only possible in manual welding mode.

In the automated welding mode or in robot welding, the robot control provides the set values for the welding parameters. Specifying command values via control panels is not possible in automated welding mode or in robot welding.

IMPORTANT!

Welding parameters that must be entered on a wire-feed unit control panel cannot be changed on the power source. Welding parameters can only be changed on the wire-feed unit.

Standard control panel



Standard control panel

(1) Welding power/wire speed adjuster

- **Setting the welding power** (during MIG/MAG pulse synergic welding, MIG/MAG standard synergic welding)
- **Setting the wire speed** (during MIG/MAG standard manual welding)

(2) Arc length/arc-force dynamic adjuster

has a different function depending on the welding process being used

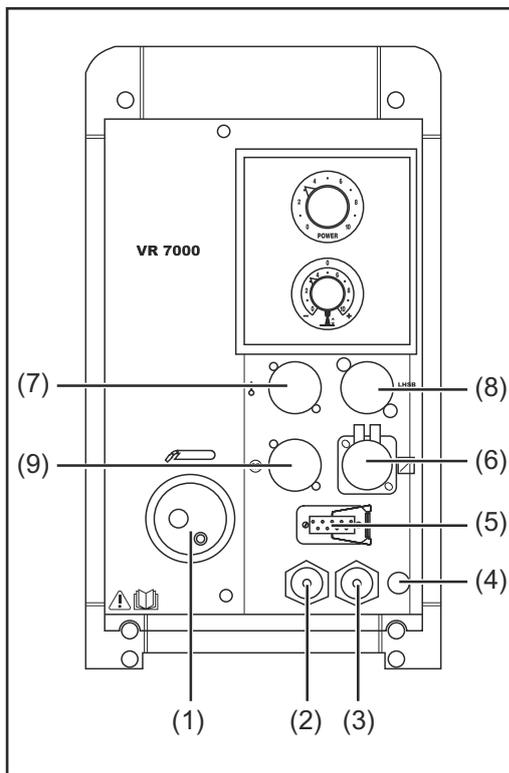
- **Correcting the arc length**
(during MIG/MAG pulse synergic welding, MIG/MAG standard synergic welding)
 - = shorter arc length
 - 0 = neutral arc length
 - + = longer arc length

 - **Setting the welding voltage**
(during MIG/MAG standard manual welding)

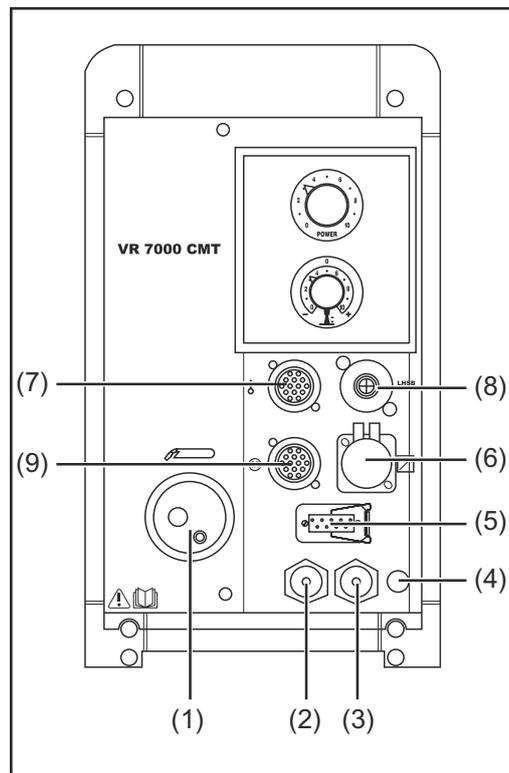
 - **Influencing the short circuit amperage at the instant of droplet transfer**
(during MMA welding)
 - 0 = soft, low-spatter arc
 - 100 = harder and more stable arc
-

