LAMPERT.
PRECISION WELDING

Operating manual
M280 TIG pulse welding device

M 280

OPERATING MANUAL (translation)
"M280"

Dear Customer,

This operating manual is intended to familiarise you with the commissioning process and operation of your "M280”. Please read the operating instructions carefully and follow the advice given here diligently. Disruptions and operational faults will thus be avoided. Your personal safety, constant availability and long service life can be assured by this.

THE COMMISSIONING OF THE DEVICE MUST ONLY BE UNDERTAKEN BY TRAINED SPECIALISTS AND ONLY WITHIN THE SCOPE OF APPROPRIATE USE. THE MANUFACTURER ACCEPTS NO LIABILITY FOR DAMAGES CAUSED THROUGH INAPPROPRIATE USE AND IMPROPER OPERATION. THE “GENERAL SAFETY REQUIREMENTS” AND "PERSONAL BODY PROTECTION" CHAPTERS MUST BE READ BEFORE COMMISSIONING.

Please keep these operating instructions safe.

The equipment produced by “Lampert Werktechnik GmbH” fulfils the conformity requirements of the CE mark and is constructed in accordance with the VDE guidelines.

Only use original spare parts for maintenance and overhaul work. Our customer service department will naturally be happy to help you.

THE DEVICE MUST ONLY BE OPENED OR MODIFIED BY AUTHORISED CUSTOMER SERVICE PERSONNEL, OTHERWISE ALL GUARANTEES AND WARRANTIES ARE VOID.

LAMPERT WERKTECHNIK GMBH

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1. WARNING AND INFORMATION SIGNS

	Warning! “Warning” identifies a potentially dangerous situation. If this is not avoided, the consequences can be death or severe injuries.
	Caution! "Caution!" identifies a potentially hazardous situation. If this is not avoided, the consequences can be slight or minor injuries as well as property damage.
	Note! “Note” identifies the product at risk from the hazard and possible damage to the equipment.
	Important! "Important!" designates user tips and other especially useful information. This is not a signal word for hazardous or dangerous situations.

2. APPROPRIATE USE (FIELD OF APPLICATION)

- Outdoor operation is impermissible. Use this device only in dry rooms!
- „M280“: The application of spot welds on steel alloys as well as various non-ferrous metals.

GENERALLY NO LIABILITY IS ACCEPTED FOR THE DURABILITY OF THE WELDING. WE RECOMMEND THAT THE WELDING BE CHECKED IN EVERY CASE.

- Eye protection system: Observation and microscopic viewing of objects through the ocular of the microscope/optic unit and illumination of the working area.
- Eye protection system: may only be used for welding if it has been properly connected to a M280 fine-welding device.

3. SAFETY INSTRUCTIONS

3.1 GENERAL SAFETY REQUIREMENTS

PERSONS WHO WEAR ACTIVE IMPLANTS (HEART PACEMAKERS) MUST MAINTAIN A SAFETY DISTANCE OF 20CM BETWEEN THE WELDING CURRENT CABLE / SOURCE OF THE WELDING CURRENT AND THE IMPLANT.

The opening of the device is only permitted when undertaken by an electrician. Before opening remove the mains cable and ensure that the device is de-energised. Discharge any components in the device that could hold electrical charge.
In case of doubt or uncertainty, always consult with a specialist. Our customer support department is naturally always available to assist you with their professional trained personnel, appropriate tooling and equipment.
Always use the original cables and ensure that workpiece clamps are properly attached.
Both the mains and welding currents can be a source of danger.
Always remove the mains plug when exchanging the LED unit. (Only use original replacement LED units from Lampert).
The device must be isolated from the mains power when undertaking any repair or maintenance work on the power source. The power socket is to be clearly blocked when undertaking any work on the system beyond minor manipulations where it is necessary to leave the workplace, even for brief periods.
The highest and thus the most dangerous voltage in the welding circuit is the no-load voltage. The highest permissible no-load voltages are recorded in the national and international regulations in accordance with the type of welding current, construction of the current source and the extent of the electrical hazard to the workplace.
If it can be assumed that risk-free operation is no longer possible, the unit must be put out of operation and secured against being unintentionally restarted.

