

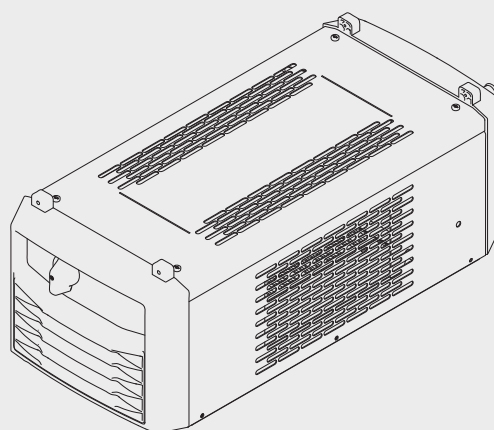


**600 V/500 V - 460 V, 575 V - 440 V
auto-transformer**

EN

Operating instructions

Autotransformer



42,0426,0084,EN 012-25082020

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Safety rules

Explanation of safety notices

DANGER!

Indicates **immediate danger**.

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

WARNING!

Indicates a **potentially hazardous situation**.

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

CAUTION!

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

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

NOTE!

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

General

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

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

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

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

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

All safety and danger notices on the device

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

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

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

This is for your personal safety!

Proper use

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

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

Proper use includes:

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

Never use the device for the following purposes:

- Thawing out pipes
 - Charging batteries
 - Starting engines
-

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

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

Environmental conditions

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

Ambient temperature range:

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

Relative humidity:

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

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

Obligations of the operator

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

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

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

Obligations of personnel

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

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

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

Mains connection

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

This may affect a number device types in terms of:

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

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

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

IMPORTANT! Ensure that the mains connection is earthed properly

Protecting yourself and others

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

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

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

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

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

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

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

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

Noise emission values

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

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

Danger from toxic gases and vapours

The fumes produced during welding contain harmful gases and vapours.

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

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

Keep your face away from welding fumes and gases.

Fumes and hazardous gases

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

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

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

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

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

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

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

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

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

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

Danger from flying sparks

Flying sparks may cause fires or explosions.

Never weld close to flammable materials.

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

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

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

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

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

Risks from mains current and welding current

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

If necessary, provide adequate earthing for the workpiece.

Switch off unused devices.

Wear a safety harness if working at height.

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

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

After opening the device:

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

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

Meandering welding currents

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

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

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

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

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

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

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

EMC Device Classifications

Devices in emission class A:

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

Devices in emission class B:

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

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

EMC measures

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

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

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

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

Supporting measures for avoidance of EMC problems:

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

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

EMF measures

Electromagnetic fields may pose as yet unknown risks to health:

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

Specific hazards

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

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

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

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

During operation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 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.

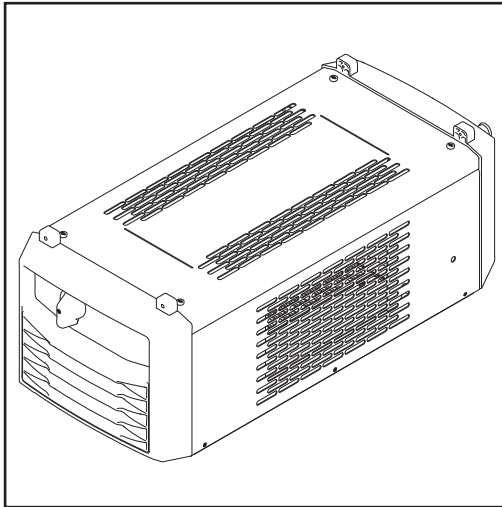
Data protection The user is responsible for the safekeeping of any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

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

Machine concept



The auto-transformer allows the TransSteel 3500/5000 MIG/MAG power source to be used with mains voltages of 600 V, 575 V and 500 V. The mains voltage is transformed to 460 V or 440 V. The auto-transformer has its own main switch, which can be used to centrally switch all the components of the welding system on or off. A cylinder holder extension is delivered with the auto-transformer to enable the auto-transformer to be mounted on the PickUp 5000 trolley together with a cooling unit and a power source.

Possible voltage ranges

The auto-transformer transforms voltages as follows:

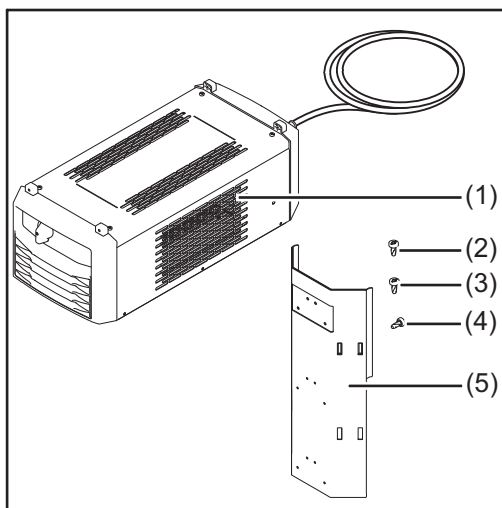
- 600 V/500 V - 460 V
- 575 V - 440 V

The auto-transformer is prepared for 600 V and 575 V mains voltage at the factory. To use the auto-transformer at a mains voltage of 500 V, set it to 500 V mains voltage (see the "Setting the auto-transformer to 500 V mains voltage" section).

