



Autres langues disponibles sur la carte SD.  
Other languages available on the SD card.  
Weitere auf SD-Karte verfügbare Sprachen.

## **USER MANUAL** **v1.01.01**

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Thank you for your choice ! Before installing and using the product or before maintenance, please read carefully the following safety recommendations in order to avoid accidents to the users and damage of the welding process.

GYS cannot be held responsible for the damages occurring to persons or belongings, following the use of the machine in the following circumstances:

- Modification or disabling of safety elements,
- Non-respect of the recommendations written in the user manual,
- Modification of the characteristics of the product,
- Use of accessories other than the GYS accessories , or accessories not adapted to the machine
- Non-respect of the regulations and particular dispositions in the country where the machine is installed.

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

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 impacts (impacts of hail with the option « quick repair”).

### **GENERALITIES**

1. The operators must have followed up an appropriate training.
2. The repair and maintenance operations can only be performed by qualified personnel.
3. The operator is responsible for the respect of the car manufacturer's recommendations, regarding the protection of the car electrical and electronic equipments (car computer, car radio, alarm, air bag, etc...).
4. Before any repair or maintenance operation, the compressed air supply must be disconnected and depressurized.
5. The electrodes, arms, as well as the other secondary conductors can reach a very high temperature and remain hot very long after having stopped the machine. Pay particular attention to the risks of serious burns.
6. It is necessary to make a regular preventive maintenance on the machine.

### **MAINS SUPPLY**

1. Check whether the unit is correctly connected to the earth and that the connection to the earth is in good condition.
2. Check whether the workbench is connected to the earth coupler.
3. Make sure that the operator has no contact with the metal parts to be welded without any protection or with wet clothes.
4. Avoid being in contact with the welding part.
5. Do not make any spot welding operations in very wet areas or on a wet floor.
6. Do not weld with worn out cables. Make sure that there is no isolation defect, nor stripped cables nor loose connections, and that there is no cooling liquid leaks.
7. Before performing any control or maintenance operation, switch off and disconnect the unit directly from the plug.

### **EYE AND BODY PROTECTION**

1. During the welding process, the operator must protect himself from possible projections of steel in fusion with clothes like : leather gloves, welding aprons, safety shoes, welding helmets or glasses for filtering radiations and projections. Similarly, during grinding or hammering operations, the operator must wear eye protection.
2. The tightening force of the clamp can reach 550 daN. Keep away all body parts from the mobile elements of the clamp to avoid any risk of squeezing, of fingers in particular.
3. Do not wear rings, watches, or jewellery, which are current conductors and can cause serious burns.
4. All the protection boards must be in good condition and maintained in place.  
Never look at a welding arc without any eye protection.  
Protect the environment near the product against projections and reflections.

### **FIRE**

1. Make sure that the sparks will not cause fire, especially near flammable material.
2. Check that fire extinguishers are near the operator.
3. Use the product in a room with extractor fans
4. Do not weld on combustible or lubricant containers, even empty, nor on containers containing flammable material.
5. Do not weld in an atmosphere charged with flammable gas or fuel fumes.

### **ELECTRO-MAGNETIC COMPATIBILITY**

Near the spot-welding machine, check whether :

- there are no other power supply cable, no control lines, no telephone cables, no radio or TV reception appliances, no watches, no mobile phones, no magnetic cards, no computers nor any other electronic appliance.
- there are, in the surroundings, no persons using active medical appliances (pacemakers, acoustic prosthetics).

Plan extra protections if other products are to be used in the vicinity of the machine.

This product is designed to be used in an industrial or professional environment, as defined in the CISPR11 publication. In a different environment, it might be difficult to ensure electromagnetic compatibility.

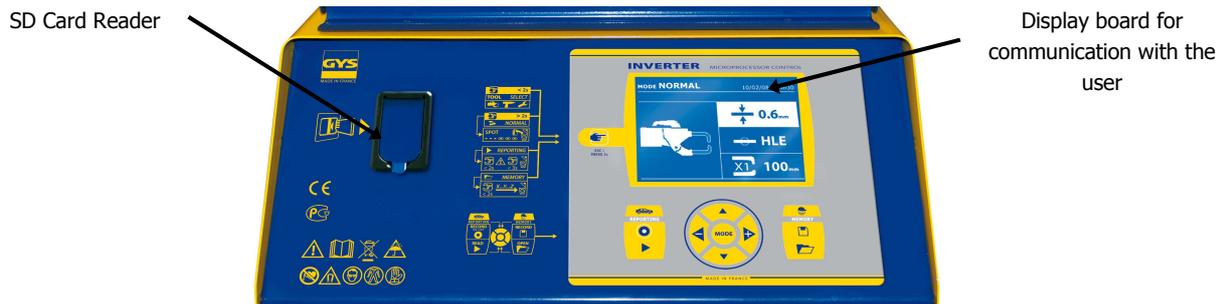
## CE MARK

GYS testifies that this product has been designed and manufactured in conformity with the following European standards :

- Low Voltage Directive 2006/95/EC in application of the norm EN 50063
- Electromagnetic Compatibility Directive EMC 2004/108/EC in application of the norm EN 62135-2
- Machines directive 2006/95/EC in application of the norm EN 60204-1

## 2 – DESCRIPTION OF THE MACHINE

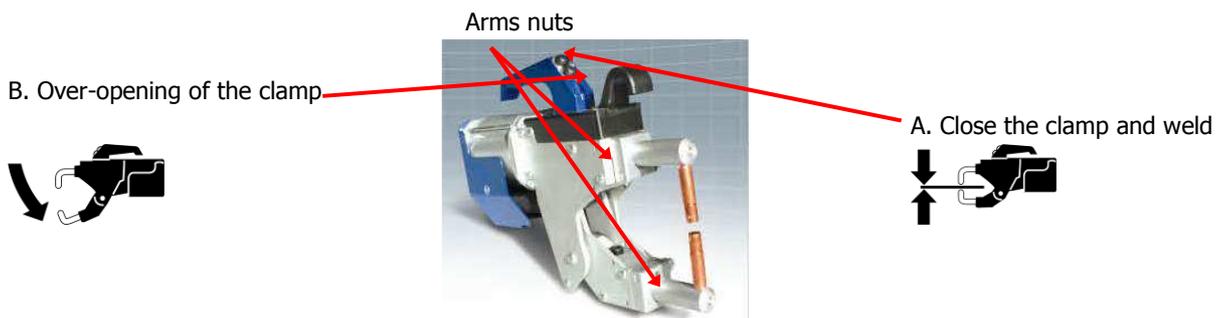
### ✓ 100R Front panel



### ✓ 100R Rear panel



### ✓ X Clamp (for GYSPOT INVERTER 100R-X)



### ✓ C Clamp (for 100R-C spotters)



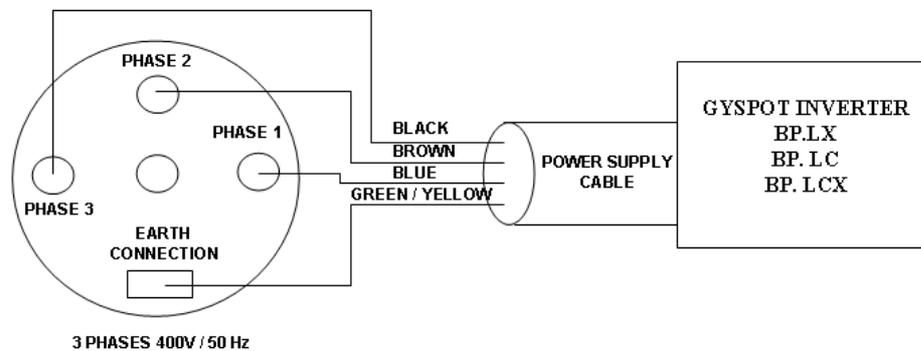
### **3- INSTALLATION**

#### **✓ Before use**

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

Here are the verifications to do :

- 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 7 bar** (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 3 bar.

✓ **Assembling the clamp stand and earth cable (accessories bag)**

X clamps (100R-X)

- ① Assemble the clamp stand on the right side of the machine
- ② Assemble the X clamp handle.
- ③ Depending on the arms used, position the clamp either using the hook or using the clamp handle (see left).



C clamp (BP.LC and BP.LCX)

- ① Assemble the c-clamp stand on the right hand side of the machine using the three M6x16 provided screws.
- ② Assemble the handle on the left hand side of the clamp.