It can be assumed that risk-free operation is no longer possible, if

- the equipment shows visible signs of damage,
- malfunctions occur,
- or the equipment is no longer working.

The „M280“ must, as standard, be operated with a mains voltage of 230V~.
Yellow-green wire = protective earth terminal (PE). The other wires L1 and N are to be connected to the phase and neutral conductors of the power plug.
Mains power is defined as 230V Europe-wide since introduction of Euro Norm IEC 38 (valid from May 1987).
The welding device is factory-adjusted to 230V!
This means that as a result of the tolerance range +/-10%, the system can also be operated at 220V~. Devices configured to voltages other than 230V will be designated as such by means of a label.
THE DEVICE MUST ONLY BE OPENED BY AUTHORISED SERVICE PERSONNEL!
IF THE DEVICE HAS BEEN CONFIGURED FOR A CUSTOM VOLTAGE, THE TECHNICAL DATA ON THE DEVICE SPECIFICATION PLATE APPLY! MAINS PLUGS MUST CORRESPOND TO THE MAINS VOLTAGE AND POWER CONSUMPTION OF THE WELDING EQUIPMENT (see technical data!)
THE FUSING FOR THE MAINS SUPPLY MUST BE MATCHED TO THE POWER CONSUMPTION OF THE WELDING EQUIPMENT!
ONLY USE THE SUPPLIED MAINS CABLE!

THE M280 IS A PIECE OF ELECTRICAL EQUIPMENT. NATIONAL REGULATIONS ON TESTING INTERVALS AND THE SCOPE OF REQUIRED RECURRING SAFETY-RELATED TESTS MUST BE OBSERVED.

3.2 HAZARDS AND PERSONAL BODY PROTECTION

Please also observe the relevant regulations of the respective country.

 RISK OF INJURY FROM RADIATION OR HEAT:
Protective gloves must be worn when welding.
Uncovered areas of the skin must be protected from the UV radiation generated during welding in order to avoid skin damage.
Wear suitable dry protective clothing with no synthetic fibers.
The workpiece and the electrode tip can become very hot during welding – risk of burns.
Welding can cause sparks and spatters – risk of burns.

 EYE PROTECTION WHEN WELDING:
Never look into the arc without eye protection; always use a welding mask with certified protective glass.
In addition to light and thermal radiation, which can cause dazzling and burning, the electric arc also emits UV radiation. With insufficient protection this invisible ultraviolet radiation causes very painful conjunctivitis, which can first be noticed hours later, and can also cause permanent eye damage.
The Lampert eye protection systems with its integrated LCD protective welding screen offers reliable protection against these risks and provides permanent protection from UV / IR rays in both light and dark state. The protective class of the filter is defined such that dazzling by the arc is effectively prevented.
Persons who are nearby to the electric arc and assistants must also be informed of the dangers and equipped with the appropriate protection; if necessary set up protective partition walls.

EYE PROTECTION WHEN OPERATING THE LED ILLUMINATION:
Never look into the LED lamp or its reflections without eye protection; use protective shield or safety glasses with suitable protective glass.

 SMOKES AND GASES:
When welding, especially in small spaces, ensure that there is an adequate fresh air supply or use an external extractor fan, as smoke and hazardous gases occur.

 EXPLOSION HAZARD – DANGER WHEN WELDING ON CONTAINERS:
It is not permitted to carry out welding on containers that have been used for storing gases, propellants, mineral oils or similar, even if they have been empty for a long time, as there is a risk of explosions caused by residues.
Particular regulations apply to fire and explosion endangered spaces.

 OTHER DANGERS:
The electrode tip installed in the handpiece means a risk of injury (stabbing and scratching of e.g. hand, face and eyes).

3.3 HAZARDS OF SHIELDING GAS CYLINDERS:

 Observe all applicable safety measures when handling gas cylinders as well as the safety regulations for handling gases. Gas tanks must especially be secured against falling over / falling down and heat (max. 50°C); it is particularly important to ensure they are not subjected to sunlight for extended periods and that they are protected from severe frost.

