

GYSPOT 100.R INVERTER



USER MANUAL v2.4

TABLE OF CONTENTS

1 - PRESENTATION, SAFETY RECOMMENDATIONS AND GENERAL PRECAUTIONS	2
2 - DESCRIPTION	3
- Front panel	3
- Rear panel	3
- Clamps	3
3 - INSTALLATION	4
4 -EQUIPMENT OPERATION	5
- Key definition	5
- Use of the C clamp	6-7
- Use of the X clamp	8-9
- Use of the single sided gun	10
- Error management	11
- Welding spots counter	12
- Recording features (identification mode – user’s parameters)	13-14
- SD memory card	15
- GYSPOT software on PC	15-16
5 - PRECAUTIONS AND SERVICING	17
- Relacement of caps/electrodes	17
- Cleaning or replacement of welding tools	17
- purge of th epneumatic filter	17
- maintenance of the generator	17
- Replacement and adjustment of X arms	18
- Replacement and adjustment of C arms	19
6 – ASSEMBLY INSTRUCTIONS	20-21
7 – TECHNICAL CHARACTERISTICS	22
8 - ANOMALIES / CAUSES / REMEDIES	23
9 - ICONS	24
10 – DECLARATION OF CONFORMITY	24
11 – WARRANTY	25
12 – CIRCUIT DIAGRAM	26-27



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

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.

MAIN 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.

In order to protect the electronic control units on the vehicles, it is recommended to :

- disconnect the battery of the vehicle.
- disconnect the airbag control unit.
- disconnect, and even remove, the electronic control units if they are in the immediate vicinity of the welding area.

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 MARKING

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 62135-1
- 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

SD card reader

Display board for communication with the user



Rear panel

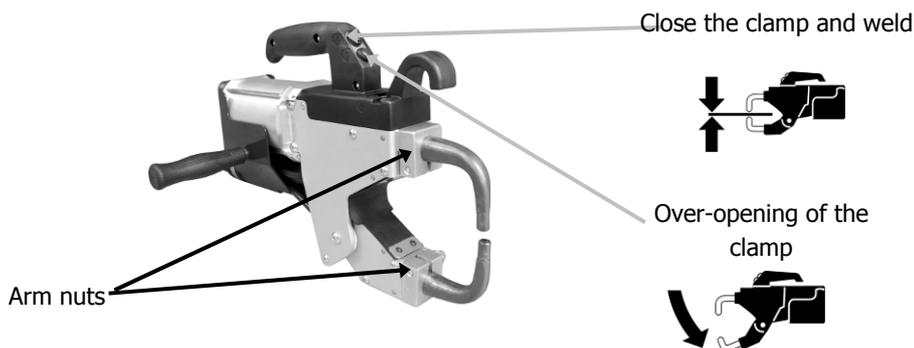


32 A D-curve circuit breaker

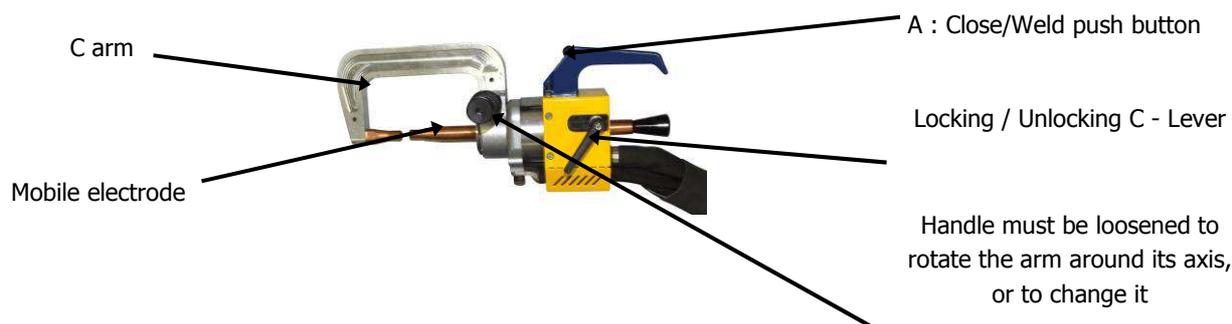


Pneumatic filter, connection to the pneumatic network system

X Clamp (for INVERTER GYSPOT 100R-X)