Earth cable ( BP.LX / BP.LC / BP.LCX)

Assemble the copper plate on the extremity of the earth cable



Air connector

Assemble the air connector on the air filter.



✓ **Starting the machine**

Switch ON the circuit breaker. The electronic card starts a test and initialisation cycle of the parameters during a period of about 10 seconds. At the end of this cycle, the machine is ready to be used.

✓ **Cooling of the welding cable**

The clamp cable and single sided gun cable are cooled by air blown.

Cooling of the cable clamp:

The air is blown into the clamp cable when the user presses the trigger.  
The air continues to be blown into the cable three minutes after the last welding spot.

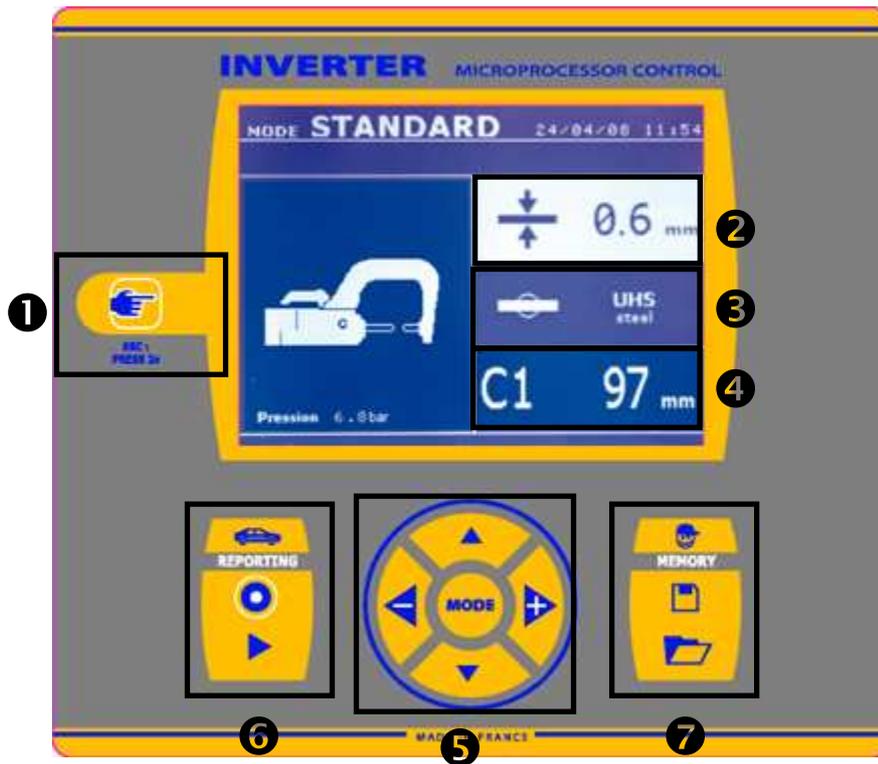
Cooling of the gun cable:

The air is blown into the gun cable when the user presses the trigger.  
The air continues to be blown into the cable three minutes after making the last shot with the gun.

The clamp is not cooled by air blown during welding for not to reduce the clamping force

## 4- EQUIPMENT OPERATION

### ✓ Key definition



#### ① Key

- Pressing this key allows to select the tool that will be used : either clamp or single sided gun. For the BP.LCX machine, pressing this key changes the mode from C clamp to C clamp adjustment, X clamp, X clamp adjustment, and finally single sided gun. The clamp adjustment mode allows to close the clamp and apply the programmed force on the electrodes with any current flowing. This mode is used to adjust the arms.
- Pressing this key 2 seconds allows to come back to normal mode from the other modes.
- Pressing this key 2 seconds brings the spot counter to zero, when it is displayed.
- Pressing briefly twice this key erases the report that is displayed on the screen, when in the visualisation mode.
- Pressing briefly this key when in program saving mode erases the selected program.

#### ② Steel sheet thickness

This setting allows to select the thickness of the steel sheets to weld. The sheet thickness can be adjusted using the + and – keys (in the circle, position 5). The thickness can be selected amongst the following preset values : 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0 mm.

#### ③ Type of steel sheet

This setting allows to select the type of steel sheet to weld, amongst 4 families : coated steel, HTS steel, UHTS steel, BORON steel. This setting can be adjusted using the + and – keys (in the circle, position 5).

#### ④ Arm used

When a clamp is used (either C or X), the user should specify here the length of the arms fitted on the clamp, so that the machine will adjust automatically the air pressure to get the requested electrode force.

#### ⑤ Use of the advanced modes

The MODE key allows to navigate through 3 different modes : STANDARD MODE, MULTISHEET MODE, MANUAL MODE. A long press on the MODE key allows to enter the configuration mode, where the language and date can be edited and the sound alarm activated for “current too low” or “low pressure” messages. The up and down keys (in the circle) allow to select the parameter to modify (sheet thickness, type of steel, arm used). The + and – keys allow to modify the parameter.

#### ⑥ Save a report

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

The « record » key  allows to enable or disable the saving of a report.

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

#### ⑦ Saving of user welding parameters

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

The “open” key  allows to call back 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).

✓ **C clamp modes**

**STANDARD Mode**



This mode is the default mode when the machine starts.

It allows to easily perform a welding spot by selecting :

- The tool to be used
- The thickness of the sheets to be welded, to choose from 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0.
- The type of steel to be welded (Coated steel, HTS steel, UHTS steel, BORON steel)
- The arm used.

Pressing the up and down key (in the circle) allows to navigate from one parameter to the next (thickness, type of steel, arm used). Each parameter can be adjusted by pressing the + and – keys (in the circle).

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

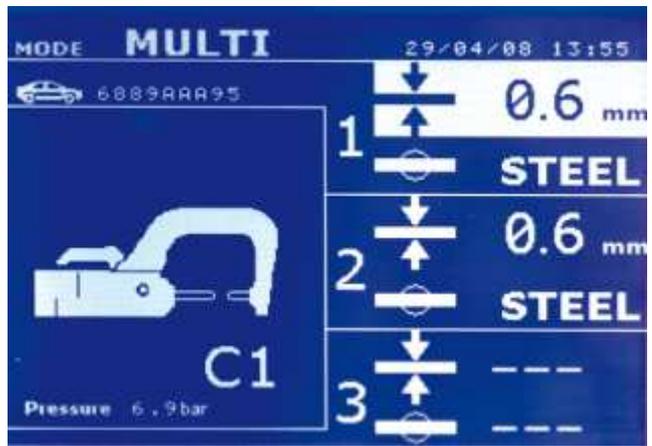
Button B on the clamp allows to make a welding spot using the selected parameters.

If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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

**MULTISHEET Mode**



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

Using the up and down keys (in the circle) allows to select the parameters for each sheet. When the parameters for each sheet are highlighted, the sheet thickness and type of steel parameters can be adjusted using the + and – keys (in the circle).

The parameters to be adjusted in this mode are :

- The thickness of each sheet to be welded : to choose between the values 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0 mm.
- The type of steel for each sheet : coated steel, HTS steel, UHTS steel, BORON steel.
- In order to activate sheet 3, press the up and down keys (in the circle) to highlight sheet 3; then use the + and – keys (in the circle) to select the sheet thickness and type of steel.

If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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



Pressing during 2 seconds the key allows to come back to the "normal" mode.

## MANUAL Mode



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

When entering this mode, the parameter selected by default is the welding current.

The parameters can be adjusted using the + and – keys (in the circle). The up and down keys allow to navigate from one parameter to the next :

- Welding current (2000 to 10000 A, by steps of 100 A). Display is in kA (thousand amps).
- Welding time (from 100 to 850 ms, by steps of 10ms). Display in milliseconds.
- Electrode force (from 100 to 500 daN, by steps of 5 daN). Display in decaNewtons.
- arm used on the clamp (arm number and length).

If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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

Pressing during 2 seconds the  key allows to come back to the "normal" mode.

