

## Operating instructions

### MICRO BRAZING AND WELDING UNIT Lötstar 141



**It is of importance to read the instructions before use! If you don't read them: Danger!**  
**This machine should only be operated in accordance with the relevant safety regulations !**  
**Only for professional use!**

**Subject to technical alteration without prior notice !**

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## 1. Safety instructions

### 1.1 Handling the electrolyte

These safety instructions must be strictly followed, both, at the initial operation of the soldering unit as well as when refilling the reactor with distilled water!



**Caution! Electrolyte causes severe cauterization!**

**Always wear gloves resistant to alkaline solutions and safety goggles when handling the electrolyte!** Do not eat, drink, smoke or snuff when filling! Wash your hands after having filled the reactor!

Keep the electrolyte out of the eyes and off the skin! If accidental contact with eyes occurs, immediately rinse eye (eyelid open) for several minutes with water and seek medical assistance.

In case of skin contact, wash carefully with soap and water and rinse well.

In case of overfilling, never suck up electrolyte using a tube and your mouth. There is immediate danger of severe cauterization! In case of accidental overfilling, the surplus electrolyte must be removed with the appropriate suction implements that are resistant to alkaline solutions.

Containers with remaining electrolyte should be kept tightly closed and away from frost. Unauthorized persons, especially children must be kept from the containers. Rinse empty electrolyte containers with plenty of running water. Normal disposal is possible, although it is advisable to ask local authorities about special provisions.

### 1.2 Handling of evaporating liquid

For many applications is the use of the MIG-O-MAT evaporating liquid type BLQ-1800 optimal. Compared with the former comparable appliances using often liquids with a high content of methanol, this evaporating liquid is not toxic! The functions of the evaporating liquids are described in paragraph 2 to this operation manual.



**Caution, the evaporating liquid type BLQ-1800 is easily flammable!**

While filling the evaporation glass cylinder avoid the inhalation of the steam. Keep ignition sources away. Do not eat, drink or smoke while handling the evaporating liquid!

**Wear safety glasses and safety clothes! Take care of good room ventilation!**

Close tightly container and evaporation unit! Keep storage container away from ignition sources.

### 1.3 Dangers of gas and burning flame

Do not let the machine run without supervision. The escaping gas is highly flammable and explosive. When the appliance is turned off and pressureless, the gas lines are filled with air. Therefore, after starting the unit, please allow the flowing gas to press this air out of the gas system before you light the gas. After finishing work, shut the valve and turn the machine off. Then open the valve until the work pressure gauge shows zero. Whenever unlit gas escapes without supervision, there is the danger of fire and explosion! Keep flames and other ignition sources away when refilling the reactor - even the open pressureless reactor contains highly explosive gas!



**Immediately before opening the reactor for a level control or a refill with distilled water, touch with both hands cap nuts on the upper part of the appliance or the sheet metal screws on the housing, to prevent electrostatic sparks!**

For short interruptions of use, hang the torch with burning flame on the soldering stand. Make sure the flame has enough distance to flammable things.

During soldering and welding, take care for sufficient ventilation!

**Observe accident prevention regulations!**

### 1.4 Dangers of electrical current

Except for the change of the mains fuse, electrical repairs should only be performed by a skilled electrician. Turn to our after-sales service for help in the case of technical problems (malfunctions).

## 2. Construction and options

### 2.1 Function



Fig. 1 : LÖTSTAR 141 – View from the front

MIG-O-MAT micro soldering and welding units of the series **Lötstar** are machines with their own gas production. By means of the electrolysis of an appropriate electrolyte, distilled water is transformed into a hydrogen-oxygen mixture. This mixture is then used as gas for a micro torch. The mixture is made up in the same ratio as water  $H_2O$ , i. e. two parts hydrogen to one part oxygen. In combustion, the gaseous components unite without residue to volatile water vapor.

Gas production takes place electro-chemically through electrolysis. The distilled water is made electrically conductive by means of the electrolyte liquid. The electrolyte itself is not used up during this process of electrolysis and consequently does not need to be changed over a long period of time. To keep the machine running, it is merely necessary to add distilled water from time to time to ensure the correct filling level of the electrolyte.

The temperature of the pure hydrogen-oxygen flame reaches abt. 2 850 °C. It is characteristic for this type of flame to be almost invisible with a low flame capacity. The time needed to melt a metal, by soldering or welding, is not only determined by the flame temperature but also by the calorific value and the velocity with which the flame energy is transported into the work piece. For this reason, the gas that flows out of the gas exit (pos. 5, fig. 1) of the pressure stable reactor and through the condensate separator / gas filter (pos. 3, fig. 1) receives a third component in the evaporation cylinder (pos. 2, fig. 1). This component adapts the flame capacity to the job required and also adds colour to the flame, which increases work safety.

Mainly are still used as evaporating liquid methanol or fluxing agents with methanol. The “fluxing agent solvents” are especially popular because of the bright green colouring of the flame. Here is added to the methanol a little amount of a borax compound, which may however crystallize at little humidity and so, flame barriers and nozzles can be obstructed. Besides the considerable danger of disturbances of the appliances by obstructions, it has to be observed that methanol and all offered fluxing agents are highly toxic! Therefore, new evaporating liquids as the **MIG-O-MAT BLQ-1800** will replace these agents, in the future. The evaporating liquid MIG-O-MAT BLQ-1800 colours the flame bright blue and is not toxic!

The necessary safety for the operator is guaranteed by a wealth of measures like flame barriers at the outlet of the device and in the micro torch, by a thermal after flow barrier and by the surveillance of the temperature of the reactor, the temperature of the transformer and the gas pressure by the pressure sensor and the from it independent safety press switch.