Application areas

The auto-transformer can be used for all products in the TransSteel 3500/5000 series.

Scope of supply

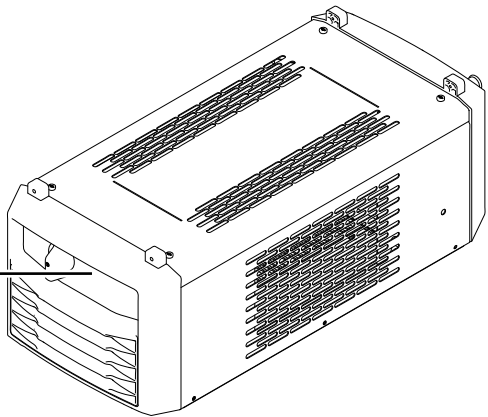


- (1) Auto-transformer with 1.5 m connection cable for the power source
- (2) Four 5 x 16 mm screws for screwing to the trolley
- (3) Four 5 x 25 mm screws for screwing to the power source or cooling unit
- (4) Eight M 5 x 12 screws for the cylinder holder extension
- (5) Cylinder holder extension
- (6) Operating instructions (not shown)

Warning notices affixed to the device

The auto-transformer 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.

		Type: Autotrafo 3x600/500V-460V	
A-4600 Wels www.fronius.com		Art.No.: 4,001,706	
		Ser.No.: 2047XXXX	
		IEC 60974-1	
SEC	X (40°C)	40%	100%
	I ₂	38 A	24 A
	U ₂	3 x 460 / 440 V	
PRIM	U ₁		I _{1max} I _{1eff}
	600/575V	35 A	31 A 21.5 A
	3 x 500V	35 A	36 A 24.7 A
I.CL. H	S1		21 kVA
IP 23			



Do not dispose of used units with domestic waste. Dispose of them according to safety rules.

Do not use the functions until you have fully read all the operating instructions.

Mains connection The devices are designed for the mains voltage specified on the rating plate. If your version of the appliance does not come with mains cables and plugs ready-fitted, these must be fitted in accordance with national regulations and standards. For details of fuse protection of the mains lead, please see the technical data.

CAUTION!

An inadequately dimensioned electrical installation can cause serious damage.

- The mains lead and its fuse must be dimensioned to suit the local power supply. The technical data shown on the rating plate applies.

Control elements and connections

Safety



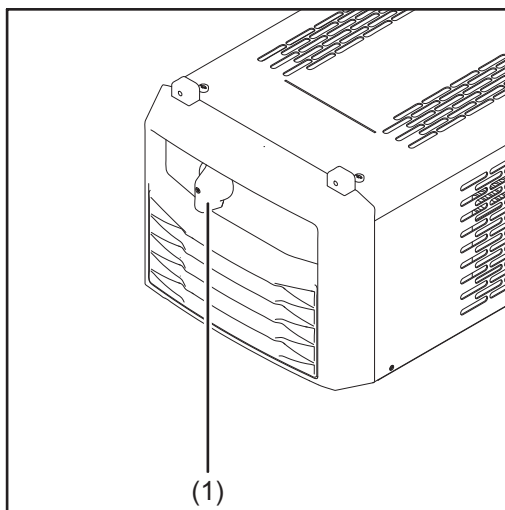
WARNING!

Operating the equipment incorrectly can cause serious injury and damage.

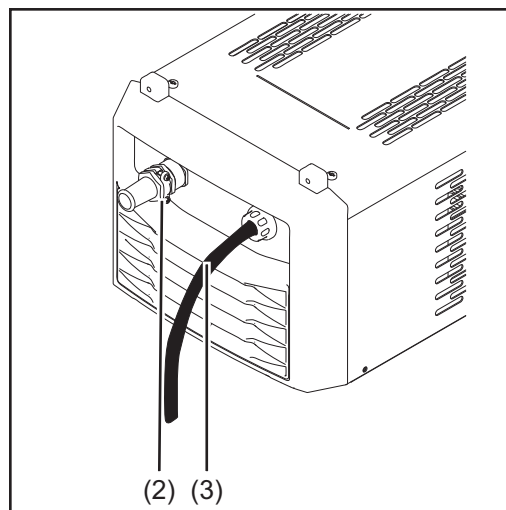
Do not use the functions described until you have thoroughly read and understood the following documents:

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

Control elements and connections



Front view



Rear view

No.

Func- tion

- | | |
|-----|--|
| (1) | Mains switch
for switching the auto-transformer and all the welding system components on and off |
| (2) | Strain relief device for the mains cable |
| (3) | Power source connection cable
for supplying the power source with transformed voltage |

Before commissioning

Safety



WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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

Setup regulations



WARNING!