## Clamp adjustment

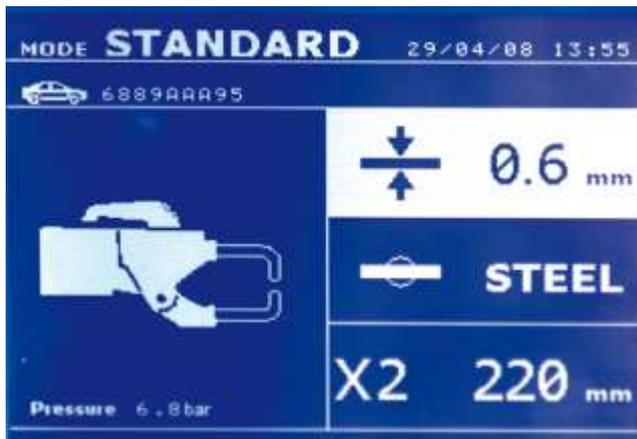


The key  allows to switch from one tool to the next, and also allows to enter the clamp adjustment mode. The clamp adjustment mode allows to close the clamp and apply the selected electrode force, without delivery of any current. The clamp remains closed as long as the button on the clamp is pressed. This mode allows to check the alignment of the electrodes and the good positioning of the caps.

Pressing during 2 seconds the  key allows to come back to the "normal" mode.

## ✓ X-clamp modes

### STANDARD Mode



This mode is the default mode when the machine starts.

It allows to easily perform a welding spot by selecting :

- The tool to be used
- The thickness of the sheets to be welded, to choose from 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0.
- The type of steel to be welded (Coated steel, HTS steel, UHTS steel, BORON steel)
- The arm used.

Pressing the up and down key (in the circle) allows to navigate from one parameter to the next (thickness, type of steel, arm used). Each parameter can be adjusted by pressing the + and – keys (in the circle).

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

Button D on the clamp allows to remotely change the type of steel.

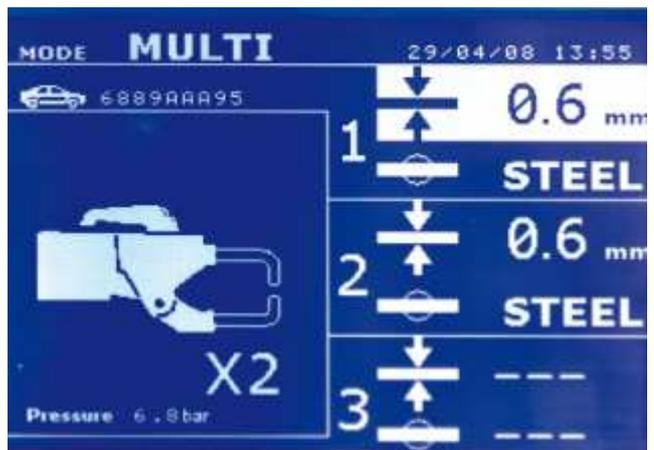
Pressing button B (close / weld) allows to make a welding spot using the selected parameters.

If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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

### MULTISHEET Mode



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

Using the up and down keys (in the circle) allows to select the parameters for each sheet. When the parameters for each sheet are highlighted, the sheet thickness and type of steel parameters can be adjusted using the + and – keys (in the circle).

The parameters to be adjusted in this mode are :

- The thickness of each sheet to be welded : to choose between the values 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0 mm.
- The type of steel for each sheet : coated steel, HTS steel, UHTS steel, BORON steel.
- In order to activate sheet 3, press the up and down keys (in the circle) to highlight sheet 3; then use the + and – keys (in the circle) to select the sheet thickness and type of steel.

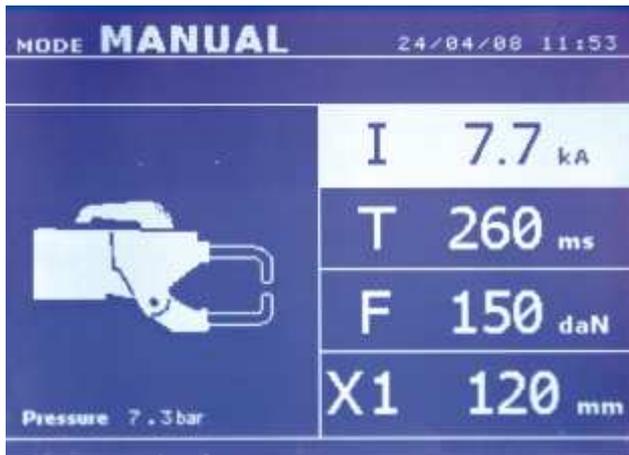
If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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

Pressing during 2 seconds the  key allows to come back to the "normal" mode.

## MANUAL Mode



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

When entering this mode, the parameter selected by default is the welding current.

The parameters can be adjusted using the + and – keys (in the circle). The up and down keys allow to navigate from one parameter to the next :

- Welding current (2000 to 10000 A, by steps of 100 A). Display is in kA (thousand amps).
- Welding time (from 100 to 850 ms, by steps of 10ms). Display in milliseconds.
- Electrode force (from 100 to 500 daN, by steps of 5 daN). Display in decaNewton.
- arm used on the clamp (arm number and length).

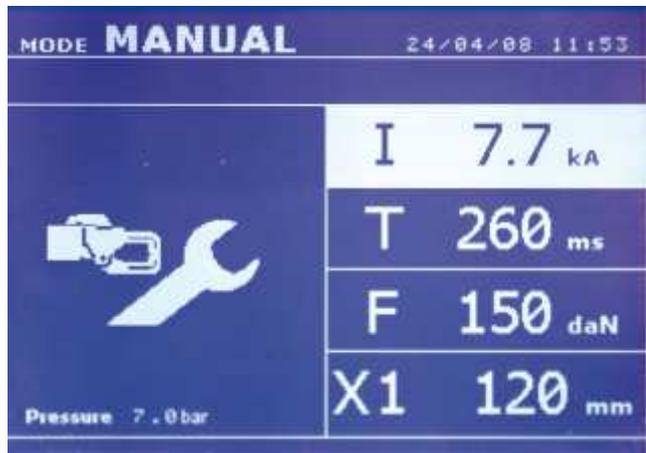
If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air pressure available.

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

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

Pressing during 2 seconds the  key allows to come back to the "normal" mode.

## Clamp adjustment



The key  allows to switch from one tool to the next, and also allows to enter the clamp adjustment mode. The clamp adjustment mode allows to close the clamp and apply the selected electrode force, without delivery of any current. The clamp remains closed as long as the button on the clamp is pressed. This mode allows to check the alignment of the electrodes and the good positioning of the caps.

## ✓ Use of single sided gun



The single sided gun can be used in standard or manual mode. In normal mode, the single sided gun will be limited to steel sheets of thickness 1.5mm maximum.

With the single sided gun, the operator can choose between a variety of tools (monopoint welding, star welding, stud welding, rivet welding, washer welding, carbon shrinking, stitch welding) The selection of the tool is performed using the + and - keys.

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

Pressing during 2 seconds the  key allows to come back to the "normal" mode.

The highlighting allows to select the parameter to adjust. Each parameter can be adjusted using the + and - keys. The up and down keys allow to move from one parameter to the next.



## ✓ Error Management

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

- the messages that warn the user, of overheating, or a lack of electrode force or welding current, etc... These messages appear on the screen, and remain until a key is pressed.
- the defects that correspond to a bad installation (air pressure, electrical power supply)
- the messages that inform of major failures, such as IGBT failure, bad charging of the power capacitors, etc... These defects cause the display of an error message that blocks the machine.
- the thermal protection makes use of a thermistor on the diode bridge, which block the use of the machine, and displays the message "overheating".

### Current too low

If the welding current obtained during the welding spot is 6% less than the current setting, the machine displays, once the welding spot is performed, an error message "Current too low", warning that the welding spot should be checked.

In any case, a message is displayed at the end of the welding spot showing the actual measured welding current. This message is displayed on the screen until a key is pressed on the control panel, or until a new welding spot is performed, by pressing the 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

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



Pressing again on the button allows 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**

A welding spot counter allows to count the number of spots performed with the same caps. If the welding spot is performed without any problem, the following message appears.



The counter is displayed on the top left corner of the

screen. Pressing the key  resets this counter to zero, after the caps have been replaced.

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



✓ **Recording features**

The log report allows to save the characteristics of the welding spots performed with the clamp. It is available from all modes, by simply pressing the keys located below the icon "REPORTING".  
The user welding parameters mode is also available from all modes, by pressing the keys below the icon "MEMORY"

**LOG Report**



Recording a report allows to save the characteristics of a series of welding spots, and save them on the SD memory card, such that they can be transferred to any standard PC. GYS provides a software to read the SD card, and edit reports. This GYSPOT software is stored in the SD card, together with a copy of the user manual.

