

Operating instructions



WEGA MIG 250 - 600 **WEGA MIG 250 - 600 PROGRAM** *for standard MIG/MAG welding.*

WEGA MIG 250, MIG 250 PROGRAM
WEGA MIG 330, MIG 330 PROGRAM
WEGA MIG 400, MIG 400 PROGRAM
WEGA MIG 400 E
WEGA MIG 500, MIG 500 PROGRAM
WEGA MIG 600, MIG 600 PROGRAM



These operating instructions must be read before commissioning.

Failure to do so may be dangerous.

Machines may only be operated by personnel familiar with the appropriate safety regulations.

The machines bear the conformity mark and thus comply with the

- EC Low Voltage Directive (73/23/EEC)
- EC EMC Directive (89/336/EEC)

(The CE Mark is only required in EC member states).



The machines are marked with the S symbol and can be used in accordance with IEC 60974, EN 60974, VDE 0544 in environments where there is an increased electrical risk.

Name des Herstellers:

Name of manufacturer:

Nom du fabricant:

EWM HIGHTEC WELDING GmbH

(nachfolgend EWM genannt)

(In the following called EWM)

(nommé par la suite EWM)

Anschrift des Herstellers:

Address of manufacturer:

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Hiermit erklären wir, daß das nachstehend bezeichnete Gerät in seiner Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheitsanforderungen der unten genannten EG- Richtlinien entspricht. Im Falle von unbefugten Veränderungen, unsachgemäßen Reparaturen und / oder unerlaubten Umbauten, die nicht ausdrücklich von EWM autorisiert sind, verliert diese Erklärung ihre Gültigkeit.

We herewith declare that the machine described below meets the standard safety regulations of the EU- guidelines mentioned below in its conception and construction, as well as in the design put into circulation by us. In case of unauthorized changes, improper repairs and / or unauthorized modifications, which have not been expressly allowed by EWM, this declaration will lose its validity.

Par la présente, nous déclarons que la conception et la construction ainsi que le modèle, mis sur le marché par nous, de l'appareil décrit ci - dessous correspondent aux directives fondamentales de sécurité de la U.E. mentionnées ci- dessous. En cas de changements non autorisés, de réparations inadéquates et / ou de modifications prohibées, qui n'ont pas été autorisés expressément par EWM, cette déclaration devient caduque.

Gerätebezeichnung:

Description of the machine:

Déscription de la machine:

Gerätetyp:

Type of machine:

Type de machine:

Artikelnummer EWM:

Article number:

Numéro d'article

Seriennummer:

Serial number:

Numéro de série:

Optionen:

Options:

Options:

keine

none

aucune

Zutreffende EG - Richtlinien:

Applicable EU - guidelines:

Directives de la U.E. applicables:

EG - Niederspannungsrichtlinie (73/23/EWG)

EU - low voltage guideline

Directive de la U.E. pour basses tensions

EG- EMV- Richtlinie (89/336/EWG)

EU- EMC guideline

U.E.- EMC directive

Angewandte harmonisierte Normen:

Used co-ordinated norms:

Normes harmonisées appliquées:

EN 60974 / IEC 60974 / VDE 0544

EN 50199 / VDE 0544 Teil 206

Hersteller - Unterschrift:

Signature of manufacturer:

Signature du fabricant:



Michael Szczesny ,

Geschäftsführer
managing director
gérant

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Safety instructions

For Your Safety



**Observe accident prevention regulations.
Ignoring the following safety procedures can be fatal.**

Designed use

This machine is manufactured according to the current state of the art and current regulations and standards. It is to be operated only for the designed use (see Chap. Commissioning/Area of application).

Use not as designed

This machine may be a hazard to persons, animals and property, however, if it is

- not used as designed
- used by unskilled persons who have not been trained
- modified or converted improperly



Our operating instructions will provide you with an introduction into the safe use of the machine.

Therefore please read them closely and only start work when you are familiar with them.

Any person involved in operation, maintenance and repair of this machine must read and follow these operating instructions, especially the safety precautions. Where appropriate, this must be confirmed by signature.

Furthermore, the

- relevant accident prevention regulations,
- generally recognised safety regulations,
- regionally specific provisions etc. are to be adhered to.
- **Before undertaking welding tasks, put on prescribed dry protective clothing, e.g. gloves.**
- **Protect eyes and face with protective visor.**



Electric shocks can be fatal

- **The machine may only be connected to correctly earthed sockets.**
- **Only operate with intact connection lead including protective conductor and safety plug.**
- **An improperly repaired plug or damaged mains cable insulation can cause electric shocks.**
- **The machine may only be opened by specialist staff.**
- **The unit must be disconnected from the mains power before being opened. Switching off is not sufficient. Wait for 2 minutes until capacitors are discharged.**
- **Always put down welding torch, stick electrode holder in an insulated condition.**



Even touching low voltages can cause you to get a shock and lead to accidents, so:

- **Secure yourself from falls before working on platforms or scaffolding.**
- **When welding, operate earth tongs, torch and workpiece properly, not in ways for which they are not intended. Do not touch live parts with bare skin.**
- **Only replace electrodes when wearing dry gloves.**
- **Never use torches or earth cables with damaged insulation.**

Safety instructions



Smoke and gases can lead to breathing difficulties and poisoning.

- Do not breathe in smoke and gases.
- Ensure that there is sufficient fresh air.
- Keep solvent vapours away from the arc radiation area. Chlorinated hydrocarbon fumes can be converted into poisonous phosgene by ultraviolet radiation.



Workpiece, flying sparks and droplets are hot

- Keep children and animals well away from the working area. Their behaviour is unpredictable.
- Move containers with inflammable or explosive liquids away from the working area. There is a danger of fire and explosion.
- Never heat explosive liquids, dusts or gases by welding or cutting. There is also a danger of explosions when apparently harmless substances develop high pressures in enclosed containers by heating.



Take care to avoid fire hazards

- Any kind of fire hazards must be avoided. Flames can form e.g. when sparks are flying, when parts are glowing or hot slag is present.
- A constant check must be kept on whether fire hazards have been created in the working area.
- Highly inflammable objects, such as matches and cigarette lighters for example, must not be carried in trouser pockets.
- You must ensure that fire extinguishing equipment - appropriate to the welding process - is available close to the welding work area and that easy access is possible.



Take care to avoid fire hazards

- Containers in which fuels or lubricants have been present must be thoroughly cleaned before welding begins. It is not sufficient simply for the receptacle to be empty.
- After a workpiece has been welded, it must only be touched or brought into contact with inflammable material when it has cooled down sufficiently.
- Loose welding connections can completely destroy protective conductor systems of interior installations and cause fires. Before beginning welding work, ensure that the earth tongs are properly fixed to the workpiece or welding bench and that there is a direct electrical connection from the workpiece to the power source.



Noise exceeding 70 dBA can cause permanent hearing damage

- Wear suitable earmuffs or plugs.
- Ensure that other people who spend time in the working area are not inconvenienced by the noise.



Secure gas cylinder

- Place shielding gas cylinders in the holders provided for them and secure with safety chains.
- Take care when handling cylinders; do not throw or heat, guard against them toppling over.
- When moving by crane, take off the gas cylinder from the welding machine.

Safety instructions



Interference by electrical and electromagnetic fields is possible e.g. from the welding machine or from the high-voltage pulses of the ignition unit.

- As laid down in Electromagnetic Compatibility Standard EN 50199, the machines are intended for use in industrial areas; if they are operated e.g. in residential environments problems can occur in ensuring electromagnetic compatibility.
- The functioning of heart pacemakers can be adversely affected when you are standing near the welding machine.
- Malfunctioning of electronic equipment (e.g. EDP, CNC equipment) in the vicinity of the welding location is possible.
- Other mains supply leads, trip leads, signal and telecommunications leads above, under and near the welding device may be subject to interference.



Electromagnetic interference must be reduced to such a level that it no longer constitutes interference. Possible reduction measures:

- Welding equipment should be serviced regularly. (see Chap. Maintenance and care)
- Welding leads should be as short as possible and run closely together on or near to the ground.
- Selective shielding of other leads and equipment in the environment can reduce radiation.



Repair and modifications may only be carried out by authorised, trained, specialist staff! The warranty becomes null and void in the event of unauthorised interference.

Transport and Installation



The machines may only be transported and operated in an upright position.



- Before moving, pull out mains plug and place on the machine.
- Secure high-pressure shielding gas cylinder with safety chain to prevent it from toppling over.
- Do not roll over hoses or cables.



Place the shielding gas cylinder in the cylinder holder and secure it against accidents with the securing chain! Maximum permissible cylinder size at internal pressure:

- 200 bar, up to 50 l geometrical volume
- 300 bar, up to 33 l geometrical volume



When the power source is moved and positioned, it is only secure against falling to an angle of 15° (as specified in EN 60974-1). Special attention should be paid to the fact that, when the machine is moved, additional danger results from obstacles on the floor as these can cause additional tilting moments.

Safety instructions

Safety rules for crane transport



Carefully observe the accident prevention regulations VBG 9, VBG 9a and VGB 15.

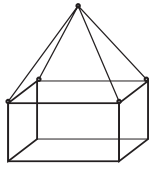


Fig. 1:

Crane principle

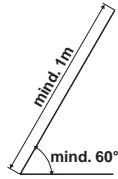


Fig. 2:

Angle of the
suspension ropes

- Lift with the crane at all 4 eye bolts simultaneously (as depicted in Fig. 1).
- Ensure an even distribution of the load to all four ropes and maintain an angle of at least 60° of the suspension ropes (see Fig. 2).
Use only ring chains or suspension ropes of equal length (at least 1 m).
- Use load hooks with securing cleats and shackles of corresponding size to DIN 82 101, Form A, minimum size 0,4.
- Before lifting with a crane, always remove the shielding gas cylinder from the welding machine.
- Never lift other loads together with the welding machine, e.g. persons, toolboxes, wire spools etc.
- Avoid jerks when raising and lowering the welding machine.

Environmental conditions

The welding machine can be operated in a location where there is no risk of explosion under the following conditions:

- Temperature range of the ambient air:
during welding: -10°C to +40°C*),
during transport and storage -25°C to +55°C *)
- relative humidity
up to 50% at 40°C,
up to 90% at 20°C

The ambient air must be free of unusual amounts of dust, acids, corrosive gases or substances etc., insofar as they do not occur during welding.

Examples of unusual operating conditions:

- Unusual corrosive smoke,
- vapour,
- excessive oil vapour,
- unusual vibrations or jolts,
- excessive quantities of dust such as grinding dust etc.,
- severe weather conditions,
- unusual conditions near the coast or on board ship.

When setting up the machine, ensure a free inlet and outlet of air.

The machine is tested to protection class IP23, i.e.:

- Protection against penetration of solid foreign bodies $\varnothing > 12\text{mm}$,
- Protection against water spray up to an angle of 60° to the vertical.

*) Using the appropriate coolant.

Safety instructions

Notes on the use of these operating instructions

These operating instructions are arranged in chapters.

To help you find your way around more quickly, in the margins you will occasionally see, in addition to sub-headings, icons referring to particularly important passages of text which are graded as follows depending on their importance:



(Note): Applies to technical peculiarities which must be observed by the user.



(Warning): Applies to working and operating procedures which must be followed precisely to avoid damaging or destroying the machine.



(Caution): Applies to working and operating procedures which must be followed precisely to avoid endangering people and includes the "Warning" symbol.

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

- Insert plug of welding current lead into socket **(Sect. 5, G2)** and lock.

Meaning of the diagram descriptions:

- e.g. **(C1)** means: Item C / Figure 1 in the respective chapter
- e.g. **(Sect. 3, C1)** means: in Chapter 3 Item C / Figure 1

1 Technical data

1.1 WEGA series

WEGA series	MIG 250	MIG 330	MIG 400	MIG 500	MIG 600
Setting range for welding current	30-250 A	30-330 A	50-400 A	50-500 A	50-600 A
MIG welding voltage	15-26.5 V	15.5-30.5 V	16.5-34 V	16.5-39 V	16.5-44 V
Max. welding current at: 45%DC (40°C) / 52.5%DC (20°C) /	250 A / 250A	330 A / 330 A	400 A / 400 A	500 A / 500 A	600 A / 600 A
60%DC (40°C) / 70%DC (20°C) /	210 A / 210 A	280 A / 280 A	345 A / 345 A	435 A / 435 A	520 A / 520 A
100%DC (40°C) / 100%DC (20°C) /	165 A / 180 A	220 A / 240 A	265 A / 290 A	335 A / 365 A	400 A / 440 A
Cos φ	0.95				
Open circuit voltage	15 V-39 V	15.5 V-45 V	16.5 V-45 V	16.5V -49.5V	16.5V -57.5V
Mains fuses, slow-blow	3 x 20 A	3 x 20 A	3 x 25 A	3 x 35 A	3 x 35 A
Setting steps	24 (fine 2 / coarse 12)			36 (fine 3 / coarse 12)	
Load alternation	10min				
Mains voltage	3 x 400 V / 415V				
Max. connected power	9.6 kVA	14.2 kVA	18.0 kVA	22.9 kVA	32.1 kVA
Frequency	50/60 Hz				
WF speed (compact)	1 m/min - 20 m/min				
Standard wire-feed roller fitting for steel	1.0 +1.2 mm				
Workpiece lead (4m)	35 qmm	50 qmm	70 qmm		95 qmm
Ambient temperature	-10°C to +40°C				
Machine cooling	fan				
Torch cooling	air / water			water	
Tank capacity	7l				
Euro central connection	yes				
Insulation class	H				
Protection classification	IP 23				
Dimensions (L/W/H) incl. cylinder bracket	960 mm / 560 mm / 885 mm			960 mm / 560 mm / 1,010 mm	
Weight without accessories: compact / water-cooled	151 kg	165 kg	170 kg	205 kg	233 kg
decompact / water-cooled	145 kg	159 kg	164 kg	200 kg	228 kg
compact / gas-cooled	131 kg	145 kg	150 kg	-	-
decompact / gas-cooled	125 kg	139 kg	144 kg	-	--
Constructed to standards	IEC 60974, EN 60 974, VDE 0544, CE The machines are marked with the S symbol and can be used in accordance with IEC 60974, EN 60,974, VDE 0544 in environments where there is an increased electrical risk.				

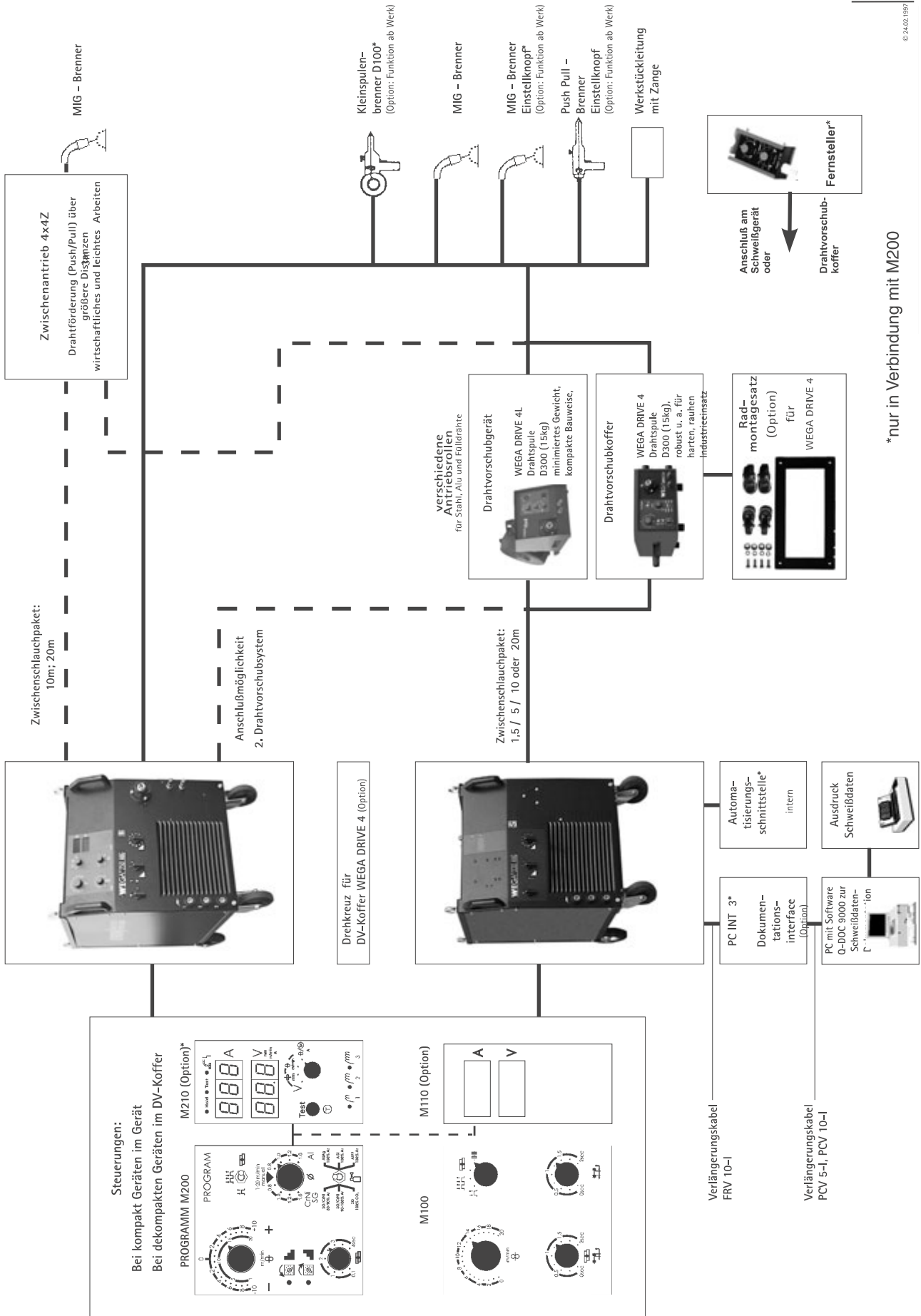
1 Technical data

1.2 WEGA DRIVE 4 WF case

	WEGA DRIVE 4
Supply voltage	42VAC
Wire feed speed	1m/min - 20m/min
Standard wire-feed roller fitting for steel	1.0mm +1.2mm
Ambient temperature	-10°C to +40°C
Euro central connection	Yes
Drive	4 rollers
Protection classification	IP 23
Dimensions (L x W x H) / mm	680 x 460 x 265
Weight without accessories, incl. 1.5m intermediate tube package	approx. 24kg
Constructed to standards	IEC 60974, EN 60 974, VDE 0544, CE EN 50199 / VDE 0544 Part 206 S sign / CE

2 Description of the system components

2.1 System overview



2 Description of the system components



2.2 The welding current sources

2.2.1 WEGA 250 - 600 welding machine range (front view)

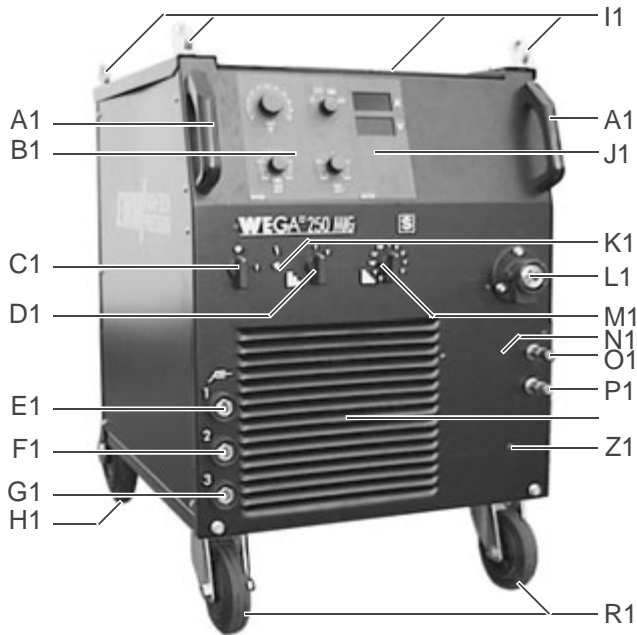
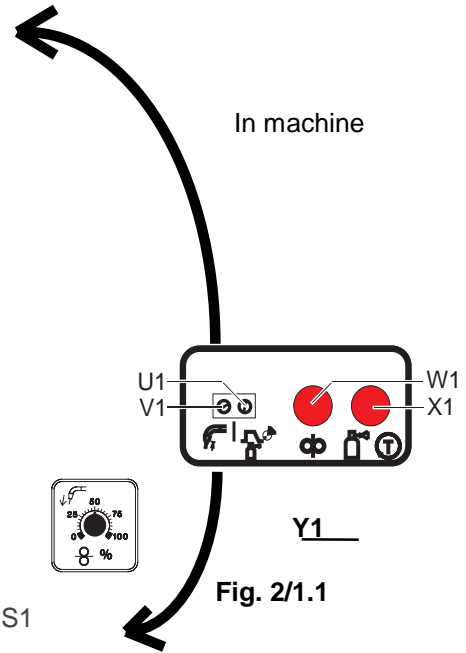


Fig. 2/1; Front view (compact design)



In machine

Fig. 2/1.1

In WF case

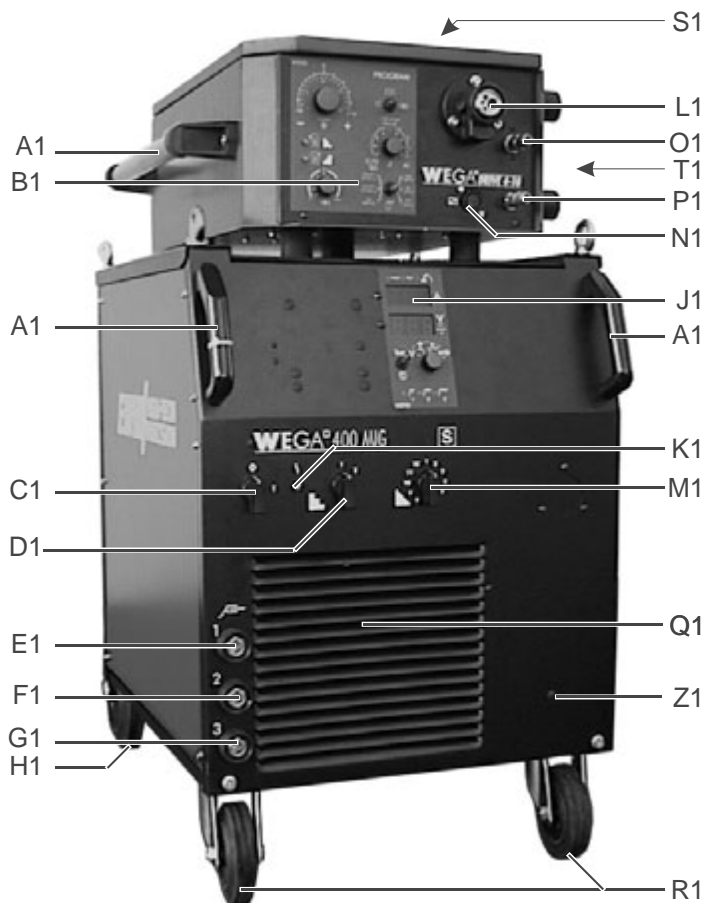



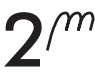
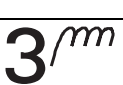


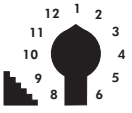





Fig. 2/2; Front view (decompact design)

2 Description of the system components

	A1	Carrying handles
	B1	"PROGRAM" M200 control (fig. 2/2) or M100 (fig. 2/1)
	C1	Main switch, machine on/off
	D1	Step switch for coarse setting of welding voltage (M100) or power (M200) (2 steps for WEGA MIG 250-400, 3 steps for WEGA MIG 500 - 600)
	E1	"-" welding current socket, workpiece connection CO ₂ choke tap (hard) (see also chap. 2.2.3)
	F1	"-" welding current socket, workpiece connection MIX choke tap (medium) (see also chap. 2.2.3 and chap. 6.9.3)
	G1	"-" welding current socket, workpiece connection AR choke tap (soft) (see also chap. 2.2.3)
	H1	Fixed castors
	I1	Lifting lugs
Option	J1	M110 control welding current and voltage display (fig. 2/1) or M210 (fig. 2/2)
	K1	LED error display for high temperature and / or coolant shortage
	L1	Welding torch "+" connection (Euro central connector)
	M1	Step switch (12 steps) for fine setting of welding voltage (M100) or performance (M200)
	N1	Remote control connection socket, 19-pole, (optional), connection for remote control or welding torch control lead
	O1	Red rapid-action closure coupling, water feedback from torch
	P1	Blue rapid-action closure coupling, water supply to torch
	Q1	Air inlet
	R1	Guide castors
	S1	Sliding closure coupling to open the WF case
	T1	Plug pin draw, Ø 20.8mm (optional)
	U1	Gas post-flow setting options
	V1	Wire burn-back setting options
	W1	Key button for no-power wire inching
	X1	Key button for no-power gas test
	Y1	Rotary dial for wire creep (only for M100)
	Z1	Service opening Hole for removing the pump blade

2 Description of the system components

2.2.2 WEGA 250 - 600 welding machine range (rear view)

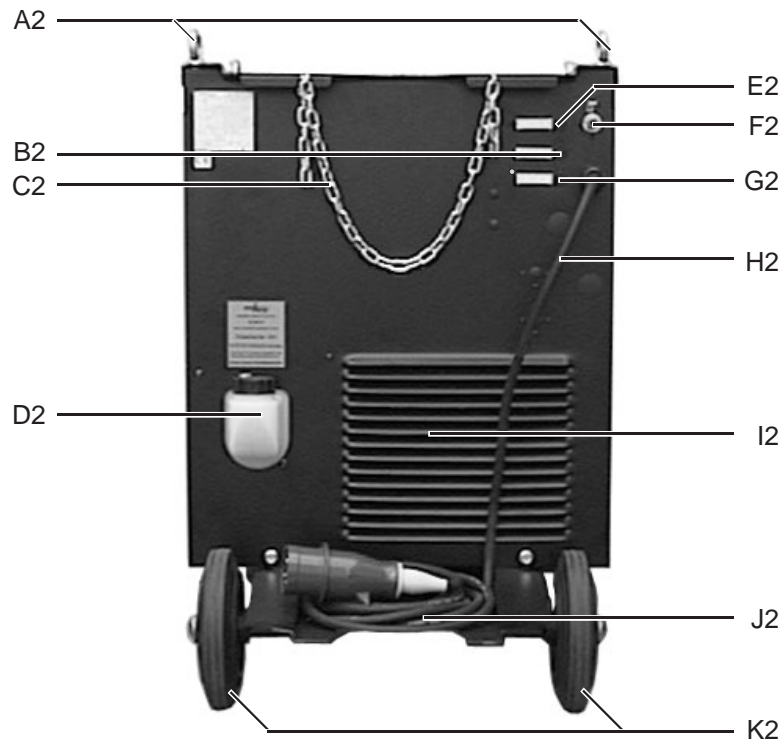


Fig. 2/3; Rear view (compact design)