If one of these machines topples over or falls it could cause serious or even fatal injury.

Place device on a solid, level surface in such a way that it remains stable.

The device is tested to IP 23 in conjunction with a power source or a cooling unit, meaning:

- Protection against penetration by solid foreign bodies with diameters > 12 mm (0.49 in.)
- Protection against direct sprays of water up to 60° from the vertical

NOTE!

If the auto-transformer is used without a device (power source and cooling unit) fixed onto it, the protection class of the auto-transformer is reduced to IP 20.

Cooling air

The system must be set up in such a way that the cooling air can flow unimpeded through the slots in the side panels.

Dust

Make sure that metallic dust cannot accumulate directly on the device (from grinding work, for example).

Outdoor operation

The device can be set up and operated outdoors in accordance with IP23. Avoid direct wetting (e.g. from rain).

Intended purpose

The device is intended solely for voltage transformation for the voltages specified on the rating plate.

The device is intended solely for use in conjunction with a Fronius power source.

Any use above and beyond this purpose is deemed improper. The manufacturer is not liable for any damage, unexpected or incorrect results arising out of such misuse.

Utilisation in accordance with the "intended purpose" also comprises

- carefully reading and obeying all operating instructions and safety and danger notices
- carrying out all the specified inspection and servicing work

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.

Fitting the mains cable to the auto-transformer

Safety

WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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

WARNING!

An electric shock can be fatal.

Before starting work:

- ▶ Turn the mains switch of the auto-transformer to the "O" position
- ▶ Unplug the auto-transformer 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

WARNING!

An inadequate ground conductor connection can cause serious injury or damage.

The housing screws provide a suitable ground conductor connection for earthing the housing and must NOT be replaced by any other screws that do not provide a reliable ground conductor connection.

Specified mains cable for the auto-transformer

Specified EU mains cable:

Cable type	Cross-section for 500 V	Cross-section for 600 V / 575 V	Length
H07RN-F	4G4	4G4	5 m (199.6 in.)

Specified UL / CSA mains cable:

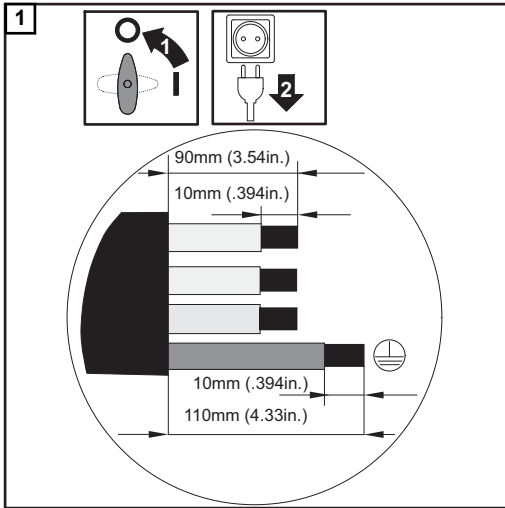
Cable type	Cross-section for 500 V	Cross-section for 600 V / 575 V	Length
SOOW	AWG 8	AWG 10	5 m (199.6 in.)

Preparing the mains cable for connection to the auto-transformer

CAUTION!

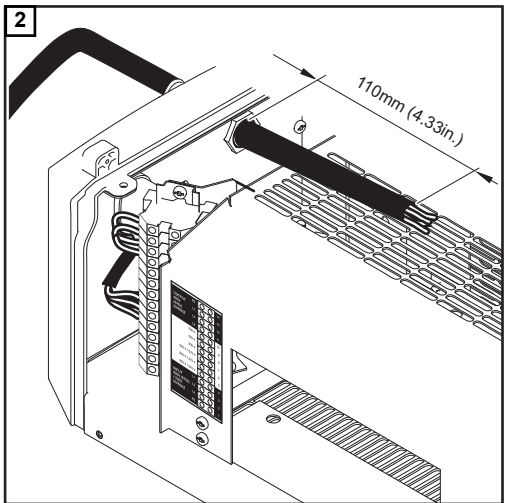
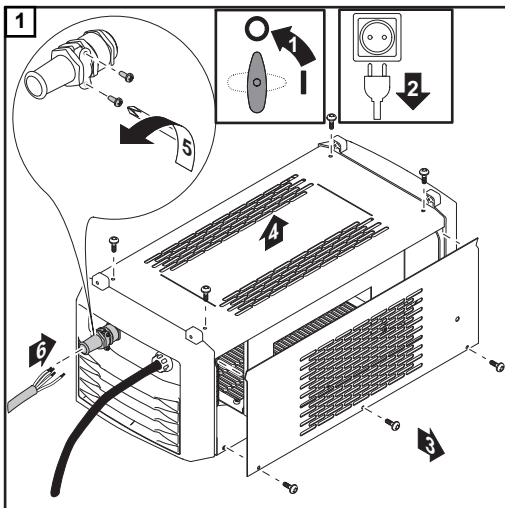
If wire end ferrules are not used, there is a risk of short circuits between the phase conductors or between phase conductors and the PE conductor.

