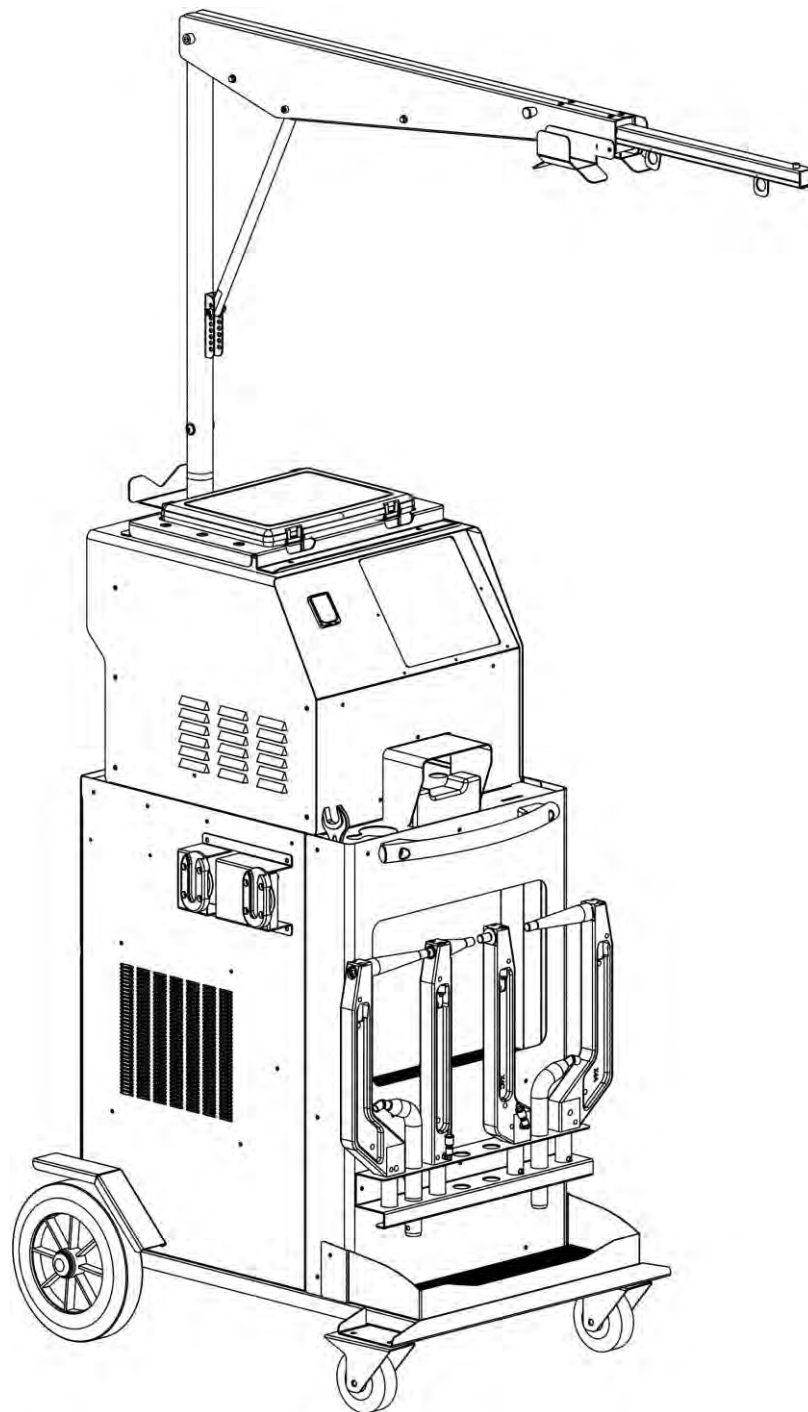




# MI200 LC / LX SPOTWELDER - 400 V

## USER MANUAL



IN20805

Thank you for choosing this Chief Automotive Technologies product! Please read the instructions carefully before installing, using the product, or before maintenance in order to avoid accidents, and keep the manual in a safe place for future reference. Chief Automotive Technologies cannot be held responsible for damage to persons or items, as a result of using the machine in the following circumstances:

- Modification or neutralisation of safety elements has been undertaken.
- Safety recommendations written in this manual have not been adhered to.
- **Modification of the product's specifications.**
- Use of accessories not specified by the manufacturer.
- Failure to observe regulations specific to the country or state in which the machine is used.

## **1- PRESENTATION, SAFETY RECOMMENDATIONS AND GENERAL PRECAUTIONS**

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This product has been designed to carry out the following operations in car body workshops:

- Spot welding on metal sheets with a pneumatic clamp,
- Welding of metal sheets with a single sided gun,
- Welding of nails, rivets, washers and studs,
- **Repair of bumps and dents (small dents, i.e. from hail or small stones with the « quick repair” option)**

### **GENERAL PRECAUTIONS**

1. Operators must have received appropriate training.
2. Repair and maintenance operations must only be carried out by qualified personnel.
3. Regularly check the condition of the power supply cable. If the power cable is damaged, it must be replaced by the manufacturer, its after sales service or an equally qualified person to prevent danger.
4. **The operator is responsible for respecting the car manufacturer's recommendations regarding the protection of the car's electrical and electronic equipment (on-board computer, car radio, alarm, air bags, etc...).**
5. Ensure compressed air supply is disconnected and depressurised before any repair or maintenance operation is carried out.
6. The electrodes, arms, and other secondary conductors can reach a very high temperature and remain hot for a long time after the machine has stopped. Pay particular attention to the risks of serious burns.
7. It is necessary to make a regular preventive maintenance on the machine.

### **MAINS SUPPLY:**

1. The unit must be connected to an earthed power supply - ensure that the earth connection is in good condition.
2. Ensure the workbench is connected to the earth.
3. Dry, protective clothing and accessories must be worn before working with the metal.  
Make sure that the operator has no contact with the metal parts to be welded without any protection or with wet clothes.
4. Avoid contact with the welding pool.
5. Do not undertake welding, or place the machine, in wet areas or on wet flooring.
6. Ensure all welding cables are in excellent condition before undertaking any work. Ensure that any defects in isolation, cables, or connectors are addressed, and that equipment is checked for any gas, or coolant liquid leaks, before commencing work.
7. Before performing any control or maintenance operation, switch off and disconnect the unit directly from the electricity supply.

### **EYE AND BODY PROTECTION:**

1. During the welding process, the operator must protect themselves from possible metal projections: leather gloves, welding aprons, safety shoes, welding helmets or glasses for filtering radiation and projections. Similarly, during grinding or hammering operations, the operator must wear eye protection.
2. The tightening force of the clamp can reach 1237 Lbf (550 daN). Keep all body parts away from the mobile elements of the clamp to avoid any risk of injury - particularly to fingers and other small extremities.
3. Do not wear rings, watches, or jewellery, as metal current conductors can cause serious burns.
4. All protection boards must be in good condition and kept in place.
5. Never look at a welding arc without eye protection.
6. Protect the environment surrounding the work area from projections and reflections.

### **FIRE:**

1. Do not undertake welding near flammable material as sparks may cause fire.
2. Ensure that there is a fire extinguisher in close proximity to the operator
3. Ensure the machine is used in an area with adequate ventilation.
4. Do not weld on, or near, combustible or lubricant containers or those used to contain flammable material, even if empty.
5. Do not weld in an atmosphere charged with flammable gas or fuel fumes.

### **ELECTRO-MAGNETIC COMPATIBILITY:**

When using the welding equipment, ensure that:

- There are no other power supply cables, control lines, or any sensitive electronic devices (mobile phones, radios, computers, medical equipment etc...) in the vicinity of the machine.
- People using electronic medical devices (such as pacemakers, or hearing aids) should consult their doctor before using this device. Take extra protections if other products are to be used in the vicinity of the machine.
- The battery is disconnected from the vehicle.

**We recommend you to take the machine away at the maximum from all the devices of the vehicle (calculators, relay, embedded computer...**

## 2- DESCRIPTION OF THE MACHINE

### BP Front panel:

SD card reader



Display board for communication with the user

### BP rear panel:



Fan

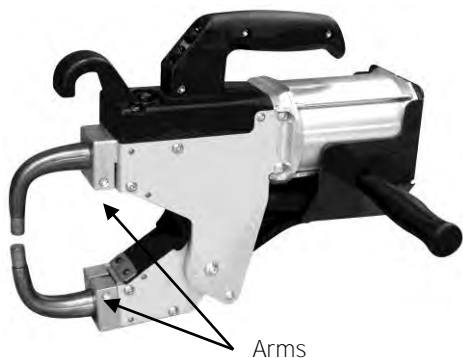


32 A D curve circuit breaker

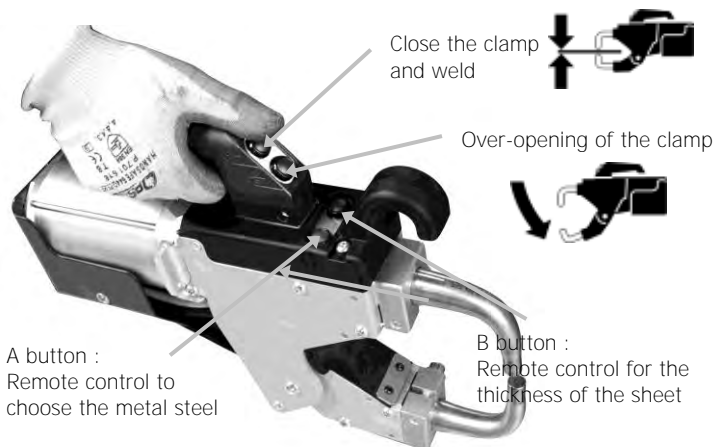


Pneumatic filter, pneumatic network air connector

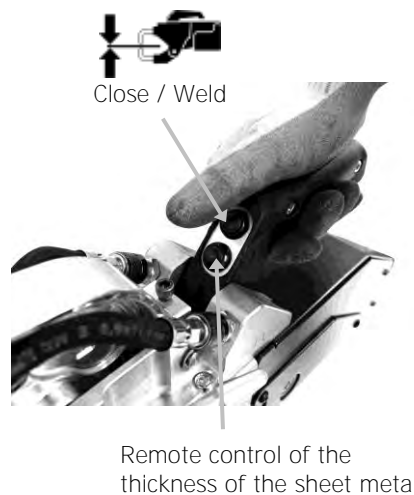
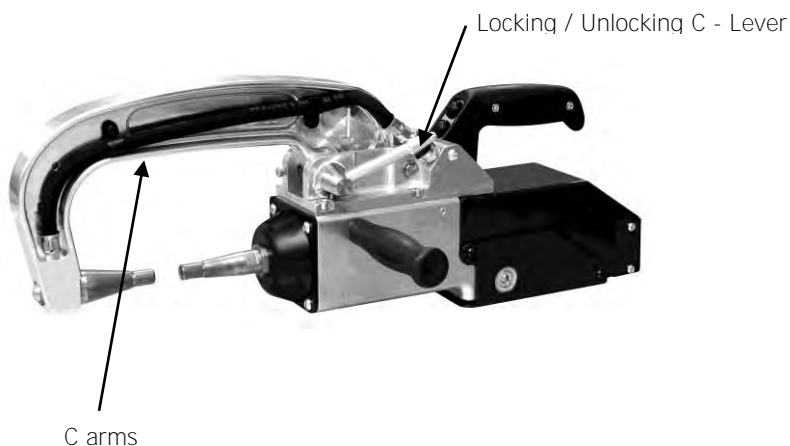
### X clamp (MI200 LX):