C clamp (for INVERTER GYSPOT 100R-C)



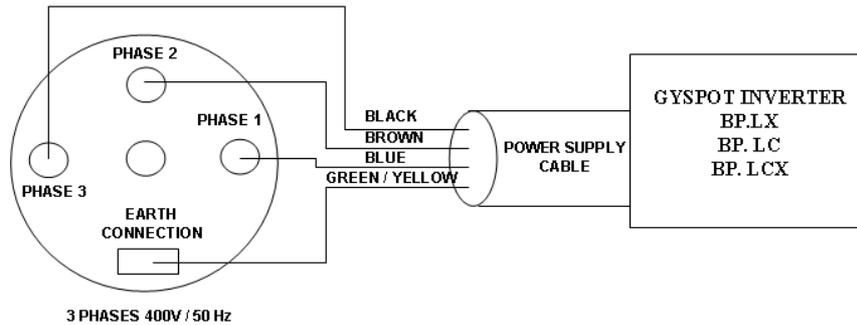
3- INSTALLATION

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 mm²**. If this cable is longer than 10m, use a conductor size of 10mm². If you use an electrical extension cord, use a 6mm² conductor size (10mm² 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 clamp stand and earth cable

Arm stand

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



Earth cable

Assemble the copper plate on the extremity of the earth cable

This earth cable is to be used only with the single sided gun



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 cables

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

- Cooling of the clamp cable :

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.

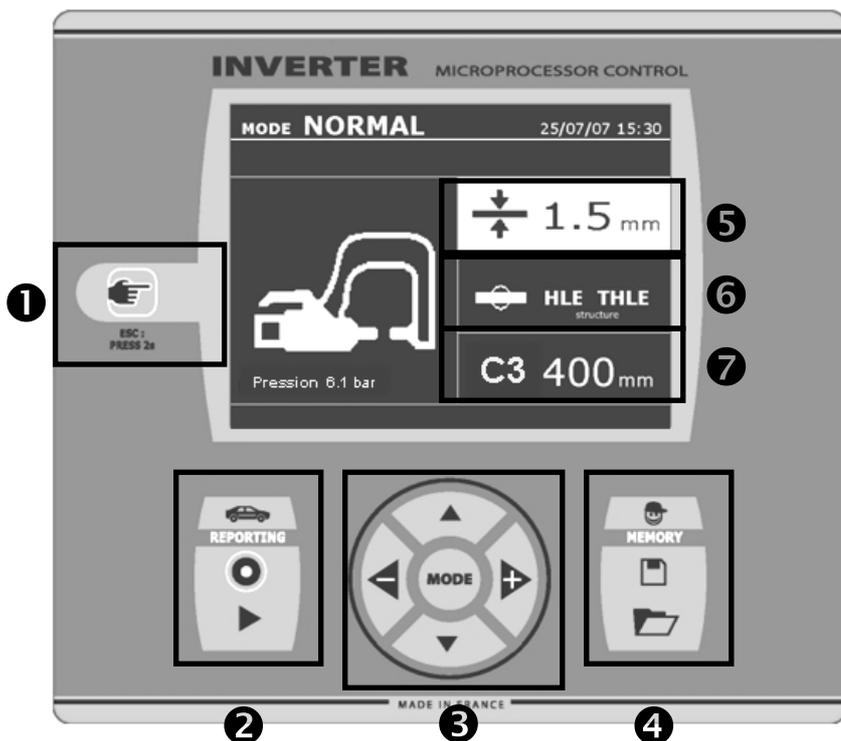
- Cooling of the gun cable:

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 spot with the gun.

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 Save a report

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

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

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

③ 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.

④ Saving parameters

The « save » key allows to save an user’s 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).

⑤ 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.

⑥ 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).