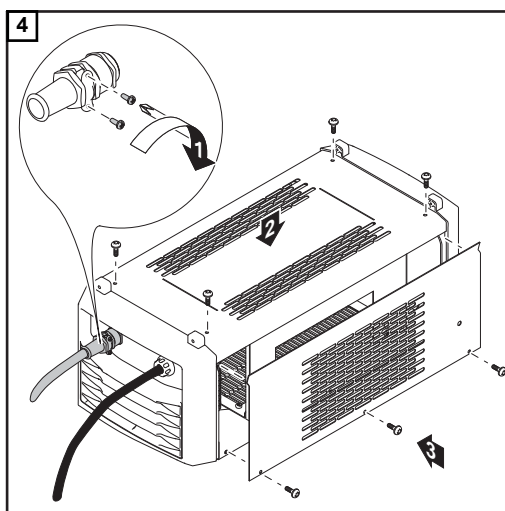
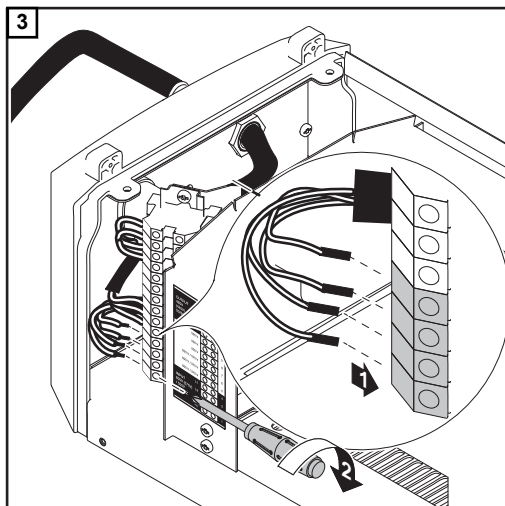
Fit wire-end ferrules to all phase conductors and the PE conductor of the stripped mains cable.



Connecting the mains cable to the auto-transformer

⚠ WARNING!
Work that is carried out incorrectly can cause serious injury and damage.
 The following activities must only be carried out by trained and qualified personnel. Pay particular attention to the "Safety rules" section.





Running functionality checks

WARNING!

Work that is carried out incorrectly can cause serious injury and damage.

The following activities must only be carried out by trained and qualified personnel. Observe the safety rules in the operating instructions for the power source and the auto-transformer.

WARNING!

An electric shock can be fatal.

If the device needs to be switched on briefly for testing while the housing is open:

- ▶ Do not touch any parts inside the housing
- ▶ Use only suitable measuring or test probes for measurements and tests inside the housing

- 1 Connect the power source connection cable to the power source as described in the power source operating instructions
- 2 Remove the left side panel of the auto-transformer
- 3 Check that the phase conductor and PE conductor of the power source connection cable and the auto-transformer mains cable are securely attached to the wiring terminal and are correctly connected
- 4 Check the insulation and PE conductor using a suitable device

- 5 Connect the auto-transformer to the mains
- 6 Using a suitable device, test the mains voltage at the INPUT 600V (575V) / 500V, 50/60HZ terminal screws; mains voltage = 600 V (575 V)
- 7 Turn the mains switch of the auto-transformer to the "I" position
- 8 Using a suitable device, test the output voltage at the OUTPUT 460V (440V), 50/60HZ terminal screws; output voltage = 460 V (440 V)
- 9 Turn the mains switch of the auto-transformer to the "O" position
- 10 Unplug the auto-transformer from the mains
- 11 Fit the left side panel of the auto-transformer
- 12 Check the insulation and PE conductor using a suitable device: place the test probe of the testing device on any of the cover's fastening screws

Setting the auto-transformer to 500 V mains voltage

Safety

WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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

WARNING!

An electric shock can be fatal.

Before starting work:

- ▶ Turn the mains switch of the auto-transformer to the "O" position
- ▶ Unplug the auto-transformer 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

WARNING!

An inadequate ground conductor connection can cause serious injury or damage.

The housing screws provide a suitable ground conductor connection for earthing the housing and must NOT be replaced by any other screws that do not provide a reliable ground conductor connection.

General

The auto-transformer is prepared for 600 V and 575 V mains voltage at the factory. To use the auto-transformer at a mains voltage of 500 V, set it to 500 V mains voltage as described below.

Setting the auto-transformer to 500 V mains voltage

WARNING!