Arms



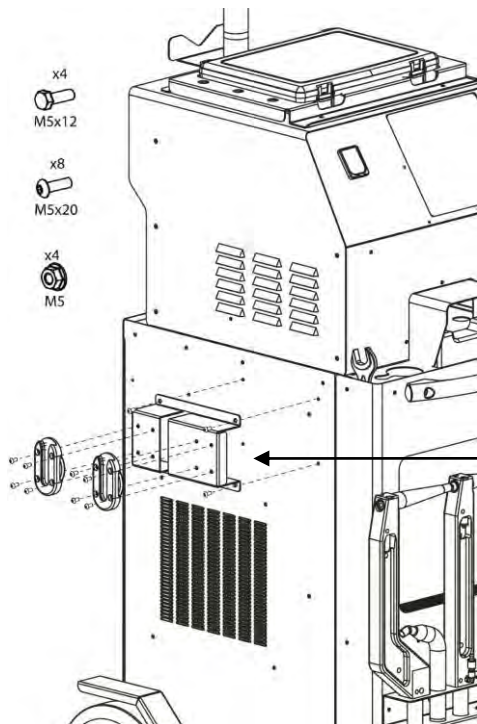
### C clamp (MI200 LC):



### **Assembling the clamp handle, clamp stand and earth cable (accessories bag):**

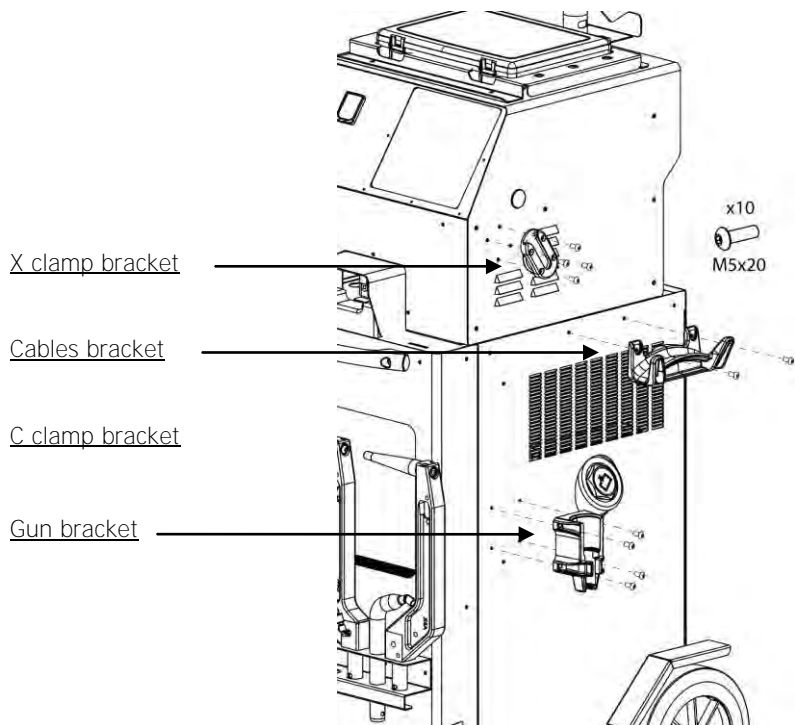
#### **MI200 LC:**

Assemble the handle on the left hand side of the clamp.



#### **MI200 LX:**

Assemble the clamp handle on the left or right side of the clamp, depending on the preferred choice.



#### **Earth cable:**

Assemble the copper plate on the extremity of the earth cable. This earth cable has to be used with the gun.



Air connector: Assemble the air connector on the air filter.



## **3- INSTALLATION OF THE MACHINE**

### **TRANSPORT AND TRANSIT OF THE MACHINE**

This machine is not equipped with a lifting facility - the operator is required to make the necessary arrangements for safe lifting and transport of the machine (be careful not to tilt the machine). The handle cannot be used to hang the machine from other equipment. Do not use the cables to move the machine. The welding equipment must be moved in an upright position.

This equipment must be used and stored in a place protected from dust, acid or any other corrosive agent. Operate the machine in an open, or well-ventilated area.

Operating temperature:

Use between +5°C and +40°C (+41 and +104°F).

Store between -25 and +55°C (-13 and 131°F) or 70°C (+158°F) if < 24 hours.

Air humidity: Lower or equal to 50% at 40°C (104°F).

Lower or equal to 90% at 20°C (68°F).

Up to 2000 meters above sea level (6500 feet).

### **Before use:**

Several verifications are necessary before using the unit to ensure good performance of the machine :

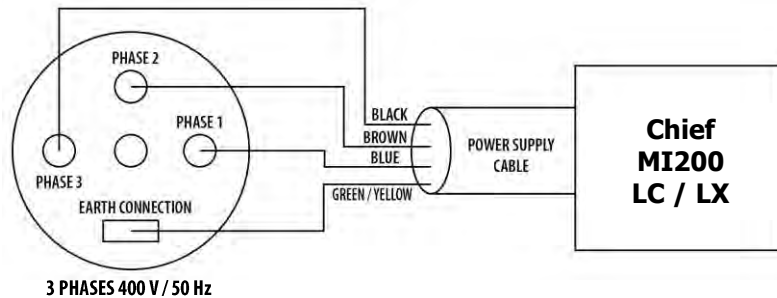
This equipment must be used only in a system which is either three-phase or a four-wire system with a neutral earth, three-wire system with a neutral to ground.

- This equipment must use an earth connection system type TT or TN (Neutral connected to earth).

- Check the electrical line voltage: it should be **400V**, 3 phases, with a **32 A delayed circuit breaker, curve D (or fuse of aM type)**.

- Check the cross section of the cable going from the main electrical board to the socket where the machine will be plugged : it should be **4x6 mm<sup>2</sup>**. If this cable is longer than 10m, use a conductor size of 10mm<sup>2</sup>. If you use an electrical extension cord, use a 6mm<sup>2</sup> conductor size (10mm<sup>2</sup> if electrical line + extension cord total length is superior to 10m).

- Connect a **3 phase + earth plug** (minimum 32A) on the supply cable.



- Be careful: in order to avoid voltage drops which can generate bad welding spots, you must never have overloaded electrical lines, nor supply cable diameters which cross section are not large enough. Also, the mains plugs must not be too far from the circuit breaker.

- If the machine is not sufficiently supplied, it is not possible to ensure a good welding quality.

- Check that the **air compressed** network can deliver a **minimum of 102 PSI (7 bars)** (dry air), then connect the compressed air network on the back of the machine. The machine must not be used on an air compressed network with a pressure inferior to 44 PSI (3 bars).

**Filling the cooling tank:**

Chief Automotive Technologies recommends that you specific welding machine coolant with following properties:

- Corrosion resistance
- Freeze resistance
- Dielectric resistance (low electrical conductivity)
- Low foam
- Free of nitrate and heavy metals
- Dillute with distilled water only

The use of other cooling liquids, and in particular standard cooling liquids, can lead to the accumulation of solid substances inside the cooling system (due to electrolysis). This will negatively impact the cooling efficiency and possibly cause total obstruction of the system. Any degradation to the machine caused by the use of others cooling liquids or due to the freezing of cooling liquid will not be accepted under warranty.

To fill the tank with cooling liquid, proceed as follows:

- Put the pneumatic clamp on its stand

- **Fill the tank with 30 litres (8 Gal) of cooling liquid** - this should reach the middle of the min / max indicator on the side of the machine.

**Safety recommendations regarding the cooling liquid:**

- In case of contact with the eyes, rinse thoroughly with plenty of water immediately after contact (remove contact lenses first if worn). Seek medical help if necessary.
- In case of contact with the skin, wash thoroughly with soap and plenty of water. Remove any contaminated clothing, and if **skin irritation occurs (redness etc...) consult doctor**.
- In case of ingestion, rinse the mouth out thoroughly, and drink plenty of water - consult your doctor immediately.

**Maintenance:**

It is recommended that the cooling liquid is changed every 2 years. To empty the coolant tank, proceed as follows:

NB: Ensure there is a container available near-by to collect the cooling liquid as it drains.

- Make sure an arm is fitted on the C-clamp
- Select the C-clamp adjustment mode in the machine menu.
- Unscrew the mobile electrode from the clamp.
- Select the normal mode in the menus.
- Press the welding button on the clamp to activate the pump.
- Use the container to collect the liquid as it drains from the clamp.
- In the absence of welding, the pump will stop automatically after 2 minutes. It will therefore be necessary to press this button several times to completely empty the tank.
- When the tank is empty, go back to the C-clamp adjustment mode in the menus and re-connect the mobile electrode to the clamp.

Fill the tank with the new cooling liquid. Dispose of used fluid in accordance with local regulations.

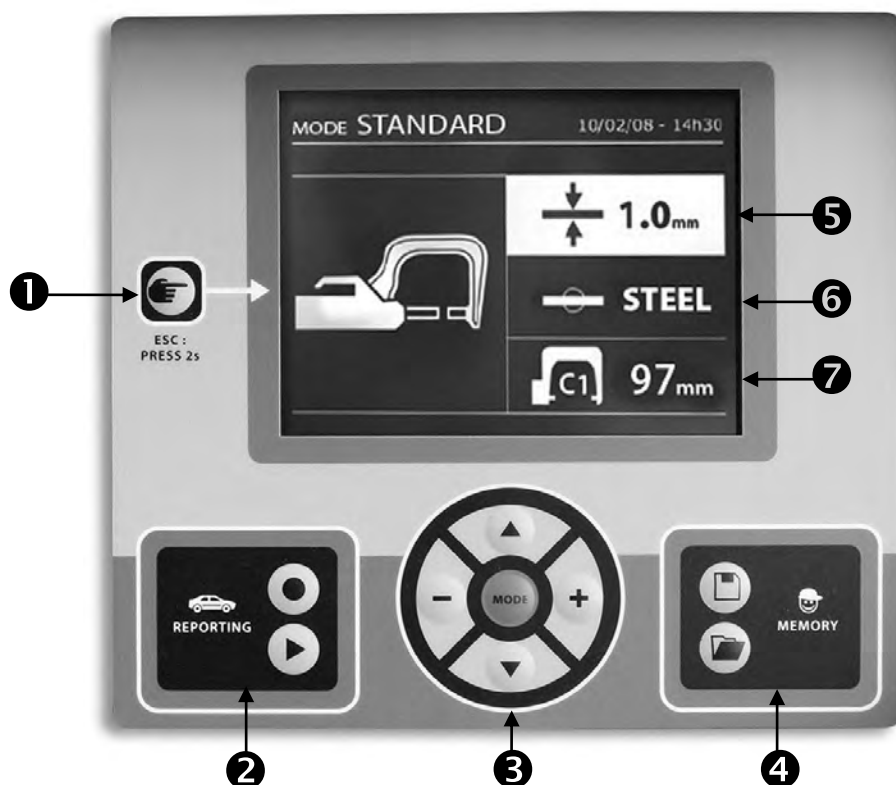
**Starting the machine:**

Switch ON the circuit breaker. The electronic card starts a test and initialisation cycle of the parameters for approximately 10 seconds. At the end of this cycle, the machine is ready to use.

When the machine starts up, liquid will circulate in the cables. **Check that there are no leaks.**

## 4- PRODUCT OPERATION

### Key definition:



#### ① key

- This key is used to select the tool required: Clamp, single-sided gun or "clamp adjustment"
- Press for 2 seconds: to return to AUTO mode from any other mode.
- To re-set the spot-counter to 0 (when displayed): Press for 2 seconds.
- In visualisation mode: Press twice to erase the report that is displayed on the screen.
- In Program Saving mode: Press the button briefly to erase the selected program.

#### ② Save a report

More details can be found on this function in the corresponding chapter.

The « record » key enables or disables the saving of a report.

The « View » key allows the user to read the sequence of spots performed.

