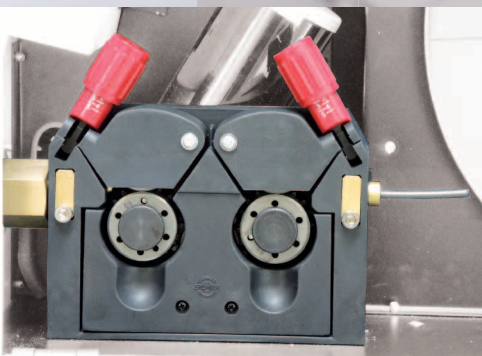


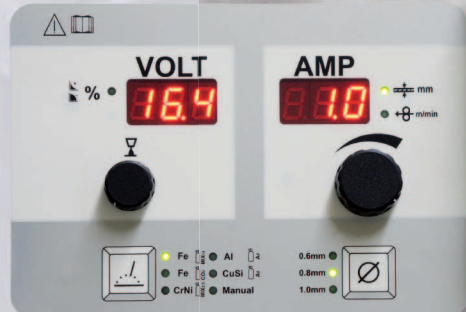


A very straight forward and **simple to use** machine with **simple settings** because of the **tough construction** - it will tolerate very hard impacts.

- MIG/MAG welding (MIG-flux-cored welding wire brazing)
- 4 roller drive with trim adjustment
- Use with D300 wire spool (max. 17 kg)



- Display with hold function for welding current and tension.



- Dynamic pulse adjustment to remove the „ball“ at the end of the wire
- Extremely good welding results even on very thin sheet metal. There are no problems with steelwelding on panels as thin as 0,6mm (0,023 in)

We want to make it easier for you!



single phase 220/240V



Content of delivery
 Welder with rollers
 Torch MB 15, 3m
 Earth cable 4 m
 Item N° 341290

Technical Data

Mains connection	220/240V - 50/60 Hz
Load capacity (delayed)	16 A
Current adjustment range	20 - 200A
Voltage adjustment range	10 - 35V
Welding range/steps	continuous
No load output voltage U ₀ @40°C	20%/200A/24V
Load capacity 60% ED@40°C	140A / 21V
Load capacity 100% ED@40°C	120A / 20V
Weight	35 kg
Dimensions (HxBxL)	890x365x600 mm

IM 240 I - steel wire 0,6 mm

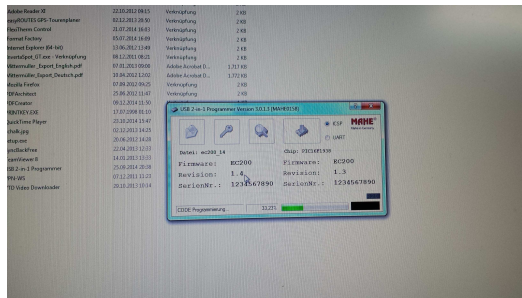
Upgrade

1. Software

- New software PD board
- Version EC200_14.hex



Open lid at the left side of the welder casing.



2. Transport wheels 0,6 mm
3. Wheel pressure +/- 2,5



4. Torch with **Teflon liner blue** inner diam. 0,8 mm (max)



Welding nozzle 0,6 mm



PERFEKT welding performance IM 240 I with welding wire

SG 2 0,6 mm / gas 80/20 / nozzle 0,6 mm



MV Marketing und Vertriebs-GmbH & Co.KG

Wieländer+Schill

Professionelle Karosserie-Spezialwerkzeuge

Siederstraße 50 D-78054 Villingen-Schwenningen

Operation manual

IM 240-i



August 2014
REV 2.1



CONTENT

1	PREFACE	4
1.1	PRODUCT INTRODUCTION	4
1.2	ASSEMBLY REQUIREMENTS	4
2	PUTTING INTO OPERATION	5
2.1	CONNECTING TO THE ELECTRIC NETWORK.....	5
2.2	CONNECTING THE PRESSURE BOTTLE CONTAINING PROTECTIVE GAS	5
2.3	CONNECTING THE RETURN CABLE.....	5
2.4	MIG/MAG TORCH	6
2.5	SELECTING THE FEEDING WHEEL	6
1.1	PLEASE CHOOSE THE FEEDING ROLLS CORRESPOND TO USED WELDING WIRE.	6
2.6	WELD AREA PREPARATION	7
3	SAFETY AND FIRE INSTRUCTION	7
3.1	PROTECTION	7
3.2	REMOVING THE FIRE HAZARD	7
3.3	HANDLING THE PRESSURE BOTTLES.....	8
3.4	PROTECTION AGAINST ELECTRICAL ACCIDENTS.....	8
3.5	EXTRAORDINARY MENACE DURING WELDING.....	8
4	OPERATION	9
4.1	TURNING THE DEVICE ON	9
4.1.1	<i>Power-on sequence</i>	9
4.2	OPERATING PANEL.....	9
4.2.1	<i>Filler wire material selection</i>	9
4.2.2	<i>Filler wire diameter selection</i>	10
4.3	SET UP, ADJUSTMENT AND DISPLAY DESCRIPTION	10
4.3.1	<i>Synergic mode</i>	10
4.3.2	<i>Manual mode</i>	11
5	CARE AND MAINTENANCE	12
5.1	DISPOSAL OF THE MACHINE.....	12
6	TECHNICAL DATA	13
7	TROUBLESHOOTING	14