⑦ Arm used

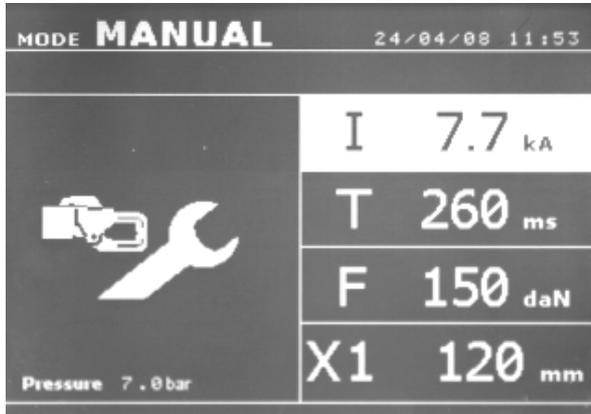
When a clamp is used (either C or X), the user should specify here the length of the arms fitted on the clamp, so that the machine will adjust automatically the air pressure to get the requested electrode force.

Use of the pneumatic clamps

When using a pneumatic clamp, always disconnect the earth cable used in single sided gun mode from the vehicle.

C clamp

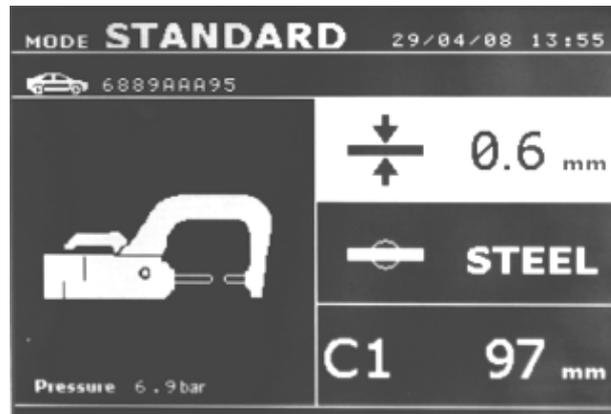
Clamp adjustment



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 takes back to the "standard" mode.

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) and 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).

Pressing the close / weld button allows to perform a welding spot, using the selected parameters.

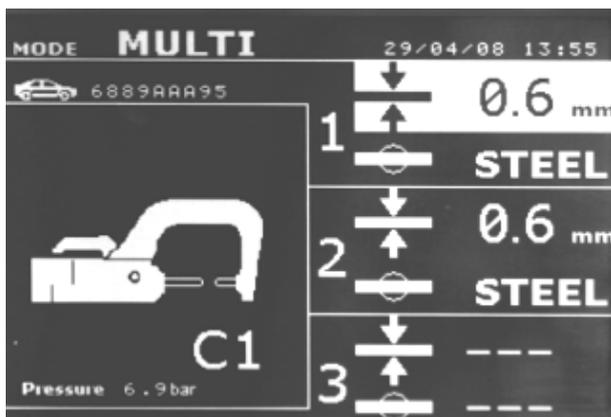
If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air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

Gysteel mode

The Gysteel mode is optional, it can be configured in the setup menu which is activated by pressing the "mode" button for 2 seconds (mode Gysteel on/off).



This mode is identical to the standard mode, except that the user can define the elasticity limit of the sheet. This limit (Re) can be identified using a metal tester like Gysteel Vision.

- Re : 1-10 refers to mild steels.
- Re : 11-18 refers to HSS/THSS.
- Re : 19-35 refers to UHSS.
- Re : 36-99 refers to boron steel.

- ◆ Thickness of metal sheets : 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0.
- ◆ The arm type which is used.

The parameters of thickness, elasticity, type of arm can be highlighted using the ▲ or ▼ keys, And adjusted using + and – keys.

Pressing the close/welding button allows to perform a welding spot, using the parameters displayed.

Pressing during 2 seconds the  key takes back to the « standard » 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).

- 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.

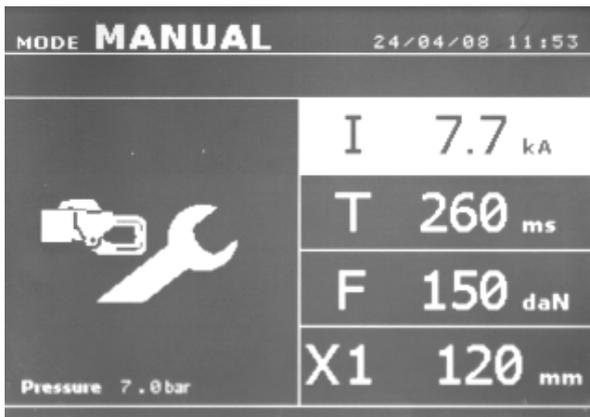
If the welding current measured during the spot is 6% less than the setting, the machine will display, when the spot is completed, an error message "Current too low", warning that the welding spot should be checked.

