Operating instructions

GB

Welding machine

Wega 401, 501 FDG
Wega 401, 501, 601 FDW

099-004934-EW501 | Observe additional system documents! | 13.06.2013

General instructions

CAUTION

Read the operating instructions!
The operating instructions provide an introduction to the safe use of the products.

- Read the operating instructions for all system components!
- Observe accident prevention regulations!
- Observe all local regulations!
- Confirm with a signature where appropriate.

NOTE

In the event of queries on installation, commissioning, operation or special conditions at the installation site, or on usage, please contact your sales partner or our customer service department on +49 2680 181-0.
A list of authorised sales partners can be found at www.ewm-group.com.

Liability relating to the operation of this equipment is restricted solely to the function of the equipment. No other form of liability, regardless of type, shall be accepted. This exclusion of liability shall be deemed accepted by the user on commissioning the equipment.

The manufacturer is unable to monitor whether or not these instructions or the conditions and methods are observed during installation, operation, usage and maintenance of the equipment.
An incorrectly performed installation can result in material damage and injure persons as a result. For this reason, we do not accept any responsibility or liability for losses, damages or costs arising from incorrect installation, improper operation or incorrect usage and maintenance or any actions connected to this in any way.

1 Contents

2 Safety instructions

2.1 Notes on the use of these operating instructions

DANGER

Working or operating procedures which must be closely observed to prevent imminent serious and even fatal injuries.

- Safety notes include the "DANGER" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol on the edge of the page.

WARNING

Working or operating procedures which must be closely observed to prevent serious and even fatal injuries.

- Safety notes include the "WARNING" keyword in the heading with a general warning symbol.
- The hazard is also highlighted using a symbol in the page margin.

CAUTION

Working or operating procedures which must be closely observed to prevent possible minor personal injury.

- The safety information includes the "CAUTION" keyword in its heading with a general warning symbol.
- The risk is explained using a symbol on the edge of the page.

CAUTION

Working and operating procedures which must be followed precisely to avoid damaging or destroying the product.

- The safety information includes the "CAUTION" keyword in its heading without a general warning symbol.
- The hazard is explained using a symbol at the edge of the page.

NOTE

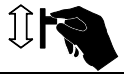
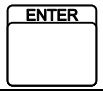
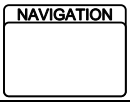
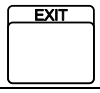
Special technical points which users must observe.

- Notes include the "NOTE" keyword in the heading without a general warning symbol.

Instructions and lists detailing step-by-step actions for given situations can be recognised via bullet points, e.g.:

- Insert the welding current lead socket into the relevant socket and lock.

2.2 Explanation of icons

Symbol	Description
	Press
	Do not press
	Turn
	Switch
	Switch off machine
	Switch on machine
	ENTER (enter the menu)
	NAVIGATION (Navigating in the menu)
	EXIT (Exit the menu)
	Time display (example: wait 4s/press)
	Interruption in the menu display (other setting options possible)
	Tool not required/do not use
	Tool required/use

2.3 General

DANGER

Electric shock!
Welding machines use high voltages which can result in potentially fatal electric shocks and burns on contact. Even low voltages can cause you to get a shock and lead to accidents.

- Do not touch any live parts in or on the machine!
- Connection cables and leads must be free of faults!
- Switching off alone is not sufficient!
- Place welding torch and stick electrode holder on an insulated surface!
- The unit should only be opened by specialist staff after the mains plug has been unplugged!
- Only wear dry protective clothing!
- Wait for 4 minutes until the capacitors have discharged!

Electromagnetic fields!
The power source may cause electrical or electromagnetic fields to be produced which could affect the correct functioning of electronic equipment such as IT or CNC devices, telecommunication lines, power cables, signal lines and pacemakers.

- Observe the maintenance instructions! (see Maintenance and Testing chapter)
- Unwind welding leads completely!
- Shield devices or equipment sensitive to radiation accordingly!
- The correct functioning of pacemakers may be affected (obtain advice from a doctor if necessary).

Do not carry out any unauthorised repairs or modifications!
To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!
The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

WARNING

Risk of accidents if these safety instructions are not observed!
Non-observance of these safety instructions is potentially fatal!

- Carefully read the safety information in this manual!
- Observe the accident prevention regulations in your country.
- Inform persons in the working area that they must observe the regulations!

Risk of injury due to radiation or heat!
Arc radiation results in injury to skin and eyes.
Contact with hot workpieces and sparks results in burns.

- Use welding shield or welding helmet with the appropriate safety level (depending on the application)!
- Wear dry protective clothing (e.g. welding shield, gloves, etc.) according to the relevant regulations in the country in question!
- Protect persons not involved in the work against arc beams and the risk of glare using safety curtains!

WARNING

Explosion risk!
Apparently harmless substances in closed containers may generate excessive pressure when heated.

- Move containers with inflammable or explosive liquids away from the working area!
- Never heat explosive liquids, dusts or gases by welding or cutting!

Smoke and gases!
Smoke and gases can lead to breathing difficulties and poisoning. In addition, solvent vapour (chlorinated hydrocarbon) may be converted into poisonous phosgene due to the ultraviolet radiation of the arc!

- Ensure that there is sufficient fresh air!
- Keep solvent vapour away from the arc beam field!
- Wear suitable breathing apparatus if appropriate!

Fire hazard!
Flames may arise as a result of the high temperatures, stray sparks, glowing-hot parts and hot slag produced during the welding process.
Stray welding currents can also result in flames forming!

- Check for fire hazards in the working area!
- Do not carry any easily flammable objects such as matches or lighters.
- Keep appropriate fire extinguishing equipment to hand in the working area!
- Thoroughly remove any residue of flammable substances from the workpiece before starting welding.
- Only continue work on welded workpieces once they have cooled down.
  Do not allow to come into contact with flammable material!
- Connect welding leads correctly!

Danger when coupling multiple power sources!
Coupling multiple power sources in parallel or in series has to be carried out by qualified personnel and in accordance with the manufacturer's guidelines. Before bringing the power sources into service for arc welding operations, a test has to verify that they cannot exceed the maximum allowed open circuit voltage.

- Connection of the machine may be carried out by qualified personnel only!
- When decommissioning individual power sources, all mains and welding current leads have to be safely disconnected from the welding system as a whole. (danger due to inverse voltages)!

CAUTION

Noise exposure!
Noise exceeding 70 dBA can cause permanent hearing damage!

- Wear suitable ear protection!
- Persons located within the working area must wear suitable ear protection!

CAUTION

Obligations of the operator!
The respective national directives and laws must be observed for operation of the machine!

- National implementation of the framework directive (89/391/EWG), as well as the associated individual directives.
- In particular, directive (89/655/EWG), on the minimum regulations for safety and health protection when staff members use equipment during work.
- The regulations regarding work safety and accident prevention for the respective country.
- Setting up and operating the machine according to IEC 60974-9.
- Check at regular intervals that users are working in a safety-conscious way.
- Regular checks of the machine according to IEC 60974-4.

Damage due to the use of non-genuine parts!
The manufacturer's warranty becomes void if non-genuine parts are used!

- Only use system components and options (power sources, welding torches, electrode holders, remote controls, spare parts and replacement parts, etc.) from our range of products!
- Only insert and lock accessory components into the relevant connection socket when the machine is switched off.

Damage to the machine due to stray welding currents!
Stray welding currents can destroy protective earth conductors, damage equipment and electronic devices and cause overheating of components leading to fire.

- Make sure all welding leads are securely connected and check regularly.
- Always ensure a proper and secure electrical connection to the workpiece!
- Set up, attach or suspend all conductive power source components like casing, transport vehicle and crane frames so they are insulated!
- Do not place any other electronic devices such as drillers or angle grinders, etc., on the power source, transport vehicle or crane frames unless they are insulated!
- Always put welding torches and electrode holders on an insulated surface when they are not in use!

Mains connection
Requirements for connection to the public mains network
High-performance machines can influence the mains quality by taking current from the mains network. For some types of machines, connection restrictions or requirements relating to the maximum possible line impedance or the necessary minimum supply capacity at the interface with the public network (Point of Common Coupling, PCC) can therefore apply. In this respect, attention is also drawn to the machines' technical data. In this case, it is the responsibility of the operator, where necessary in consultation with the mains network operator, to ensure that the machine can be connected.

CAUTION

EMC Machine Classification

In accordance with IEC 60974-10, welding machines are grouped in two electromagnetic compatibility classes (see technical data):

Class A machines are not intended for use in residential areas where the power supply comes from the low-voltage public mains network. When ensuring the electromagnetic compatibility of class A machines, difficulties can arise in these areas due to interference not only in the supply lines but also in the form of radiated interference.

Class B machines fulfil the EMC requirements in industrial as well as residential areas, including residential areas connected to the low-voltage public mains network.

Setting up and operating

When operating arc welding systems, in some cases, electro-magnetic interference can occur although all of the welding machines comply with the emission limits specified in the standard. The user is responsible for any interference caused by welding.

In order to **evaluate** any possible problems with electromagnetic compatibility in the surrounding area, the user must consider the following: (see also EN 60974-10 Appendix A)

- Mains, control, signal and telecommunication lines
- Radios and televisions
- Computers and other control systems
- Safety equipment
- The health of neighbouring persons, especially if they have a pacemaker or wear a hearing aid
- Calibration and measuring equipment
- The immunity to interference of other equipment in the surrounding area
- The time of day at which the welding work must be carried out

Recommendations for **reducing interference emission**

- Mains connection, e.g. additional mains filter or shielding with a metal tube
- Maintenance of the arc welding equipment
- Welding leads should be as short as possible and run closely together along the ground
- Potential equalization
- Earthing of the workpiece. In cases where it is not possible to earth the workpiece directly, it should be connected by means of suitable capacitors.
- Shielding from other equipment in the surrounding area or the entire welding system

2.4 Transport and installation

WARNING

Incorrect handling of shielding gas cylinders!
Incorrect handling of shielding gas cylinders can result in serious and even fatal injury.
- Observe the instructions from the gas manufacturer and in any relevant regulations concerning the use of compressed air!
- Place shielding gas cylinders in the holders provided for them and secure with fixing devices.
- Avoid heating the shielding gas cylinder!

CAUTION

Risk of tipping!
There is a risk of the machine tipping over and injuring persons or being damaged itself during movement and set up. Tilt resistance is guaranteed up to an angle of 10° (according to EN 60974-A2).
- Set up and transport the machine on level, solid ground!
- Secure add-on parts using suitable equipment!
- Replace damaged wheels and their fixing elements!
- Fix external wire feed units during transport (avoid uncontrolled rotation)!

Damage due to supply lines not being disconnected!
During transport, supply lines which have not been disconnected (mains supply leads, control leads, etc.) may cause hazards such as connected equipment tipping over and injuring persons!
- Disconnect supply lines!

CAUTION

Equipment damage when not operated in an upright position!
The units are designed for operation in an upright position!
Operation in non-permissible positions can cause equipment damage.
- Only transport and operate in an upright position!

2.4.1 Lifting by crane

DANGER

Risk of injury during lifting by crane!

When lifting the equipment by crane, serious injuries can be inflicted by falling equipment or add-on units.

- Transport on all lifting lugs at the same time (see Fig. Lifting principle)!
- Ensure that there is an even load distribution! Only use ring chains or suspension ropes of the same length!
- Observe the lifting principle (see Fig.)!
- Remove all accessory components before lifting (e.g. shielding gas cylinders, tool boxes, wire feed units, etc.)!
- Avoid jerky movements when raising or lowering!
- Use shackles and load hooks of the appropriate size!

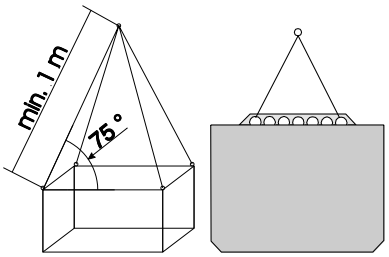


Fig. Lifting principle

Risk of injury due to unsuitable lifting eye!