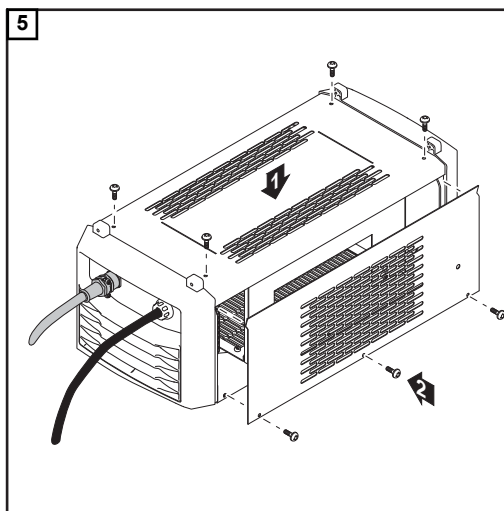
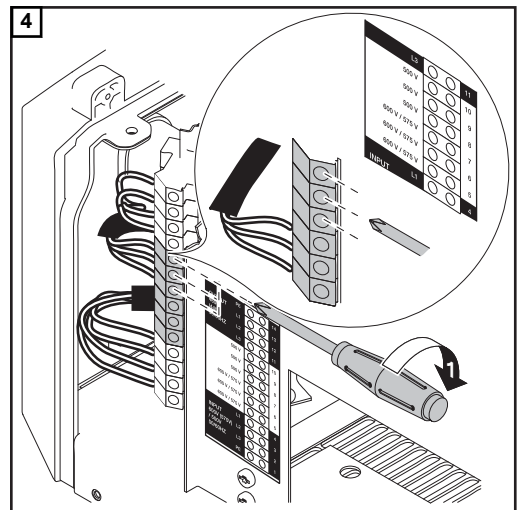
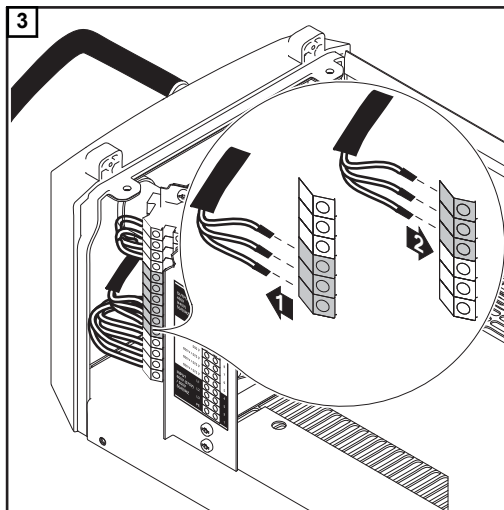
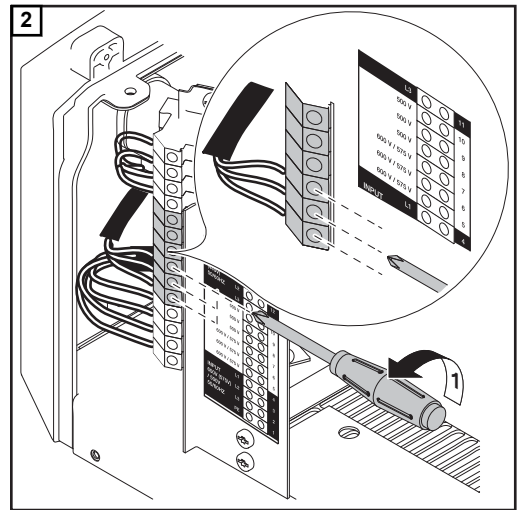
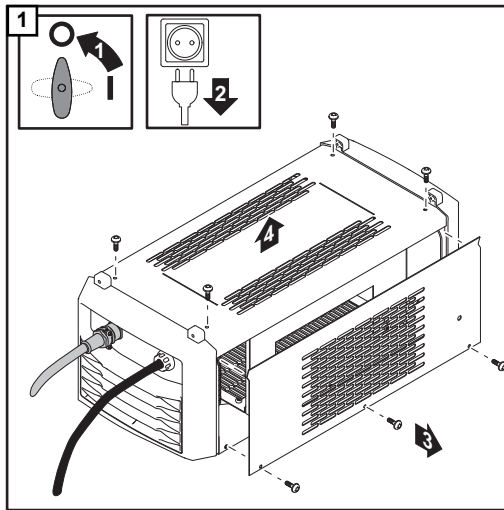
Work that is carried out incorrectly can cause serious injury and damage.

The following activities must only be carried out by trained and qualified personnel. Pay particular attention to the "Safety rules" section.

CAUTION!

Phase conductors that are not fully reconnected or that are connected incorrectly can cause serious damage.

Always reconnect all phase conductors.