After the evaporation cylinder, the gas flows through the flame barrier with temperature activated cut-off. (pos.1, fig. 1), in the following called „safety valve (flame barrier)“. Via the gas tube, the gas reaches the micro torch (pos. 6, fig. 1), consisting of the handle with block valve and detachable nozzle. Depending on the purpose, different nozzle diameters can be selected.

The following table shows the main technical characteristics of the **Lötstar 141**:

	<b>Lötstar 141</b>
Outside dimensions (length x width x height) in mm	395 x 275 x 445 (265 without upper part)
Max. gas production in litres per hour	140
Mains voltage in V at 50 Hz	230
Required mains fuse in A	10
Max. Nozzle size (inside diameter in mm)	1,1 ( 0,7)
Weight in kg	25
Contactless electronic pressure control and continuously variable setting of gas pressure	yes
Temperature controlled „whisper cooling“	yes
Service hour meter	yes
Electronic level control of the electrolyte	Option
Trolley	Option

The constructive dimensioning and the design had been carried out in accordance with the just valid construction regulations. The Lötstar 141 complies with the German industrial safety standard DIN 32 508. It bears the CE-mark

### 3. Optional Equipment

#### 3.1 Trolley

If desired, the Lötstar 141 can be equipped with a trolley without assembly expenditure. For that, the appliance is just placed with the feet on a trolley. Out of the four easy-going rollers are the two front rollers carried out as steering rollers with locking brake.

#### 3.2 Electronic filling level control

The electronic filling level control of the reactor is a special version in accordance with customers' requirements. The operator is reminded by a warning buzzer to refill. In the display appears the warning message: > Refill dest. water! <. The warning tone can be switched off by a short actuating of a key. In spite of this warning work can be continued still for some time.

But if not soon distilled water is refilled, the appliance switches off the gas production automatically, as soon as a critical low electrolyte level is reached. The signal tone can be switched off by pressing any of the four keys. In the display appears: > Dry-running protection!– Refill dest. water! <. To continue with working is only possible when the reactor is refilled again with distilled water in accordance with chapter 7.1.

#### 3.3 Special execution of the top part

With the word „top part“ are combined the on the appliance installed components for the gas processing at the MIG-O-MAT soldering units. The standard version of the top part is consisting of the condensate separator/filter (pos.2), the booster (pos. 3) and the flame barrier/ temperature activated cut off valve (pos. 4), as shown in illustration 1.

##### **Top part with platinum outlet (gas outlet in front of the evaporating glass cylinder)**

For applications which require that the flame has to be free of carbon, the gas should not be led through evaporation liquids which contain carbon. As far as these kind of works are only arising occasionally, it is sufficient when the booster remains unfilled. In case of changing jobs, the top part may be equipped with an additional outlet in front of the booster. This gas outlet has to be equipped with a special flame barrier/ temperature activated cut off valve. For the locking of the outlet is used the additional micro torch, included in the scope of delivery. It is obligatory to work always only with one of the both outlets!

If required, please ask for additional information!

#### 4. Conditions of assembly, storage and transportation

Micro soldering and welding units must be set up on a place where they are protected from rain and frost, where they can be operated under constant supervision and where the signal buzzer within the unit can be heard. clearly. The cooling air must be able to pass unhindered through the ventilation ducts on the right and left side. Make sure that the machines will not be additionally heated by neighbouring sources of heat.

The machines are delivered in suitable packaging. The transportation position on the packaging is to be kept. Usually the machines are delivered with filled reactor and empty evaporation cylinder . The evaporating liquid comes separately in plastic containers. When transporting the machines, observe the regulations concerning transportation of dangerous goods.

The glasses for condensate separator / gas filter and evaporation cylinder require special care in transport. The respective caution symbols can be found on the transport packaging.

Transportation of filled machines in the work area is only allowed in work position, otherwise serious damage to the machine could result, for which MIG-O-MAT must refuse any liability. For longer transports, empty evaporating liquid into adequate and marked containers.

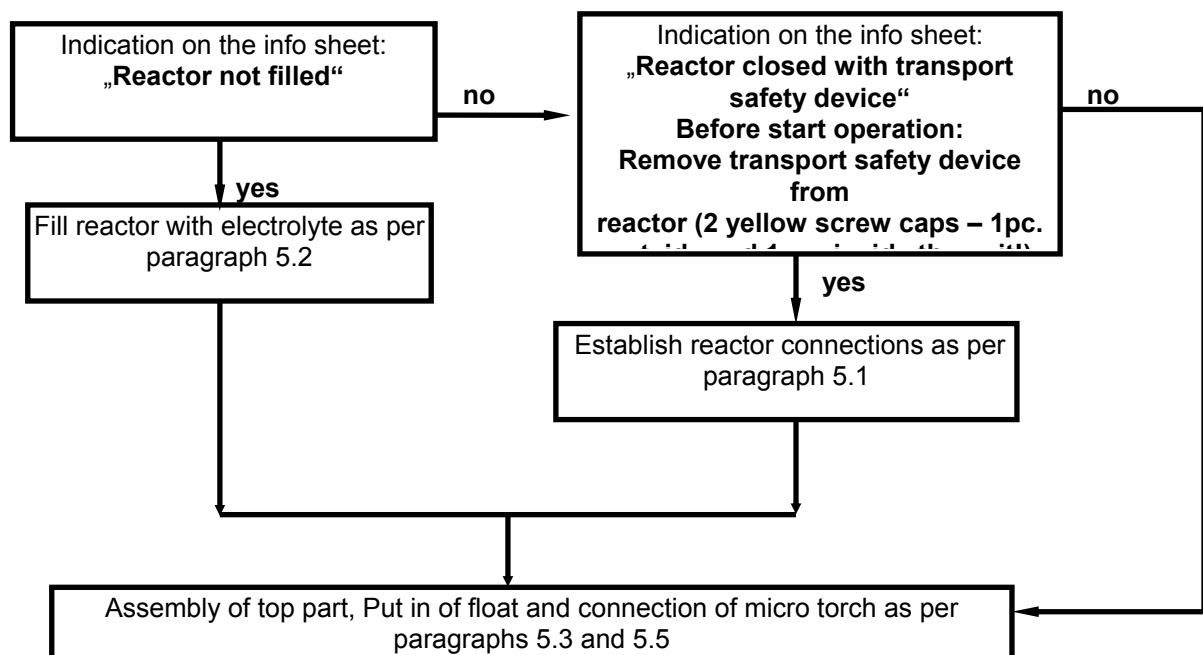
In order to prevent the electrolyte from leaking into the hose system, the connection pieces of the reactor (at gas and measurement exit) must be closed tight, as given in paragraph 5.1. The necessary screw plugs can be ordered from **MIG-O-MAT**. The measuring hose removed for the transport should be kept in a plastic bag. Plastic bag and plastic cap nuts can be ordered from **MIG-O-MAT** .