In case of improper use of lifting eyes or the use of unsuitable lifting eyes, persons can be seriously damaged by falling equipment or add-on components!

- The lifting eye must be completely screwed in!
- The lifting eye must be positioned flat onto and in full contact with the supporting surfaces!
- Check that the lifting eyes are securely fastened before use and check for any damage (corrosion, deformation)!
- Do not use or screw in damaged lifting eyes!
- Avoid lateral loading of the lifting eyes!

2.4.2 Ambient conditions

CAUTION

Installation site!

The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
- Safe operation of the machine must be guaranteed at all times.

CAUTION

Equipment damage due to dirt accumulation!

Unusually high quantities of dust, acid, corrosive gases or substances may damage the equipment.

- Avoid high volumes of smoke, vapour, oil vapour and grinding dust!
- Avoid ambient air containing salt (sea air)!

Non-permissible ambient conditions!

Insufficient ventilation results in a reduction in performance and equipment damage.

- Observe the ambient conditions!
- Keep the cooling air inlet and outlet clear!
- Observe the minimum distance of 0.5 m from obstacles!

2.4.2.1 In operation

Temperature range of the ambient air:

- -25 °C to +40 °C

Relative air humidity:

- Up to 50% at 40 °C
- Up to 90% at 20 °C

2.4.2.2 Transport and storage

Storage in an enclosed space, temperature range of the ambient air:

- -30 °C to +55 °C

Relative air humidity

- Up to 90% at 20 °C

3 Intended use

WARNING

Hazards due to improper usage!
Hazards may arise for persons, animals and material objects if the equipment is not used correctly. No liability is accepted for any damages arising from improper usage!

- The equipment must only be used in line with proper usage and by trained or expert staff!
- Do not modify or convert the equipment improperly!

3.1 Applications

3.1.1 MIG/MAG standard welding

Metal arc welding using a wire electrode whereby gas from an external source surrounds the arc and the molten pool to protect them from the atmosphere.

3.2 Use and operation solely with the following machines

NOTE

A suitable wire feed unit (system component) is required in order to operate the welding machine!

	Wega drive 41	Wega drive 41L
Wega 401	☑	☑
Wega 501	☑	☑
Wega 601	☑	☑

3.3 Documents which also apply

3.3.1 Warranty

NOTE

For further information, please see the accompanying supplementary sheets "Machine and Company Data, Maintenance and Testing, Warranty"!

3.3.2 Declaration of Conformity

The designated machine conforms to EC Directives and standards in terms of its design and construction:

- EC Low Voltage Directive (2006/95/EC),
- EC EMC Directive (2004/108/EC),

This declaration shall become null and void in the event of unauthorised modifications, improperly conducted repairs, non-observance of the deadlines for the repetition test and / or non-permitted conversion work not specifically authorised by the manufacturer.
The original copy of the declaration of conformity is enclosed with the unit.

3.3.3 Welding in environments with increased electrical hazards

In compliance with IEC / DIN EN 60974, VDE 0544 the machines can be used in environments with an increased electrical hazard.

3.3.4 Service documents (spare parts and circuit diagrams)

DANGER

Do not carry out any unauthorised repairs or modifications!
To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!
The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

Original copies of the circuit diagrams are enclosed with the unit.
Spare parts can be obtained from the relevant authorised dealer.

3.3.5 Calibration/Validation

We hereby confirm that this machine has been tested using calibrated measuring equipment, as stipulated in IEC/EN 60974, ISO/EN 17662, EN 50504, and complies with the admissible tolerances.
Recommended calibration interval: 12 months

4 Machine description – quick overview

4.1 Wega 401

NOTE

Coolant tank and quick connect coupling of coolant supply and return are only fitted in machines with water cooling.

4.1.1 Front view

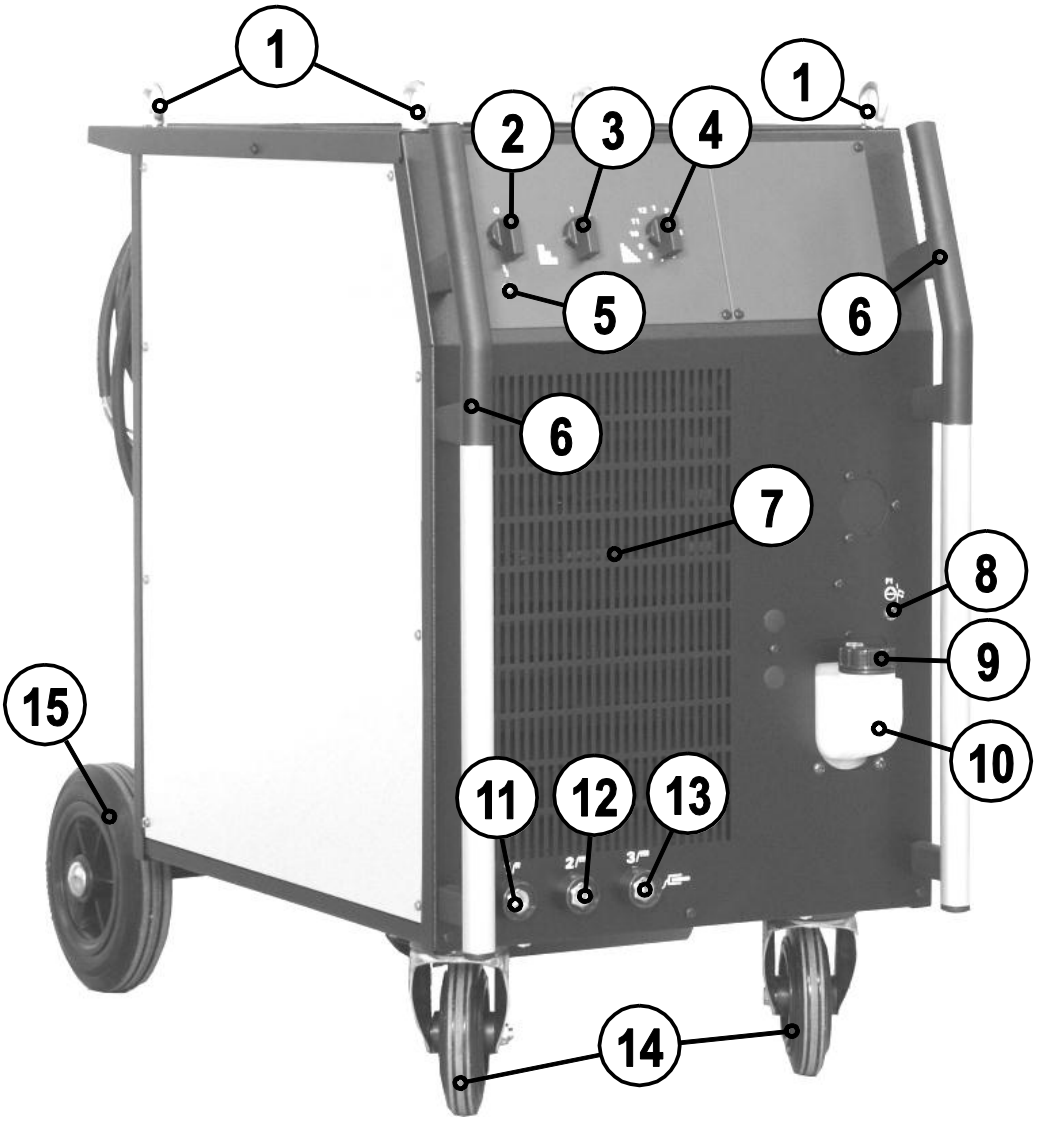


Figure 4-1

Item	Symbol	Description
1		**Lifting lug**
2		**Main switch, machine on/off**
3		**Welding voltage step switch, presetting** To roughly preset the welding voltage
4		**Welding voltage step switch, final setting** To finally adjust the welding voltage (select the option to roughly preset the welding voltage first)
5		**Signal light, Functional error** On when excess temperature detected
6		**Carrying handle**
7		**Cooling air inlet**
8		**Automatic cut-out of coolant pump key button** press to reset a triggered fuse
9		**Coolant tank cap**
10		**Coolant tank**
11		**Connection socket, workpiece lead** "Hard" choke tapping
12		**Connection socket, workpiece lead** "Medium" choke tapping
13		**Connection socket, workpiece lead** Choke tapping "soft"
14		**Wheels, guide castors**
15		**Wheels, fixed castors**

4.1.2 Rear view

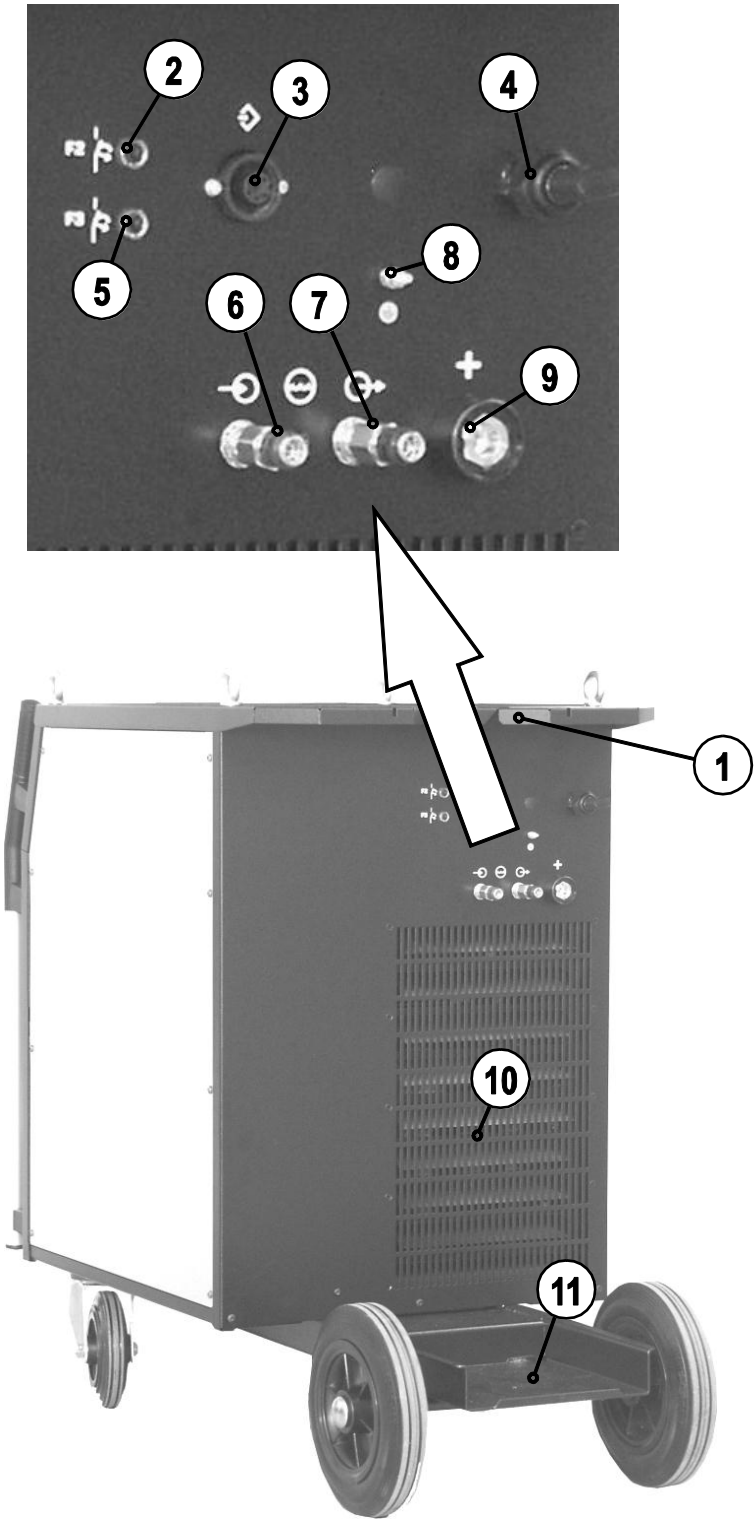


Figure 4-2

Item	Symbol	Description
1		**Intermediate hose package strain relief**
2		**Key button, automatic cutout** Wire feed motor supply voltage fuse press to reset a triggered fuse
3		**7-pole connection socket** Wire feed unit control lead
4		**Mains connection cable**
5		**Button, Automatic cut-out of fan motor** Press to reset tripped circuit breaker
6		**Quick connect coupling (red)** coolant return
7		**Quick connect coupling (blue)** coolant supply
8		**Earth cable connecting (PE)** Connection of green-yellow earth cable from the intermediate tube package
9		**Connector plug, welding current "+"** Welding current connection on wire feed unit
10		**Cooling air outlet**
11		**Bracket for shielding gas cylinder**

4.2 Wega 501, 601

NOTE

Coolant tank and quick connect coupling of coolant supply and return are only fitted in machines with water cooling.

