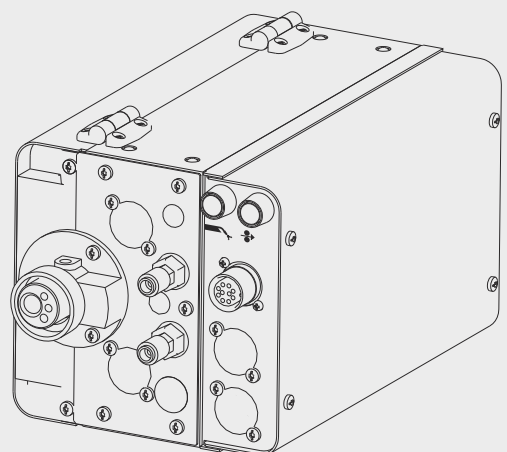


VR 1500
VR 1500 PSA
VR 1500 - 11
VR 1500 - 12
VR 1500 - 30
VR 1550
VR 1550 CMT-WS

EN

Operating instructions

Wire-feed unit



42,0426,0006,EN 007-22092021

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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.

Danger from toxic gases and vapours

The fumes produced during welding contain harmful gases and vapours.

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

Use at-source extraction and a room extraction system.

If necessary, use a welding torch with an integrated extraction device.

Keep your face away from welding fumes and gases.

Fumes and hazardous gases

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

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

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

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

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

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

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

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

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

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

Danger from flying sparks

Flying sparks may cause fires or explosions.

Never weld close to flammable materials.

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

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

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

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

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

Risks from mains current and welding current

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

If necessary, provide adequate earthing for the workpiece.

Switch off unused devices.

Wear a safety harness if working at height.

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

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

After opening the device:

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

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

Meandering welding currents

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

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

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

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

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

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

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

General remarks

NOTE!

Observe the safety rules in the power source operating instructions at all times.



VR 1500 robot wirefeeder



VR 1550 robot wirefeeder

Owing to its modular design, the robot wirefeeder can be extended as needed (e.g. Robacta Drive, gas purging, torch support etc.)

The VR 1500 is available with different wire speeds:

- 11 m/min (433.07 ipm.)
- 12 m/min (472.44 ipm.)
- 22 m/min (866.14 ipm.)
- 30 m/min (1181.10 ipm.)

The VR 1550 is available with a wire feed speed of 22 m/min.

The motor plate and control unit can be installed and operated independently of each other. The control unit, however, must be earthed/grounded separately.

Application area

The robot wirefeeder is specially designed for fitting to the robot arm and can be used in conjunction with the TS 4000 / 5000, TPS 3200 / 4000 / 5000 power sources. The robot wirefeeder is suitable for all standard shielding gases.

The VR 1500 - 11 and VR 1500 - 12 are also used for flux core wire applications.

The VR 1500 - 12 is primarily used for complex wirefeeding applications requiring a high degree of torque:

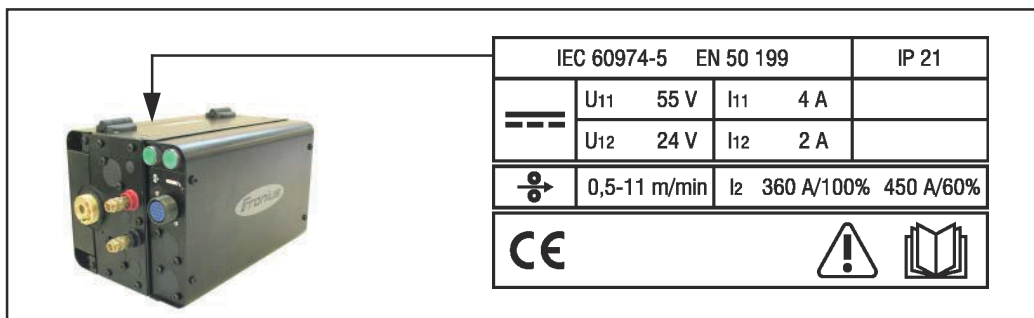
- solid flux core wires up to 2.3 mm (0.13 in.) on large spools
- solid flux core wires up to 2.3 mm (0.13 in.) in welding wire drums

The VR 1500 - 30 is also used for flat wire applications.

In particular, the VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 are also used in conjunction with the high performance TS / TPS 7200 and TPS 9000 power sources.

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.



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

General remarks

VR 1500 cover

for protecting the drive components of the robot wirefeeder

 **CAUTION!**

Risk of injury from rotating cogs on the wire drive.

This can result in serious injury and damage to property.

- ▶ If you use the wirefeeder without the "VR 1500 cover", you must take other suitable safety precautions.
-

VR 1500 adapter plate

for fitting the robot wirefeeder to the robot arm or fitting the hosepack strain-relief device

 **WARNING!**

Danger from electric current.

An electric shock can be fatal.

- ▶ If you do not use the optional VR 1500 adapter plate, the wirefeeder must be mounted in such a way that it is insulated from earth.
-

VR 1500 torch support

to stabilise and support the torch hosepack (increased service life for the torch hosepack)

Wirefeeding hose

for protecting the wire along its route from the wirespool to the robot wirefeeder; different lengths are available for aluminium and steel wires

Unreeling wirefeeders

Unreeling wirefeeders are mainly used for large spools and welding wire drums, which are located outside the welding system. The welding wire is transported to the wirefeeder by means of the unreeling wirefeeder. A push-bull calibration is required between the wirefeeder and unreeling wirefeeder.