3.4 RISK OF ALLERGIC REACTIONS:

 Please note that the device's raw materials that could come into contact with the operator's skin may cause allergic reactions in susceptible people.

4. SETUP AND INSTALLATION

4.1 SET-UP OF THE DEVICE

The system is to be set up so that cooling air is able to reach all of the surfaces of the housing without hindrance. The device may not be covered! The device is to be placed on a non-combustible surface! The device should be set up on a base that is solid, level, and insulated - ideally on a suitable workbench.

4.2 DESCRIPTION OF THE REAR OF THE DEVICE

(Fig. 2)

(1) FUSEBOX ("Fuse")

(2) MAINS SWITCH as well as
AC POWER SOCKET
(for connecting the mains cable)

(3) CONNECTION SOCKET FOR EYE PROTECTION SYSTEM AND LED ILLUMINATION

(4) CONNECTION SOCKET FOR FOOT SWITCH AND ABSORBER (optional accessory)

(5) TYPE PLATE

(6) SERIAL NUMBER

(7) PROTECTIVE GAS CONNECTION ("ARGON GAS")
for 6.0 mm diameter pressure hose (max. 4.0 bar)

(8) APPROVED MAINS VOLTAGE FOR THIS DEVICE

4.3 CONNECT EYE PROTECTION AND LED ILLUMINATION TO THE „M280“:

The circular connector for the eye protection system and the LED illumination should be inserted into the connecting socket (3) on the rear of the „M280“ welding device and is to be tightened in place with the coupling nut (hand tight).

WARNING!
ONLY SUITABLE ORIGINAL EYE PROTECTION SYSTEMS FROM LAMPERT MAY BE CONNECTED TO THE WELDING SYSTEM!

OTHER EYE PROTECTION SYSTEMS ARE NOT APPROVED AND CAN LEAD TO PERMANENT HEALTH DAMAGE OR DAMAGE TO THE WELDING DEVICE.

ALWAYS OBSERVE THE OPERATING INSTRUCTIONS FOR THE CONNECTED EYE PROTECTION SYSTEM

4.4 CONNECT SHIELDING GAS SUPPLY:

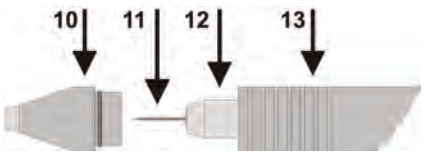
Fasten the suitable flow regulator with the corresponding tool to the shielding gas tank. ATTENTION: In doing so, always observe the enclosed special operating instructions provided. (Where possible, use argon with min. 99.9% purity, e.g. "Argon 4.6"). The pressure hose is to be fastened by hand with the help of the quick coupling adapter to the flow regulator as well as the shielding gas connector (7) on the rear of the device.

CHECK REGULARLY THAT ALL OF THE HOSE CONNECTIONS AND GAS HOSES ARE IN OPTIMAL CONDITION, ARE PROPERLY FASTENED AND ARE AIRTIGHT!

4.5 INSERTING THE ELECTRODES INTO THE WELDING HANDPIECE:

PLEASE ALWAYS CHECK THAT THE MACHINE IS SWITCHED OFF, PRIOR TO EXCHANGING THE ELECTRODES. THIS PREVENTS UNCONTROLLED TRIGGERING OF THE WELDING PROCESS.

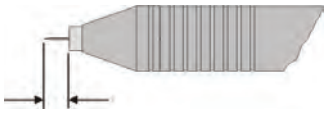
(Fig. 3)



Lightly rotate the nozzle (10) back and forth and in doing so, pull it off of the handpiece (13). It is only pushed-on, not screwed in place.

Release the threaded electrode connection (12), insert a well sharpened tungsten electrode (11) and tighten up (hand-tight – do not use a tool to tighten).

(Fig. 4)



Now replace the nozzle.

The electrode must protrude approx. 4 - 6mm out of the nozzle (Fig. 4).