CE EG-Konformitätserklärung

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 SLOVAKIA

Produkt: **IM 240-i**

Hiermit erklären wir, dass die oben beschriebene Maschine allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

Die oben genannte Maschine erfüllt die Anforderungen der nachfolgend genannten Richtlinien und Normen:

- EN 60974-1** Sicherheitsanforderungen für Einrichtungen zum Lichtbogenschweißen
 Teil 1 Schweißstromquellen
- EN 60974-5** Lichtbogenschweißeinrichtungen
 Teil 5 Drahtvorschubgeräte
- EN 60974-10** Elektromagnetische Verträglichkeit (EMV) - Produktnorm für
 Lichtbogenschweißeinrichtungen
- EN 60309-1** Stecker, Steckdosen und Kupplungen für industrielle Anwendungen
 Teil 1: Allgemeine Anforderungen
- EN 60309-2** Stecker, Steckdosen und Kupplungen für industrielle Anwendungen
 Teil 2: Anforderungen und Hauptmaße für die Austauschbarkeit von Stift- und
 Buchsensteckvorrichtungen

Kreuztal, 12.11.2012

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1 PREFACE

Dear customer!

Congratulation to purchasing of this quality inverter welding machine. Please read whole Operation manual before you start.

1.1 Product introduction

IM 240-i welding machine is compact MIG-MAG welding inverter especially developed for car body repair. Its excellent brazing characteristic as well as good steel welding possibilities enables to use this device to repair all kinds of vehicles with fine quality results.

Be aware of danger resulted from welding and follow the safety and fire instructions (see the Part 7).

It is necessary to keep the device on a dry place, to protect device against moisture. It is not advisable to use the device on the open air during rain.

1.2 Assembly requirements

It is necessary to set the device for welding in protection atmosphere on a dry place with the sufficient area for cooling. The device is designed for use in covered area (under roof).

2 PUTTING INTO OPERATION

2.1 Connecting to the electric network

Check if the voltage stated on the device label complies with rated voltage of alternate voltage of your electric network.

The device can be connected to electric socket equipped with protective contact installed by authorized electrician (TN system according IEC 60364). Current circuit of socket must be protected with 16Amp melting safety fuse or circuit breaker.

The device is delivered with plug according to CEE standard. For other connections remove delivered plug and use certified plug according national standard.

230V Supply	
Net	wire color
L	Brown
N	Blue
PE	Yellow/green

110V Supply	
Net	wire color
L1	Brown
L2	Blue
PE	Yellow/green

2.2 Connecting the pressure bottle containing protective gas

Make sure You are using right gas according welded material (see part 3.3.5)

Set the pressure bottle to the stand intended for it and fasten it by belt to the holder on the back side of the device. Open a cover and after that open the bottle valve for a short time in order that the gas flows away from your body. Screw a reduction valve on the pressure bottle. Connect a hose to the MIG-MAG welding device reduction valve. The recommended gas flow is 8 – 15 liter/minute in a room without draft.

If you use an adjustable reduction valve, you can adjust a gas flow with a wing nut with a liter scale. The device must be turned on and Gas-check function activated the welding button must be pressed during adjustment.

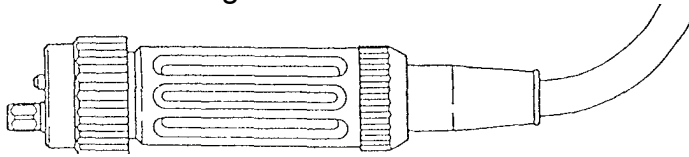
It is not allowed to repair pressure valves. It is necessary to send the defective reduction valves to service.

2.3 Connecting the return cable

It is necessary to connect the grounding clamp in the very vicinity of welded place. The transfer contact must be metallic clear free of dust and color.

2.4 MIG/MAG torch

For torch connecting is used EURO Standard torch connector. Please, tighten the connector well to eliminate the conduction losses. A loose connection can cause damage of the machine and torch.

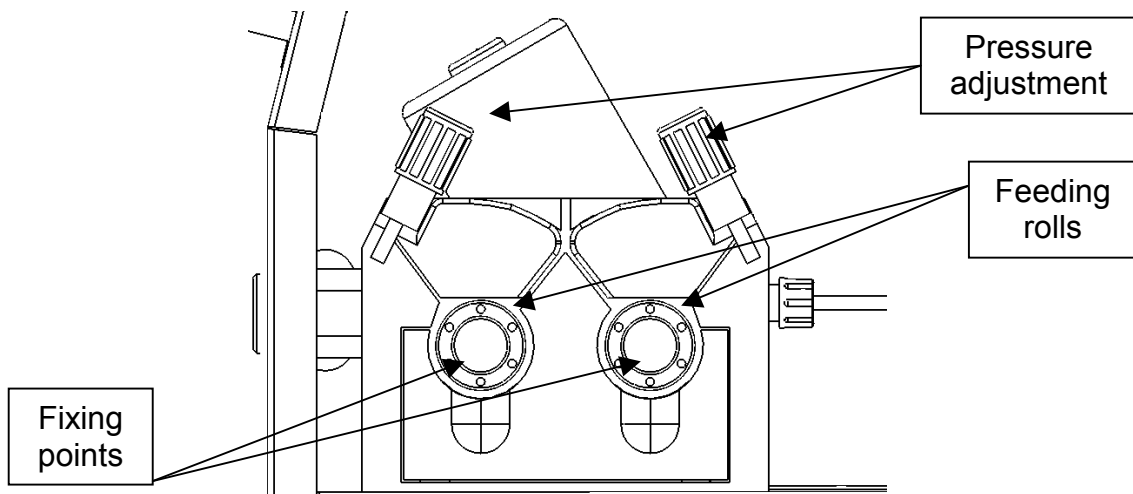


Never use damaged torch!