The unreeling wirefeeders are available in the following versions:

VR 1530 - 11	wire speed max. 11 m/min, water-cooled electric motor with shrunk-on-disc rotor
VR 1530 - 12	wire speed max. 12 m/min, high torque, water-cooled electric motor with shrunk-on-disc rotor
VR 1530 - 22	wire speed max. 22 m/min, standard motor
VR 1530 - 30	wire speed max. 30 m/min, water-cooled electric motor with shrunk-on-disc rotor

Optional installation and conversion kits

900 A VR 1500 installation kit (VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 only, each with Fronius central connector F++)

for subsequent retrofitting so that the VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 are suitable for a welding current of 900 A (incl. 2nd current socket)

VR 1500 basic torch blow out installation kit (max. 7 bar)

for subsequent installation of the optional basic torch blow out unit (= cleaning the welding torch using compressed air, max. 7 bar)

High end torch blow out installation kit (15 bar)

for subsequent installation of the optional high end torch blow out unit (= cleaning the welding torch using compressed air, max. 15 bar)

PMR 4000 PullMig, PM 43 installation kit

for subsequent installation of a push-pull unit

Gas nozzle touch sensor installation kit

for subsequent installation of the optional gas nozzle touch sensor (workpiece contact detection by means of the gas nozzle)

VR 1500 gas pressure sensor installation kit

for subsequent installation of a gas pressure sensor

Digital gas control

for subsequent installation of the digital gas control

Gas economiser valve installation kit

for subsequent installation of a gas economiser valve

Fixable tensioning lever installation kit for plastic motor plate

for subsequent installation of a fixable tensioning lever so that contact pressure cannot be accidentally adjusted

Wire-end connector installation kit

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

Unreeling wirefeeder installation kit, 17-pin amphenol plug

for subsequent installation of a 17-pin amphenol plug (required to use the robot wirefeeder in conjunction with an unreeling wirefeeder)

Increased motor supply installation kit for VR 1500 - 12 (2 x 8 A) control unit

for subsequent installation of an increased motor supply if the VR 1500 - 12 is being operated with an unreeling wirefeeder

CMT VR 1550 installation kit

for retrofitting the VR 1550 for CMT mode

Expansions and versions

VR 1500 MO/K holder

for fitting the robot wirefeeder to the robot arm

Robot wirespool holder

for fitting the wirespool holder to the robot

Cover for robot wirespool holder

VR 1500 - 22, VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 control unit

separate control unit in the event that the motor plate and control unit are used separately



WARNING!

Danger from electric current.

An electric shock can be fatal.

- ▶ Please note the following if the control unit and motor plate are used separately: The control unit must be earthed
- ▶ The motor plate must be insulated

3-roller wire straightening section

Tuchel plug

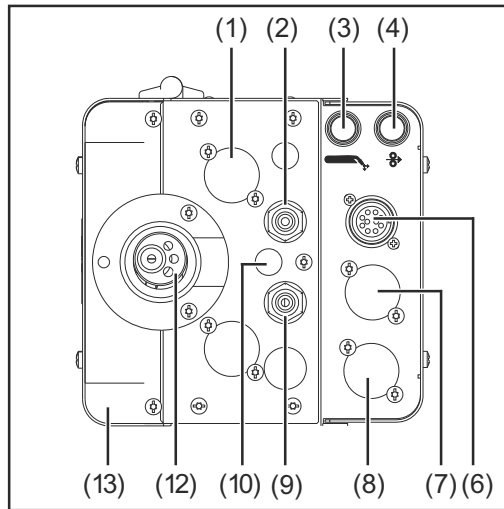
VR 1500 wire end sensor (incl. spool cover)

VR 1500 wire end sensor (for welding wire drum without control cable)

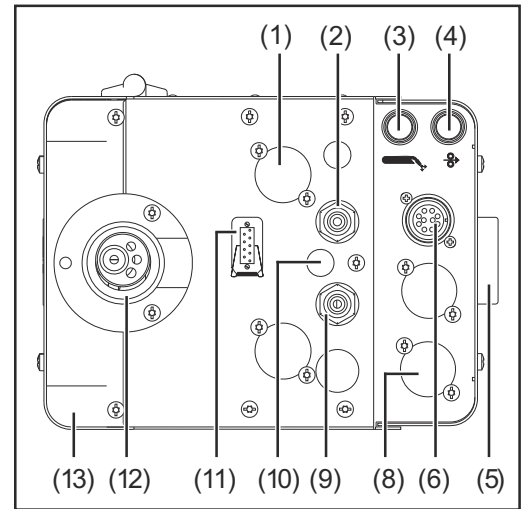
Controls, connections and mechanical components

General remarks The positions of the following controls, connections and mechanical components are customer-specific and may vary.

Front of wirefeeder



Front of VR 1500 / VR 1550



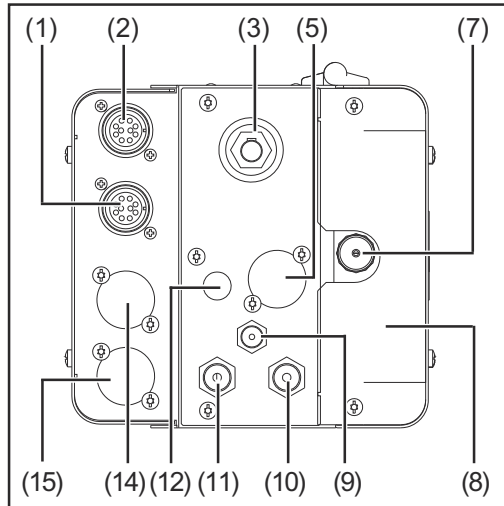
Front of VR 1500 - 11 / 12 / 30

- (1) **Blanking cover / gas pressure sensor adjusting button (optional)**
- (2) **Water return connection (red)**
- (3) **Gas test button**
for setting the required gas flow rate on the pressure regulator. If you press and hold this button, gas will flow.
- (4) **Wire threading button**
for threading the wire electrode into the torch hosepack with no flow of gas or current.
- (5) **Additional fan**
- (6) **Robacta robot welding torch connection on VR 1500**
(see circuit diagram X10 for pin assignment) or
Wire buffer connection on VR 1550 (CMT-WS) and VR 1550 CMT installation kit (optional)
- (7) **Robacta robot welding torch connection on VR 1550 (CMT-WS)**
(see circuit diagram X10 for pin assignment)
- (8) **Blanking cover/AIR IN "torch blow out" connection**
(high end option, max. 15 bar) or
LHSB connection on VR 1550 (CMT-WS) and VR 1550 CMT installation kit (optional)
- (9) **Water flow connection (black or blue)**
- (10) **AIR OUT "torch blow out" connection (optional)**
- (11) **Tuchel plug (optional)**

