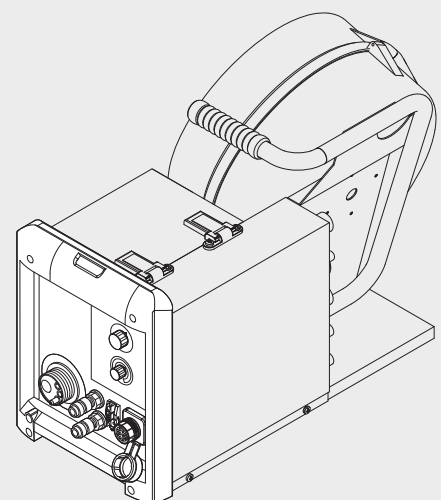




**VR 4000**  
**VR 4000-30**  
**VR 4000-30 TIME**

EN

Operating Instructions  
Spare parts list  
Wire-feed unit



42,0426,0012,EN 003-16082017



# Dear reader,

## Introduction

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

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

## Explanation of safety symbols



**DANGER!** Indicates immediate and real danger. If it is not avoided, death or serious injury will result.



**WARNING!** Indicates a potentially dangerous situation. Death or serious injury may result if appropriate precautions are not taken.



**CAUTION!** Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.



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

**IMPORTANT!** Indicates tips for correct operation and other particularly useful information. It does not indicate a potentially damaging or dangerous situation.

If you see any of the symbols depicted in the "Safety rules" chapter, special care is required.



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# Safety rules

## General



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

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

---

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

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

---

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

---

All safety and danger notices on the device

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

---

For the location of the safety and danger notices on the device, refer to the section headed "General" in the operating instructions for the device. Before switching on the device, rectify any faults that could compromise safety.

**This is for your personal safety!**

## Proper use



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

---

The device is intended solely for the welding processes specified on the rating plate.

Any use above and beyond this purpose is deemed improper. The manufacturer shall not be held liable for any damage arising from such usage.

---

Proper use includes:

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

---

Never use the device for the following purposes:

- Thawing out pipes
- Charging batteries
- Starting engines

---

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

---

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

## Environmental conditions



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

Ambient temperature range:

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

Relative humidity:

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

The surrounding air must be free from dust, acids, corrosive gases or substances, etc.

Can be used at altitudes of up to 2000 m (6561 ft. 8.16 in.)

## Obligations of the operator

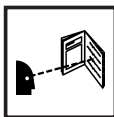


The operator must only allow persons to work with the device who:

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

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

## Obligations of personnel

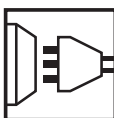


Before using the device, all persons instructed to do so undertake:

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

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

## Mains connection



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

This may affect a number of types of device in terms of:

- connection restrictions
- criteria with regard to the maximum permissible mains impedance <sup>\*)</sup>
- criteria with regard to the minimum short-circuit power requirement <sup>\*)</sup>



<sup>\*)</sup> at the interface with the public grid  
see Technical Data

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



**NOTE!** Ensure that the mains connection is earthed properly



**Protecting yourself and others**



Persons involved with welding expose 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

Anyone working on the workpiece while welding is in progress must wear suitable protective clothing with 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 or
- 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 may, under certain circumstances, cause birth defects or cancer.

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 with a ventilation rate of at least 20 m<sup>3</sup>/hour.

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Otherwise, a protective mask with an air supply must be worn.

---

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

---

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.

---

Amongst others, the following components are responsible for the degree of toxicity of welding fumes:

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

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

---

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

---

### 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.

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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 temporary backing or cover for the earth or ground potential. This temporary backing 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 pre-load.

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.

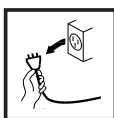
The device must only be operated on a mains supply with a ground conductor and a socket with a ground conductor contact.

Operating the device on a grid without a ground conductor and in a socket without a ground conductor contact will be deemed gross negligence. The manufacturer shall not be held liable for any damage arising from such usage.

If necessary, provide an adequate earth connection 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.

If the floor is electrically conductive, the device must be set up with sufficient insulating material to insulate it from the floor.

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 wire-feed unit.

---

## 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.

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## 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.

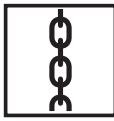
- Hook chains and/or ropes onto all suspension points provided on the load-carrying equipment.
- Chains and ropes must be at the smallest angle possible to the vertical.
- Remove gas cylinder and wire-feed unit (MIG/MAG and TIG devices).

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.

---

### Factors affecting welding results



The following requirements with regard to shielding gas quality must be met if the welding system is to operate in a correct and safe manner:

- Size of solid matter particles < 40 µm
  - Pressure dew point < -20 °C
  - Max. oil content < 25 mg/m<sup>3</sup>
- 

Filters must be used if necessary.

---



**NOTE!** There is an increased risk of soiling if ring mains are being used

---

### 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.

---

**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 if 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.

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

The 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 and 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.

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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.

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## 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!



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**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).

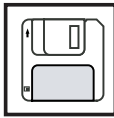
Fronius International GmbH hereby declares that the device is compliant with Directive 2014/53/EU. The full text on the EU Declaration of Conformity can be found at the following address: <http://www.fronius.com>



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.

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**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 4000/VR 4000-30 wire-feed unit



VR 4000-30 TIME wire-feed unit

The wire-feed units are designed to be used with wire spools of max. 300 mm (11.81 in) diameter. The standard 4-roller drive has good wirefeeding properties. The wirefeeders are also suitable for long hosepacks. Due to their compact size, the wirefeeders can be used in many different ways.

The VR 4000-30 TIME wire-feed unit is specially designed for the TIME high-performance welding process. All the important TIME process functions can be set directly on the wire-feed unit control panel using the integrated 3-parameter control. The following functions are not available:

- MIG/MAG standard manual welding
- Job mode
- LocalNet connection (e.g. operation with remote control or JobMaster welding torch)

## REQUIREMENTS

To operate the wirefeeder, it must first be configured for use with the corresponding power source:

	VR 4000	VR 4000-30	VR 4000-30 TIME
TransSynergic 4000/5000	X	X	-
TransSynergic 7200/9000	X	X	-
TransPuls Synergic 3200/4000/5000	X	X	-
TransPuls Synergic 7200/9000	X	X	-
TIME 5000 Digital	-	X	X
TransPuls Synergic 2700 Duo	X	-	-
TransPuls Synergic 2700 Duo TIG	X	-	-

## Application area

- VR 4000: for all types of MIG/MAG welding
- VR 4000-30: primarily used with TS/TPS 7200 and TS/TPS 9000 high-performance power sources. In conjunction with the TR 2100 remote control, and also with the TIME 5000 Digital power source
- VR 4000-30 TIME: in conjunction with the TIME 5000 Digital high-performance power source, for all types of MIG/MAG high-performance welding

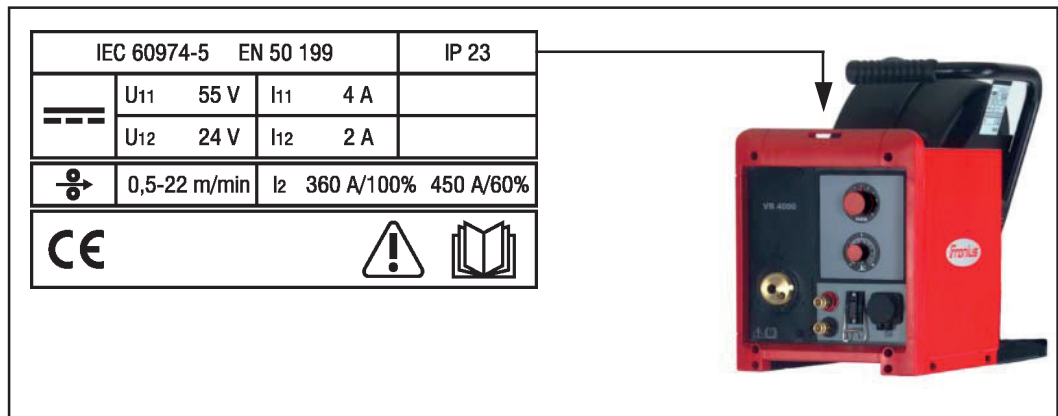
All variants of the VR 4000 are suitable for all standard shielding gases.



**NOTE!** The VR 4000 - 30 and VR 4000-30 TIME wire-feed units have a water-cooled electric motor with disc-shaped 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.



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

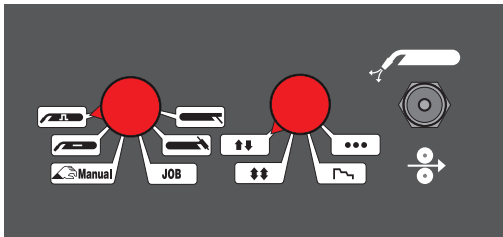


Welding is dangerous. The following basic requirements must be met:

- 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 for VR 4000/VR 4000-30



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.



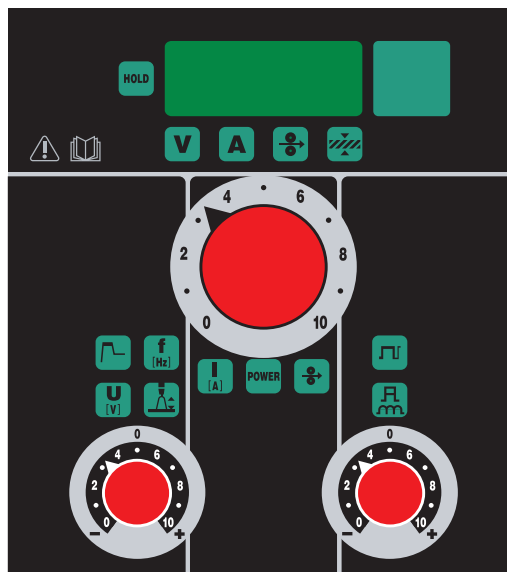
**NOTE!** The "Mode selector switch" option cannot be used in conjunction with the VR 4000 digital display control panel.