4.2.1 Front view

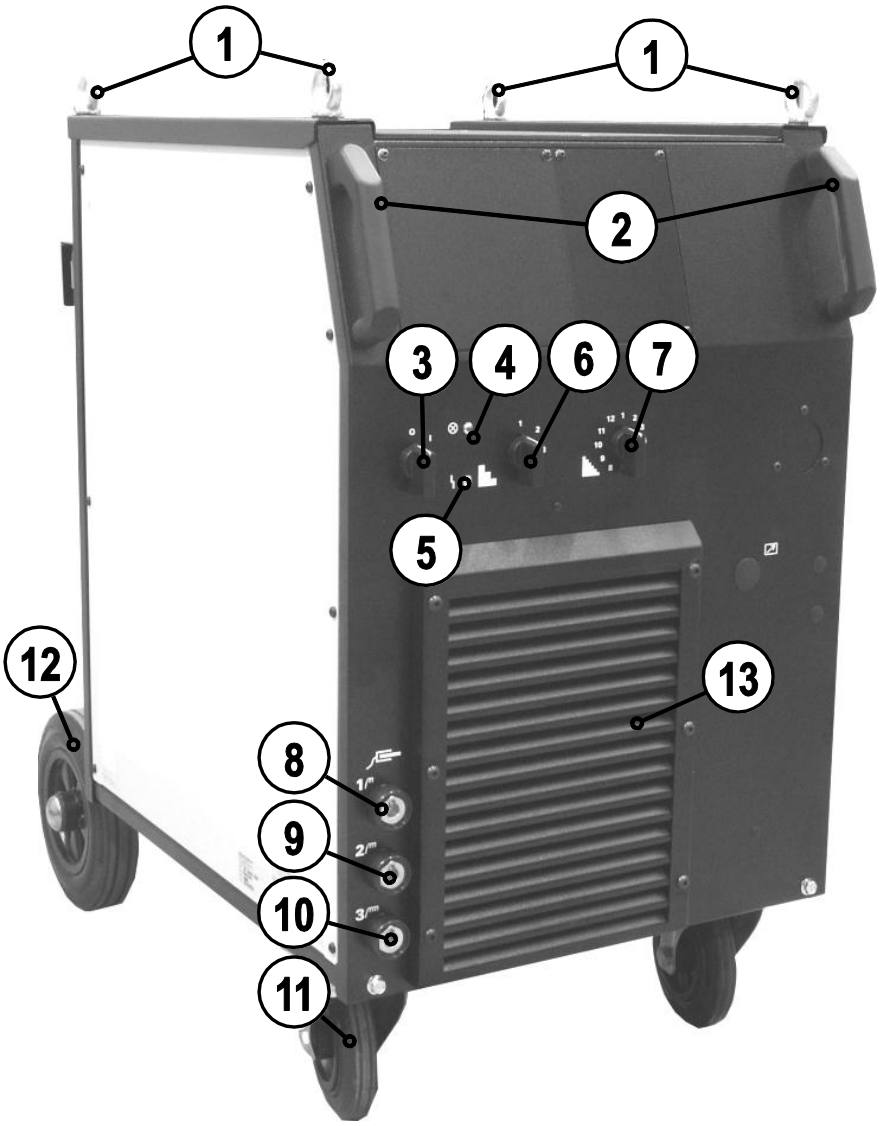
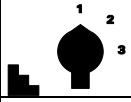


Figure 4-3

Item	Symbol	Description
1		**Lifting lug**
2		**Carrying handle**
3		**Main switch, machine on/off**
4		**Ready for operation signal light** Signal light on when the machine is switched on and ready for operation
5		**Signal light, Functional error** On when excess temperature detected
6		**Welding voltage step switch, presetting** To roughly preset the welding voltage
7		**Welding voltage step switch, final setting** To finally adjust the welding voltage (select the option to roughly preset the welding voltage first)
8		**Connection socket, workpiece lead** "Hard" choke tapping
9		**Connection socket, workpiece lead** "Medium" choke tapping
10		**Connection socket, workpiece lead** Choke tapping "soft"
11		**Wheels, guide castors**
12		**Wheels, fixed castors**
13		**Cooling air inlet**

4.2.2 Rear view

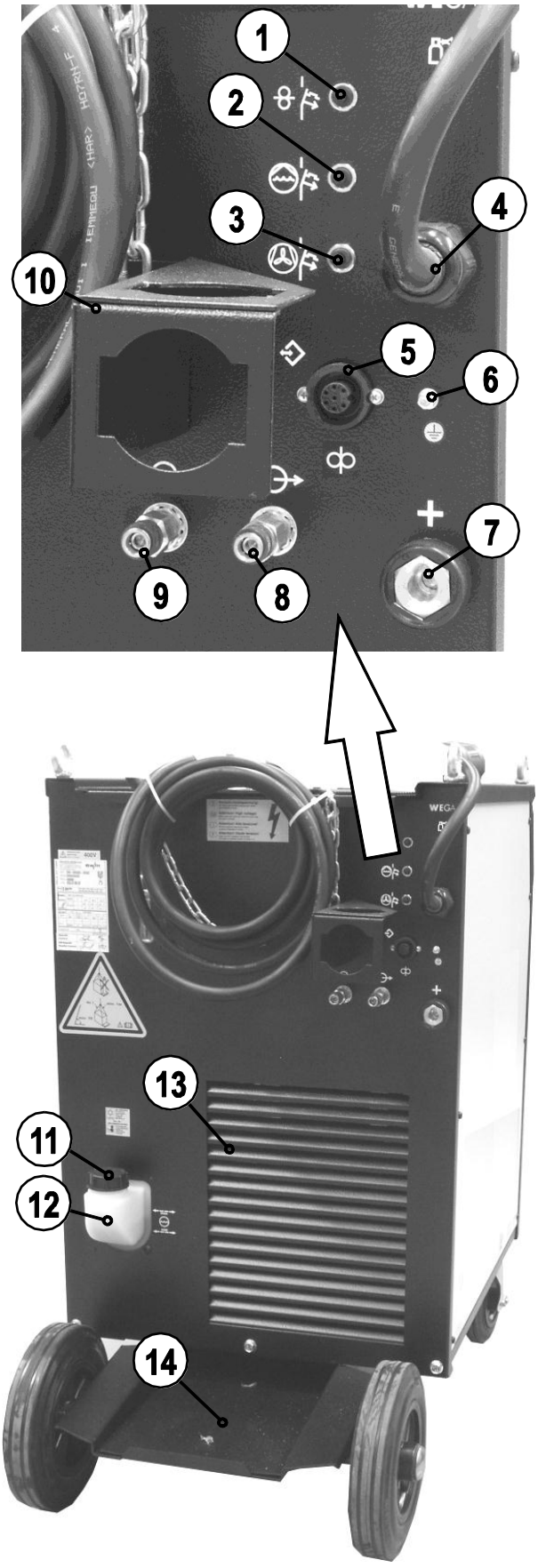
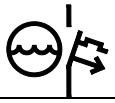


Figure 4-4

Item	Symbol	Description
1		**Key button, automatic cutout** Wire feed motor supply voltage fuse press to reset a triggered fuse
2		**Automatic cut-out of coolant pump key button** press to reset a triggered fuse
3		**Button, Automatic cut-out of fan motor** Press to reset tripped circuit breaker
4		**Mains connection cable**
5		**7-pole connection socket** Wire feed unit control lead
6		**Earth cable connecting (PE)** Connection of green-yellow earth cable from the intermediate tube package
7		**Connector plug, welding current "+"** Welding current connection on wire feed unit
8		**Quick connect coupling (blue)** coolant supply
9		**Quick connect coupling (red)** coolant return
10		**Intermediate hose package strain relief**
11		**Coolant tank cap**
12		**Coolant tank**
13		**Cooling air outlet**
14		**Bracket for shielding gas cylinder**

5 Design and function

5.1 General

WARNING

Risk of injury from electric shock!
Contact with live parts, e.g. welding current sockets, is potentially fatal!

- Follow safety instructions on the opening pages of the operating instructions.
- Commissioning may only be carried out by persons who have the relevant expertise of working with arc welding machines!
- Connection and welding leads (e.g. electrode holder, welding torch, workpiece lead, interfaces) may only be connected when the machine is switched off!

CAUTION

Insulate the arc welder from welding voltage!
Not all active parts of the welding current circuit can be shielded from direct contact. To avoid any associated risks it is vital for the welder to adhere to the relevant safety regulations. Even low voltages can cause a shock and lead to accidents.

- Wear dry and undamaged protective clothing (shoes with rubber soles/welder's gloves made from leather without any studs or braces)!
- Avoid direct contact with non-insulated connection sockets or connectors!
- Always place torches and electrode holders on an insulated surface!

Risk of burns on the welding current connection!
If the welding current connections are not locked, connections and leads heat up and can cause burns, if touched!

- Check the welding current connections every day and lock by turning in clockwise direction, if necessary.

Risk of injury due to moving parts!
The wire feeders are equipped with moving parts, which can trap hands, hair, clothing or tools and thus injure persons!

- Do not reach into rotating or moving parts or drive components!
- Keep casing covers or protective caps closed during operation!

Risk of injury due to welding wire escaping in an unpredictable manner!
Welding wire can be conveyed at very high speeds and, if conveyed incorrectly, may escape in an uncontrolled manner and injure persons!

- Before mains connection, set up the complete wire guide system from the wire spool to the welding torch!
- Remove the pressure rollers from the wire feeder if no welding torch is fitted!
- Check wire guide at regular intervals!
- Keep all casing covers or protective caps closed during operation!

Risk from electrical current!
If welding is carried out alternately using different methods and if a welding torch and an electrode holder remain connected to the machine, the open-circuit/welding voltage is applied simultaneously on all cables.

- The torch and the electrode holder should therefore always be placed on an insulated surface before starting work and during breaks.

CAUTION

Damage due to incorrect connection!
Accessory components and the power source itself can be damaged by incorrect connection!

- Only insert and lock accessory components into the relevant connection socket when the machine is switched off.
- Comprehensive descriptions can be found in the operating instructions for the relevant accessory components.
- Accessory components are detected automatically after the power source is switched on.

Using protective dust caps!
Protective dust caps protect the connection sockets and therefore the machine against dirt and damage.

- The protective dust cap must be fitted if there is no accessory component being operated on that connection.
- The cap must be replaced if faulty or if lost!

NOTE

Observe documentation of other system components when connecting!

5.2 Installation

CAUTION

Installation site!
The machine must not be operated in the open air and must only be set up and operated on a suitable, stable and level base!

- The operator must ensure that the ground is non-slip and level, and provide sufficient lighting for the place of work.
- Safe operation of the machine must be guaranteed at all times.

5.3 Machine cooling

To obtain an optimal duty cycle from the power components, the following precautions should be observed:

- Ensure that the working area is adequately ventilated.
- Do not obstruct the air inlets and outlets of the machine.
- Do not allow metal parts, dust or other objects to get into the machine.

5.4 Workpiece lead, general

CAUTION

Risk of burns due to incorrect connection of the workpiece lead!
Paint, rust and dirt on the connection restrict the power flow and may lead to stray welding currents.
Stray welding currents may cause fires and injuries!