#### ③ Using advanced modes

The MODE button navigates through 4 different modes: STANDARD MODE, MULTISHEET MODE, MANUAL MODE, and AUTO MODE. A prolonged press on the MODE key enters the configuration mode, where the language and date can be edited and the warning sound activated for "current too low" or "low pressure" messages. The up and down keys go through the parameters to modify sheet thickness, type of steel, arm used). The + and - keys allow modification of each parameter.

#### ④ Saving of user welding parameters

The « save » button allows the user to save selected welding parameters (mode, sheet thickness, welding current, welding time or electrode force)

The "open" button will restore previously saved welding settings. The machine automatically goes to manual mode, recalling the saved parameters (current, welding time, force) and the tool used (clamp or gun).

#### ⑤ Select sheet thickness

The sheet thickness can be adjusted using the + and - keys. The thickness can be selected from the following preset values: 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0 mm.

#### ⑥ Select type of steel

This allows the selection of the type of metal to weld from 4 different options: coated steel, HTS steel, UHTS steel, BORON steel. This setting can be adjusted using the + and - keys.

#### ⑦ Adjustment of the arm used

When a clamp is used, the user should specify the length of the arms fitted to the clamp, so that the machine will automatically adjust the air pressure to reach the required electrode force.

**Recommendations on the use of welding modes:**

**Only qualified and specially trained personnel are permitted to use of the spot-welder. Please observe repair manuals of respective car- manufacturers before carrying out any welds. The correct application of instructions specified in the user manual and commitment to the indications of the manufacturer as well as the necessary preparations, implementations and tests of welding jobs lies within the responsibility of the user.**

Several welding modes are available on MI200 LC or LX spot welding machines.

The STANDARD AND MULTI modes allow programming the machine by entering sheet thickness and type of steel.

The MANUAL mode allows programming individually each welding parameter according to the car manufacturer's specification: welding current, welding time, clamp force.

The AUTO, ENERGY, and CAR MANUFACTURER modes are available on MI200 LC or LX models only.

The AUTO mode allows welding without entering any parameter inside the machine. This mode may be used on all welding spots identified as non-critical by the car manufacturers. For the welding spots identified as critical by car manufacturers, refer to their repair specification, and use either the MANUAL mode or the CAR MANUFACTURER's mode. In the MANUAL mode, the exact welding parameters from the repair specification may be entered. In the CAR Manufacturer's mode, welding parameters approved and sometimes requested by car manufacturers are saved and can be recalled.

In order to safeguard the quality of each welding spot we recommend carrying out 2 sample welds and a pull out test with the same steels and applying the same distance from one another required by the job. The welding spot is acceptable if the pull-off leads to the extraction of the nugget and the tearing of the steel, with a minimum nugget diameter in accordance with the car manufacturer specifications.



### **Using pneumatic clamps:**


When using the pneumatic clamp, always disconnect the copper plate used in single sided gun welding.


### **C clamp (MI200 LC):**

- ♦ Tighten the C-clamp using the locking lever and check that the screw between the arm and the clamp is correctly tightened.
- ♦ The clamping force is calculated by the machine, considering the force setting or the thickness of the sheets selected.

### **C clamp adjustment mode:**



The  key is used to enter the clamp adjustment mode. The clamp adjustment mode allows the user to close the clamp and apply the programmed force on the electrodes without any current flowing. This mode is used to adjust the arms. The clamp will remain closed as long as the button remains pressed; this allows the user to check the alignment of the electrodes and positioning of the caps.

Press  for 2 seconds to revert back to standard mode.

### **STANDARD mode:**



This is the default mode when the machine starts. Quick and easy spot welding by selection of:

- **The sheet thickness** : it can vary from 0.60mm up to 3.0mm in steps of 0.05mm.  
When welding 2 metal sheets together, enter the thickness of the thinner one.  
When welding 3 metal sheets together, enter the total thickness divided by 2.
- **The type of steel** (coated steel, HSS steel, UHSS steel, BORON steel). When welding different types of steel together, select the hardest steel in the assembly.
- **The arm used** : select the corresponding arm number.  
The up and down button (key definition diagram, (3) ) scrolls through the parameters to modify (sheet thickness, type of steel, arm used). The + and - keys allow modification of each parameter.

Button A on the clamp allows the user change the thickness of the sheets to be welded remotely.

Button B on the clamp allows the user to spot weld with the selected parameters.

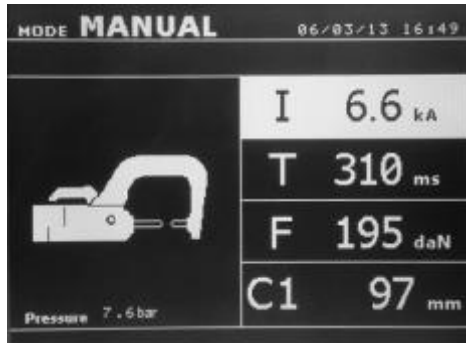
Before the weld: If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message "Pressure too low". Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

After the weld: If the welding current measured during the spot is 6% less than the setting, the machine will display the error message "Current too low" - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

### **MANUAL mode:**

This mode allows the user to manually select the welding parameters, for example when following instructions from a manufacturer.



The default settings in manual mode correspond to the settings automatically selected in standard mode (thickness and type of sheet, electrode force, arm). The parameters can be adjusted using the + and – keys (Key Definition diagram, (3)). The up and down keys allow navigation from one parameter to the next

- ◆ Welding current (2000 to 13000 A, steps of 100 A) displayed in kA.
- ◆ Welding time (100 to 850 ms, steps of 10 ms)
- ◆ Electrode force (100 to 550 daN, steps of 5 daN)  
(225 Lbf to 1237 Lbf, steps of 11 Lbf)
- ◆ Arm used on the clamp (number and length)

Before the weld: If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message **"Pressure too low"**. Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

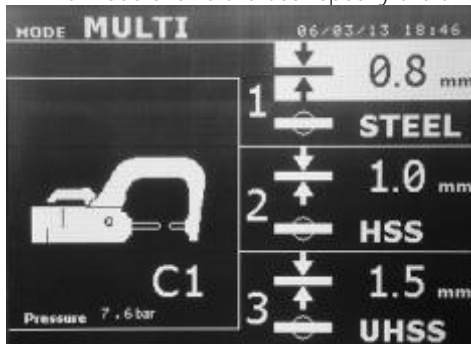
After the weld: If the welding current measured during the spot is 6% less than the setting, the machine will display the error message **"Current too low"** - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is

performed, by pressing the B button on the clamp. Press  for 2 seconds to revert back to standard mode.

### **Multi-sheet mode:**

This mode allows the user specify the thickness and type of each sheet in an assembly of 2 or 3 sheets.



Using the up and down button (key definition diagram, (5)) allows selection of the parameters for each sheet. When the parameters for a sheet are highlighted, the sheet thickness and type of steel can be adjusted using the + and – keys (key definition diagram, (3)).

The individual sheet parameters that can be adjusted in this mode are :


- Sheet thickness : it can vary from 0.60mm up to 3.0mm in steps of 0.05mm.
- The type of steel for each sheet : standard steel, HSS steel, UHSS steel, BORON steel.
- To activate the required sheet, press the up and down keys (button definition diagram, (3)) to highlight the required sheet ; then use the + and – keys to select the thickness and type of steel.

Before the weld: If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message **"Pressure too low"**. Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

After the weld: If the welding current measured during the spot is 6% less than the setting, the machine will display the error message **"Current too low"** - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force.

This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

Press  for 2 seconds to revert back to standard mode.

### **CAR MANUFACTURER Mode:**

The CAR MANUFACTURER mode is optional and is configurable in the setup menu that is activated by pressing the mode key for 2 seconds (CAR MANUFACTURER : ON / OFF).

This mode allows calling, in a nominative manner, a pre-recorded welding spot according to a car manufacturer repair specification. Select the CAR MANUFACTURER in the left column, then by pressing the (+) key the spots list is displayed on the right column. Select the requested welding spot (highlighted); the machine is ready to weld.



User programmed welding spots can be recalled by selecting USER in the list of car manufacturers. The welding spots can be programmed using the welding spot programming module in the software.

### **AUTO Mode:**

The AUTO mode is optional and is configurable in the setup menu that is activated by pressing the mode key for 2 seconds (AUTO MODE : ON / OFF).

On MI200 LC, this mode can be used with the C1, C2, C3, C4, C5, C6, C7 and C9 arms. It cannot be used with the C8, C10 and C11 arms, for which the error message « ARM NOT COMPATIBLE » will be displayed if they are selected.



In order to use this mode, a calibration should be first performed by closing the clamp without any steel between the electrodes. Press the « Close clamp / weld » button. The message « Close clamp without steel » appears on the screen. Press the button again to perform the calibration. Once the calibration has been performed, the machine displays all the parameters to zero, and is ready to weld. Close the clamp on the area to weld and weld automatically, without entering any parameter inside the machine. Every 30 welding spots, a new calibration will be requested.

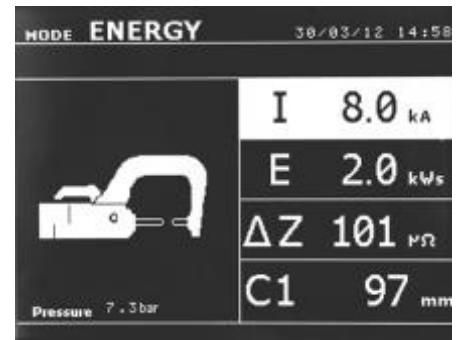
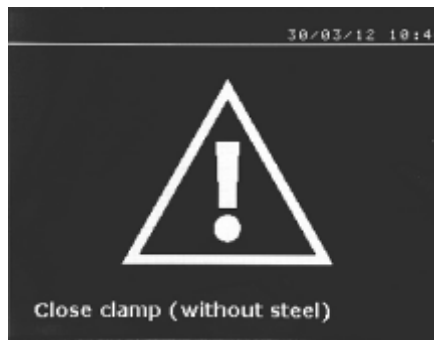
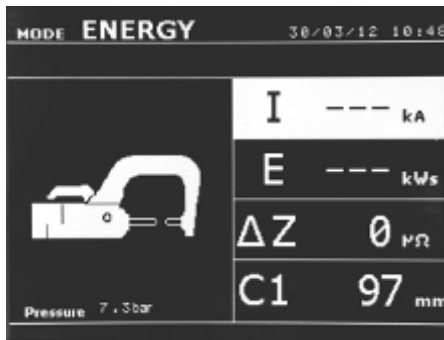
### **ENERGY Mode:**

The ENERGY mode is optional and is configurable in the setup menu that is activated by pressing the mode key for 2 seconds (ENERGY MODE : ON / OFF).

This mode allows controlling the energy transferred during the welding spot. This mode is not designed for the repair, but is rather meant to be used by car manufacturers and independent control labs.

In order to use this mode, a calibration should be first performed by closing the clamp without any steel sheets between the electrodes. Press the « Close clamp / weld » button. The message « Close clamp (without steel) » appears on the screen. Press the button again to perform the calibration. Once the calibration has been performed, the machine displays the last parameters selected for welding current and energy.

The user can then change the welding current, the energy, and the impedance. The machine will weld during the time necessary to reach the requested energy. If the welding is too long, the machine will display an error message « Timeout (ms) »




## X clamp (MI200 LX):

- ♦ Line up the electrodes so they face each other, then set and tighten the clamp arms (couple: 15 Nm).
- ♦ Enter « clamp adjustment » mode to check the alignment of the electrodes.
- ♦ The force is calculated by the machine according to the setting of the force or of the sheet thickness.

## Clamp adjustment:



The  key is used change from one tool to the next, as well as to enter the clamp adjustment mode. The clamp adjustment mode allows the user to close the clamp and apply the programmed force on the electrodes without any current flowing. This mode is used to adjust the arms. The clamp will remain closed as long as the button remains pressed; this allows the user to check the alignment of the electrodes and positioning of the caps.