## Optional control panels for VR 4000/VR 4000-30

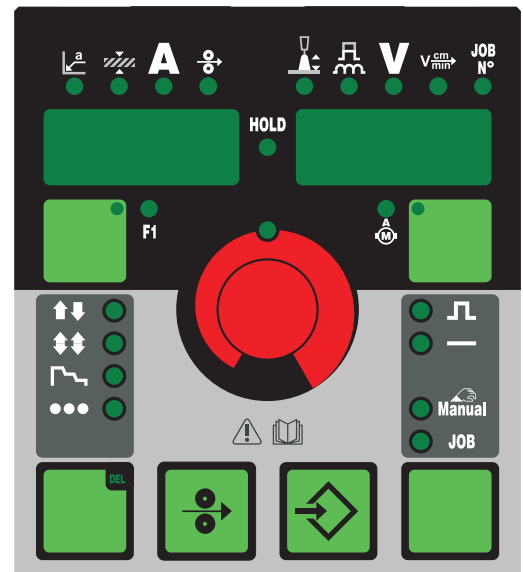
The VR 4000 and VR 4000-30 wire-feed units can, as an alternative to the standard control panel, be fitted with the following control panels:

- 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

## Optional installation and conversion kits

### Robacta Drive installation kit

for retrofitting a connection socket for the Robacta Drive robot welding torch

### Push-pull unit installation kit

for subsequent installation of a push-pull unit

### Digital gas control

for subsequent installation of the digital gas control

### 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

---

**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 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 wire-feed unit 4-roller drive

---

**Insulated crane attachment installation kit**

for fitting an insulated crane attachment

---

# Controls and indicators

## General



**WARNING!** Operating the equipment incorrectly can cause serious injury and damage. Do not use the functions described here until you have fully read and understood the following documents:

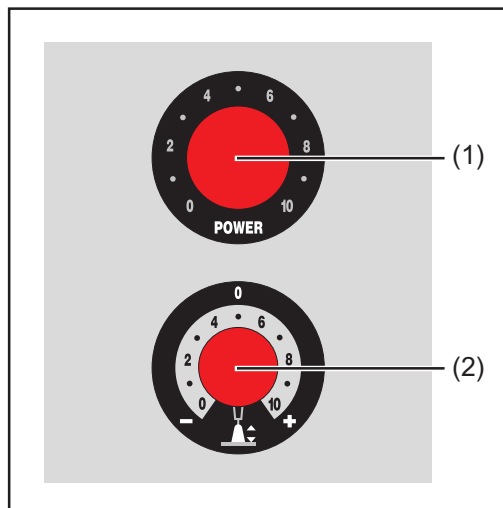
- These operating instructions
- all the operating instructions for the system components, especially the safety rules

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

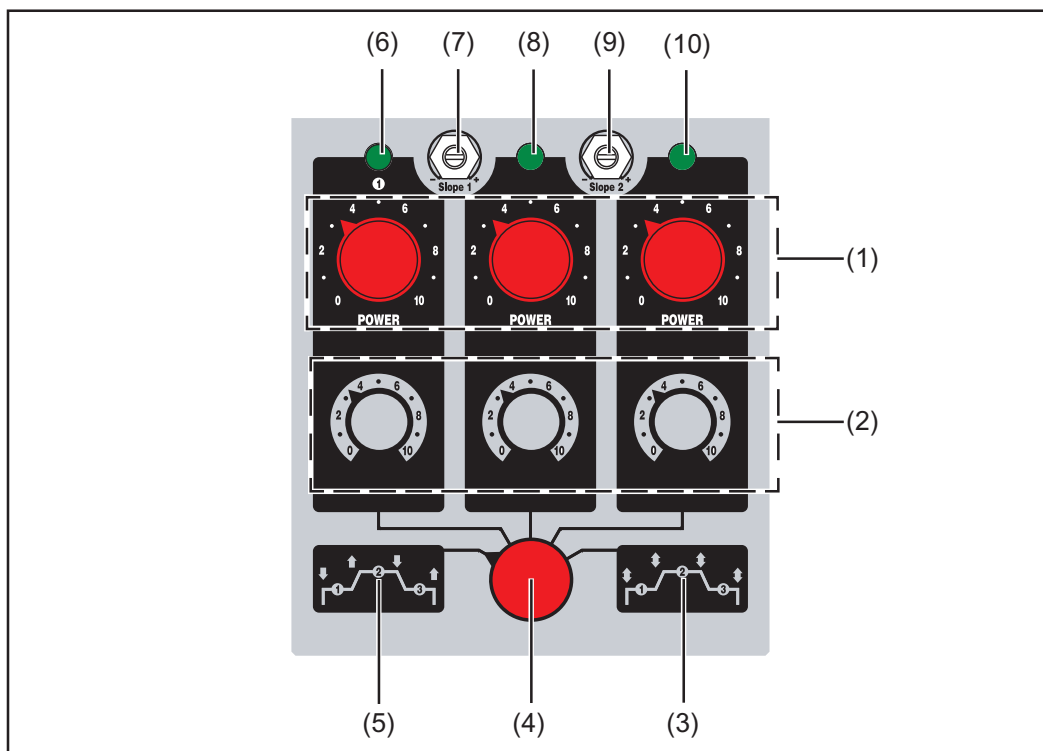
- **Setting the welding power**  
(during MIG/MAG pulse synergic welding, MIG/MAG standard synergic welding)
- **Setting the wire speed**  
(during MIG/MAG standard manual welding)

### (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

**Control panel VR  
4000-30 TIME**

The VR 4000-30 TIME wire-feed unit is part of the TIME high-performance welding system. The 3-parameter control allows you to set the starting, main and final currents individually, which is necessary for high-performance welding.



Control panel VR 4000-30 TIME

(1) **Welding power adjuster**  
for setting the welding power at the respective operating point

(2) **Arc length correction adjuster**  
for correcting the arc length at the respective operating point:  
0 = short arc  
10 = long arc

(3) **"Run 4-step" mode**  
⬇️ = Press and release the torch trigger  
The set operating points run automatically

(4) **Selector switch**  
for selecting operating points 1 - 3 and the operating modes.

If operating point 1, 2 or 3 is selected, the following settings can be made on the power source control panel

- Switching between 2-step and 4-step modes
- Switching between pulse/standard process

(5) **"Run 2-step" mode**  
⬇️ = Press the torch trigger  
⬆️ = Release torch trigger  
The set operating points run according to the 2-step principle

(6) **Operating point 1 indicator**  
illuminates when

- selector switch (4) is set to operating point 1
- operating point 1 is running

(7) **Slope 1 potentiometer**  
for adjusting the transition time from operating point 1 to operating point 2  
, setting range 0.1 - 9.9 s

- 
- (8) Operating point 2 indicator**  
illuminates when
- selector switch (4) is set to operating point 2
  - operating point 2 is running
- 

- (9) Slope 2 potentiometer**  
for adjusting the transition time from operating point 2 to operating point 3  
, setting range 0.1 - 9.9 s
- 

- (10) Operating point 3 indicator**  
illuminates when
- selector switch (4) is set to operating point 3
  - operating point 3 is running
- 

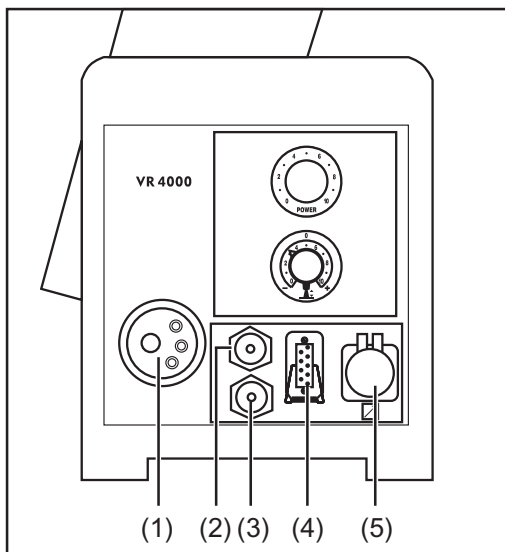
**IMPORTANT!** If using the VR 4000-30 TIME wire-feed unit, the "Job mode" function is not available. After connecting the wirefeeder, the only welding processes that can be selected on the power source are as follows:

- MIG/MAG Standard
- MIG/MAG pulse synergic

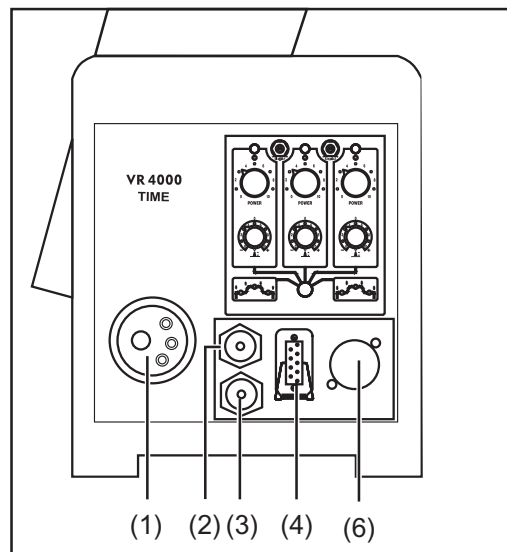


# Connections and mechanical components

## Front of wirefeeder



VR 4000 - front view



VR 4000-30 TIME - front view

- (1) **Welding torch connection**  
to hold the welding torch

---

- (2) **Water return connection (red)**

---

- (3) **Water flow connection (blue)**

---

- (4) **Torch control connection**  
for connecting the torch control plug

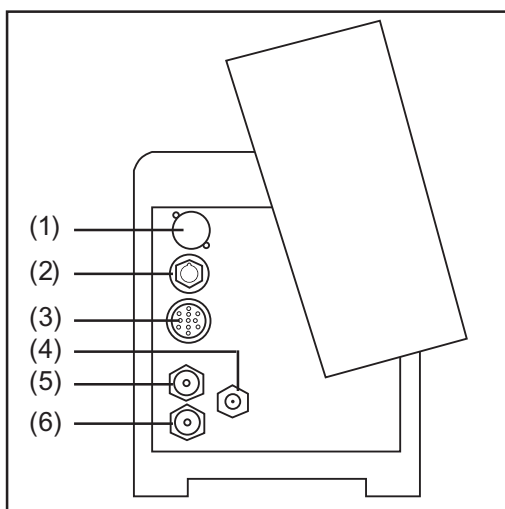
---

- (5) **LocalNet connection**  
standardised connection socket for system add-ons (e.g. remote control, JobMaster torch, etc.)

---

- (6) **Blanking cover**

## Rear of wire-feed unit



VR 4000 - rear view

- (1) **Blanking cover**

---

- (2) **(+) current socket with bayonet latch**  
for interconnecting hosepack

---

- (3) **LocalNet connection**  
for interconnecting hosepack

---

- (4) **Shielding gas connection**  
for interconnecting hosepack

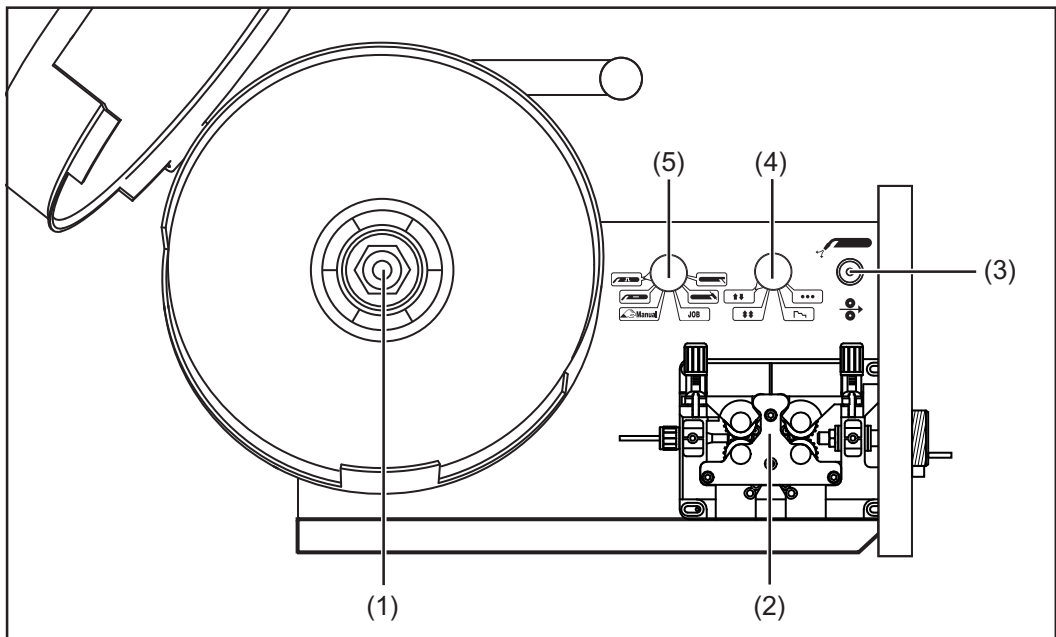
---

- (5) **Water return connection (red)**  
for interconnecting hosepack

---

- (6) **Water flow connection (blue)**  
for interconnecting hosepack

**Side of wire-feed unit**



VR 4000 - side view

**(1) Wirepool holder with brake**  
for attaching standardised wirepools up to max. 16 kg (35.27 lbs.) and with a maximum diameter of 300 mm (11.81 in.)