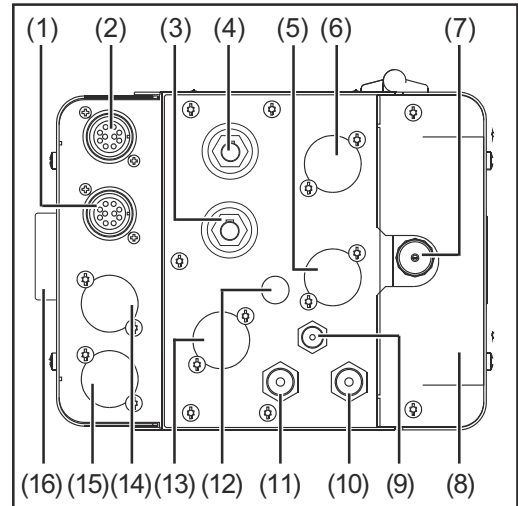
(12) Welding torch connection
for connecting the welding torch

(13) VR 1500 cover (optional)

Rear of wire-feed
unit



Rear of VR 1500 / VR 1550



Rear of VR 1500 - 11 / 12 / 30

(1) LocalNet connection - interconnecting hosepack

(2) LocalNet connection

standardised connection socket for system extensions (e.g. remote control, etc.)
If the optional unreeling wirefeeder installation kit has been fitted to the wirefeeder, the 17-pin amphenol plug of the unreeling wirefeeder installation kit is plugged into (2) and the LocalNet connection is plugged into (14).
If the optional VR 1550 CMT installation kit has been fitted to the VR 1550, the LHSB connection of the VR 1550 CMT installation kit is plugged into (2) and the LocalNet connection is plugged into (14).

(3) (+) current connection with bayonet latch - interconnecting hosepack

(4) 2nd (+) socket with bayonet latch (optional 900 A installation kit)

(5) Blanking cover / wire-end connector (optional)

(6) Blanking cover

(7) Wire infeed tube

(8) VR 1500 cover (optional)

(9) Shielding gas connection

(10) Water return connection (red) - interconnecting hosepack

(11) Water flow connection (blue) - interconnecting hosepack

(12) Blanking cover/AIR IN "torch blow out" connection
(high end option, max. 7 bar)

(13) Blanking cover

(14) Blanking cover/LocalNet connection

(if the optional unreeling wirefeeder installation kit is fitted to the wirefeeder or if the optional VR 1550 CMT installation kit is fitted to the wirefeeder)

-
- (15) **Blanking cover/AIR IN "torch blow out" connection**
(high end option, max. 15 bar)
-
- (16) **Additional filter**
-

Notes regarding the operation of the VR 1500 - 11 and VR 1500 - 12

Cooling the wirefeeder motor

NOTE!

The VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 wirefeeders are equipped with a water-cooled electric motor with shrunk-on-disc rotor and may only be operated in conjunction with an FK 4000 R, FK 4000 R US or FK 9000 R cooling unit. For the protection of the motor we recommend that you install the optional flow watchdog for the cooling unit (fitted as standard on the FK 4000 R US).

Welding current above 500 A

NOTE!

When using a welding current over 500 A, only operate the VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 wirefeeders with adequately dimensioned Fronius welding torches that have an F++ connection.

PMR 4000 push-pull option

NOTE!

If the PMR 4000 push-pull option is installed on the VR 1500 - 11 and VR 1500 - 30 wirefeeders, the power source must be equipped with an increased power supply (55 V DC, 8 A).

Applications with unreeling wirefeeders

NOTE!

If unreeling wirefeeders are used, the power source must be equipped with an increased power supply (55 V DC, 8 A).

TPS 7200 / 9000 applications with VR 1500 - 12 and unreeling wirefeeders

NOTE!

If the TPS 7200 / 9000 is used with VR 1500 - 12 and unreeling wirefeeders, both the 1st and second power source must be equipped with an increased power supply (55 V DC, 8 A).

Operating the VR 1500 - 12

NOTE!

To operate the VR 1500 - 12, the power source must be equipped with an increased power supply (55 V DC, 8 A).

Operating the VR
1500 - 12 with an
unreeling
wirefeeder

NOTE!

To operate the VR 1500 - 12 with an unreeling wirefeeder, the VR 1500 - 12 must be equipped with an increased motor supply installation kit.

Connecting wire-feed unit to power source

General remarks The wirefeeder 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.

Connecting the wirefeeder to the power source

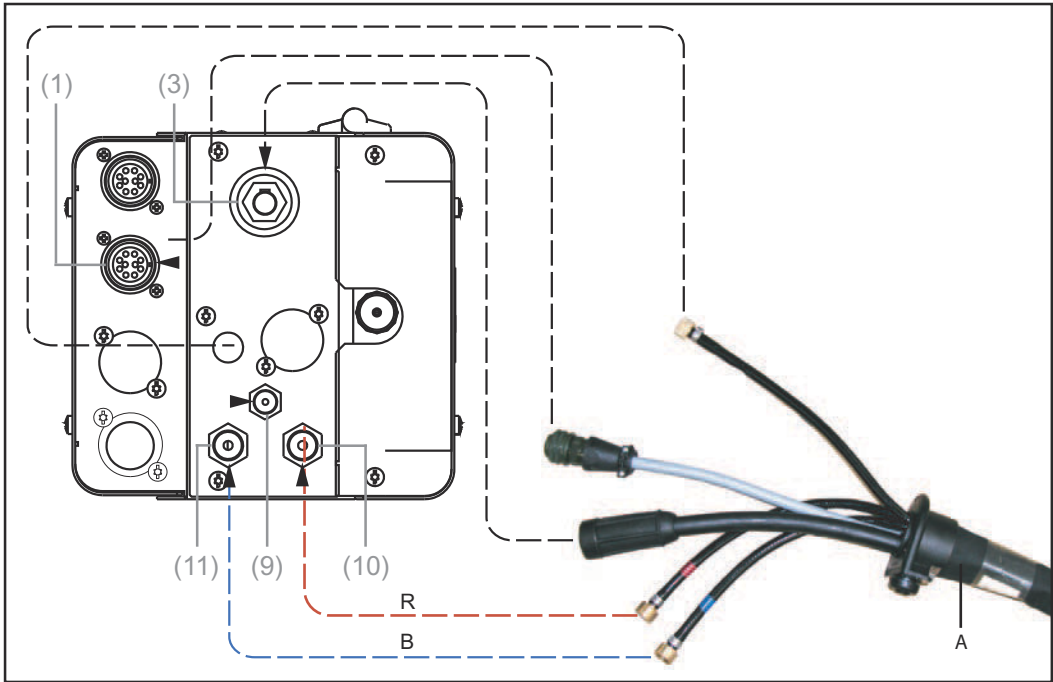
WARNING!