Connections and mechanical components

Front of wirefeeder



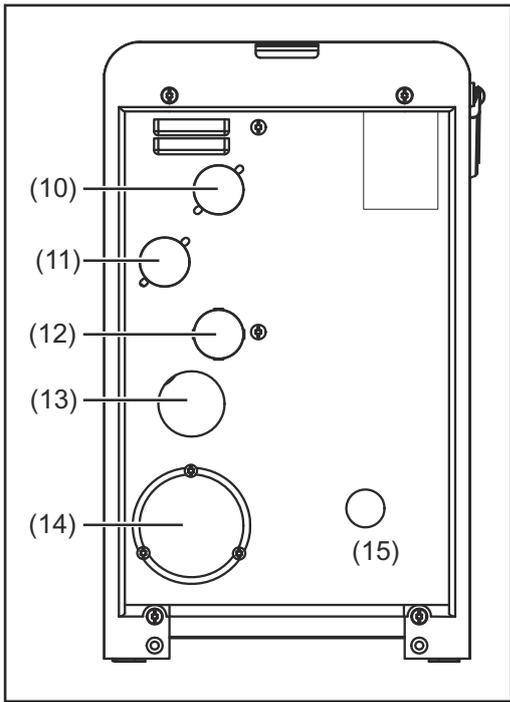
VR 7000 / VR 7000-11 / VR 7000-30



VR 7000 CMT

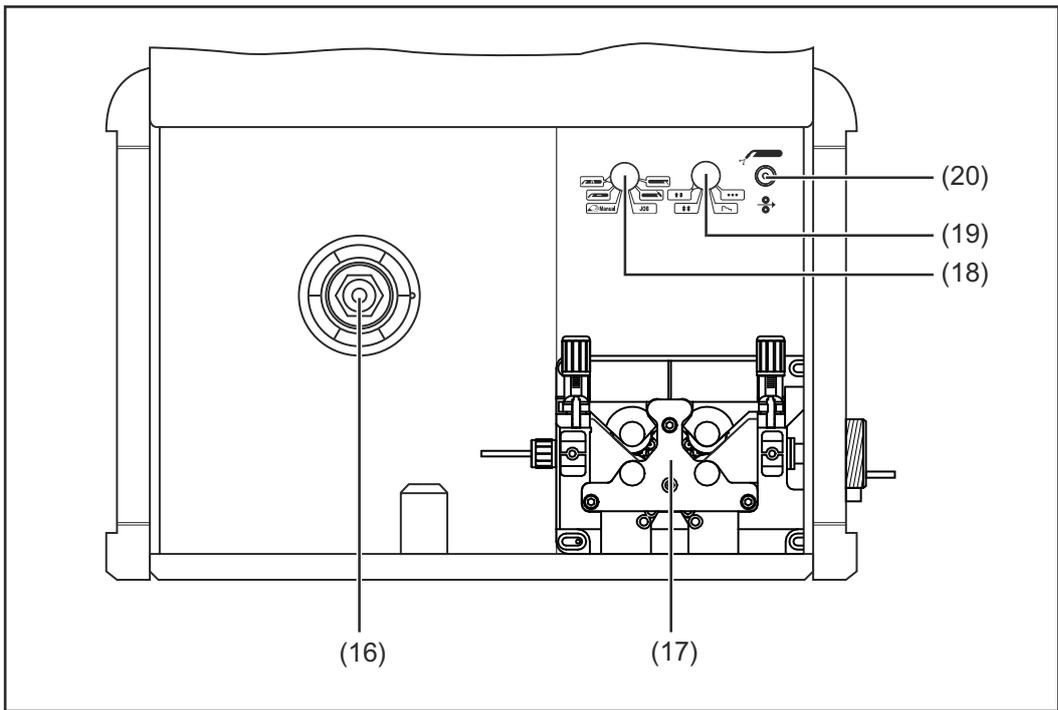
- | | |
|-----|--|
| (1) | Welding torch connection
for connecting the welding torch |
| (2) | Water return connection (red) |
| (3) | Water flow connection (blue) |
| (4) | Blanking cover
HighEnd blow-off option |
| (5) | Torch control connection
for connecting the torch control plug |
| (6) | LocalNet connection
standardised connection socket for system add-ons (e.g. remote control, Job-Master torch, etc.) |
| (7) | Blanking cover on VR 7000, VR 7000-11, VR 7000-30
Wire buffer connection on VR 7000 CMT
4-pin amphenol socket for connecting the wire buffer |
| (8) | Blanking cover on VR 7000, VR 7000-11, VR 7000-30
LHSB CMT drive unit connection on VR 7000 CMT
for connecting the LHSB cable from the welding torch, incl. power supply of the CMT drive unit |
| (9) | Blanking cover on VR 7000, VR 7000-11, VR 7000-30
Connection for Robacta Drive option, 14-pin amphenol socket
(standard on VR 7000 CMT) |

Rear of wire-feed unit



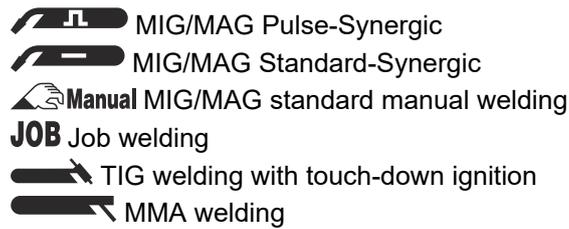
- (10) Blanking cover
- (11) Blanking cover
Optional gas economiser valve
- (12) Blanking cover
Current socket for optional
installation kit 900 A for VR
7000-11 and VR 7000-30
- (13) Bushing for compressed air
- (14) Bushing for interconnecting
hosepack
- (15) Bushing for external wire elec-
trode

Wirefeeder left side



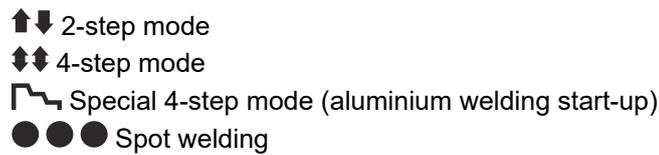
- (16) Wirespool holder with brake
for attaching standardised wirespools up to max.16 kg (35.27 lbs.) and with a
maximum diameter of 300 mm (11.81 in.)
- (17) 4 roller drive

-
- (18) Process selector switch¹⁾
for selecting the following welding processes:



IMPORTANT! If the VR 7000 wirefeeder is connected to a TS 4000/5000 power source, MIG/MAG pulse synergic welding is not available.

- (19) Mode selector switch¹⁾
for selecting the following operating modes:



-
- (20) "Gas-test/wire threading" button¹⁾

Press the button down:
thread the wire electrode into the torch hosepack without any flow of shielding gas or current. While the button is held down, the wire-feed unit runs at feeder inching speed.

Press the button up:
set the required gas-flow rate on the pressure regulator. As long as the button is pressed up, gas flows out.

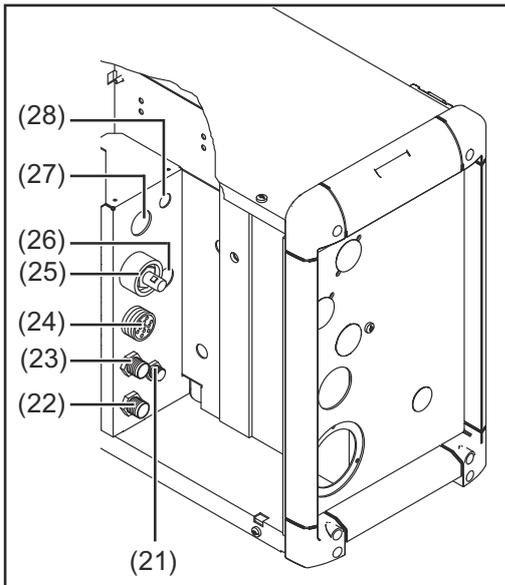
The "Gas-test/wire threading" button (20) can also be installed as a separate option on the VR 7000.

- 1) "Mode selection switch" option

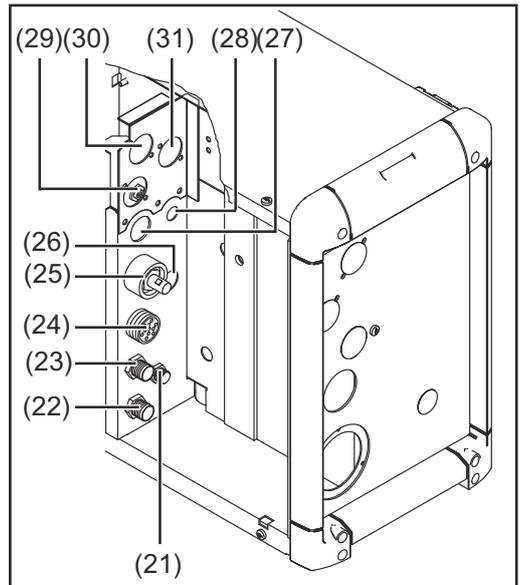
IMPORTANT! Settings made on the mode selection switch cannot be altered on other controls, e.g.:

- on the power source control panel
- the front of the wirefeeder
- the remote control