**(2) 4-roller drive**

**(3) "Wire threading/gas test" button<sup>1)</sup>**  
To feed the wire electrode into the torch hosepack with no accompanying flow of gas or current. While the button is held down, the wire-feed unit runs at feeder inching speed.

Push button upwards

to set the required gas flow rate at the pressure regulator. As long as the button is pressed up, gas flows out.

The "wire threading/gas test" button (5) can also be installed as a separate option on the VR 4000.

**(4) Mode selector switch<sup>1)</sup>**  
for selecting the following modes:

- ↑↓ 2-step mode
- ⇕⇕ 4-step mode
- ⌋ Special 4-step mode (aluminium welding start-up)
- Spot welding

**(5) Process selector switch<sup>1)</sup>**  
for selecting the following processes

- ⌋ MIG/MAG Pulse-Synergic
- ⌋ MIG/MAG Standard-Synergic
- ⌋ Manual MIG/MAG standard manual welding
- JOB Job welding
- ⌋ TIG welding with touch-down ignition
- ⌋ MMA welding

<sup>1)</sup> "Mode selector switch" option

**IMPORTANT!** If settings have been selected using the "Mode selector switch" option, they cannot be changed using other controls, for example:

- the control panel on the front of the power source
- on the front of the wire-feed unit
- on the remote control

# 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.:

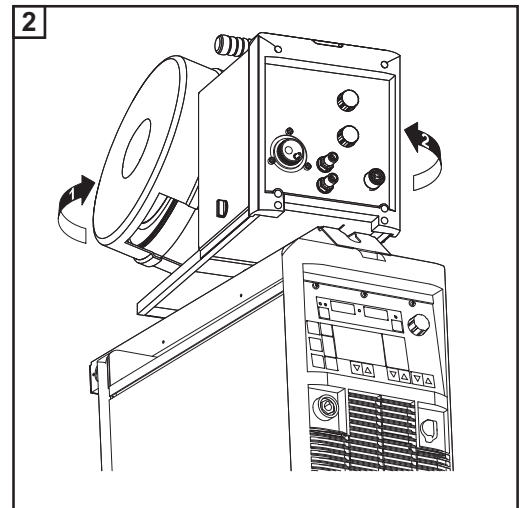
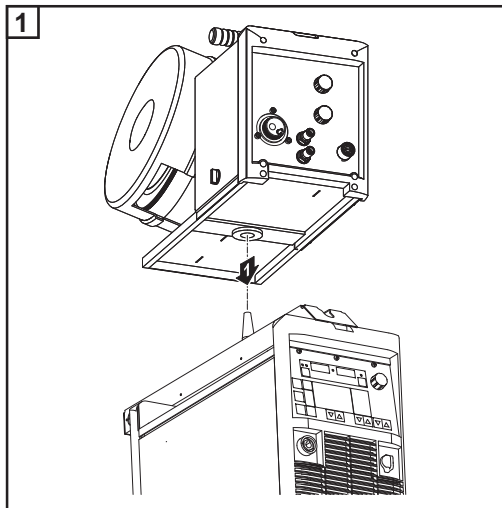
- "PickUp" swivel pin receptor, for use with the "PickUp" trolley
- "narrow" swivel pin receptor, for use with an upright console
- "wide" swivel pin receptor, for use with two screwed upright consoles and two power sources

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

## General



**CAUTION!** Danger from falling wire-feed unit. 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.

## Connecting the wirefeeder to the power source



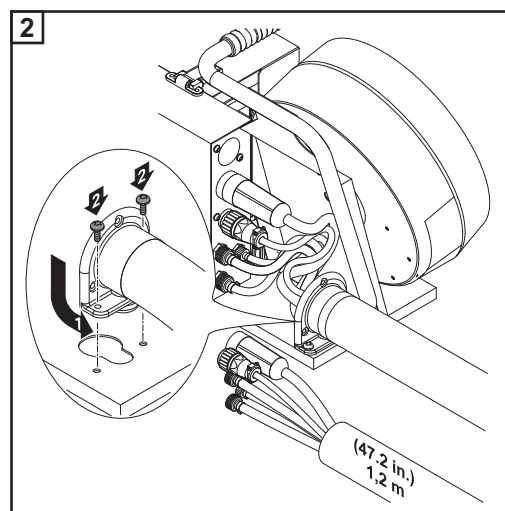
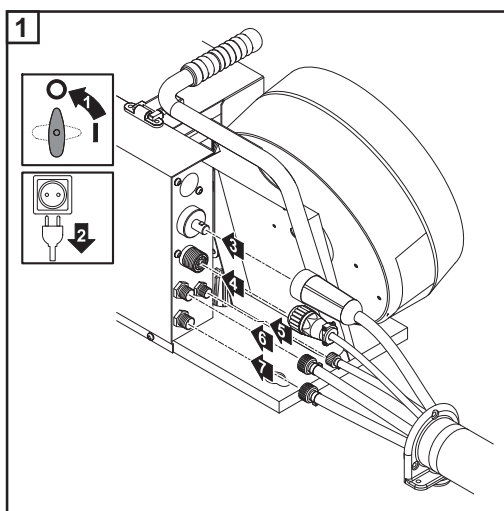
**WARNING!** An electric shock can be fatal. If the machine is plugged in during installation, there is a high risk of very serious injury and damage. Only carry out work on the device when

- the power source mains switch is in the "O" position
- the device is unplugged from the mains.



**NOTE!** When connecting the interconnecting hosepack, check that

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



**IMPORTANT!** To prevent signs of wear and tear, the interconnecting hosepack cables/pipes should be "looped inside". A strain-relief device is not provided in the case of 1.2 m (3 ft. 11.24 in.) interconnecting hosepacks.

# Connecting the welding torch

## Welding torch connections

	Fronius F++	Euro connection	for Dinse	for Tweco
VR 4000	X	X	X	X
VR 4000-30	X	X	-	-
VR 4000-30 TIME	X	-	-	-

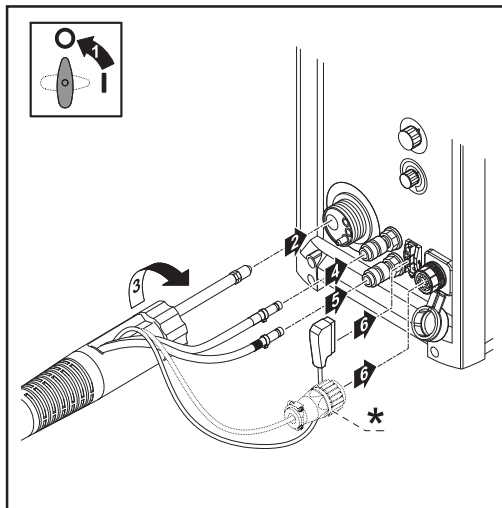
## Safety



**NOTE!** When connecting the welding torch, check that

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

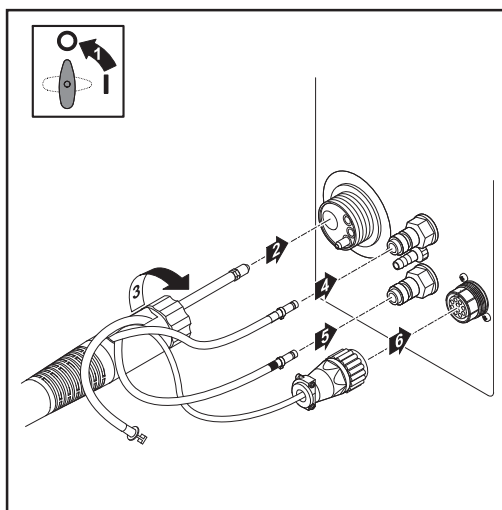
## Connecting MIG/MAG manual welding torch



\* 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 MIG/MAG robot welding torch

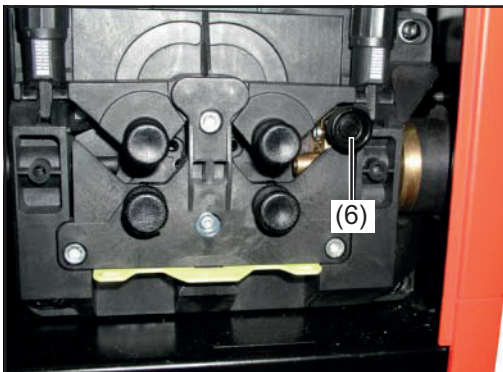


### Connecting the Tweco welding torch



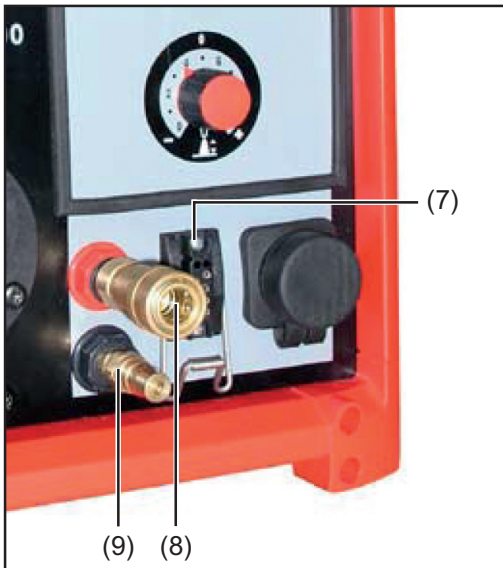
Inserting the welding torch into the connection for Tweco

- 1 Switch the power source mains switch to the "0" position
- 2 Open the wire spool cover
- 3 Insert the welding torch, infeed tube first, into the welding torch connection (5)



Fixing welding torch in place using a knurled screw

- 4 Fix the welding torch in place using a knurled screw (6)



Connecting water connections for water flow and water return

- 5 Plug the control plug of the welding torch onto the torch control connection (7) and twist it to fasten it
- 6 Optional: connect external water connections for water flow (9) and return (8) correctly, matching the colours
- 7 Close wire spool cover