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 takes back to the « standard » mode.

X Clamp

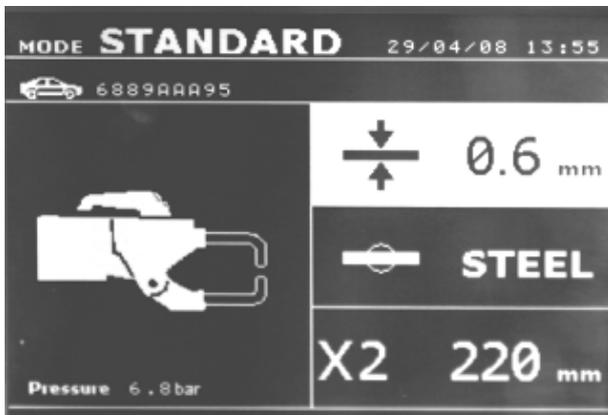
Clamp adjustment



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.

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) and 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).

Pressing the close/weld button on the clamp allows to perform a welding spot, using the selected parameters.

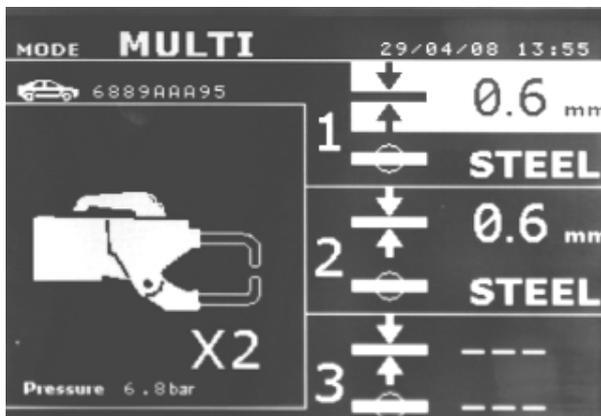
If the input air pressure is too low to reach the requested electrode force, the machine will beep and display, before the welding spot, the following error message "Pressure too low". Pressing again on the button allows to force the execution of the welding spot, which will be performed with the air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

Gysteel mode

The Gysteel mode is optional, it can be configured in the setup menu which is activated by pressing the “mode” button for 2 seconds (mode Gysteel on/off).



This mode is identical to the standard mode, except that the user can define the elasticity limit of the sheet. This limit (Re) can be identified using a metal tester like Gysteel Vision.

- Re : 1-10 refers to mild steels.
- Re : 11-18 refers to HSS/THSS.
- Re : 19-35 refers to UHSS.
- Re : 36-99 refers to boron steel.

- ◆ Thickness of metal sheets : 0.6, 0.8, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0.
- ◆ The arm type which is used.

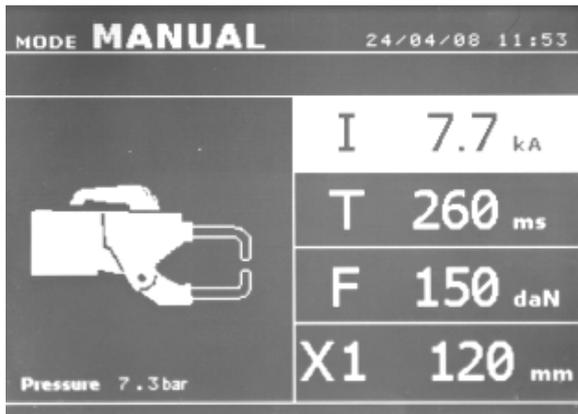
The parameters of thickness, elasticity, type of arm can be highlighted using the ▲ or ▼ keys, And adjusted using + and – keys.

Pressing the close/welding button allows to perform a welding spot, using the parameters displayed.