Wirefeeder right side



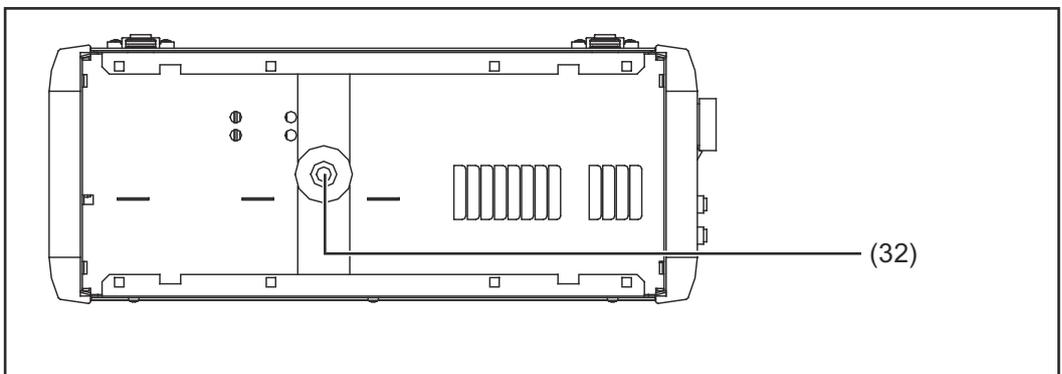
VR 7000 / VR 7000-11 / VR 7000-30



VR 7000 CMT

- (21) Shielding gas connection for interconnecting hosepack
- (22) Water flow connection (blue) for interconnecting hosepack
- (23) Water return connection (red) for interconnecting hosepack
- (24) LocalNet connection for interconnecting hosepack
- (25) (+) current socket with bayonet latch for interconnecting hosepack
- (26) Blanking cover
- (27) Blanking cover
- (28) Blanking cover
- (29) LHSB connection for CMT interconnecting hosepack
- (30) Blanking cover
- (31) Blanking cover

Wire-feed unit underside



- (32) Socket for swivel pin for placing the wirefeeder on the swivel pin of the swivel pin holder

Placing wire-feed unit on power source

General

The wire-feed units can be placed on the power source if a swivel pin holder is available, e.g.:

- "PickUp" swivel pin receptor, for use with the "PickUp" trolley
- "narrow" swivel pin receptor, for use with an upright console
- "wide" swivel pin receptor, for use with two screwed upright consoles and two power sources

More detailed information on the swivel pin receptors can be found in the "Swivel pin receptors for upright consoles" and "PickUp" operating instructions.

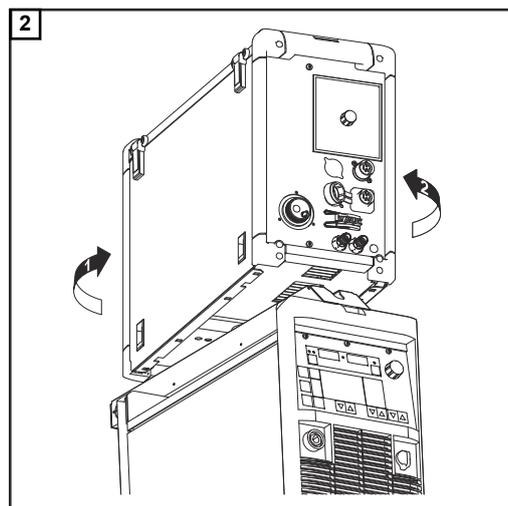
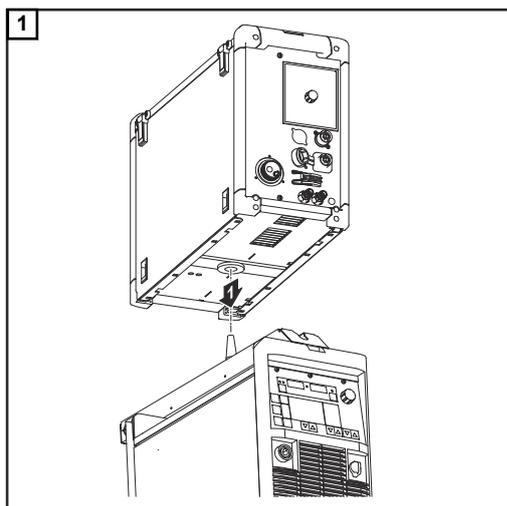
Placing wire-feed unit on power source

CAUTION!

Danger from falling wire-feed unit.

This can result in serious injury and damage to property.

- ▶ Check that the wirefeeder is securely placed on the swivel pin.



Connecting wire-feed unit to power source

General

The wirefeeder is connected to the power source using the interconnecting hosepack. For the "CMT" welding process, a special CMT interconnecting hosepack with additional LHSB cable is required for connecting the VR 7000 CMT to the CMT power source.

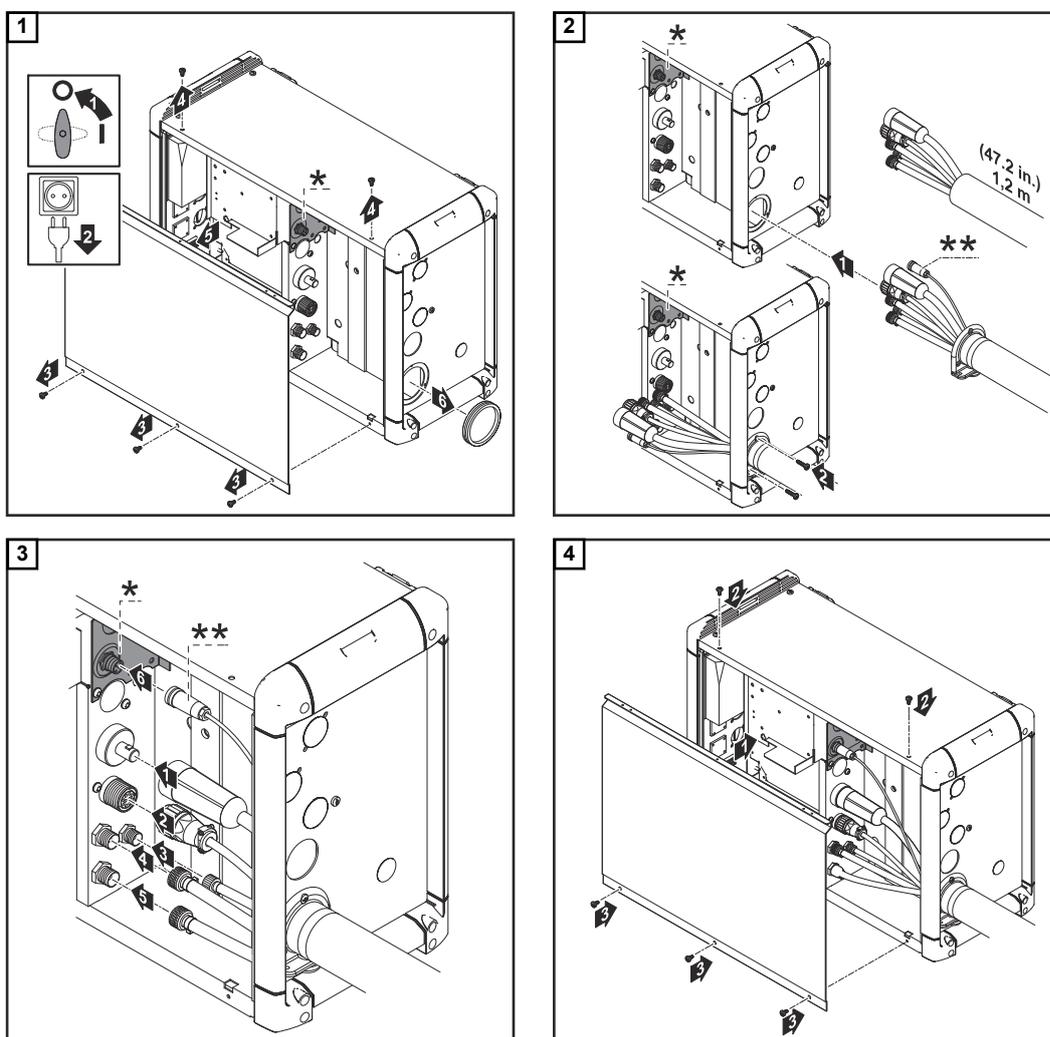
Connecting the wirefeeder to the power source