Make sure the contact tip match the manufacturer's recommendations for type and diameter of used wire. Connect the welding conduction main connecting plug into the main socket on the front side. Secure it with the lock nut.

In case Teflon liner is used is it necessary to use contact neck liner out of brass to provide good current conduction to the fill wire.

2.5 Selecting the feeding wheel



Please choose the feeding rolls correspond to used welding wire.

Materials	Shape	φ	Ordering Nr.
Fe, SS		0.6/0.8mm	E017100008
		0.8/1.0mm	E017100015
		1.0/1.2mm	E017100018
Al		1.0/1.2mm	E017100010
		1.2/1.6mm	E017100017
Fe, MC, FC		1.0/1.2mm	E017100055

2.6 Weld area preparation

A work piece must be clean in the welding area, free of paint, metallic coat, dirt, rust, fat and moisture. The preparation of weld must be according to technical instructions for welding.

3 SAFETY AND FIRE INSTRUCTION

Keep this device out from children. You have to follow the safety and fire instruction when you work with welding device for welding in protective atmosphere. Regulations for preventing of accidents during "welding, cutting and similar working activities".

3.1 Protection

A welder should wear a closed and dry working dress (non-flammable welding dress is the best), firm insulating shoes (jackboots), cap and leather sleeve gloves.

- Clothing made from synthetic materials and half shoes are improper.
- Insulating gloves on the both hands protect against electricity (welding circuit no load run), harmful radiation (heat and U.V. radiation), and also against flaming metal and slag drops. The effect of U.V. radiation on the uncovered body parts is similar as sunburn.

It is necessary to wear an appropriate eye protection against sparks, heat, visible and invisible radiation (protective shield or protective helmet equipped with protective glass from the 10-th to 15-th grade according to DIN 4647 standard, depending on used current).

- Do not look into an electric arc with unprotected eyes (you can go blind or you can burn). Invisible U.V. radiation causes a very painful eye conjunctiva inflammation without eyes protection, which rises even after couple of hours.
- Weld nearby the other persons, which are able to help you fast in a case of emergency. .
- The persons or assistants present nearby an electric arc have to be advised about hazard and must be equipped with a necessary protective equipment.
- A working places situated in the neighborhood have to be protected with proper shields against radiation.
- It is necessary to ensure air supply and exhaustion in closed rooms and buldings. The toxic vapors evaporate from metal coats and anticorrosive paints due to heat from the electric arc during welding.

3.2 Removing the fire hazard

Follow this instructions before welding starts:

- Remove inflammable materials and objects in 5 meter ring from the welding place.
- The inflammable materials and objects which could not be removed must be protected by covering with steel plates, wet rags etc...
- It is necessary to cover or tighten the holes, cracks in walls etc... due to uncontrollable sparking.
- Prepare the fire extinguisher, bucket of water etc...

- Be conscious of possibility of hidden fire on covered objects or in another rooms due to heat transfer.
- After finishing of welding check up the welding place for smoking parts or small fires in the time interval up to 6 or 8 hours.

3.3 Handling the pressure bottles

You have to follow respective safety regulations (technical regulations for pressure gas TRG 253 and 303).

Due to high pressure inside the bottles (up to 200 bar) it is necessary to secure them against mechanical damage, overturning, downfall, heating up (max 50°C), against sunshine exposure for a longer time and against strong frost.

- When the MIG/MAG device is being equipped with pressure bottle, you have to keep on mind that the bottle could cause overturn of device on an uneven surface. To prevent this kind of accident you should use an appropriate pressure bottles.
- Filling of the bottles is allowed only by specialized companies.

3.4 Protection against electrical accidents

It is not allowed to carry the torch under armpit or to hold it in such way, that a current could flow through human body. The device must be turned off during the longer breaks. When the welding is finished and before moving, the device must be un-plugged from the power supply. It is necessary to cut immediately off the power supply in a case of accident.

To prevent uncontrollable welding back current you have to connect the welding supply directly to the work piece by working clamp. The pipes, steel constructions etc... must not be „electric conductors“ in any case, if they are not welded themselves.

Follow this instructions in any case:

The welding current must not have any conductive connection with protective or zero conductor of the power supply network. Because the protective contact of power supply is connected to welding device, you must not put the grounding clamp down on the welding device body, when the device is connected to power supply network. The workpiece must be insulated from power supply protective and zero conductor and from the grounding conductor.

3.5 Extraordinary menace during welding

- It is not allowed to weld in the rooms with increased danger of fire or explosion. The special regulations must be followed in this areas.
- It is not allowed to weld in the tanks for gas, fuel, oil, paint etc..., even if they are empty for a long time. The remnant of content could cause an explosion.
- The welds exposed to an extraordinary strain must comply to strict safety regulations and can be welded only by trained and examined welders (e.g. pressure tanks, rails, drawing devices for cars, supporting structures).