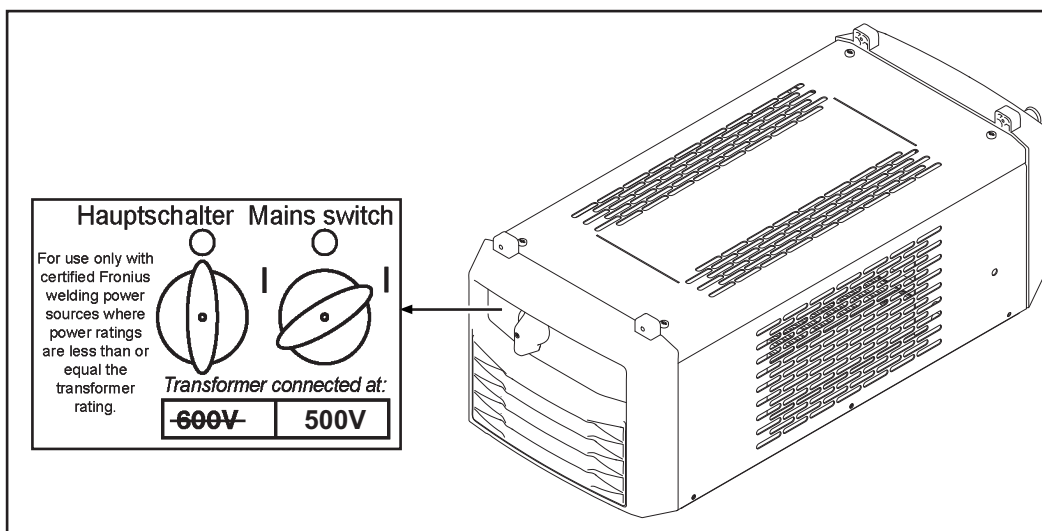
Adapting the rating plate

⚠ CAUTION!

Operating the auto-transformer at an incorrect mains voltage can cause serious damage.

If the auto-transformer has been converted to a mains voltage of 500 V, cross out "600 V" in the space above the rating plate and enter "500 V" in the empty box beside it.

1 Indicate the conversion to 500 V mains voltage as shown



Running functionality checks

WARNING!

Work that is carried out incorrectly can cause serious injury and damage.

The following activities must only be carried out by trained and qualified personnel. Observe the safety rules in the operating instructions for the power source and the auto-transformer.

WARNING!

An electric shock can be fatal.

If the device needs to be switched on briefly for testing while the housing is open:

- ▶ Do not touch any parts inside the housing
- ▶ Use only suitable measuring or test probes for measurements and tests inside the housing

- 1 Connect the power source connection cable to the power source as described in the power source operating instructions
- 2 Remove the left side panel of the auto-transformer
- 3 Check that the phase conductor and PE conductor of the power source connection cable and the auto-transformer mains cable are securely attached to the wiring terminal and are correctly connected
- 4 Check the insulation and PE conductor using a suitable device
- 5 Connect the auto-transformer to the mains
- 6 Using a suitable device, test the mains voltage at the INPUT 600V (575V) / 500V, 50/60HZ terminal screws; mains voltage = 500 V
- 7 Turn the mains switch of the auto-transformer to the "I" position
- 8 Using a suitable device, test the output voltage at the OUTPUT 460V (440V), 50/60HZ terminal screws; output voltage = 460 V
- 9 Turn the mains switch of the auto-transformer to the "O" position
- 10 Unplug the auto-transformer from the mains
- 11 Fit the left side panel of the auto-transformer
- 12 Check the insulation and PE conductor using a suitable device: place the test probe of the testing device on any of the cover's fastening screws

Fitting the auto-transformer

Safety

WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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

WARNING!

An electric shock can be fatal.

Before starting work:

- ▶ Turn the mains switch of the auto-transformer to the "O" position
- ▶ Unplug the auto-transformer 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 discharged

WARNING!

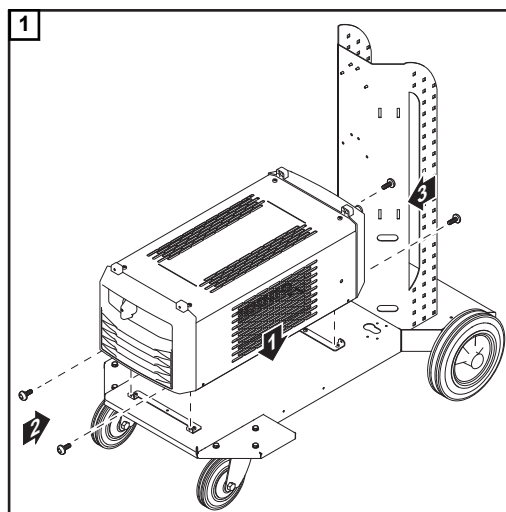
Beware of the danger of the trolley tipping over.