WARNING!

Danger due to incorrect operation and incorrectly performed work.

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.



* On the VR 7000 CMT only

** LHSB cable, on CMT interconnecting hosepack only

NOTE!

When connecting the interconnecting hosepack, check that

- ▶ all connections are connected properly
- ▶ all cables, leads and hosepacks are undamaged and correctly insulated.

Connecting the welding torch

Welding torch connections

	Fronius F++	Euro connection	for Dinse
VR 7000	X	X	X
VR 7000-11	X	(X)	-
VR 7000-30	X	(X)	-
VR 7000 CMT	X	-	-

(X) ... up to max 500 A

NOTE!

When using a welding current over 500 A, only operate wirefeeders VR 7000-11 and VR 7000-30 with Fronius welding torches that are adequately dimensioned for the welding torch F++ connection.

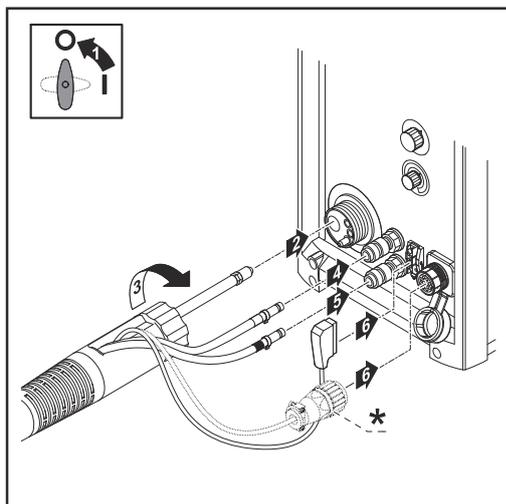
Safety

NOTE!

When connecting the welding torch, check that

- ▶ all connections are connected properly
- ▶ all cables, leads and hosepacks are undamaged and correctly insulated.

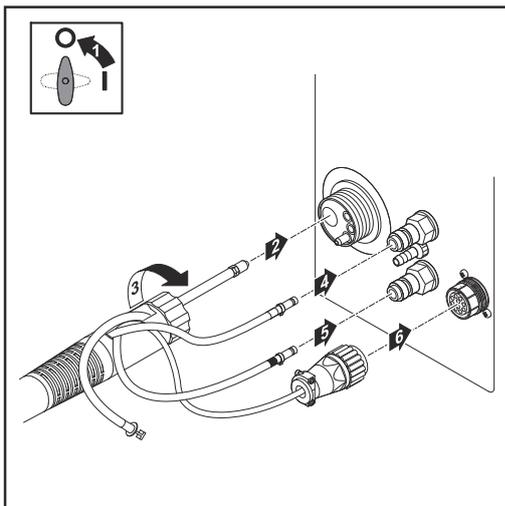
Connecting MIG/MAG manual welding torch



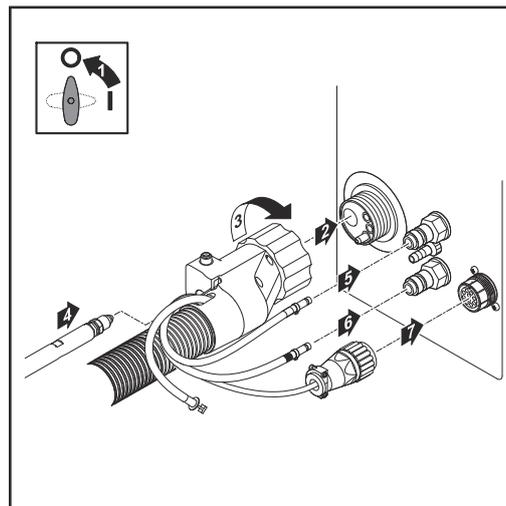
* The MIG/MAG manual welding torch control plug comes in two versions:

- as a "Tuchel" plug
- as a LocalNet plug, e.g. on JobMaster welding torches

Connecting the MIG/MAG robot welding torch, connecting the automatic MIG/MAG welding torch

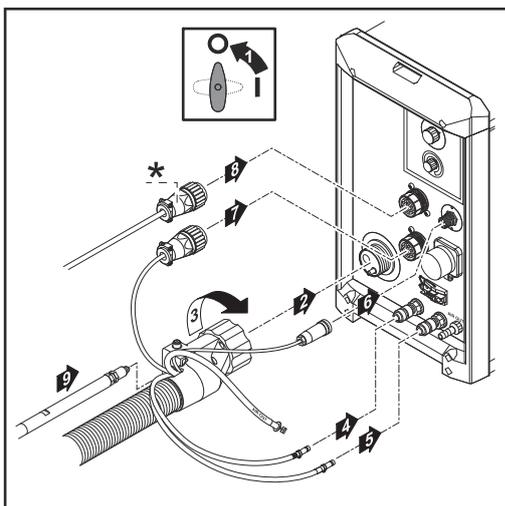


MIG/MAG robot welding torch (e.g.: Robacta Drive)