By default, this function is disabled at the start of the machine. Pressing the key  and the "mode" key allows to start recording in the selected log file. Pressing again the record key will stop the record.

The log file thus created contains : an identifier entered by the user, as well as, for each welding spot performed, the tool used, the arms used, and the settings of the machine (welding current and electrode force). It also contains the possible error messages that have been displayed during the record : I low, P low.

Use the + and - keys, as well as the up and down keys to enter the identifier. If a previously existing identifier is entered, the machine will save the new welding spot characteristics at the end of the file, without erasing any information from the file.

The key  allows to recover a report previously saved and to read it on the screen.

Before visualizing a report, the record must be stopped by pressing the  key.

The "mode" key allows to exit the report visualisation mode.

N°	X/C	I(kA)	F(daN)	Observation
1	X2	6.5	150	
2	X2	6.5	145	
3	X1	7.6	500	
4	X1	7.7	500	LOW P
5	X1	7.7	230	LOW P
6	X1	7.7	225	
7	X1	7.6	230	
8	X1	7.6	230	
9	X1	7.6	225	
10	X1	7.6	230	
11	X1	7.7	230	
12	X1	7.7	230	

To erase the contents of a report, display it on the screen , using the "visualize" key . Then, press key . The following message appears on the screen :



When the triangle sign is displayed, pressing key  a second time definitively erases the contents of the report displayed on the screen. The triangle sign disappears from the screen after 3 seconds.

**User welding parameter record**

The saving of user welding parameters allows to save the preferred welding parameters for different users of the machine. 20 user profiles can be saved. Each of them contains the following settings : tool, arm, welding current, welding time, electrode force).

A user can save his preferred parameters for the clamp or single sided gun.

Two keys allow to navigate in this mode :



The save key allows to record the settings currently used in manual mode (welding current, welding time, electrode force). The 20 user profiles are then displayed with either an identifier, for those that are already used, or « --- » for those that are still available.

Use the + and – keys, as well as the up and down keys, to enter the identifier. When entering a previously used identifier, the machine will erase the previous settings saved.



The « Open » key allows to access the user profiles previously saved. Selecting an empty user profile has no effect.



Pressing briefly the key erases the selected program in the list of saved programs.

The “mode” key allows to exit the program selection mode, and makes the machine enter the manual mode where the parameters and the tool saved in the program are recalled.

To disable a program, simply change the value of a parameter in the manual mode, standard mode or mutisheet mode, or simply change tool by pressing key



## ✓ SD Memory card

SD Card reference : 050914

This card allows the user to transfer files from the machine to a PC to :

- collect log reports in order to keep traceability of his work, and possibly show it to an insurance company.
- Update welding parameters, add new menu languages.

A copy of the GYSPOT software to collect and edit the traceability reports is stored on the SD card.

A copy of the user manual is also stored on the SD card.

The memory space will allow saving the characteristics of more than 1 000 welding spots.

The machine can operate without any SD card in manual mode only.

If the memory card is not inserted in the card reader, then the following message is displayed :



Switch off the machine, insert the SD card, and switch the machine ON again.

Warning : The machine shall be switched off before removing the SD card from the reader indeed data on the SD card can be destroyed.

✓ **GYSLOT software for PC**

<b>GYSLOT Software</b>
------------------------

The purpose of this software is to allow the user to edit or save reports of the welding spots performed on a car body repair with a GYSLOT machine equipped with an SD card reader. In order to use this software, the PC (Personal Computer) must be equipped with an SD memory card reader.

**Language selection**

The software proposes several languages. By default, the following languages are available :

French  
English  
German  
Spanish  
Dutch

To select a language, click on **Options**, and then on **Languages** in the menus.

Beware, once the language is selected, the user should exit and enter again the GYSLOT software for the new language to be considered.

**User identity**

In order to customize the information that appears on the reports, the user should fill some data in the software. To enter this data, click in the menus on **Options**, and then on **Identity**. A new window then appears with the following informations :

Company Name  
Address  
Postal code  
Town  
Telephone  
Fax  
E-mail  
Web site  
Logo

This information will then automatically be displayed on the reports.

**Import log reports saved on the SD card**

In order to import on the PC log reports of welding spots performed with the GYSLOT machine, insert the SD memory card in the card reader of your PC, and then start the GYSLOT software.

Then, select the reader where your memory card is inserted, and click on the import icon 

When the import is completed, the welding spots performed are sorted by an identifier of the repair order. This identifier corresponds to the name of the report in the spot welding machine. This identifier is displayed in the **Active** tab.

When all the reports have been imported, it is possible to perform a search, edit or archive each report. To visualize the characteristics of welding spots in a report, select the report; the characteristics of each spot appear in a table.

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

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

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

Beware, the imported reports cannot be deleted if they have not been previously archived.

### **Visualize log reports of welding spots**

To visualise log reports, click on the **Archive** tab. The reports are sorted by year and month. To visualise the characteristics of the welding spot performed, select a report : the data corresponding to each welding spot appears in a table.

For the archived reports, it is possible to perform a search, edit or delete a report.

Beware, a report which is archived, and then deleted, will be imported again in the next import operation in case the SD card has not been blanked.

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

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

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

### **Purge of the SD card**

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

To purge the SD card, insert the SD card in the reader of your PC and, in the menus, click on **Options** and **Purge SD Card**.

Beware, during a purge operation, the reports that have not yet been imported in the software will be automatically imported.

### **Filling the informations of a report**

The following information can be automatically added on each report :

Operator	Vehicle
Repair Order	Registration
Report Date	First registration
Remarks	Operation

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

### **Print a report**

To print a report, select the report and click on icon . A print preview appears. Click on icon



## Export in PDF format

To export a report in PDF format, select a report, and click on icon . A print preview appears.

Click on icon  PDF.

Example of a report :

	<b>Company name :</b> S.A.S. GYS	<b>Phone number :</b> 0243012360
	<b>Address :</b> 134 BOULEVARD DES LOGES	<b>Fax number :</b> 0243012360
	...	<b>Email :</b> contact@gys.fr
	<b>Zip code :</b> 53941	<b>Website :</b> www.gys-soudure.com
	<b>City :</b> SAINT BERTHEVIN	

<b>Operator :</b> DUPOND Jean-Pierre	<b>Vehicle :</b> MEGANE CC 1.6L 16V
<b>Repair order :</b> 455B	<b>Registration :</b> 1600SW53
<b>Report date :</b> 13/05/2008	<b>First Registration :</b> 21/01/2005
<b>Remarks :</b> RAS	<b>Operation :</b> REDRESSAGE AILE ARRIERE GAUCHE

--

Point n°	Date / Hour	Mode	Tool	Settings			Measurements		State
				Time (ms)	Intensity (kA)	Force (dall)	Intensity (kA)	Force (dall)	
1	05/05/2008 11:11:21	Normal	X clamp n°1	310	6,6	195	6,5	195	Point OK
2	05/05/2008 11:11:25	Normal	X clamp n°1	310	6,6	195	6,5	195	Point OK
3	05/05/2008 11:11:29	Normal	X clamp n°1	310	6,6	195	6,5	195	Point OK
4	05/05/2008 11:11:33	Normal	X clamp n°1	310	6,6	195	6,5	195	Point OK
5	05/05/2008 11:11:48	Manual	X clamp n°1	310	6,6	550	6,5	480	LowPressure
6	05/05/2008 11:11:54	Manual	X clamp n°1	310	6,6	550	6,5	480	LowPressure

### ✓ Use of the single sided gun

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

In case of monopoint welding with the single sided gun, always fix the earth plate on the sheet that is not in contact with the welding electrode (such that the welding current will flow the 2 sheets to be welded).

- Select the GUN tool using the ESC key.
- Single side welding : choose the type of sheet to weld using the up and down keys, and the + and – keys.
- Other processes : highlight the accessory parameter using the up and down keys, and select the tool by pressing the + and – keys.

- 1 – Withdrawal of impacts
- 2 – Smoothing of dents
- 3 – Carbon shrinking
- 4 – Studs welding
- 5 – Rivets welding
- 6 – Bolts welding
- 7 – Stitch welding

- select the thickness of the sheets to be welded on the machine, using the + and – keys. It is possible to modify the parameters for current and time in manual mode.

✓ **Use of pneumatic clamps**

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



- Adjust and tighten the arms of the clamp, in order to have the electrodes perfectly aligned (couple : 15 Nm).
- Select the clamp adjustment mode to adjust the alignment of the electrodes
- The clamping force is calculated by the machine, considering the force setting or the thickness of the sheets selected.