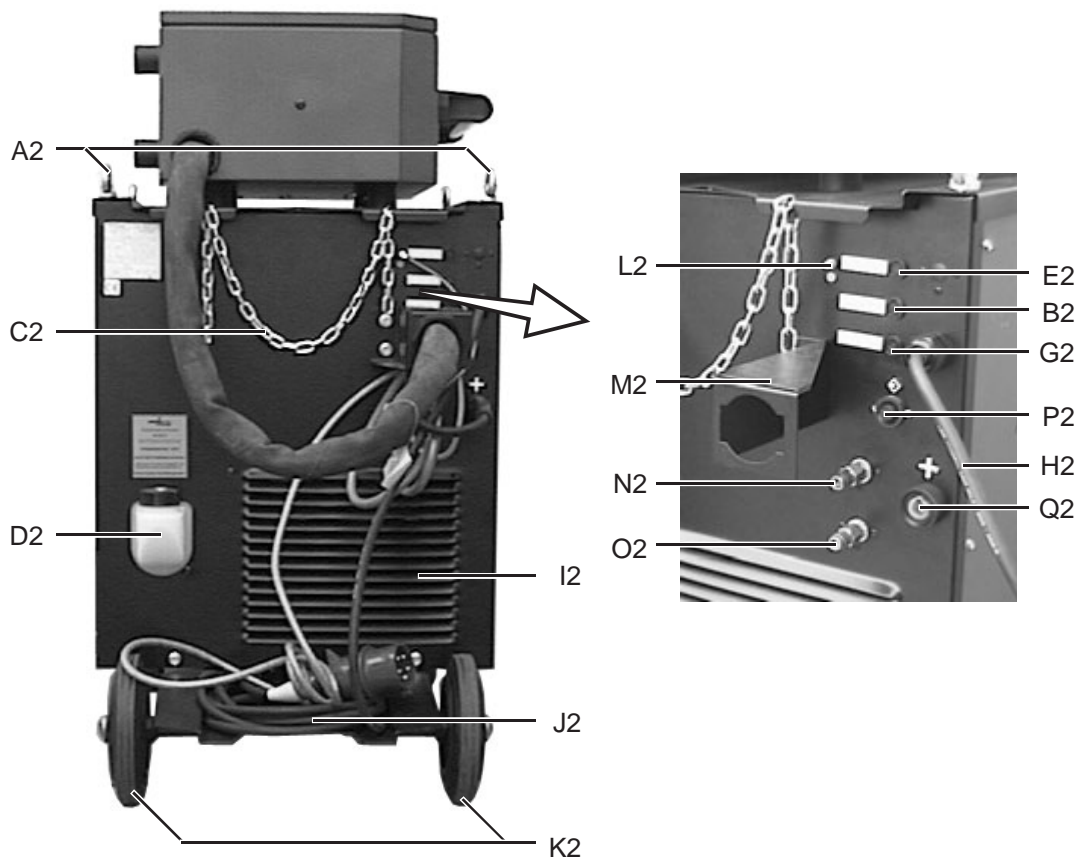







Fig. 2/4; Rear view (decompact design)

2 Description of the system components

2.2.3 WEGA 400 MIG E with electronic choke (front view)

	A2	Lifting lugs
	B2	Excess voltage release, fan/water pump (230V / 2.5A slow-blow)
	C2	Securing chain for gas cylinder
	D2	Coolant filling pipes (welding torch cooling)
	E2	Fuse, control (42V / 4A slow-blow)
	F2	G 1/4" gas connection (compact machines only)
	G2	Excess current release, fan/water pump
	H2	Mains cable
	I2	Air outlet
	J2	Bracket for shielding gas cylinder
	K2	Fixed castors
	L2	Connecting screw Connecting screw to connect PE lead of WF case
	M2	Strain relief for intermediate tube package
	N2	Red rapid-action closure coupling, water feedback from WF case
	O2	Blue rapid-action closure coupling, water supply to WF case
	P2	7-pole connection socket Control unit connection for WF case
	Q2	Welding current connection + socket Welding current connection for WF case
		PCINT 3 connection option (only when used with M200 + M210)

2 Description of the system components

2.2.3 WEGA 400 MIG E with electronic choke (front view)

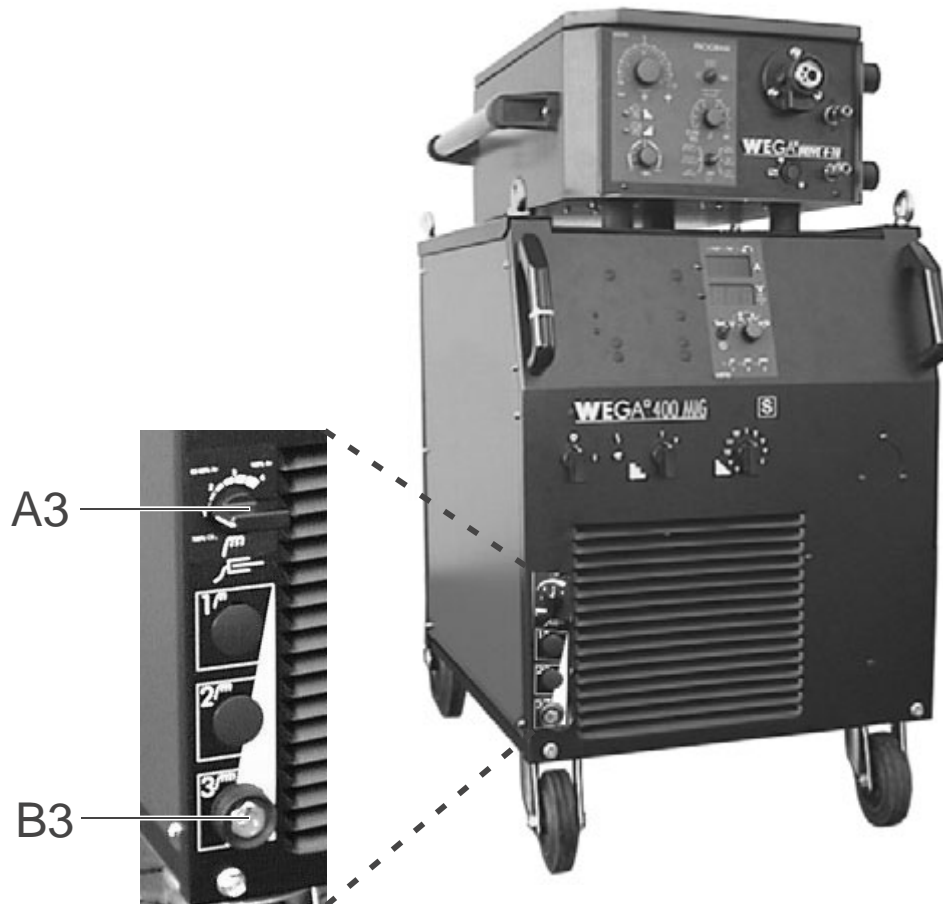


Fig. 2/5; Front view (WEGA 400 MIG E with electronic choke)

A3	Toggle switch for 4-way setting of the choke Switch position 1: CO ₂ choke tapping (hard) Switch position 2: MIX choke tapping (medium hard) Switch position 3: MIX choke tapping (medium soft) Switch position 4: AR choke tapping (soft)
B3	Welding current socket "-": workpiece connection

2 Description of the system components

2.3 Controls

2.3.1 "PROGRAM" M200 control

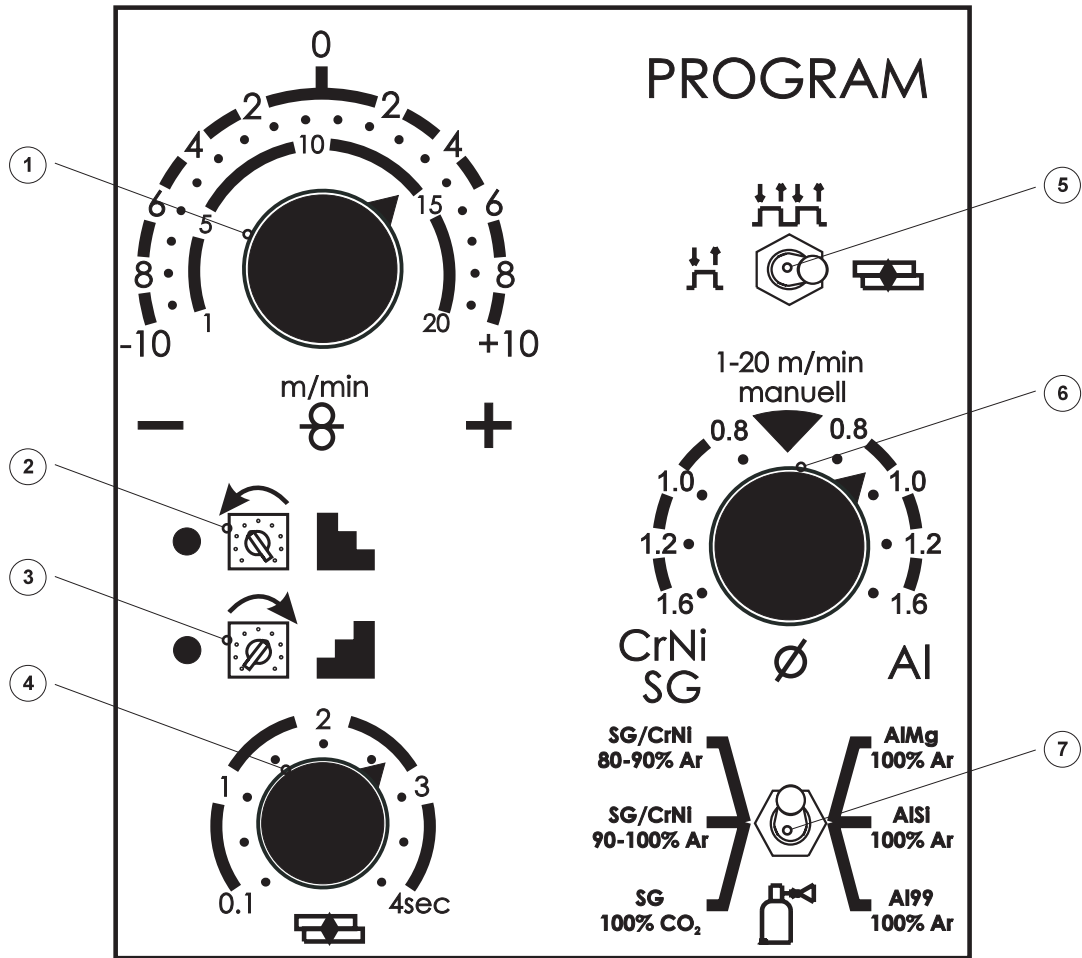
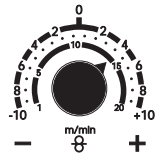


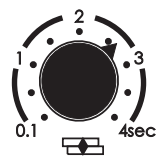
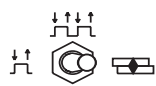

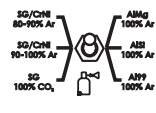


Fig.: 2/6 "PROGRAM" M200 control

2 Description of the system components

<p>①</p>		<p>Rotary dial for the infinite adjustment of:</p> <ul style="list-style-type: none"> • Wire feed speed correction • Wire feed speed 1 - 20 m/min (Selector switch ⑥ in manual position)
<p>②</p>		<p>Signal light: Switchover recommendation at excessive welding speed pre-selection "Turn selector switch left" (or error message, see 4.4)</p>
<p>③</p>		<p>Signal light: Switchover recommendation for too little welding speed pre-selection "Turn selector switch right" (or error message, see 4.4)</p>
<p>④</p>		<p>Rotary dial for the infinite adjustment of:</p> <ul style="list-style-type: none"> • Spot time 0.1 - 4 seconds
<p>⑤</p>		<p>Operating mode changeover switch</p> <ul style="list-style-type: none"> • non latched operation • latched operation, • spots.
<p>⑥</p>		<p>Selector switch for setting:</p> <ul style="list-style-type: none"> • Position "manual": Two-dial operation • Wire electrode diameter and material type for aluminium welding • Wire electrode diameter and material type for chrome-nickel / steel welding
<p>⑦</p>		<p>Changeover switch for selecting the gas type</p>

2 Description of the system components

2.3.2 M100 control

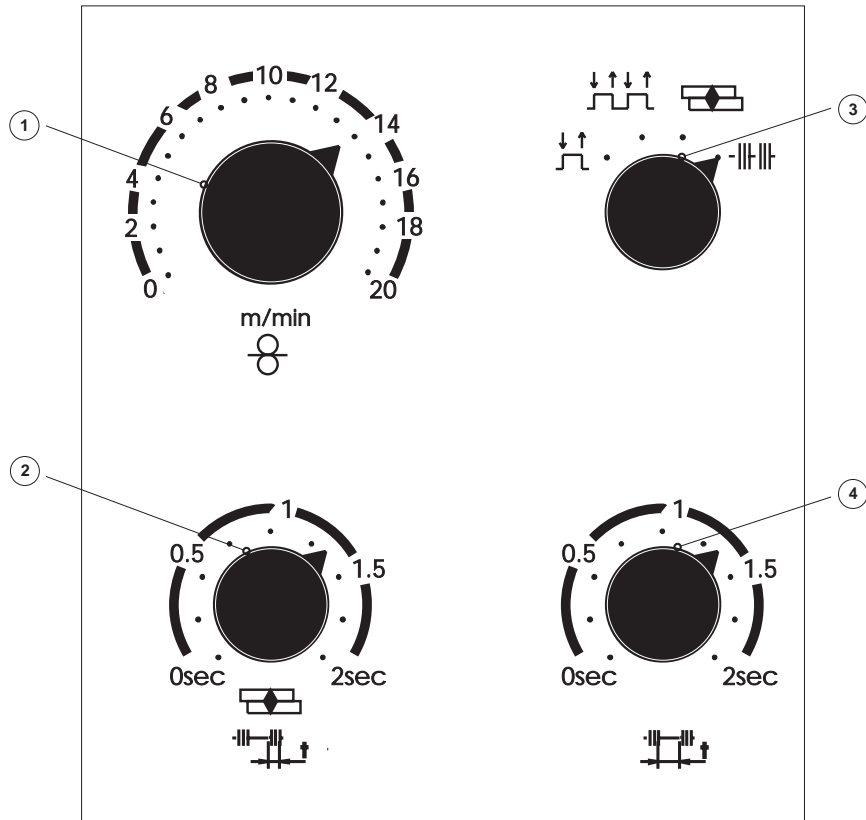

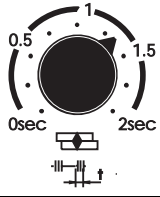
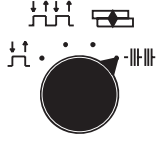




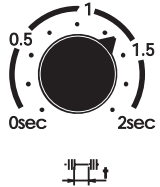


Fig.: 2/7 M100 control panel

	<p>"Wire-feed speed" rotary dial for infinitely variable setting of wire-feed speed (1 - 20m/min)</p>
	<p>Rotary dial for "spot and interval times" for infinitely variable setting of welding time (0 - 2s) in "SPOT and INTERVAL" mode</p>
	<p>"Operating mode" selector  non-latched;  latched;  spot or  interval welding</p>
	<p>"Pause time" rotary dial for infinitely variable setting of pause time (0 – 2s) in "INTERVAL" mode</p>

2 Description of the system components

2.4 Voltmeter / ammeter displays

2.4.1 M210: digital V / A meter with preset and hold function (optional for M200)

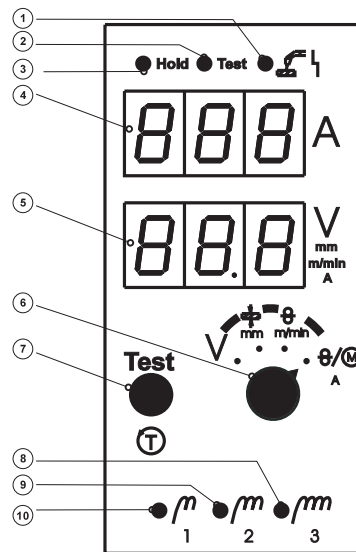


Fig.: 2/8 control panel digital voltage and current display with preset function M210 (optional)

①		Short-circuit signal light between wire electrode (or gas nozzle) and workpiece
②	● Test	Signal light preset mode on: preset welding parameter values are displayed according to key button ⑥ in displays ⑤, ④
③	● Hold	Signal light hold function : the last welding values for the welding voltage and current are shown in the displays ⑤, ④
④		Red digital welding current display: before, during and after welding
⑤		Green digital display: Welding voltage, material thickness, WF speed or motor current according to position of switch ⑥ before, during and after welding
⑥		Changeover switch: Select which parameters are displayed on the green display ⑤
⑦	Test 	Preset mode ON/OFF key button: for pre-setting the welding speed using the step switch
⑧		Signal light: rec. choke tap according to material and type of gas
⑨		Signal light: rec. choke tap according to material and type of gas
⑩		Signal light: rec. choke tap according to material and type of gas

2 Description of the system components

2.4.2 M110: digital V / A meter with hold function (optional for M100 and M200)

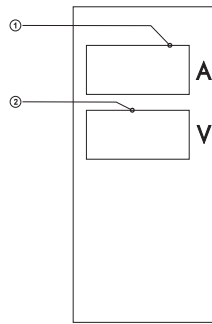


Fig. 2/9; Control panel of M110 digital voltage and power display

①		Digital welding current display
②		Digital welding voltage display

2.5 The remote controls (optional, only in combination with M200)



Only the remote controls described in these operating instructions should be connected! Remote controls must only be connected or removed when the machine is switched off! The welding machine detects the remote control automatically after being switched on. The machine must be equipped with the option remote control potentiometer connection option

2.5.1 Manual remote control RM

- Connect remote control to remote control socket (see 2.2).



Rotary dial for the infinite adjustment of:

- Wire feed speed correction
- Wire feed speed 1 -20m/min (Selector switch ⑥ chap. 2.3.1 in manual position)
- Connector plug (19-pole) with 5-metre connection cable.

2.5.2 Manual remote control on the welding torch (option, in preparation)

2.6 Mechanised welding interface (optional, only in combination with M200)

The welding current sources feature a very high standard of safety. This safety standard is also retained when peripheral equipment is connected for automatic welding if this peripheral equipment fulfils the same criteria, particularly with regard to their isolation from the mains supply.

This is ensured when transformers conforming to VDE 0551 are used.



All interface contacts described below in this chapter can be loaded with a maximum of:
100mA +15V/-15V

The following signals are available on the remote control socket:

- Start / Stop power source
- Power-flow signal I > 0
- Control voltage to regulate wire feed speed

3 Description of M100 / M110 control

3.1 Description of M100 control

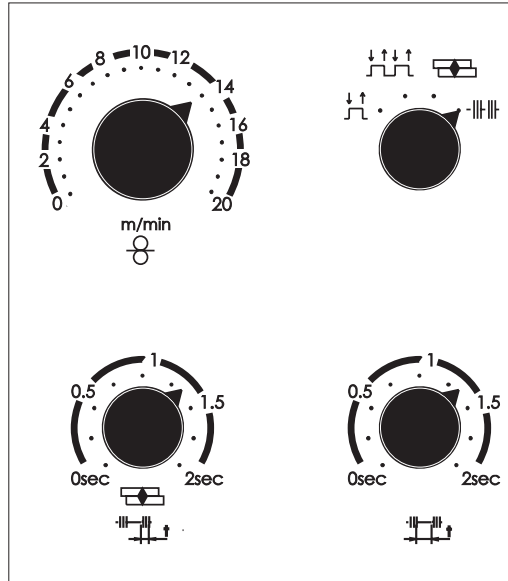


Fig. 3/1: M100 control





3.1.1 Adjusting the operating point

The M100 MIG/MAG control is operated according to a two-dial principle, i.e. to pre-select the working point, the operator simply pre-sets the

wire feed speed on the control and the

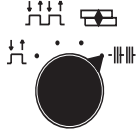




welding voltage on the step switches

to the diameter of the chosen material and wire electrodes.


	WF speed selection	Set rotary dial to appropriate wire feed speed
	Step switch	Welding voltage selection
		Coarse-setting step switch to set welding voltage
		Fine-setting step switch to set welding voltage

3 Description of M100 / M110 control

3.1.2 Selecting the operating mode

	Operating mode changeover switch	The operating mode can be adjusted to the relevant welding task
	Non-latched setting	e.g.: tacking, short welding seams
	Latched setting	e.g.: long welding seams
	Spot setting	e.g.: spot-welding
	Interval setting	e.g.: tack welding for coach-building

3.1.3 Choke tapping

	Choke tap selection	Depending on the shielding gas, there is a selection of 3 choke tapping settings :
1^m	Choke output 1	"Hard" choke connection e.g. for welding with CO₂
2^m	Choke output 2	"Medium" choke connection e.g. for welding with gas mixtures (see also page 6/7, chap.6.9.3 "Additional choke tapping")
3^{mm}	Choke output 3	"Soft" choke connection e.g. for welding with argon

3.1.4 Settings for the electronic choke (WEGA 400 MIG E only)

	Setting the electronic choke using switches (chap. 2, fig. 2/5; A3)	Depending on the shielding gas, there is a selection of 4 choke settings :
	Switch position 1	"Hard" choke connection e.g. for welding with CO₂
	Switch position 2	"Medium hard" choke connection e.g. for welding with mixed gases
	Switch position 3	"Medium soft" choke connection e.g. for welding with mixed gases
	Switch position 4	"Soft" choke connection e.g. for welding with argon

3.2 V / A meter with hold function M110 (optional)

3.2.1 Display of actual values during and after welding

The digital VA meter M110 is available as an option for control M100 or M200. This display informs the welder of the current power and voltage values during the welding operation. In addition, the last welding data is saved on the display (hold function).

3 Description of M100 / M110 control

3.3 Setting other welding parameters

The welding machine and WF case (Fig. 3/2) contain controls to set the following welding parameters.

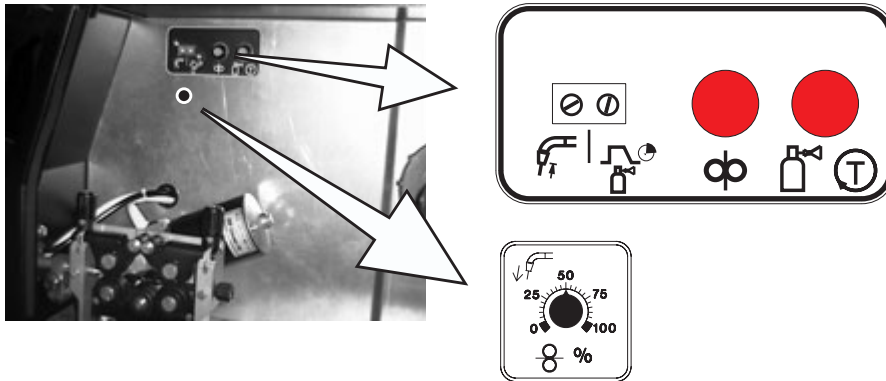


Fig. 3/2 Setting options in the welding machine or WF case

3.3.1 Wire burn-back



Trimmer
wire burn-back
infinitely
adjustable:
0 - 250 ms

Setting note:

Wire back-burn set **too high**: large drops developing on the wire electrode result in poor ignition properties or the wire electrode fusing onto the welding nozzle.
Wire back-burn set **too low**: Wire electrode fuses to the weld pool.

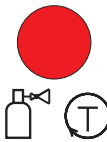
3.3.2 Gas post-flow time



Trimmer
gas post-flow time
infinitely
adjustable:
0.2 - 10s

The purpose of the gas post-flow is to prevent crater formation in the welding material by keeping it surrounded with shielding gas until it solidifies.

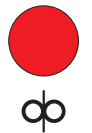
3.3.3 Current-less gas test



Key button for
current-less gas
test

This ensures a high standard of safety for the welder by preventing accidental ignition of the arc.

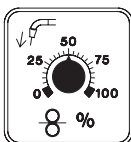
3.3.4 Inching the wire electrode



Key button for
current-less
inching

With the current off, the wire electrode can be inched into the tube package without releasing gas.

3.3.5 Wire creep



Wire creep rotary
dial infinitely
adjustable:
0 - 100%

The percentage wire creep rate is dependent on the wire feed speed selected. The standard factory setting is calibrated to 50%. (e.g.: WF speed = 10m/min \geq wire creep = 5 m/min)













Advantage: The wire electrode does not reach the workpiece at full speed. This facilitates reliable, spatter-free ignition.

3 Description of M100 / M110 control

3.4 Function sequence in operating modes

3.4.1 Explanation of signs and functions

Table :

Symbol	Meaning
	Press torch trigger
	Release torch trigger
	Shielding gas flowing
	Welding power
	Wire electrode is being discharged
	Wire creep The wire electrode does not reach the workpiece at full speed. This facilitates reliable, spatter-free ignition.
	Wire burn-back Advantage: Prevents fusing of the wire electrode into the weld pool. Wire back-burn set too high : large drops developing on the wire electrode result in poor ignition properties or the wire electrode fusing onto the welding nozzle. Wire back-burn set too low : Wire electrode fuses to the weld pool.
	Gas pre-flows
	Gas post-flows The purpose of the gas post-flow is to prevent crater formation in the welding material by keeping it surrounded with shielding gas until it solidifies.
	Time
	Non-latched
	Latched

3 Description of M100 / M110 control

3.4.2 Non-latched MIG function sequence

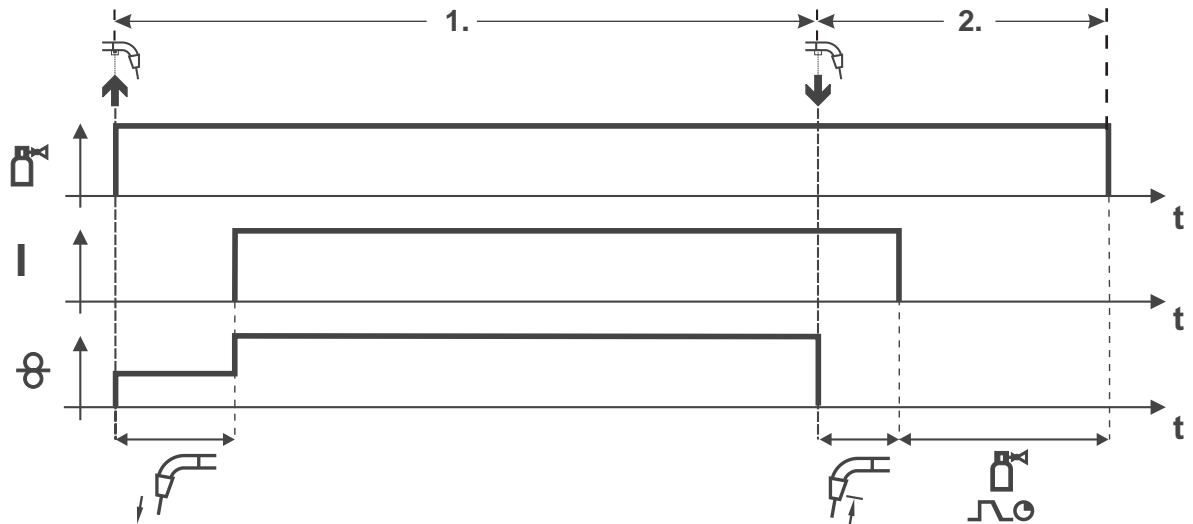


Fig. 3/3 Non-latched MIG

1st step

Press and hold torch trigger

- Shielding gas is expelled
- Wire-feed motor runs at "creep-start speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.

2nd step

Release torch trigger

- WF motor stops.
- Arc is extinguished after the set wire burn-back time elapses.
Advantage: Prevents fusing of the wire electrode into the weld pool.
- Gas post-flow time elapses.