## STANDARD mode:

This is the default mode when the machine starts. Quick and easy spot welding by selection of :



**- The sheet thickness** : it can vary from 0.60mm up to 3.0mm in steps of 0.05mm.

When welding 2 metal sheets together, enter the thickness of the thinner one.  
When welding 3 metal sheets together, enter the total thickness divided by 2.

**- The type of steel** (coated steel, HSS steel, UHSS steel, BORON steel). When welding different types of steel together, select the hardest steel in the assembly.

**- The arm used** : select the corresponding arm number.

The up and down button (key definition diagram, (3)) scrolls through the parameters to modify (sheet thickness, type of steel, arm used). The + and - keys allow modification of each parameter.

Button A on the clamp remotely adjusts the thickness of the sheets to be welded.

Button B on the clamp creates a welding spot using the selected parameters.

Pressing button close / weld allows the user to make a welding spot using the selected parameters.

**Before the weld:** If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message "Pressure too low". Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

**After the weld:** If the welding current measured during the spot is 6% less than the setting, the machine will display the error message "Current too low" - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

### Multi-sheet mode:

This mode allows the user specify the thickness and type of each sheet in an assembly of 2 or 3 sheets.

The first piece (Thickness of the metal sheet 1) is selected. The up and down button allows the selection of the parameters for each sheet. When the parameters for a sheet are highlighted, the sheet thickness and type of steel can be adjusted using the + and – keys.




The parameters to set in that mode are:

- ◆ Thickness of the metal sheet 1: from 0.60mm up to 3.00mm by steps of 0.05mm.
- ◆ Type of the metal 1: coated steel, HTS steel, UHTS steel, BORON steel.
- ◆ Thickness of the metal sheet 2: the same as the metal sheet 1.
- ◆ Type of the metal 2: the same as the metal sheet 1.
- ◆ Thickness of the metal sheet 3: deactivate the mode by default (« --- ») or the same as the metal sheet 1.
- ◆ Type of the metal 3: deactivate the mode by default (« --- ») or the same as the metal sheet 1.
- ◆ To activate the metal sheet 3 press the up and down keys to highlight the metal sheet 3.

Before the weld: If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message **"Pressure too low"**. Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

After the weld: If the welding current measured during the spot is 6% less than the setting, the machine will display the error message **"Current too low"** - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

Press  for 2 seconds to revert back to standard mode.

### MANUAL mode:



This mode allows the user to manually select the welding parameters, for example when following instructions from a manufacturer. The settings proposed by default in the manual mode correspond to the settings automatically selected by the standard mode (thickness and type of sheet, electrode force, arm).

The parameters can be adjusted using the + and – keys. The up and down keys scroll from one parameter to the next:

- ◆ Welding current (2000 to 13000 A, steps of 100 A) displayed in kA.
- ◆ Welding time (100 to 850 ms, steps of 10 ms)
- ◆ Electrode force (100 to 550 daN, steps of 5 daN)  
(225 Lbf to 1237 Lbf, steps of 11 Lbf)
- ◆ Arm used on the clamp (number and length)

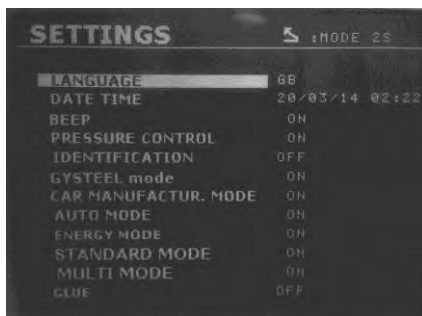
Before the weld: If the input air pressure is too low to reach the required electrode force, a warning will sound, and the machine will display the error message **"Pressure too low"**. Pressing the button for a second time will force the execution of the welding spot with the available air pressure.

After the weld: If the welding current measured during the spot is 6% less than the setting, the machine will display the error message **"Current too low"** - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current and electrode force. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

Press  for 2 seconds to revert back to standard mode.

### SETTINGS MODE:



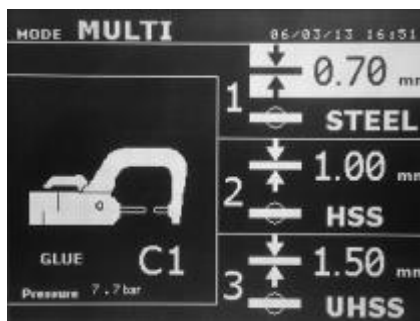
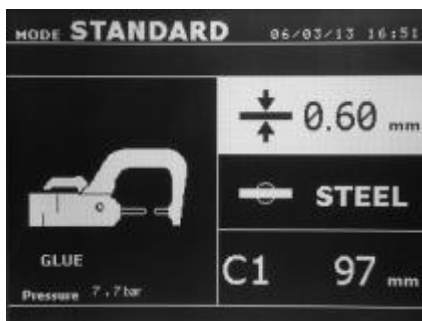
The **SETTINGS** mode can be accessed by pressing the MODE key during more than 2 seconds.

The language of the menus can be selected on line 1.  
The date and time can be entered on line 2.

The CAR MANUFACTURER, AUTO, ENERGY, STANDARD and MULTITOLE modes can be also be disabled in this menu.

### GLUE MODE:


In the SETTINGS menu shown above, a specific mode can be selected in case there is glue in between the steel sheets to be welded. In this case, a GLUE mode can be switched ON or OFF in this menu. If the GLUE mode is activated, a pre-spot is performed prior to the welding spot. The duration of this pre-spot is selected in milliseconds, from 0 to 400ms, by increments of 50ms. When this mode is selected, the text « GLUE » appears in the welding modes STANDARD, MANUAL AND MULTI.



### Using the single-sided gun:

- ♦ Connect the copper plate onto the generator's earth cable.
- ♦ Firmly fix the earth plate as near as possible to the welding area.

In case of spot welding with the single sided gun, always fix the earth plate to the sheet that will not come into contact with the welding electrode (so that the welding current will flow through the 2 sheets to be welded).

- ♦ Select the GUN tool using the  key, or by pressing the gun trigger.
- ♦ The standard mode with 'star welding' is launched by default.
- ♦ The gun can be used in both standard and manual modes.



**Never leave the inertia hammer on the gun when it is hung from the balancer as this may damage the welding cables.**



- ♦ In standard mode, the gun can weld a maximum of 1.5mm thick sheets. When using the gun, the operator can choose between several tools (single spot, carbon shrinking, star welding, studs, rivets, washers, stitches). The tool selection is made with + and - keys.



- ♦ In manual mode, the maximum permitted welding current is 9 kA during a period that will not exceed 600 ms, it is therefore impossible to select higher values for these parameters.

Set the generator by selecting the thickness of the sheet metal with the key + and -. It is possible to modify the parameters time and current in manual mode.

Press  for 2 seconds to revert back to standard mode.

When highlighted, a parameter can be adjusted using the + and – keys. The ▲ and ▼ keys allow movement from one parameter to the next.

**CAUTION:**

**The clamps and gun are connected to the same power supply, therefore when one is in use, current will be delivered to all tools. It is necessary that the tools which are not used are placed on their respective supports. Failure to follow this precaution may result in serious damage to the user, the generator and its tools, and there is a high risk of sparks and metal spatter.**

**Error management:**



Different events might cause the appearance of error messages. They can be classified in three categories:

♦ General Warnings: i.e overheating, lack of electrode force or welding current, etc...

These messages appear on the screen, and remain until a key is pressed.

♦ Installation Errors (air pressure, electrical power supply).

♦ Major Faults: These defects cause the display of an error message that locks the machine

♦ The thermal protection relies on a thermostat located on the diode bridge, this feature will lock the machine, and display the message "overheating"

**Low battery (clock):**



The message « Low battery (clock) » appears after switch ON of the machine and alerts the user that the voltage of the battery on the command board is too low. This battery ensures the saving of the date and time when switching OFF the machine.

**Tool out of order:**



The message « Tool out of order » appears after switch ON of the machine and alerts the user that a button or trigger is constantly pressed, or a permanent short-circuit is detected. Control the trigger of the gun, as well as the buttons on the clamps in order to make this message disappear.

**Current too low:**



If the welding current measured during the spot is 6% less than the setting, the machine will display the error message "Current too low" - the welding spot should be checked.

A message will be displayed at the end of every welding spot, showing the measured welding current. This message is displayed on the screen until a key on the control panel is pressed, or until a new welding spot is performed, by pressing the B button on the clamp.

If the machine cannot deliver the requested current, then the following message appears. The welding spot is not performed, and the message must be acknowledged to perform a welding spot.

## Insufficient air pressure:


Before the welding spot: If the input air pressure is too low to reach the required electrode force, the machine will beep and display the following error message "Insufficient Pressure".

Pressing the button allows the user to force the execution of the welding spot, which will be performed with the air pressure available. If the actual measured clamping force is too low, then the machine will display the following message "Low Pressure".



## Welding spot counter:

The spot counter will count the number of spot welds performed with the same caps. If the welding spot is performed without any problem, the message below left, appears.

The counter is displayed on the top left corner of the screen. After the caps have been replaced, press the  button to reset the counter to zero.

If more than 200 welding spots are done with the same caps, then the machine will display the below warning message. In this case, the warning message "Change tips" is also recorded in the traceability report.

**Attention: After the warning message is displayed, if the nozzles are not changed before resetting the counter to zero, the nozzles may become badly damage and cause poor quality welding.**



## Recording features:

The "Identification" mode is optional; you can configure it in the settings menu which is activated by pushing the mode button for 2 seconds (identification mode on/off).

If the identification mode is « off », enter a file name and activate it to store the information of the welding spots made in the memory.

The log book stores the spots made with the clamp in the memory. It is available in all modes by pressing both buttons located below the "reporting" icon.


The user's program is available in all modes by pushing the buttons below the "memory" icon.

### Report (log book)



Saving a report allows spot welding data to be stored on a memory card, in order to use it again later or retrieve it at a later date eg. on a computer. Chief Automotive Technologies supplies software called SPOT to read the SD card and the user manual. This SPOT software is stored in the SD card with the user manual.


By default, the report mode is not activated when the machine is started.


Pressing the record button (on/off)  and the « mode » button starts the recording process in the selected log file. To stop saving the information, press the save button again.


The new report has: an identifier entered by the user, all the spots made, the arm and the clamp used, the settings (voltage and pressure). It puts also stores any messages received whilst recording: LOW I, LOW P, CAPS PB.

You can enter the identifier using the 4 buttons: +, -, up or down. If you enter an identifier that has already been used, the unit will save the new spot information, without erasing the old ones.




To erase the content of a report, it has to be on screen by pressing "view" .

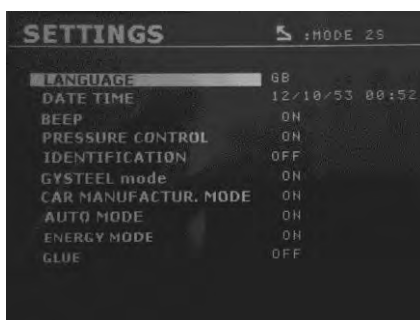
Then press  and the following message will be on the screen:

Press a second time  :

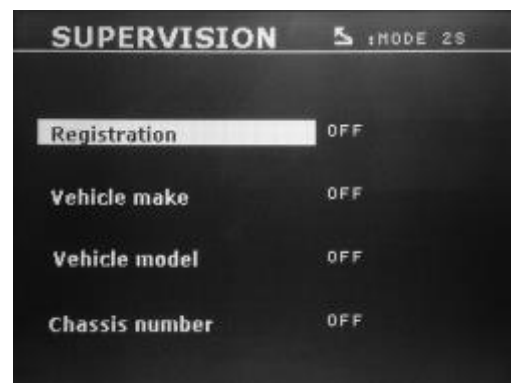


When the warning image is displayed, press  again and the report content will be erased. The warning image will disappear after 3 seconds.