**Attention:** Even with closed reactor-exits, the appliance shall not be tilted during transport; it shall only be transported in work position. If it is impossible to ensure this, the unit shall not be transported at all in conditions.

#### 5. Preparation of the machine for initial operation

For the first operation of the micro soldering appliances, please follow the steps indicated in paragraphs 5.1 to 5.4. Upon your request our MIG-O-MAT field service workers or the resp. authorized service partners prepare together with you the machine for the first use and explain its operation, maintenance and technical safety issues to you.

Please find enclosed in the packaging of the unit an information sheet containing important information about transport condition and transport safety devices and is of importance for the initial operation.



**Remaining steps like daily operation !!**





### 5.3 Put float into the filler neck

Put the glass float situated in the accessory bag with the thick end first into the filler neck of the reactor (pos. 6, fig. 1). **The float should be flush with the top of the filler neck.** If necessary, the required amount of electrolyte has to be refilled. Provided, the reactor was already filled with electrolyte ex works, only distilled water has to be refilled. By no means, the top of the float should be higher than 5 mm over the edge of the filler neck. After that, screw on the sealing cap of the filler neck and fasten it hand-tightly.



#### **Caution!**

**An overfilling of the reactor with electrolyte leads to damages of the appliance, for which we cannot give any warranty! It is not allowed to start any operation with such an appliance!**

### 5.4 Installation of the top part

The „top“ consists of the condensate separator (gas filter) with tube filter, evaporation cylinder with compensation container and the sintered gas distributor (sinter filter), the safety valve (flame barrier and temperature activated cut off valve), screw fittings (lock cap, lock ring etc.) and of 2 holding angles to fix the assembled top part onto the brazing unit (see fig. 4).

The top part is delivered completely pre-assembled and has to be screwed on with both holding angles on the threaded bolts protruding of the housing lid. Before that, the 4 nuts of the threaded bolts have to be removed. A wrench with jaw size 10 is required to fasten the screws.

The gas outlet hose is screwed by means of a wrench (jaw size 19) tightly with the gas outlet cap of the reactor (pos. 1, ill. 1). By a slight moving of the gas connection fixed in the connection nut has to be ensured that the cone of the connection hose is placed vertically in the filler neck. After that, the connection has to be screwed on very tightly by means of a wrench. At the same time, the reactor has to be hold with one hand at the filler neck. A slight moving of the reactor is not important as it is fixed flexible.

### 5.5 Connecting the micro torch

The enclosed gas tube is the link between the micro torch (pos. 5, fig. 1) and the gas exit of the safety valve (flame barrier) (fig. 4). Screw the knurled nut down tight so that the connection is gas tight.

The **Lötstar 141** are delivered with a nozzle set with nozzles of the standard sizes 0.6; 0.7; 0.8; 0.9 and 1.1. The use of larger nozzles is not allowed. The use of smaller nozzles is trouble-free possible. The suitable nozzle out of the nozzle set has to be selected in accordance with the working task and to be placed on the conical top of the grip end.

## 6. Set into operation

### 6.1 Checking the filling level of the reactor – Refilling with distilled water

Check the filling level of the reactor before operation, even when the appliance has been delivered in filled condition. If necessary, refill with distilled water (see paragraph 7.1).

### 6.2 Filling / checking / refilling the top part with operation liquids

Fill the evaporation cylinder up to the filling mark with the evaporation liquid BLQ 1800, delivered in a separate container.