3 Description of M100 / M110 control

3.4.3 Latched MIG function sequence

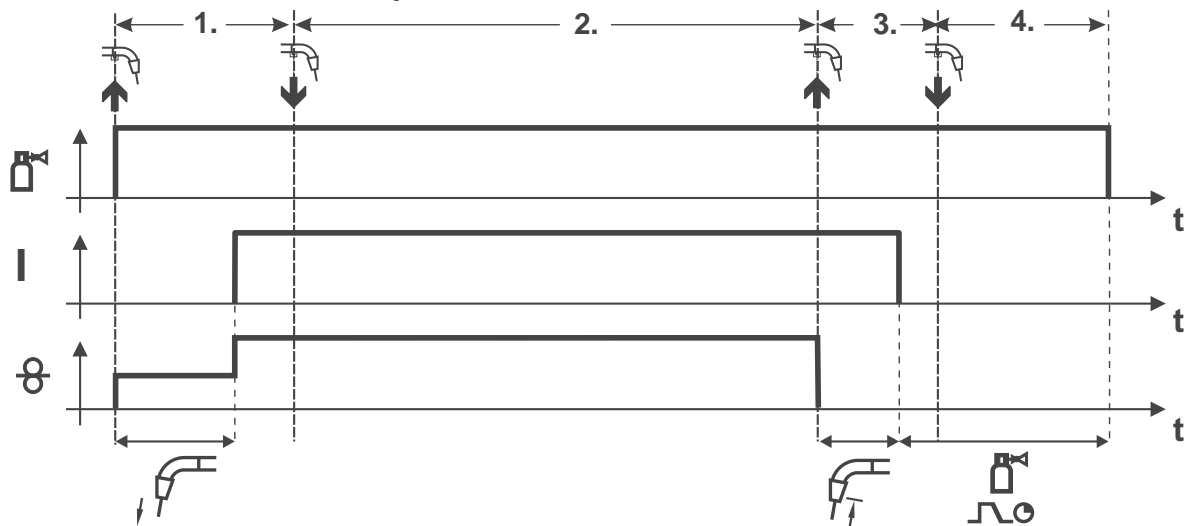


Fig. 3/4 Latched MIG

1st and 2nd step

Press and release torch trigger

- Shielding gas is expelled
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.

3rd and 4th step

Press and release torch trigger

- WF motor stops.
- Arc is extinguished after the set wire burn-back time elapses.
- Release torch trigger: Step 4, no function
- Gas post-flow time elapses.

3 Description of M100 / M110 control

3.4.4 MIG spot-welding function sequence

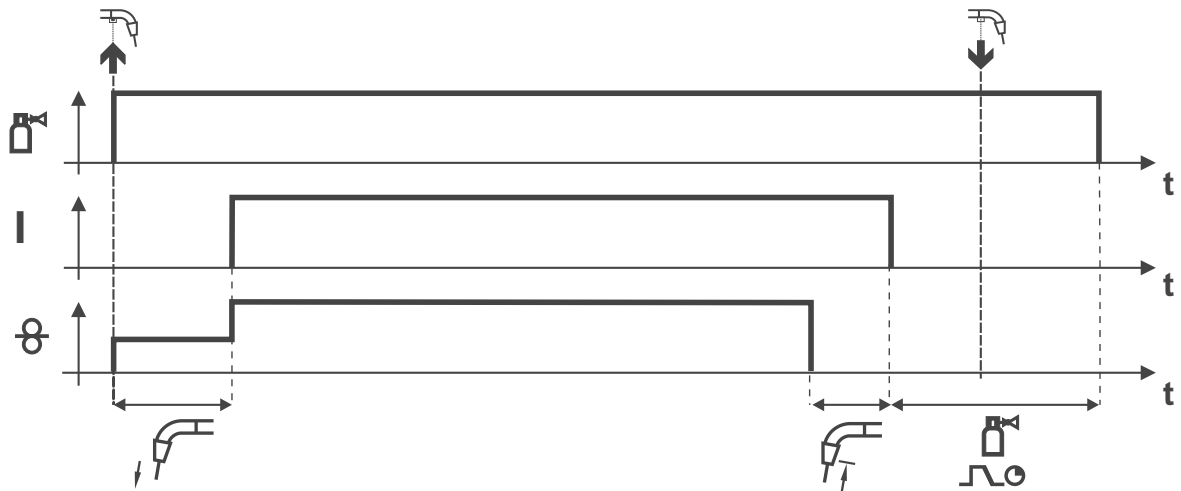


Fig. 3/5 MIG spots

Start spot welding

Press and hold torch trigger

- Shielding gas is expelled
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.
- Wire-feed motor stops after the selected spotting time expires.
- Arc is extinguished after the set wire burn-back time elapses.
- Gas post-flow time elapses.

End spot-welding

- Spot-welding ends when the pre-selected spotting time expires.
- Early ending of spot-welding with the release of the torch trigger.

Release torch trigger: spot-welding can be resumed.

3 Description of M100 / M110 control

3.4.5 MIG interval function sequence

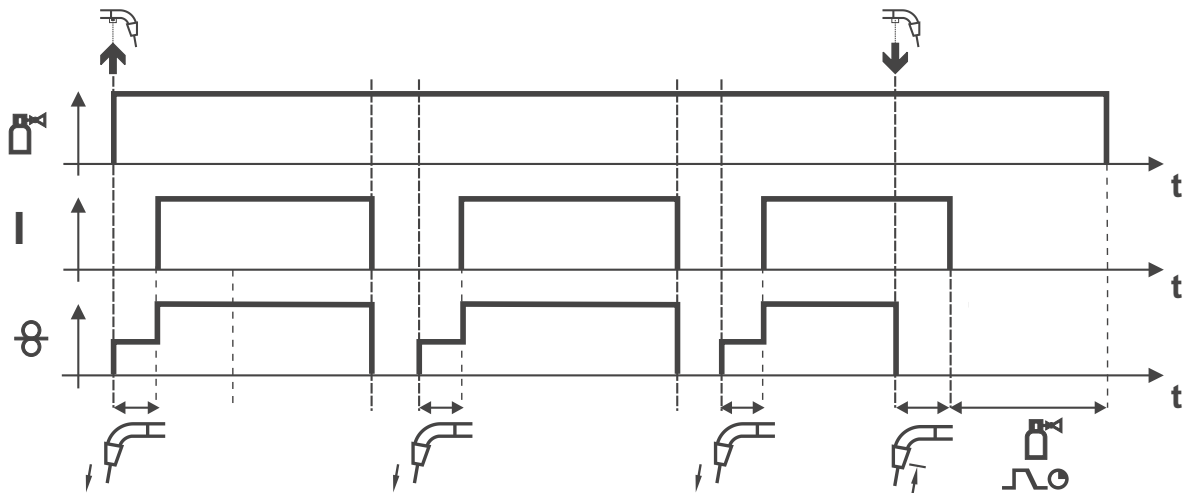


Fig. 3/6 MIG interval

Start interval welding

Press and hold torch trigger

- Shielding gas is expelled
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
-
- Wire-feed motor stops after set pulse time expires.
- Arc is extinguished after the set wire burn-back time elapses.
- After the pre-selected pause time elapses, the welding operation is re-started with wire creep.



This welding procedure (interval) is repeated until the torch trigger is released.

Ending interval welding

Release torch trigger during welding phase:

- Release torch trigger.
- Wire-feed motor stops.
- Arc is extinguished after the set wire burn-back time elapses.
- Gas post-flow time elapses.

Release torch trigger during the pause phase:

- Release torch trigger.
- Gas post-flow time elapses.

4 Description of control M200 / M210 (optional)

4.1 Definition of MIG/MAG welding tasks

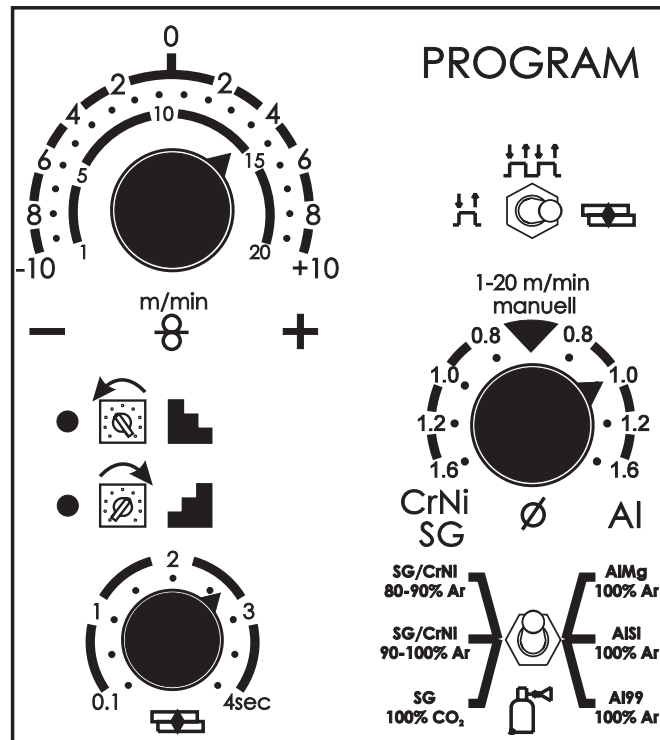


Fig. 4/1: M200 control

The microprocessor-controlled MIG/MAG "PROGRAM" M200 control works on the principle of one-dial operation, i.e.:

To specify the operating point, the user simply specifies

- the gas type,
- the material type and the wire electrode diameter and
- the welding speed using the step switch

.

This defines the welding task and the control system specifies the wire feed speed for the optimum operating point once the torch trigger has been pressed.

The user has the option of correcting the wire feed speed according to the welding task or individual requirements

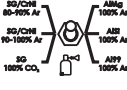
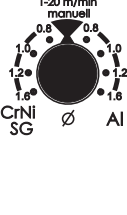

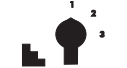


The wire feed speed can be corrected:

- on the PROGRAM M200 control,
- on the remote control (optional)
- or on the welding torch using the rotary dial (optional)

.

4 Description of control M200 / M210 (optional)

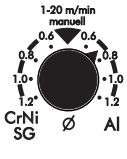



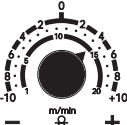
4.1.1 MIG/MAG welding task selection and operating point setting (without option M210 / Program, one-dial operation operating mode)

	Gas type changeover switch	Changeover switch for the various gas types
	Wire electrode diameter/material type changeover switch	Selector switch for setting: <ul style="list-style-type: none"> • Wire electrode diameter and material for aluminium (Al) • Wire electrode diameter and material for high-alloy steel (CrNi) or low-alloy steel (SG) • "Manual" position: Two-dial operation (no program pre-selection)
	Step switch	Welding speed selection
	"Coarse" step switch	For setting the welding speed in rough stages
	"Fine" step switch	For setting the welding speed in fine stages
	Rotary dial	Rotary dial for setting: <ol style="list-style-type: none"> 1. Correction of wire feed speed (external scale) with Program operating mode (one-dial operation) 2. Wire feed speed 1- 20m/min (internal scale) for manual operating mode (two-dial operation)

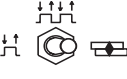



4 Description of control M200 / M210 (optional)

4.1.2 MIG/MAG welding task selection and operating point setting (without option M210 / Program, manual operating mode, two-dial operation)

The control M200 can be used to weld in two-dial operation as with standard MIG/MAG welding machines.

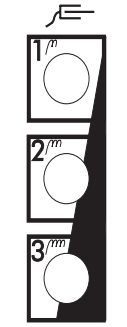
	Wire electrode diameter/ material type changeover switch	Changeover switch to the "manual" two-dial operation position.
	Step switch	Welding voltage selection
	"Coarse" step switch	For setting the welding voltage in rough stages
	"Fine" step switch	For setting the welding voltage in fine stages
	Wire feed speed rotary dial	Rotary dial for setting the wire feed speed 1- 20 m/min

4.2 Non latched, latched, spot operating mode selection

	Operating mode changeover switch	
	Non-latched setting	e.g.: tacking, short welding seams
	Latched setting	e.g.: long welding seams
	Spot setting	e.g.: spot welding

4.3 Choke setting

4.3.1 Settings for the standard choke

	Choke tap selection	Depending on the type of gas being used, there is a choice of 3 choke taps :
1^m	Choke output 1	"Hard" choke connection e.g. for welding with CO₂
2^m	Choke output 2	"Medium" choke connection e.g. for welding with gas mixtures
3^{mm}	Choke output 3	"Soft" choke connection e.g. for welding with argon

4 Description of control M200 / M210 (optional)

4.3.2 Settings for the electronic choke (WEGA 400 MIG E only)

	Setting the electronic choke using switches (chap. 2, fig. 2/5; A3)	Depending on the shielding gas, there is a selection of 3 choke settings :
	Switch position 1	"Hard" choke connection e.g. for welding with CO₂
	Switch position 2	"Medium hard" choke connection e.g. for welding with mixed gases
	Switch position 3	"Medium soft" choke connection e.g. for welding with mixed gases
	Switch position 4	"Soft" choke connection e.g. for welding with argon

4.4 Signal lights for error messages

These signal lights indicate to the user fault conditions or faults on the welding torch or in the machine

4.4.1 Error message: Pre-selected welding speed “too high / too low”

If a welding speed has been set on the step switch which is too high or too low for the selected wire electrode diameter, the material and gas type, the corresponding signal lamp comes on.



Faults are only ever indicated after the torch trigger has been pressed. Welding is still possible despite an error message.

	Signal light step switch	Signal light on: Welding speed too high Turn down the step switch
	Signal light step switch	Signal light on: Welding speed too low Turn up the step switch

4.4.2 Error message: Short-circuit

If there is a short-circuit between the wire electrode and the workpiece, the control cannot calculate the operating point and the indicator lamps flash alternately.



Welding not possible!

	Short-circuit between the wire electrode and the workpiece	Indicator lights: flashing
--	---	---

4.4.2.1 Short-circuit when the machine is switched on

Both LEDs brightly lit and with short flashes. "Welding not possible". Remove the torch from the workpiece. LEDs will cease flashing.

4.4.2.2 Short-circuit during initial welding operation

Both LEDs lit with short, fast flashes, "welding not possible". When the torch trigger is pressed, both LEDs will flash on 6 times in succession alternately.

4 Description of control M200 / M210 (optional)

4.4.2.3 Short-circuit in any welding operation (remote ignition)

Both LEDs lit with short, fast flashes. The machine can, however weld normally. (The values from the previous welding operations are used.) The LEDs go out as soon as the torch trigger is pressed.

4.5 Wire feed speed correction

4.5.1 Wire feed speed correction via remote control (optional)

The settings for correcting the WF speed (one-dial operation) and for the WF speed (manual operating mode, two-dial operation) can be made independently of the setting on the control.

4.5.2 Wire feed speed correction via remote control on the welding torch (optional)

- Connect the welding torch with the potentiometer to the central connection on the welding machine.
- Plug the control lead on the torch into the remote control socket.

The settings for correcting the WF speed (one-dial operation) and for the WF speed (manual operating mode, two-dial operation) can be made independently of the setting on the control.

4 Description of control M200 / M210 (optional)

4.6 M210 (optional): digital V / A meter with hold and preset function

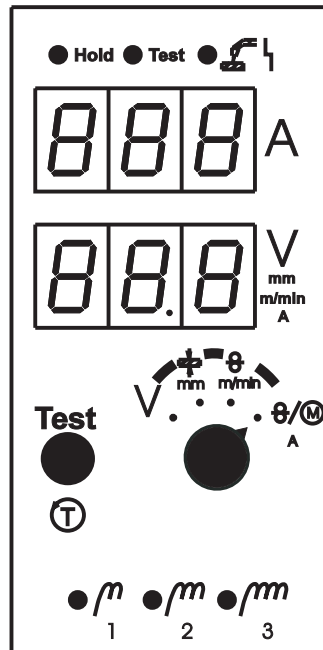


Fig.: 4/2 M210 control panel (optional)

The M 210 control is used to display welding parameters

- before the welding process and
- during and
- after welding.

The welding parameters are displayed on two 7-segment displays:

Red display: Welding current.

Green display: Welding voltage, material thickness, WF speed or WF motor current as per switch position (see 4.6.1).

Display of welding parameters before the welding process (Test mode)

The M210 display unit is also used for fast location of the operating point.

The welder can set the operating point using 4 different welding parameters before welding:

Welding current or welding voltage or material thickness or wire feed speed (see 4.6.2).

This mode is switched on using the test switch and the signal light for test mode will be on.

Display of the welding parameters during the welding process:

During the welding process, the actual values for the welding voltage and current, wire feed speed and wire feed motor armature current are measured continually and shown on the displays (see 2.6.2).

Display of the welding parameters after the welding process:

After the welding process, the last welded (measured) welding parameters are shown on the displays. The signal light for Hold mode will be on.

Further signal lights indicate to the user the optimum choke tapping (see 4.6.4), fault for welding torch/workpiece short-circuit (see 4.6.5.1) and general error messages (see 4.6.5.2).

4 Description of control M200 / M210 (optional)

4.6.1 Operating point setting before welding with option M210



Prerequisites for the test: Torch trigger not pressed, no error message on the display, no short-circuit on the torch.



With the test key button on, there will be open circuit voltage on the wire electrode or torch.

Wire electrode must not come into contact with the workpiece!

Test



Test switch

To preset (Preset function), press the test switch and hold, signal light will be on

4.6.1.1 Operating point setting using welding current



Step switch

Set **welding current** for the relevant welding task on the step switches



Red display

Digital welding current display

4.6.1.2 Operating point setting using welding voltage



Changeover switch

Switch position: **V**



Step switch

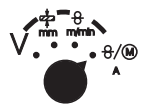
Set **welding voltage** for the relevant welding task on the step switches



Green display

Digital welding voltage display

4.6.1.3 Operating point adjustment using the material thickness



Changeover switch

Switch position: $\frac{\mu}{mm}$



Step switch

Set **material thickness** for the relevant welding task on the step switches



Green display

Digital display of material thickness

4.6.1.4 Operating the operating point using the wire feed speed



Changeover switch

Switch position: $\frac{\mu}{mmmin}$



Step switch

Set **WF speed** for the relevant welding task on the step switches




Green display

Digital display of wire feed speed



4 Description of control M200 / M210 (optional)

4.6.2 Welding data display during welding process (actual values)

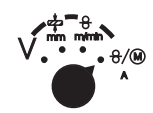

4.6.2.1 Welding current – actual value

	Red display	Digital welding current display
---	--------------------	---------------------------------

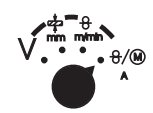

4.6.2.2 Welding voltage – actual value

	Changeover switch	Switch position: V
	Green display	Digital welding voltage display

4.6.2.3 Wire feed speed – actual value


	Changeover switch	Switch position: $\frac{\oplus}{\text{mmh}}$
	Green display	Digital display of wire feed speed

4.6.2.4 Wire feed motor armature current – actual value


	Changeover switch	Switch position: $\frac{\oplus/\otimes}{\text{A}}$
	Green display	Digital display of wire feed motor armature current

4 Description of control M200 / M210 (optional)

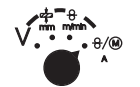
4.6.3 Welding data display (actual values) after welding “Hold function”

	Hold Signal light on	Display unit is in Hold mode
---	--------------------------------	------------------------------


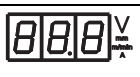
4.6.3.1 Welding current – actual value

	Red display	Digital welding current display
---	--------------------	---------------------------------



4.6.3.2 Welding voltage – actual value

	Changeover switch	Switch position: V
	Green display	Digital welding voltage display


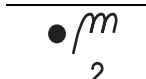
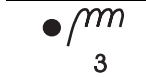
4.6.3.3 Wire feed speed – actual value

	Changeover switch	Switch position: $\frac{\text{mm}}{\text{min}}$
	Green display	Digital display of wire feed speed

4.6.3.4 Wire feed motor armature current – actual value

	Changeover switch	Switch position: $\frac{\text{mm}}{\text{min}}$
	Green display	Digital display of wire feed motor armature current

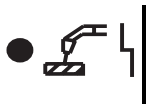
4.6.4 Choke tapping specification

	Signal lights	The control specifies a choke tap according to the setting for the shielding gas. Plug workpiece lead into the relevant choke tap on the welding machine.
1		
		
2		
		
3		

4 Description of control M200 / M210 (optional)

4.6.5 Error messages on M210 display unit

4.6.5.1 Short-circuit fault in welding torch / workpiece



Signal light

Short-circuit between wire electrode (or gas nozzle) and workpiece

4.6.5.2 General error messages

Via error message shown on the display

Message on the display	Possible cause	Fault elimination
Both displays flashing	<ul style="list-style-type: none">• Error situation as under 4.6.5.1	<ul style="list-style-type: none">• Lift welding torch from the workpiece
Error message e.g. E1	<ul style="list-style-type: none">• Error in the machine	<ul style="list-style-type: none">• Service situation
Error message e.g.: E6	<ul style="list-style-type: none">• WF case not connected (decompact only)• Cable breakage• No data transfer to M200 control	<ul style="list-style-type: none">• For decompact machine, connect WF case.• Check control lead for damage• Service situation

4.7 M110 (optional) digital V / A meter with hold function

4.7.1 Display of actual values during and after welding

The digital VA meter M110 is available as an option for control M100 or M200.

This display informs the welder of the current power and voltage values during the welding operation. In addition, the last welding data for the welding current and voltage is saved on the display (Hold function).

4 Description of control M200 / M210 (optional)

4.8 Other functions

In the welding machine (fig. 4/3), or with the decompact version in the WF case, there are control elements for setting the following welding parameters.

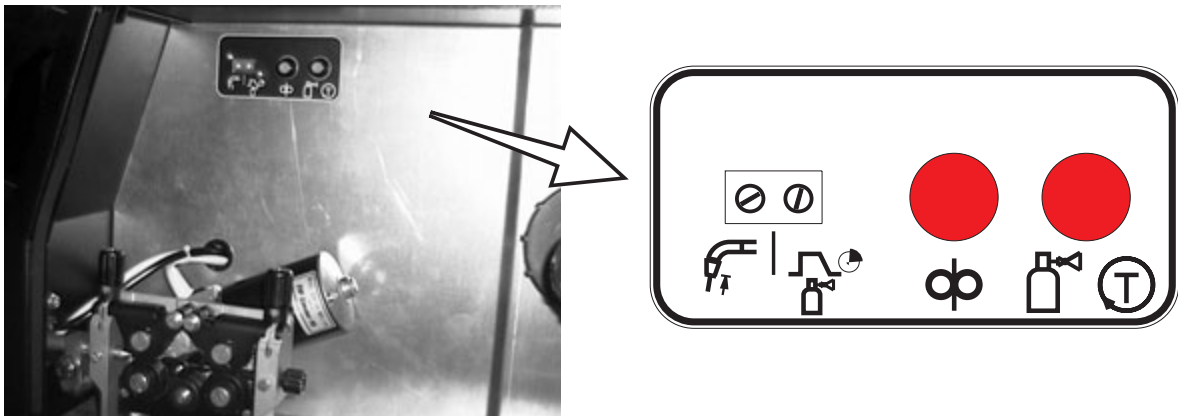
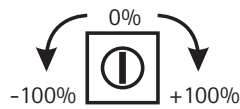


Fig. 4/3; Setting options in the welding machine

4.8.1 Wire burn-back



Trimmer
wire burn-back
time



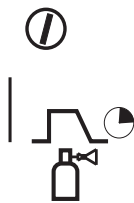
The optimum time is specified automatically according to the WF speed and selected welding parameters (0%), but can be changed on the trimmer by approx. +/- 100 %.

Setting note:

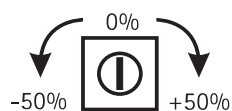
Wire back-burn set **too high**: Large drops developing on the wire electrode result in poor ignition properties or the wire electrode fusing onto the welding nozzle.

Wire back-burn set **too low**: Wire electrode fuses into the weld pool.

4.8.2 Gas post-flow time



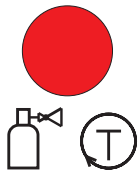
Trimmer
gas post-flow
time



The purpose of the gas post-flow is to prevent crater formation in the welding material by keeping it surrounded with shielding gas until it solidifies. The optimum time is specified automatically according to the material/gas combination (0%), but can be changed on the trimmer by approx. +/-50 %.

4 Description of control M200 / M210 (optional)

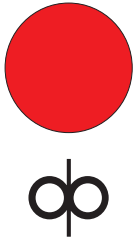
4.8.3 No-power gas test



Key button for
gas test

This ensures a high standard of safety for the welder by preventing accidental ignition of the arc.

4.8.4 Inching the wire electrode



Key button for
no-power inching

With the current off, the wire electrode can be inched into the tube package without releasing gas.

4.8.5 Wire creep

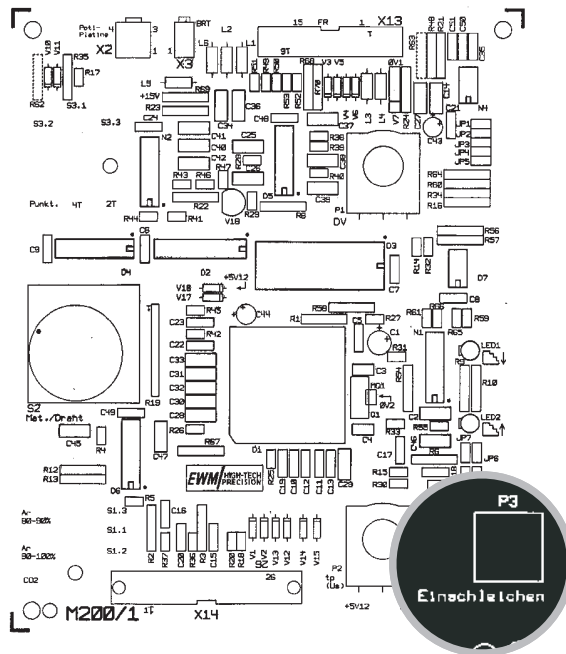


Fig. 4/4; M200 control screen printing

The wire creep speed depends on the welding task (on the material, type of gas and wire diameter) and is determined by characteristic curves.

Observe Fig. 4/4

The value for wire creep can be changed at a later time on the rear of the M200 controller (inside the machine) on **trimmer P3** (fully to the left = -20%, fully to the right = +20%; factory setting is centre position). The changed wire feed speed will be available after the torch trigger is pressed again.

4 Description of control M200 / M210 (optional)

4.8.6 Gas pre-flows

The optimum gas pre-flow time is always specified automatically according to the material and gas types selected.

4.8.7 Ignition control

The ignition process is monitored and optimised according to the conditions. This provides constant, reproducible ignition results for all kinds of different applications.

4.8.8 Automatic shut-off

The automatic shut-off function is used to prevent accidents.

If welding is interrupted for more than 3 sec., the wire feed, welding voltage and gas are switched off.

4.8.9 Short-circuit monitoring

This function is also used for accident prevention (for users and the machine).













If there is short-circuit between the wire electrode and the workpiece or workpiece potential during welding or when using the welding machine, the gas, wire feed and the welding voltage are shut-down in fractions of a second. The short-circuit is also displayed as an error message (see 4.6.5.1+4.6.5.2).