Danger due to incorrect operation and incorrectly performed work.

This can result in serious injury and damage to property.

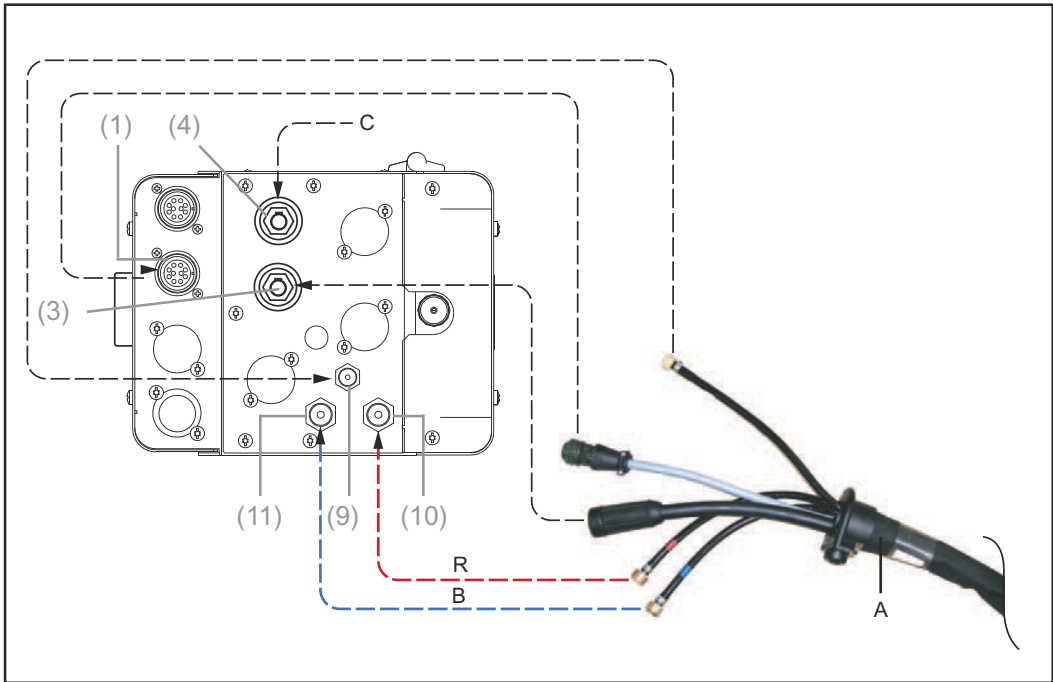
- ▶ Do not carry out the steps described here until you have read and completely understood all the operating instructions.
-

- 1 Turn the power source mains switch to the "O" position
- 2 Fix the strain-relief device of the interconnecting hosepack to the VR 1500 hosepack holder
- 3 Connect the gas hose of the interconnecting hosepack to the shielding gas connection (9)
- 4 Tighten the union nut on the gas hose
- 5 If available, connect the water flow and water return hoses of the interconnecting hosepack to the water flow (11) and water return (10) connections, ensuring that the colours match
- 6 Tighten the union nuts on the water flow and water return hoses
- 7 Plug the LocalNet plug of the interconnecting hosepack into the LocalNet connection (1)
- 8 Tighten union nut on LocalNet plug
- 9 Plug the welding potential cable of the interconnecting hosepack into the (+) current connection (3)
- 10 Turn welding potential bayonet plug to fasten it



VR 1500 / VR 1550: connect the interconnecting hosepack to the wirefeeder

- A Interconnecting hosepack; wirefeeder end
- R red
- B blue



VR 1500 - 11 / 12 / 30: Connecting the interconnecting hosepack to the wirefeeder

- A Interconnecting hosepack; wirefeeder end
- C 2nd power cable (optional)
- R red
- B blue

Fitting the welding torch

Welding torch connections

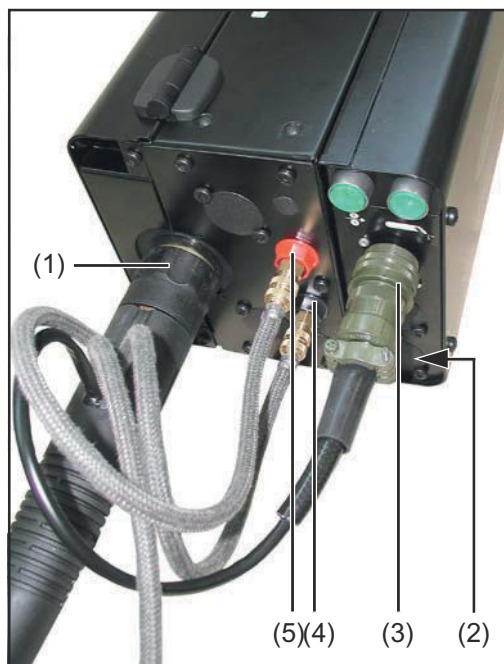
	Fronius F++	Euro	for Dinse	for Tweco
VR 1500	X	X	X	X
VR 1500 - 11	X	(X)	-	-
VR 1500 - 12	X	(X)	-	-
VR 1500 - 30	X	(X)	-	-
VR 1550	X	X	-	-
VR 1550 (CMT-WS)	X	-	-	-

(X) ... up to a max. of 500 A

NOTE!

When using a welding current over 500 A, only operate the VR 1500 - 11, VR 1500 - 12 and VR 1500 - 30 wirefeeders with adequately dimensioned Fronius welding torches that have F++ connections.