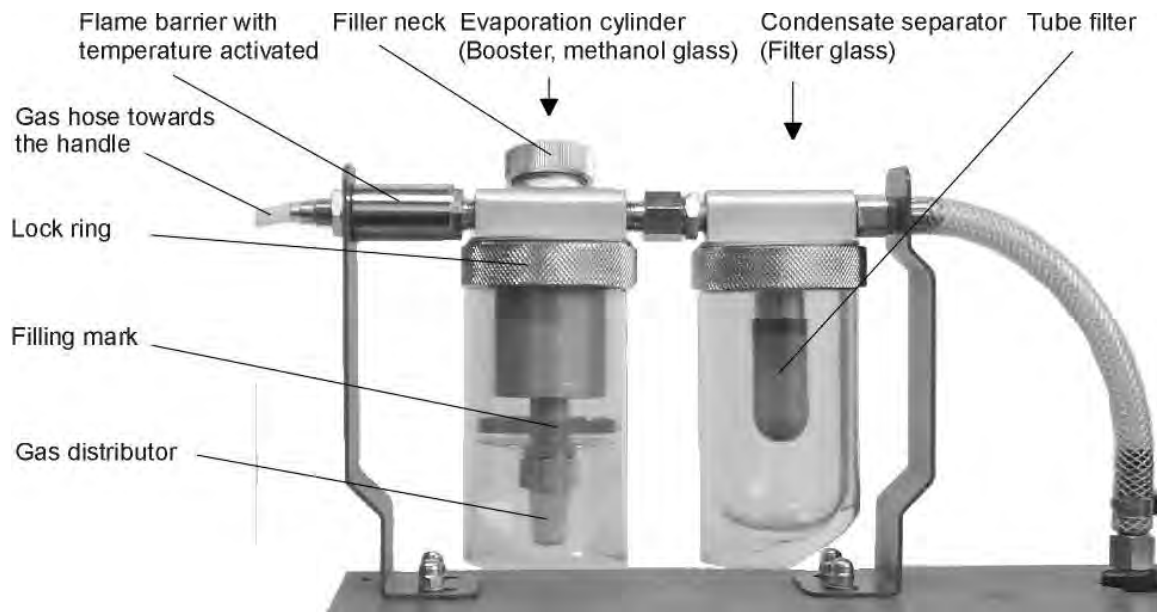


Fig. 4 : Top part with filter, evaporator and safety valve (flame barrier)

**Caution!** It is obligatory that filling level does not pass over the mark on the glass. Only by that is ensured that the evaporating liquid is not sucked in the condensate separator (glass with filtering candle) in case of a chilling of the reactor (in that way is caused a vacuum).

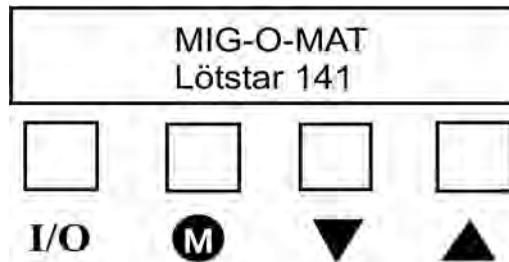
### 6.3 Mains supply

Attention! The **Lötstar 141** is designed for a mains voltage of 230 V. A connection is only allowed to sockets with a net line with a fuse protection of at least 16 A.

Plug in the mains plug when main switch is switched off in position **I/O** (position „0“).

## 6.4 Switching on the appliance

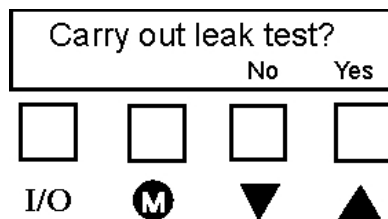
The appliance is switched on at the main switch. The main switch is located on the back of the appliance, on the top, left. While switching-on at the main switch, the appliance is shifted in stand-by-operation. The display illumination is switched on and it appears:



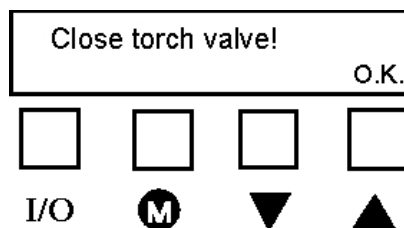
The switching off of the appliance at the main switch is only necessary in case of very long work interruptions (end of the working day, weekend, holiday). In stand-by-operation, at a cooled-down appliance, the power consumption is reduced to a minimum. In case of a daily stand-by-operation of 8 hours, the necessary, annual power costs are abt.1 Euro. The indication in the display shows that the main switch is switched on.

## 6.5 Leak test

By a short pressure on the **I/O** – key the Lötstar 141 is actuated. At a temperature which is lower than the leak test temperature barrier, you are forced to decide, whether an automatic leak test shall be carried out or not:

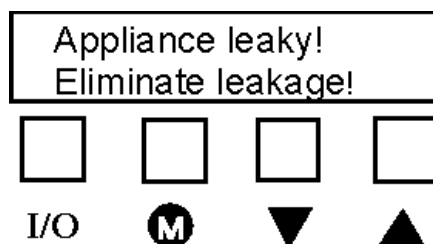


After actuation of the key ▲ you will be forced to check and to acknowledge that the valve at the micro torch and the filler necks at the reactor and at the evaporating cylinder are closed tightly.



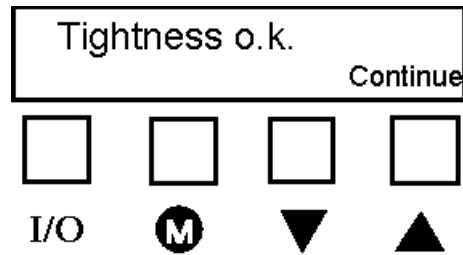
By actuation of the key below „O.K.“ the leak test is starting. Please wait until in the display is indicated the result of the test. This takes about 25 to 30 seconds!

When the appliance is not tight appears:



Before work can be started, the leakages have to be detected and eliminated. For that, please take into consideration the indications in chapter 8, „Indications for the elimination of malfunctions“. Before opening of the appliance, it has to be disconnected from the main supply (Switch off main supply, pull main plug out of the socket!).

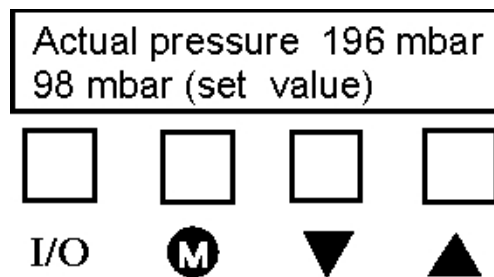
If the appliance is impenetrable, appears:



The actuation of the key below >Continue<, starts the gas production:

## 6.6 Selection of the torch nozzle and adaptation of gas production

In the display is indicated in the upper line the actual operation pressure in millibar, e. g. > 196 mbar < and in the lower line the at the appliance adjusted set value of the working pressure, e. g. > 98 mbar <:



By actuation of the key ▼ the set value of the pressure can be decreased and by pressing the key ▲ increased.