4 Operation

4.1 Turning the device ON

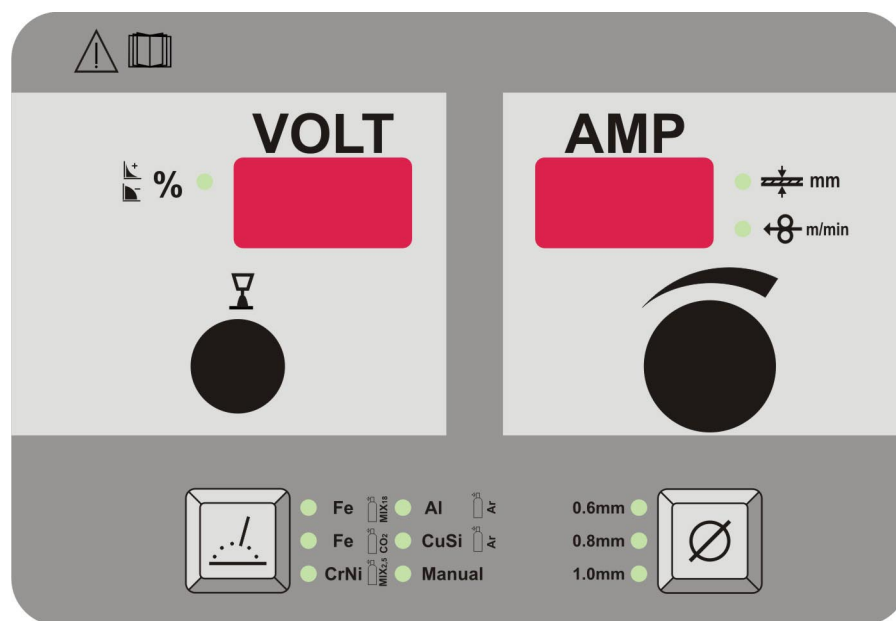
Always use the main switch to turn On and Off the device, never use the power plug for this purpose!

4.1.1 Power-on sequence

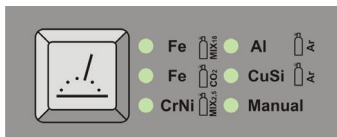
After powered special power on sequence is started on the operating panel, to give the user information about the firmware.

- a) **Firmware type** (in voltage window)
Fm – Front panel IM
- b) **A mperage rating** (in Ampere window)
200 – 200Amp
- c) **Firmware revision** (in Ampere window) r11 major . minor revision numbers.

4.2 Operating Panel



4.2.1 Filler wire material selection



- FeSg2 (MIX)** - Standard, not alloyed steel,
shielding gas: 82%Ar + 18%CO₂
- FeSg2 (CO₂)** - Standard, not alloyed steel,,
shielding gas: 100% CO₂
- CrNi** - CrNi steel AWS: 308Lsi
shielding gas: 2.5% CO₂ + 87.5%Ar
- Al** - Aluminum + 5% magnesium AlMg5,
shielding gas: 100%Ar
- Cu** - Copper silicium wire CuSi3
shielding gas: 100%Ar
- Manual** - Manual setup of wire speed and welding voltage

4.2.2 Filler wire diameter selection

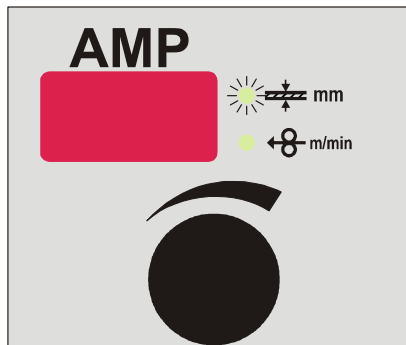
(Not available if MMA/TIG selected)



4.3 Set up, adjustment and display description

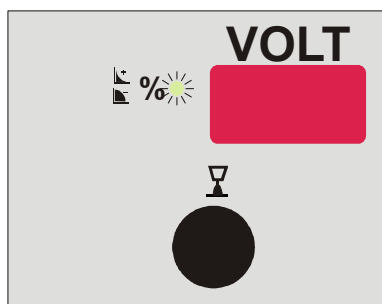
4.3.1 Synergic mode

4.3.1.1 Welding power set up

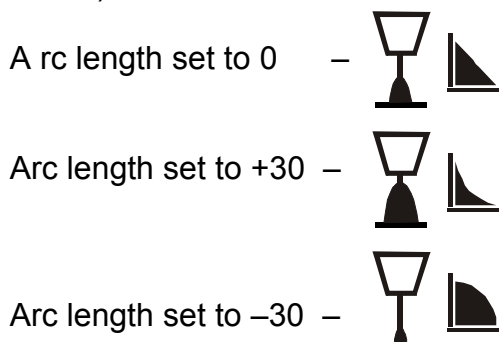


IM 240-i machines can be controlled with full synergic feature. The welding power is to adjust just with one main rotary encoder. By setup of material thickness (in millimeters) are automatically set all welding parameters .

4.3.1.2 Arc length correction

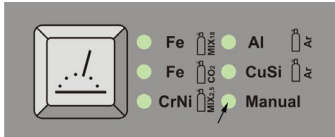


There is possible to adjust length of the welding arc. By turning the encoder in any direction is display switching from Voltage mode to Arc length correction mode (% LED Active).