MIG/MAG robot welding torch with external wirefeeding hose (e.g. Robacta Drive ext. DFS)

Connecting the CMT drive unit



* Control plug for wire buffer

Inserting/replacing feed rollers

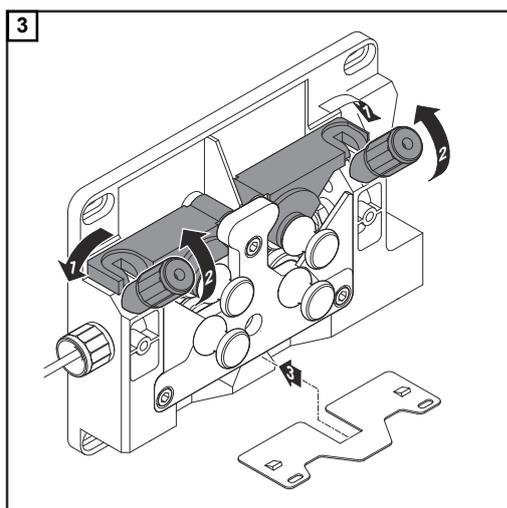
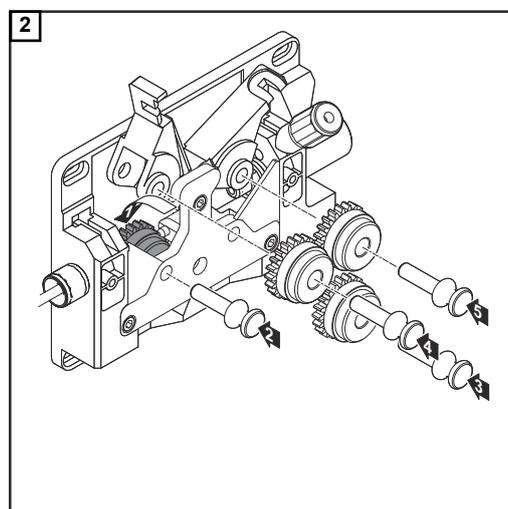
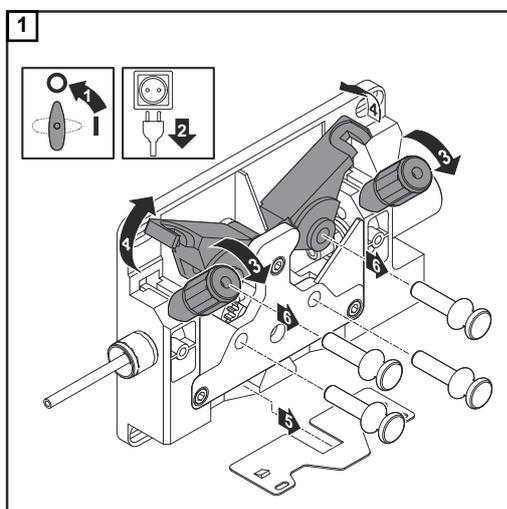
General remarks In order to achieve optimum wire electrode feed, the feed rollers must be suitable for the diameter and alloy of the wire being welded.

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 wirepool, 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.

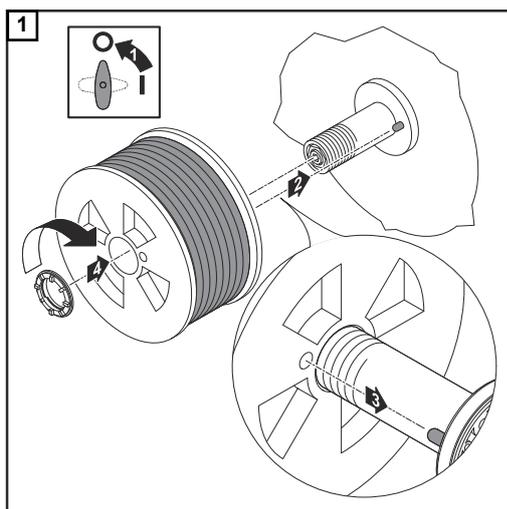
CAUTION!

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



Inserting the basket-type spool

NOTE!

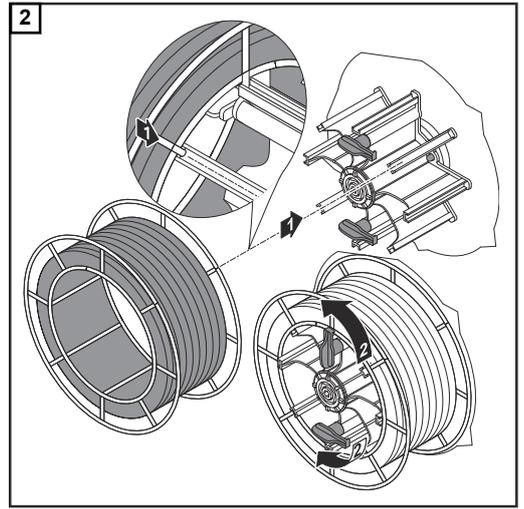
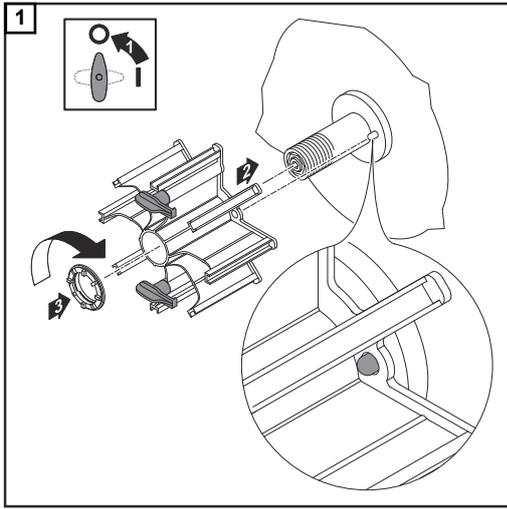
When working with basket-type spools, use only the basket-type spool adapter supplied with the wire-feed unit! USA wire-feed units are supplied without basket-type spool adapters.

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

Feed in the wire electrode

⚠ CAUTION!

Danger from springiness of spooled wire electrode.

This can result in severe injuries.