Maximum clamping force

ARMS	characteristics	Maximum PRESSURE in bar	GYS REFERENCE (set of 2 arms)
RX1	L=120 aluminium	8 bar	051034
RX1	L=220 aluminium	8 bar	051041
RX1	L=220 aluminium	8 bar	051058
X1	L=120 copper	8 bar	050501
X2	L=220 copper	8 bar	050518
X3	L=350 over copper	8 bar	050525
X4	Copper under fender	5 bar	050549
X5	L=440 aluminium	8 bar	050532

Recommended parameters for mild steel sheets :

Sheet Thickness (in mm)	Recommended Force (in daN)	Arms Length (in mm)	Air Pressure (in bar)
From 0,4 to 0,8	100 to 200	120	2 to 3
From 0,4 to 0,8	100 to 200	220	2 to 4
From 0,4 to 0,8	100 to 200	440	5 to 7
From 1 to 2	150 to 300	120	3 to 3,5
From 1 to 2	150 to 300	220	3 to 6
From 1 to 2	150 to 300	440	6 to 7
More than 2	300 to 550	120	4 to 7
More than 2	230 to 550	220	6 to 8

C Clamp

- The clamping force is calculated by the machine, considering the force setting or the thickness of the sheets selected.

Maximum Clamping Force

ARMS	Max. Clamping Force (daN)	Maximum Pressure in bars	GYS REFERENCE
RC1	500 daN	8 bar	051065
RC2	500 daN	8 bar	051072
RC3	500 daN	8 bar	051089

Recommended parameters for mild steel metal sheets:

Sheet Thickness (in mm)	Type of Arm	Air Pressure (in bars)	Clamping force (in daN)
From 0,4 to 0,8	C1-C2-C3-C4-C5-C6	3	100 à 200
1 to 2	C1-C2-C3-C4-C5-C6	3,5 to 4	150 à 300
2 to 3	C1-C2-C3-C4-C5	4 to 8	300 à 550

**WARNING :**

The clamp and the gun of the unit are connected to the same current source. This means that when you use one of these 2 tools, there is also power on the second tool. The tool which is not used must therefore be placed on its stand on the trolley (clamps stand located on the side of the trolley and gun stand located on the T-Shape balancer).

In case these instructions are not respected, severe damage can occur to the generator tools. Sparks and metal projections can occur.

## **5- PRECAUTIONS AND SERVICING**

### ✓ **User training**

Operators must have an appropriate qualification for the use of the machine in order to get the best of the unit and to make satisfying work (e.g. : car-body repair training).

### ✓ **Preparation of the parts to assemble**

It is essential to grind, clean and to accost the part to be welded.  
In case of a protection application, first verify that it is conducting by testing a sample.

### ✓ **Single sided gun welding**

Before repairing a vehicle, check that the car manufacturer authorizes the welding process you have chosen.

### ✓ **Use of the under fender arm**

Considering the strong locking pressure of the clamp, the air compressed pressure should be lowered to 4 bars.  
WARNING : a pressure higher than 5 bars can cause the destruction of the arms set and therefore metal projections that might cause body damage to the operator.

### ✓ **Nuts circular joints**

Inside the 2 tightening arms nuts (see description of the clamp), there are 2 circular joints which have to be replaced in case of leaks or every 6 months. These 2 circular joints are necessary to avoid risks of cooling liquid leaks.  
These joints have a diameter of  $d=25$ , flange=4. During replacement, it is advised to add copper grease on these joints to ease insertion of the arms (copper grease reference : ref. 050440)

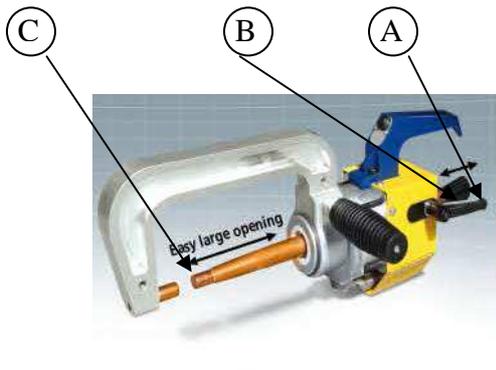
✓ **Replacement or adjustment of X-Clamp arms :**

When changing the arms, place the clamp on its stand, and proceed as follows :

- 
- Screw off the tightening screw of the arms nuts.
- Take the other arms, put some grease all around the arm's extremity (use special "copper grease").
- Put the arms back against mechanical stop. Adjust them so that both electrodes face each other. Then screw both screws of the arms nuts (couple 15 Nm).



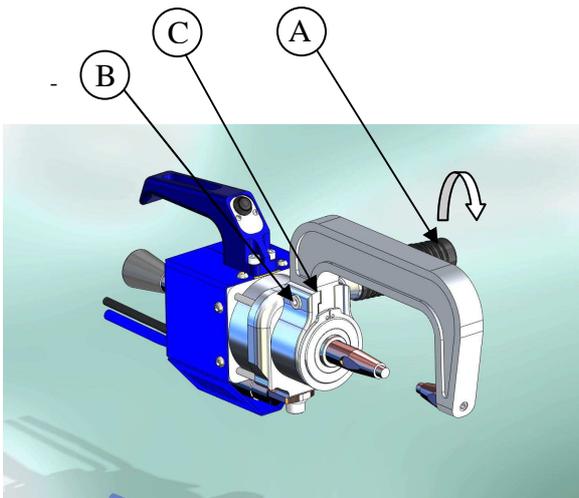
✓ **C clamp mobile electrode setup :**



Proceed as follow :

1. Unlatching the movable electrode of the nut by unscrewing the locking handle (A).
2. Adjust the position of the movable electrode by sliding through the sleeve (B).
3. opening between the 2 caps (C) should be about 20 mm.
4. Set the movable electrode in the nut tightening the locking handle (A).

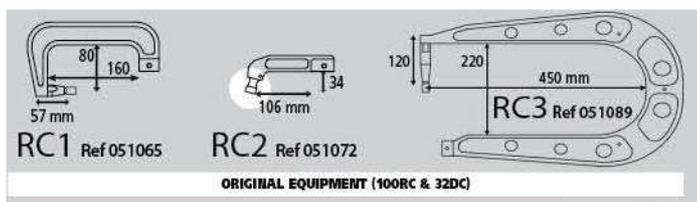
✓ **Replacement or adjustment of C-Clamp arms :**



When changing the arms, place the clamp on its stand, and proceed as follows:

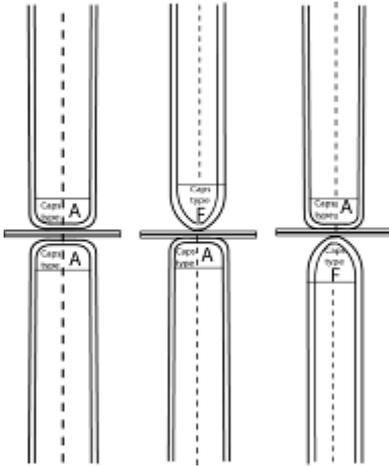
- Unscrew the handle (A)
- Unscrew the screw maintaining the arm and the clamp (B).
- Remove the arm from the clamp (C).
- Take another arm and insert it in the clamp; put some copper grease on the extremity of the arm
- Screw to assemble arm and clamp (B).
- Screw the handle again.

✓ **Type of arms for C-clamp**



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

- To guarantee an efficient welding spot, it is necessary to replace the caps every 200 spots, using the dedicated caps key.
- It is forbidden to grind the caps.
- Assemble the caps with copper grease (ref. 050440)
- A type caps (ref. 049987)
- F type caps (ref. 049970)
- Bevelled caps (ref. 049994)
- Several combinations are possible :



✓ **Cleaning or replacement of the welding tools**

Any welding tool is degraded after a certain period of use. However all tools must stay clean in order to get the best performance of the unit. When using the unit in pneumatic clamp mode, check the good state of the CAPS electrodes (flat, rounded or bevelled). If this is not the case, clean them with sandpaper (fine grain) or replace them (see reference on the unit).

For a use in single sided gun mode, it is necessary to check the state of the tools : stars, monopoint electrode, carbide electrode, ... and if they look in bad conditions clean or replace them.

The anti-dust filter at the back of the unit must regularly be cleaned to avoid the overheating of the generator.