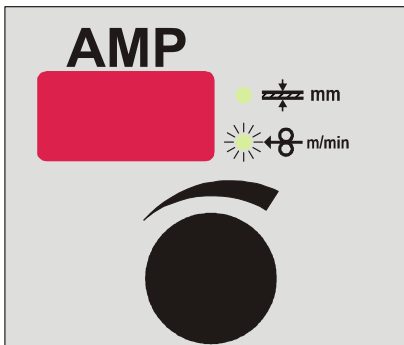


Operation manual

4.3.2 Manual mode

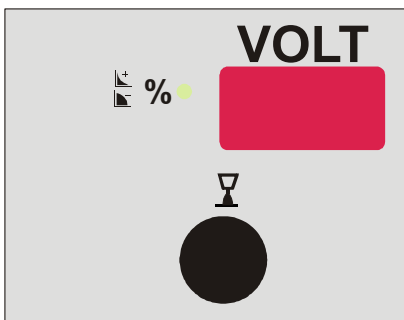


4.3.2.1 Wire speed setup



Set up wire feed speed in m/min by turning the encoder.

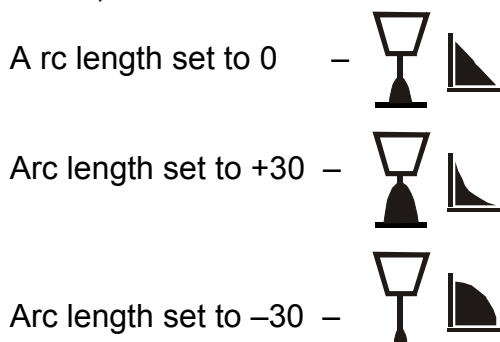
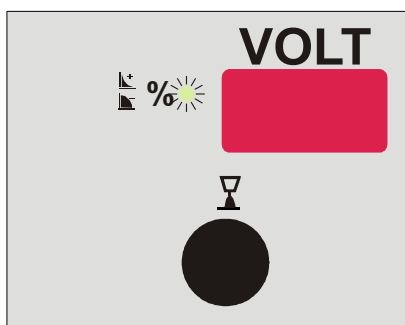
4.3.2.2 Welding voltage setup



Set up the welding voltage in Volts by turning the encoder.

4.3.2.3 Arc length correction

There is possible to adjust length of the welding arc. By turning the encoder in any direction is display switching from Voltage mode to Arc length correction mode (% LED Active).



5 CARE AND MAINTENANCE

Pull out the power cable from the socket before every maintenance and troubleshooting. The device is almost maintenancefree.

It is necessary to check feeding wheel, pressure roller and inflow nozzle regularly, if there is not some dirt. If it is, you have to clean it out.

Please, change the contact tip on the torch regularly

The complete set of pressure hoses should be cleaned up from time to time, because of embedded dust and parts.

The contact nozzle of the torch is wearing up subsequently. When the hole in the nozzle is too large, it is necessary to change the nozzle. The metal drops are embedding in the inner walls of the torch cover. Take them out if necessary. The separator is helpful and it is also a prevention against the firm caking of the drops.

You have to change the damaged cables at once.

5.1 Disposal of the machine



Do not dispose of electrical equipment together with the normal waste!

In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical equipment that has reached end of its life must be collected separately and returned to an environmentally compatible recycling facility.

6 TECHNICAL DATA

Mains connection	1~ 230V +10/-15%
Mains cable	3x2.5qmm
Fusing	16Amp delayed
Load capacity	20% @200Amp/24V
	60% @140Amp/21V
	100% @ 120Amp/20V
Peak input current I _{1p}	32Amp @200Amp/24V
Effective maximum input current I _{1eff}	15Amp @200Amp/24V/20%
No load output voltage U ₀	40.2
Efficiency	87%
Power factor	0.75
Current adjustment range	20 – 200Amp
Voltage adjustment range	10 – 35V / 0.1V step
Wire speed range	1.5 – 15 m/min
Wire feed roll diameter	37mm
Wire spool diameter	300mm max / 17kg max
Thermal class	H(180°C)
Temperature range	-10+40°C - operating temp. -40+80°C - storage temp.
Dimensions LxWxH	900x500x840mm
Weight	40kg
Degree of protection	IP23

7 TROUBLESHOOTING

Mechanical defects are mostly the result of irregular wire feeding or its blocking.

Electrical defects cause partial or full device failure. Only an authorized electrician can repair the electrical part of welding device.

The troubleshooting should be executed in the OFF mode first and in the following sequence:

- Check up the solidity of electrical connections on switches, current transformer, suppressor and also the solidity of plugged and soldered connections.
- Check up the conductivity and fuse contacts.
- Check up visually possible short circuits or winding overload (coloration).

Possible malfunction

Troubleshooting

Possible reason

Electric arc is irregular or unstable

- | | |
|--|---|
| 1. wrong welding voltage setup | adjust the voltage |
| 2. too much/little wire | adjust the wire feed regulator |
| 3. The workpiece clamp is loose or transfer resistance is too high (rust, paint) | make a good contact between workpiece and clamp |
| 4. The contact nozzle is worn up or the diameter is wrong | change it |
| 5. The gas flow is not correct | adjust the gas flow |
| 6. The workpiece is not clear in the welding area | remove paint, rust, fat etc. |
| 7. Performance grade malfunction | take the device to service |
| 8. Plug-in spiral is dirty | clean it up or change it |
| 9. Feeding malfunction | see thereafter |