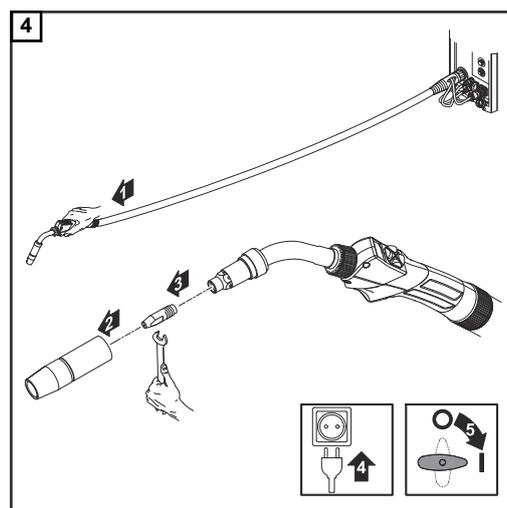
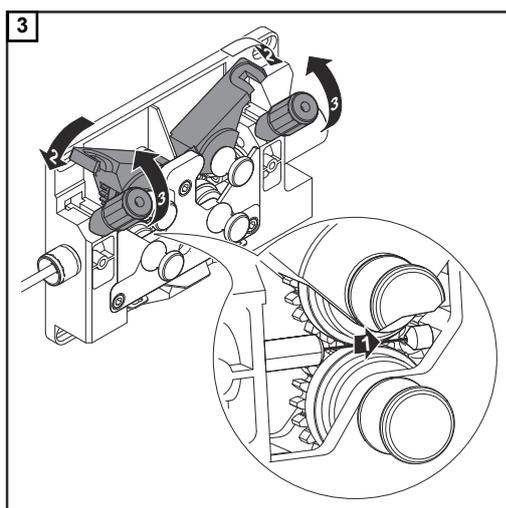
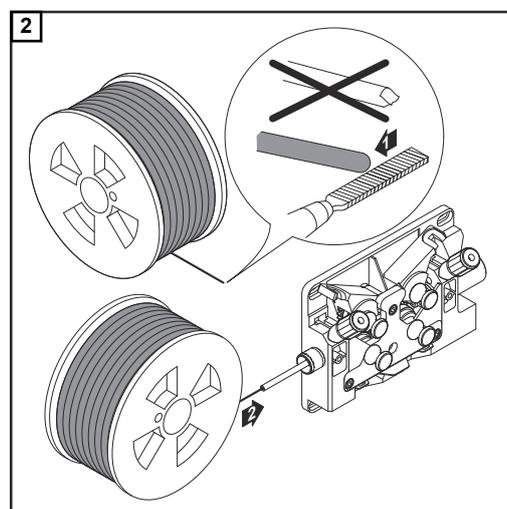
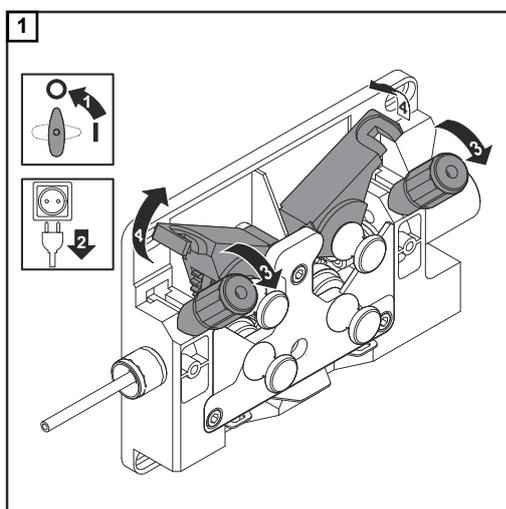
- ▶ When inserting the wire electrode into the 4 roller drive, hold the end of the wire electrode firmly to avoid injuries caused by the wire springing back.

⚠ 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 feeding in.

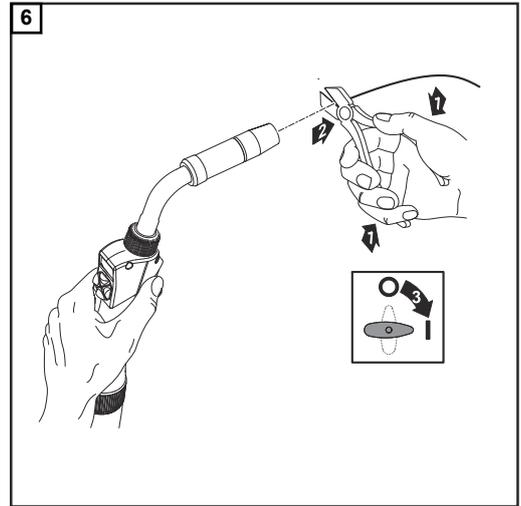
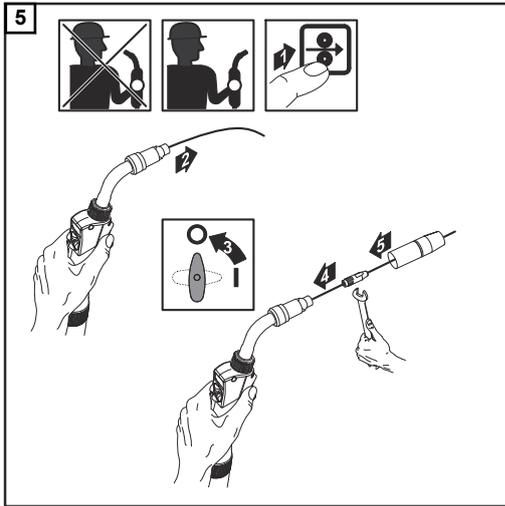


⚠ CAUTION!

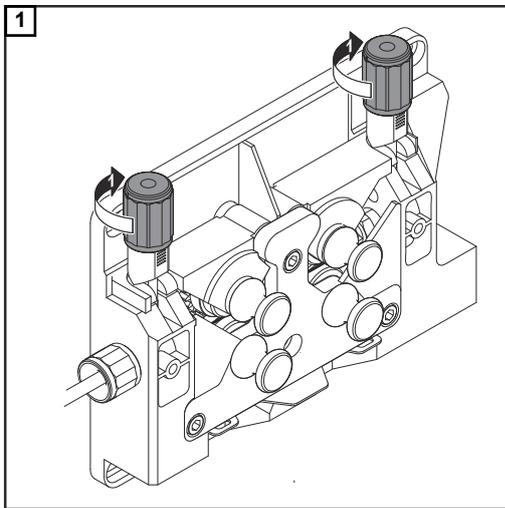
Danger from wire electrode emerging at speed.

This can result in severe injuries.

- ▶ 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.