- Clean the connections!
- Fix the workpiece lead securely!
- Do not use structural parts of the workpiece as a return lead for the welding current!
- Take care to ensure faultless power connections!

5.5 Welding torch cooling system

5.5.1 General

CAUTION

Coolant mixtures!
Mixtures with other liquids or the use of unsuitable coolants result in material damage and renders the manufacturer's warranty void!

- Only use the coolant described in this manual (overview of coolants).
- Do not mix different coolants.
- When changing the coolant, the entire volume of liquid must be changed.

Insufficient frost protection in the welding torch coolant!
Depending on the ambient conditions, different liquids are used for cooling the welding torch (see overview of coolants).
Coolants with frost protection (KF 37E or KF 23E) must be checked regularly to ensure that the frost protection is adequate to prevent damage to the machine or the accessory components.

- The coolant must be checked for adequate frost protection with the TYP 1 frost protection tester (see accessories).
- Replace coolant as necessary if frost protection is inadequate!

NOTE

The disposal of coolant must be carried out according to official regulations and observing the relevant safety data sheets (German waste code number: 70104)!

- Coolant must not be disposed of together with household waste.
- Coolant must not be discharged into the sewerage system.
- Recommended cleaning agent: water, if necessary with cleaning agent added.

5.5.2 List of coolants

The following coolants may be used (for item nos., please see the Accessories chapter):

Coolant	Temperature range
KF 23E (Standard)	-10 °C to +40 °C
KF 37E	-20 °C to +10 °C
DKF 23E (for plasma machines)	0 °C to +40 °C

5.5.3 Adding coolant

The unit is supplied ex works with a minimum level of coolant.

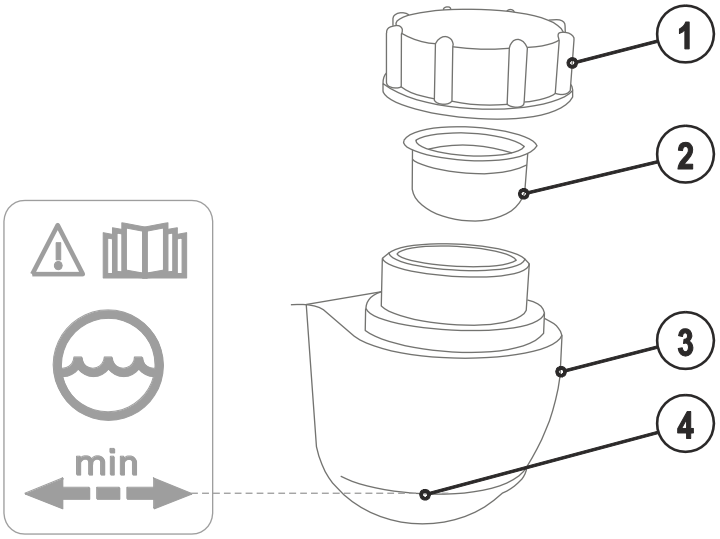


Figure 5-1

Item	Symbol	Description
1		**Coolant tank cap**
2		**Coolant filter sieve**
3		**Coolant tank**
4		**"Min" mark** Minimum coolant level

- Unscrew and remove the coolant tank sealing cover.
- Check filter sieve insert for dirt, clean if necessary and reinsert into position.
- Top up coolant to the filter sieve insert, close sealing cover again.

NOTE

After the initial filling, wait for at least one minute when the machine is switched on so that the hose package is filled with coolant completely and without bubbles.
With frequent changes of torch and during the initial filling process, the cooling unit tank should be topped up as necessary.

The level of coolant must never fall below the “min” mark.

If there is less coolant in the coolant tank than the minimum required you may need to vent the coolant circuit. In this case the welding machine will automatically shut down the coolant pump and signal an error, see chapter "Rectifying faults".

5.6 Mains connection

DANGER

Hazard caused by improper mains connection!
An improper mains connection can cause injuries or damage property!

- Only use machine with a plug socket that has a correctly fitted protective conductor.
- If a mains plug must be fitted, this may only be carried out by an electrician in accordance with the relevant national provisions or regulations!
- Mains plug, socket and lead must be checked regularly by an electrician!
- When operating the generator always ensure it is earthed as stated in the operating instructions. The resulting network has to be suitable for operating devices according to protection class 1.

5.6.1 Mains configuration

NOTE

The machine may be connected to:

- **a three-phase system with four conductors and an earthed neutral conductor**
- **a three-phase system with three conductors of which any one can be earthed,**

e.g. the outer conductor

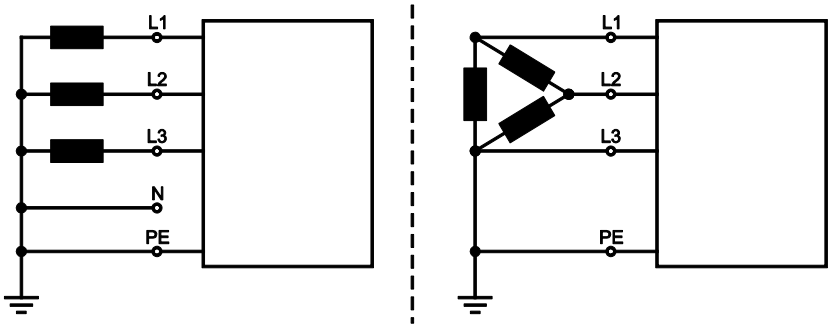


Figure 5-2

Legend

Item	Designation	Colour code
L1	Outer conductor 1	brown
L2	Outer conductor 2	black
L3	Outer conductor 3	grey
N	Neutral conductor	blue
PE	Protective conductor	green-yellow

CAUTION

Operating voltage - mains voltage!
The operating voltage shown on the rating plate must be consistent with the mains voltage, in order to avoid damage to the machine!

- For mains fuse protection, please refer to the “Technical data” chapter!

- Insert mains plug of the switched-off machine into the appropriate socket.

5.7 Intermediate hose package connection

5.7.1 Wega 401

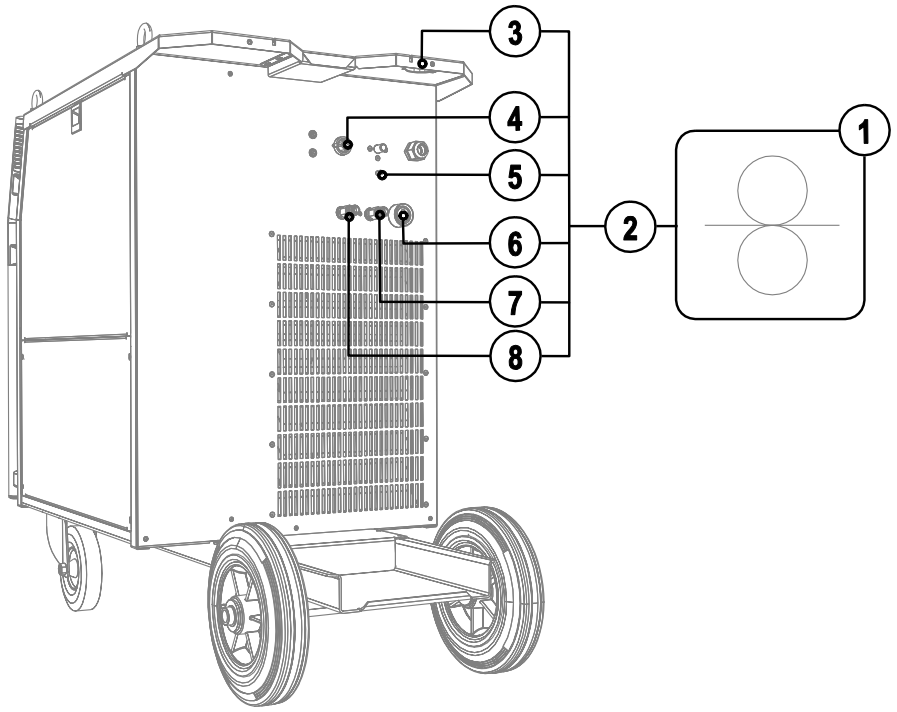


Figure 5-3

Item	Symbol	Description
1		**Wire feed unit**
2		**Intermediate hose package**
3		**Intermediate hose package strain relief**
4		**7-pole connection socket** Wire feed unit control lead
5		**Earth cable connecting (PE)** Connection of green-yellow earth cable from the intermediate tube package
6		**Connector plug, welding current "+"** Welding current connection on wire feed unit
7		**Quick connect coupling (blue)** coolant supply
8		**Quick connect coupling (red)** coolant return

- Insert the end of the hose package through the strain relief of the hose package and lock by turning to the right.
- Insert the plug on the welding current lead into the welding current connection socket "+" and lock.
- Insert cable plug on the control lead into the 7-pole connection socket and secure with crown nut (the plug can only be inserted into the connection socket in one position).
- Screw the eyelet of the earth lead on to the connecting nipple of the earth lead.

If fitted:

- Lock connecting nipples of the cooling water tubes into the corresponding quick connect couplings: Return line red to quick connect coupling, red (coolant return) and supply line blue to quick connect coupling, blue (coolant supply).

5.7.2 Wega 501, 601

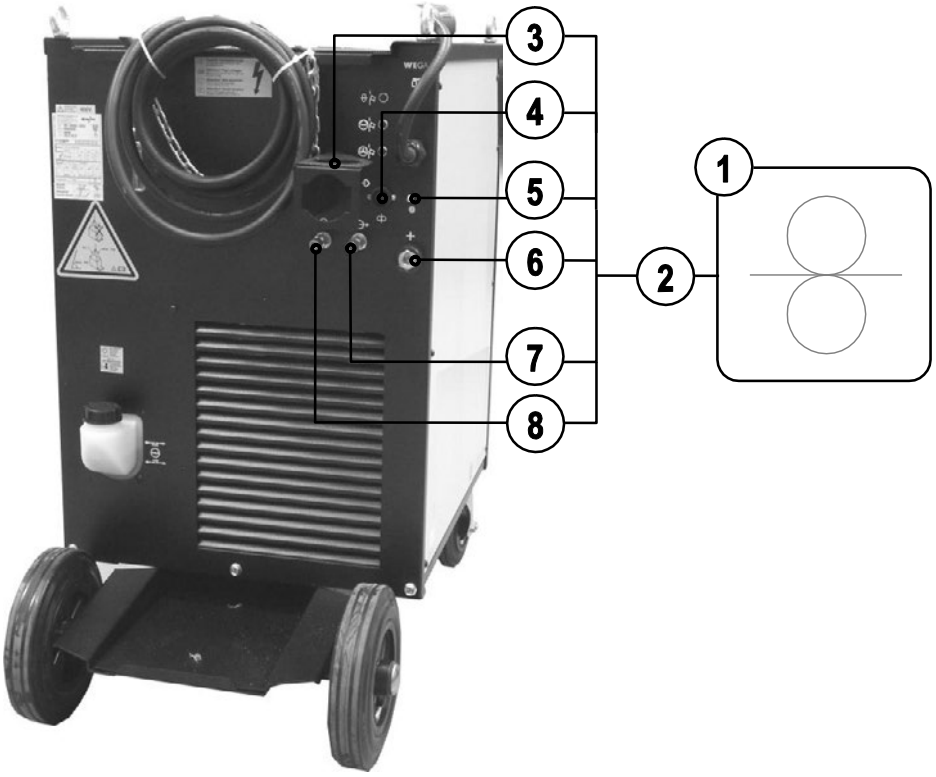


Figure 5-4

Item	Symbol	Description
1		**Wire feed unit**
2		**Intermediate hose package**
3		**Intermediate hose package strain relief**
4		**7-pole connection socket** Wire feed unit control lead
5		**Earth cable connecting (PE)** Connection of green-yellow earth cable from the intermediate tube package
6		**Connector plug, welding current "+"** Welding current connection on wire feed unit
7		**Quick connect coupling (blue)** coolant supply
8		**Quick connect coupling (red)** coolant return

- Insert the end of the hose package through the strain relief of the hose package and lock by turning to the right.
- Insert the plug on the welding current lead into the welding current connection socket "+" and lock.
- Insert cable plug on the control lead into the 7-pole connection socket and secure with crown nut (the plug can only be inserted into the connection socket in one position).
- Screw the eyelet of the earth lead on to the connecting nipple of the earth lead.