4 Description of control M200 / M210 (optional)

4.9 Function sequence in operating modes

4.9.1 Explanation of signs and functions

Table :

Symbol	Meaning
	Press torch trigger
	Release torch trigger
	Shielding gas flowing
	Welding power
	Wire electrode is being discharged
	Wire creep The wire electrode does not reach the workpiece at full speed. This facilitates reliable, spatter-free ignition.
	Wire burn-back Advantage: Prevents fusing of the wire electrode in the weld pool. Wire back-burn set too high : large drops developing on the wire electrode result in poor ignition properties or the wire electrode fusing onto the welding nozzle. Wire back-burn set too low : Wire electrode fuses to the weld pool.
	Gas pre-flows
	Gas post-flows The purpose of the gas post-flow is to prevent crater formation in the welding material by keeping it surrounded with shielding gas until it solidifies.
	Time
	Non-latched
	Latched

4 Description of control M200 / M210 (optional)

4.9.2 Non-latched MIG function sequence

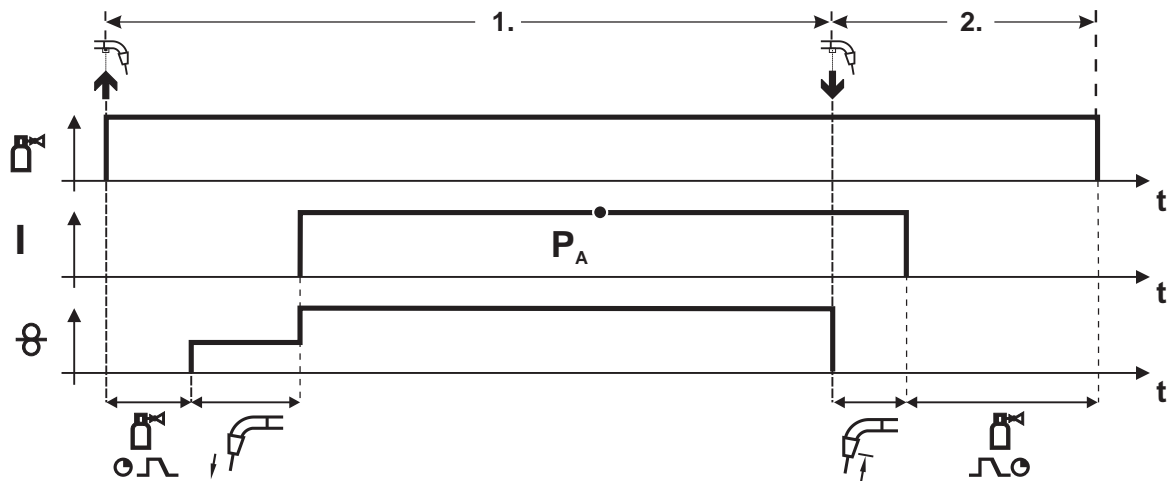


Fig. 4/5; Non-latched MIG

1st step

Press and hold torch trigger

- Shielding gas is expelled (gas pre-flows).
- Wire-feed motor runs at "**creep-start speed**".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.

2nd step

Release torch trigger

- WF motor stops.
- Arc is extinguished after the set wire burn-back time elapses.
Advantage: Prevents fusing of the wire electrode in the weld pool.
- Gas post-flow time elapses.

4 Description of control M200 / M210 (optional)

4.9.3 Latched MIG function sequence

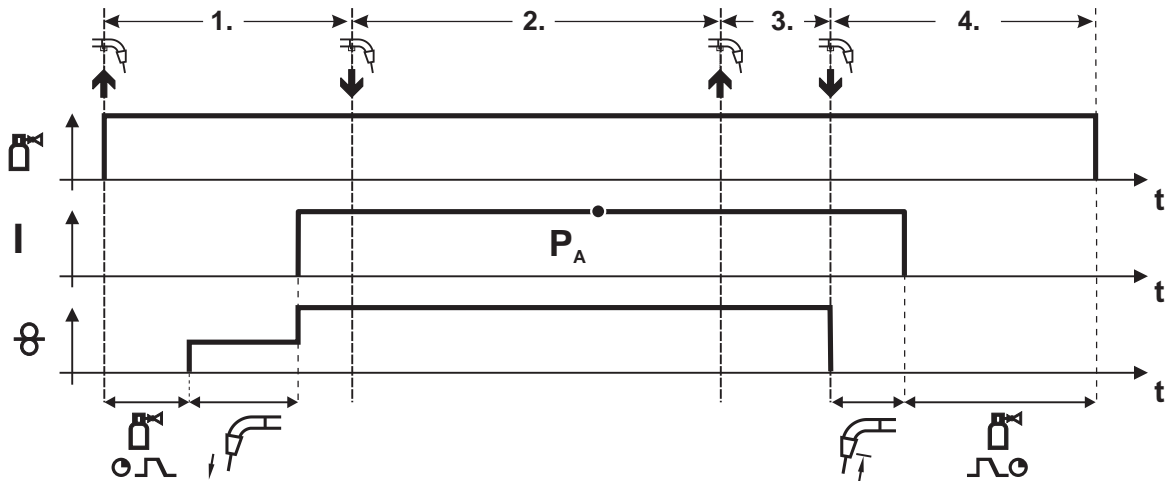


Fig. 4/6; Latched MIG

1st step

Press torch trigger and hold down (until the arc ignites)

- Shielding gas is expelled (gas pre-flows).
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.

2nd step

Release torch trigger



If welding is interrupted for more than 3 sec., wire feed, welding voltage and gas are switched off!

3rd step

Press torch trigger (no effect)

4th step

Release torch trigger

- WF motor stops.
- Arc is extinguished after the set wire burn-back time elapses.
- Gas post-flow time elapses.

4 Description of control M200 / M210 (optional)

4.9.4 MIG spot-welding function sequence

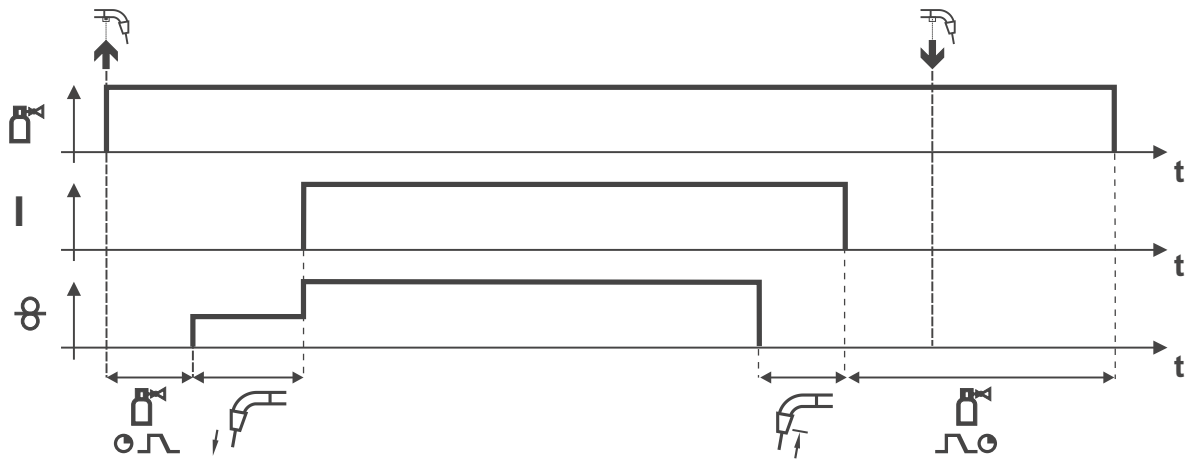


Fig. 4/7; MIG spots

Spot-welding starts

Torch trigger is operated and held

- Shielding gas is expelled (gas pre-flows).
- Wire feed motor runs at "creep speed".
- Arc ignites after the wire electrode makes contact with the workpiece, welding current flows.
- Changeover to pre-selected WF speed.
- Wire-feed motor stops after the selected spotting time expires.
- Arc is extinguished after the set wire burn-back time elapses.
- Gas post-flow time elapses.

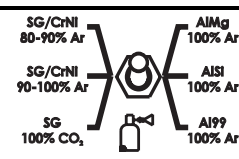
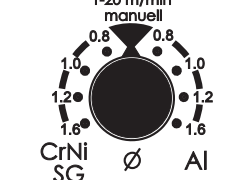

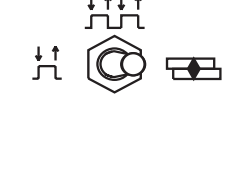


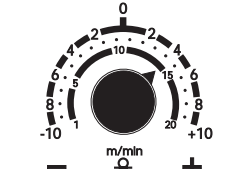
End spot-welding

- Spot-welding ends when the pre-selected spotting time expires.
- Early ending of spot-welding with the release of the torch trigger.

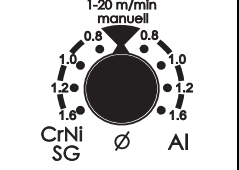

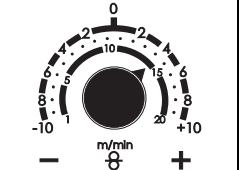
Release torch trigger: spot-welding can be resumed.

5 Quick start for WEGA M200 + M210 PROGRAM

Setting the welding task (Program one-dial operation)

	Type of gas	According to the welding task: Adjusting the gas type
	Wire electrode diameter / material type	Set switch to material type with relevant electrode diameter
	Welding speed with coarse and fine steps	Setting the welding speed with coarse and fine steps
	Operating mode switch	Setting the operating modes
	Signal light on: Welding speed too high	Turn down the step switch
	Signal light on: Welding speed too low	Turn up the step switch
	When the torch trigger is pressed, the optimum wire feed speed is specified automatically This can be corrected using the potentiometer	Set the wire feed speed correction (external scale)

Setting the welding parameters (two-dial operation, manual)

	Wire electrode diameter / material type	Selector switch to "manual" position, switch to two-dial operation
	Welding voltage with coarse and fine steps	Setting the welding voltage with coarse and fine steps
	Setting the wire feed speed	Set the wire feed speed (welding current) 1-20 m/min (internal scale)

5 Quick start for WEGA M200 + M210 PROGRAM

Operating point setting before welding with M210 (optional)



Caution: With the test key button on, there will be open circuit voltage on the wire electrode or torch. Wire electrode must not come into contact with the workpiece!

	Press and hold the test switch, signal light is on	Prerequisites for the test: Torch trigger not pressed, no error message on the display, no short-circuit on the torch
	Set welding current on the step switches	Operating point setting via welding current. red digital welding current display
	Switch position: Welding voltage, material thickness and WF speed V , $\frac{\phi}{mm}$, and $\frac{\phi}{min}$ set on the step switches	Operating point setting via welding voltage, material thickness and WF speed digital green display for welding voltage, material thickness and WF speed.

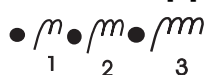
Welding data display (actual values) during welding with 210 (optional)

	Switch position: V , $\frac{\phi}{mm}$ and $\frac{\phi}{min}$	digital welding current display (red) digital display (green) for welding voltage, wire feed speed and armature current for wire feed motor
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Welding data display (actual values) after welding “hold function” with 210 (optional)

	Signal light Hold on	Display unit is in Hold mode
	Switch position: V , $\frac{\phi}{mm}$ and $\frac{\phi}{min}$	digital welding current display (red) digital display (green) for welding voltage, wire feed speed and armature current for wire feed motor

Choke tapping specification



Signal lights

The control specifies a choke tap according to the setting for the shielding gas.
 Plug workpiece lead into the relevant choke tap on the welding machine.

6 Commissioning

6.1 Range of applications:

- MIG/MAG welding (only in combination with an additional wire feed unit) for steel-CrNi \varnothing 0.8mm to 1.6mm, aluminium \varnothing 1.0mm to 1.6mm and cored wires \varnothing 0.9mm to 1.2mm.

6.1.1 Proper usage

These welding machines are only suitable for MIG/MAG welding. Any other use is regarded as "improper" and no liability is assumed for any damage arising therefrom.

We can only guarantee smooth and trouble-free operation of the machines when used in conjunction with the welding torches and accessories from our range.

6.2 Setting up the welding machine



Follow the safety instructions on the opening pages entitled "For Your Safety". Set up the machine so that there is sufficient space to adjust the operating elements. Ensure that the machine is set up in a stable position and appropriately secured.

6.3 Mains connection



The correct mains plug must be connected to the mains supply lead on the machine. The connection must be made by an electrician in compliance with current VDE regulations. The phase sequence is irrelevant and has no effect on the direction of rotation of the fan and pump, where applicable.



For mains fuse protection, please refer to the technical data (chapter 1).

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

6.3.1 Reconnecting the mains voltage 400/415V on the control transformer

The Faston plug (arrow) must be set on the transformer according to the mains voltage. (Factory setting 400V.)

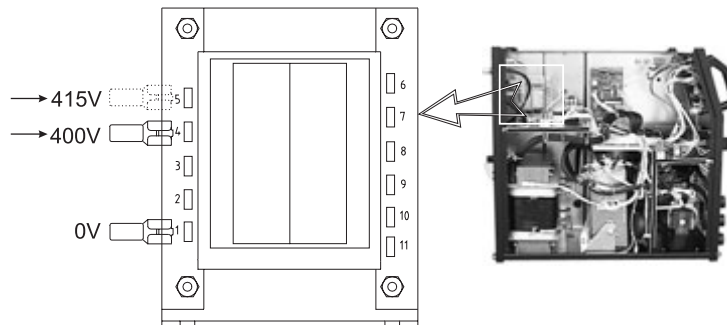
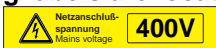


Abb.: Steuertrafo



The following labels are located at the rear of the machine (top nameplate) (e.g.: factory setting 400)



The current mains voltage configuration for the machine is given on this label.

Sample labels with special voltages are included with each machine (see right).

If the mains voltage configuration is changed, the corresponding label with the new mains voltage printed on it must be affixed over the sticker (right-hand box) on the rear of the machine.

230V	230V
400V	400V
400V/415V	415V
440V/460V	460V
500V	500V
___ V	___ V

6 Commissioning

6.4 Cooling the welding machine

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,
- Metal parts, dust or other foreign bodies must be kept out of the machine.

6.4.1 Temperature-controlled water pump and fan

In all machines of the Wega series, the **water pump and the fan are temperature-controlled**, i.e. they are **only switched on as required** (see Table 1).

	Fan	Water pump
Switch on machine at the mains switch	off	off
Press the torch trigger (start welding)	on	on
Release the torch trigger (end welding)		
Temperature at rectifier < 60°C	off	off
Temperature at rectifier > 60°C	on	on
Machine error (torch trigger pressed)	on	on

(Table 1)

If an error occurs (e.g. insufficient cooling water), welding is not possible. When the torch trigger is pressed, the fan and the water pump can still be switched on.

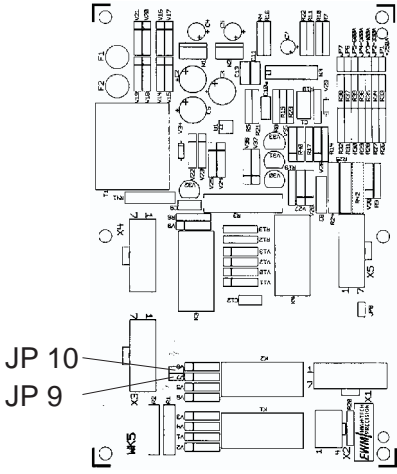
It is also possible to switch on the **water pump and the fan permanently**.

This is particularly advisable for applications such as: tacking, spot welding at high power or as requested by a customer, etc.

For these changes to the function, a jumper setting must be changed on circuit board WK5.

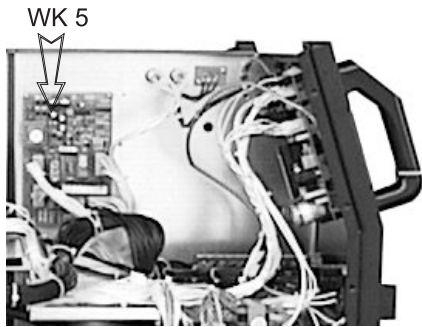
Jumper settings:
Temperature-controlled water pump and fan (standard on delivery):
Jumper inserted on "JP10"

Water pump and fan in permanent operation:
Jumper moved from "JP10" to "JP9"



JP 10
JP 9

Screen print of circuit board WK 5



WK 5



Only one jumper may be in place at any time.

Circuit board WK 5 is located on the left side inside the machine.



Observe safety measures.
Unplug at the mains!

6 Commissioning

6.5 Water cooling for welding torches

- The cooling of the welding torch is performed by an air-cooled heat exchanger with integrated silent fan regulator and a high-performance water pump (see diagram).
- The machines are delivered from the factory filled with a minimum quantity of coolant.
- Check the coolant level and top up with coolant KF23E-10 to the upper inspection glass **D2** (chapter 2), if necessary. The filter must always be inserted in the filling pipe during filling.



Coolant KF23E--10 ensures against freezing to -10°C!

Mixing this with other liquids or the use of other coolants voids our manufacturer's guarantee!



When working with long intermediate tube packages (> 10m), the reduction of the flow rate (and the associated cooling performance) at an increasing delivery height must be observed (see characteristic curve for the coolant pump).

Characteristics of the integrated water pump

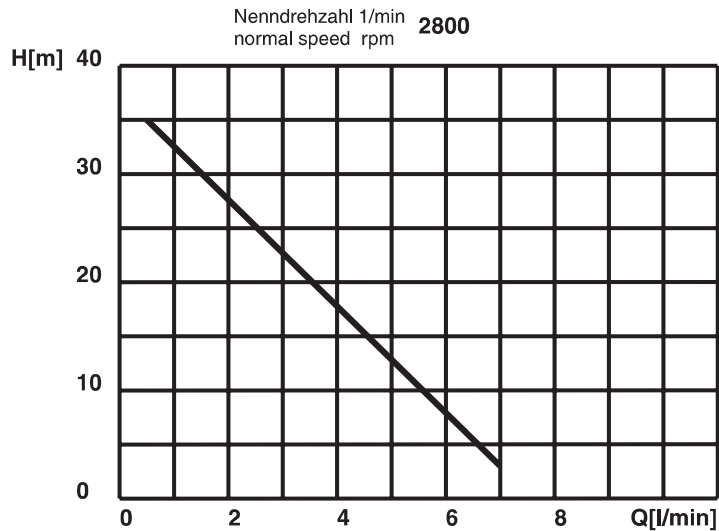


Fig.: Characteristics of the water pump

Key:

- H [in m] = height difference
- Q [l/min] = flow rate
- P [in W] = specified pump output
- Q [m³/h] = flow rate

6.6 Connecting the WF tube package to the current source

6.6.1 WEGA range (decompact) with WEGA DRIVE 4-10

Insert the end of the tube package through the strain relief **B1** and lock by turning to the right.

- Insert the plug on the welding current lead into the connection socket **E1 (+)** and lock.
- Insert connection hoses for the coolant water into the relevant quick-release couplings on the rear panel of the current source.
Red return line to coupling **D1** / supply line **blue** to coupling **F1**.
- Insert the plug on the control cable into connection socket **C1** and secure with the box nut (The plug can only be inserted into the connection socket in one position).
- Secure protective conductor connection to threaded bolt **A1** with nut, spring washer and plain washer.
- The gas supply is connected directly to the pressure reducer of the gas cylinder..

6 Commissioning

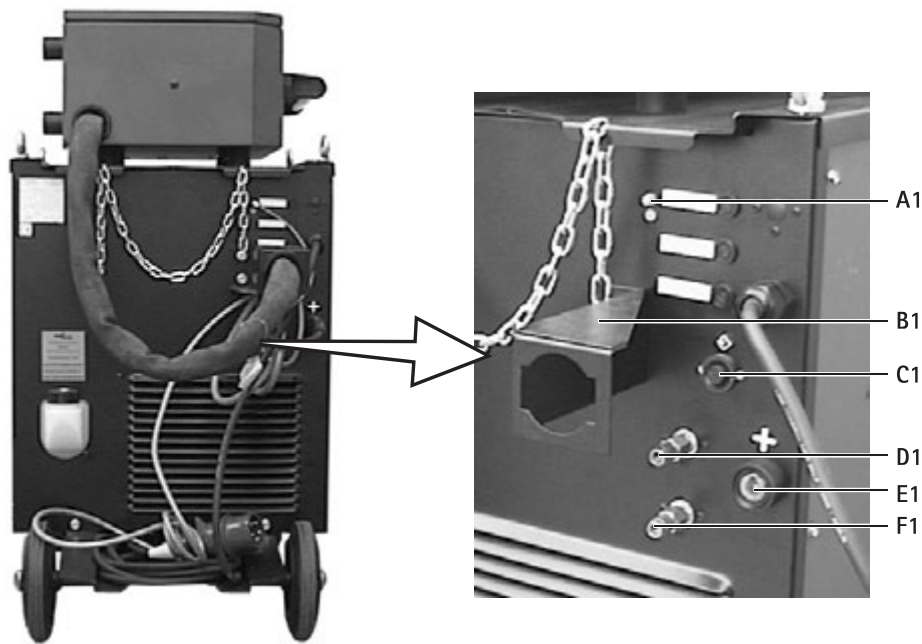


Fig. 1: WEGA series, rear view (decompact)

6.7 Connecting the welding torch

We can only guarantee smooth and trouble-free operation of our machines when used with our range of welding torches.

6.7.1 MIG welding torch



Welding torch with spiral guide:

A capillary tube must be installed in the central connection.

Welding torch without spiral guide (e.g. Teflon core):

No capillary tube may be installed in the central connection of the torch.

Preparing the welding torch for the welding task:

- Shorten the Teflon core and surrounding guide pipe so that the distance to the drive roller is as short as possible.



The Teflon core and the guide pipe must not be deformed.

- Deburr the Teflon core and the guide pipe.

Connecting the welding torch:

- Insert welding torch into the central connection of the machine and fasten by tightening cap nut.

6.7.2 MIG welding torch with adjusting knob for WF correction

In Bearbeitung

6 Commissioning

6.7.3 Connecting the MIG Push/Pull torch (optional)

Push / pull torch function description:

The most important preconditions for the greatest degree of efficiency and seam quality is the smooth conveyance of the wire electrode. This is particularly problematic when:

- longer tube packages are used,
- wire electrodes have poor sliding properties,
- wire electrodes have poor bending strength,
- an especially even wire outlet speed is required.

In this process, additional conveying aids in the torch result in significant improvements in comparison with pure feed wire conveyors. In addition to a pushing wire feed (PUSH) in the current source / wire feed case, a pulling wire feed (PULL) is used in the torch.

The two feed motors are synchronised by a current regulator.

All standard Push/Pull torches with a Euro-central connection can be connected, e.g.: Binzel, Dinse, Autogen Ritter and TB.

Welding torch with one adjusting knob:

The WF correction can be carried out using an adjusting knob on the torch.
(The adjusting knob on the control is deactivated)



Conditions for the connection of a Push/Pull torch:

- The welding machine must be prepared for the connection of this torch (optional).
- The welding torch plug must be wired in accordance with the torch being used.

6.8 Inserting the wire electrode



To ensure an optimal wire feed, it is essential that the wire feed rollers match the applied wire electrode diameter and the type of material used (exchange if necessary). Slide new drive rollers into place in such a way that the diameter of the wire electrode printed on the drive roller is visible. Screw the drive rollers in place with knurled screws.

6.8.1 Installing the wire spool



Standard D300 pin reels can be used. For the use of standardised basket reels (DIN 8559), adapters are required (see accessories).

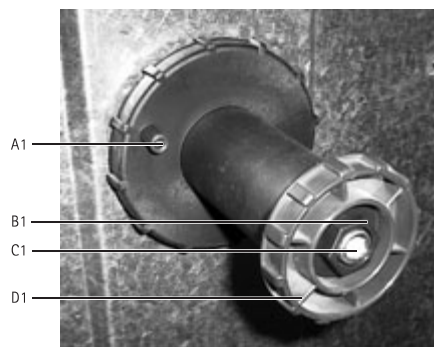


Fig. 5/1: Spool holder

- Loosen knurled nut **D1** from spool holder.
- Fix welding wire reel on the spool holder so that the carrier pin **A1** locks into the spool bore.
- Fasten wire spool using knurled nut **D1**.

6 Commissioning

6.8.2 Inching the wire electrode

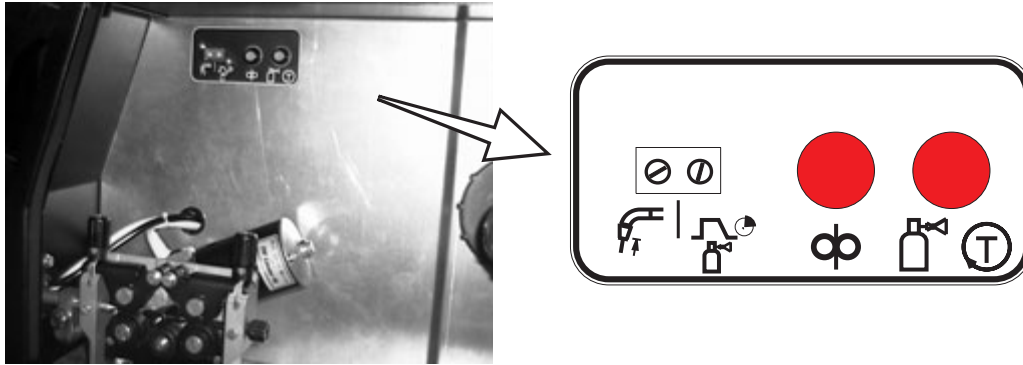


Fig. 5/2: Operating elements inside the welding machine and the WF case

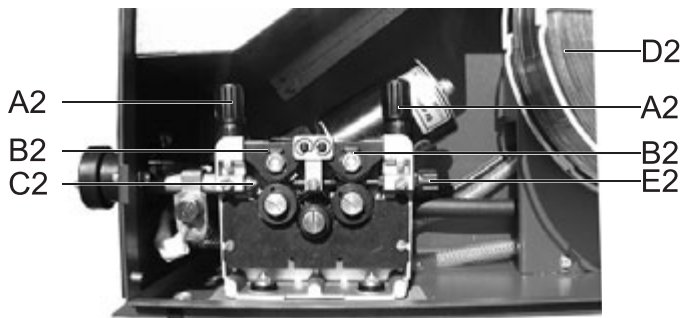


Fig. 5/3: Part view of the wire feed

- Lay out the torch tube package in an extended position.
- Loosen the knurled nuts **A2** on the wire feed and swivel them outwards at the sides. The clamping elements **B2** with the counter-rollers swivel upwards automatically.
- Unwind the wire electrode in a clockwise direction from the wire spool **D2** and insert it through the wire inlet nipple **E2**, the grooves in the drive rollers and the guide tube into the capillary tube and Teflon core with the guide tube **C2**.
- Press the clamping elements **B2** with the counter-rollers back downwards (wire electrode must lie in the groove of the drive roller).
- Swivel the knurled nuts **A2** which set the counter-pressure back upwards.



The pressing force must be adjusted with the knurled nuts such that the wire electrode is conveyed but slips when the wire spool jams.

- Press the wire inching button until the wire electrode projects from the welding torch.



Danger of injury!

When inching the wire, never point the torch at persons or animals.

6.8.3 Setting the spool brake



Tighten spool brake only to the point where the wire spool no longer runs on when the torch trigger is released!

- Tighten the hex. **C1** in the spool holder, simultaneously countering with the hexagonal nut **B1** to tighten.

6 Commissioning

6.9 Workpiece lead



Remove paint, rust and dirt from clamping and welding areas with a wire brush. Attach the workpiece clip or clamp directly next to the welding position.