# Inserting/replacing feed rollers

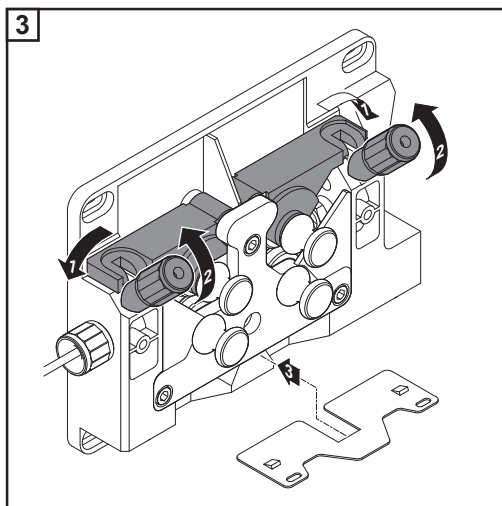
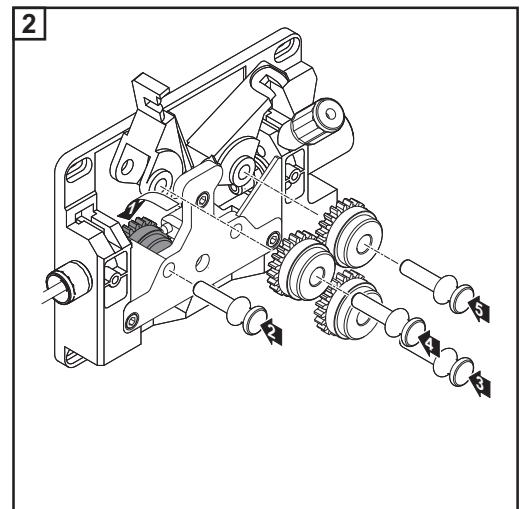
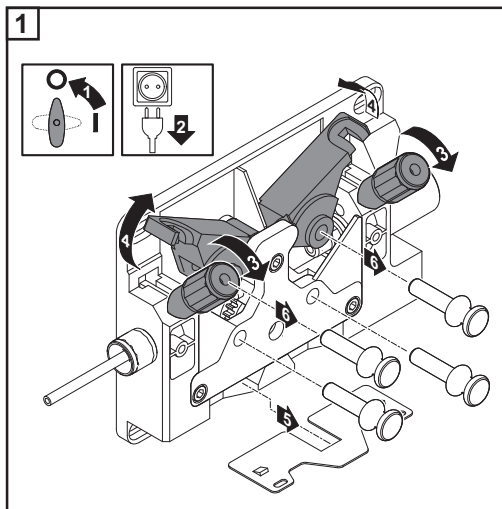
**General remarks** In order to achieve optimum wire electrode feed, the feed rollers must be suitable for the diameter and alloy of the wire being welded.

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

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

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


## inserting/replacing feed rollers






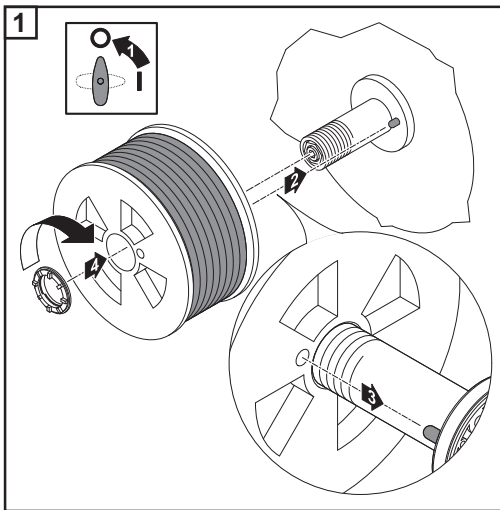
# Inserting the wirepool, inserting the basket-type spool

## Safety


 **CAUTION!** Risk of injury from springiness of spooled wire electrode. 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!** Risk of injury from falling wirepool/basket-type spool. Make sure that the wirepool or basket-type spool with adapter is fitted securely to the wirepool holder.

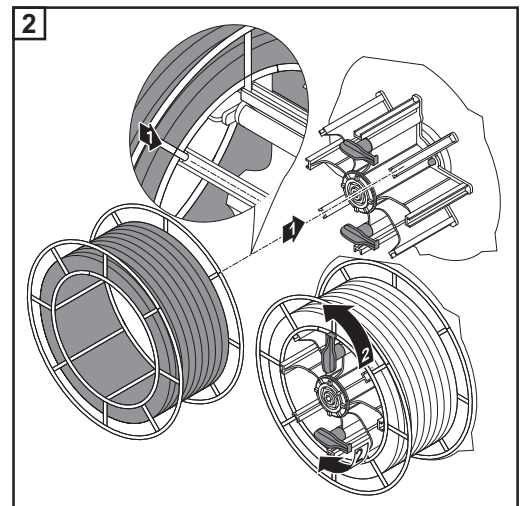
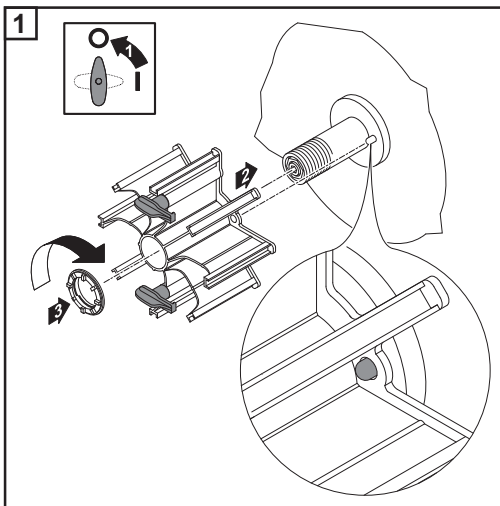
## Inserting the wirepool



## 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!** Risk of injury from falling basket-type spool. 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

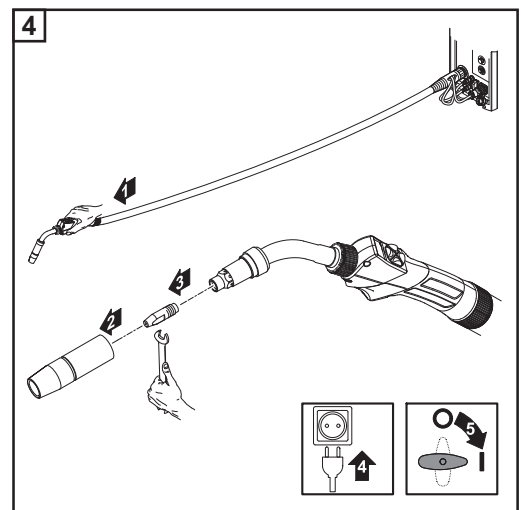
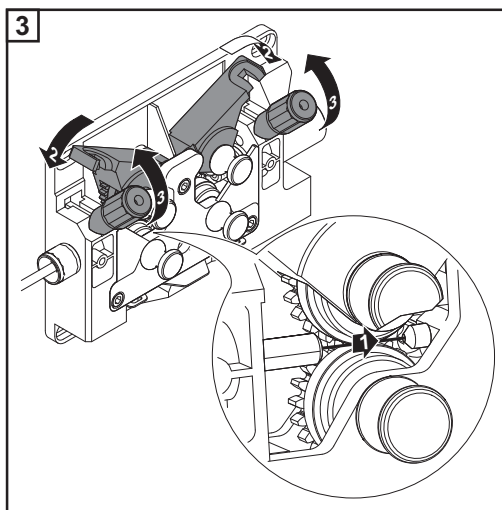
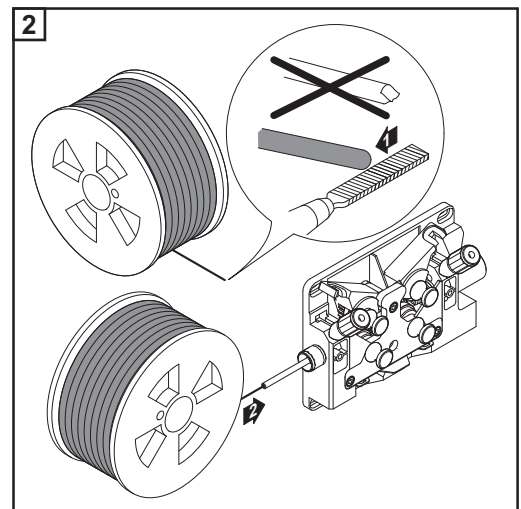
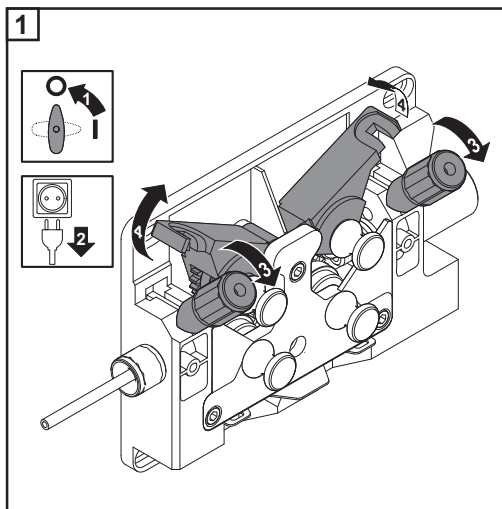
## Feed in the wire electrode



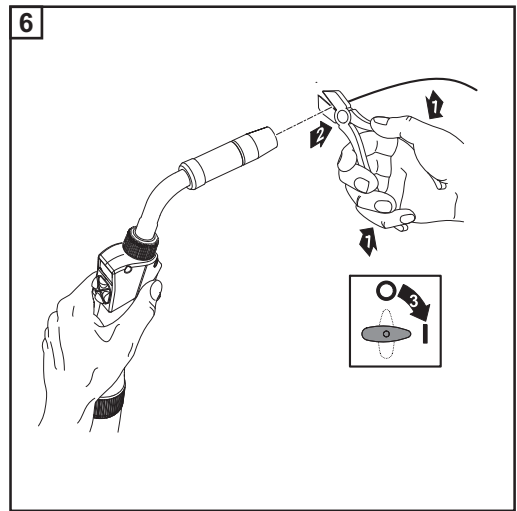
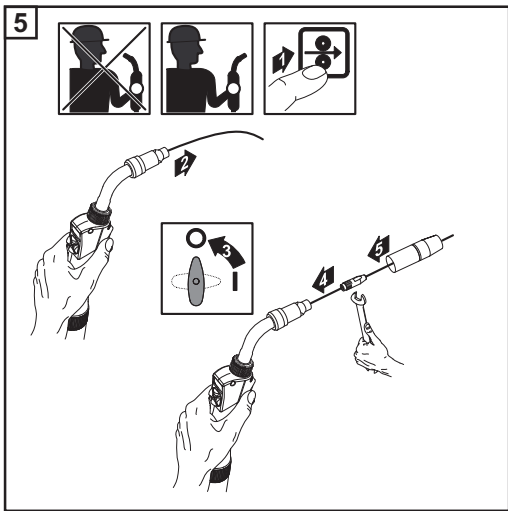
**CAUTION!** Risk of injury from springiness of spooled wire electrode. When inserting the wire electrode into the 4 roller drive, hold the end of the wire electrode firmly to avoid injuries caused by the wire springing back.