**Note:** The maximum, selectable working pressure value is fixed in the factory to 200 mbar and the minimum gas pressure to 50 mbar.

Depending on the selected nozzle size of the micro torch is adjusted the necessary gas production in that way, that an optimal flame is produced. The automatic pressure regulation device is keeping the pressure constantly, by comparing constantly the set value with the actual gas pressure value and adjusting the gas production accordingly.

The gas pressure should be between 50 and 150 mbar, depending on the working task. If necessary, the quantity of the used torches at the same time or the nozzle size has to be reduced.

Only when the adjusted set value of the gas pressure is adjusted below the reachable actual gas pressure, an adjustment of the mains voltage fluctuations resp. the levelling out of pressure variations is possible by switching-on or off of single torches. As greater the distance between the maximum reachable pressure for each nozzle and the set pressure value is selected as faster the appliance is reacting to interferences or to a switching off a torch in case of an use of several torches and as more constant are the flame conditions.

With an increasing gas pressure, the flame gets „harder“, with a decreasing gas pressure, the flame gets „softer“. The **Lötstar 141** allows an ideal adaptation of the „flame characteristic“ to the working task. If the selected set value of gas pressure for the selected nozzle is too low, which is causing that the burning speed of the gas is higher than the streaming out speed, the flame is flashing back in the nozzle. By that, often the nozzle is destroyed. The back stroke of the flame is suffocated in the grip part by the back stroke safety device. By that, the back stroke safety device is contaminated and the gas flow ability of the grip part reduced. If this operation is repeated several times, the grip part can be obstructed completely.

## 6.7 Working break

If the work is interrupted short-term, the micro torch with burning flame can be hung on the torch stand. In that case it has been taken care that the flame of the torch cannot reach any flammable material, also in the case that the position of the torch top is changing. In any case, it is safer to blow out the flame and to close the valve of the grip part.

In case of longer working breaks the flame has to be extinguished and the valve of the torch has been closed. By pressing the **I/O** – key below the display, the gas production is stopped and the appliance is changed automatically to stand-by-mode. By that, with a reduced number of revolutions of the ventilator, the main components reactor, rectifier and main transformer are cooled down in that way, that any damages due to a thermal overheating are excluded. As soon as the appliance is cooled down, the control device is switching off also the ventilator.

Provided, after a longer work term, the appliance is switched off directly at the main switch, damages due to overheating are not excluded.

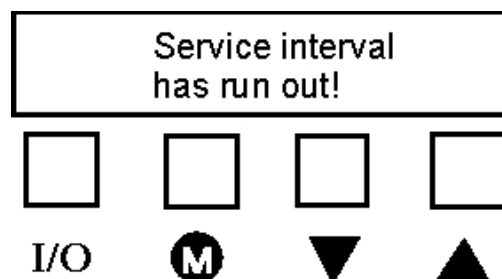
## 6.8 End of work

Extinguish the flame of the torch valve by turning fast clockwise. Finish gas production by pressing the **I/O** –key. Open the valve of the micro valve as long as no more any gas bubbles are bubbling in the booster glas (pos. 3, ill. 1). Close the valve again.

By pressing the key **I/O** not only the gas production is stopped but also the appliance is automatically changed to stand-by-mode. The appliance can remain in this condition, for a longer time. By switching off at the main switch (at top left, at the back of the appliance) the stand-by-mode is finished. The indication in the display disappears.

## 6.9 Service messages

During the operation of the soldering units the anodes and the cathodes are wearing out. To ensure a safe operation, therefore, after a longer time of operation, the appliance has to be serviced by a MIG-O-MAT customer service. The information about the level of service may be obtained by switching-over the display. By pressing the mode-key **M**, appears the indication of the total time of gas production as well as the service level. „100 %“ service-level corresponds with the level ex works resp. the condition after service. As service-level of 0 %“ means, that the next service should be carried out immediately. If service becomes necessary, it is indicated by a blast of the whistle and an indication:

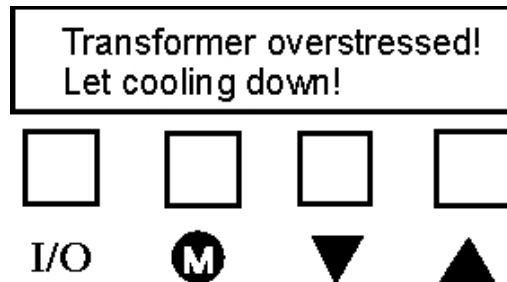


The warning signal can be switched off by pressing any key. Nevertheless, normal work can be continued.

## 6.10 Malfunction and warning messages

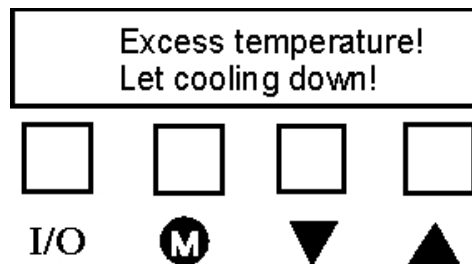
In case of malfunctions of the appliance by thermal overstress or overpressure is stopped automatically the gas production in that way, that the set value of the pressure is fixed at „zero“. It sounds a blast of whistle. The valve at the grip part has to be closed quickly. The blast of whistle can be switched off by pressing any key.