Machine parts, pipes, rails etc. – other than the workpiece – must not be used as welding current return lines. Care must be taken to ensure faultless power connections in the case of welding benches and appliances



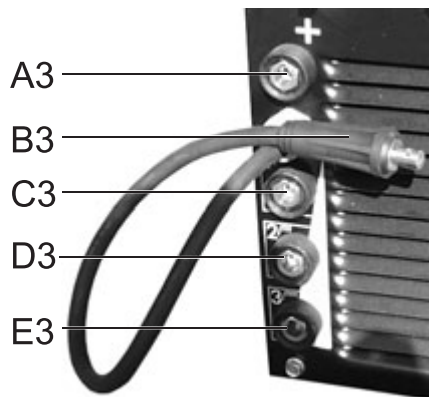
Torch and tube packages and workpiece leads must never be rolled into spirals! Voltage losses via what is known as induction drainage and undesirable changes of welding properties can be avoided by operation with unrolled cables.

6.9.1 Standard machines

- Insert plug of workpiece lead into whichever of the "-" welding current sockets (choke taps) (Chapter 2.: E1/F1/G1) and lock by twisting to the right.

6.9.2 Machines with polarity switching, e.g. for cored wires (optional)

MIG/MAG standard Solid electrode Positive pole to the welding torch	Insert cable plug B3 into A3 and lock. Depending on the type of material and gas, insert the workpiece lead into C3, D3 or E3 and lock.
Special MIG/MAG applications e.g.: cored wires Negative pole to the welding torch	Depending on the type of material and gas, insert the cable plug into C3, D3 or E3 and lock. Insert workpiece lead in A3 and lock.



- A3 Welding current socket "+":
- B3 Cable plug (welding current to the torch)
- C3 Welding current socket "-"
- Choke tapping CO₂ (hard) 1^m
- D3 Welding current socket "-"
- Choke tapping MIX (middle) 2^m
- E3 Welding current socket "-"
- Choke tapping AR (soft) 3^m

6.9.3 Additional choke tapping



Apart from the choke tapplings already used for argon, gas mixture and CO₂, a further tapping (internal) is possible for gas mixture. If the existing mixed gas tapping is too soft for your application, it is possible to select a harder tapping for mixed gas internally, e.g. for better ignition for the welding of low-alloyed steels SG2.

6.9.4 Setting the electronic choke (WEGA 400 MIG E only)



- A4 4-step switch for setting the electronic choke:
 - Switch position 1; "hard" welding choke setting
e.g. for welding using CO₂
 - Switch position 2; "medium hard" welding choke setting
e.g. for welding using mixed gas
 - Switch position 3; "medium soft" welding choke setting
e.g. for welding using mixed gas
 - Switch position 4; "soft" welding choke setting
e.g. for welding using argon
- B4 Welding current socket "-"

6 Commissioning

6.10 Shielding gas supply

6.10.1 Establishing the gas connections



Place the shielding gas cylinder in the cylinder holder and secure it against accidents using the securing chain.



No dirt must be allowed to enter the shielding gas supply, as it could cause blockages. Before connecting the pressure reducer to the gas cylinder, open the cylinder valve briefly to blow out any existing dirt.

All shielding gas connections must be gastight.

- Mount the pressure reducer on the gas cylinder valve.

Compact version:

- Screw gas tube to the pressure reducer of the gas cylinder by tightening the G ¼" connection nipple.
- Screw gas hose onto the rear panel of the welding machine with connection nipple G ¼" (**chap 2.:F2**)

Decompact version:

- Screw gas tube (tube package WF case) to the pressure reducer of the gas cylinder by tightening the G ¼" connection nipple.

6.10.2 Adjusting the shielding gas



In the standard design, a venturi for a gas flow rate of 0 -16l/min is mounted on each wire feed case. For applications where a higher gas flow rate is required (e.g. for aluminium), a venturi for 0 -32l/min (see accessories) should be installed.

Consequences of incorrect shielding gas settings:

Insufficient shielding gas: inadequate gas protection, the drawn in air causes pores in the weld seam.

Excessive shielding gas: turbulence may occur, as a result of which air may penetrate and cause pores in the weld seam.

- Adjust shielding gas volume at the pressure reducer to suit various individual applications (see setting instructions).

7 Maintenance and care

Under normal operating conditions these welding machines are largely maintenance-free and require a minimum of care. However, a number of points should be observed to guarantee fault-free operation of your welding machine. Among these are regular cleaning and checking, as well as the level of contamination in the environment and the usage time of the machine.



Maintenance work on welding machines may only be carried out by qualified personnel. Any one of the following tests the machines may only be carried out by qualified personnel.

Die im Kapitel "Wartung und Pflege" aufgeführten Hinweise, Richtlinien und Normen wurden grundlegend überarbeitet und sind aus diesem Grund nicht mehr gültig!
Die relevanten Hinweise, Richtlinien und Normen finden Sie in den beiliegenden Ergänzungsblättern "Allgemeine Hinweise zu 3 Jahre Garantie", Art. Nr.: 099-000GAR-EWMxx. Sollten die Dokumente nicht vorliegen, können diese über den autorisierten Fachhändler angefordert werden!

Außerrachtlassung kann lebensgefährlich sein!

7.1 Cleaning



To do this, carefully read the instructions.
(Switching off or unscrewing the plug)
Wait for 2 minutes until the capacitors are discharged.



Electronic components or circuit boards with electrolytic capacitors should be handled as follows: depending on the amount of dust, blow out carefully with compressed air or a vacuum cleaner.

The instructions, guidelines and standards given in the "Maintenance and Care" chapter have been completely revised and are therefore no longer valid!
The relevant instructions, guidelines and standards can be found in the enclosed supplements "General notes on the 3 year warranty", item no.: 099-000GAR-EWMxx.
If these documents are missing, they can be requested from your authorised specialist dealer!

Not observing these instructions can be potentially fatal!

The following instructions should be observed when cleaning:
You are recommended to carry out the cleaning work after every repair. Test sequence after every repair.



Les consignes, directives et normes indiquées au chapitre « Maintenance et entretien » ont été mises à jour et ne sont donc plus valables !
Vous trouverez les consignes, directives et normes applicables dans les additifs « Consignes générales relatives à la garantie de 3 ans », à l'article : 099-000GAR-EWMxx.
Si vous ne possédez pas les documents, vous pouvez vous les procurer auprès de votre revendeur autorisé !

Le non-respect des consignes peut représenter un danger de mort !

Measurement of the resistance between the source and the machine.
Measurement of the insulation resistance between the connecting lead, mains switch and the machine.
Function test of the welding machine.

7.2 Regular check of correct condition



The machine must be inspected for externally visible faults (e.g. insulation faults, scorch or pressure damage) before use. If necessary, e.g. insulation faults, scorch or pressure damage, the connecting lead, mains switch, etc. must be replaced.

Le istruzioni, direttive e norme presenti nel capitolo „Manutenzione e cura” sono state completamente riviste e per questo motivo non sono più valide!
Le istruzioni, direttive e norme rilevanti le trovate nell'aggiornamento qui allegato "Istruzioni generali sui 3 anni di garanzia", Nr. Art.: 099-000GAR-EWMxx.
Se i documenti non fossero disponibili, possono essere richiesti al rivenditore autorizzato!

L'inosservanza delle istruzioni può comportare pericolo di vita!

Damage to the machine must be reported to the manufacturer.
Improper interference with the machine is prohibited.
The type plate and warning symbols must be kept in good condition.

7.2.2 Measurement of protective conductor resistance

Measure between safety contact of the mains plug and metal parts of the machine casing screws. During measuring, the entire length of the machine's connecting lead near the connecting points, must be moved.

The resistance must be < 0.1Ω. The measurement must be performed using at least 200 mA.

7 Maintenance and care

7.2.3 Measurement of insulation resistance

Disconnect the machine from the mains. Pull out the mains plug!
Open the machine and clean carefully (as described above).
Switch on mains switch.

Insulation resistance mains current circuit-casing

Switch on mains switch.

a) Step switch controlled machines:

The machine must be opened. Measure the insulation resistance from the main fuse input and mains fuse output to the casing. At the mains fuse input it is necessary to measure from each connection, at the mains fuse output only from one connection.

The resistance must be $> 2.5 \text{ M}\Omega$.

b) Inverter machines:

Measure from one phase of the mains plug to the housing.

The resistance must be $> 2.5 \text{ M}\Omega$.

Insulation resistance welding current circuit-casing

Measure between a welding socket and protective conductor.

The resistance must be $> 2.5 \text{ M}\Omega$.

Insulation resistance mains current circuit welding-current circuit

Switch on mains switch.

a) Step switch controlled machines:

Measure the insulation resistance between the mains fuse output and a welding current socket.

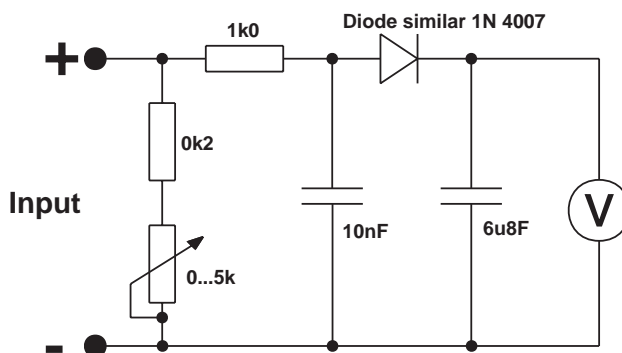
The resistance must be $> 5 \text{ M}\Omega$.

b) Inverter machines:

Measure between a phase of the mains plug and a welding current socket.

The resistance must be $> 5.0 \text{ M}\Omega$.

7.2.4 Measurement of open circuit voltage (according to EN 60974-1 / VDE 0544 T1)



Measurement circuit for peak values

Connect the measuring circuit to the welding current sockets as shown in Fig. 1. The voltmeter must indicate the mean value. Adjust the potentiometer from $0\text{k}\Omega$ to $5\text{k}\Omega$ during the measurement. The measured voltage must not deviate from that specified on the rating plate (U_0) by more than 10% and must be no higher than 113V.

7.2.5 Function test of the welding machine

Carry out a function test depending on the type of machine.

7.3 Repair work

Repair and maintenance work may only be performed by qualified personnel.

In all service matters, always consult your dealer, the supplier of 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, the machine type, serial number and item number of the machine, as well as the type description and item number of the spare part must be quoted.

If repair or maintenance work is carried out on this machine by personnel who are not trained and authorised to undertake such work, the right to claim under the warranty lapses.

8 Operating problems, causes and remedies

8.1 Customer checklist

All machines are subjected to strict manufacturing and final inspection procedures. If, despite this, anything fails to work at any time, please check the machine using the following chart. If none of the fault elimination procedures described results in the correct functioning of the machine, please contact your authorised dealer.

Fault	Possible cause	Remedy
The wire electrode is not advanced	1. Splatter has blocked the opening of the contact nozzle The wire feed roller slips	Clean the contact nozzle, spray with separating agent
	2. The motor of the wire feed drive does not turn A kink in the wire prevents passage through the contact nozzle	Check the counter pressure roller. Feed roller worn, replace. Wire jams. Check how it unwinds.
	3. Wire drum brake is set too tight Torch defective	Check fuse F1 on WK 5 (see spares list)
	4.	Unfasten the contact nozzle and snip off deformed wire
	5.	Ease brake setting
	6.	Replace
Wire is looped	1. Core or nozzle blocked	Renew or clean
	2. Excessive curvature of the tube package	Ensure that the tube package is extended as fully as possible
The wire-electrode feed advances irregularly	1. Blocked or damaged wire feed coil	Clean or replace
	2. Wire drum brake is set too tight	Loosen the wire drum brake
	3. Bore of the contact nozzle is too small	Use the correct contact nozzle
The unit does not switch on	1. No mains voltages	Check the mains fuses and replace as necessary
	2. Fault in the power source	Eliminate the fault
No welding current:	1. Insufficient contact of the workpiece lead	Check contact and installation
	2. Excess temperature	Allow equipment to cool down
Water deficiency	1. Too little water	Replenish coolant supply
	2. Leak in water circuit	Repair leak and replenish water
	3. Coolant pump inoperative	Depress the excess temperature release
Pump is stuck	1. Extended standstill times	1. Press in overcurrent release
	2. Dirt	2. Use screwdriver to release the pump impeller through the service opening in the front panel.

8 Operating problems, causes and remedies

Fault	Possible cause		Remedy
Malfunction of feed or gas valve	Fault in the electronics		Replace electronics Check cable connections
The weld seam is porous	1.	None, insufficient or too much gas	Wire diameter x 10 produces min. gas throughput in l/min
	2.	Gas cylinder is empty	Replace the flange
	3.	Inappropriate quality or inadequate purity of gas	Use a different gas
	4.	Excessive protrusion of electrode	Reduce the distance between the torch and the weld seam
	5.	Influence of air currents or wind	Prevent air flow by shielding the welding point
	6.	Gas nozzle blocked by splatter	Clean or replace the gas nozzle
	7.	Incorrect wire quality or wire surface contamination	Use a wire quality recommended for MIG/MAG welding. Store wire in a clean place
	8.	Base material surface is badly contaminated	Clean the base material
	9.	Localised overheating of the workpiece	Where it is necessary to weld several short layers, the workpiece must be allowed to cool before welding is continued. Check the seal in the gas supply hoses. Eliminate leaks
	10.	"Incorrect" air drawn into the gas hose	
Abnormally heavy splatter	1.	Bubble effects	Work out a more favourable connection of the workpiece lead through trial and error
	2.	No gas	Adjust the gas volume to suit the application

WEGA



9 Ersatzteilliste/Spare Parts List

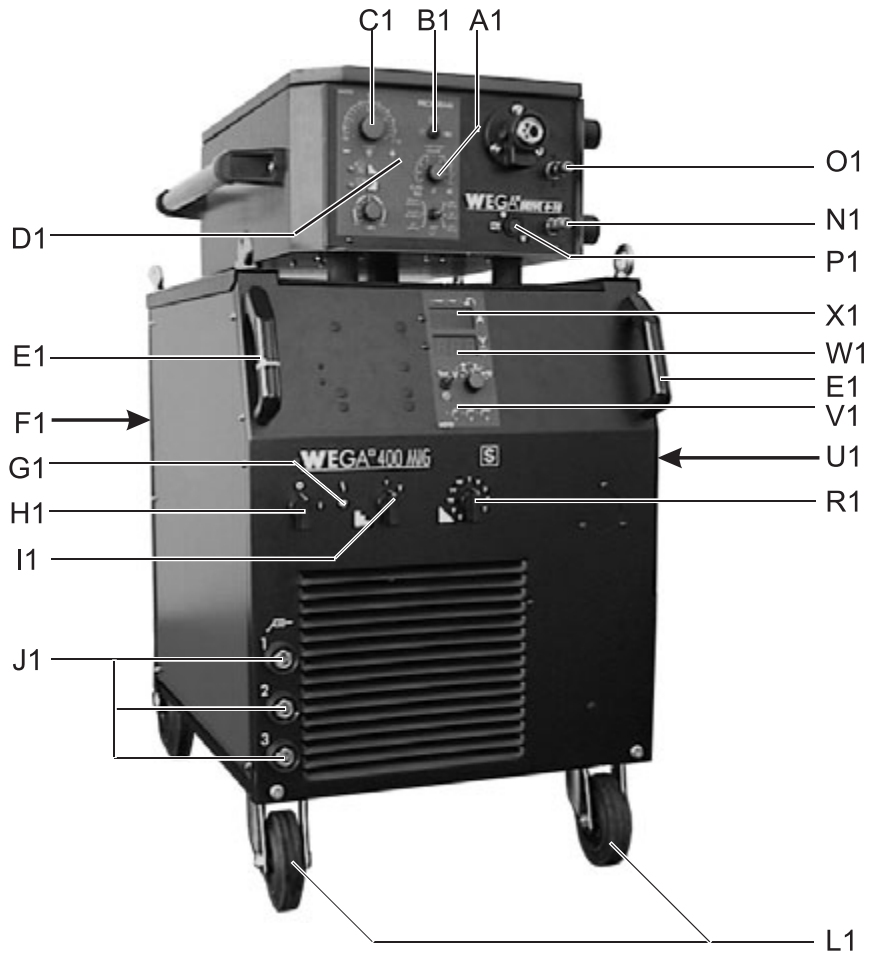


Fig. 9/1a Vorderseite decompact / Front view, decompact

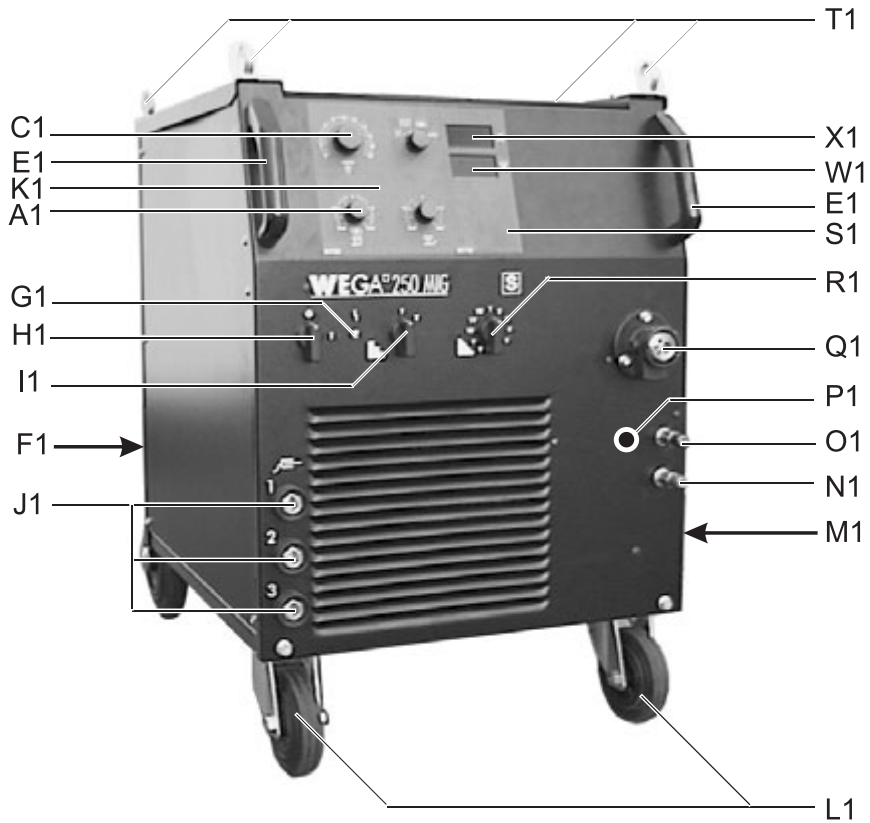


Fig. 9/1b Vorderseite kompakt / Front view compact

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	WEGA	
			250A -400A	500A -600A
A1	Drehknopf	Rotary knob	074-0000315-00000	
for A1	Drehknopfdeckel	Rotary knob cap	074-0000315-00001	
for A1	Drehknopf Pfeilscheibe	Rotary knob arrow indicator	074-0000315-00002	
C1	Drehknopf	Rotary knob	074-0000234-00000	
for C1	Drehknopfdeckel	Rotary knob cap	074-0000234-00001	
for C1	Drehknopf Pfeilscheibe	Rotary knob arrow indicator	074-0000234-00002	
D1	Leiterplatte M200	PCB M200	040-0000511-00000	
for D1	Folie Bedieneinheit M200	Foil control panel M200	094-002881-00000	
E1	Transportgriff	Carrying handle	094-0000212-00000	
F1	Seitenwand links	Side panel left	094-002822-00008	094-003356-00002
G1	LED-Anzeige	LED display	094-002752-00000	
H1	Netzschalter ein/aus	Mains on/off switch	094-000861-00000	
for H1	Drehknopf	Rotary dial	094-001815-00000	
I1	Stufenschalter	Step switch	094-002335-00000	094-000563-00000
for I1	Drehknopf	Rotary dial	094-001815-00000	
J1	Anschlußbuchse	Connection socket	074-000232-00000	074-000517-00000
K1	Leiterplatte M100	M100 PCB	040-000509-00000	
for K1	Folie Bedieneinheit M100	Foil control panel M100	094-002880-00000	
L1	Lenkrolle	Guide castor	094-000327-00000	
M1	Seitenwand rechts oben rechts unten	Side panel right up right down	094-003017-00006 094-002717-00005	094-003017-00006 094-003346-00002
N1	Schnellkupplung blau	Rapid-action coupling, blue	094-000521-00000	
for N1	Dichtungsring	Sealing ring	094-000527-00000	
O1	Schnellkupplung rot	Rapid-action coupling, red	094-000520-00000	
for O1	Dichtungsring	Sealing ring	094-000527-00000	
P1	Anschlußmöglichkeit Fernsteller (Option)	Remote control connection option (optional)	092-000742-00001	
for P1	PCB Fernregleranschluß	PCB remote control connection	040-000521-00000	
for P1	Anschlußbuchse 19-polig	Connection socket, 19-pole	094-003064-00000	
Q1	Eurozentralanschluß	Euro central connection	094-000347-00000	
for Q1	Isolierflansch	Insulation flange	094-005221-00000	
for Q1	Madenschraube	Grub screw	094-005222-00000	
for Q1	Kapillarrohr bis Ø 1,6mm	Capillary tube Ø 1.6mm	094-002559-00000	
for Q1	Kapillarrohr Ø 2,0 u 2,4mm	Capillary tube Ø 2.0 & 2.4mm	094-001607-00000	
R1	Stufenschalter	Step switch	094-000515-00000	094-000564-00000
for R1	Drehknopf	Rotary dial	094-001815-00000	
S1	Leiterplatte M110 (Option)	PCB M110 (optional)	040-000512-00000	
for S1	Folie Bedieneinheit M110	Foil control panel M110	094-002882-00000	
T1	Kranösen	Crane lifting lugs	094-000209-00000	
U1	Seitenwandverkleidung rechts	Side panel right	094-002999-00007	094-003351-00002
V1	Leiterplatte M210 (Option)	M210 PCB (optional)	040-000515-00000	
for V1	Folie Bedieneinheit M210	Foil control panel M210	094-002883-00000	
W1	Kunststoffabdeckung neutral	Plastic cover, neutral	094-002751-00002	
X1	Kunststoffabdeckung rot	Plastic cover, red	094-002750-00002	

9 Ersatzteilliste/Spare Parts List

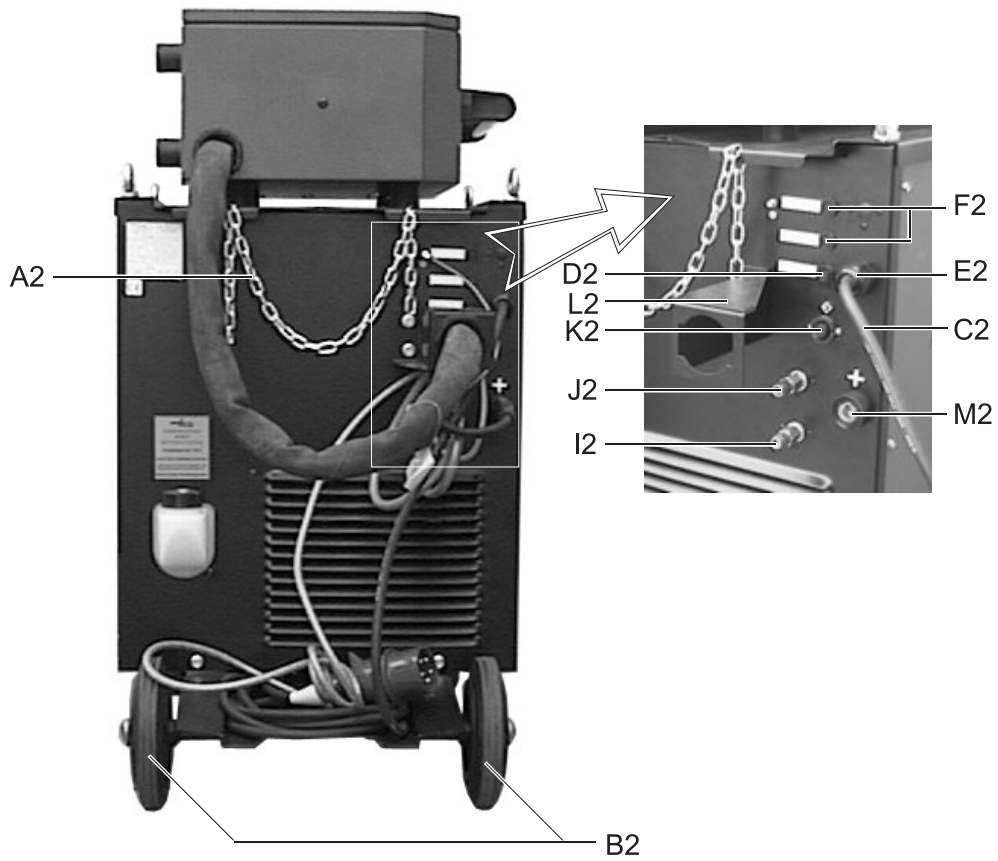


Fig. 9/2a Rückseite decompact / Rear view, decompact

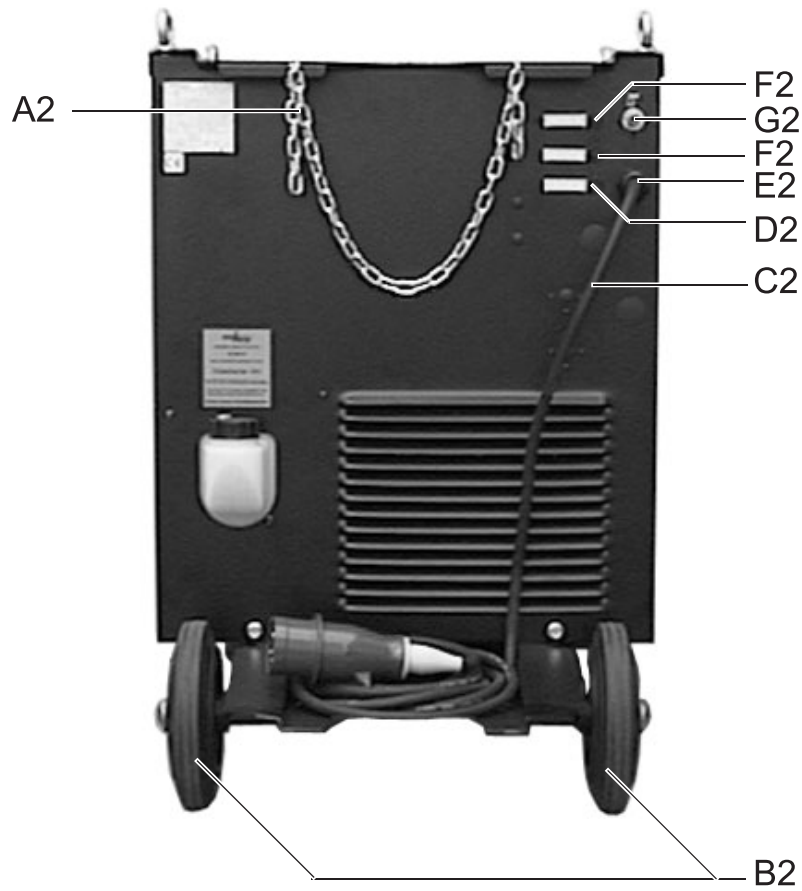


Fig. 9/2b Rückseite kompakt / Rear view compact

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	WEGA	
			250A -400A	500A -600A
A2	Sicherungskette	Securing chain	094-000178-00000	
B2	Bockrolle	Fixed castor	094-000179-00000	
C2	Netzkabel	Mains cable	092-000660-00000	092-001397-00000
D2	Schutzschalter	Automatic breaker	094-003252-00000	
E2	Kabelverschraubung	Screwed cable gland	094-000208-00000	
for E2	Gegenmutter	Lock nut	024-000207-00001	
F2	Sicherungshalter m. Mutter	Fuse holder with nut	094-000001-00000	
for F2	Sicherungskappe	Fuse cap	094-000001-00001	
for F2	Sicherung	Fuse	094-000676-00000	
G2	Gasventil	Gas valve	094-000472-00000	
I2	Schnellkupplung blau	Rapid-action coupling, blue	094-000521-00000	
for I2	Dichtungsring	Sealing ring	094-000527-00000	
J2	Schnellkupplung rot	Rapid-action coupling, red	094-000520-00000	
for J2	Dichtungsring	Sealing ring	094-000527-00000	
K2	Flanschbuchse 7-polig	Flange socket, 7-pole	094-000227-00000	
L2	Zugentlastung	Strain relief	094-001995-00001	
M2	Anschlußbuchse	Connection socket	Up to 400A 074-000232-00000 after 500A 074-000517-00000	