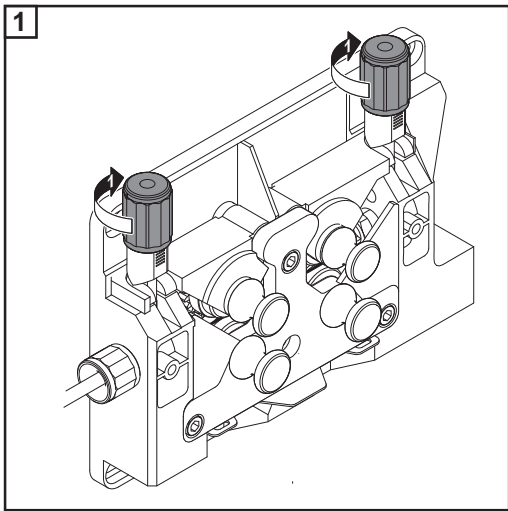
**CAUTION!** Risk of damage to the welding torch from sharp end of wire electrode. Deburr the end of the wire electrode well before feeding in.



**CAUTION!** Risk of injury from wire electrode emerging at speed. 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.

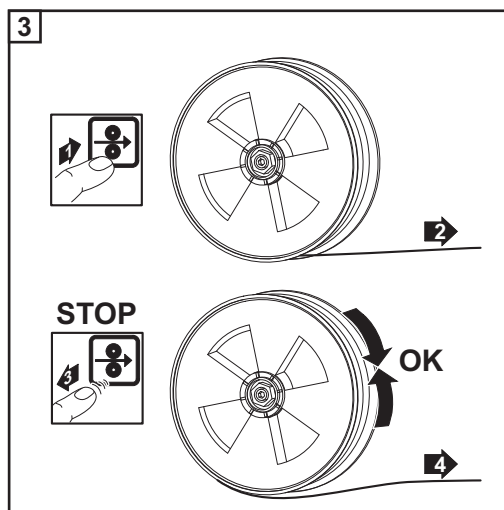
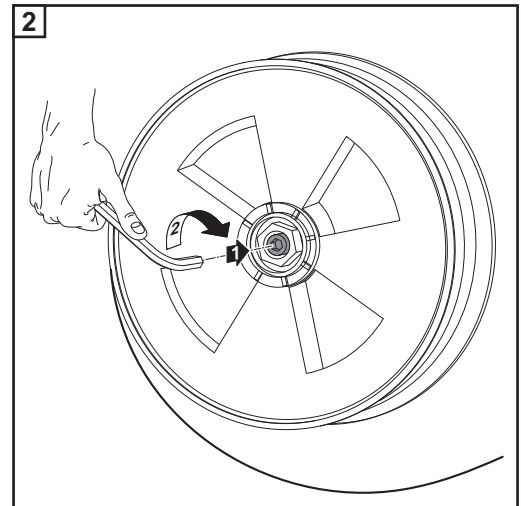
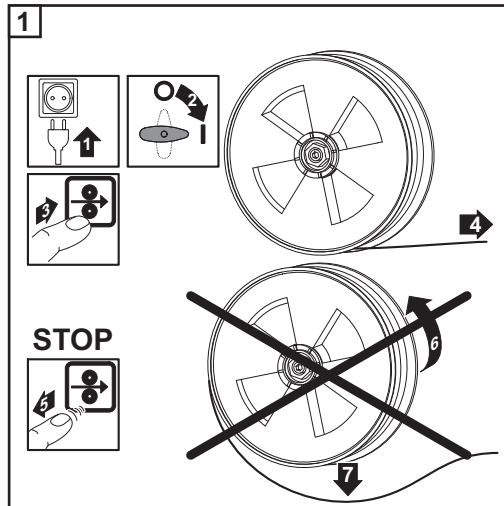
Contact pressure standard values	Semi-cylindrical rolls	Trapeze rolls	Plastic rollers
Aluminium	1.5	-	3.5 - 4.5
Steel	3 - 4	1.5	-
CrNi	3 - 4	1.5	-

# Adjust the brake

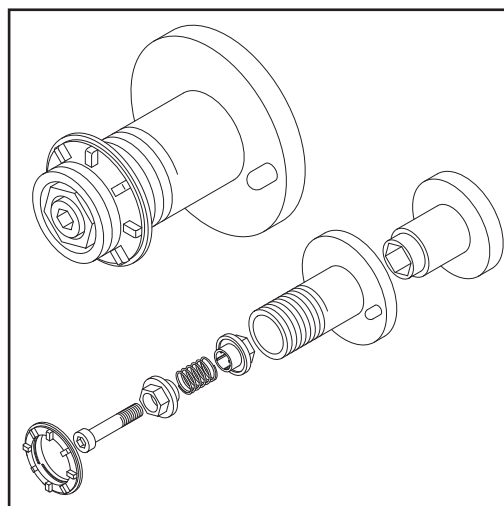
## Adjusting the brake



**NOTE!** After releasing the torch trigger the wirepool should stop unreeling. Adjust brake if necessary.



## Design of the brake



**WARNING!** Fitting the equipment incorrectly can cause serious injury and damage.

- Do not dismantle the brake.
- Maintenance and servicing of brakes to be carried out by trained, qualified personnel only.

The brake is only available as a complete unit.  
This illustration is for information purposes only.

# Start-up

---

## General information



**WARNING!** Operating the equipment incorrectly can cause serious injury and damage. Do not use the functions described until you have thoroughly read and understood the following documents:

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

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:

- Wire-feed unit connected to the power source using the interconnecting hosepack
- Welding torch connected to the wire-feed unit
- Feed rollers inserted into the wire-feed unit
- Wirespool or basket-type spool and adapter inserted in the wire-feed unit
- 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

# 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!** 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



**NOTE!** Risk of damage to electronic components. Do not bring the air nozzle too close to electronic components.

---

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

# Technical data

## VR 4000

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	650 x 290 x 410 mm 25.59 x 11.42 x 16.14 in.
Weight	16 kg 35.27 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

## VR 4000-30

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	650 x 290 x 410 mm 25.59 x 11.42 x 16.14 in.
Weight	16.5 kg 36.38 lbs.
Types of wirespool	all standardised wirespools
Maximum permitted wirespool weight	16.5 kg 36.38 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

---

**VR 4000-30 TIME**

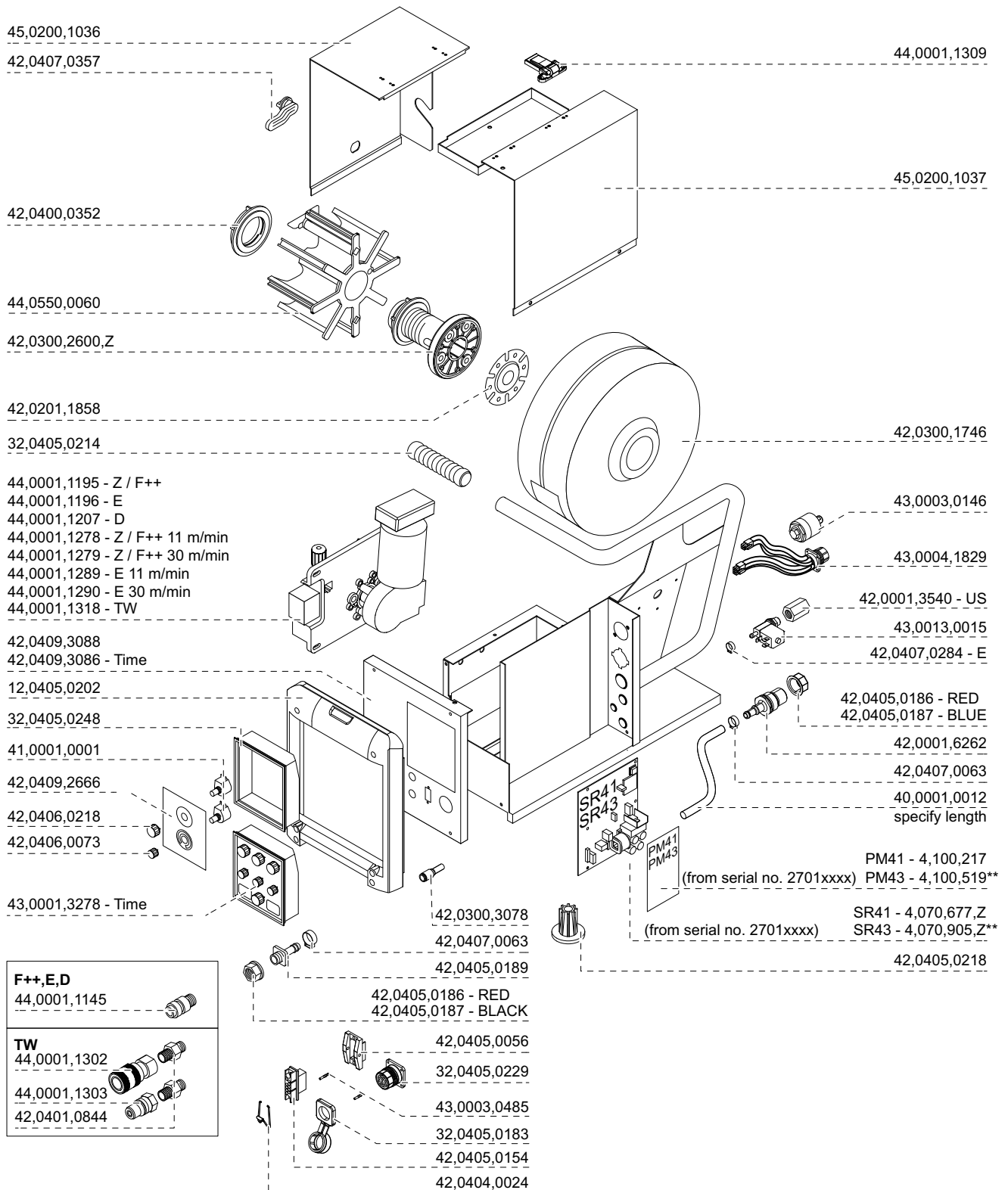
Supply voltage (supply from the power source)	55 V DC
Nominal current	4 A
Wire speed	0.5 - 30 m/min 19.69 - 1181.10 ipm
Degree of protection	IP 23
Dimensions l x w x h	650 x 290 x 410 mm 25.59 x 11.42 x 16.14 in.
Weight	16.5 kg 36.38 lbs.
Types of wirepool	all standardised wirepools
Maximum permitted wirepool weight	16.5 kg 36.38 lbs.
Wirepool 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