If fitted:

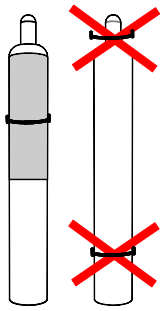
- Lock connecting nipples of the cooling water tubes into the corresponding quick connect couplings:
  Return line red to quick connect coupling, red (coolant return) and
  supply line blue to quick connect coupling, blue (coolant supply).

5.8 Shielding gas supply (shielding gas cylinder for welding machine)

WARNING

Risk of injury due to improper handling of shielding gas cylinders!
Improper handling and insufficient securing of shielding gas cylinders can cause serious injuries!

- Secure shielding gas cylinders using the standard fastening elements on the unit (chain/belt)!
- The fastening elements must tightly enclose the shielding gas cylinder!
- Attach the fastening elements within the upper half of the shielding gas cylinder!
- Do not attach any element to the shielding gas cylinder valve!
- Observe the instructions from the gas manufacturer and any relevant regulations concerning the use of compressed air!
- Avoid heating the shielding gas cylinder!



CAUTION

Faults in the shielding gas supply.
An unhindered shielding gas supply from the shielding gas cylinder to the welding torch is a fundamental requirement for optimum welding results. In addition, a blocked shielding gas supply may result in the welding torch being destroyed.

- Always re-fit the yellow protective cap when not using the shielding gas connection.
- All shielding gas connections must be gas tight.

NOTE

Before connecting the pressure regulator to the gas cylinder, open the cylinder valve briefly to expel any dirt.

5.8.1 Connection

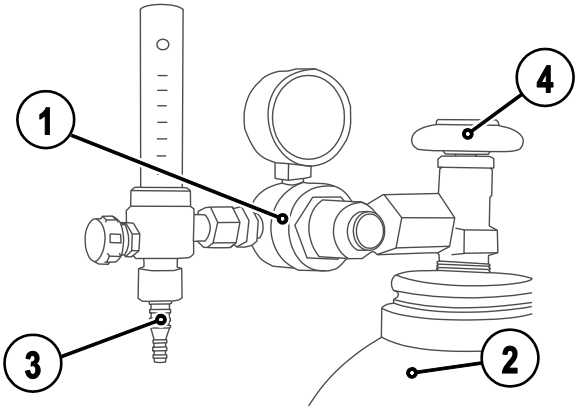


Figure 5-5

Item	Symbol	Description
1		**Pressure regulator**
2		**Shielding gas cylinder**
3		**Output side of the pressure regulator**
4		**Cylinder valve**

- Place the shielding gas cylinder into the relevant cylinder bracket.
- Secure the shielding gas cylinder using a securing chain.
- Tighten the pressure regulator screw connection on the gas bottle valve to be gas-tight.
- Screw the gas hose connection nipple (intermediate tube package) onto the output side of the pressure regulator.

5.9 Connection for workpiece lead

5.9.1 Wega 401

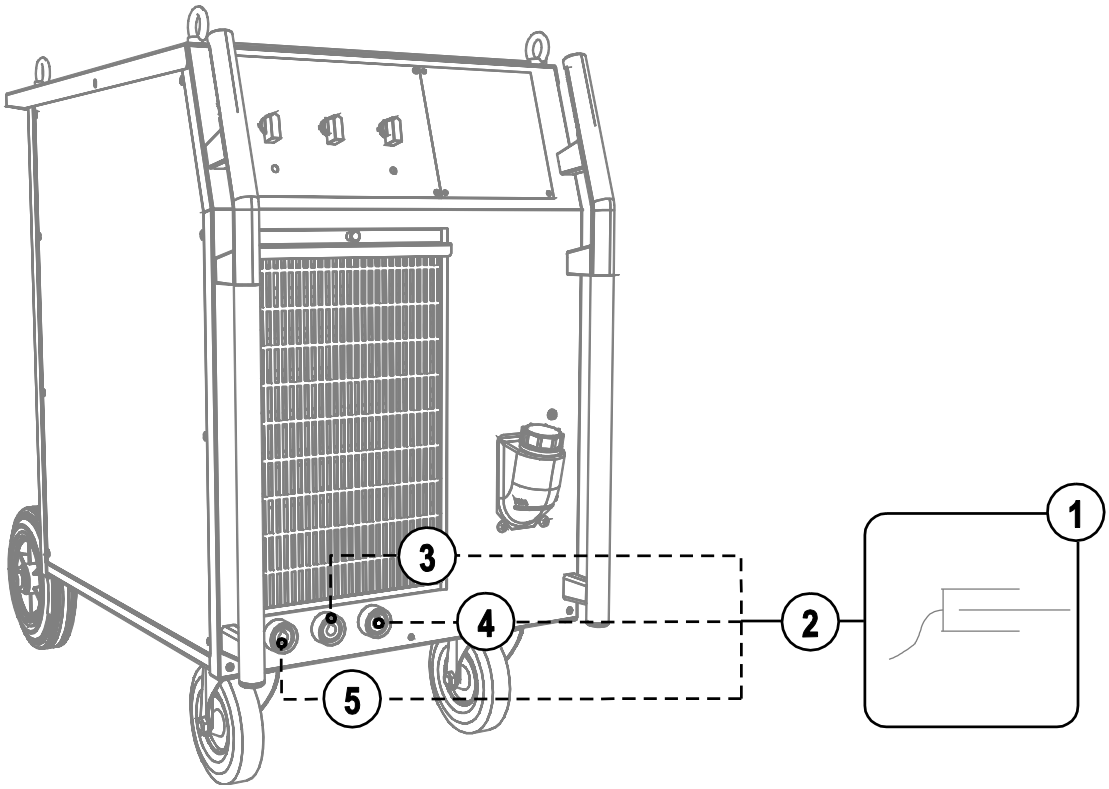


Figure 5-6

Item	Symbol	Description
1		**Workpiece**
2		**Workpiece lead**
3	2 m	**Connection socket, workpiece lead** "Medium" choke tapping
4	3 m	**Connection socket, workpiece lead** Choke tapping "soft"
5	1 m	**Connection socket, workpiece lead** "Hard" choke tapping

- Insert the cable plug of the workpiece lead into the connection socket for workpiece lead 1, 2 or 3 (depending on the application or shielding gas used) and lock by turning to the right.

5.9.2 Wega 501, 601

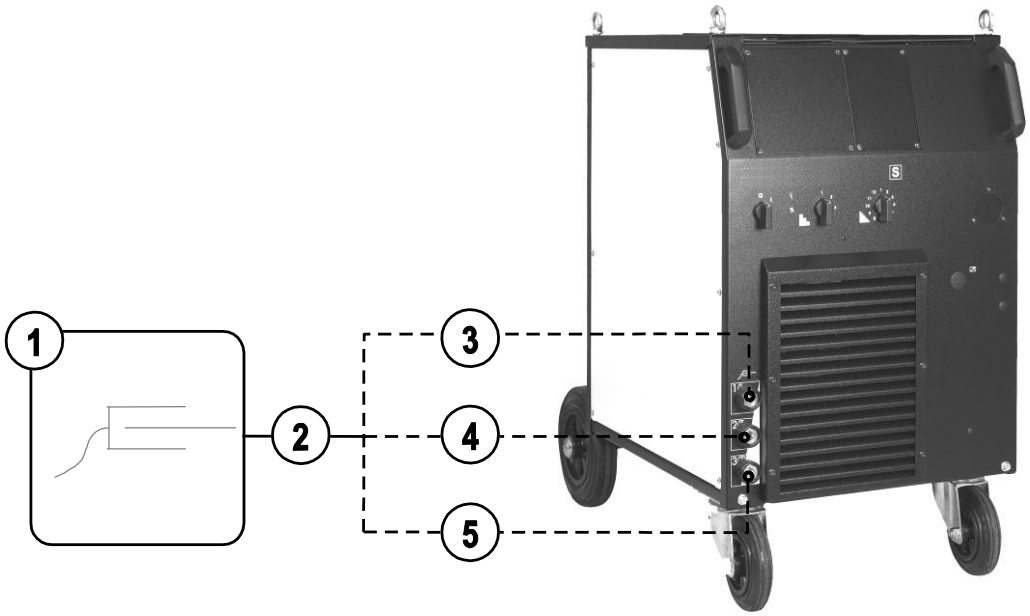


Figure 5-7

Item	Symbol	Description
1		**Workpiece**
2		**Workpiece lead**
3	1	**Connection socket, workpiece lead** "Hard" choke tapping
4	2	**Connection socket, workpiece lead** "Medium" choke tapping
5	3	**Connection socket, workpiece lead** Choke tapping "soft"

- Insert the cable plug of the workpiece lead into the connection socket for workpiece lead 1, 2 or 3 (depending on the application or shielding gas used) and lock by turning to the right.

6 Maintenance, care and disposal

DANGER

Risk of injury from electric shock!
Cleaning machines that are not disconnected from the mains can lead to serious injuries!

- Disconnect the machine completely from the mains.
- Remove the mains plug!
- Wait for 4 minutes until the capacitors have discharged!

6.1 General

When used in the specified environmental conditions and under normal operating conditions, this machine is largely maintenance-free and requires a minimum of care.

There are some points, which should be observed, to guarantee fault-free operation of your welding machine. Among these are regular cleaning and checking as described below, depending on the pollution level of the environment and the length of time the unit is in use.

6.2 Maintenance work, intervals

CAUTION

Electric current!
Repairs may only be carried out by authorised specialist staff!

- Do not remove the torch from the hose package!
- Never clamp the torch body in a vice or similar, as this can cause the torch to be irreparably destroyed!
- If damage occurs to the torch or to the hose package which cannot be corrected as part of the maintenance work, the entire torch must be returned to the manufacturer

6.2.1 Daily maintenance tasks

- Check that all connections and wearing parts are hand-tight and tighten if necessary.
- Check that all screw and plug connections and replaceable parts are secured correctly, tighten if necessary.
- Remove any spatter.
- Clean the wire feed rollers on a regular basis (depending on the degree of soiling).

6.2.1.1 Visual inspection

- Check hose package and power connections for exterior damage and replace or have repaired by specialist staff as necessary!
- Mains supply lead and its strain relief
- Gas tubes and their switching equipment (solenoid valve)
- Other, general condition

6.2.1.2 Functional test

- Check correct mounting of the wire spool.
- Welding current cables (check that they are fitted correctly and secured)
- Gas cylinder securing elements
- Operating, message, safety and adjustment devices (Functional test)

6.2.2 Monthly maintenance tasks

6.2.2.1 Visual inspection

- Casing damage (front, rear and side walls)
- Wheels and their securing elements
- Transport elements (strap, lifting lugs, handle)
- Check coolant tubes and their connections for impurities

6.2.2.2 Functional test

- Selector switches, command devices, emergency stop devices, voltage reducing devices, message and control lamps
- Check that the wire guide elements (inlet nipple, wire guide tube) are fitted securely.

6.2.3 Annual test (inspection and testing during operation)

NOTE

The welding machine may only be tested by competent, capable personsl.
A capable person is one who, because of his training, knowledge and experience, is able to recognise the dangers that can occur while testing welding power sources as well as possible subsequent damage and who is able to implement the required safety procedures.

For further information, please see the accompanying supplementary sheets "Machine and Company Data, Maintenance and Testing, Warranty"!

A periodic test according to IEC 60974-4 "Periodic inspection and test" has to be carried out. In addition to the regulations on testing given here, the relevant local laws and regulations must also be observed.

6.3 Maintenance work

DANGER

Do not carry out any unauthorised repairs or modifications!
To avoid injury and equipment damage, the unit must only be repaired or modified by specialist, skilled persons!
The warranty becomes null and void in the event of unauthorised interference.

- Appoint only skilled persons for repair work (trained service personnel)!