Too much metal drops during welding

- | | |
|--------------------------------|--------------------------------|
| 1. too much wire | adjust the wire feed regulator |
| 2. welding voltage is too high | set up lower voltage |
| 3. workpiece is dirty | clean it up |

Feeding engine is not rotating

- | | |
|--|---|
| 1. Power malfunction | check up the connection to the socket |
| 2. Button on the torch was not pressed | press the button |
| 3. Fuse | change it (must be changed by authorized electrician) |
| 4. Engine malfunction | take the device to service |

Operation manual

Wire feeding malfunction

- | | |
|---|--|
| 1. Pressing roller is loosen | Increase the pressure to the leaf spring by using the grooved screw |
| 2. Wire has got out from feeding | Center the intake nozzle |
| 3. Wire feed wheel grove is worn up | Change the wire feed wheel |
| 4. Wire is welded to the contact nozzle | Change the contact nozzle, if the wire is deformed, lower the pressure on wire |

Device turns OFF and the “Err tMP” is displayed

- | | |
|---------------------------------|---|
| 1. Time of make is exceded (TM) | Let the device cool down and folow the instructions for TM according to device type |
|---------------------------------|---|

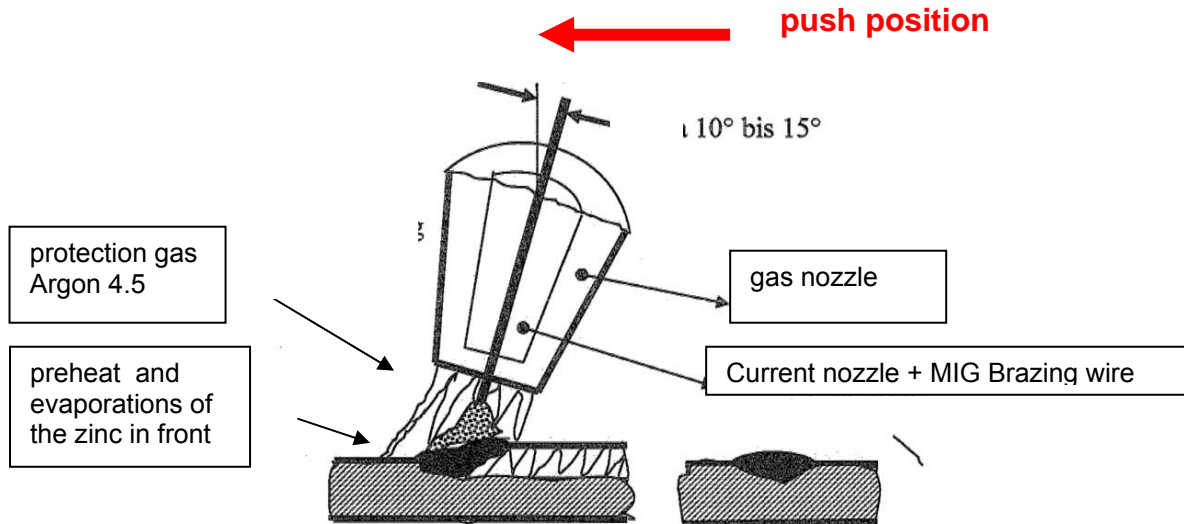
The protective gas still flows

- | | |
|---|--|
| 1. Magnetic valve is dirty and it is still open | Disconnect the torch connector and connecting hose, alternately flow a pressure air into the torch connector and connecting hose and in the same time often press the button on the torch. |
|---|--|

Only an authorized electrician can repair the eletric part of device.

Wieländer u. Schill MIG-Brazing Seminar

MIG-Brazing is a kind of soldering technique using: a welding arc together with a special area protection gas.



What kind of material you can braze?

All kind of steel plates, either coated or uncoated, such as zinc ~, phosphate ~ or aluminium coat.

The advantages of MIG-Brazing:

- The melting temperature is around 900 -1.000 °C. Therefore there is far less damage to the zinc coating next to the area you are working
- Of zinc coated sheet metal less smoke and less pores in the area
- Less temperature means less damage through heat distortion
- Less risk of corrosion in the area
- Brazing is much easier to grind, consuming less ~discs, files and grinding-paper

The disadvantages of MIG-Brazing:

- Brazing wires and argon gas are more expensive
- Sheet metal has to be clean, no paint, no factory primer
- Sheet metal has to be flush and close to each other. No distance in between.

MIG-Brazing gas:

- Inert gas Argon 100 % (4.5 and higher) or Argon + O₂ (99%+1%)