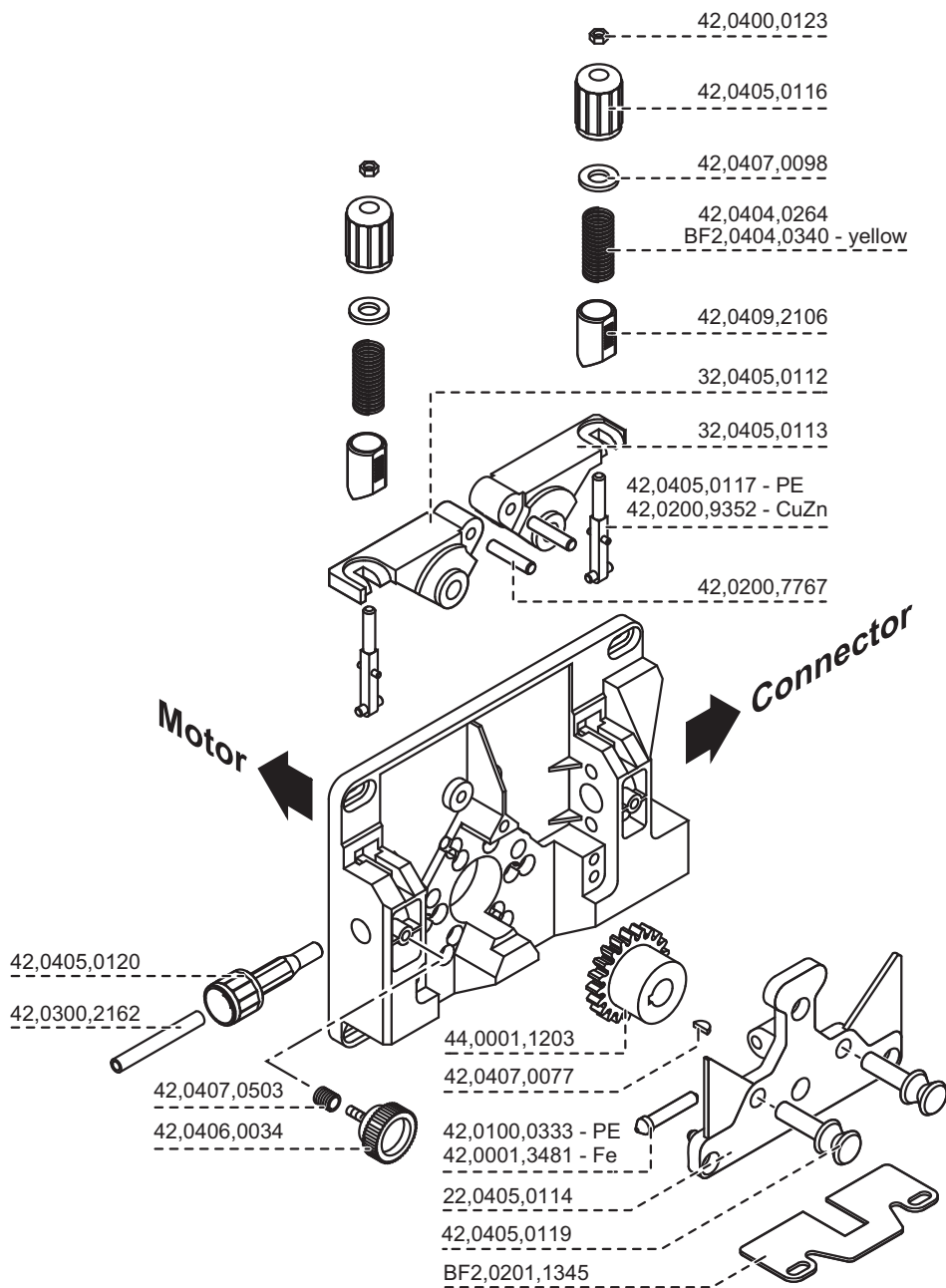
# Appendix

# Spare parts list: VR 4000 TIME, VR 4000, VR 4000-30

VR 4000 2R/G/W/Z	4,045,830	VR 4000-30 Time 4R/G/W/F++	4,045,831,630
VR 4000 2R/G/W/F++	4,045,830,000	VR 4000 4R/G/W/F++	4,045,831,800 US
VR 4000 2R/G/W/E	4,045,830,001	VR 4000 4R/G/W/E	4,045,831,801 US
VR 4000 4R/G/W/Z	4,045,831	VR 4000 4R/G/W/TW	4,045,831,808 US
VR 4000 4R/G/W/F++	4,045,831,000**	VR 4000-30 4R/G/W/F++	4,045,966,000
VR 4000 4R/G/W/E	4,045,831,001**	VR 4000-30 4RG/W/E	4,045,966,001
VR 4000 4R/G/W/D	4,045,831,002	VR 4000 4R/G/E	4,045,831,631



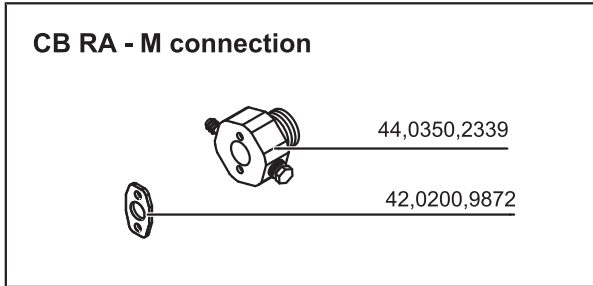
**Motorplate 42V 4R**



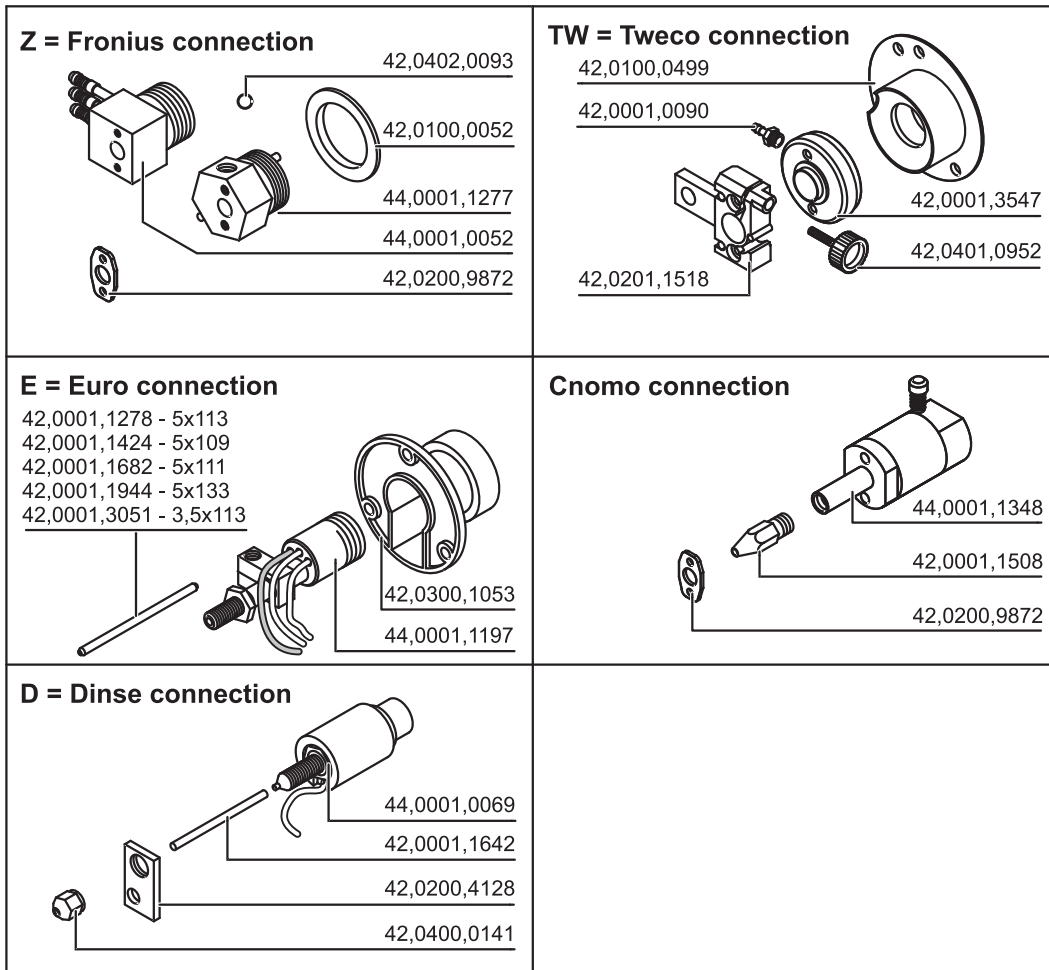
**Connerctors**

**VR 1500-M ( 4.045.848.638 )**

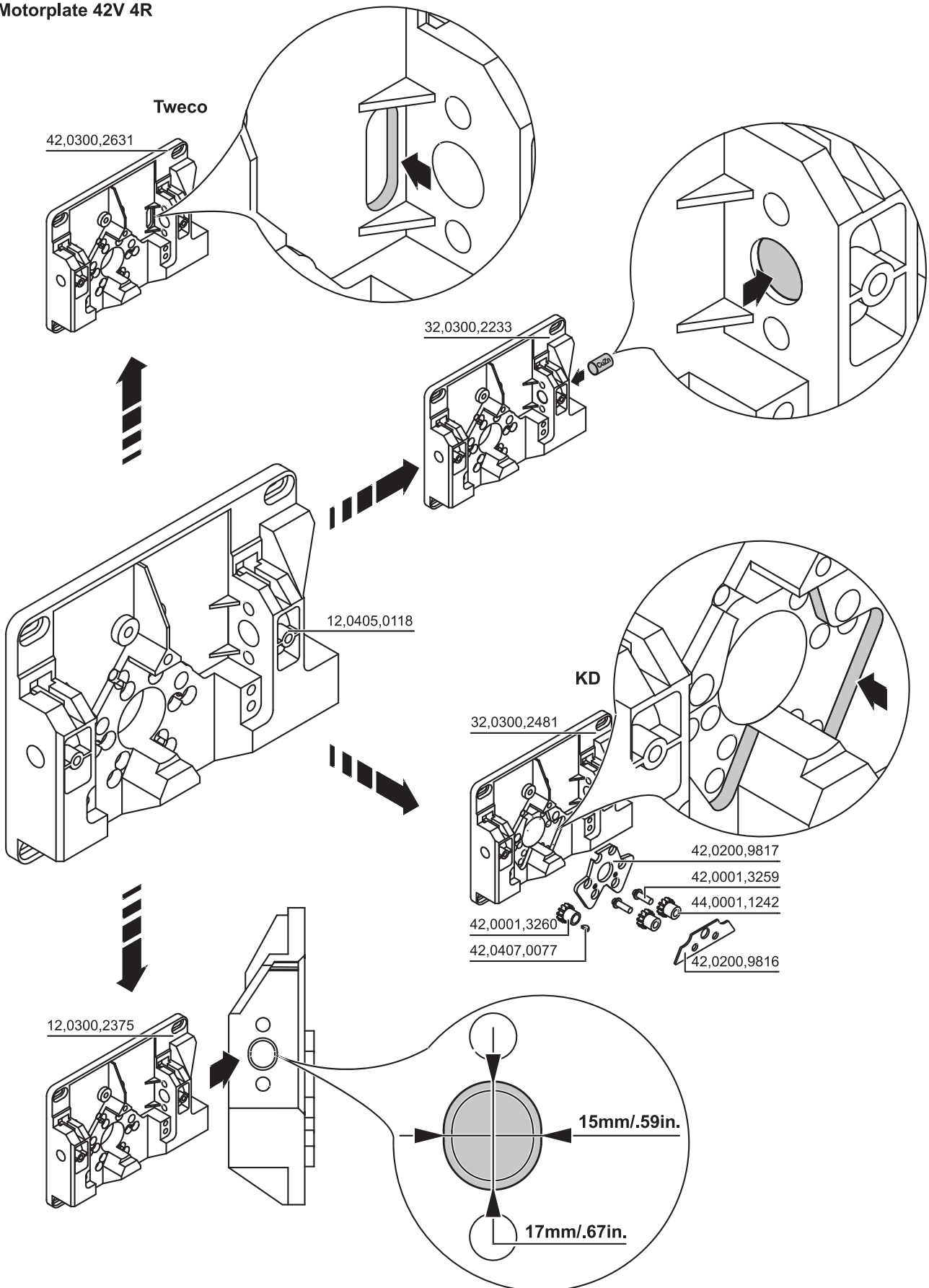
**VR 1500-PAP ( 4.045.996, 4.045.996.800, 4.049.001, 4.049.001.800 )**