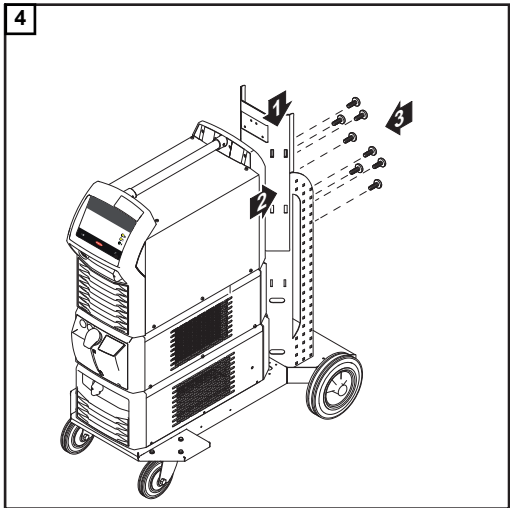
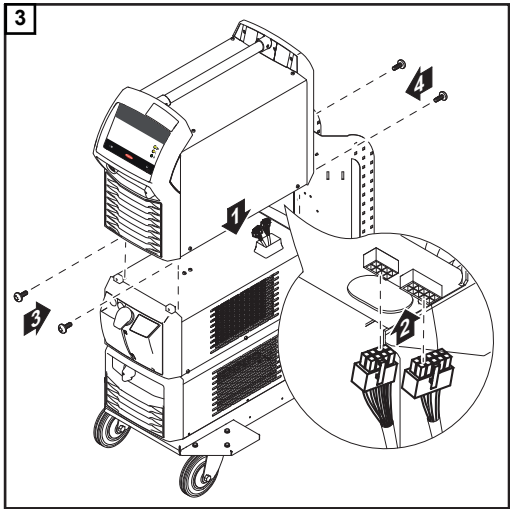
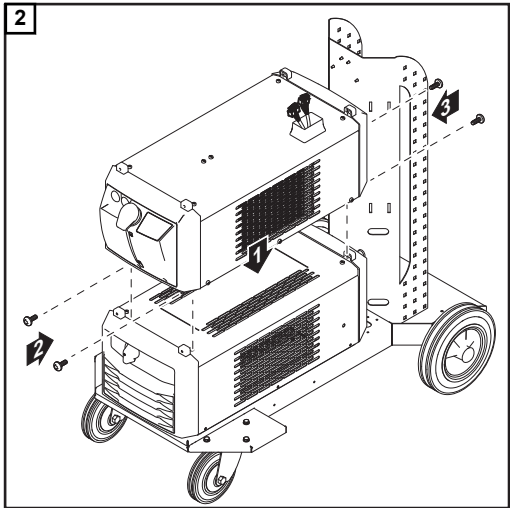
Always place the heavy auto-transformer at the bottom. As the centre of gravity is now lower, there is less chance of the trolley tipping over.

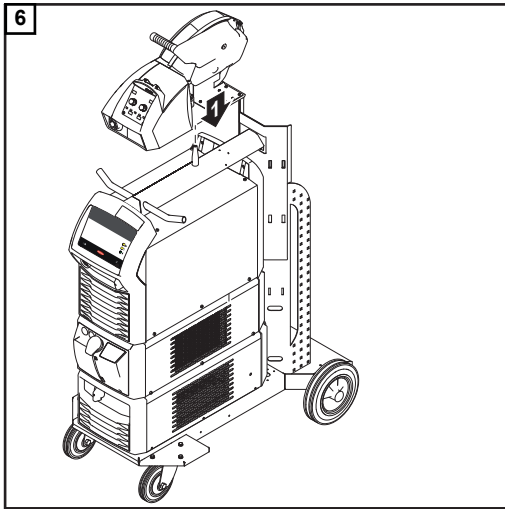
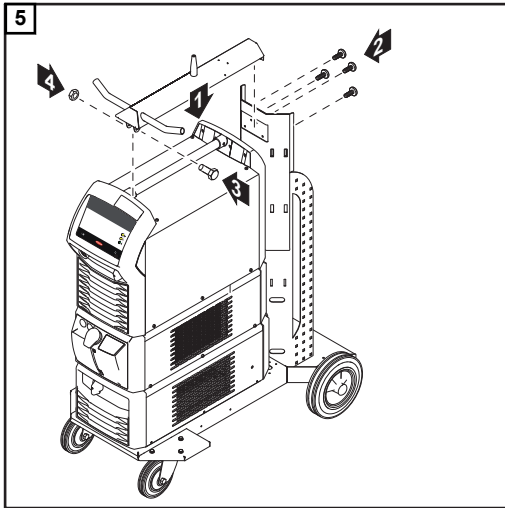
General

If the auto-transformer is only mounted on the PickUp 5000 trolley with a power source, the supplied cylinder holder extension does not have to be fitted.

Mounting the auto-transformer and the system components







Putting the auto-transformer into service

Safety



WARNING!

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The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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

Putting the auto-transformer into service

- 1 Turn the power source mains switch to the "O" position
- 2 Turn the mains switch of the auto-transformer to the "O" position
- 3 Connect the mains cable of the auto-transformer to the mains
- 4 Turn the mains switch of the auto-transformer to the "I" position
 - The auto-transformer is ready for use

Care, maintenance and disposal

Safety

WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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
-

WARNING!

An electric shock can be fatal.

Before starting work:

- ▶ Turn the mains switch of the auto-transformer to the "O" position
 - ▶ Unplug the mains cable of the auto-transformer 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 discharged
-

WARNING!

Inadequate PE conductor connections can cause serious injury and damage.

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

At every start-up

- Check the mains plug and mains cable for damage
- Check that there is a gap of 0.5 m (1 ft. 8 in.) all around the device to ensure that cooling air can flow and escape unhindered

NOTE!