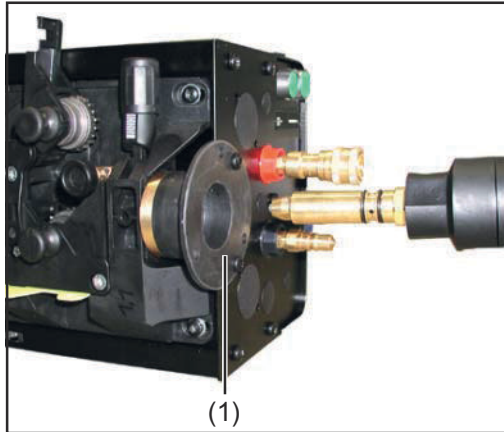
Fit the welding torch



Mounting the welding torch e.g. Robacta Drive

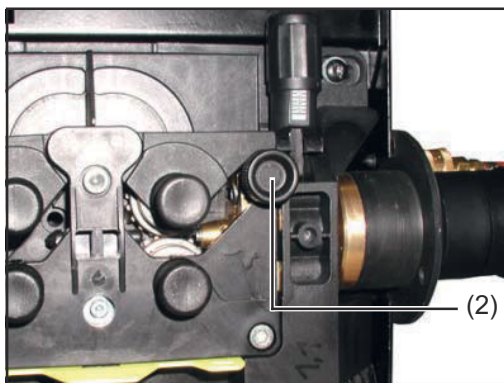
- 1 turn the power source mains switch to the "O" position
- 2 Check that the welding torch is correctly set up. Insert it - infeed tube first - into the torch connection (1) and tighten the union nut by hand to secure the torch in place
- 3 Plug the control plug of the welding torch into the Robacta robot welding torch connection (3) and tighten the union nut to secure in place
- 4 If present: connect the external water flow (4) and return (5) connections correctly, matching the colours
- 5 If present: connect the hose for the blow out device to the AIR OUT torch blow out connection (2)

Fitting the welding torch - Tweco connection



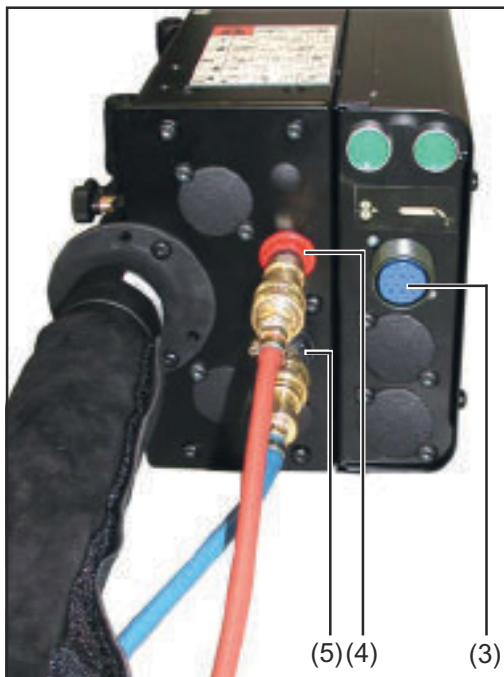
- 1 turn the power source mains switch to the "O" position
- 2 Check that the welding torch is correctly set up. Insert it - infeed tube first - into the torch connection (1)

Inserting the welding torch into the connection for Tweco



- 3 Fix the welding torch in place using a knurled screw (2)

Fixing welding torch in place using a knurled screw



- 4 If present: plug the control plug of the welding torch into the Robacta robot welding torch connection (3) and tighten the union nut to secure it in place
- 5 If present: connect the external water flow (4) and return (5) connections correctly, matching the colours

Connecting water connections for water flow and water return

Inserting/replacing feed rollers

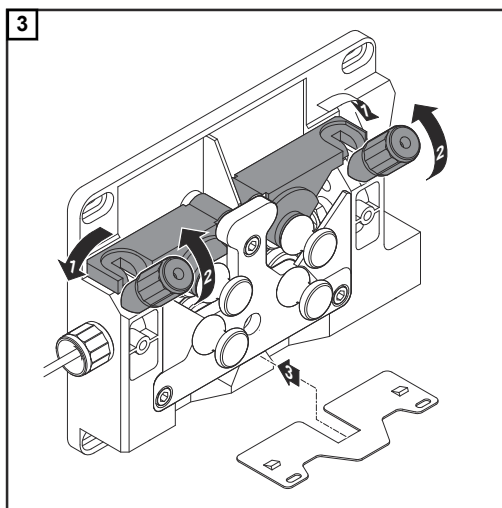
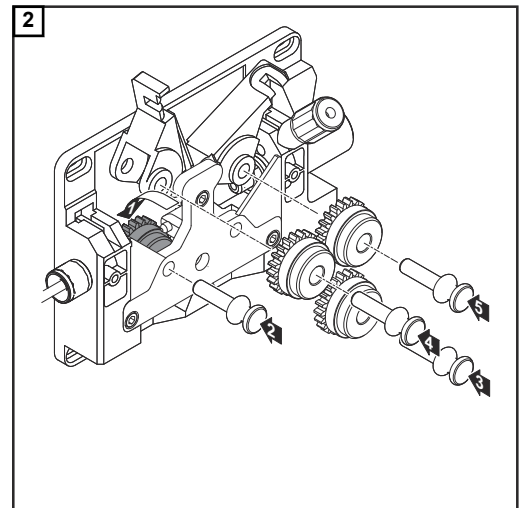
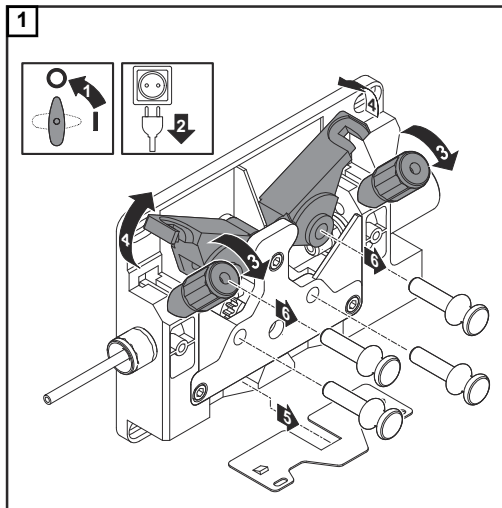
General remarks In order to achieve optimum wire electrode feed, the feed rollers must be suitable for the diameter and alloy of the wire being welded.

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



Feeding in the wire electrode

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.

Feed in the wire electrode

CAUTION!

Risk of injury from springiness of spooled wire electrode.

This can result in serious injury and damage to property.