**VR 1500 ( all variants )**

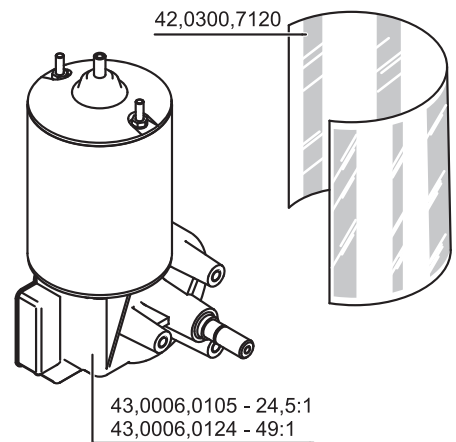
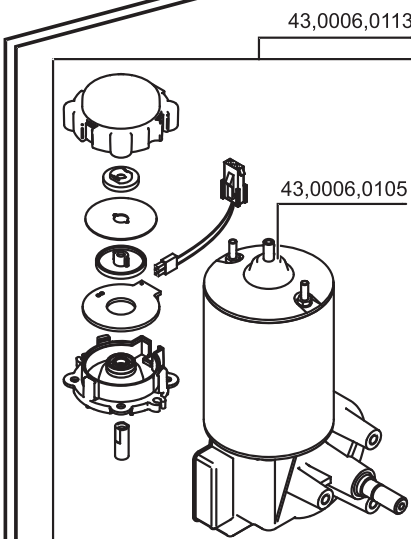
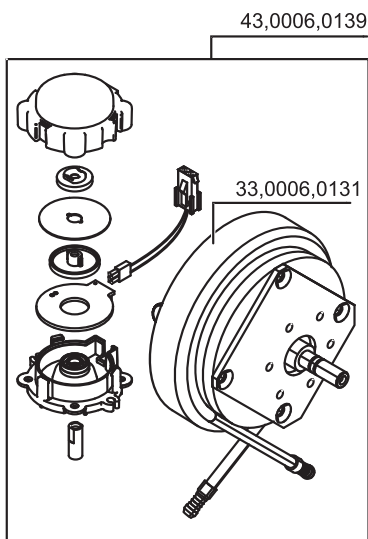
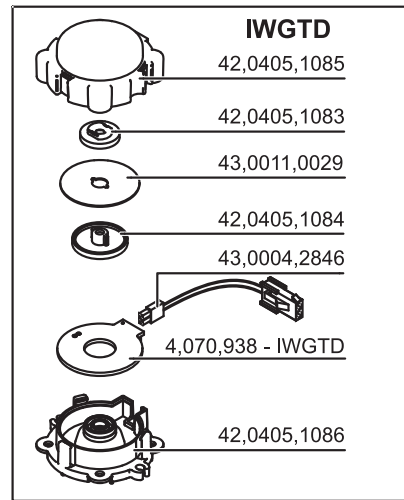
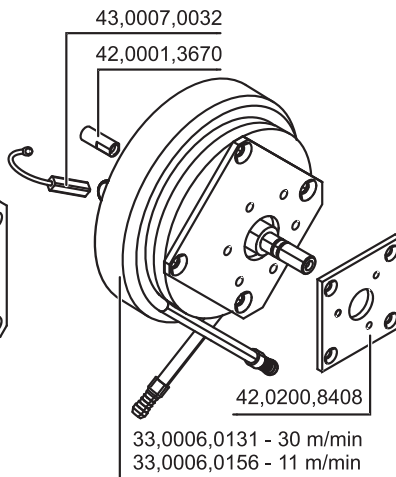
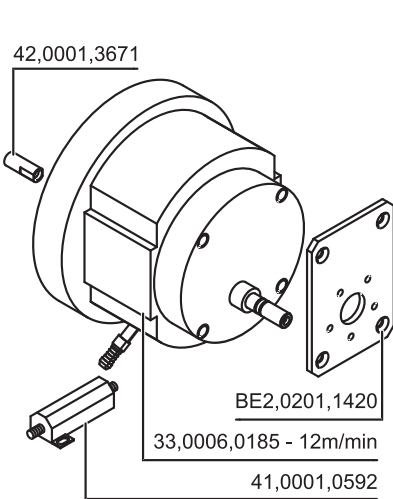
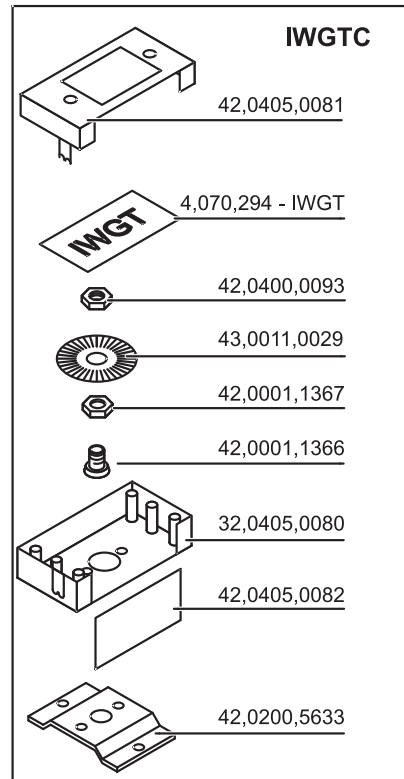
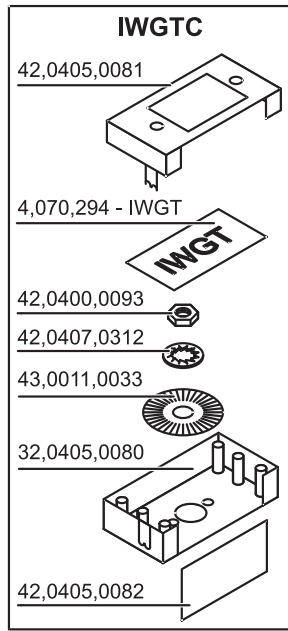
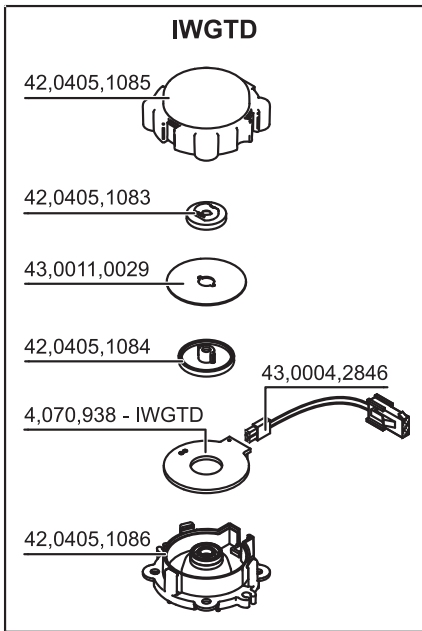


Motorplate 42V 4R



**Motorplate 42V 4R**

**Motor**



Profi			
mm / inch	T	H	R
0,6 / .023	44,0001,3403	-	-
0,8 / .030	44,0001,3405	44,0001,3404	-
0,9 / .035	44,0001,1365	44,0001,3404	-
1,0 / .040	44,0001,1227	44,0001,1184	-
1,2 / .045	44,0001,1200	44,0001,1185	44,0001,3406
1,4 / .052	44,0001,1353	44,0001,3407	44,0001,3408
1,6 / 1/16	44,0001,1228	44,0001,1209	44,0001,3409
1,8 / .068	-	44,0001,1296	-
2,0 / 5/64	44,0001,3412	44,0001,3410	44,0001,3411
2,4 / 3/32	-	44,0001,3413	44,0001,3414
2,8 / 7/64	-	-	44,0001,3415
3,2 / 1/8	-	44,0001,3416	44,0001,3417

Heavy Duty	
mm / inch	U
0,9 / .035	44,0001,1376
1,0 / .040	44,0001,1377
1,2 / .045	44,0001,1378
1,4 / .052	44,0001,1379
1,6 / 1/16	44,0001,1323
2,0 / 5/64	44,0001,1501
2,4 / 3/32	44,0001,1322

Profi				
mm / inch	Steel + CrNi	Alu + CuSi	FC	without teeth
0,6 / .023	42,0001,1438	-	-	-
0,8 / .030	-	42,0001,1610	-	42,0001,2767
0,9 / .035	-	-	-	42,0001,3591
1,0 / .040	-	42,0001,1611	-	42,0001,2824*
1,2 / .045	42,0001,1321	42,0001,0382	42,0001,0403	-
1,4 / .052	44,0001,1353	-	-	-
1,6 / 1/16	42,0001,1322	42,0001,0383	42,0001,0378	-
2,0 / 5/64	-	42,0001,1609	42,0001,0379	-
2,4 / 3/32	-	42,0001,1655	42,0001,0380	-
2,8 / 7/64	-	-	42,0001,0432	-

pressure roller	
Profi	
44,0001,1221	

drive roller	
44,0001,1203	

- D** \* Nicht geeignet für Schweißdrähte deren Durchmesser nur in Inch angegeben ist.
- GB** \* Not suited for welding wires with a diameter given in inches only.
- F** \* Ne convient pas pour fils soudage dont le diamètre n'est indiqué qu'en pouces.
- I** \* Non adatto per fili di apporto il cui diametro sia riportato solo in pollici.