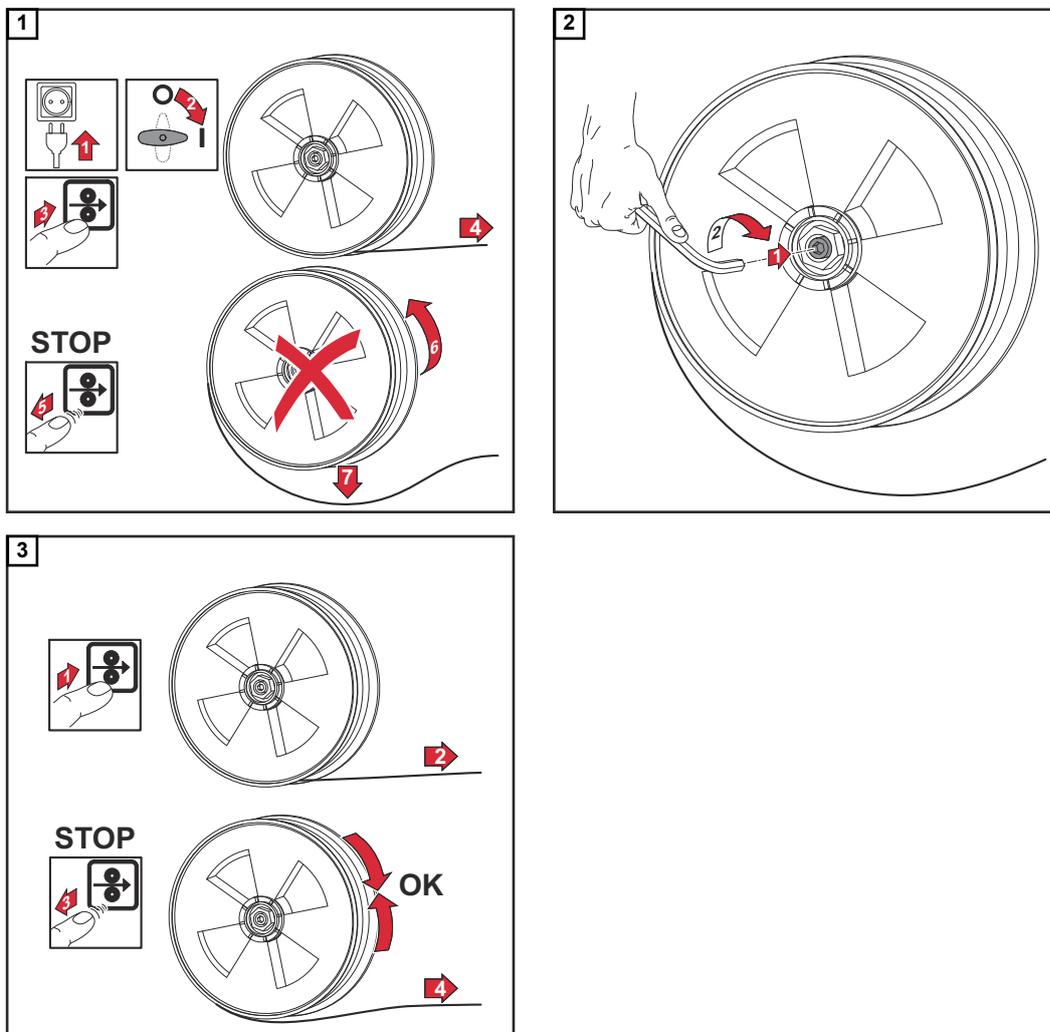
Contact pressure standard values	Semi-cylindrical rolls	Trapeze rolls	Plastic rollers
Aluminium	1.5	-	3.5 - 4.5
Steel	3 - 4	1.5	-
CrNi	3 - 4	1.5	-

Adjust the brake

Adjusting the brake

NOTE!

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



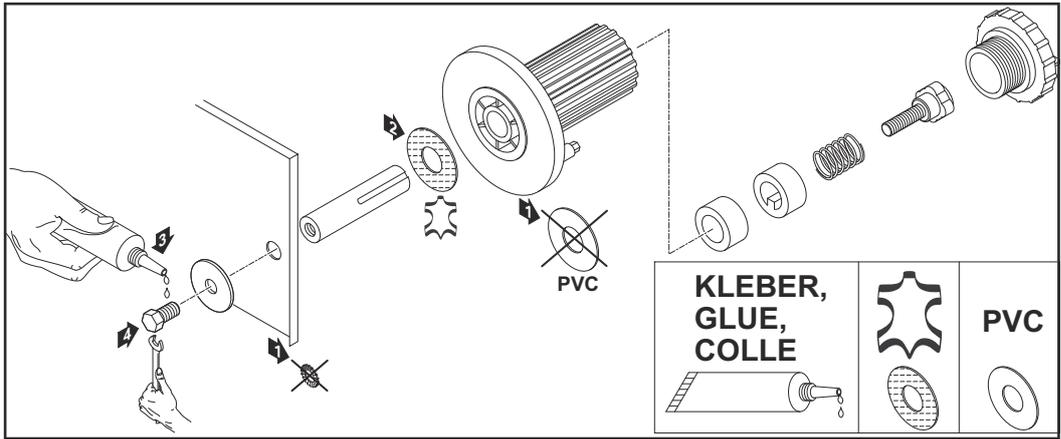
Design of the brake

⚠ CAUTION!

Danger from falling wirespool.

This can result in serious injury and damage to property.

- To ensure that the wirespool is properly in place and that the brake works properly, fit the brake according to the following diagram.



Fitting wirefeeding hose for external wire electrode

General

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

The wirefeeding hose is available in two versions:

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

Insulated routing of wire electrode to wire-feed unit

WARNING!

Risk of serious injury and property damage or an inferior weld as a result of earth contact or short-circuit of a non-insulated wire electrode.