Repair and maintenance work may only be performed by qualified authorised personnel; otherwise the right to claim under warranty is void. In all service matters, always consult the dealer who supplied the machine. Return deliveries of defective equipment subject to warranty may only be made through your dealer. When replacing parts, use only original spare parts. When ordering spare parts, please quote the machine type, serial number and item number of the machine, as well as the type designation and item number of the spare part.

6.4 Disposing of equipment

NOTE

Proper disposal!
The machine contains valuable raw materials, which should be recycled, and electronic components, which must be disposed of.
- Do not dispose of in household waste!
- Observe the local regulations regarding disposal!

6.4.1 Manufacturer's declaration to the end user

- According to European provisions (guideline 2002/96/EG of the European Parliament and the Council of January, 27th 2003), used electric and electronic equipment may no longer be placed in unsorted municipal waste. It must be collected separately. The symbol depicting a waste container on wheels indicates that the equipment must be collected separately.
  This machine is to be placed for disposal or recycling in the waste separation systems provided for this purpose.
- According to German law (law governing the distribution, taking back and environmentally correct disposal of electric and electronic equipment (ElektroG) from 16.03.2005), used machines are to be placed in a collection system separate from unsorted municipal waste. The public waste management utilities (communities) have created collection points at which used equipment from private households can be disposed of free of charge.
- Information about giving back used equipment or about collections can be obtained from the respective municipal administration office.
- EWM participates in an approved waste disposal and recycling system and is registered in the Used Electrical Equipment Register (EAR) under number WEEE DE 57686922.
- In addition to this, returns are also possible throughout Europe via EWM sales partners.

6.5 Meeting the requirements of RoHS

We, EWM HIGHTEC Welding GmbH Mündersbach, hereby confirm that all products supplied by us which are affected by the RoHS Directive, meet the requirements of the RoHS (Directive 2002/95/EC).

7 Rectifying faults

All products are subject to rigorous production checks and final checks. If, despite this, something fails to work at any time, please check the product using the following flowchart. If none of the fault rectification procedures described leads to the correct functioning of the product, please inform your authorised dealer.

7.1 Checklist for rectifying faults

NOTE

The correct machine equipment for the material and process gas in use is a fundamental requirement for perfect operation!

Legend	Symbol	Description
		Fault/Cause
		Remedy

Coolant error/no coolant flowing

- Insufficient coolant flow
  - Check coolant level and refill if necessary
- Air in the coolant circuit
  - see chapter "Vent coolant circuit"

Wire feed problems

- Contact tip blocked
  - Clean, spray with anti-spatter spray and replace if necessary
- Setting the spool brake (see "Setting the spool brake" chapter)
  - Check settings and correct if necessary
- Setting pressure units (see "Inching wire electrodes" chapter)
  - Check settings and correct if necessary
- Worn wire rolls
  - Check and replace if necessary
- Wire feed motor without supply voltage (automatic cutout triggered by overloading)
  - Reset triggered fuse (rear of the power source) by pressing the key button
- Kinked hose packages
  - Extend and lay out the torch hose package
- Wire guide core or spiral is dirty or worn
  - Clean core or spiral; replace kinked or worn cores

Functional errors

- Machine control without displaying the signal lights after switching on
  - Phase failure > check mains connection (fuses)
- No welding performance
  - Phase failure > check mains connection (fuses)
- Various parameters cannot be set
  - Entry level is blocked, disable access lock (see chapter entitled "Lock welding parameters against unauthorised access")
- Connection problems
  - Make control lead connections and check that they are fitted correctly.
- Loose welding current connections
  - Tighten power connections on the torch and/or on the workpiece
  - Tighten contact tip correctly

7.2 Vent coolant circuit

NOTE

- **Coolant tank and quick connect coupling of coolant supply and return are only fitted in machines with water cooling.**
- **To vent the cooling system always use the blue coolant connection, which is located as deep as possible inside the system (close to the coolant tank)!**

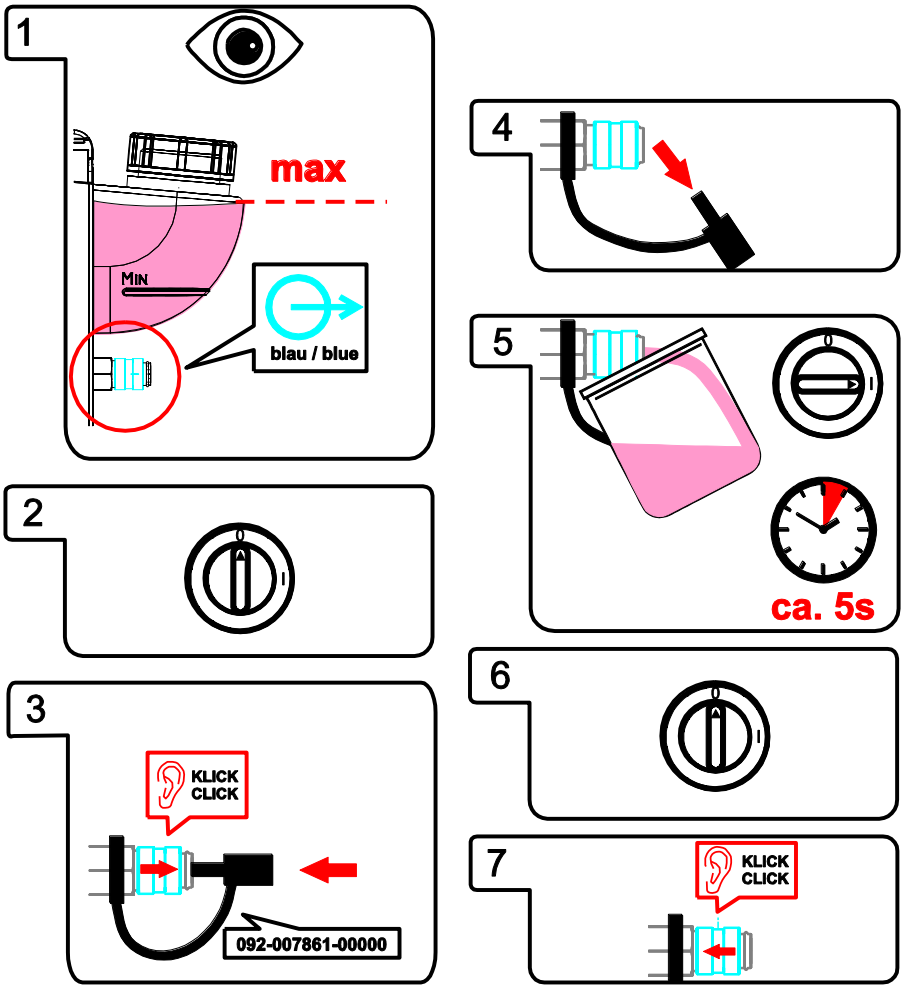


Figure 7-1

8 Technical data

NOTE

Performance specifications and guarantee only in connection with original spare and replacement parts!

8.1 Wega 401 FDG

Switching steps	24 (2 x 12)
Setting range for welding current	30 A to 400 A
Setting range for welding voltage	15.5 V to 34.0 V
Duty cycle at 25 °C ambient temperature	
70%	400 A
100%	300 A
Duty cycle at 40 °C ambient temperature	
60%	400 A
100%	300 A
Open circuit voltage	15.5 V to 45 V
Mains connection lead	H07RN-F4G4
Mains voltage (tolerances)	3 x 400 V (+/- 15%)
Frequency	50/60 Hz
Mains fuse (safety fuse, slow-blow)	3 x 25 A
Max. connected load	19.2 kVA
Rec. generator rating	26 kVA
Workpiece lead	70 mm²
cosφ	0.95
Weight	159 kg
Dimensions L x W x H in mm	1100 x 560 x 1000
Insulation class/protection classification	H/IP 23
Ambient temperature	-25 °C to +40 °C
Machine/torch cooling	Fan/gas
EMC class	A
Constructed to standard	IEC 60974-1, -10 S / CE

8.2 Wega 401 FDW

Switching steps	24 (2 x 12)
Setting range for welding current	30 A to 400 A
Setting range for welding voltage	15.5 V to 34.0 V
Duty cycle at 25 °C ambient temperature	
70%	400 A
100%	300 A
Duty cycle at 40 °C ambient temperature	
60%	400 A
100%	300 A
Open circuit voltage	15.5 V to 45 V
Mains connection lead	H07RN-F4G4
Mains voltage (tolerances)	3 x 400 V (+/- 15%)
Frequency	50/60 Hz
Mains fuse (safety fuse, slow-blow)	3 x 25 A
Max. connected load	19.2 kVA
Rec. generator rating	26 kVA
Workpiece lead	70 mm²
cosφ	0.95
Cooling capacity at 1 l/min	1200 W
Tank capacity (max.)	9 l
Flow rate (max.)	5 l/min
Outlet pressure (max.)	3.5 bar
Weight DW	185 kg
Dimensions L x W x H in mm	1100 x 560 x 1000
Insulation class/protection classification	H/IP 23
Ambient temperature*	-25 °C to +40 °C
Machine/torch cooling	Fan/water
EMC class	A
Constructed to standard	IEC 60974-1, -2, -10 S/CE

NOTE

* **Ambient temperature depends on coolant!**
Observe the coolant temperature range for the welding torch cooling!

8.3 Wega 501 FDG

Switching steps	36 (3 x 12)
Setting range for welding current	50 A to 500 A
Setting range for welding voltage	16.5 V–39.0 V
Duty cycle at 40 °C ambient temperature	
45%	-
60%	500 A
100%	400 A
Duty cycle at 25 °C ambient temperature	
60%	-
70%	500 A
100%	400 A
Open circuit voltage	16.5 V to 49.5 V
Mains connection lead	H07RN-F4G6
Mains voltage (tolerances)	3 x 400 V (+/- 15%)
Frequency	50/60 Hz
Mains fuse (safety fuse, slow-blow)	3 x 32 A
Max. connected load	27.5 kVA
Rec. generator rating	32 kVA
Workpiece lead	95 mm^2
cosφ	0.95
Weight	188 kg
Dimensions L x W x H in mm	960 x 560 x 1010
Insulation class/protection classification	H/IP 23
Ambient temperature	-25 °C to +40 °C
Machine/torch cooling	Fan/gas
EMC class	A
Constructed to standard	IEC 60974-1, -10 S / CE

8.4 Wega 501, 601 FDW

	501 DW	601 DW
Switching steps	36 (3 x 12)	
Setting range for welding current	50 A to 500 A	50 A to 600 A
Setting range for welding voltage	16.5 V–39.0 V	16.5 V–44.0 V
Duty cycle at 40 °C ambient temperature		
45%	-	600 A
60%	500 A	-
100%	400 A	450 A
Duty cycle at 25 °C ambient temperature		
60%	-	600 A
70%	500 A	-
100%	400 A	450 A
Open circuit voltage	16.5 V to 49.5 V	16.5 V to 57.5 V
Mains connection lead	H07RN-F4G6	
Mains voltage (tolerances)	3 x 400 V (+/- 15%)	
Frequency	50/60 Hz	
Mains fuse (safety fuse, slow-blow)	3 x 32 A	
Max. connected load	27.5 kVA	36.7 kVA
Rec. generator rating	32 kVA	50 kVA
Workpiece lead	95 mm^2	
cosφ	0.95	
Tank capacity (max.)	7 l	
Flow rate (max.)	5l/min	
Cooling capacity at 1 l/min	1200 W	
Outlet pressure (max.)	3.5 bar	
Weight	213 kg	236 kg
Dimensions L x W x H in mm	960 x 560 x 1010	
Insulation class/protection classification	H/IP 23	
Ambient temperature*	-25 °C to +40 °C	
Machine/torch cooling	Fan/water	
EMC class	A	
Constructed to standard	IEC 60974-1, -2, -10 S/CE	

NOTE

* **Ambient temperature depends on coolant!**
Observe the coolant temperature range for the welding torch cooling!

9 Accessories

NOTE

Performance-dependent accessories like torches, workpiece leads, electrode holders or intermediate hose packages are available from your authorised dealer.