ONLY USE THORIUM OXIDE FREE ORIGINAL ELECTRODES

Subsequently insert the connector of the handpiece as straight as possible into the socket (Fig. 27, p. 7) on the front of the M280 and fasten in place by tightening the coupling nut hand-tight in a clockwise direction. Insert the connecting cable used into the socket (28) on the front side of the housing.

4.6 CONNECT POWER SUPPLY:

Insert the power cable with the mains connector into the corresponding socket (2) on the rear of the housing and insert the mains plug into a suitable socket with the correct mains voltage.

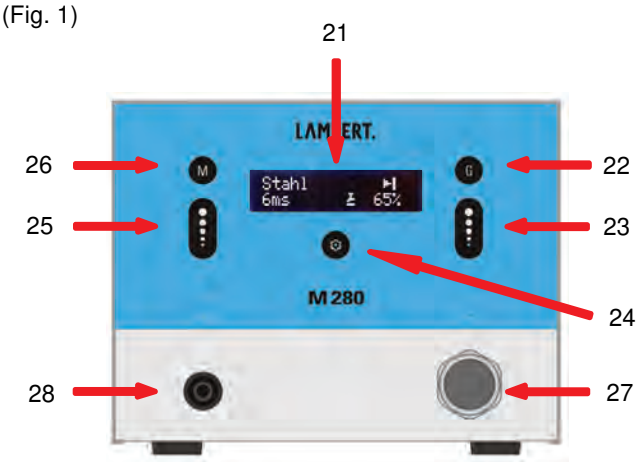
CAUTION!

AS SOON AS THE MASTER MAINS SWITCH ON YOUR „M280“ IS SWITCHED ON, THE VOLTAGE IS APPLIED TO THE CONNECTED CONTACT CLAMPS OR CABLES. IT IS TO BE ENSURED THAT THESE PARTS ARE NOT ALLOWED TO COME INTO CONTACT WITH ELECTRICALLY CONDUCTIVE OR EARTHED PARTS, SUCH AS THE HOUSING, ETC. IN DOING SO, THERE IS NO RISK FOR THE OPERATOR, WITH THE EXCEPTION OF POSSIBLE CIRCUMSTANCES ARISING FROM OPERATING ERROR.

5. COMMISSIONING

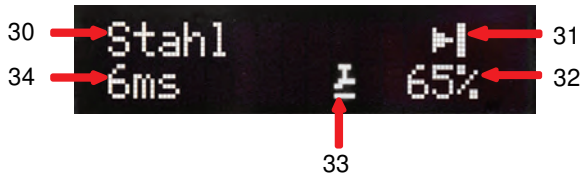
5.1 DESCRIPTION OF THE FRONT-SIDE CONTROLS

(Fig. 1)



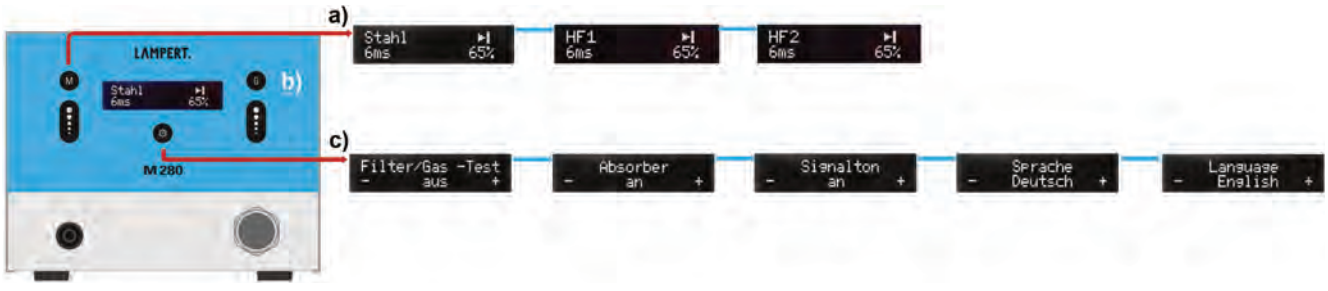
(21) DISPLAY
(22) GEOMETRY BUTTON
Preselect welding situation and pulse shape
(23) WELDING POWER (+/-) BUTTONS
(24) SETTINGS BUTTON
(25) PULSE DURATION (+/-) BUTTONS
(26) MATERIAL / METAL BUTTON
Preselect material or welding program
(27) CONNECTION SOCKET FOR HANDPIECE (-)
(28) SOCKET (+)
For connecting contact elements such as welding bench, contact terminals and clamps.