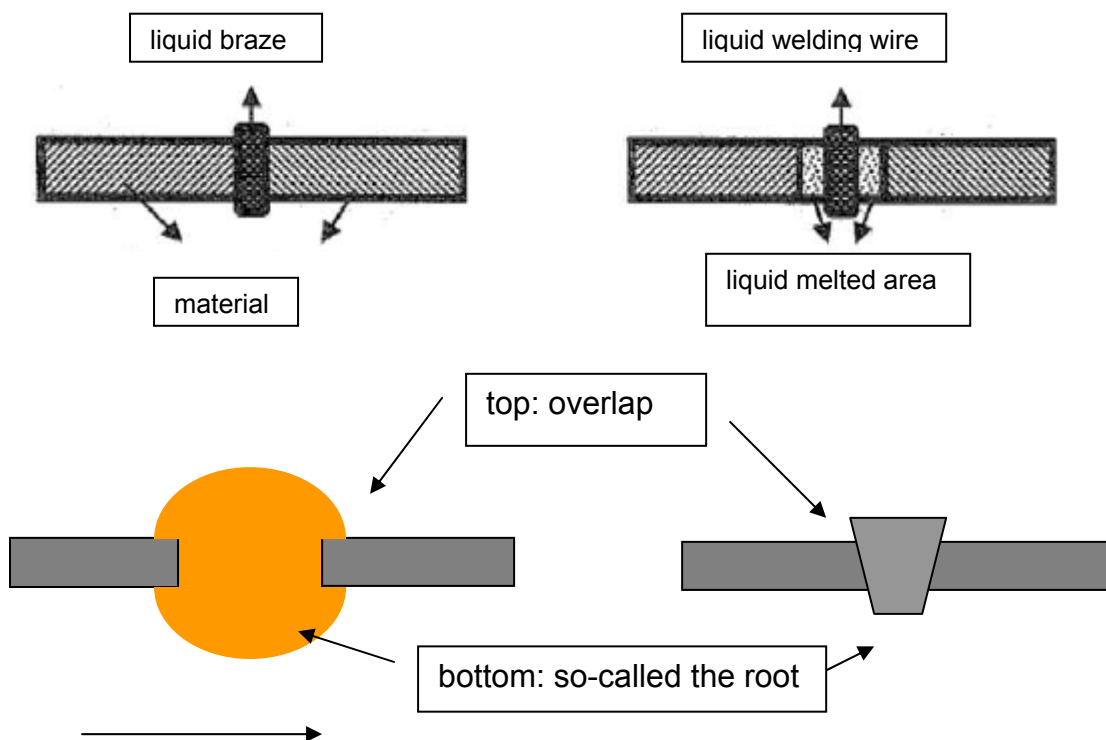
MIG-Brazing wires approved by car makers:

- CuSi3 (0,8mm + 1,0mm)
- CuAl8 or CuBzAl8 (0,8mm + 1,0mm)

The differences between MIG-Brazing and steel welding

Using the MIG-Brazing the base material never gets into liquid conditions *different* to welding with steel wire and Mixgas or CO₂ gas.

Mixgas = Argon/CO₂ 80/20, 82/18, 85/15 % = soft, no sparks, little root, especially for thin sheet metal
 CO₂ gas = 100% = very hot, sparks, deep root, preferred for thick steel



MIG-Brazing: the sheet metal will not become one with the brazing material. Steel requires around 1.400°C to melt, to become liquid. As brazing is around 900°C, the two materials left and right will stay in their shape.

Therefore it is very, very important to have a certain gap between the sheet metal so the braze is able to **penetrate in between**. At the end of the job there must be a reasonable top and bottom overlap. Some people call the overlaps also: *mushroom*

Steel welding with so-called MAG-wire gets hot up to 1.400-1.500 °C. At the end the sheet metal and the wire become *one*.

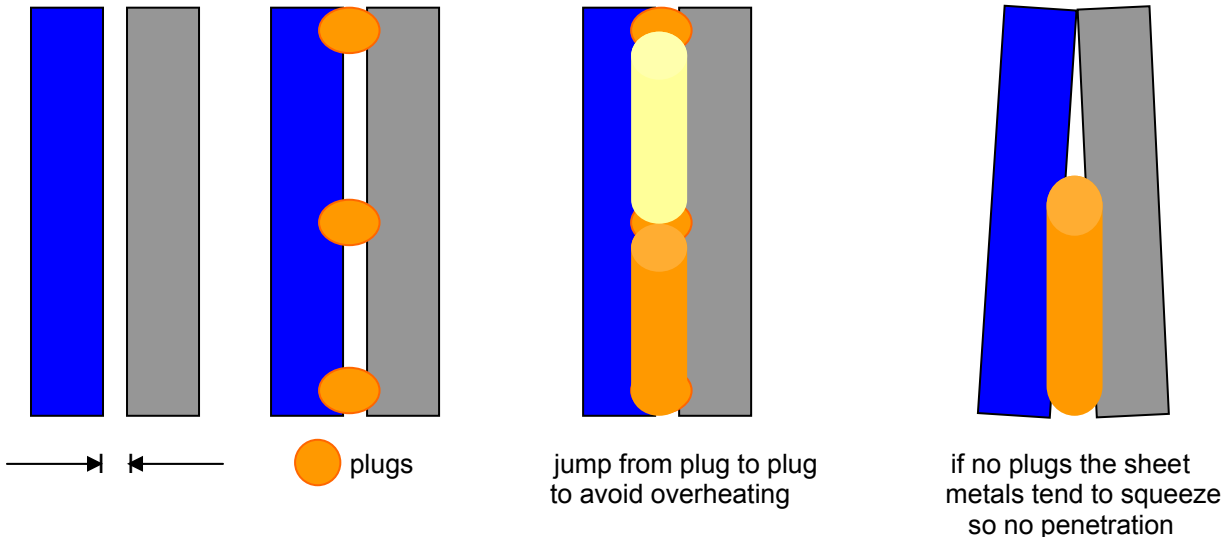
Brazing needs: a gap between the sheets. The most important thing in brazing is to respect a specified gap between the sheet metal if you work in **butt weld position**. F.i. if you do side panel repairs.

In no visible areas, such as inner wheel house or chassis legs **do not grind off** the top overlap. Just keep it and your repaired area gets even stronger. **The bottom root make sure it is big enough**, at least two times the size of the material.