If the main transformer gets overstressed, the display indicates the malfunction message



The continuation of work is only possible after cooling down the transformer. For that the set value of the pressure should be readjusted to the desired value.

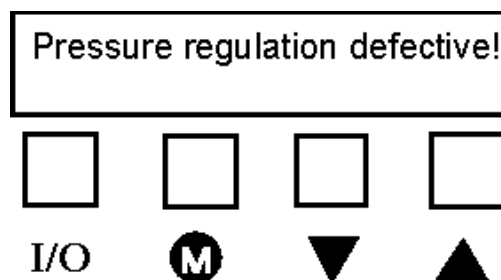
While passing over the permitted reactor temperature, the malfunction message appears:



After a cooling down of the appliance work can be continued normally. For that the set value of the pressure has to be adjusted to the desired value.

It is important that in case of trouble by overheating the appliance is not switched off by the main switch as in this case the ventilator is not working. Should the fan noise cause too much disturbances, it can be changed by pressing the I/O-key to stand-by-operation. By that, the revolving number of the ventilator is reduced. But then, the cooling down process needs much more time!

If the pressure regulation of the control unit fails, there is indicated with the automatic switch off the malfunction message:



Should the failure be repeated after switching off the appliances at the main switch and the restart, please contact the MIG-O-MAT-customer service.

## 7. Maintenance



**Wear safety gloves and safety glasses when refilling the unit with operation liquids! To avoid dangerous ignitions by electrostatic charges before opening gas containing components (glass cylinders at the upper part or the reactor) touch with both hands cap nuts at the holding angles of the upper part! By that possible charges of the body will be derived.**

### 7.1 Refilling the reactor with distilled water

The amount of electrolyte in the reactor is reduced by the electrolysis. Therefore, a regular check of the filling level of the reactor (after abt. 8 hours of gas production) is necessary. For that the flame has to be extinguished, the gas production has to be stopped by pressing the **I/O** –key and the valve of the grip part has to be opened. After that, the screw cap of the filler neck (pos. 6, ill.1) has to be removed. The float should end precisely with the edge of the neck. If necessary, distilled water has to be refilled. For that use the enclosed funnel and safety glasses.

**Caution! While refilling a larger amount of distilled water, the float does not show the correct filling level, as the specific density of distilled water is lower than that of the electrolyte. The float shows immediately after the refill of a larger amount of distilled water a lower filling level as actually available. Therefore, the refill with distilled water has to be carried out stepwise. Between the single refilling processes, the appliance has to be switched on and the gas production has always be started for abt. 30 to 60 seconds.**

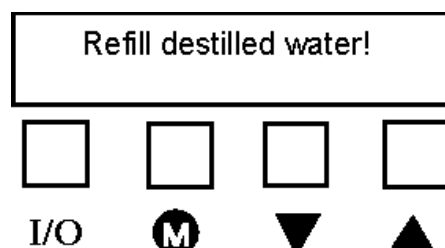
1. If the float cannot be recognized in the filler neck, refill a maximum of 0.2 liters of distilled water.
2. Start gas production for abt. 30 to 60 seconds. The filler neck can remain open.
3. **Caution! Keep ignition sources away!**
4. Stop gas production by pressing the **I/O** – key and check the filling level again. If the float in the filler neck is still not recognizable, repeat the procedure.
5. If the float is visible in the neck, refill still only small amounts of distilled water until the float is matching exactly the edge of the neck.
6. After that, screw on cap of the filler neck (pos. 6, ill. 1) and close it hand-tightly.



**Caution:**

**Also while refilling the reactor with distilled water observe strictly the safety instructions of paragraph 1.1 !**

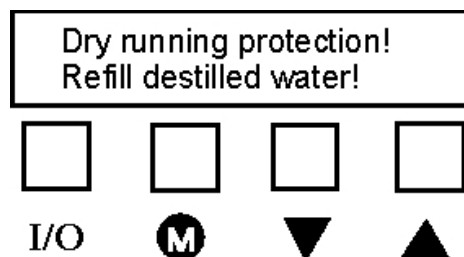
If desired, the **Lötstar 141** is equipped with a filling level sensor. If the Lötstar 141 is equipped as special version with an „electronic filling level control“, the control device indicates the refilling time with a blast of the whistle and the message:



The signalling tone can be switched off by pressing any key and normal work may continue. Nevertheless, as soon as possible, the normal filling level in the reactor should be regained with distilled water as described above.



If any distilled water is not refilled, but work is continued for a longer time, the appliance switches off the gas production and it appears the malfunction message:



Before continuation of work a refill with distilled water is obligatory.

## 7.2 Refilling of evaporating liquid

While operating the appliance evaporating liquid is consumed. At the latest, when the liquid level reaches the sintered gas distributor (see ill. 4, page 11) the appliance has to be changed to stand-by-mode, in accordance with paragraph 6.7, and the evaporating liquid in the evaporating cylinder (booster) has to be refilled in accordance with paragraph 6.2. If the appliance has not been used for a longer period, the filling level in the booster cannot be checked exactly before the appliance is operated shortly under pressure. It is absolutely obligatory to take care that not more evaporating liquid is filled in the cylinder as indicated by the mark. Otherwise, there is existing the danger that the evaporating liquid is sucked back in the filter cylinder after the end of the operation due to the vacuum arising in the reactor. Therefore, it is recommended to evacuate the evaporating cylinder from time to time, to clean it with hot water and to refill fresh evaporating liquid.

## 7.3 Cleaning of the filter cylinder

While operating the appliance, in the filter cylinder (pos. 2, ill.1) gather condensate and entrained electrolyte. When the level of the condensate exceeds 1 cm, it has to be removed and after that, the filter cylinder has to be flushed with hot water. For that, wear safety glasses and protecting gloves.