## User identification mode:



If the identification mode setting is « ON », all the fields of the repair order must be completed or the machine will display « identification defect ». To activate or deactivate the identification mode, an "Identification" SD card must be inserted in the BP drive instead of the "Program" SD card. The setting screen below is activated by pressing the mode button for 2 seconds.



When the "Identification" SD card is inserted and the identification mode is « ON », the following screen is displayed →

This screen allows the selection of default fields « registration number, car brand, car model, chassis number »  
To exit the screen, press and hold the mode button for 2 seconds. Then, re-insert the "Program" SD card into the BP drive.

## Entry of repair order (screen guide):

To modify or erase a repair order that has already been created, you will need to use the SPOT software on a PC (you are unable to do this on the machine). You can create maximum 100 repair orders.

Screen: « Job number »



Screen: « User identification »



The « left » and « right » arrow keys move the cursor within the field.  
The up and down arrow keys scroll through letters or figures.  
Press Esc to erase the field.  
The Mode button changes the field to modify playback.

Screen: « Registration number » (optional)



Screen: « Vehicle make » (optional)




Screen: « Vehicle model » (optional)



Screen: « Chassis number » (optional)



## Catalogue:

The View button , allows you to view all repair orders on the screen - "CATALOGUE":

The number of pages is displayed (max 13) at the top

The left and right arrow keys scroll through the pages. The up and down arrow keys scroll through the list of Repair Orders. Press the Mode button to display the repair order selected.



26/01/17 09:31

JOB1				
N°	X/C	I(kA)	F(daN)	Observation
1	C1	6.5	205	P FAIBLE
2	C1	7.7	265	
3	C1	7.8	460	

Use the « mode » button to exit the report view.


- ♦ The SD card driver allows the management of SD cards > 2 Gb.
- ♦ Each repair order is linked an archive file xxx.dat.(with xxx=identifier from 001 to 100). In each archive, you can save up to maximum 500 welding points. The repair order names and users are displayed.
- ♦ The page number is indicated top left.
- ♦ All the repair orders are saved in the file catalog.SYS.
- ♦ This file contains the total number of repair orders, the name of each repair order and the name of each user. There are a maximum of 100 repair orders.

### User programs:

The 'save' option allows a user program to be entered to save information for future use. 20 memory slots are available; each one contains the following parameters: tool, arm, welding intensity, welding time and pressure. A program can be linked to a clamp and gun.


The  button will save the settings in the manual mode (intensity, time and pressure). The 20 memory slots are indicated by their identifier (when in use) or by the symbol « --- ».


To enter an identifier, use the 4 buttons +, -, up and down arrow keys. When entering an existing user, the machine will erase the previous parameters.

The « recall » button  allows access to previously saved settings.

Pressing  will erase the selected program from the saved program list.

The « mode » button exits the program selection mode, the machine will then enter manual mode with the parameters and the tool saved in the program.

To deactivate a program simply change the parameter value in one of the 3 modes manual, normal or multi metal sheet, or change the tool (clamp or gun) by using the .

The view  button will retrieve a previously saved report and display it on the screen.

### SD memory card (ref CEL050914)

This card is a link between the MI200 LC or LX and a PC to enable the user to:

- ♦ Retrieve and print reports for a record of work, and documentation for insurance companies if required.
- ♦ Upgrade welding parameters or add new languages.
- ♦ Edit the parameters in the SD memory card.
- ♦ Access the user manual stored on the SD memory card.



The memory space can store information on more than 65 000 spots.

The unit can only work without memory card in manual mode. In other modes, if the memory card is not inserted in the card drive, the following « message will appear: The machine must be shut-down and restarted after inserting an SD card”.

**Important:** The machine must be switched off before an SD card is inserted or removed from the reader - failure to do so may result in the loss of data from the card.

### ELEKTRON Software

The software allows the user to edit and save the weld reports made by a MI200 LC or LX equipped with a SD drive.

The Elektron software can be installed from files present on the SD card. In the \ V X.XX directory, double click on the INSTALL.EXE file, and follow the instructions to install the software on your PC. A ELEKTRON icon is automatically created on the desktop of your PC.

#### 1/ Language selection

The software contains several languages: French, English, German, Spanish, Dutch, Danish, Finnish, Italian, Swedish, US, Russian and Turkish. To choose a language, in the menu, select **Options**, and then click **Languages**.

Attention: once a language is selected, shut down and re-start the Elektron software in order to apply the change.

#### 2/ User identification

In order to personalise the reports with your company information, the required fields will need to be completed. In the menu, click on **Options** and select **Identity**. A new screen is displayed with the following information:

*Company name*

*Address / Post code / City*

*Phone / Fax / Email / Website*

*Logo*


This information will be displayed on your print-outs.


#### 3/ Traceability


As a default, the Elektron software opens in « Traceability » mode. In the « Welding spot programming » module, click on « Traceability » in the « Options » menu.


### **3.1/ Import the spot reports made from an SD card**

To import the spot reports made with your welding machine to your PC, insert the SD card into the PC card drive, or use a card reader, and start up the Elektron software.

Select the drive and click on the **Import**  icon. When the import is complete, the spot reports will be grouped by the identifier of the repair order. The identifier matches up with the report name established on the welding machine, and is displayed in the tab «In progress». Once the reports have been imported, it is possible to search, edit or archive them. To view the spots made in a report, select a report and the spots will be displayed in the table.

To search for a report, fill the field and click on the icon .

To edit a report, select it and click on the icon .

To archive a report, select it and click on the icon .


Attention! The imported reports cannot be cancelled until they are archived.


### **3.2/ Consult archived spot reports**

To consult the report archives, click on the tab "**Archives**". The files are grouped by year and month. To view the spot information, select a report and they will appear in the table. For archived reports, it is possible to search, edit or to erase a report.

**Attention!** When a report is archived or erased, the SD card must then be formatted to prevent the report from being imported again.

To search for a report, fill the field and click on the icon .

To edit a report, select it and click on the icon .

To erase a report, select a report and click on the icon .

### **3.3/ Purge the SD card.**

A purge operation will erase all the reports saved on the SD card.

To purge and SD card, insert the SD card into your PC card drive or a card reader and, in the menu, click on **Options** and **Purge the SD card**.

Attention : any reports stored on the SD card that have not already been imported, will be imported automatically before purging.

### **3.4/ Entering the report information**

Each report can include the following information:

User

Car model

Repair order

Registration number

Put into circulation

Intervention

Comments

To enter this data, select a report and enter the information in the report header.

### **3.5/ Print a report**

To print a report, select the one required and click . A print preview is displayed. Click .

### 3.6/ Export the report as a PDF file

To export the report as a PDF, select a file, and click on . A preview of the print is displayed. Click  PDF. Below shows an example of the parameters saved and printed by using the Elektron software.

<b>CHIEF</b>		Raison sociale: Chief Automotive Technologies		Téléphone: 800-445-9262	
		Adresse: 996 Industrial Drive		Télécopie: 866-275-0173	
		Code postal: IN 47259		Email: elektron.support@chiefautomotive.com	
		Ville: MADISON		Site Web: www.chiefautomotive.com	

Intervenant: DUPOND JEAN-PIERRE	Véhicule: MEGANE CC 1.6L 16V
Ordre de réparation: 455B	Immatriculation: 1600SW53
Date du journal: 13/05/2008	Mise en circulation: 21/01/2005
Commentaires: RAS	Intervention: REDRESSAGE AILE ARRIERE GAUCHE

MI200T									
Point n°	Date / Heure	Mode	Outil	Consignes			Mesures		Etat
				Temps (ms)	Intensité (kA)	Serrage (dall)	Intensité (kA)	Serrage (dall)	
1	05/05/2008 11:11:21	Normal	Pince X n°1	310	6,6	195	6,5	195	Point OK
2	05/05/2008 11:11:25	Normal	Pince X n°1	310	6,6	195	6,5	195	Point OK
3	05/05/2008 11:11:29	Normal	Pince X n°1	310	6,6	195	6,5	195	Point OK
4	05/05/2008 11:11:33	Normal	Pince X n°1	310	6,6	195	6,5	195	Point OK
5	05/05/2008 11:11:48	Manuel	Pince X n°1	310	6,6	550	6,5	480	Pression faible
6	05/05/2008 11:11:54	Manuel	Pince X n°1	310	6,6	550	6,5	480	Pression faible

MI200T									
Point n°	Date / Heure	Mode	Outil	Consignes			Mesures		Etat
				Temps (ms)	Intensité (kA)	Serrage (dall)	Intensité (kA)	Serrage (dall)	
7	06/05/2008 11:18:36	Normal	Pince C n°1	310	6,6	195	6,4	190	Point OK
8	06/05/2008 11:18:48	Normal	Pince C n°1	310	6,6	195	6,6	190	Point OK
9	06/05/2008 11:18:53	Normal	Pince C n°1	310	6,6	195	6,5	190	Point OK
10	06/05/2008 11:19:00	Normal	Pince C n°1	310	6,6	195	6,5	190	Point OK
11	06/05/2008 11:19:04	Normal	Pince C n°1	310	6,6	195	6,6	190	Point OK

### 4/ Welding spot programming module

In order to enter the « Welding spot programming » mode, click on « Welding spot programming » in the « Options » menu.

The « Welding spot programming » mode allows the user to select welding spots defined by Car Manufacturers. This mode also allows the user to program his own welding spot profiles.

Insert the SD card delivered with your spot welding machine in the SD card reader of your PC, then select the corresponding reader identifier in the « Unit Choice » menu.

The spot welding machines can accept up to 16 files, which can contain each up to 48 programmed welding spots.

The first file called « User » cannot be deleted. It enables the user to add, edit or delete a programmed welding spot.

The other files are restricted to Car Manufacturer defined welding spots. It is possible to import downloaded Car manufacturer files from the website. It is not possible to add, edit or delete a welding spot saved in a Car Manufacturer file.

#### 4.1/ Import a Car Manufacturer welding spot file

Double click in the first column and highlight a car manufacturer name.

USER	user	▲
GM EUROPE		
PSA		
RENAULT		
TOYOTA		▼


Then, double click in the second column to select a Car Manufacturer file previously downloaded from our website.

USER	user
GM EUROPE	ctr1
PSA	
RENAULT	
TOYOTA	

The list of welding spots defined by the Car Manufacturer are displayed in the second table below. Select a programmed welding spot in order to display the welding spot profile on the screen.

GME 01
GME 02
GME 03
GME 04
GME 05

#### **4.2/ Add a programmed welding spot in the USER file**

In order to add a welding spot in the USER file, select the USER file in the list of files and then click on the button  on the right of the table below. Enter the name of the welding spot, and then press the TAB key or click outside the list programmed welding spots in order to program the welding parameters.

USR001

To program a welding spot, it is possible to select :

The prespot tightening duration

The preheating current and duration

The parameters of the pulses (up to 4 maximum), with pulse ramp-up time, current and duration. Inter pulse parameters can also be selected.

The current and duration of the forging stages (hot and cold) can also be selected.

In order to modify the parameters, click on the buttons .

When the user changes a parameter, the chronogram of the welding spot profile is updated.


To validate the programmed welding spot, click on the button .

To cancel a programmed welding spot, click the button .


#### **4.3/ Edit a welding spot programmed in the USER file**

In order to edit the parameters of a programmed welding spot, select a welding spot in the list and then edit the welding parameters.

To validated the modifications, click on the button .

To cancel the modifications, click on the button .