Pressing during 2 seconds the  key takes back to the « standard » 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).

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 setting 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 takes back to the « standard » mode.

Use of the single sided gun

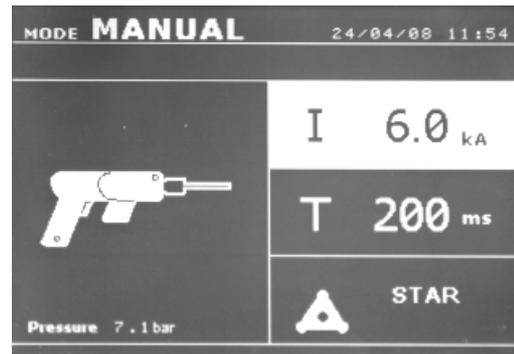
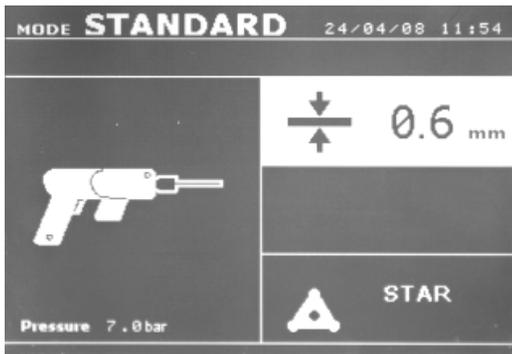
- ◆ Connect the copper plate to the generator's earth cable.
- ◆ Firmly fix the earth plate as near as possible to the welding area.

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  key, or pulling the gun's trigger.
- ◆ The default parameter is star welding in standard mode .



Never let the inertia hammer at the end of the gun if this one is hung to the balancer.



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.

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

Pressing during 2 seconds the  key takes back to the « standard » mode.

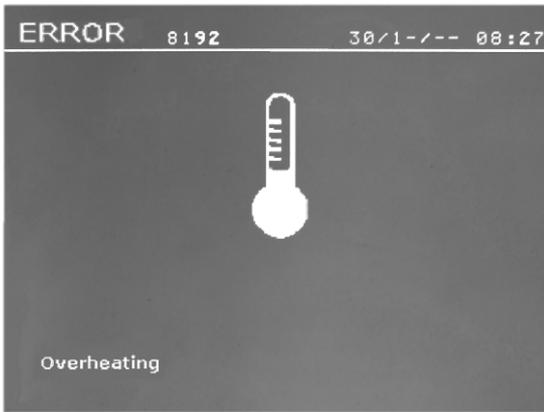
The highlighting allows to select the parameter to adjust. Each parameter can be adjusted using the + and – keys. The up and down keys allow to move from one parameter to the next .

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.

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 material failure. 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  for two seconds 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. You can define the threshold number of spots, 200 by default.

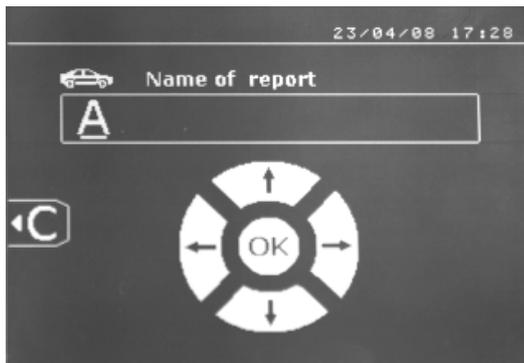


Recording features

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.

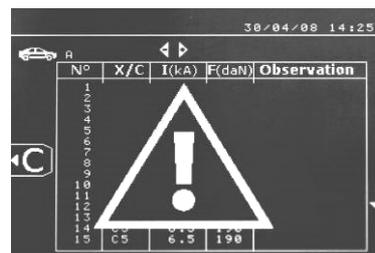
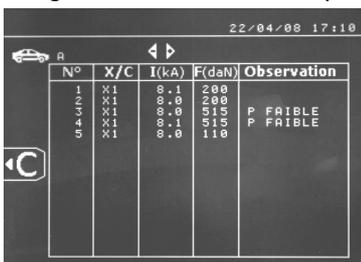
Before visualizing a report, the record must be stopped by pressing the  key.