## 8. Trouble shooting and elimination

Defect	Possible reasons	Defect elimination
Unit does not produce gas, display without indication.	Unit is not plugged in.  Appliance is not switched-on at the main switch.	Plug in mains cable in suitable socket.  Turn on the unit at main switch on the back of the unit – in the display appears the designation of the unit.
Unit does not produce gas, set value of the gas is adjusted to abt. 150 mbar, the torch valve is closed. The actual gas pressure does not reach the set value of the gas pressure!	Unit is leaky -(Sealing screw-on cap at the reactor (pos. 6, ill. 1) and/or the gas lines between gas outlet (pos. 1, ill. 1) and grip part (pos. 5, ill.1) are leaky.  Hose system within the unit is leaky.	Switch-off unit at the main switch, screw-on screwing connections tightly, if necessary, change gas-kets, check leakage of the glass cylinders – check correct fitting of the o-rings.  Switch off the unit, unplug the unit, open the unit, check tight fitting of the hose connections, tighten leaky connections (if necessary, inform MIG-O-MAT-customer service)
Unit does not produce gas, While starting sounds the warning signal and in the display appears >Dry running protection –	Electrolyte level is too low, distilled water has to be refilled.	Switch off the unit, refill distilled water in accordance with paragraph 7.1.

Refill distilled water<		
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## Second page – Table troubleshooting

Defect	Possible reasons	Defect elimination
Unit does not produce gas although set value of pressure rises to the pre-selected set value of pressure.	Obstructions in the gas lines of single or several components (pos. see ill. 7):  <ul style="list-style-type: none"> <li>- torch nozzle and/or</li> <li>- gas filter (pos. 27) and/or</li> <li>- gas distributor (pos. 32) and/or</li> <li>- flame barrier (pos. 20) and/or</li> <li>- torch grip part</li> </ul>	Exchange of the obstructed components.
Unit produces not enough gas, the actual value is falling to a value, by which with the selected nozzle the normal standard flame size cannot be reached.	Leakage in the gas lines (Carry out leak test in accordance with paragraph 5.7).  Filling level in the reactor is too low.	Find out the leakages at the connections (treat with bubbling agent) and tighten connections resp. exchange gaskets. If leakage cannot be found out, call customer service.  Refill distilled water up to the point where float meets exactly the edge of the filler neck.
Unit produces not enough gas. But the pressure indicator shows the normal standard gas pressure for each used nozzle size.	Obstructions in the gal lines of single or several components (pos. see ill. 7):  <ul style="list-style-type: none"> <li>- torch nozzle and/or</li> <li>- gas filter (pos. 27) and/or</li> <li>- gas distributor (pos. 32) and/or</li> <li>- flame barrier (pos. 20) and/or</li> <li>- torch grip part</li> </ul>	Exchange of the obstructed components.
Flame is not stable	Nozzle blocked.  Evaporating liquid/fluxing agent used up.	Clean or exchange nozzle.  Exchange evaporating liquid/exchange fluxing agent completely. Clean glass cylinder.
Unit switches off automatically and stops gas production, warning buzzer sounds, in the display appears the following messages:  >Pressure regulation device defective<  >Dry running protection – refill distilled water<	Electrolyte level too low.	Switch off the unit and inform MIG-O-MAT customer service!  Switch off the unit. Refill distilled water in accordance with paragraph 7.1.
Pressure rises over 300 mbar.	Pressure regulation device and safety pressure control device defective.	Switch off unit immediately at the main switch and inform MIG-O-MAT customer service.

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## 9. Spare parts and expendables

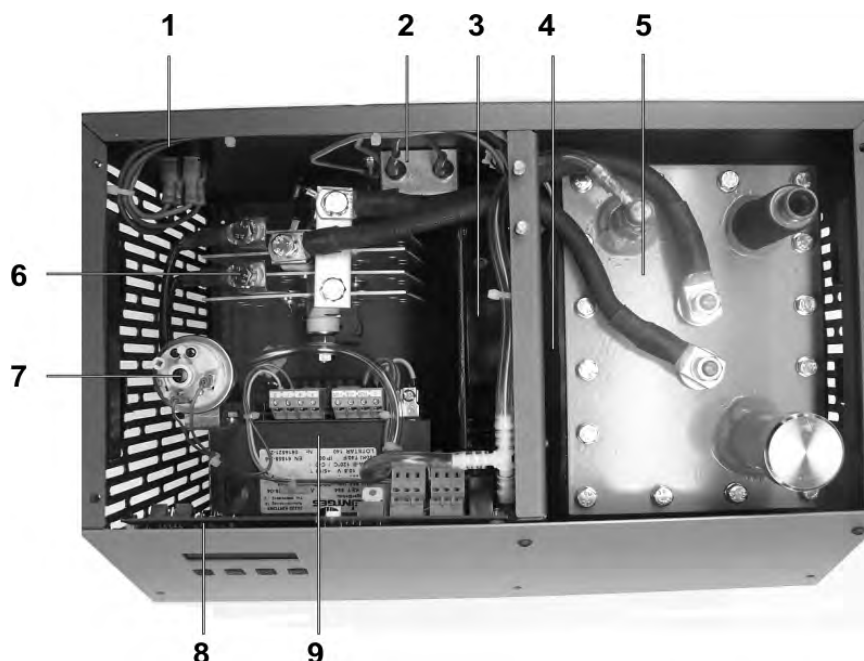
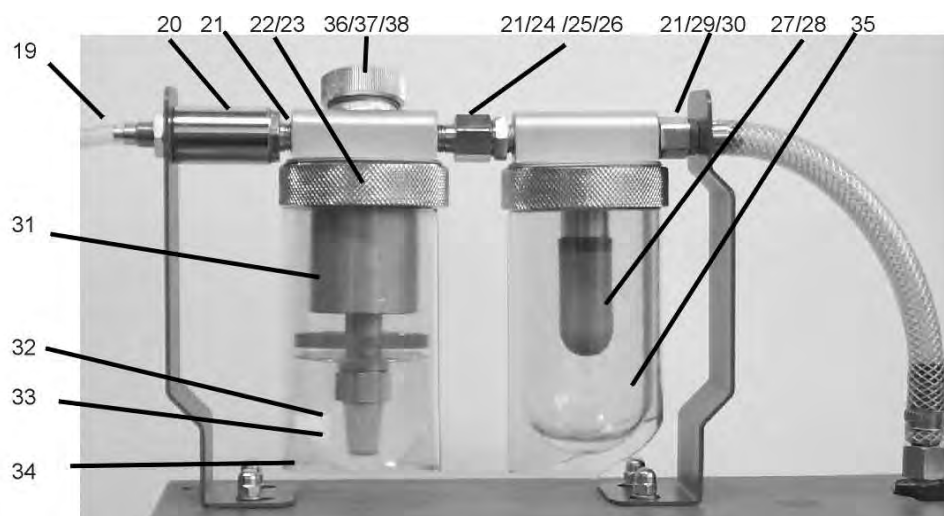