#### **4.4/ Delete a welding spot programmed in the USER file**

Select a welding spot programmed in the list, then click on the button  on the right of the list.

## **5- USE AND MAINTENANCE PRECAUTIONS**

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### **User training**

Any operator of this machine should receive training adapted to its use in order to gain maximum performance from the unit (e.g.: car body repair training).

### **Adjust the balancer's spring tension**

Adjust the balancer's spring tension with the Allen key equipped. Do not leave the clamp hanging for a long time on the balancer, as it would induce early wear out of this part. Do not let the clamp fall down repeatedly without holding it, as it could damage the balancer.

### **Preparation of the work-piece:**

Grind and clean the work-piece thoroughly before welding.

If protection is being used, ensure that the parts are conducting by testing a sample.

### **Single sided gun welding**

Before repairing a car, check that the car manufacturer authorizes that welding process.

### **Cooling liquid level and efficiency**

The cooling liquid level is important to ensure the unit functions correctly. The liquid level should always be between the minimum and maximum levels indicated on the tank. Check the level and efficiency of the cooling liquid regularly, replace if needed. It is recommended replacing the cooling liquid every 2 years.

### **Cleaning the pneumatic filter**

Ensure the dehumidifier filter located at the back of the machine is cleaned regularly.

### **Generator maintenance**

The maintenance and repair of the generator should only be carried out by a Chief Automotive Technologies technician. Any repair/maintenance made to the generator by unauthorized personnel will invalidate the machine's warranty - Chief Automotive Technologies will not take responsibility for any or accident under these circumstances.

### **Cleaning / replacement of welding tools and other items**

All welding tools are consumable and will deteriorate during use.

To extend the lifespan and efficiency of the tools, ensure that they are inspected and cleaned regularly.

When using with the Pneumatic Clamp, check that the condition of the electrodes/CAPS (flats, rounded or beveled) is good. If the condition is poor, clean with fine grain sandpaper, or replace (see reference on the machine).

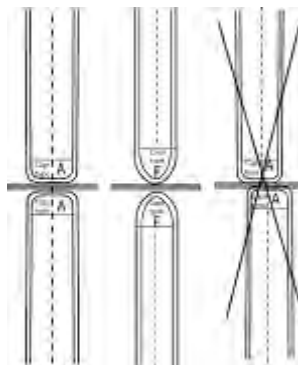
When using with the gun, check the condition of the tools: star, single-point electrode, carbon electrode. Clean, or replace if necessary.

Ensure the pneumatic filter is clean to prevent the machine overheating.

### **Replacement of the caps/electrodes:**

- ♦ To ensure an efficient welding point, you need to replace the caps every 200 spots - remove the caps using the spanner. (Ref. CEL 050846)
- ♦ Use grease (ref: CEL050440) when replacing caps
- ♦ Caps type A (ref: CEL049987)
- ♦ Caps type F (ref: CEL049970)
- ♦ Caps beveled (ref: CEL049994)

**Caution:** The caps must be perfectly aligned. To check the electrode line, see change of arms on pages 18 and 19.



## Replacement of the C arms (MI200 LC):

### ATTENTION :

The clamps and gun are connected to the same power supply, therefore when one is in use, current will be delivered to all tools. It is necessary that the tools which are not used are placed on their respective supports. Failure to follow this precaution may result in serious damage to the user, the generator and its tools, and there is a high risk of sparks and metal spatter.

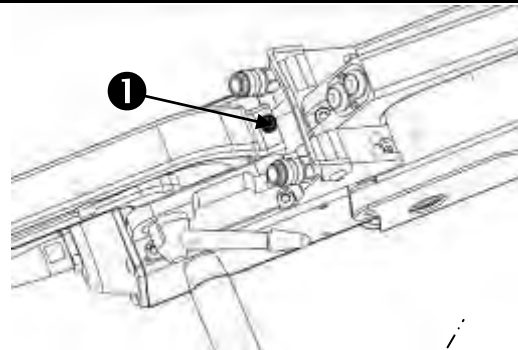
## Replacement of the C arms :

Please read the following instructions carefully.

**Incorrectly tightening or setting the C clamp arms can lead to the arm and clamp overheating and causing damage. Damage caused by incorrect assembly are not covered under the warranty.**

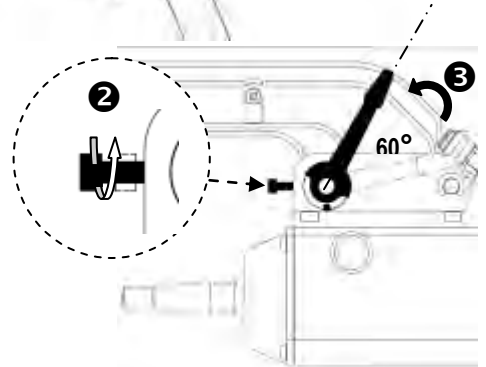
Ⓐ

- ◆ Switch off the machine, or put the machine into « clamp setting » mode.
- ◆ Pull the locking system ❶ which holds the arm to the clamp.



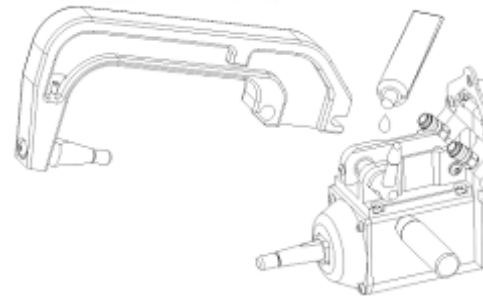
Ⓑ

- ◆ Disconnect the cooling liquid pipes.
- ◆ Unscrew screw ❷ and loosen the lever ❸ on the side of the clamp.



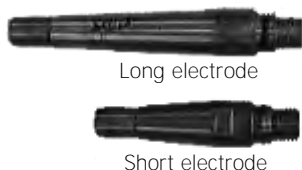
Ⓒ

- ◆ Remove the clamp arm.
- ◆ Lubricate both a new arm and the support with contact grease (ref. CEL050440).



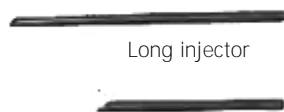
### Specific Installation for C2 and C8 arms

For these arms, the electrodes will also need to be changed. Unscrew the short electrode with a flat spanner and remove the injector. Centre the injector along the axle of the clamp (Caution: beveled side outside) and insert it manually (1). Position the long electrode in front and screw it on to the clamp axle (maximum torque 15Nm) (2)



Long electrode

Short electrode



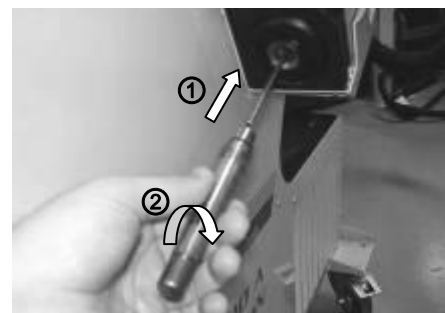
Long injector

Short injector

#### Electrode types:

Short: C1, C3, C4, C5, C6, C7, C9, C10

Long: C2, C8



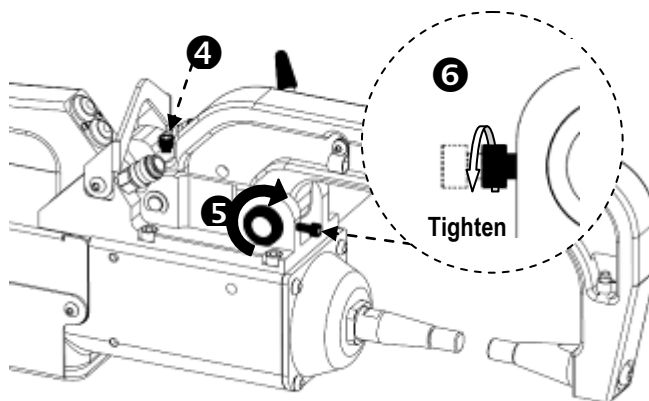


### **Adjustment of the C arms :**

①

♦ Pull the locking system ④ to place the arm on the clamp and push it back to secure the arm.

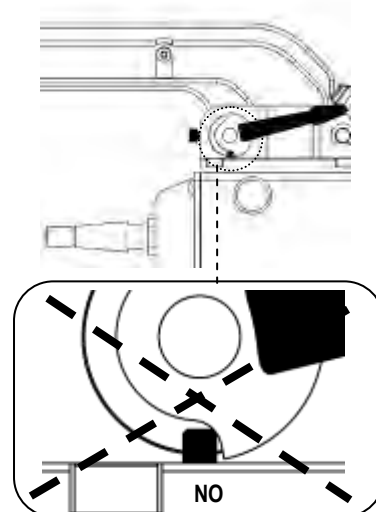
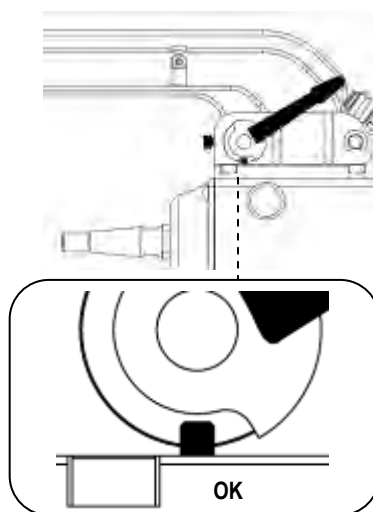
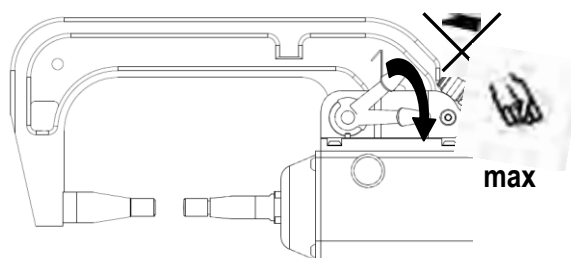
♦ Tighten ring ⑤ manually, then the tighten ⑥ using the Allen key.



②

♦ Tighten the lever manually and check it is not end up .

If it is the case go back to step ①.



**Warning: Clamp and arm may be damaged if the lever is not tightened properly.**

③

- ♦ Check the cooling liquid level.
- ♦ Check screws and lever, incorrectly tightening can damage the material.
- ♦ Switch on the machine.

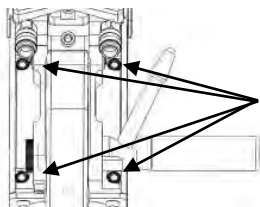
### **ATTENTION :**

**The warranty does not cover damages and defects due to a bad tightening or assembly of the C arms.**

### **C clamp overhaul :**

The tightening of the following screws need to be inspected every month:

#### **Screw between the arm and the clamp:**



These 4 screws fix the arm to the clamp. They need to be tightened to ensure good transmission of the current. A loose/bad connection leads to loss of current and even worse can cause irreversible damage to the arm or clamp.



The screw shown opposite ensures secure attachment of the copper cable which carries current to the clamp. It is recommended that screw tightness is checked every month to prevent irreversible damage inside the clamp.