DISPLAY



(30) Material or welding program
(31) Preselected welding situation (geometry)
(32) Power output as a percentage (%)
(33) Foot switch display (optional)
(34) Pulse duration in milliseconds (ms)

5.2 EXPLANATION / OVERVIEW OF MENUS



(Fig. Schematic diagram of user levels)

ONCE IT IS SWITCHED ON, THE „M280“ STARTS UP IN ITS MAIN MENU.

a) Preselection of the material to be welded
Steel, HF1 (e.g. for certain weldable aluminium alloys), HF2 (e.g. for certain weldable brass alloys)

b) Preselection of the welding situation (geometry) (chapter 6.1.1)
c) Settings can be used to modify basic settings and launch various test functions.

5.3 SWITCHING ON THE DEVICE

First, carefully open the gas tank valve. Then switch the master mains switch (2) on the rear of the housing to the **"I"** position – the display shows the safety prompt regarding eye protection and the operating manual. Confirm your compliance with the safety instructions by pressing one of the buttons.

5.4 ADJUSTING FOR THE CORRECT GAS FLOW

PLEASE CONSIDER THAT GOOD WELDING RESULTS CAN ONLY BE ACHIEVED WITH A CORRECTLY ADJUSTED GAS FLOW.

In order to configure the correct gas flow, activate the "Gas Test" (see chapter 5.5). This opens the gas valve in the welding device. Now set the flow regulator to the correct flow rate of approx. 2 – 3 litres/min. In doing so, also observe the instructions provided with the flow regulator. Once the gas flow is correctly adjusted, quit the "Gas Test" by pressing the corresponding button.

5.5 OPERATING LEVEL "SETTINGS"

The "Settings" user level can be used to modify basic settings and launch various test functions.

- **Gas Test / Filter Test:**

Pressing the welding power (+/-) buttons (23) causes the gas valve to be opened and repeated switch-over of the eye protection filter from light to dark. This function is important in order to set the correct gas flow on the flow regulator (see chap. 5.4) and enables correct function of the eye protection filter to be checked. Pressing the buttons again causes the gas valve to be closed and quits the gas / filter test.

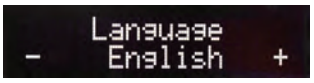
- **Absorber:**

Press the welding power (+/-) buttons (23) to enable the optionally available absorber to be activated or deactivated.

- **Welding signal tone:**

Press the welding power (+/-) buttons (23) to activate or deactivate the acoustic signal that notifies the triggering of the weld.

- **Language**:



The system can be toggled between German and English by pressing the welding power (+/-) buttons (23).

6. SELECTION OF THE WELDING PARAMETERS

6.1 SELECTION OF THE WELDING PARAMETERS

BASIC INFORMATION ABOUT THE EFFECTS OF WELDING POWER AND WELDING TIME:

POWER:

The welding power or the strength of welding energy is set with the power control (23).
The size and intensity of the welding points are controlled in this way, i.e. the higher the power the larger the welding point.
With very thin materials too high a power level can also quickly result in damage, i.e. it makes sense to experiment with samples for beginners with the „M280“ system to find the optimum power level, starting at a power of 20% or with very fine welding, even lower. Power settings between 35 and 50% are considered medium welding powers.
With copper alloys in particular it is generally not practical to increase the power level above 50% as the metal will otherwise very quickly start to “spatter” instead of welding.
Other metals can be welded with higher power levels, just as with stainless steel. A very high power level is not practical in the most usual circumstances. There is a danger of inhomogeneous welds and only experienced users should move outside this range.