✓ **Purging of the pneumatic filter**

Regularly drain the dehumidifier filter placed on the rear side of the unit.

✓ **Generator maintenance**

The maintenance and the repair of the current generator must be done by an appointed and GYS trained technician. Any maintenance operation done by another person will cancel the warranty conditions. GYS cannot be held responsible for damages or accidents which happen subsequently to operations performed by people exterior to GYS.

## 6. -CLAMP HEATING – DUTY CYCLE

GYSLOT 100R-X and 100R-C are cooled by air. The duty cycle is limited.

The duration of the stop due to the default "overheating" can be significant.

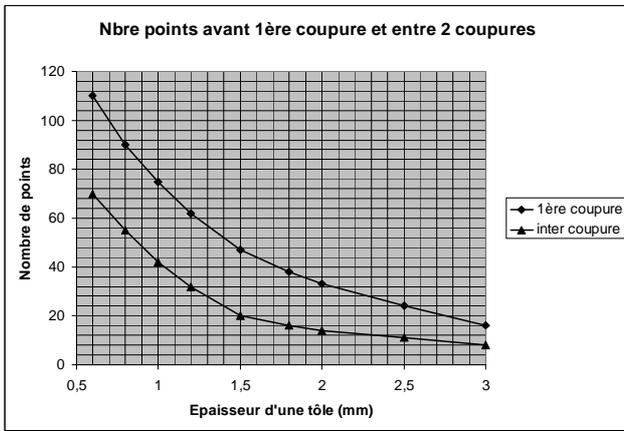
The graphs below represent the number of spot welds can be made consecutively at a rate of 10 points per minute and the duration of the default "overheating" depending on type and thickness of plates.

Type plate "steel HSS, UHSS and BORON"

Thickness: 0.6 to 3.0 mm

### Gyspot 100RC

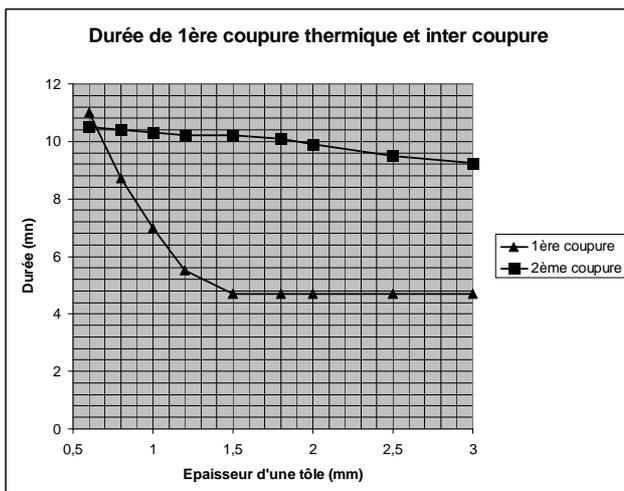
Welding in mode « standard steel» :



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

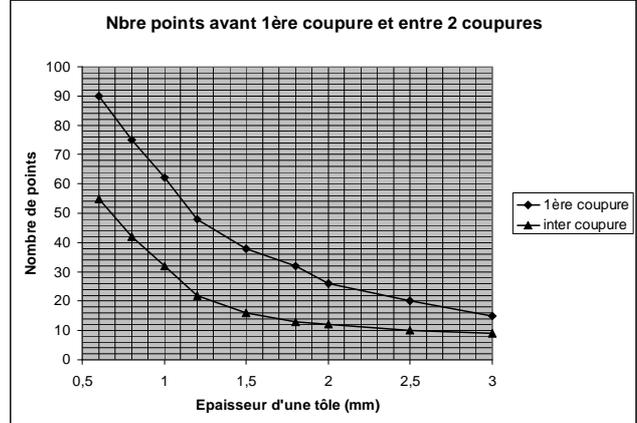


Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

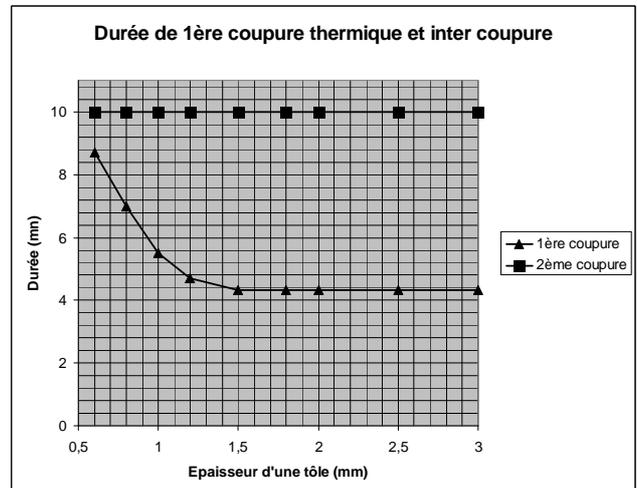
Welding in mode « standard HSS» :



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

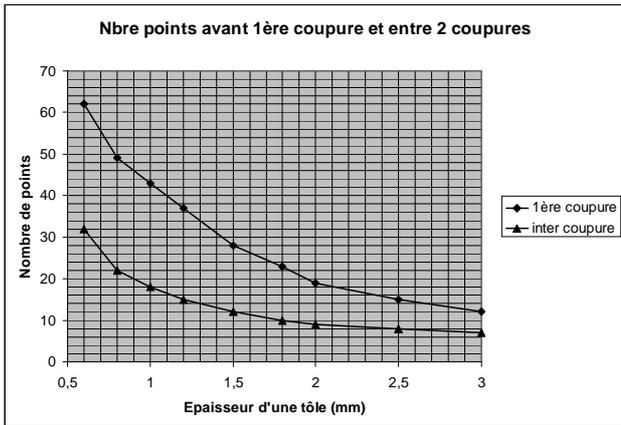


Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

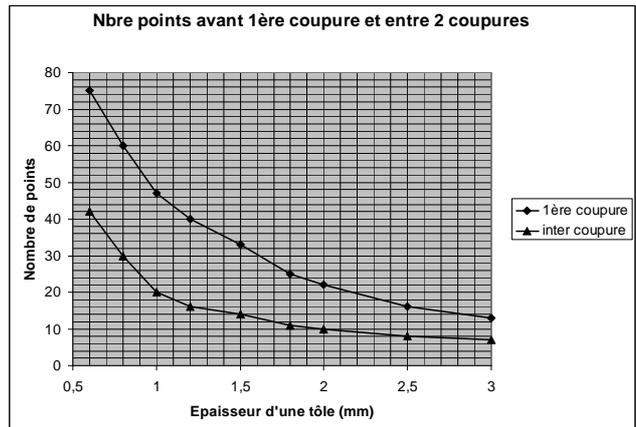
The other curve represents the number of spot welds before the first overheating fault of the spotter.

**Welding in mode « standard UHSS » :**

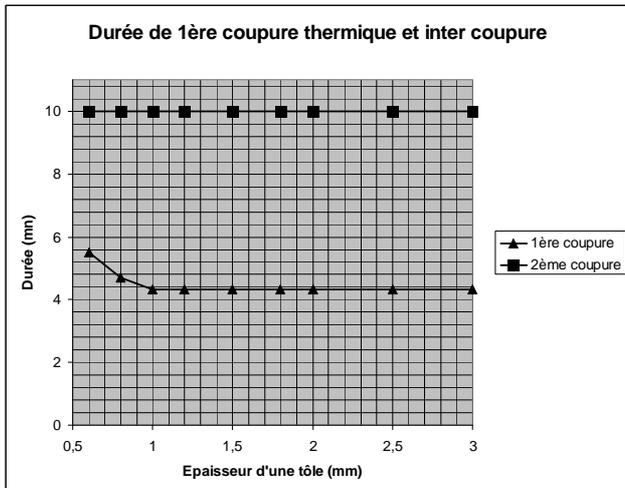


Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
 The other curve represents the number of spot welds before the first overheating fault of the spotter.