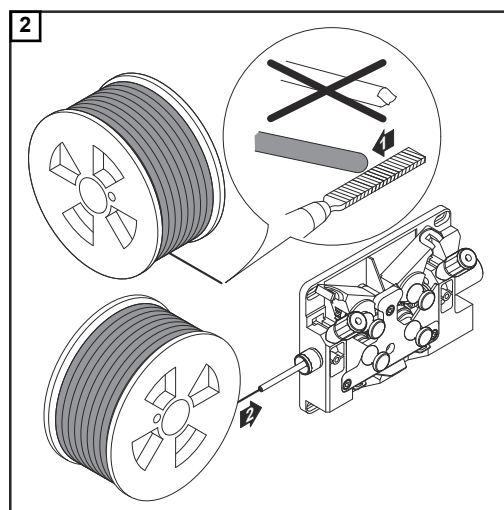
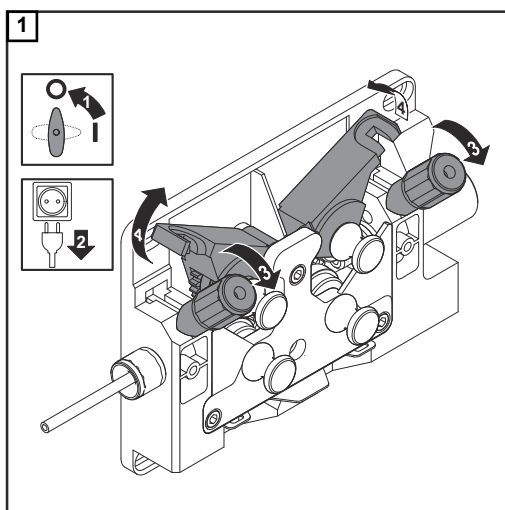
- ▶ When inserting the wire electrode into the 4 roller drive, hold the end of the wire electrode firmly to avoid injuries caused by the wire springing back.

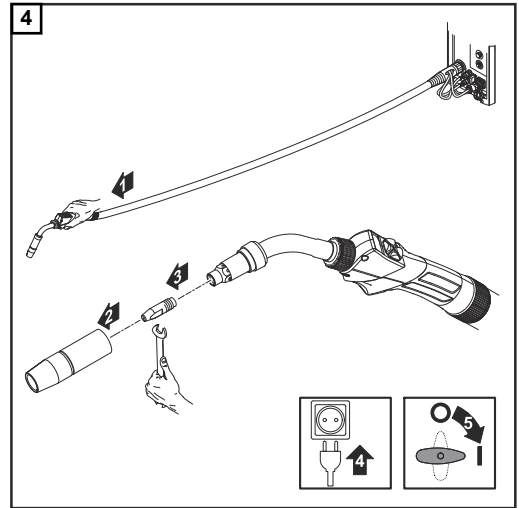
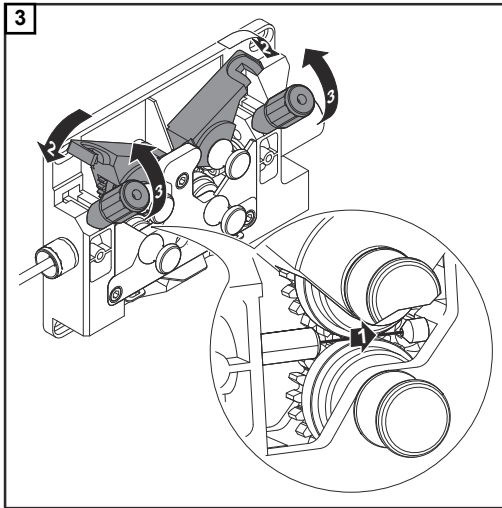
CAUTION!

Risk of damage to the welding torch from sharp end of wire electrode.

This can result in serious damage to property.

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



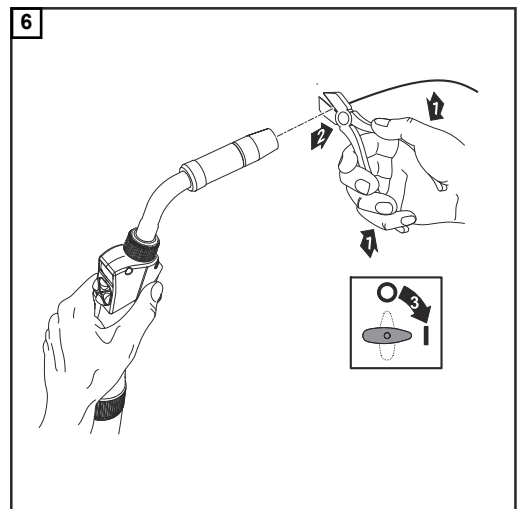
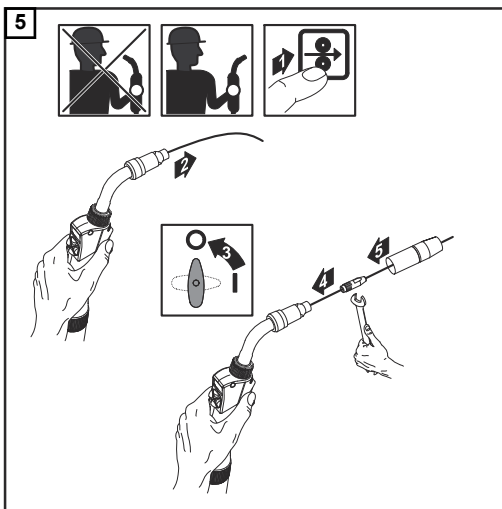


⚠ CAUTION!

Risk of injury from wire electrode emerging at speed.

This can result in serious injury and damage to property.

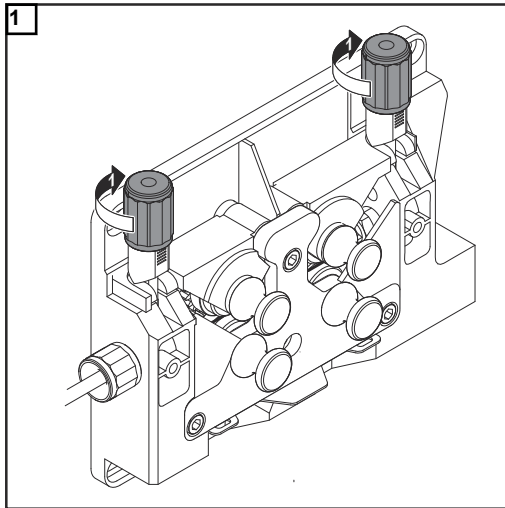
- ▶ When pressing the wire threading button or the torch trigger, keep the welding torch away from your face and body, and wear suitable protective goggles.