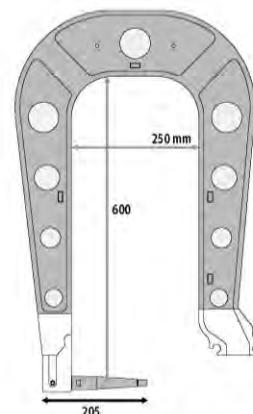
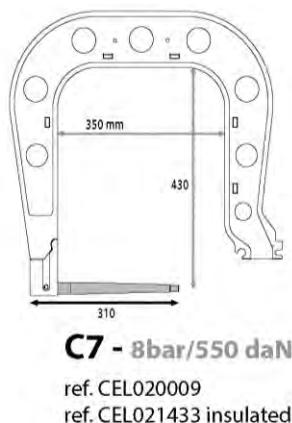
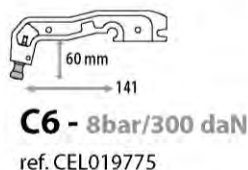
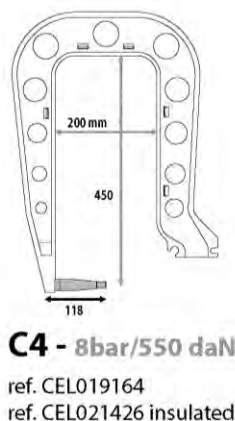
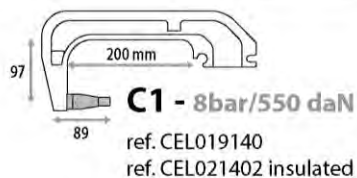
### Arm types for the C clamp:

#### Arms kits :

Ref. CEL019126 : C2 + C3 + C4

Ref. CEL050044 : C2 + C3 + C5 + C6 + C9

Ref. CEL021457 : C2+C3+C4



### Accessories and consumables



### Spot control

Ref. CEL050433



HLE / HTS 1,0mm (x150) Ref. CEL050181  
THLE / VHTS 2,5mm (x150) Ref. CEL050167



### **Replacement of the X arms (MI200 LX):**

- ♦ Turn the machine off, or place machine in « clamp setting » mode.
- ♦ Place the clamp somewhere above the level of the cooling liquid tank to drain water from the arms.
- ♦ Wait at least one minute to lower the pressure in the arms.
- ♦ Unscrew the tightening screws of the circular arm joints.
- ♦ Remove the arms and drain any excess liquid from the arms.
- ♦ Put contact grease around the end of the replacement arms that will be connected to the clamp (ref CEL050440).
- ♦ Check the condition of the toric joint (toric joint D=25, thickness = 4).
- ♦ Put the arms on the joint stop, set the alignment so that the electrodes are face to face, then tighten the 2 screws of the circular joint (couple 15 Nm).
- ♦ Check the cooling liquid level.
- ♦ Switch on the unit.

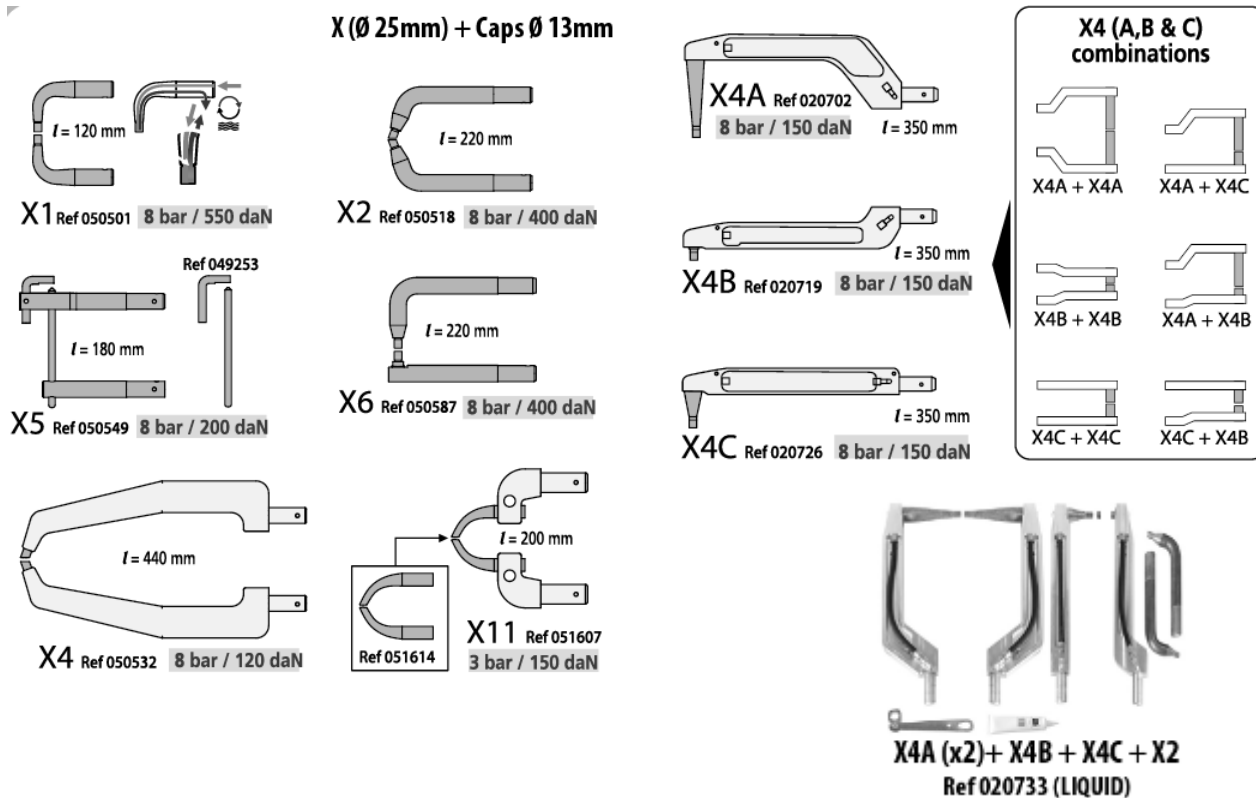


**ATTENTION: If the circular joints are not securely tightened as the liquid circulates, the arms could be ejected and cause severe damage or injury.**

### **ATTENTION :**

**The warranty does not cover defects or damage caused by incorrect assembly or incorrect tightening of the X-Clamp.**

### **Arm types for the X clamp:**



**6- SYMPTOMS / REASONS / SOLUTIONS**

<b>SYMPTOMS</b>		<b>REASONS</b>	<b>SOLUTIONS</b>
<b>Clamp</b>	The Spot weld doesn't hold / is not good	The caps used are worn out/faulty	Replace the caps
		Insufficient preparation of the work-piece	Sand and clean the metal sheet again
		The arm selected doesn't match the one installed	Check the arm with the software
	The spotter cuts the metal	The caps used are worn out/faulty	Replace the caps
		Not enough pressure	Check the compressed air network (min. 102 PSI - 7 bar)
		Insufficient preparation of the work-piece	Sand and clean the metal sheet again
	Lack of power at the clamps (C and X)	Power supply issue	Check the stability of voltage delivered
		Caps worn out or damaged	Change the caps
	Lack of power only at the C clamp	Bad tightening of the arm	Please follow the instruction in the C arm adjustment chapter
	Power cable expands. Excessive pressure when changing the X arm.	C arm missing on the the C clamp. C arm cooling pipes are disconnected	Assemble the C arm on the C clamp. Connect the C arm cooling pipes
<b>Welding Gun</b>	Abnormal overheating of the gun	Bad tightening of the chuck	Check the tightening of the chuck, the star support chuck, and the liner condition.
		Gun liner out	Put back the liner to have the air cool going to the gun
	The spot weld made doesn't hold	Bad positioning of the earth clamp	Check the earth clamp is securely connected to the metal sheet
	Lack of power in the gun	Bad contact of the earth clamp	Check the earth clamp is securely connected to the metal sheet
		Loose chuck or accessories	Check the tightening of the chuck and accessories, and the condition of the liner
		Worn out / Damaged consumables	Replace the consumables

**7- WARRANTY**


## Installation Registration Form

Thank you for purchasing a Chief Elektron product. Please fill out the information below to register your purchase.

Company Name: \_\_\_\_\_

Contact: \_\_\_\_\_ e-mail: \_\_\_\_\_

Business Address: \_\_\_\_\_

State/Zip code: \_\_\_\_\_ Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Chief Elektron Model Purchased:	
EL520458 MI-100 Control MX4900	
EL520484 MI 100 Control VW/Audi	
EL520531 MI-100 MX3900	
EL520535 MI 100 Control T MTC6000 OEM	
EL515706 Multi-Spot M-80	
EL520436 MI-100 Control MC5000	
EL520474 MI-100 Control T	
VAS 821 101 MI200T	
VAS 821 101CSA MI200T	
CEL025000 MI200T	
CEL025000CSA MI200TCSA	
CEL025001LC MI200LC	
CEL025002LX MI200LX	
CEL5208B Multi Mig 190	

Chief Elektron Model Purchased:	
EL900021 Multi Mig 621	
EL900022 Multi Mig 522	
EL900010 522 Welder w/PP & STD. Torch	
EL900011 511 Welder w/STD. Torch	
EL900012 Muti Mig 511	
EL900013 Multi Spot M22	
EL900003 Multi Spot M25 AL	
EL900025 Multi Spot M30	
EL900029 Multi Spot M30 Pro	
EL900026 Multi Spot M30 Pro Aluminum	
EL515819 Multi Cutter MC40	
MigMag Welder Place Serial Number Below	
Other:	

Serial Number: S \_\_\_\_\_

Purchased from: \_\_\_\_\_ Date Installed: \_\_\_\_\_

Technical Information: To be completed by installer or electrician

Wire Size: # \_\_\_\_\_ Breaker Size: \_\_\_\_\_ Amp's

Main Voltage (at panel): \_\_\_\_\_ V Voltage at Receptacle: \_\_\_\_\_ V

Max Air Pressure: \_\_\_\_\_ PSI

Was a Loop Resistance Check Performed: \_\_\_\_\_

Information above is confirmed by:

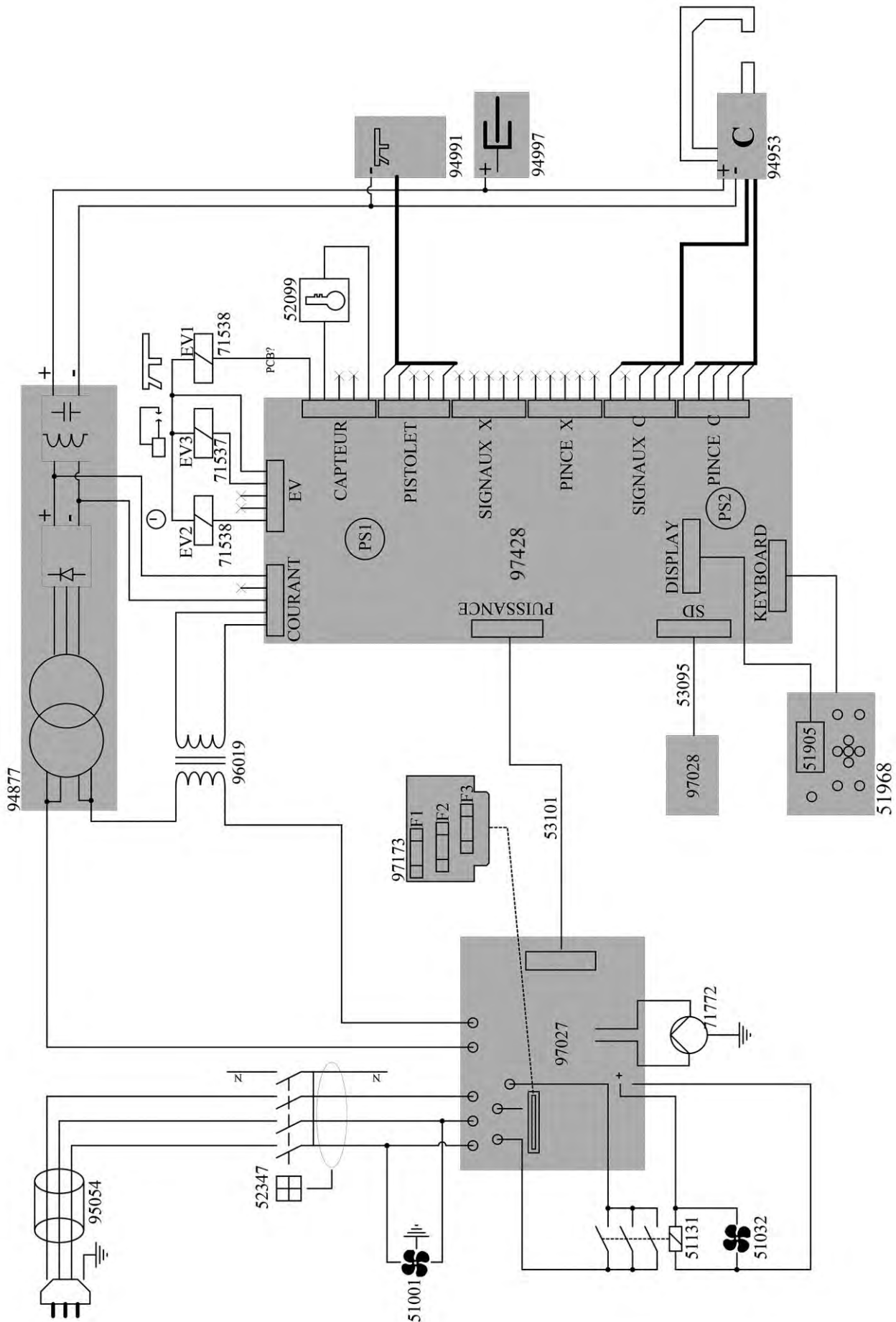
Installer: \_\_\_\_\_ Shop Owner/Manager: \_\_\_\_\_