Abb. 5: LÖTSTAR 141 – top part and cover removed

Position	Benennung	Artikelnummer
1	main switch	50.2501114
2	interference filter	50.5181901
3	fan	30.700001
4	temperature sensor	50.25500780
5	reactor, cpl	30.3000030
6	rectifier	30.500001
7	safety pressure switch	50.2501218
8	electronic control system, cpl.	30.601010
9	transformer	30.400100
	float	50.2520820
	torch stand	50.2630001
	Micro torch with control valve, cranked type	50.2502410
	Nozzle, size 0,5 x 10 (set with 5 pieces)	50.25019050
	Nozzle, size 0,6 x 10 (set with 5 pieces)	50.25019060
	Nozzle, size 0,7 x 10 (set with 5 pieces)	50.25019070
	Nozzle, size 0,8 x 10 (set with 5 pieces)	50.25019080
	Nozzle, size 0,9 x 10 (set with 5 pieces)	50.25019090
	Nozzle, size 1,0 x 10 (set with 5 pieces)	50.25019100
	Nozzle, size 1,1 x 10 (set with 5 pieces)	50.25019110



**Abb. 7: Lötstar 141 - top part**

Item	Specification	Article number
19	Gas tube	50.2501164
20,21	Safety valve (flame barrier), cpl. with seal	50.2504210
22	Lock ring	50.25164020
23	Spring lock washer	50.2526413
24	Screw fitting	50.25163090
25	Union nut	50.25012090
26	Cone	50.25012080
27	Tube filter	50.2520208
28	Intermediate part for tube filter	50.25202090
29	Screw fitting	50.2501303
30	Hose nozzle	50.2516405
31	Compensation container	50.2520210
32	Sintered cone	50.2520211
33	Glass cylinder with filling mark	50.2516420
34	Protection cylinder	50.2516415
35	Glass cylinder for filter	50.2516414
36	Cover with filler neck	50.25164030
37	Screw cap	50.25014040
38	Seal for no. 37	50.2501405



**Attention!**

**Reutilize the protection cylinder for a new glass cylinder in case of replacing a broken glass cylinder!**

## EU-conformity declaration

## EG-Konformitätserklärung Déclaration de Conformité de U.E

**Name des Herstellers:** MIG-O-MAT Mikrofügetechnik GmbH  
(nachfolgend MIG-O-MAT genannt)  
Name of manufacturer: (in the following called MIG-O-MAT)  
Nome du fabricant : (nommé par la suite MIG-O-MAT)

**Anschrift des Herstellers:** Werksstraße 20, 57299 Burbach-Würgendorf  
Address of manufacturer:  
Adresse du fabricant:

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 Fall von unbefugten Veränderungen, unsachgemäßen Reparaturen und / oder unerlaubten Umbauten, die nicht ausdrücklich von MIG-O-MAT autorisiert sind, verliert diese Erklärung ihre Gültigkeit.

We herewith declare, that the machine described below meets the standard safety regulations of the EU directives mentioned below in its conception and construction, as well as 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 MIG-O-MAT, this declaration will lose its validity.

Par le présente, nous déclarons, que la conception et la construction ainsi que le modèle, mis en 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 MIG-O-MAT cette déclaration devient caduque.

**Gerätebezeichnung:**  
Description of machine:  
Type de machine:

**Mikrolöt- und Schweißgerät**  
micro soldering and brazing unit  
appareil de micro brasage

**Gerättyp:**  
Type of machine:  
Type de machine:

**Lötstar 141**

**Artikelnummer:**  
Article number:  
Numéro d'article

**30.100100**

**Seriennummer:**  
Serial number:  
Numéro de série:

**Zutreffende EG-Richtlinie:**

Applicable EU-guideline:

Directives de la U.E. applicables:

EG-Niederspannungsrichtlinie 2006/95/EG  
EG-EMV Richtlinie 2004/108/EG  
DIN 32 508: 2000 - 12  
Unfallverhütungsvorschrift BGR 500  
EU low voltage guideline 2006/95/EG  
EU-EMC guideline 2004/108/EG  
Directive de la U.E. pour basses tensions 2006/95/EG  
U.E.-EMC directive 2004/108/EG

**Hersteller – Unterschrift:**  
Signature of manufacturer:  
Signature du fabricant:

Dr. Bernd Kollert  
Geschäftsführer / managing director / gérant  
Januar 2006