WELDING TIME OR PULSE DURATION:

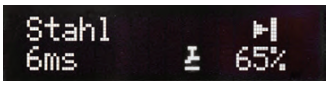
The pulse duration / welding time button (25) determines for how many milliseconds the welding power is applied, i.e. a longer pulse duration results in a longer and deeper application of the energy to the workpiece and thus simultaneously a greater development of heat.
With very thin materials or wires it is recommended to use a shorter welding time, primarily when welding near to heat-sensitive materials. Welding times of no more than 4 ms are recommended here.
With copper alloys or other highly conductive metals a longer welding time can be advantageous in order to avoid hot cracks, starting at 10 ms.

IMPORTANT FOR SUCCESSFUL OPERATION WITH THE „M280“:

Welding power and pulse duration must be considered in close context with each other in all cases! The total energy applied to the workpiece is comprised of these two parameter settings together – prior to welding this must be considered carefully following an in-depth analysis of the welding task, the materials and the workpiece geometry.

6.1.1 SELECTION OF THE WELDING PARAMETERS ON „M280 “:

The welding parameters are set in two stages:



1. In the upper area of the display, the metal to be welded is selected by means of pressing the metal / material button (26).
2. Pressing the geometry button (22) selects the given welding situation.

- The welding time can be changed at any time with the corresponding buttons (25).
- The power can also be changed at any time with the corresponding buttons (23).

6.1.2 DESCRIPTION OF THE WELDING SITUATION WITH ASSOCIATED SYMBOL ON THE SCREEN:

- The meaning of the following symbols is always the same for each of the preconfigured materials.

Universal setting for material thicknesses from 0.3 mm. This is well suited for most applications (≥ 0.3 mm).

Welding in sharp angles and tight joint situations. Here it is IMPORTANT to use short welding times of 3 to 5 msec.

Melting of welding wire. Use identical alloy wire with a diameter of 0.3 to 0.4 mm. Ideal is a diameter of 0.35 mm.

7. WELDING INSTRUCTIONS

NOTE!

PRIOR TO WELDING, ALWAYS CHECK THE FUNCTION OF THE EYE PROTECTION FILTER AS DESCRIBED IN CHAPTER 5.5 "FILTER TEST". IF THE EYE PROTECTION FILTER (SHUTTER) FAILS TO SWITCH OVER FROM LIGHT TO DARK, THEN IT MUST BE IMMEDIATELY EXCHANGED BY **SPECIALIST PERSONNEL**.

7.1 WELDING INSTRUCTIONS

- First connect a metallic blank section of the workpiece with the contact clamp.
- Lightly touch the area to be welded with the tip of the electrode until welding begins. In doing so, it is important to remain in the position where initial contact is made until welding begins, i.e. neither to follow the electrode with the workpiece when it retracts slightly in the handpiece, nor to pull back.

APPLY EXTREMELY LIGHT PRESSURE OR NO PRESSURE TO THE TIP OF THE ELECTRODE!

The welding process proceeds automatically:

- shielding gas flows around the welding point.
- A signal tone announces the arc.
- The arc triggers and the electrode retracts slightly in the handpiece.
- The shielding gas supply cuts off.

THE WELDING PROCESS CAN BE HALTED AT ANY TIME BY MEANS OF LIFTING THE ELECTRODE AWAY FROM THE WORKPIECE.

7.2 WELDING WITH FOOT SWITCH (optional accessory)

With the „M280“ switched off, connect the foot switch to the socket (4) on the rear of the device. Switch the device on, wait for the self-test to conclude and confirm the safety prompt by pressing any button. The device is now ready for operation.

THE FOOT SWITCH CAN BE ACTIVATED BY PRESSING AND HOLDING IT (APPROX. 2 SEC.). A WHITE SYMBOL APPEARS IN THE DISPLAY.

Connect a metallic blank section of the workpiece with the contact clamp. Now lightly touch the workpiece with the electrode, so that the shielding gas flows out. If the foot switch is operated in this mode, the welding process will start automatically as described in chapter 7.1.

PRESSING AND HOLDING THE FOOT SWITCH (APPROX. 2 SEC.) (WITHOUT TOUCHING A WORKPIECE) CAUSES IT TO BE DEACTIVATED AND THE WHITE SYMBOL ON THE DISPLAY DISAPPEARS.