9.1 System components

Type	Designation	Item no.
Wega M1.02 drive 41	Wire feed unit, water, Euro central connector	090-004962-00502
Wega M1.02 drive 41L	Wire feed unit, water, Euro central connector	090-004965-00502
Wega M2.20 drive 41	Wire feed unit, water, Euro central connector	090-004963-00502
Wega M2.20 drive 41L	Wire feed unit, water, Euro central connector	090-004966-00502
Wega M2.40 drive 41	Wire feed unit, water, Euro central connector	090-004964-00502
Wega M2.40 drive 41L	Wire feed unit, water, Euro central connector	090-004967-00502

9.2 General accessories

Type	Designation	Item no.
KF 23E-10	Coolant (-10 °C), 9.3 l	094-000530-00000
KF 23E-200	Coolant (-10 °C), 200 litres	094-000530-00001
KF 37E-10	Coolant (-20 °C), 9.3 l	094-006256-00000
KF 37E-200	Coolant (-20 °C), 200 l	094-006256-00001
HOSE BRIDGE	Tube bridge	092-007843-00000
TYP 1	Frost protection tester	094-014499-00000
DM AR/MIX 35L/MIN	Manometer pressure regulator	094-000009-00000
5POLE/CEE/32A/M	Machine plug	094-000207-00000

9.3 Options

9.3.1 Wega 401

Type	Designation	Item no.
ON DK drive 41 Wega 401	Pivot support, horizontal for drive 41	092-002522-00000
ON DK drive 41L Wega	Pivot support, horizontal for drive 41L	092-002113-00000
ON Filter W	Retrofit option contamination filter for air inlet	092-002091-00000
ON Holder Gas Bottle <50L	Holding plate for gas cylinders smaller than 50 litres	092-002151-00000
ON Hose/FR Mount	Optional holder for tubes and remote control for machines without pivot support	092-002116-00000
ON Hose/FR Mount DK 4L	Mounting for hoses and remote controls for machines with 4L pivot support (092-002112-00000 and 092-002113-00000)	092-002117-00000
ON LB Wheels 160x40MM	Retrofit option for locking brake for machine wheels	092-002110-00000
ON Tool Box	Retrofit option tool box	092-002138-00000

9.3.2 Wega 501, 601

Type	Designation	Item no.
ON DK drive 41 Wega 501/601	Pivot support, horizontal for drive 41	092-000680-00000
ON DK drive 41L Wega 501/601	Pivot support, horizontal for drive 41L	092-002635-00000
ON Filter W501/601	Retrofitting option for air inlet dirt filter	092-002730-00000
ON LB Wheels 160x40MM	Retrofit option for locking brake for machine wheels	092-002110-00000

10 Appendix A

10.1 Setting instructions

Wega 401

		SG2/3 G3/4 Si1 Ar82/18				SG2/3 G3/4 Si1 CO_2 100				CrNi Ar98/2				AlMg Ar100			
mm	mm	m/min			1 / 2 / 3	m/min			1 / 2 / 3	m/min			1 / 2 / 3	m/min			1 / 2 / 3
0,8	0,8	1,6	1	1	1	1,3	1	1	1	2,2	1	1	1	6,8	1	1	3
	1,0	0,9	1	1	1	1,1	1	1	1	1,2	1	1	1	6,8	1	1	3
1,0	0,8	1,8	1	2	1	1,3	1	1	1	2,6	1	2	1	7,3	1	2	3
	1,0	1,3	1	2	1	1,1	1	1	1	1,6	1	2	1	7,3	1	2	3
	1,2	1,1	1	2	1	0,5	1	2	1	1,5	1	2	1	5,0	1	2	3
1,5	0,8	4,3	1	10	1	3,0	1	9	1	5,6	1	8	2	8,8	1	5	3
	1,0	1,6	1	3	1	2,5	1	9	1	4,5	1	8	1	8,8	1	5	3
	1,2	2,4	1	7	1	1,6	1	8	1	2,0	1	4	1	6,2	1	5	3
2,0	0,8	5,9	1	12	2	3,6	1	11	1	6,6	1	9	2	10,5	1	8	3
	1,0	2,3	1	5	1	3,1	1	11	1	5,3	1	9	1	10,5	1	8	3
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	1,6	1,7	1	8	1	1,4	1	9	1	1,8	1	5	1	5,0	1	5	3
3,0	0,8	7,4	2	2	2	6,0	2	1	1	8,6	1	11	2	13,6	1	12	3
	1,0	4,0	1	10	1	5,9	2	2	1	7,0	1	11	1	13,6	1	12	3
	1,2	6,7	2	4	3	2,8	1	11	1	4,0	1	9	1	8,1	1	9	3
	1,6	2,3	1	11	2	3,0	2	1	1	2,1	1	7	1	5,6	1	8	3
4,0	0,8	11,8	2	5	2	8,5	2	3	1	10,8	2	1	2	15,5	2	2	3
	1,0	7,2	2	3	2	9,1	2	5	2	7,9	1	12	1	15,5	2	2	3
	1,2	7,7	2	6	3	3,9	2	2	1	5,4	1	11	1	9,8	1	12	3
	1,6	2,7	1	12	2	3,6	2	4	1	2,5	1	9	1	6,4	1	11	3
5,0	0,8	15,7	2	8	2	11,1	2	5	2	11,6	2	2	2	16,6	2	3	3
	1,0	9,4	2	7	3	11,2	2	7	2	9,9	2	2	1	16,6	2	3	3
	1,2	8,2	2	7	3	4,4	2	3	1	5,9	1	12	1	11,2	2	2	3
	1,6	3,6	2	2	2	4,1	2	6	1	3,0	1	11	1	7,3	2	2	3
6,0	0,8	21,2	2	10	2	12,8	2	7	2	13,5	2	5	2	19,0	2	5	3
	1,0	13,4	2	10	3	12,5	2	8	2	10,6	2	3	1	19,0	2	5	3
	1,2	8,9	2	8	3	5,4	2	5	2	6,4	2	1	1	11,9	2	3	3
	1,6	5,0	2	7	2	4,7	2	8	2	3,4	1	12	1	7,7	2	3	3
8,0	0,8	24,0	2	12	2	18,3	2	11	2	16,6	2	7	2	23,9	2	9	3
	1,0	16,6	2	11	3	15,5	2	10	2	12,5	2	6	2	23,9	2	9	3
	1,2	10,7	2	10	3	9,0	2	8	2	7,7	2	3	1	15,7	2	7	3
	1,6	6,1	2	10	3	4,9	2	9	2	4,3	2	2	1	8,6	2	5	3
10,0	0,8	24,0	2	12	2	21,3	2	12	2	20,5	2	9	2	23,9	2	9	3
	1,0	16,6	2	11	3	19,6	2	12	2	13,9	2	8	2	23,9	2	9	3
	1,2	12,4	2	11	3	11,2	2	10	2	9,1	2	5	1	19,3	2	10	3
	1,6	6,8	2	11	3	5,7	2	11	2	5,0	2	4	1	9,7	2	7	3
12,0	1,0	20,8	2	12	3	19,6	2	12	2	17,0	2	9	2	23,9	2	9	3
	1,2	12,4	2	11	3	12,8	2	11	2	10,7	2	8	1	22,1	2	12	3
	1,6	6,8	2	11	3	5,7	2	11	2	5,3	2	5	1	10,3	2	8	3
14,0	1,0	20,8	2	12	3	19,6	2	12	2	20,5	2	10	2	23,9	2	9	3
	1,2	14,4	2	12	3	14,9	2	12	2	13,4	2	10	1	22,1	2	12	3
	1,6	7,6	2	12	3	6,7	2	12	2	6,2	2	7	1	11,1	2	9	3
16,0	1,0	20,8	2	12	3	19,6	2	12	2	22,5	2	11	2	23,9	2	9	3
	1,2	14,4	2	12	3	14,9	2	12	2	16,6	2	11	1	22,1	2	12	3
	1,6	7,6	2	12	3	6,7	2	12	2	7,8	2	9	1	11,9	2	10	3
20,0	1,0	20,8	2	12	3	19,6	2	12	2	22,5	2	11	2	23,9	2	9	3
	1,2	14,4	2	12	3	14,9	2	12	2	21,2	2	12	1	22,1	2	12	3
	1,6	7,6	2	12	3	6,7	2	12	2	12,2	2	12	1	13,9	2	12	3

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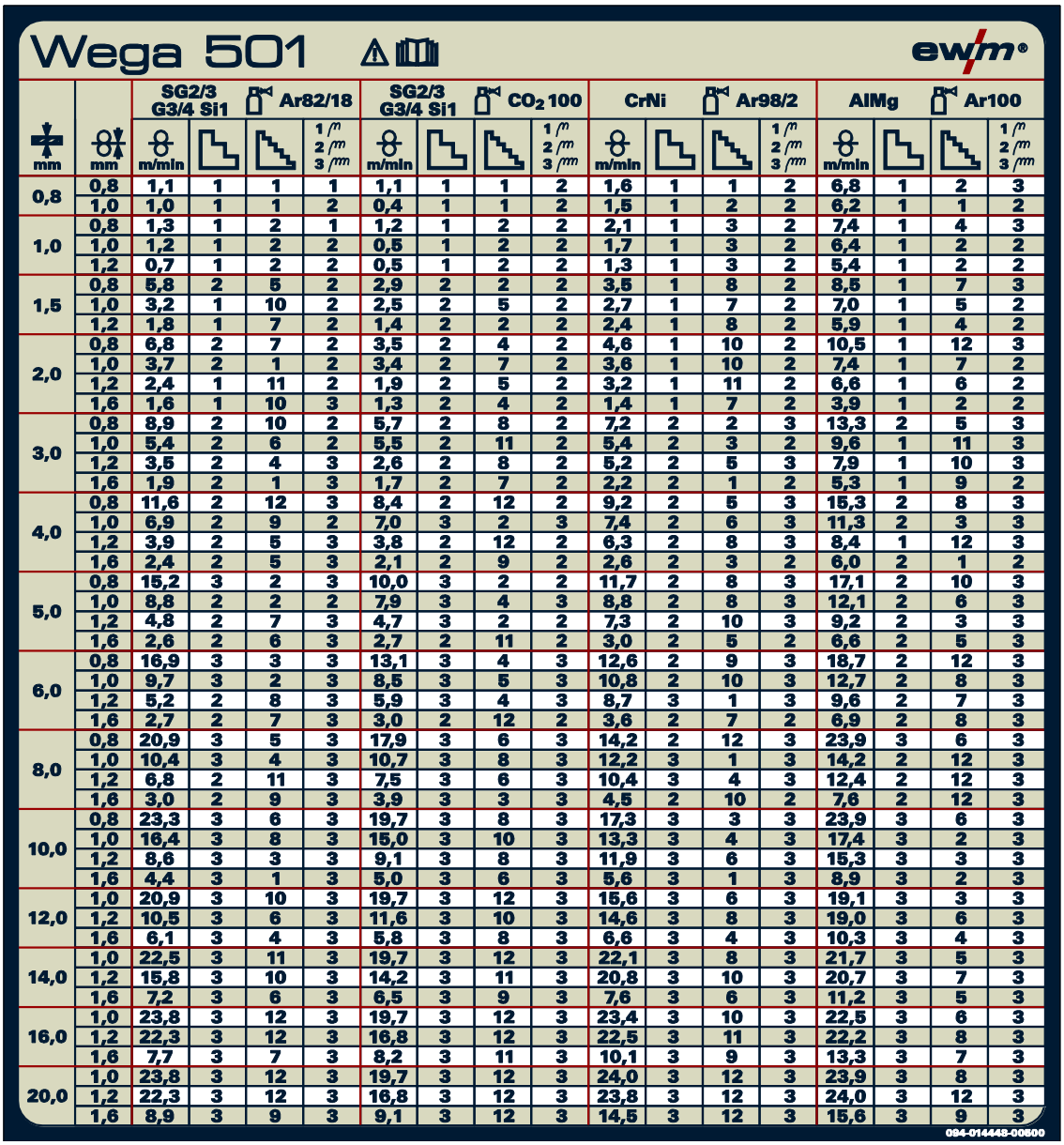
Figure 10-1