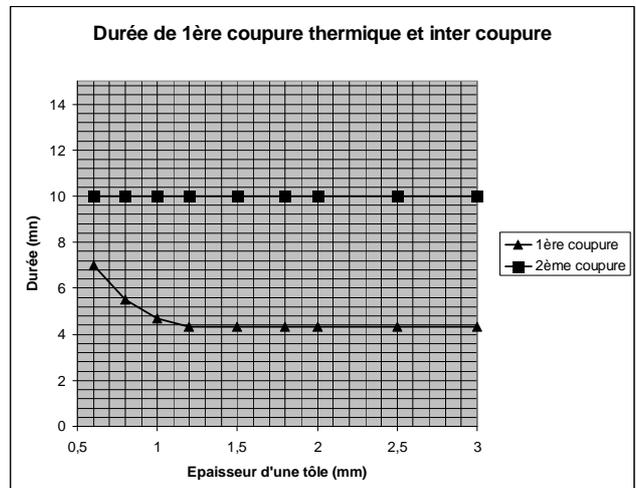
**Welding in mode « standard BORON » :**



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
 The other curve represents the number of spot welds before the first overheating fault of the spotter.



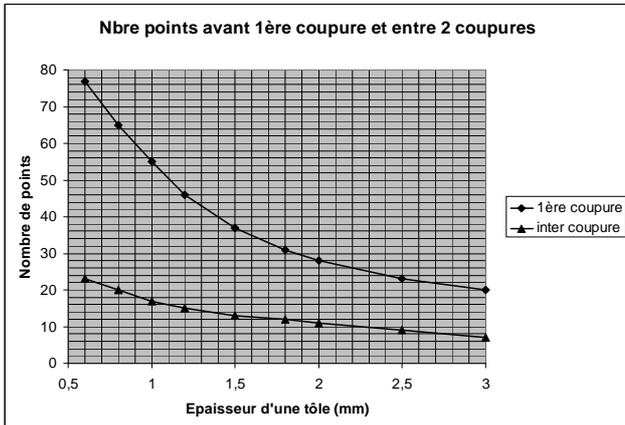
Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
 The other curve represents the number of spot welds before the first overheating fault of the spotter.



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
 The other curve represents the number of spot welds before the first overheating fault of the spotter.

# Gyspot 100RX

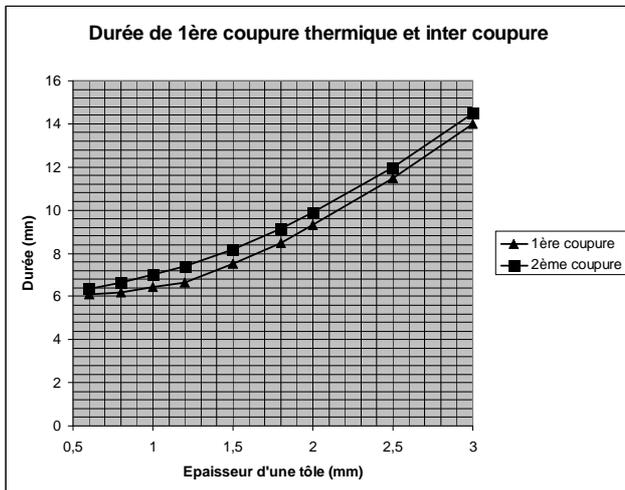
## Welding in mode « standard STEEL» :



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

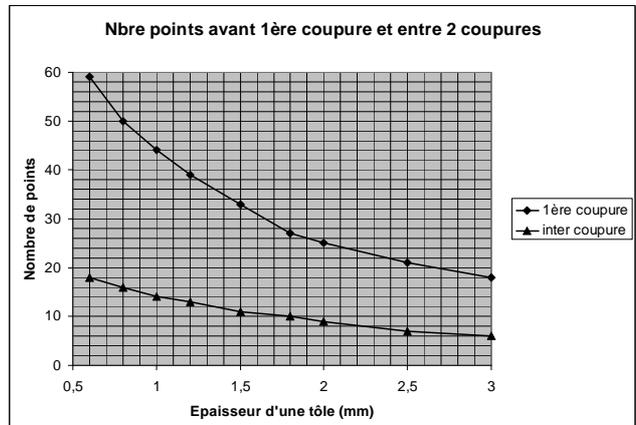


Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

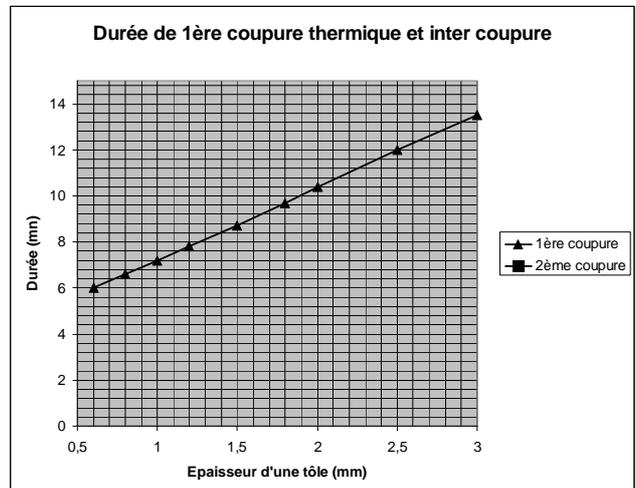
## Welding in mode « standard HSS» :



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

The other curve represents the number of spot welds before the first overheating fault of the spotter.

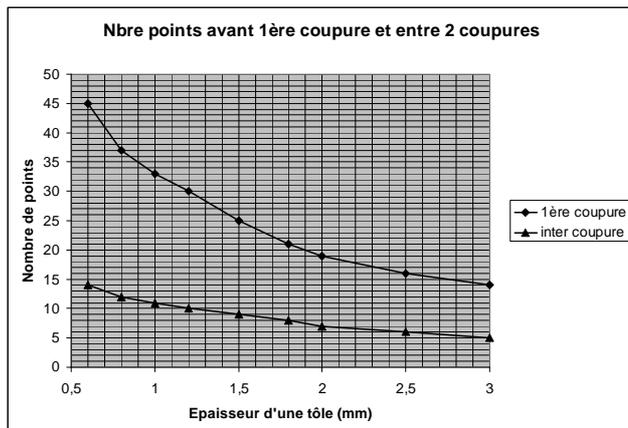


Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.

The curve ▲ represents the number of spot welds between 2 thermal breaks.

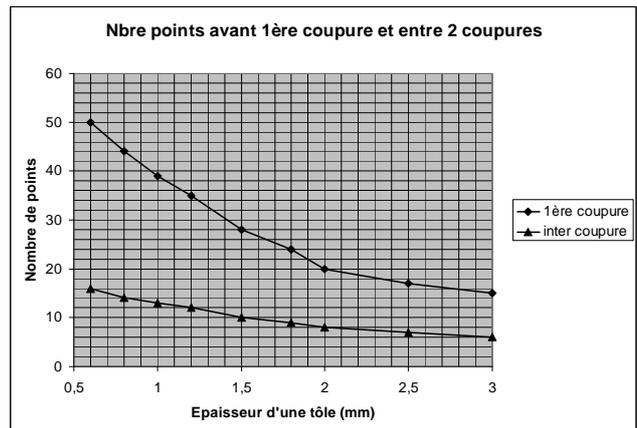
The other curve represents the number of spot welds before the first overheating fault of the spotter.

### Welding in mode « standard UHSS » :

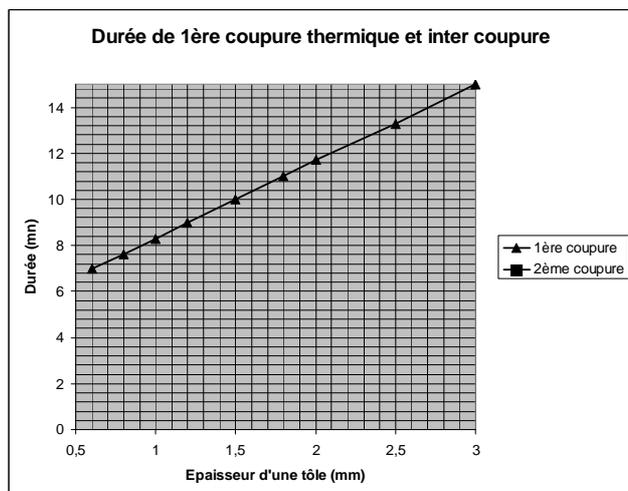


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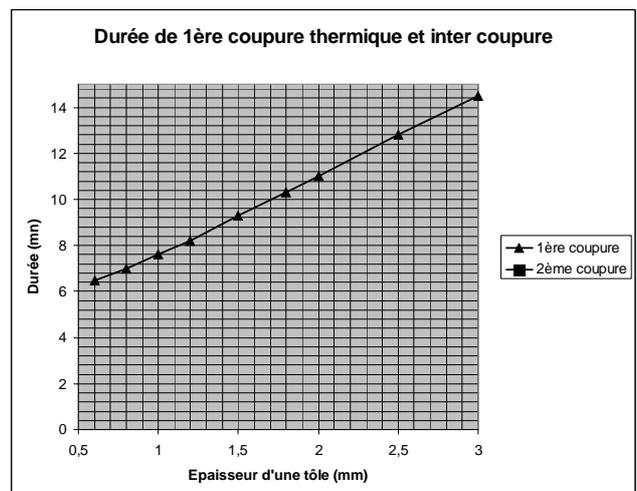
### Welding in mode « standard BORON » :



Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
 The other curve represents the number of spot welds before the first overheating fault of the spotter.