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	SC	TR	PL
Aluminium	1.5	-	3.5 - 4.5
Steel	3 - 4	1.5	-
CrNi	3 - 4	1.5	-

Feed rollers:

SC = Semi-cylindrical rollers

TR = Trapeze rollers

PL = Plastic rollers

Troubleshooting

"Wire end" error message

The "wire end" error message is used for the following errors on VR 1500 series systems:

- wire end
 - overheating of power electronics
 - motor current too high
-

"Wire end" special function

Two options can be preset on the power source for the "wire end" error message:

- (1) complete welding ... e.g. for short weld seams
 - (2) stop welding immediately ... e.g. for long weld seams, flux core wire applications, high-performance welding (risk of motor power module overload if these welding processes are not stopped)
-

Troubleshooting

Err | 056 (on the power source)

Wire end

Cause: The wire end check option has detected the end of the welding wire.

Remedy: Insert new wirepool and thread in the welding wire, acknowledge the error on the power source

Cause: Additional fan filter 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 the error on the power source

Cause: Ambient temperature too high

Remedy: Reduce ambient temperature, if necessary position and operate the welding system at a cooler location; acknowledge the error on the power source

Cause: Motor current too high e.g. due to wire threading problems or an inadequately dimensioned wirefeeder

Remedy: Check wire threading conditions, rectify faults, acknowledge error on the power source

Error reset



Press the "Setup/Store" button on the power source to acknowledge an error message. Setup/Store button on the power source

Setup/Store button on the power source

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 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

General remarks

NOTE!

The specified degree of protection is only guaranteed if the VR 1500 "cover" installation kit is installed.

VR 1500

Supply voltage	55 V DC
Nominal current	4 A
Wire diameter	0.8 - 1.6 mm 0.03 - 0.06 in.
Wire feed speed	0.5 - 22 m/min 19.69 - 866.14 ipm.
Torque	4 Nm
Degree of protection	IP 21
Dimensions l x w x h	405 x 208 x 205 mm 15.94 x 8.19 x 8.07 in.
Weight	7 kg 15.43 lb.
Drive	4-roller drive
Maximum shielding gas pressure	7 bar 101 psi.
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar 87 psi.

VR 1500 - 11

Supply voltage	55 V DC
Nominal current	4 A
Wire diameter	0.8 - 3.2 mm 0.03 - 0.13 in.
Wire feed speed	0.5 - 11 m/min 19.69 - 433.07 ipm.
Torque	11 Nm
Degree of protection	IP 21
Dimensions l x w x h	400 x 300 x 205 mm 15.75 x 11.81 x 8.07 in.
Weight	8 kg 17.64 lb.
Drive	4-roller drive, water-cooled electric motor with shrunk-on-disc rotor
Special accessories	Additional fan for the power electronics

Maximum shielding gas pressure	7 bar 101 psi.
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar 87 psi.

VR 1500 - 12

Supply voltage	55 V DC
Nominal current	6 A
Wire diameter	0.8 - 3.2 mm 0.03 - 0.13 in.
Wire feed speed	0.5 - 12 m/min 19.69 - 472.44 ipm.
Torque	21.6 Nm
Degree of protection	IP 21
Dimensions l x w x h	400 x 300 x 205 mm 15.75 x 11.81 x 8.07 in.
Weight	10 kg 22.05 lb.
Drive	4-roller drive, water-cooled electric motor with shrunk-on-disc rotor
Special accessories	Additional fan for the power electronics
Maximum shielding gas pressure	7 bar 101 psi.
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar 87 psi.

VR 1500 - 30

Supply voltage	55 V DC
Nominal current	4 A
Wire diameter	0.8 - 1.6 mm 0.03 - 0.06 in.
Wire feed speed	0.5 - 30 m/min 19.69 - 1181.10 ipm.
Torque	3.7 Nm
Degree of protection	IP 21
Dimensions l x w x h	400 x 300 x 205 mm 15.75 x 11.81 x 8.07 in.
Weight	8 kg 17.64 lb.
Drive	4-roller drive, water-cooled electric motor with shrunk-on-disc rotor
Special accessories	Additional fan for the power electronics

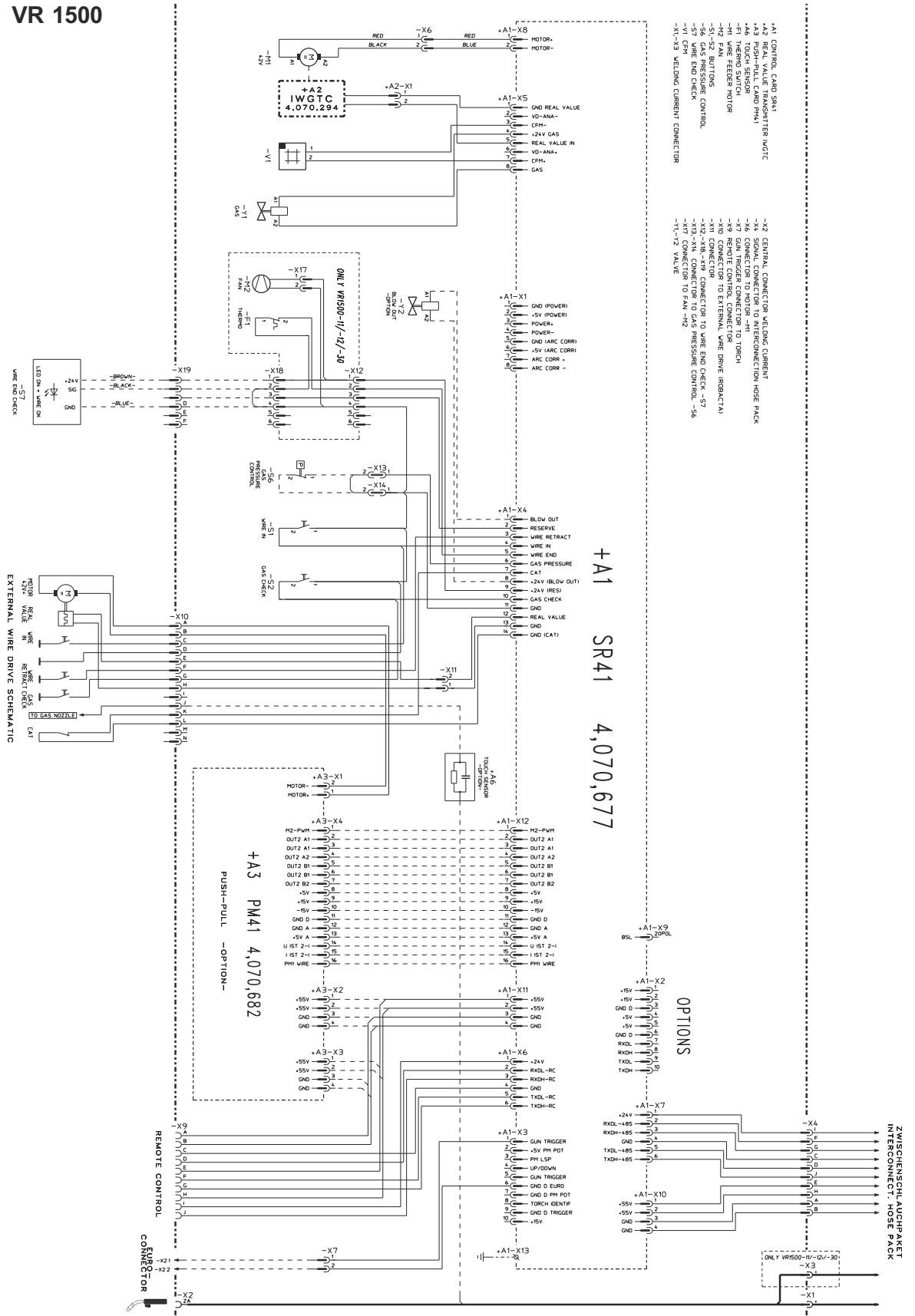
Maximum shielding gas pressure	7 bar 101 psi.
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar 87 psi.