Wega 501

mm	mm	SG2/3 G3/4 Si1 Ar82/18 m/min	1	2	3	SG2/3 G3/4 Si1 CO_2 100 m/min	1	2	3	CrNi Ar98/2 m/min	1	2	3	AlMg Ar100 m/min	1	2	3
0,8	0,8	1,1	1	1	1	1,1	1	1	2	1,6	1	1	2	6,8	1	2	3
	1,0	1,0	1	1	2	0,4	1	1	2	1,5	1	2	2	6,2	1	1	2
1,0	0,8	1,3	1	2	1	1,2	1	2	2	2,1	1	3	2	7,4	1	4	3
	1,0	1,2	1	2	2	0,5	1	2	2	1,7	1	3	2	6,4	1	2	2
	1,2	0,7	1	2	2	0,5	1	2	2	1,3	1	3	2	5,4	1	2	2
1,5	0,8	5,8	2	5	2	2,9	2	2	2	3,5	1	8	2	8,5	1	7	3
	1,0	3,2	1	10	2	2,5	2	5	2	2,7	1	7	2	7,0	1	5	2
	1,2	1,8	1	7	2	1,4	2	2	2	2,4	1	8	2	5,9	1	4	2
2,0	0,8	6,8	2	7	2	3,5	2	4	2	4,6	1	10	2	10,5	1	12	3
	1,0	3,7	2	1	2	3,4	2	7	2	3,6	1	10	2	7,4	1	7	2
	1,2	2,4	1	11	2	1,9	2	5	2	3,2	1	11	2	6,6	1	6	2
	1,6	1,6	1	10	3	1,3	2	4	2	1,4	1	7	2	3,9	1	2	2
3,0	0,8	8,9	2	10	2	5,7	2	8	2	7,2	2	2	3	13,3	2	5	3
	1,0	5,4	2	6	2	5,5	2	11	2	5,4	2	3	2	9,6	1	11	3
	1,2	3,5	2	4	3	2,6	2	8	2	5,2	2	5	3	7,9	1	10	3
	1,6	1,9	2	1	3	1,7	2	7	2	2,2	2	1	2	5,3	1	9	2
4,0	0,8	11,6	2	12	3	8,4	2	12	2	9,2	2	5	3	15,3	2	8	3
	1,0	6,9	2	9	2	7,0	3	2	3	7,4	2	6	3	11,3	2	3	3
	1,2	3,9	2	5	3	3,8	2	12	2	6,3	2	8	3	8,4	1	12	3
	1,6	2,4	2	5	3	2,1	2	9	2	2,6	2	3	2	6,0	2	1	2
5,0	0,8	15,2	3	2	3	10,0	3	2	2	11,7	2	8	3	17,1	2	10	3
	1,0	8,8	2	2	2	7,9	3	4	3	8,8	2	8	3	12,1	2	6	3
	1,2	4,8	2	7	3	4,7	3	2	2	7,3	2	10	3	9,2	2	3	3
	1,6	2,6	2	6	3	2,7	2	11	2	3,0	2	5	2	6,6	2	5	3
6,0	0,8	16,9	3	3	3	13,1	3	4	3	12,6	2	9	3	18,7	2	12	3
	1,0	9,7	3	2	3	8,5	3	5	3	10,8	2	10	3	12,7	2	8	3
	1,2	5,2	2	8	3	5,9	3	4	3	8,7	3	1	3	9,6	2	7	3
	1,6	2,7	2	7	3	3,0	2	12	2	3,6	2	7	2	6,9	2	8	3
8,0	0,8	20,9	3	5	3	17,9	3	6	3	14,2	2	12	3	23,9	3	6	3
	1,0	10,4	3	4	3	10,7	3	8	3	12,2	3	1	3	14,2	2	12	3
	1,2	6,8	2	11	3	7,5	3	6	3	10,4	3	4	3	12,4	2	12	3
	1,6	3,0	2	9	3	3,9	3	3	3	4,5	2	10	2	7,6	2	12	3
10,0	0,8	23,3	3	6	3	19,7	3	8	3	17,3	3	3	3	23,9	3	6	3
	1,0	16,4	3	8	3	15,0	3	10	3	13,3	3	4	3	17,4	3	2	3
	1,2	8,6	3	3	3	9,1	3	8	3	11,9	3	6	3	15,3	3	3	3
	1,6	4,4	3	1	3	5,0	3	6	3	5,6	3	1	3	8,9	3	2	3
12,0	1,0	20,9	3	10	3	19,7	3	12	3	15,6	3	6	3	19,1	3	3	3
	1,2	10,5	3	6	3	11,6	3	10	3	14,6	3	8	3	19,0	3	6	3
	1,6	6,1	3	4	3	5,8	3	8	3	6,6	3	4	3	10,3	3	4	3
14,0	1,0	22,5	3	11	3	19,7	3	12	3	22,1	3	8	3	21,7	3	5	3
	1,2	15,8	3	10	3	14,2	3	11	3	20,8	3	10	3	20,7	3	7	3
	1,6	7,2	3	6	3	6,5	3	9	3	7,6	3	6	3	11,2	3	5	3
16,0	1,0	23,8	3	12	3	19,7	3	12	3	23,4	3	10	3	22,5	3	6	3
	1,2	22,3	3	12	3	16,8	3	12	3	22,5	3	11	3	22,2	3	8	3
	1,6	7,7	3	7	3	8,2	3	11	3	10,1	3	9	3	13,3	3	7	3
20,0	1,0	23,8	3	12	3	19,7	3	12	3	24,0	3	12	3	23,9	3	8	3
	1,2	22,3	3	12	3	16,8	3	12	3	23,8	3	12	3	24,0	3	12	3
	1,6	8,9	3	9	3	9,1	3	12	3	14,5	3	12	3	15,6	3	9	3

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Figure 10-2

WEGA 601 ⚠

EWM HIGHTEC WELDING

mm	mm	SG2/3 G3/4 Si1 Ar 82/18				SG2/3 G3/4 Si1 CO_2 100				CrNi Ar 98/2				AlMg Ar 100			
		m/min			1 m / 2 m / 3 m	m/min			1 m / 2 m / 3 m	m/min			1 m / 2 m / 3 m	m/min			1 m / 2 m / 3 m
0,8	0,8	2,1	1	1	1	1,4	1	1	2	2,7	1	1	2	7,9	1	1	3
	1,0	2,0	1	1	2	0,7	1	1	2	2,3	1	1	2	7,1	1	1	2
1,0	0,8	2,1	1	1	1	1,4	1	1	2	2,7	1	1	2	7,9	1	1	3
	1,0	2,0	1	1	2	0,7	1	1	2	2,3	1	1	2	7,1	1	1	2
	1,2	1,4	1	1	2	0,6	1	1	2	1,8	1	1	2	6,4	1	1	2
1,5	0,8	5,7	2	1	2	2,9	1	10	2	3,6	1	4	2	8,7	1	3	3
	1,0	3,2	1	6	2	2,5	2	1	2	2,9	1	3	2	7,1	1	1	2
	1,2	1,7	1	2	2	1,4	1	10	2	2,3	1	3	2	6,4	1	1	2
2,0	0,8	6,7	2	3	2	3,8	2	1	2	4,7	1	6	2	10,6	1	8	3
	1,0	3,7	1	9	2	3,3	2	3	2	3,7	1	6	2	7,6	1	3	3
	1,2	2,3	1	6	2	1,9	2	1	2	3,3	1	7	2	6,8	1	2	2
	1,6	1,5	1	5	3	1,3	1	12	2	1,5	1	3	2	4,5	1	1	2
3,0	0,8	9,1	2	7	2	6,3	2	5	2	7,2	1	10	3	13,2	2	1	3
	1,0	5,3	2	2	2	5,1	2	7	2	5,4	1	11	2	9,7	1	7	3
	1,2	3,4	1	12	3	2,8	2	5	2	5,1	2	1	2	7,8	1	5	3
	1,6	1,9	1	9	3	1,7	2	3	2	2,2	1	9	2	5,1	1	4	2
4,0	0,8	12,3	2	9	3	8,6	2	9	2	9,1	2	1	3	15,0	2	4	3
	1,0	7,3	2	6	2	6,7	2	12	3	7,3	2	2	3	11,3	1	11	3
	1,2	3,8	2	1	3	3,6	2	8	2	6,1	2	4	3	8,4	1	8	3
	1,6	2,4	2	1	3	2,2	2	6	2	2,6	1	11	2	6,0	1	9	2
5,0	0,8	13,9	2	10	3	10,1	2	11	2	11,3	2	4	3	16,6	2	6	3
	1,0	9,0	2	9	2	8,0	3	1	3	9,3	2	5	3	12,0	2	2	3
	1,2	4,6	2	3	3	4,7	2	11	3	7,4	2	7	3	9,2	1	11	3
	1,6	2,6	2	2	3	2,5	2	7	2	3,0	2	1	2	6,5	2	1	3
6,0	0,8	16,8	2	12	3	13,3	3	1	3	12,9	2	6	3	19,0	2	9	3
	1,0	9,7	2	11	3	8,5	3	2	3	10,2	2	6	3	12,9	2	5	3
	1,2	5,5	2	5	3	5,9	3	1	3	8,3	2	9	3	9,6	2	3	3
	1,6	2,8	2	4	3	3,1	2	9	3	3,7	2	4	2	6,9	2	4	3
8,0	0,8	21,0	3	2	3	17,8	3	3	3	14,4	2	9	3	23,9	3	3	3
	1,0	10,5	3	1	3	10,6	3	5	3	12,3	2	10	3	14,4	2	9	3
	1,2	6,5	2	7	3	7,4	3	3	3	10,4	3	1	3	11,9	2	8	3
	1,6	3,1	2	6	3	3,9	2	12	3	4,6	2	7	2	7,8	2	9	3
10,0	0,8	23,2	3	3	3	19,7	3	5	3	17,0	2	12	3	23,9	3	3	3
	1,0	16,2	3	5	3	16,1	3	8	3	13,4	3	1	3	17,5	2	11	3
	1,2	8,6	2	12	3	9,0	3	5	3	11,8	3	3	3	15,2	2	12	3
	1,6	4,1	2	9	3	4,9	3	3	3	5,6	2	10	3	9,0	2	11	3
12,0	1,0	21,7	3	8	3	18,6	3	9	3	15,5	3	3	3	19,0	2	12	3
	1,2	11,2	3	4	3	11,1	3	7	3	14,4	3	5	3	18,9	3	3	3
	1,6	6,2	3	1	3	5,7	3	5	3	6,7	3	1	3	10,4	3	1	3
14,0	1,0	23,2	3	9	3	24,0	3	11	3	21,7	3	5	3	21,7	3	2	3
	1,2	17,0	3	8	3	15,6	3	9	3	19,6	3	7	3	20,2	3	4	3
	1,6	7,2	3	3	3	7,1	3	7	3	8,1	3	4	3	11,3	3	2	3
16,0	1,0	24,0	3	10	3	24,0	3	12	3	23,4	3	7	3	22,4	3	3	3
	1,2	24,0	3	11	3	18,9	3	10	3	21,8	3	8	3	22,0	3	5	3
	1,6	7,6	3	4	3	7,7	3	8	3	9,9	3	6	3	13,0	3	4	3
20,0	1,0	24,0	3	12	3	24,0	3	12	3	24,0	3	12	3	23,9	3	5	3
	1,2	24,0	3	12	3	24,0	3	12	3	24,0	3	10	3	24,0	3	9	3
	1,6	9,3	3	7	3	9,7	3	10	3	13,7	3	9	3	15,5	3	6	3

Figure 10-3

11 Appendix B

11.1 Overview of EWM branches

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Technology centre

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Production, Sales and Service

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EWM HIGHTEC WELDING s.r.o.
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Tel: +420 412 358-551 · Fax: -504
www.ewm-jirikov.cz · info@ewm-jirikov.cz

Sales and Service Germany

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www.ewm-rathenow.de · info@ewm-rathenow.de

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