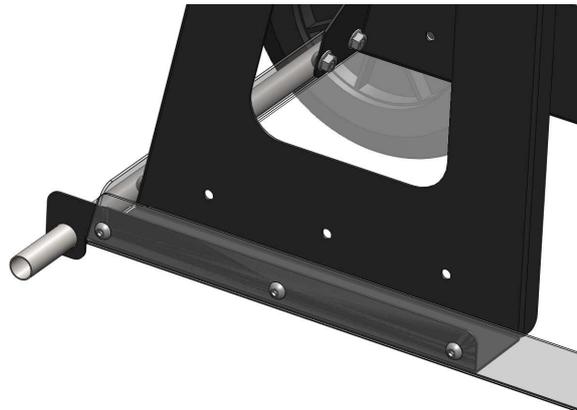


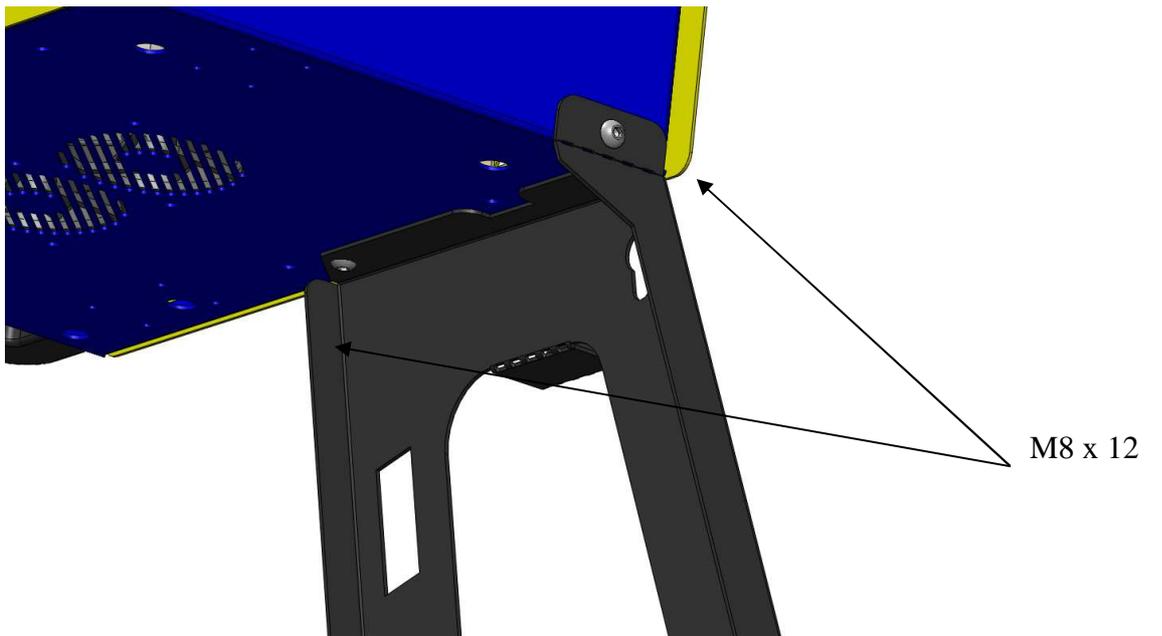
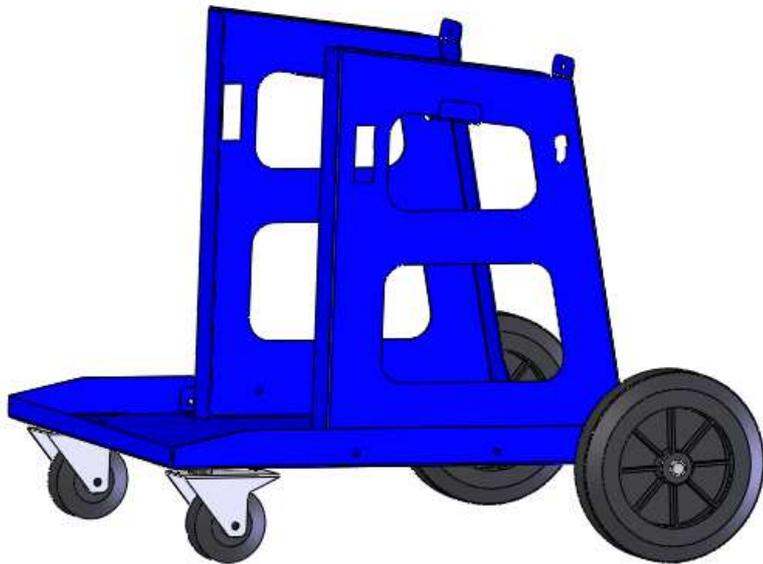
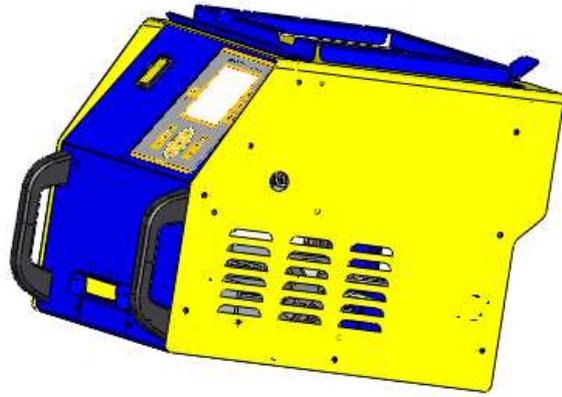
Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
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Number of welding spots before the spotter stops due to overheating fault. Curves are depending on the type and thickness of sheet metal welded.  
 The curve ▲ represents the number of spot welds between 2 thermal breaks.  
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## **7 – ASSEMBLY INSTRUCTION**









## **8 TECHNICAL CHARACTERISTICS**

<b>ELECTRICAL CHARACTERISTICS</b>	
Nominal input voltage : U <sub>IN</sub>	400V 3 ~ 50/60Hz
Permanent input current : I <sub>IN</sub>	32
Power at 50% duty factor : S <sub>50</sub>	13 kVA
Permanent input power : S <sub>p</sub>	9 kVA
Maximum welding input power : S <sub>max</sub>	90 kVA
Secondary voltage : U <sub>2d</sub>	16 VDC
Maximum short-circuit output current : I <sub>2cc</sub>	10 000A
Maximum permanent output current : I <sub>2P</sub>	560 A
Maximum regulated welding current	10 000A
Circuit Breaker	32 Amp D curve
Duty cycle	0.5 %
<b>THERMAL CHARACTERISTICS</b>	
Ambiant temperature Range	+5°C +45°C
Transport and storage Temperature range	-25°C up to +55°C
Hygrometry	80 %
Altitude	2000m
<b>MECHANICAL CHARACTERISTICS</b>	
Protection degree	IP21
Width	700 mm
Height	990 mm
Depth	208 mm
Weight	105 kg
<b>PNEUMATICS CHARACTERISTICS</b>	
Maximum air pressure P <sub>1</sub>	8 bar
Minimum regulated force : F <sub>min</sub>	100 daN
Maximum regulated force F with C clamp : F <sub>max</sub>	300 daN
Maximum regulated force F with X clamp and 440 mm arms	130 daN
Maximum regulated force F with X clamp and 120 mm arms	500 daN

## 9 Pictograms

 	Caution ! Read the user manual before use
	Separate collection required – Do not throw in a domestic dustbin
	Do not use in the open air. Do not use the product under water projections. IP21.
	People wearing pace-makers should not approach this product. Risk of interference and disturbance of pace-makers near of the product.
	Caution ! Strong magnetic field. People wearing active or passive implants must be informed.
	Use eye protection or wear safety glasses.
	Body protection must be worn.
	Hand protection must be worn. Risk of burns.