9 Ersatzteilliste/Spare Parts List

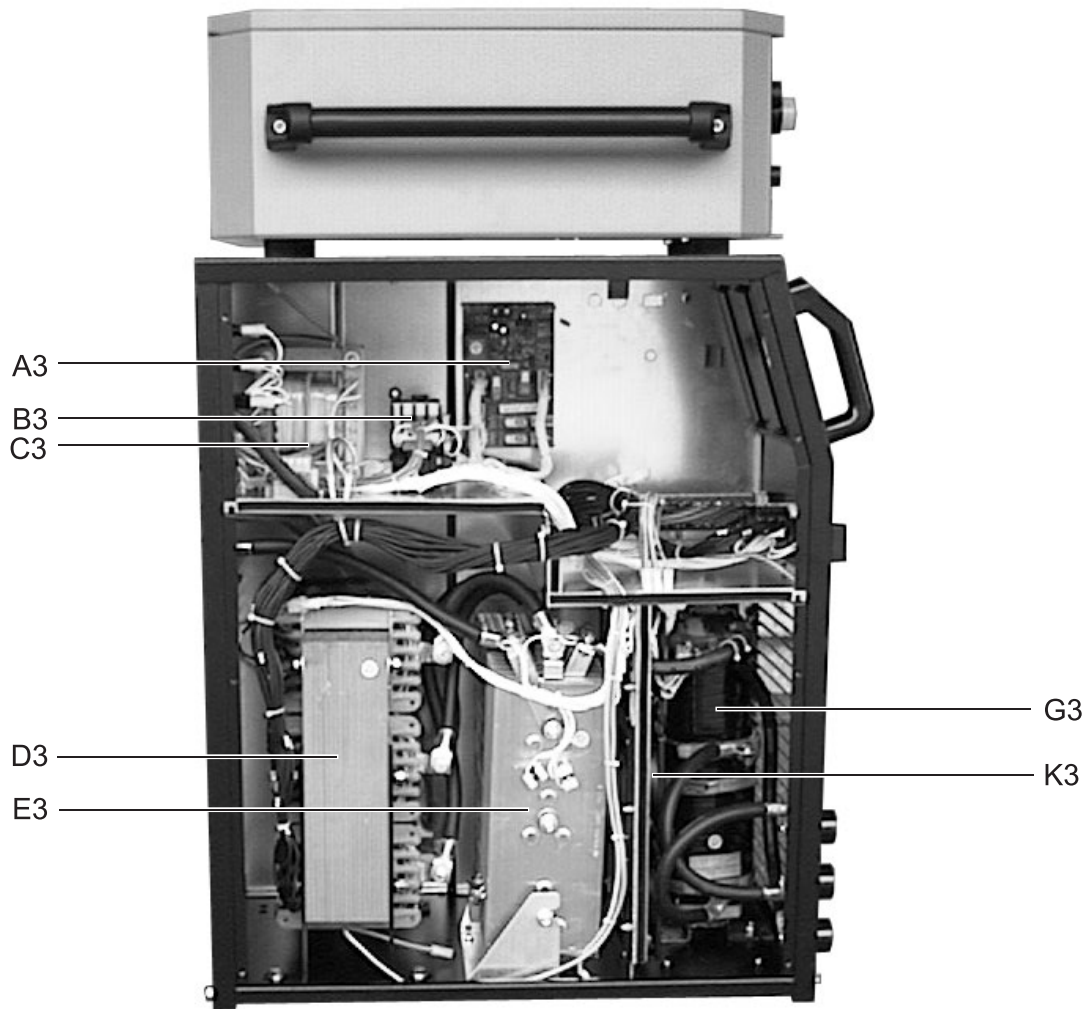


Fig. 9/3a linke Seite decompact / Left side, decompact

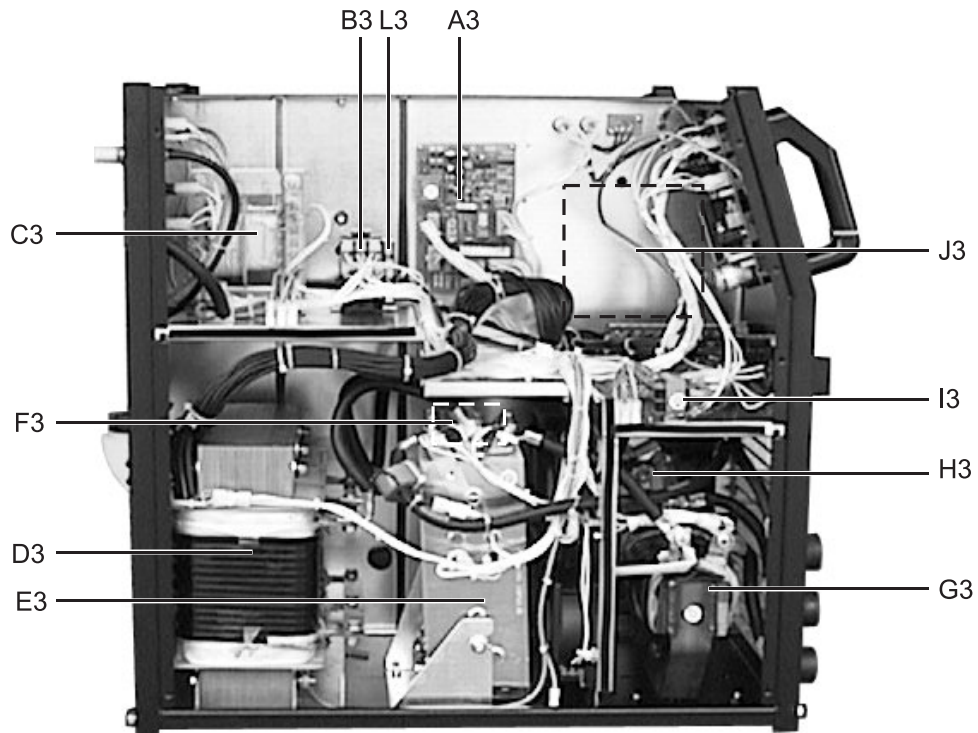


Fig. 9/3b linke Seite kompakt / Left side, compact

9 Ersatzteilliste/Spare Parts List

Item	Designation: Description:	WEGA [®] 250 M1G	WEGA [®] 330 M1G	WEGA [®] 400 M1G	WEGA [®] 500 M1G	WEGA [®] 600 M1G
A3	Relaisplatine Relay PCB	040-000510-00000				
B3	Schütz Relay	094-000591-00000			094-000590-00000	
L3	Hilfskontakt Aux. contact	-----	-----	-----	094-000593-00000	094-000593-00000
C3	Versorgungstr rafo Supply transformer	094-002762-00001				
D3	Haupttransfor mator inkl. Stufenschalter Main transformer incl. step switch	032-000112-00002	032-000114-00005	032-000118-00002	032-000125-00003	032-000126-00002
E3	Gleichrichter Rectifier	060-005B40-04K00	060-005B41-04K00	060-005B41-04K00	060-005B44-04K00	060-005B44-04K00
F3	Shunt Shunt	074-000034-00000	074-000440-00000	074-000440-00000	074-000440-00000	074-000440-00000
G3	Drossel Choke	032-000117-00000	032-000116-00005	032-000116-00005	032-000127-00003	032-000127-00003
H3	Sättigungs- wandler Saturation transducer	044-000967-00001				
I3	Steuerrafo M200 M200 control transformer	044-002266-00000				
J3	Prozessor- steuer- platine M210 (Option) Processor M210 control PCB (optional)	040-000514-00000				
K3	Lüfter Fan	074-000015-00000				

9 Ersatzteilliste/Spare Parts List

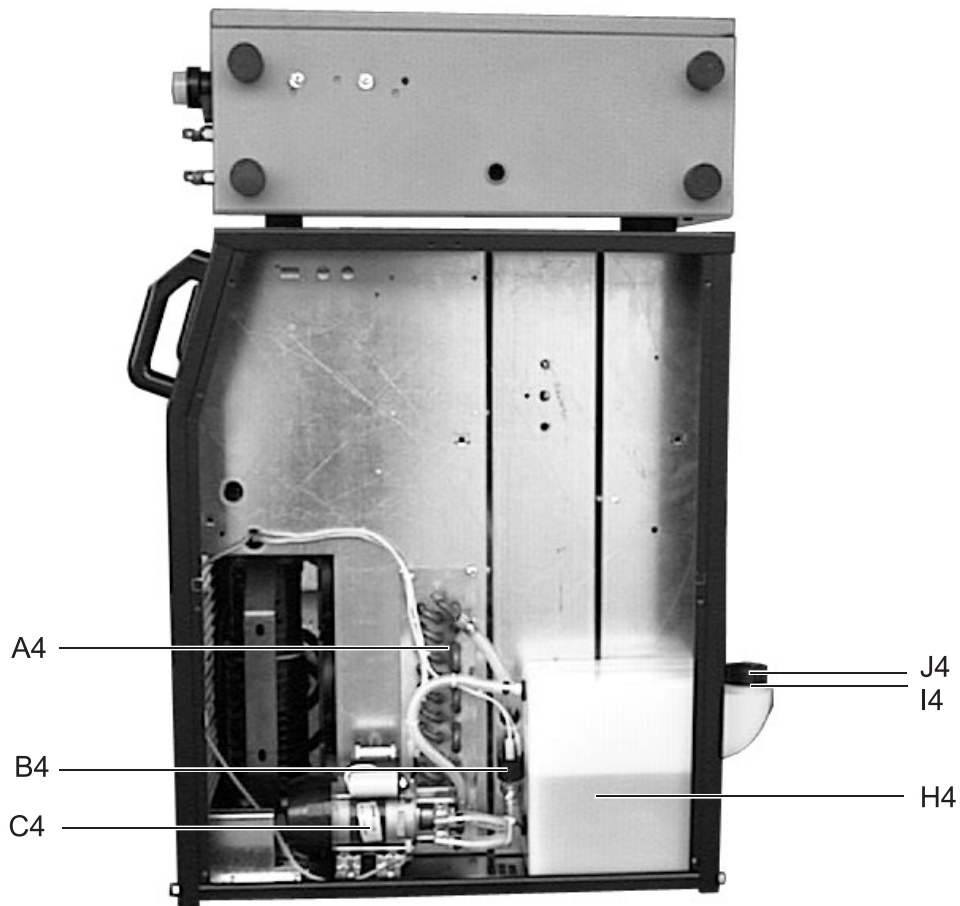


Fig. 9/4a rechte Seite dekompakt / Right side, decompact

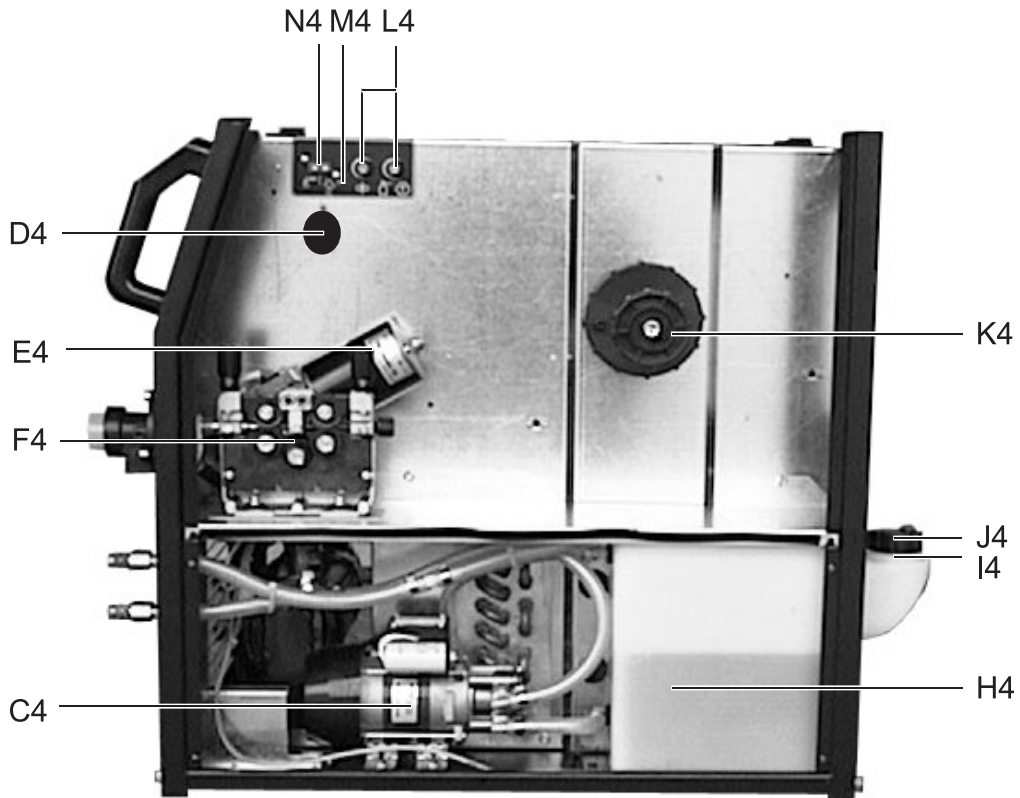


Fig. 9/4b rechte Seite kompakt / Right side, compact

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	WEGA	WEGA
			250A-400A	500A-600A
A4	Wärmetauscher	Heat exchanger	094-002585-00004	094-003341-00000
B4	Druckwächter	Pressure monitor	094-000232-00001	
C4	Kreiselpumpe	Centrifugal pump	094-002613-00000	
D4	Drehknopf	Rotary dial	094-000997-00000	
for D4	Folie Bedieneinheit Draht einschleichen	Foil control panel for wire creep	094-004255-00001	
for D4	Potentiometer	Potentiometer	044-001782-00000	
E4	Motor Drahtvorschub	Wire feed motor	094-004274-00000	
F4	Drahtvorschub (Einzelteile siehe Abb. 9/6)	Wire feed (individual parts see Fig. 9/6)	094-001390-00001	
for F4	Abdeckkappe OT	Cover cap, TDC	094-007079-00000	
for F4	Abdeckkappe UT	Cover cap, BDC	094-007080-00000	
E4/F4	Vorschub (komplett)	Wire feed (complete)	092-000910-00000	
H4	Tank	Tank	094-002579-00003	
I4	Sieb	Filter	094-001804-00000	
J4	Verschlußdeckel	Sealing cover	094-002291-00000	
K4	Spulendorn komplett Mutter für Spulendorn	Spool holder, complete Nut for spool holder	094-000346-00000 094-000346-00001	
L4	Drucktaster	Pushbutton	044-001116-00000	
M4	Folie Bedieneinheit Einfädeln Gastest	Foil control panel gas test inching	094-002888-00000	
N4	Justierplatine	Adjustment PCB	040-000516-00000	
o.Abb.	Klebefolie KLF „Wega-Rollenantrieb“/1	KLF foil for “Wega-Roll drive”/1	094-006025-00000	

9 Ersatzteilliste/Spare Parts List

WEGA 400 MIG "E" M110 with electronic choke

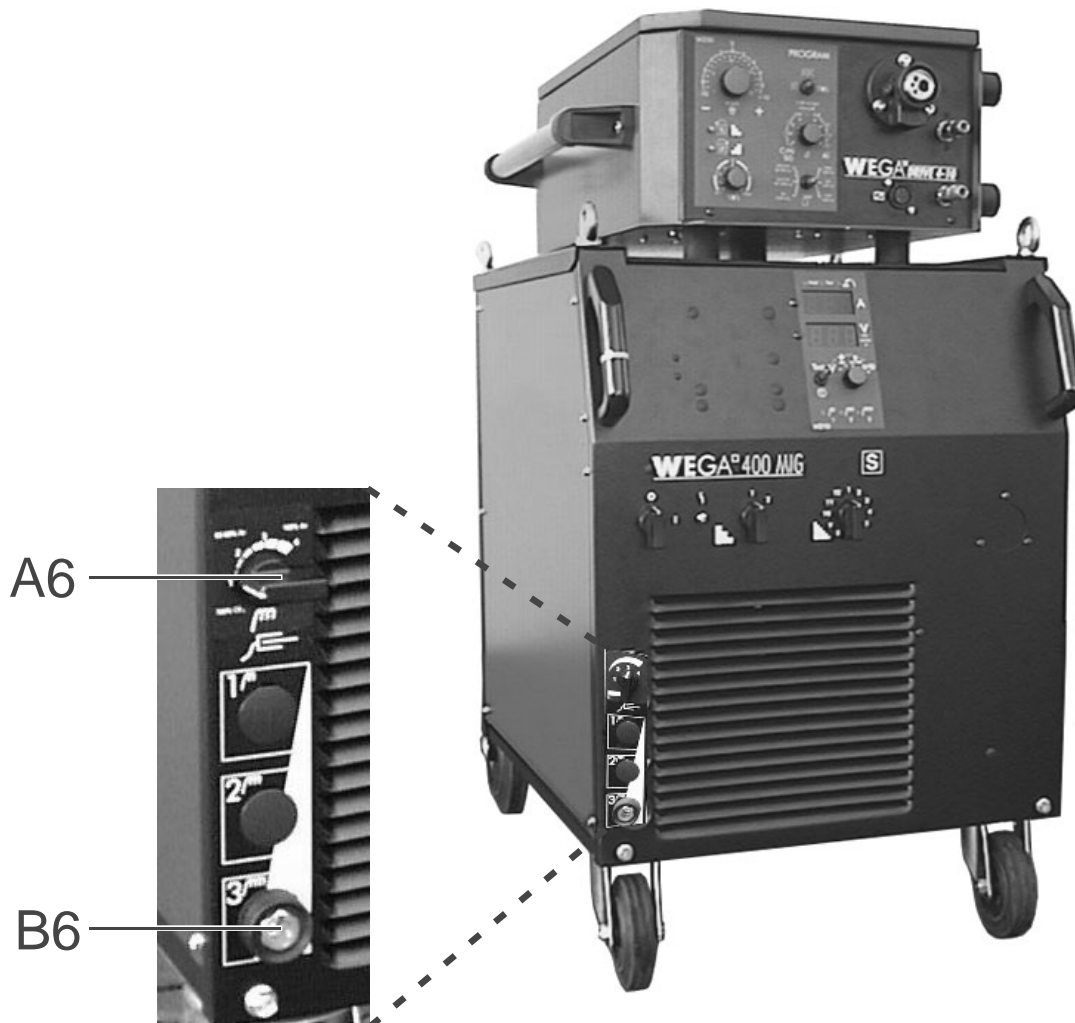


Fig. 9/5a Vorderseite / Front view

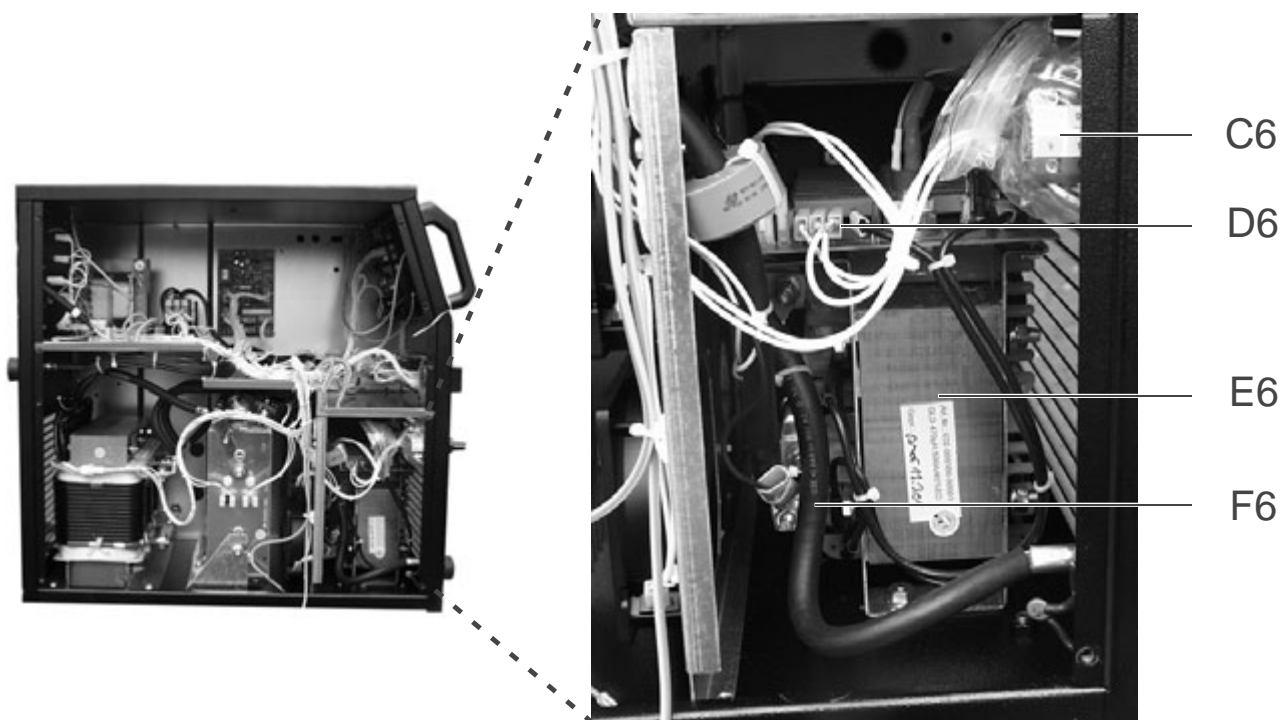


Fig. 9/5b, linke Seite / Left side

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	WEGA 400 MIG DW „E“ M110
A6	Drehknopf	Rotary dial	094-001815-00000
B6	Anschlußbuchse	Connection socket	074-000232-00000
C6	Stufenschalter	Step switch	094-007813-00000
D6	Platine EDR2	EDR2 PCB	040-000608-00000
E6	Glättungsdrossel incl. Platine EDR2	Smoothing choke incl. EDR2	032-000166-00001
F6	Lastkabel mit Sättigungswandler	Load cable with saturation transformer	094-007840-00000

9 Ersatzteilliste/Spare Parts List

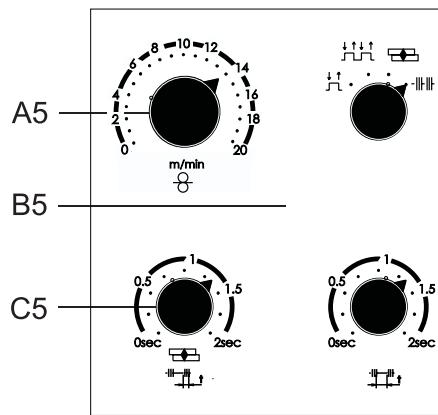


Fig. 9/6a Drahtvorschubkoffer / Wire feed case

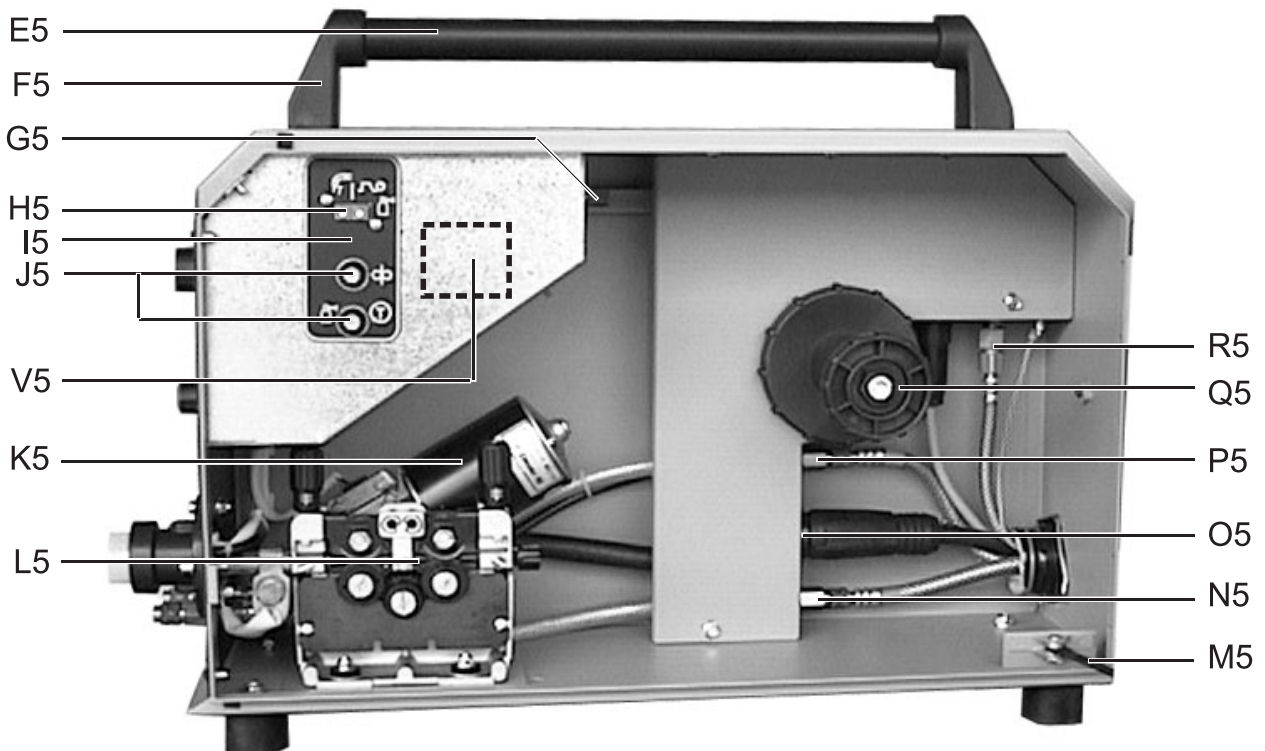


Fig. 9/6b Drahtvorschubkoffer / Wire feed case

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	WEGA
A5	Drehknopf	Rotary dial	074-000234-00000
for A5	Drehknopfdeckel	Rotary dial cap	074-000234-00001
for A5	Drehknopf Pfeilscheibe	Rotary dial arrow indicator	074-000234-00002
B5	Leiterplatte M100	M100 PCB	040-000509-00000
for B5	Folie Bedieneinheit M100	Foil control panel M100	094-002759-00002
C5	Drehknopf	Rotary dial	074-000315-00000
for C5	Drehknopfdeckel	Rotary dial cap	074-000315-00001
for C5	Drehknopf Pfeilscheibe	Rotary dial arrow indicator	074-000315-00002
D5	Leiterplatte M200	M200 PCB	040-000511-00000
for D5	Folie Bedieneinheit M200	Foil control panel M200	094-002758-00002
E5	Griffstange	Hand grip	074-000237-00005
F5	Halterung für Griffstange	Bracket for hand grip	074-000237-00000
G5	Drehknopf	Rotary dial	094-000997-00000
for G5	Folie Bedieneinheit Draht einschleichen	Foil control panel for wire creep	094-004255-00001
for G5	Potentiometer	Potentiometer	044-001782-00000
H5	Justierplatine	Adjustment PCB	040-000516-00000
I5	Folie Bedieneinheit Einfädeln-Gastest	Foil control panel inching gas test	094-003086-00000
J5	Drucktaster	Pushbutton	044-001116-00000
K5	Motor Drahtvorschub	Wire feed motor	094-004274-00000
L5	Drahtvorschub (Einzelteile siehe Abb. 9/6a)	Wire feed (individual parts see fig. 9/6a)	094-001390-00000
K5/L5	Vorschub (komplett)	Wire feed (complete)	092-000910-00000
M5	Lift-o-Mat	Liftomat	094-000373-00000
N5	Schnellkupplung blau	Rapid-action coupling, blue	094-000521-00000
for N5	Dichtungsring	Sealing ring	094-000527-00000
O5	Anschlußstecker	Connection plug	094-001532-00000
P5	Schnellkupplung rot	Rapid-action coupling, red	094-000520-00000
for P5	Dichtungsring	Sealing ring	094-000527-00000
Q5	Spulendorn komplett	Spool holder complete	094-000346-00000
R5	Gasventil	Gas valve	094-000472-00000
for R5	Gasstaudüse 0-16L	Venturi 0-16L	094-000914-00000
S5	GummifüÙe	Rubber feet	094-001824-00000
T5	Eurozentralanschluß	Euro-central connection	094-000347-00000
for T5	Isolierflansch	Insulation flange	094-005221-00000
for T5	Madenschraube	Grub screw	094-005222-00000
for T5	Kapillarrohr bis Ø 1,6mm	Capillary tube Ø 1.6mm	094-006634-00 000
for T5	Kapillarrohr Ø 2,0 u 2,4mm	Capillary tube Ø 2.0 & 2.4mm	094-006635-00000
U5	GummifüÙe	Rubber feet	074-000223-00000
V5	Steuertrafo M200	Control transformer M200	044-002266-00000
X5	Griffmulde	Recessed grip	094-000594-00000
for X5	Griffmulde	Recessed grip	094-000434-00000