Air inlets and outlets must never be covered, not even partially.

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 air nozzle too close to electronic components.

- If a lot of dust has accumulated, clean the cooling air ducts.

Disposal

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

Troubleshooting

Safety



WARNING!

Work that is carried out incorrectly can cause serious injury or damage.

The activities described below must only be carried out by trained and qualified personnel. Do not carry out the activities described below 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
-



WARNING!

An electric shock can be fatal.

Before starting work:

- ▶ Turn the mains switch of the auto-transformer to the "O" position
 - ▶ Unplug the mains cable of the auto-transformer 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 discharged
-



WARNING!

Inadequate PE conductor connections can cause serious injury and damage.

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

Troubleshooting

Power source inoperative

Mains switch is ON, but indicators are not lit up

Cause: There is a break in the mains lead; the mains plug is not plugged in

Remedy: Check mains lead, check mains voltage if necessary

Cause: Mains outlet socket or plug is faulty

Remedy: Replace faulty components

Cause: The mains switch of the auto-transformer is faulty

Remedy: Contact After-Sales Service (Replace the mains switch of the auto-transformer)

Cause: Phase conductors (L1, L2, L3) connected incorrectly

Remedy: Connect phase conductors as described

Mains fuse or automatic circuit breaker has tripped

Cause: Mains fuse underrated
Remedy: Rate mains lead fuse according to rating plate

Cause: Short circuit on the transformer windings
Remedy: Replace the auto-transformer

Cause: Auto-transformer not connected correctly
Remedy: Correct the mains connection

Output voltage too low

Cause: Incorrect mains voltage
Remedy: Check the mains voltage

Cause: Mains leads are connected incorrectly
Remedy: Correct mains connection

Cause: L1/L2/L3 swapped with N-conductor
Remedy: Correct the mains connection

Output voltage too high

Cause: Actual mains voltage is greater than permitted for the auto-transformer
Remedy: Adjust the mains voltage

Cause: Auto-transformer not connected correctly
Remedy: Correct the mains connection

Surface of auto-transformer housing feels hot

Cause: Permitted duty cycle exceeded
Remedy: Turn mains switch of the auto-transformer to "O" position, allow auto-transformer to cool

Cause: The connected welding machine is drawing too much current
Remedy: Check the current consumption of the connected welding machine

Cause: Unsuitable installation location
Remedy: Change installation location (ensure air can move unhindered through openings in housing)

Cause: Ambient temperature too high
Remedy: Reduce ambient temperature or change installation location

Cause: Housing interior dirty
Remedy: Open auto-transformer and clean with compressed air

Cause: Mains voltage too high
Remedy: Check voltage and correct mains supply

Asymmetric output voltage

Cause: Incorrectly connected mains cable/mains plug

Remedy: Connect the mains cable neutral and phase conductors correctly/attach a new mains plug/ contact After-Sales Service (replace the wiring terminal)

Cause: Mains switch - break/contact fault

Remedy: Contact After-Sales Service (replace the mains switch)

Cause: Damaged mains cable/PE conductor break/faulty wiring terminal

Remedy: Replace mains cable/contact After-Sales Service (replace wiring terminal)

Cause: Auto-transformer connected asymmetrically

Remedy: Connect auto-transformer symmetrically

Cause: Wiring terminal - break/contact fault

Remedy: Contact After-Sales Service (fix/replace the wiring terminal)

Technical data

Safety

NOTE!

Incorrectly rated mains plugs, mains leads or fuses can result in serious damage.
If the power source is designed for a special voltage, the technical data on the rating plate apply. Rate the mains plug, mains lead and their fuse protection accordingly.

600 V/500 V - 460 V, 575 - 440 V auto-transformer

Mains voltage 1 (U_1)	3 x 600 V / 575 V
Mains voltage 2 (U_1)	3 x 500 V
Mains voltage tolerance	+/- 10 %
Mains frequency	50 / 60 Hz
Output voltage 1 (U_2)	3 x 460 V / 440 V
Mains fuse protection (slow-blow)	35 A slow-blow
Maximum apparent power (S_1)	30 kVA
Effective apparent power (S_1)	21 kVA
Cos phi	0.9
Maximum primary current (I_{1max})	
mains voltage 1 (600 V)	30 A
mains voltage 1 (575 V)	31 A
mains voltage 2 (500 V)	36 A
Effective primary current (I_{1eff})	
mains voltage 1 (600 V)	20.6 A
mains voltage 1 (575 V)	21.5 A
mains voltage 2 (500 V)	24.7 A
Secondary current (I_2) for	
10 min / 40 °C 40 % d.c.	38 A
10 min / 40 °C 100 % d.c.	24 A
Protection	IP 20
Protection class in conjunction with power source or cooling unit	IP 23
Type of cooling	Convection cooling
Insulation class	H
Marks of conformity	CE
Dimensions l x w x h	658 x 301 x 248 mm 25.91 x 11.85 x 9.76 in.
Weight	52.5 kg 115.74 lb.

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