7.3 BASICS AND TIPS

IMPORTANT!

- Always work with a well sharpened electrode (see point 7.4 for information about sharpening the electrodes).
- Ensure extremely good contact between the workpiece and the contact clamp, i.e. make contact between the workpiece and the connection cable terminal at a point which is metallically blank.
- Never weld "free hand", i.e. put your hands comfortably on the work bench. Shaking hands can cause the configured parameters to be falsified.
- Apply only light force to the electrode tip.
- Weld with the correct gas flow of 2 - 3 litres/minute and check this regularly.
- With a little experience you will notice that the angle with which you touch the workpiece with tip of the electrode affects the "direction of flow" of the welding point.
- The electrode can easily be clamped in somewhat longer for welding recessed areas.
- In many cases it is helpful to work with welding wire as a welding supplement, but never with solder.

7.4 RESHARPENING THE ELECTRODES

Please switch off the machine prior to exchanging the electrodes. This prevents uncontrolled triggering of the welding process.

If possible, the electrodes should be sharpened with a diamond disk with fine or medium grain.

The recommended angle of grinding is approx. 15°.

7.5 ADDITIONAL INFORMATION AVAILABLE ONLINE:

You will find a variety of practical tips on our website www.lampert.info clicking on “Workshop News”, where you can also subscribe to our newsletter. Furthermore in our “Showroom” you can have a look at various videos and photos of different applications.

8. CARE OF THE SYSTEM COMPONENTS

8.1 CARE OF WELDING DEVICE

Your „M280“ requires a minimum of maintenance under normal working conditions. However, it is essential that a few points are observed in order to guarantee the functionality and to keep the spot welding device fully operational for years to come.

- Check the mains plug and cable as well as all welding and connection cables regularly for damage.
- Check that the moving parts of the handpiece move easily.
- If necessary, clean the electrode threaded assembly on the handpiece, in order to ensure optimal contact with the electrodes.
- Clean the device occasionally with a suitable cloth.

IF WORK OR REPAIRS THAT ARE NOT DESCRIBED IN THESE OPERATING INSTRUCTIONS ARE NECESSARY THEN CONTACT YOUR DEALER.

WARNING!

IF FUSES REQUIRE EXCHANGING, THEN THEY MUST BE REPLACED WITH FUSES OF THE SAME TYPES AND VALUES. THE GUARANTEE IS VOID IN THE EVENT OF EXCESSIVLY HIGH FUSING!

THE DEVICE MAY ONLY BE OPENED BY A QUALIFIED ELECTRICIAN!

9. TECHNICAL DATA

9.1 TECHNICAL DATA WELDING DEVICE

Device suitable for welding in dry rooms

Mains voltage	~230 V / 50-60 Hz +/-10%
Mains fusing	T 3.15 A
Power consumption (during welding)	400VA
Closed-circuit voltage	30 – 43 V
No-load voltage	43 V
Duty cycle X	80 %
Max. charging time	0.8 s
Shielding gas	min. ARGON 99.996%
Maximum gas pressure	4 bar
Protection class	I
Insulation class	B
Protection type	IP 21S
Weight	6,5 kg

9.2 TYPE PLATE

Explanation of pictographs:

A	Current	V	Voltage	IP	Protection type	Hz	Hertz
~	Alternating current (AC)	⎓	Direct current	1 ~ 50-60Hz 	Mains input 1 phase / AC / 50-60Hz		Read operating manual
U_0	No-load voltage	U_1	Mains voltage	U_2	Voltage at nominal load		Tungsten inert gas welding
	Earthing (earth)	I_2	Nominal welding current	I_{1max}	Power consumption under max. load	I_{1eff}	Power consumption under nominal load
X	Cyclic duration factor		Single-phase transformer		Keep away from water		

9.3 WARNING NOTICES:

	Breathing welding fumes and gases can be hazardous to your health.
	Welding sparks, hot workpiece, and hot equipment can cause fires and burns.
	Arc rays from the welding process can burn eyes and skin.
	Magnetic fields can affect pacemakers.