9 Ersatzteilliste/Spare Parts List

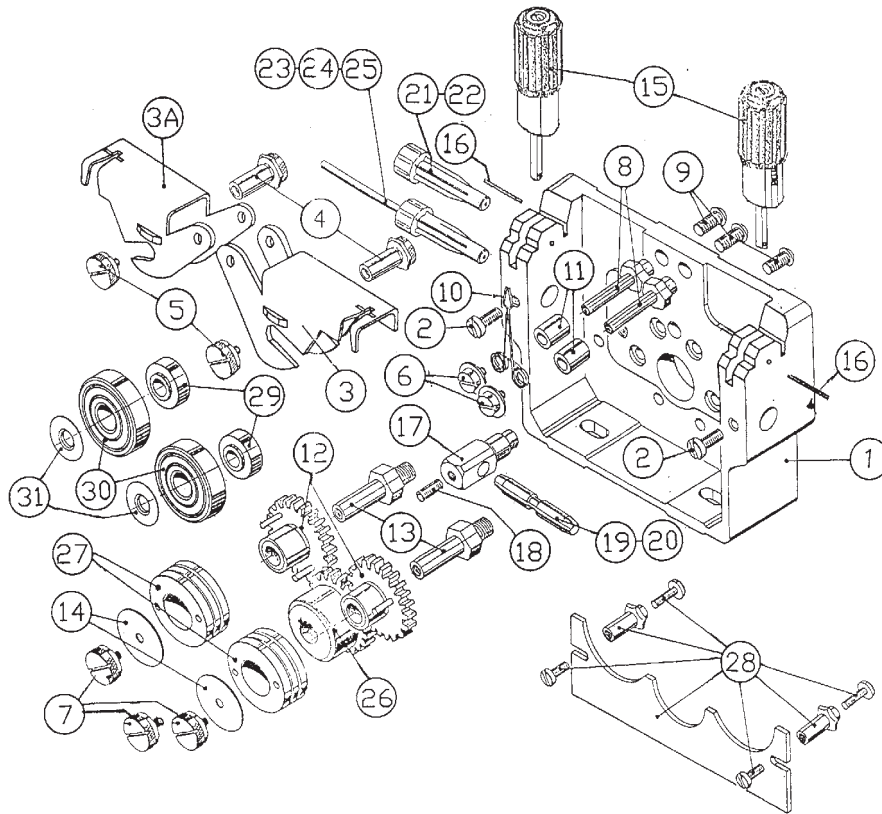


Fig. 9/7a Explosionszeichnung Drahtvorschubeinheit 4-Rollenantrieb /
Exploded view of 4-roll drive wire feed unit

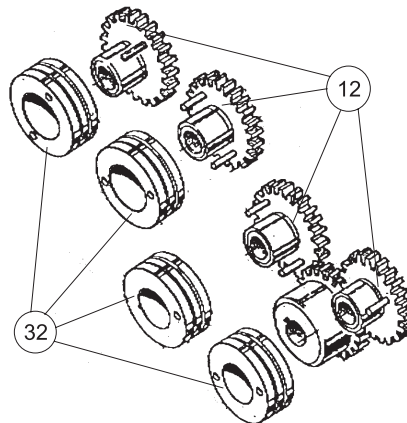


Fig. 9/7b Ersatzrollen Aluminium / Spare aluminium rolls

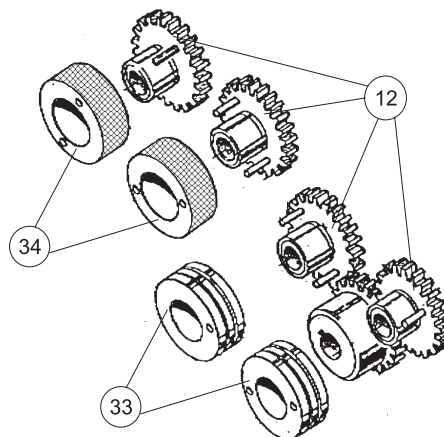


Fig. 9/7c Ersatzrollen Fülldraht / Spare cored wire rolls

9 Ersatzteilliste/Spare Parts List

Item	Designation:	Description	
1	Vier Rollen Basisstück	Four roll feed plate	094-006257-00000
2	Schraube M6x14	Screw M6x14	094-006258-00000
3	Andruckarm rechts	Pressure arm, right	094-006259-00000
3A	Andruckarm links	Pressure arm, left	094-006260-00000
4	Achsenwelle mit gerändeltem Kopf	Axle shaft with knurled head	094-006261-00000
5	Rändelschraube Achsenwelle	Knurled fixing screw for axle shaft	094-006262-00000
6	Sicherungsschraube Antriebsrolle	Drive roll retaining screw	094-006263-00000
7	Rändelschraube Antriebsrolle	Drive roll knurled screw	094-002557-00000
8	Achsenwelle Andruckarm	Axle shaft pressure arm	094-006264-00000
9	Innensechskantschraube	Allen screw	094-006265-00000
10	Feder Andruckarm	Spring pressure arm	094-006266-00000
11	Abstandsrohr Andruckarm	Spacer tube pressure arm	094-006267-00000
12	Aufnahme Antriebsrollen	Drive roll bracket	094-005232-00000
13	Achsenwelle	Axle shaft	094-006268-00000
14	Unterlegscheibe	Plain washer	094-002556-00000
15	Andruckeinrichtung mit Skala	Pressure device with scale	094-006269-00000
16	Splint Andruckeinrichtung	Locating pin for pressure device	094-006270-00000
17	Aufnahmealte Drahtführungshülse	Adapter block holder intermediate guide	094-006271-00000
18	Innensechskantschraube	Allen screw	094-006272-00000
19	Drahtführungshülse 0,8mm-2,0mm Draht	Intermediate guide, 0.8mm-2.0mm wire	094-006273-00000
20	Drahtführungshülse 1,6mm-3,2mm Draht	Intermediate guide, 1.6mm-3.2mm wire	094-006274-00000
21	Drahteinlaufnippel 0,6mm-1,6mm Draht	Inlet guide, 0.6mm-1.6mm wire	094-002088-00000
22	Drahteinlaufnippel 1,6mm-3,2mm Draht	Inlet guide, 1.6mm-3.2mm wire	094-002740-00000
23	Drahteinlaufnippel mit Drahtführungsrohr blau Innendurchmesser 2,0mm	Inlet guide with wire guide tube, blue, i.d. 2.0mm	094-006275-00000
24	Drahteinlaufnippel mit Drahtführungsrohr Innendurchmesser 2,5mm	Inlet guide with wire guide tube, i.d. 2.5mm	094-006276-00000
25	Drahteinlaufnippel mit weichem Führungsrohr rot Innendurchm. 2,5mm	Inlet guide with soft liner tube, red, i.d. 2.5mm	094-006277-00000
26	Hauptantriebszahnrad	Main gear drive	094-005233-00000
28	Sicherungsschutz	Guard kit	094-006279-00000
29	Abstandsrollen groß	Spacer, large	094-005402-00000
31	Abstandsrollen klein	Spacer, small	094-006280-00000
	Andruckarm rechts komplett	Pressure arm, right, complete	094-006281-00000
	Andruckarm links komplett	Pressure arm, left, complete	094-006282-00000
27	2 AR Stahl 0,6+0,8; Stahl-Standard	2 DR steel 0.6+0.8; steel-standard	092-000839-00000
27	2 AR Stahl; 0,8+1,0; Stahl-Standard	2 DR steel 0.8+1.0; steel-standard	092-000840-00000
27	2 AR Stahl; 0,9+1,2; Stahl-Standard	2 DR steel 0.9+1.2; steel-standard	092-000841-00000
27	2 AR Stahl; 1,0+1,2; Stahl-Standard	2 DR steel 1.0+1.2; steel-standard	092-000842-00000
27	2 AR Stahl; 1,2+1,6; Stahl-Standard	2 DR steel 1.2+1.6; steel-standard	092-000843-00000
30	2 Gegendruckrollen glatt; Stahl	2 counterpressure rolls plane; steel	092-000844-00000
32	4 Zwillingssrollen AL 0,8+1,0	4 twin rolls AL 0.8+1.0	092-000869-00000
32	4 Zwillingssrollen AL 1,0+1,2	4 twin rolls AL 1.0+1.2	092-000848-00000
32	4 Zwillingssrollen AL 1,2+1,6	4 twin rolls AL 1.2+1.6	092-000849-00000

9 Ersatzteilliste/Spare Parts List

32	4 Zwillingssrollen AL 2,4+3,2	4 twin rolls AL 2.4+3.2	092-000870-00000
33	2 AR Röhrendraht 0,8/0,9+0,8/0,9	2 DR cored wire 0.8/0.9+0.8/0.9	092-000834-00000
33	2 AR Röhrendraht 1,0/1,2+1,4/1,6	2 DR cored wire 1.0/1.2+1.4/1.6	092-000835-00000
33	2 AR Röhrendraht 1,4/1,6+2,0/2,4	2 DR cored wire 1.4/1.6+2.0/2.4	092-000836-00000
33	2 AR Röhrendraht 2,8+3,2	2 DR cored wire 2.8+3.2	092-000837-00000
34	2 Gegendruckrollen randiert Röhrendraht	2 counterpressure rolls knurled cored wire	092-000838-00000
o.Abb.	Umrüstung verzahnt>unverzahnt, Stahl/Alu	Conversion geared>ungeared, Steel/Alu	092-000845-00000
12/6b	Umrüstset 4 Z-Rollen AL 0,8+1,0 Opt. Alu	Conversion kit 4 T-rolls AL 0.8+1.0	092-000867-00000
12/6b	Umrüstset 4 Z-Rollen AL 1,0+1,2 Opt. Alu	Conversion kit 4 T-rolls AL 1.0+1.2	092-000846-00000
12/6b	Umrüstset 4 Z-Rollen AL 1,2+1,6 Opt. Alu	Conversion kit 4 T-rolls AL 1.2+1.6	092-000847-00000
12/6b	Umrüstset 4 Z-Rollen AL 2,4+3,2 Opt. Alu	Conversion kit 4 T-rolls AL 2.4+3.2	092-000868-00000
12/6c	Umrüstset 2 AR Röhr 0,8/0,9+0,8/0,9 Opt.-Röhr	Conversion kit 2 DR cored wire 0.8/0.9+0.8/0.9, opt. tube	092-000830-00000
12/6c	Umrüstset 2 AR Röhr 1,0/1,2+1,4/1,6 Opt.-Röhr	Conversion kit 2 DR cored wire 1.0/1.2+1.4/1.6, opt. tube	092-000831-00000
12/6c	Umrüstset 2 AR Röhr 1,4/1,6+2,0/2,4 Opt.-Röhr	Conversion kit 2 DR cored wire 1.4/1.6+2.0/2.4, opt. tube	092-000832-00000
12/6c	Umrüstset 2 AR Röhr 2,8+3,2 Opt.-Röhr	Conversion kit 2 DR cored wire 2.8+3.2, opt. tube	092-000833-00000

AR = Antriebsrolle; DR = Drive rolls; AL = Aluminium

10 Accessories

10.1 MIG welding torch

10.1.1 MIG potentiometer torch

Designation / description	Item No.:
Optional remote control connection option, potentiometer and Push/Pull torch (on-site modernising)	092-000988-00000
MIG torch 36, with G potentiometer, 3m	094-003416-00000
MIG torch 501, with W potentiometer, 3m	094-003417-00000

10.1.2 MIG Push/Pull welding torch

Designation / description	Item No.:
Optional remote control connection option, potentiometer and Push/Pull torch (on-site modernising)	092-000988-00000
MIG torch for Push/Pull motor 42V G, 8m	094-003421-00000
MIG torch for Push/Pull motor 42V 1 potentiometer G, 8m	094-003419-00000
MIG torch for Push/Pull401D motor 42V, 8m	094-003420-00000
MIG torch for Push/Pull401D 1 potentiometer motor 42V W, 8m	094-003418-00000

10.2 Workpiece leads

Designation / description	Item No.:
Workpiece lead 35 sq.mm, 4m, pole clamp	092-000008-00000
Workpiece lead 50 sq.mm, 4m, pole clamp	092-000003-00000
Workpiece lead 70 sq.mm, 4m, pole clamp	092-000013-00000
Workpiece lead 95 sq.mm, 4m, pole clamp	092-000171-00000

10.3 Remote control (without cable) and accessories

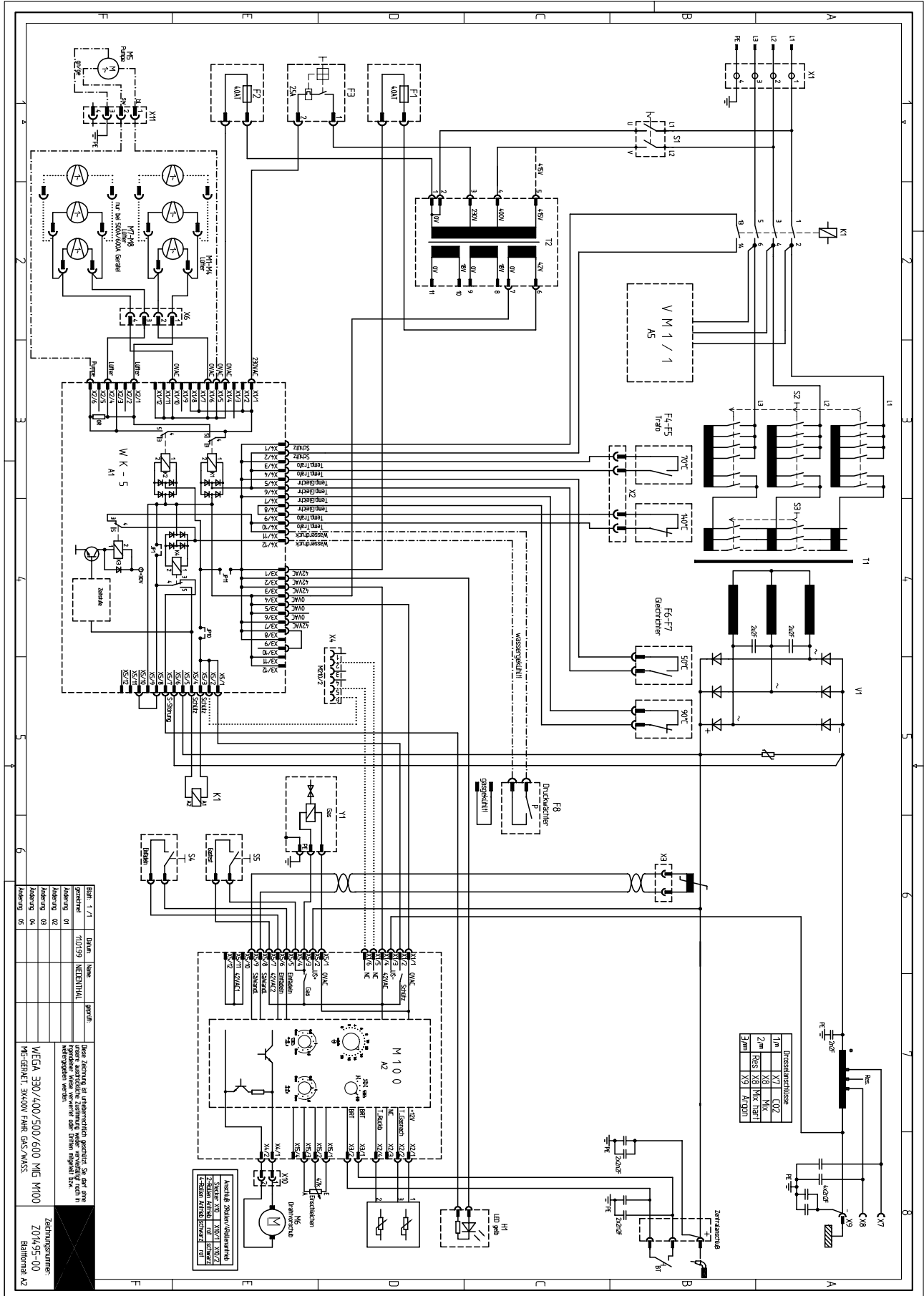
Designation / description	Item No.:
Optional remote control connection option, potentiometer and Push/Pull torch (on-site modernising)	092-000988-00000
RM remote control for WF correction without cable, with holding magnet	090-008100-00000
Remote control connection cable, 5m, 19-pole	092-001470-00005
Remote control connection cable, 10m, 19-pole	092-001470-00010
Remote control connection cable, 20m, 19-pole	092-001470-00020

10.4 General

Designation / description	Item No.:
32A CEE plug	094-000207-00000
Adapter for K300 basket spool	094-001803-00001
KF 23E-10 coolant 9.3l (frost protection -10°)	094-000530-00000
KF 23E-200 coolant 200l (frost protection -10°)	094-000530-00001
KF 37E-10 coolant 9.3l (frost protection -20°)	094-006256-00000