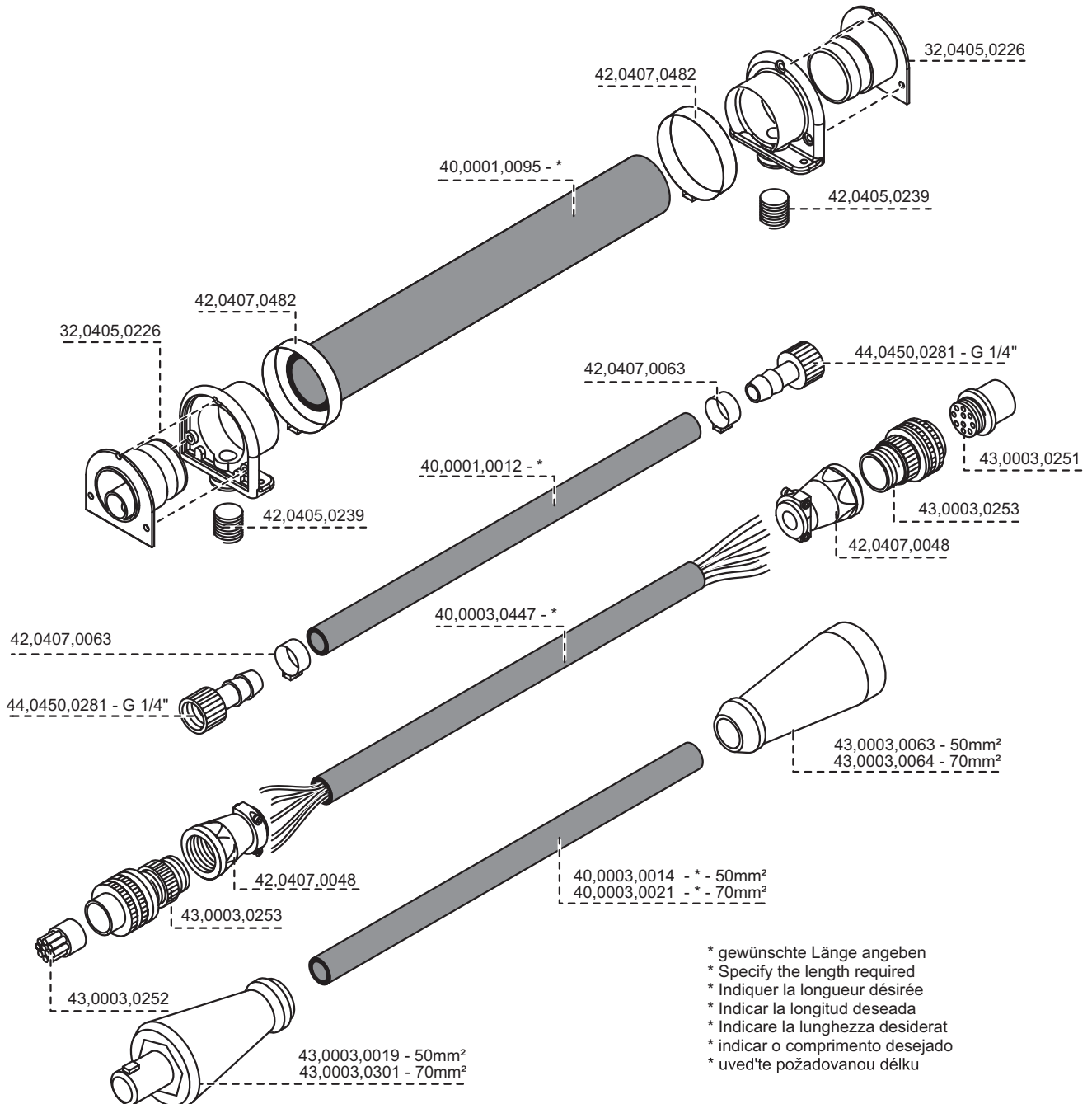
- E** \* No sirve para alambres de aportación cuyo diámetro está indicado únicamente en pulgadas.
- P** \* Não adequado para fios de soldadura cujo diámetro esteja indicado apenas em polegadas.
- CZ** \* Není vhodný pro svařovací dráty, jejichž průměr byl uveden pouze v palcích.
- NL** \* Niet geschikt voor lasdraaden wanner de diameter is alleen in Inch angegeven.





## Connection hose pack

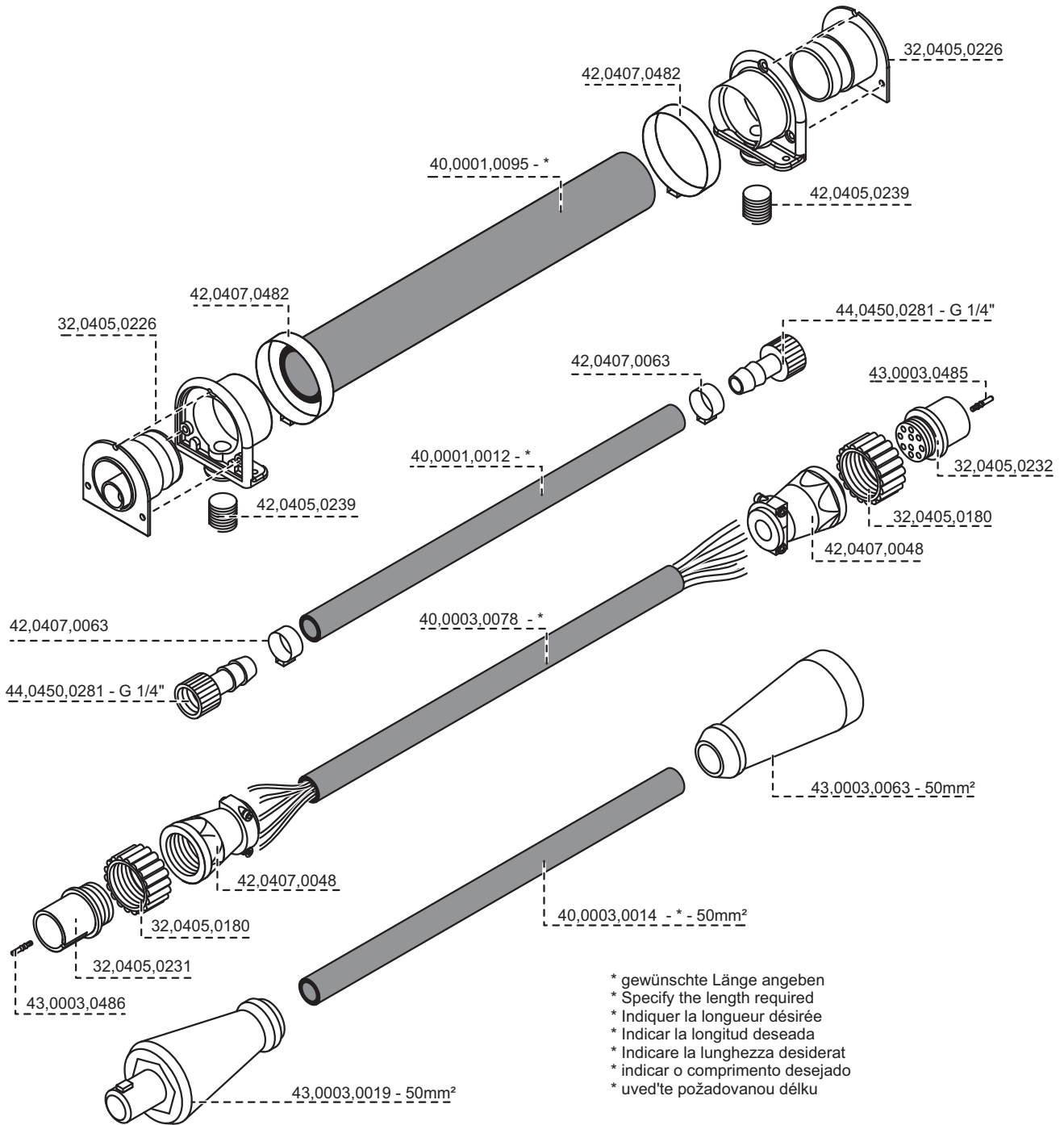
G 50mm<sup>2</sup> 4m      4,047,411  
 G 70mm<sup>2</sup> 8m      4,047,412



- \* gewünschte Länge angeben
- \* Specify the length required
- \* Indiquer la longueur désirée
- \* Indicar la longitud deseada
- \* Indicare la lunghezza desiderat
- \* indicar o comprimento desejado
- \* uved'te požadovanou délku

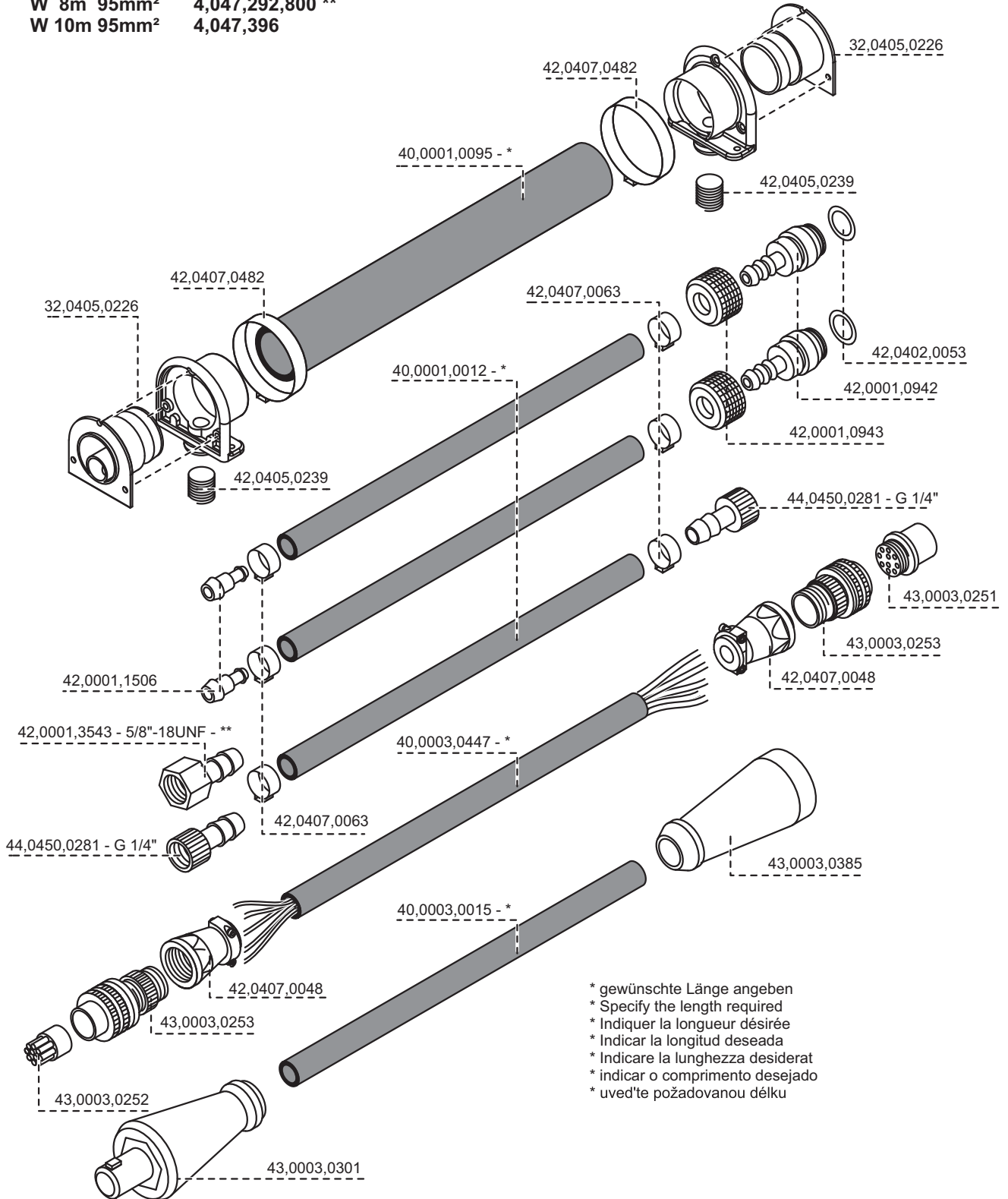
## Connection hose pack

G 50mm <sup>2</sup> 1,2m	4,047,408
G 50mm <sup>2</sup> 5m	4,047,409
G 50mm <sup>2</sup> 10m	4,047,410



## Connection hose pack

W 4m 95mm <sup>2</sup>	4,047,291
W 8m 95mm <sup>2</sup>	4,047,292
W 8m 95mm <sup>2</sup>	4,047,292,800 **
W 10m 95mm <sup>2</sup>	4,047,396



- \* gewünschte Länge angeben
- \* Specify the length required
- \* Indiquer la longueur désirée
- \* Indicar la longitud deseada
- \* Indicare la lunghezza desiderata
- \* indicar o comprimento desejado
- \* uved'te požadovanou délku



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