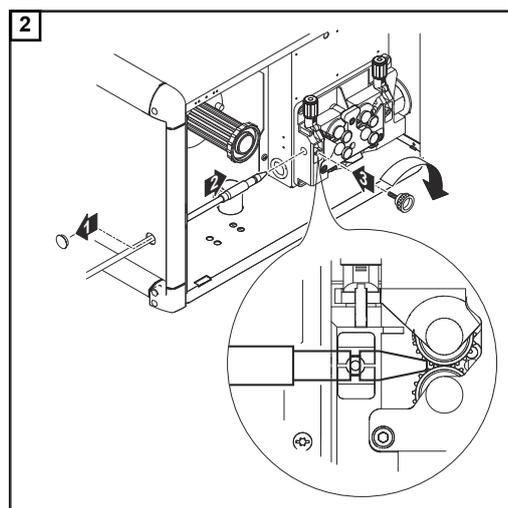
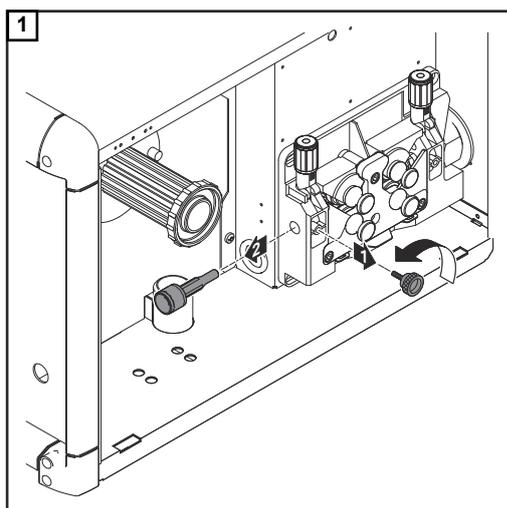
In the case of automated applications, ensure that only an insulated wire electrode is routed from the welding wire drum, large wirefeeder spool or wirespool to the wirefeeder (e.g. by using a wirefeeding hose).

An earth contact or short-circuit can be caused by:

- an uninsulated, exposed length of wire electrode coming into contact with an electrically conductive object during welding
- missing insulation between the wire electrode and the earthed enclosure of a robot cell
- chafed wirefeeding hoses, exposing the wire electrode

Using wirefeeding hoses ensures that the wire electrode remains insulated as it is transported towards the wirefeeder. To prevent chafing, do not route the wirefeeding hoses over sharp edges. Use hose holders or hose protectors as necessary. Coupling pieces and hoods for welding wire drums also ensure safe transport of the wire electrode.

Fitting wirefeeding hose for external wire electrode



Start-up

Safety



WARNING!

Danger due to incorrect operation and incorrectly performed work.

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

- ▶ All the functions described may only be used by trained and qualified personnel.
 - ▶ Fully read and understand this document.
 - ▶ Fully read and understand all the Operating Instructions for the system components, especially the safety rules.
-

General information

The wire-feed unit is commissioned by pressing the torch trigger (for manual applications) or by means of a welding start-up signal (for automatic applications).

REQUIREMENTS

When commissioning the wire-feed unit, the following requirements must be met:

- Wirefeeder connected to the power source using the interconnecting hosepack
- Welding torch connected to the wirefeeder
- Feed rollers inserted into the wirefeeder
- Wirespool or basket-type spool and adapter inserted in the wirefeeder
- Wire electrode fed in
- Feed roller contact pressure set
- Brake adjusted
- All covers closed, all side panels in place, all protection devices intact and in their proper place

Additional requirement for automated applications in conjunction with external wire electrodes:

- Insulated routing of wire electrode to wire-feed unit

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 electric current.

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 instrument, check to make sure that electrically charged components (e.g. 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

VR 7000

Supply voltage (supply from the power source)	55 V DC
Nominal current	4 A
Wire speed	0.5 - 22 m/min 19.69 - 866.14 ipm
Degree of protection	IP 23
Dimensions l x w x h	640 x 260 x 430 mm 25.20 x 10.24 x 16.93 in.
Weight	18 kg 39.68 lbs.
Types of wirespool	all standardised wirespools
Maximum permitted wirespool weight	16 kg 35.27 lbs.
Wirespool diameter	max. 300 mm max. 11.81 in.
Wire diameter	0.8 - 1.6 mm 0.03 - 0.06 in.
Wire drive	4-roller drive
Maximum shielding gas pressure	7 bar 101 psi
Coolant	Original Fronius
Maximum coolant pressure	6 bar 87 psi
LocalNet data rate	57600 baud
LHSB connection	-

VR 7000-11

Supply voltage (supply from the power source)	55 V DC
Nominal current	4 A
Wire speed	0.5 - 11 m/min 19.69 - 433.07 ipm
Degree of protection	IP 23
Dimensions l x w x h	640 x 260 x 430 mm 25.20 x 10.24 x 16.93 in.
Weight	19 kg 41.89 lbs.
Types of wirespool	all standardised wirespools
Maximum permitted wirespool weight	16 kg 35.27 lbs.

Wirespool diameter	max. 300 mm max. 11.81 in.
Wire diameter	0.8 - 3.2 mm 0.03 - 0.13 in.
Wire drive	4 roller drive, water-cooled electric motor with shrunk- on-disc rotor
Maximum shielding gas pressure	7 bar 101 psi
Coolant	Original Fronius
Maximum coolant pressure	6 bar 87 psi
LocalNet data rate	57600 baud
LHSB connection	-

VR 7000-30

Supply voltage (supply from the power source)	55 V DC
Nominal current	4 A
Wire speed	0.5 - 30 m/min 19.69 - 1181.10 ipm
Degree of protection	IP 23
Dimensions l x w x h	640 x 260 x 430 mm 25.20 x 10.24 x 16.93 in.
Weight	19 kg 41.89 lbs.
Types of wirespool	all standardised wirespools
Maximum permitted wirespool weight	16 kg 35.27 lbs.
Wirespool diameter	max. 300 mm max. 11.81 in.
Wire diameter	0.8 - 1.6 mm 0.03 - 0.06 in.
Wire drive	4 roller drive, water-cooled electric motor with shrunk- on-disc rotor
Maximum shielding gas pressure	7 bar 101 psi
Coolant	Original Fronius
Maximum coolant pressure	6 bar 87 psi
LocalNet data rate	57600 baud
LHSB connection	-

VR 7000 CMT

Supply voltage (supply from the power source)	55 V DC
Nominal current	4 A
Wire speed	0.5 - 22 m/min 19.69 - 866.14 ipm
Degree of protection	IP 23
Dimensions l x w x h	640 x 260 x 430 mm 25.20 x 10.24 x 16.93 in.
Weight	18 kg 39.68 lbs.
Types of wirepool	all standardised wirepools
Maximum permitted wirepool weight	16 kg 35.27 lbs.
Wirepool diameter	max. 300 mm max. 11.81 in.
Wire diameter	0.8 - 1.2 mm 0.03 - 0.05 in.
Wire drive	4-roller drive
Maximum shielding gas pressure	7 bar 101 psi
Coolant	Original Fronius
Maximum coolant pressure	6 bar 87 psi
LocalNet data rate	57600 baud
LHSB data rate	10 MBaud
LHSB connection - interconnecting hose- ack	Standard
LHSB CMT drive unit connection	Standard
Supply voltage for CMT drive unit	24 V DC, 100 mA
Wire buffer connection	Standard
Supply voltage for wire buffer	24 V DC, 40 mA

FRONIUS INTERNATIONAL GMBH

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