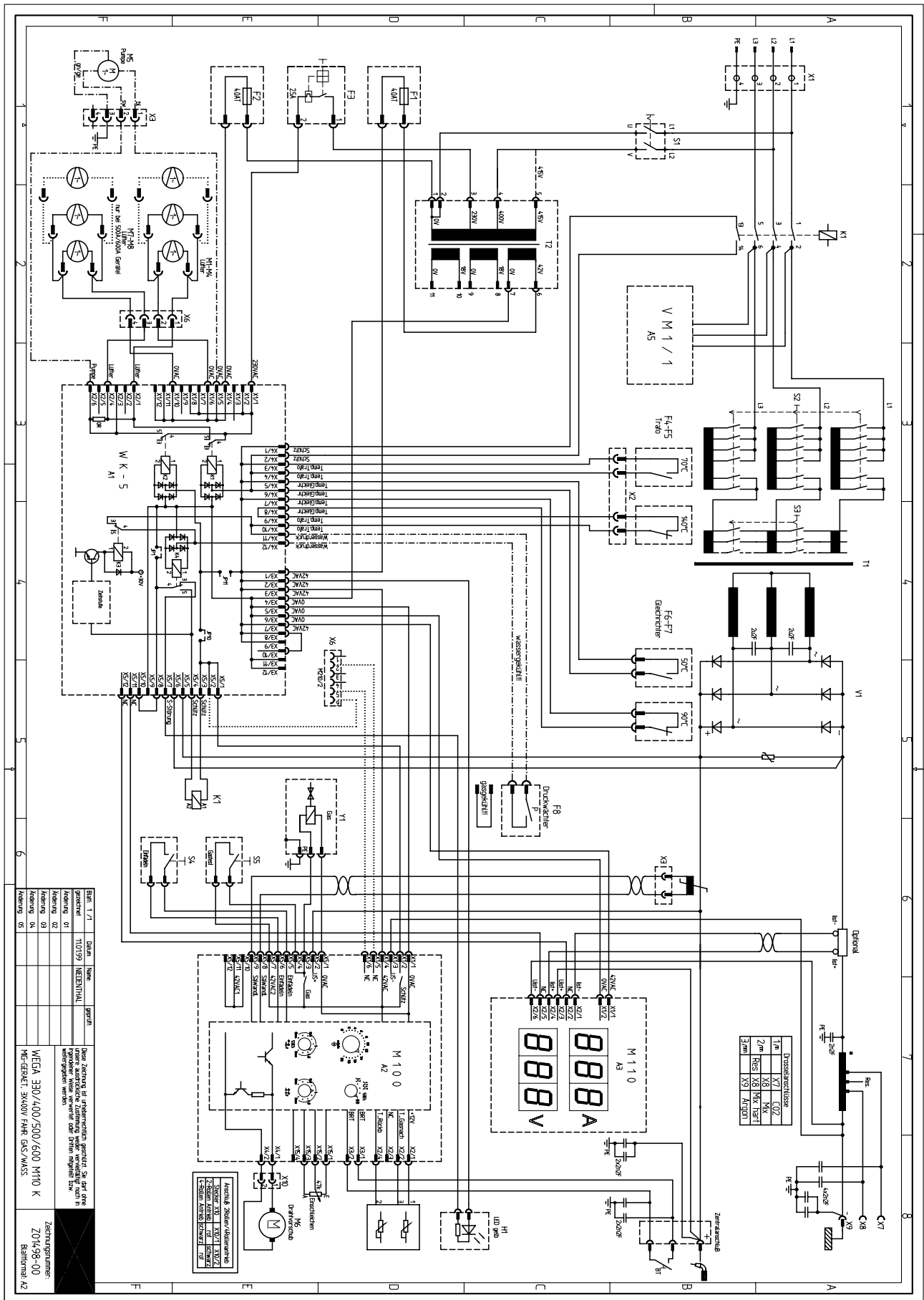
11 Schaltplan / Circuit diagrams

11.1 WEGA 330 - 600 compact (M100)



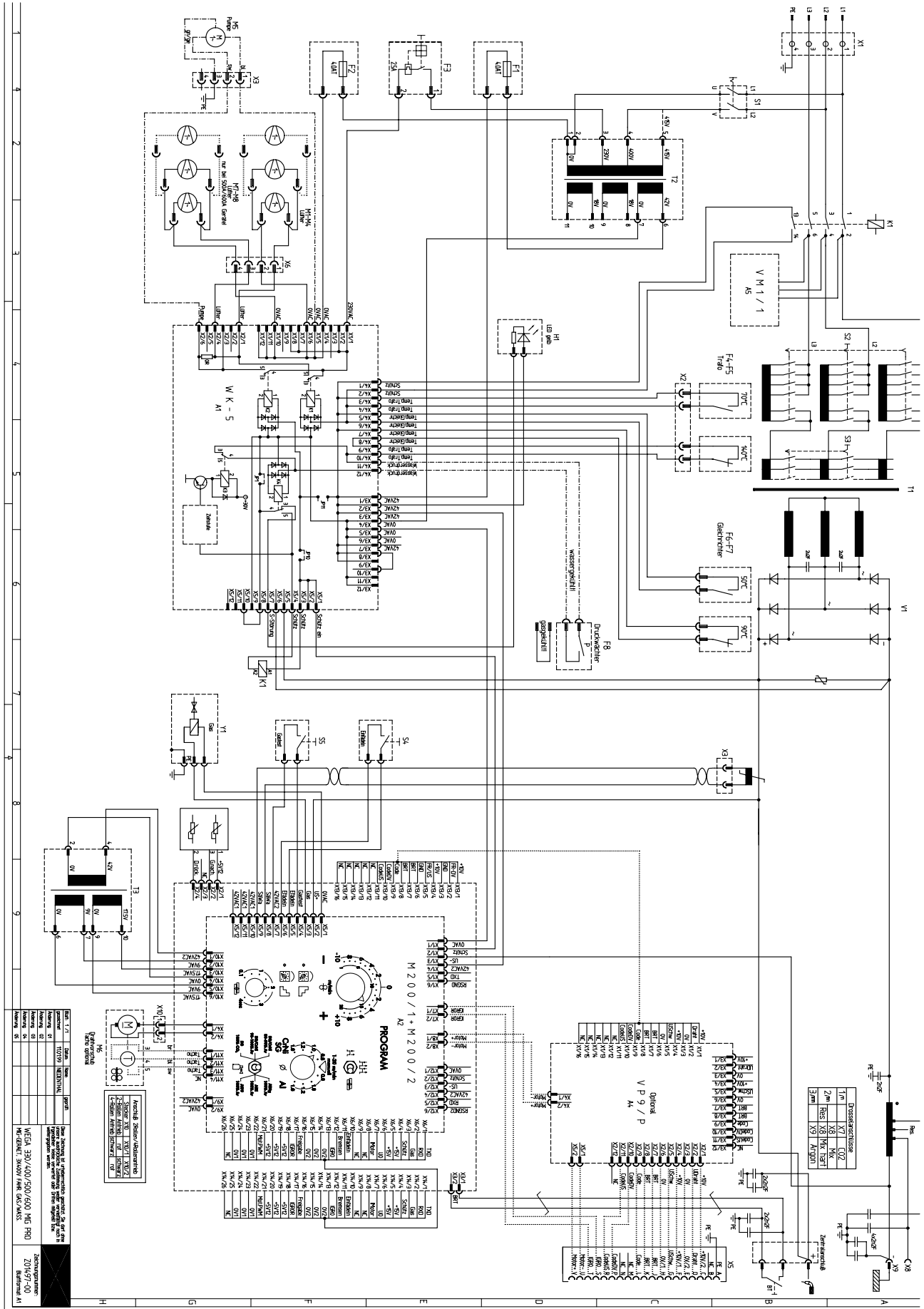
11 Schaltplan / Circuit diagrams

11.2 WEGA 330 - 600 compact (M100/110)



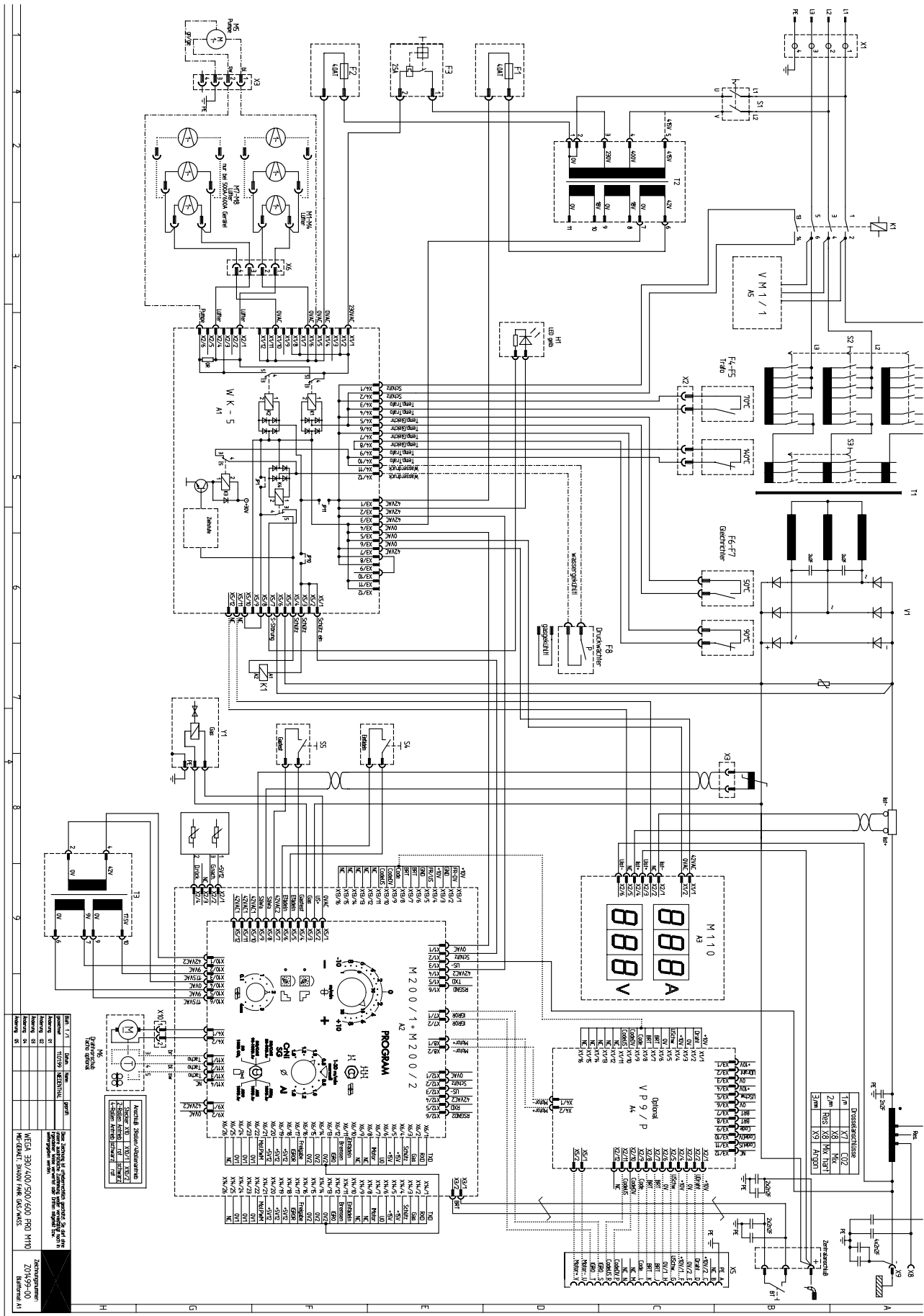
11 Schaltplan / Circuit diagrams

11.3 WEGA 330 - 600 compact (M200)



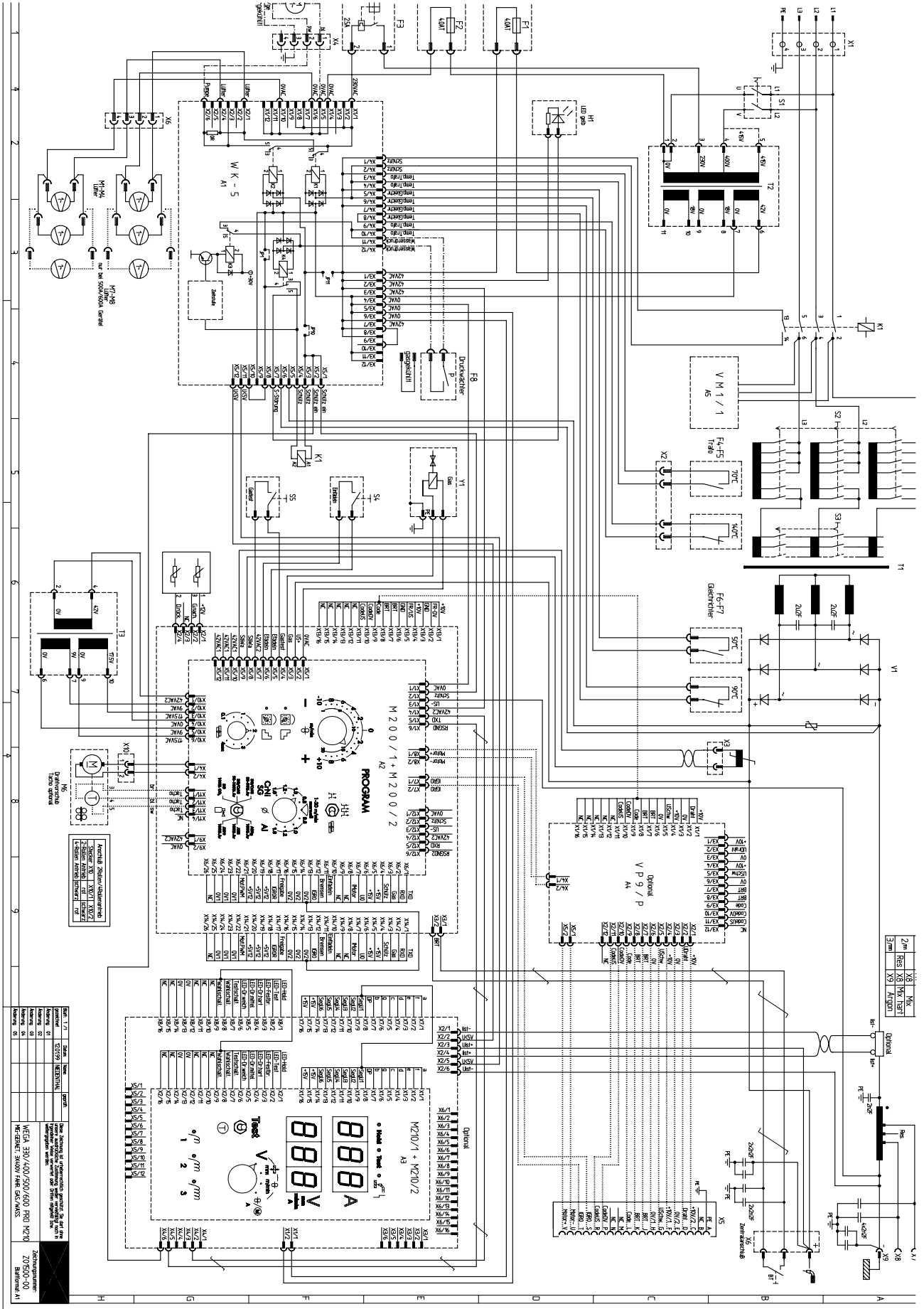
11 Schaltplan / Circuit diagrams

11.4 WEGA 330 - 600 compact (M200/110)



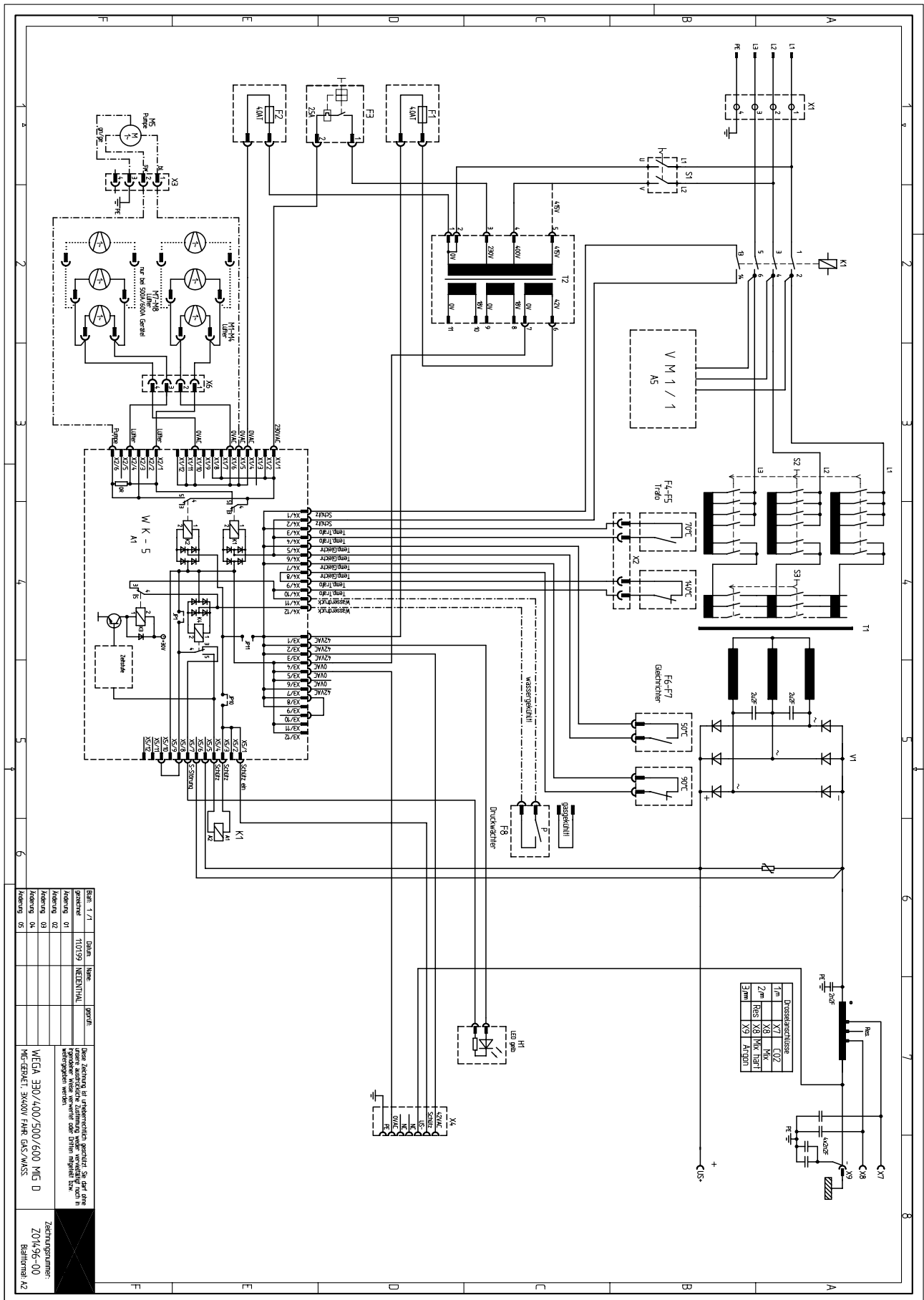
11 Schaltplan / Circuit diagrams

11.5 WEGA 330 - 600 compact (M200/M210)



11 Schaltplan / Circuit diagrams

11.6 WEGA 330 - 600 decompact



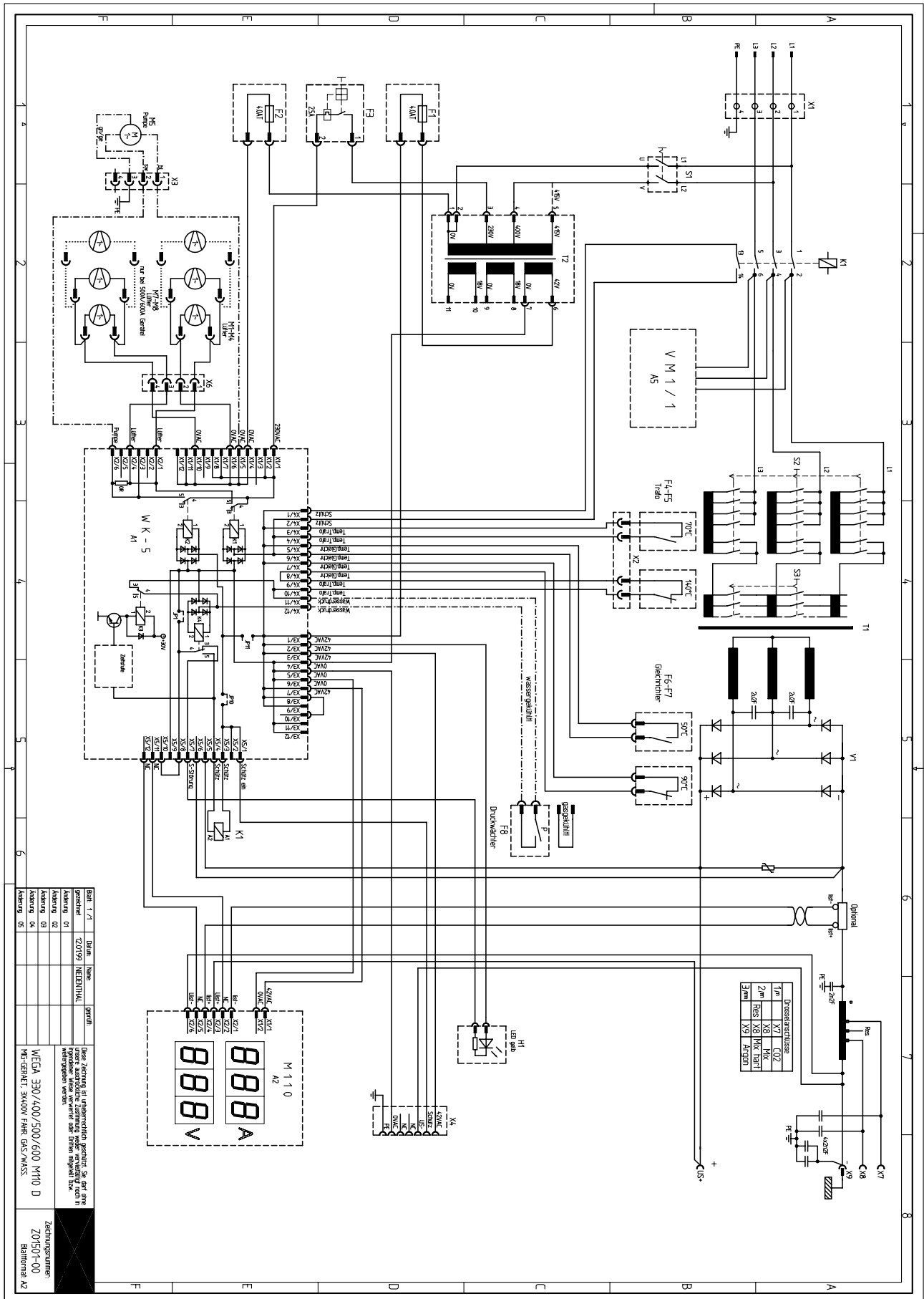
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Blatt 01	10/199	NEUBAU	
Blatt 02			
Blatt 03			

Das Zeichnung ist ungenügend gezeichnet. Sie darf ohne
 größere Wiese verändert oder Dritten mitgeteilt werden.
WEGA 330/400/500/600 MEG D
MICROMET 3000V FAHR GAS/MASS

Zeichnungsnummer:
Z01496-00
 Blattnummer:
Blatt 01/02

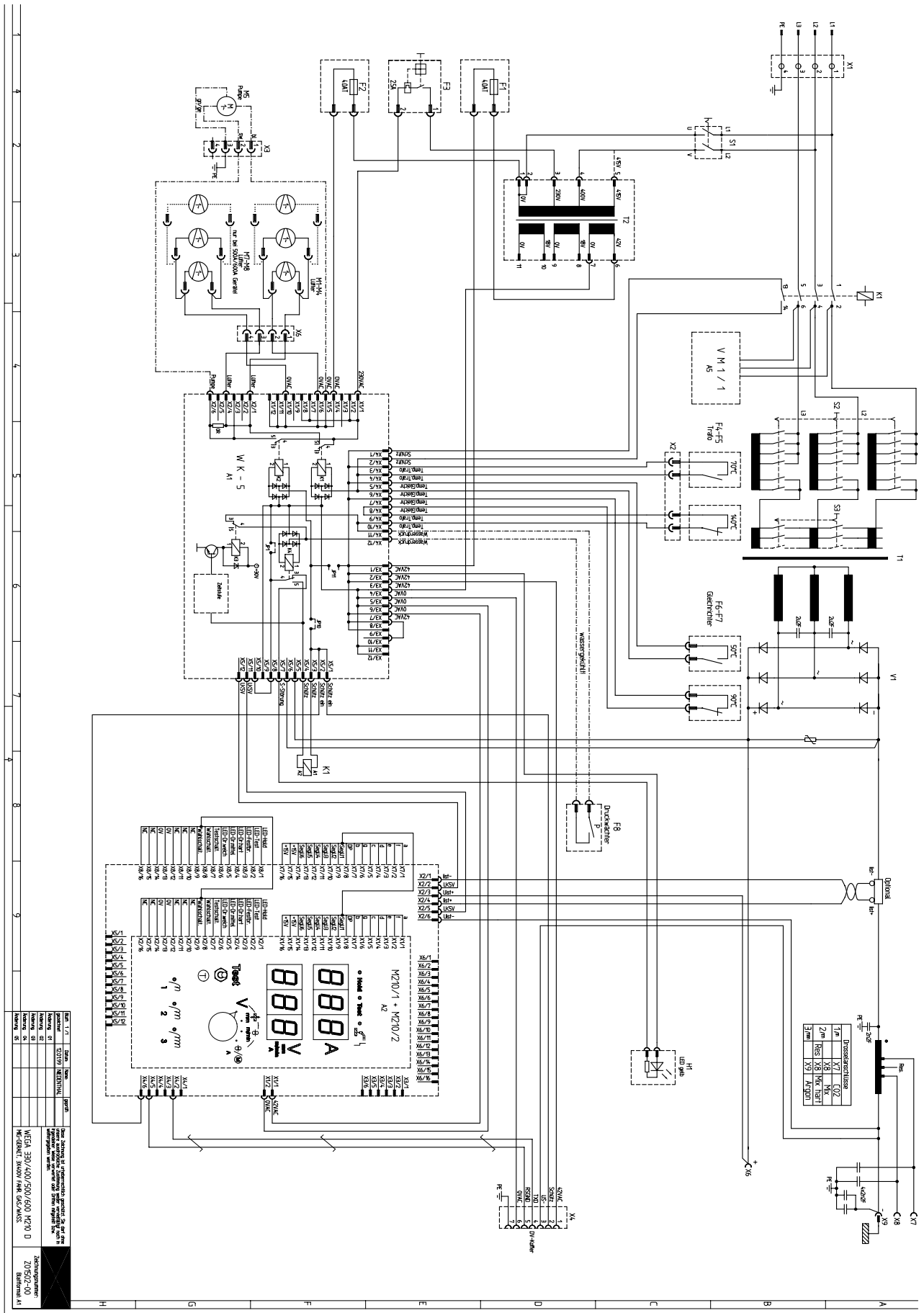
11 Schaltplan / Circuit diagrams

11.7 WEGA 330 - 600 decompact (M110)



11 Schaltplan / Circuit diagrams

11.8 WEGA 330 - 600 decompact (M210)



11 Schaltplan / Circuit diagrams

11.9 WEGA 400 E M110

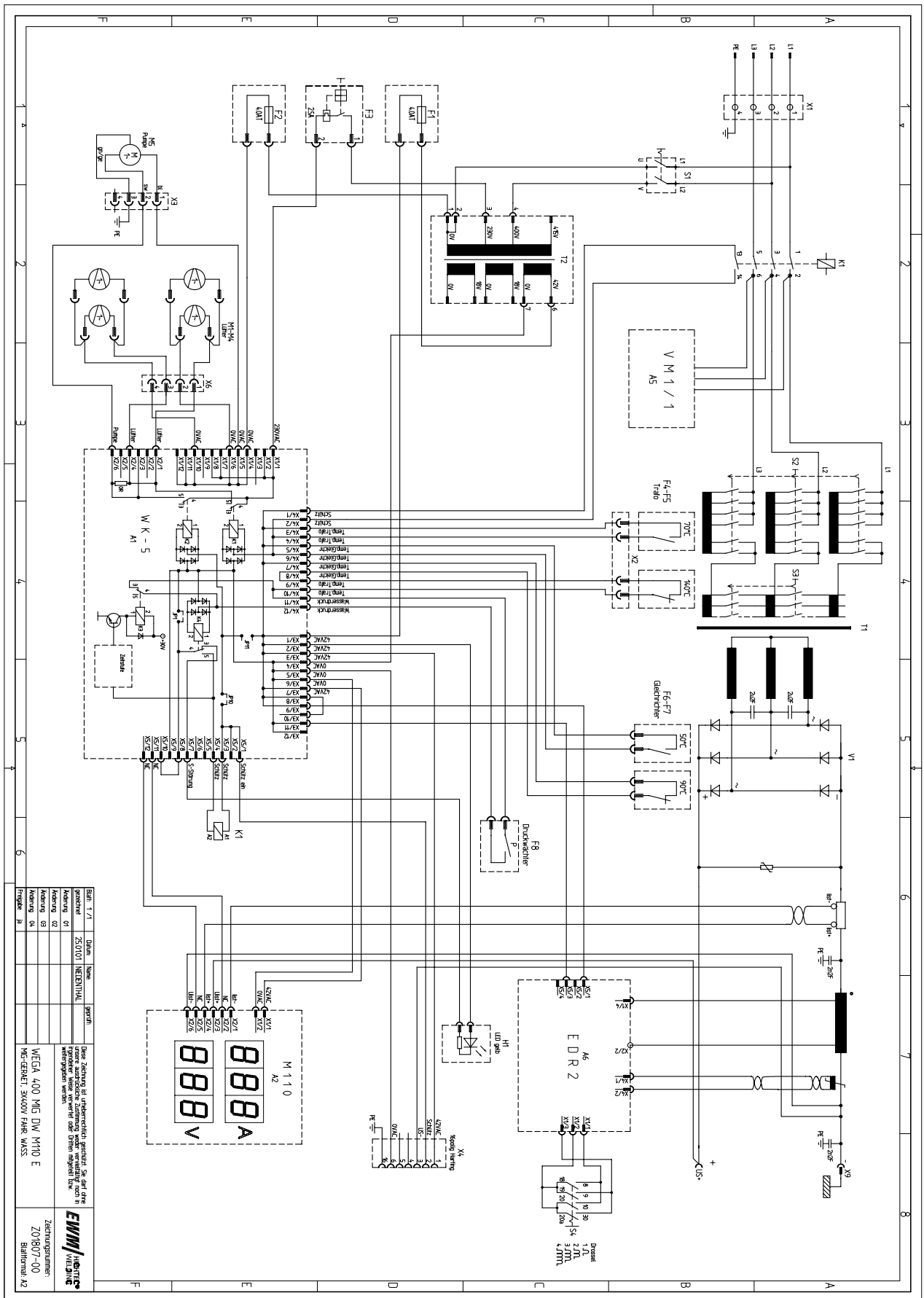
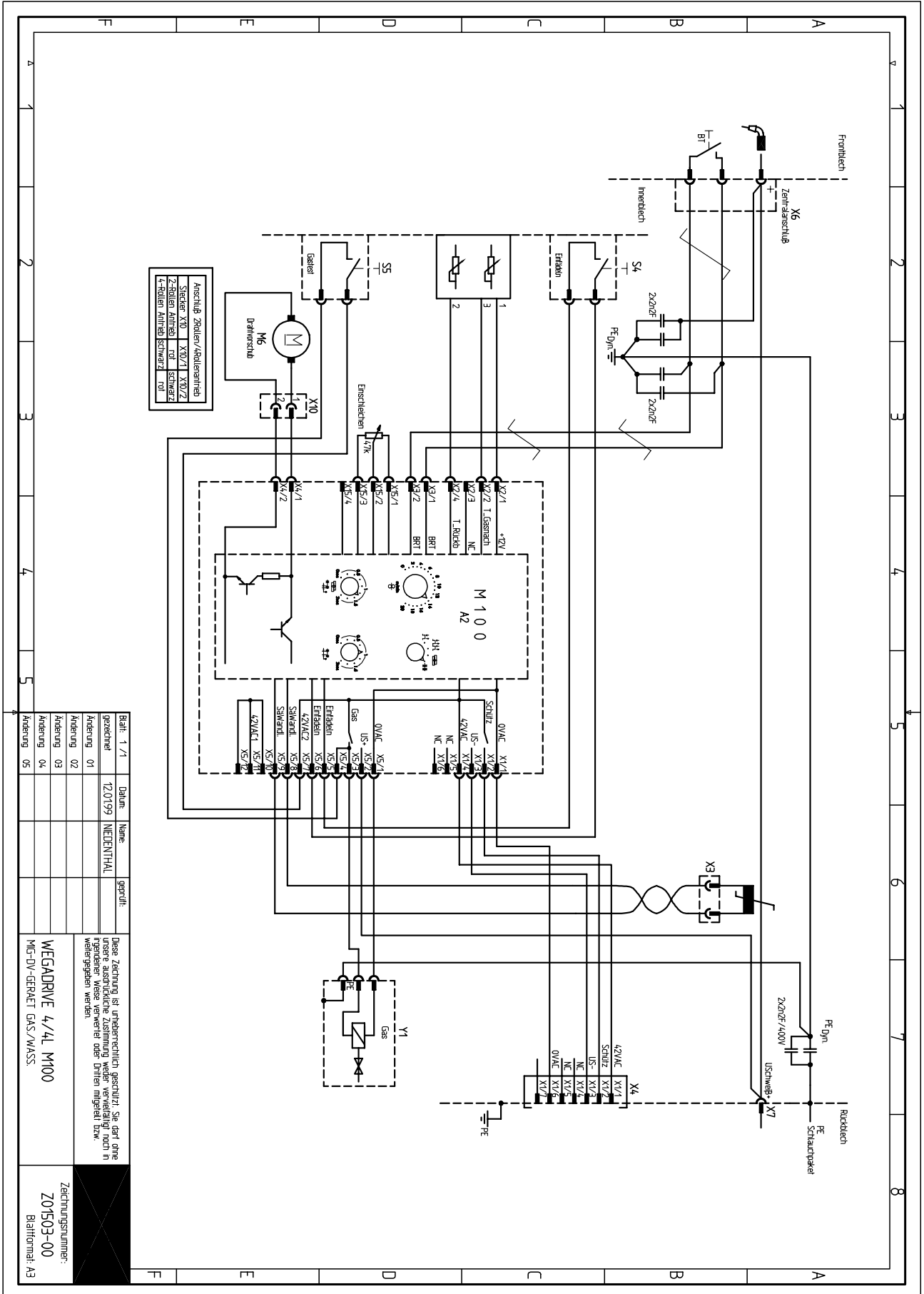


Bild 1/1	Datum	Name	spezif.
positiv	25.01.01	WEGENHALL	
Kezung 01			
Kezung 02			
Kezung 03			
Kezung 04			
Frage			
Bitte Zuhilfenahme der Bedienungsanleitung für das Gerät. Sie sind Anhang des Produktes. Diese werden dem Benutzer mitgeliefert bzw. separat bestellt. WEGA 400 MG DW M110 E WEGENHALL 3K400V FAHR MASS			
Zeichnungsnummer: Z01807-00			Blattnummer: Blatttotal: 42

11 Schaltplan / Circuit diagrams

11.10 WEGA DRIVE 4 (M100)



11 Schaltplan / Circuit diagrams

11.11 WEGA DRIVE 4 (M200)