Date: \_\_\_\_\_

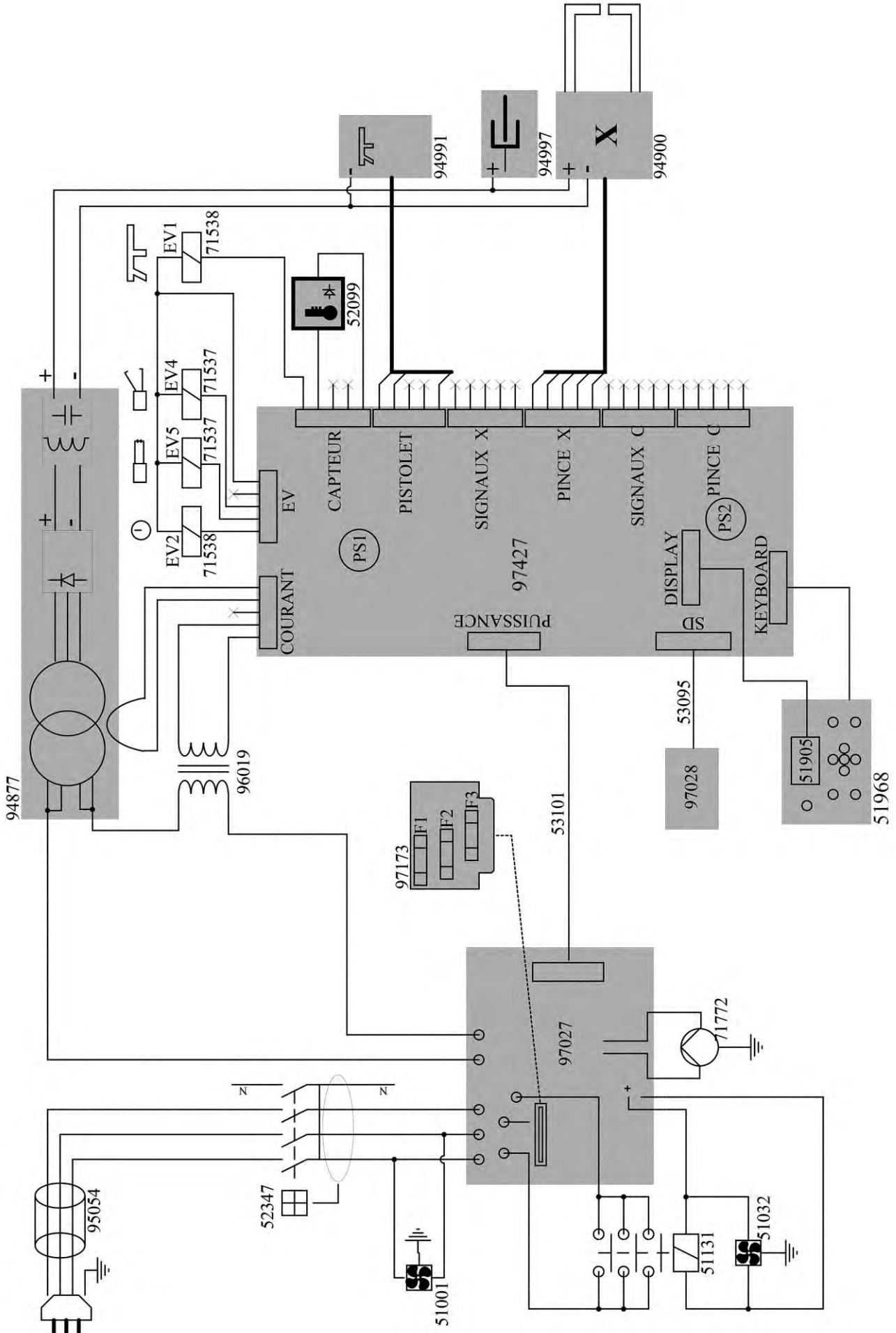
Submit form to: Chief Elektron fax #:1-866-275-0173 or salesorders@chiefautomotive.com

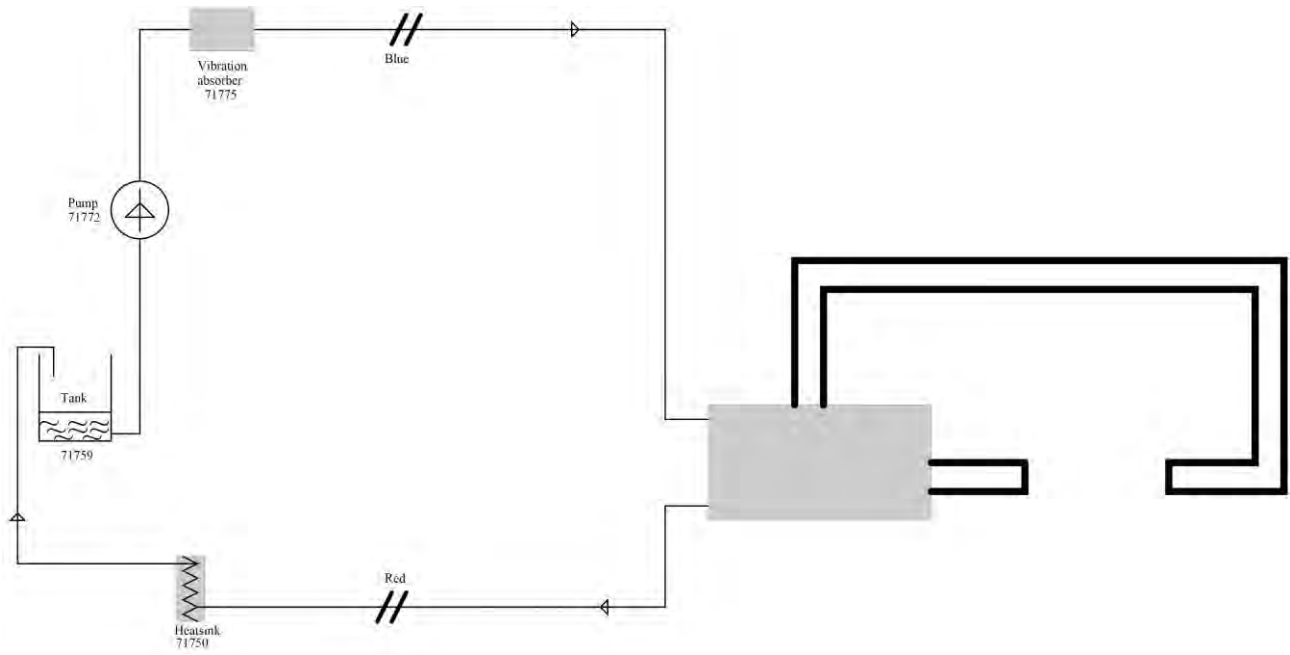
**8- CIRCUIT DIAGRAMS**

MI200 LC:



MI200 LX:









**9- COOLING LIQUID CIRCUIT**




## 10- TECHNICAL SPECIFICATIONS

<b>ELECTRICAL CHARACTERISTICS</b>	<b>MI 200 LC 400 V</b>	<b>MI 200 LX 400 V</b>
Nominal input voltage : U1N, Frequency	400V 3~ 50/60 Hz	
Permanent input current : ILP (ILCC)	32 A (274 A)	
Permanent input power : Sp (S50)	23 kVA (32 kVA)	
Maximum welding input power : Smax	190 kVA	
Secondary voltage : U2d	15.5 V dc	
Maximum short-circuit output current : I2cc	13 000 A dc	
Maximum permanent output current : I2P	1 600 A	
Circuit breaker	32 A curve D	
Earth Leakage Circuit Breaker	30 mA	
Duty cycle	1.45 %	
<b>THERMAL CHARACTERISTICS</b>		
Ambient temperature range	+5°C +40°C (+41 and +104°F)	
Transport and storage temperature range	-25°C +55°C (-13 and 131°F)	
Hygrometry	Max 50%@40°C (104°F) / Max 90%@20°C (68°F)	
Altitude	2000 m (6500 ft)	
Thermal protection by thermistor on the diodes bridge	70°C (158 °F)	
<b>MECHANICAL CHARACTERISTICS</b>		
Protection rating	IP20	
Width	650 mm (25.6 in)	
Depth	800 mm (31.5 in)	
Height	2050 mm (81 in)	
Weight	160 kg (350 lbs)	
Weight of clamp	10 kg (22 lbs)	
Network cable length	8 m (26 ft)	
Clamp cable length	2.5 m (8.2 ft)	
Range of arm spacing : e	125 mm à 200 mm (4.92 in to 7.87 in)	150 mm (5.9 in)
Range of arm length : l	25 mm à 600 mm (1 in to 23.6 in)	120 mm à 440 mm (4.7 in to 17.3 in)
<b>PNEUMATIC CHARACTERISTICS</b>		
Air pressure P1 min / P1 max	8 bar (116 PSI) / 10 bar (145 PSI)	
Liquid flow rate : Q	1.5 l/min (0.4 US Gal/min)	
Pressure drop of the coolant : Δp	2.5 bar (36 PSI)	
Minimum regulated force : F min	100 daN (225 lbf)	
Maximum regulated force with C clamp : F max	550 daN (1236 lbf)	

## 11- ICONS

<b>V</b>	Volt
<b>A</b>	Amps
<b>3 ~</b>	Three-phase power supply
<b>U1n</b>	Nominal input voltage
<b>Sp (S50)</b>	Permanent input power (50% duty cycle input power)
<b>S max</b>	Maximum welding input power
<b>U2d</b>	Secondary DC no load voltage
<b>I2cc (I2p)</b>	Maximum secondary current on short-circuit (Permanent secondary current)
<b>IP 20</b>	Protected against moisture. No access to dangerous parts.
	Caution! Read the user manual before use
	Separate collection required – Do not throw in a domestic waste bin.
	Do not use in the open air. Do not use the product in damp/wet environments. IP20.
	Risk of interference and disturbance of electronic medical devices (i.e. pace-makers) when near of the product.
	Caution! Strong magnetic field. People wearing active or passive implants must be informed.
	Always wear suitable protective clothing to shield eyes, hands, and skin, when welding.