10. TROUBLESHOOTING

10.1 WELDING DEVICE

	FAULT	CAUSE	REMEDY
1	**No welding current**		
	Mains master switch on, display remains off	Mains cable interrupted	Check mains cable and mains voltage
		Device fuse blown	Replace device fuse with identical fuse (same type and value)
2	**No welding current**		
	Mains master switch on	Welding cable connections interrupted	Check plugged connections
		Poor or zero contact to the workpiece	Establish connection to the workpiece, fasten contact clamps directly to the workpiece
3	**No welding current**		
	Mains master switch on	Fault due to leakage current	Switch device off and back on again
			If fault reoccurs, arrange for servicing of device
4	**Mains fuse blows or automatic circuit breaker trips**	Mains insufficiently fused or incorrect automatic circuit breaker	Fuse mains properly
		Mains protection trips during idling	arrange for servicing of device
5	**Poor welding characteristics**	Incorrect shielding gas	Use inert shielding gas (Argon 4.6)
6	**Poor ignition characteristics**	Electrode clamped loosely in handpiece	Tighten the clamping nut in the handpiece (chap.11, no.41) by hand, however, tighten firmly.

7	**Oxidation and rusting**	Excessive gas pressure	Reduce flow rate - approx. 2 l/min is recommended
8	**Severe oxidation of the welding points**	Incorrect shielding gas	Use inert shielding gas (Argon 4.6)
9	**Tungsten inclusions in base material**	Excessive pressure of the electrodes on the workpiece	Touch workpiece with extremely light pressure.
10	**Tungsten electrode welds to workpiece**	Excessive pressure of the electrodes on the workpiece	Touch workpiece with extremely light pressure.
11	**Tungsten electrode melts off immediately**	Electrode sharpened too steeply	Use the recommended angle of grinding (approx. 15°)
12	**Static discharge over the surface of the device**	Special local conditions	Use special foot mat for the workspace
13	**Device begins to weld immediately when touching the workpiece (no gas pre-flow)**	Fault	Immediately shut down the device, arrange for servicing.

11. SPARE PARTS LIST

Handpiece

(37)	Nozzle (Ø 3 mm - Ø 4 mm)	100 150 x
(38)	Clamping nut	100 152
(39)	Chuck Ø 0.5-0.6 / 0.8 mm	100 15x
(40)	Handpiece complete	100 100 04

Gas hose:

Gas hose 6 x 4 mm (sold by the meter)	100 153

PLEASE NOTE!
Nozzle (37), clamping nut (38), electrodes and clamping tongs (39) are wearing parts and are not covered by the guarantee.

12. DISPOSAL INFORMATION:

Render discarded devices unusable by removing the mains cable.
Only for EU countries: In accordance with EU directive 2012/19/EU regarding the disposal of used electrical and electronic equipment, discarded electrical devices must be separated and collected and sent for recovery in an environmentally friendly manner.

13. EC – DECLARATION OF CONFORMITY

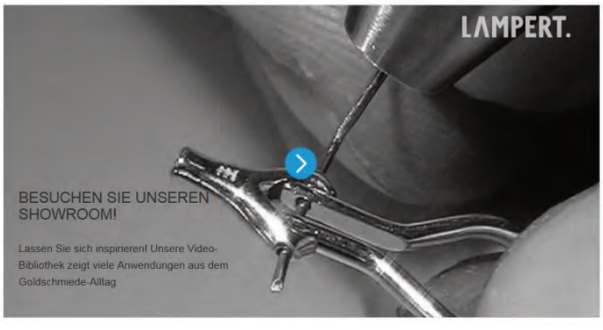
Please find enclosed to this shipment the separate document – Declaration of Conformity.

WORKSHOP NEWS

You are interested in the possibilities of use of our fine-welding devices? Or you are searching for one or another tip on working with your „M280“? Then just sign up for our newsletter on www.lampert.info!

VISIT OUR SHOWROOM!

Our video library is showing many applications from everyday goldsmith activities, our photo gallery various examples of use. Get inspired on www.lampert.info!



Born in Germany.

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