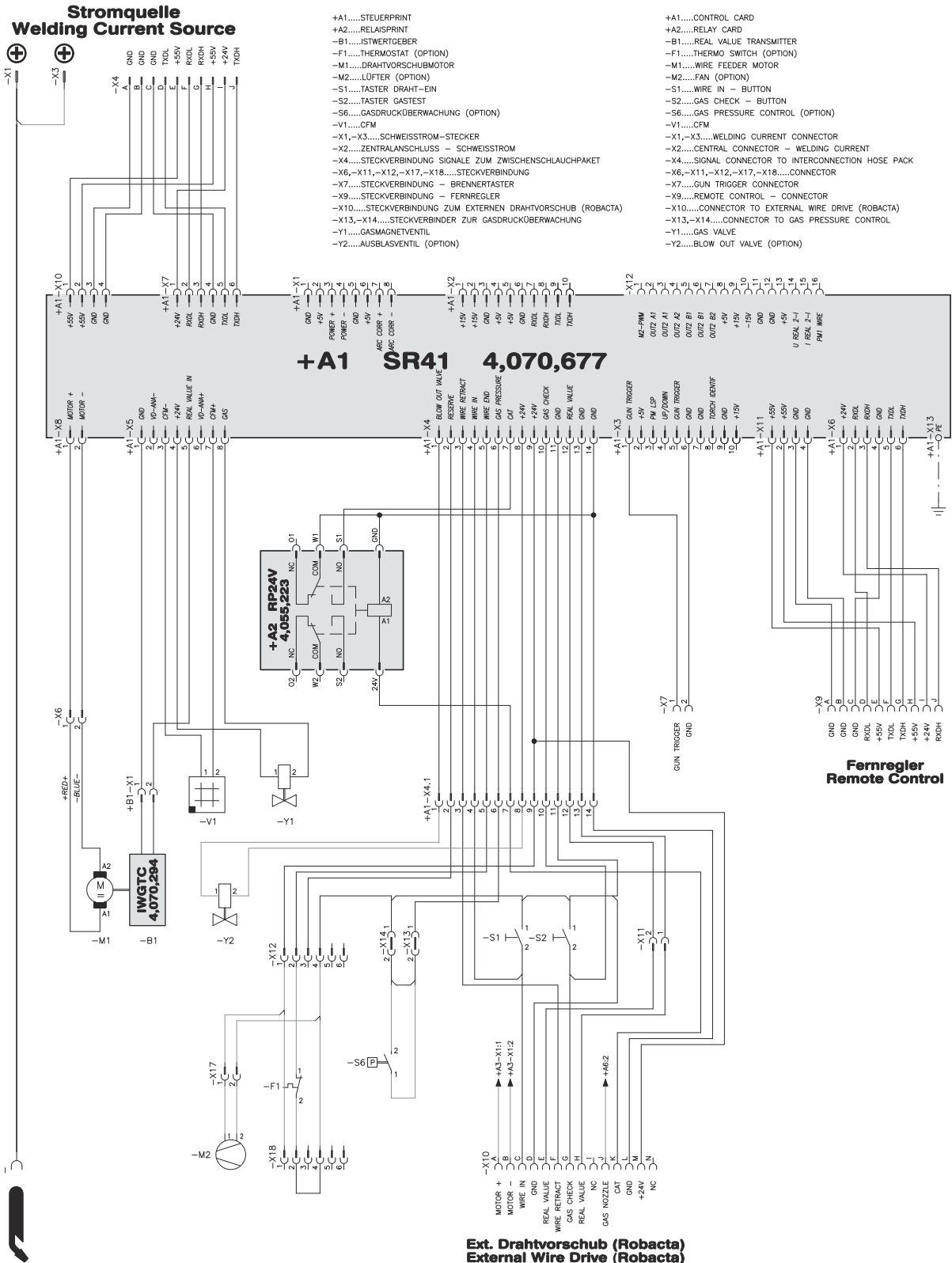
VR 1550 (CMT-WS)

Supply voltage	55 V DC
Nominal current	4 A
Wire diameter	0.8 - 1.6 mm 0.03 - 0.06 in.
Wire feed speed	0.5 - 22 m/min 19.69 - 866.14 ipm.
Torque	4 Nm
Degree of protection	IP 21
Dimensions l x w x h	405 x 208 x 205 mm 15.75 x 8.19 x 8.07 in.
Weight	7 kg 15.43 lb.
Drive	4-roller drive
Maximum shielding gas pressure	7 bar 101 psi.
Coolant	Original Fronius coolant
Maximum coolant pressure	6 bar 87 psi.

Circuit diagrams

VR 1500 VR 1500





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spareparts.fronius.com