Wieländer u. Schill MIG-Brazing Seminar

MIG Brazing – butt weld position

sheet metal at car
 new replacing sheet metal



Sometimes it might be necessary to re-cut the gap in between the gaps with a thin disc grinder



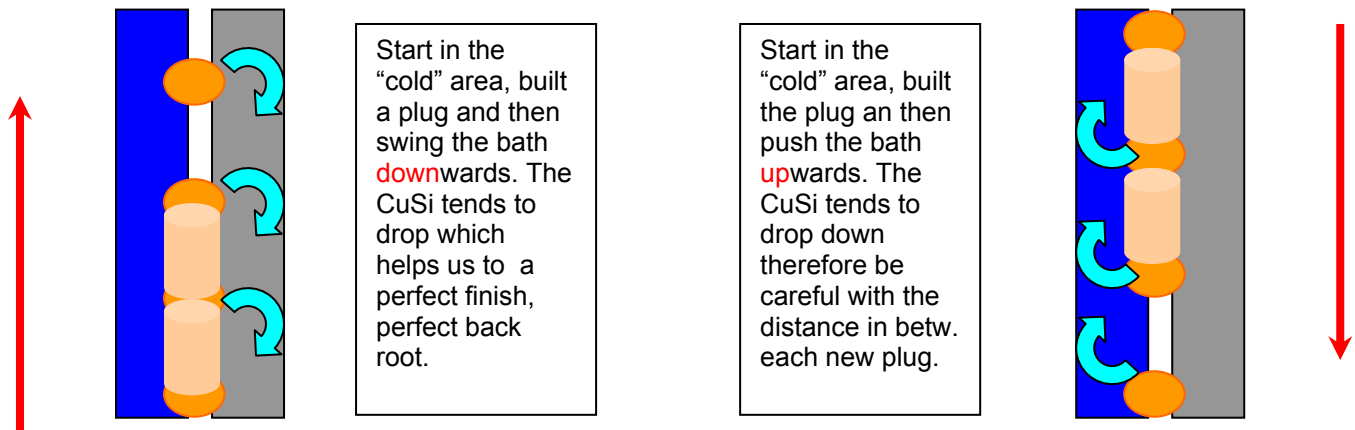
How large should be the gap?

gap 0,8-1,0mm up to $t \leq 1,2$ mm
 gap min. 1,2 mm for $t \geq 1,2$ till 2,0 mm

How far should be the plugs ● ?

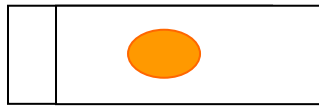
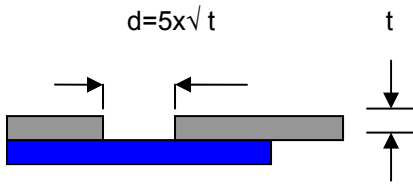
sheet metal $t \leq 1\text{mm} = \sim 50$ mm
 sheet metal $t \geq 1\text{mm} = \sim 75$ mm

Vertical positions, especially thin sheet metal: always from bottom to the top torch in neutral position in push, never pull!

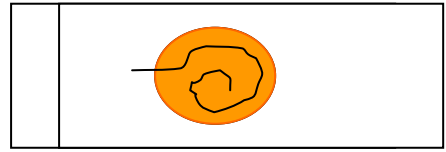
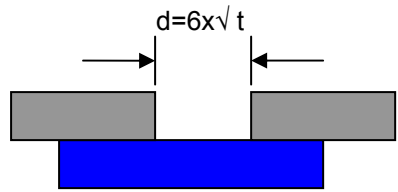


You may need to increase the amperage. Work with the strength of the arc power, keep the torch nozzle closer to the job. Use post-gas to keep everything cold!

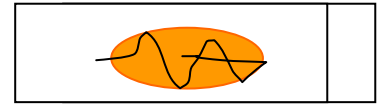
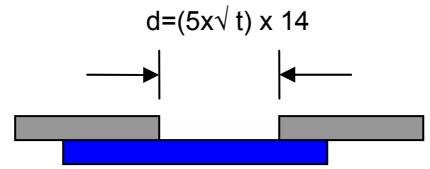
MIG-Brazing – plug holes + longitudinal holes



Instruction:
torch in neutral position, in thin sheet metal. Start the plug in the centre of the hole. Increase the amps for fast go!

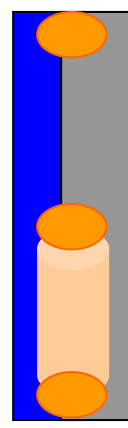
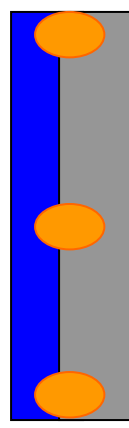
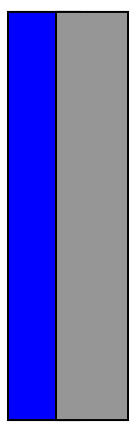


Instruction:
torch in neutral position. Start from the outside at 9 o'clock, swing around till 12 o'clock. Get the edges hot before you move into the centre



Instructions:
torch in push position. Start at the outside, swing along the long hole from left to right edge. Come back to the centre.

MIG Brazing in overlap position



In vertical jobs, please work always from bottom to the top
– see page 2

In swaged position also swing the torch from left to right to penetrate the edges.

A



B