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

To erase the content of a report, display it on the screen using the « visualize »  key.

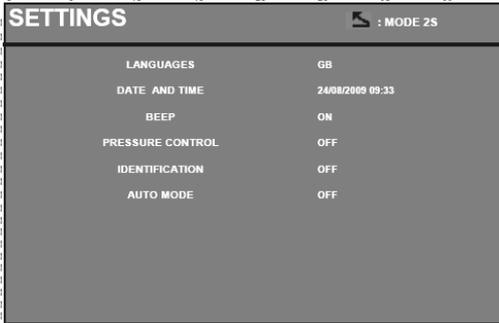
Then, press the key 

The following message appears on the screen :



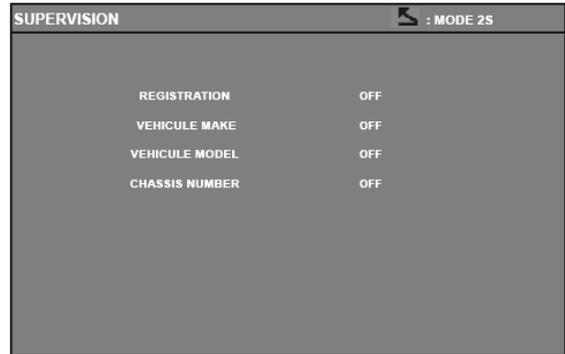
When the triangle sign is displayed, pressing key  a second time definitively erases the contents of the report displayed on the screen. The triangle sign disappears from the screen after 3 seconds

Identification mode :



If the identification mode is set to "ON", then you should enter all required fields of the repair order to the welding points if the machine will issue the "defect identification". To enable and disable the identification mode, insert an SD card reader in the identification of BP instead of the SD card that contains the programs. The screen below setup is activated by pressing for 2 seconds on the mode button.

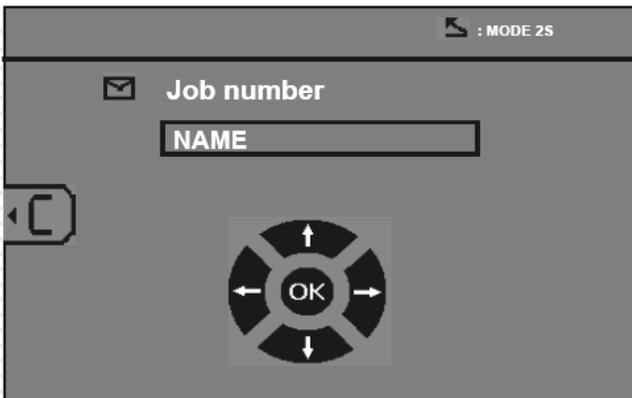
When the SD card "identification" is inserted and you select "identify ON" THEN supervision following screen appears. This screen allows you to make the fields "registration, vehicle make, vehicle model, vehicle identification number" required when entering the repair order. To exit the screen, you must press the mode key for 2 seconds. Then you must put the SD card that contains the program into your BP card reader.



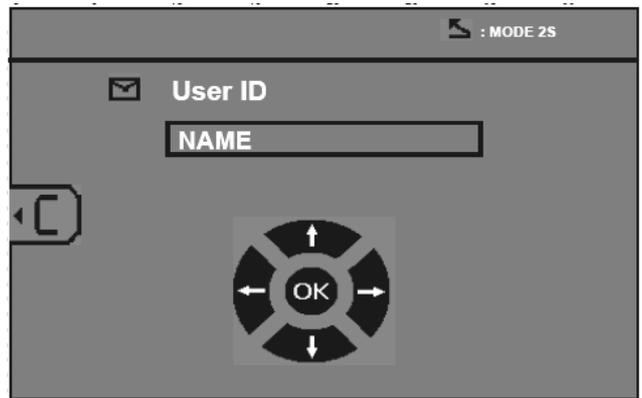
List of screens that allow you to enter a repair order :

When a job number has already been created, it can not be changed or deleted on the BP. To remove it you must use the software GYSPOT PC. You can create up to 100 job numbers.

Display : 'Job number'

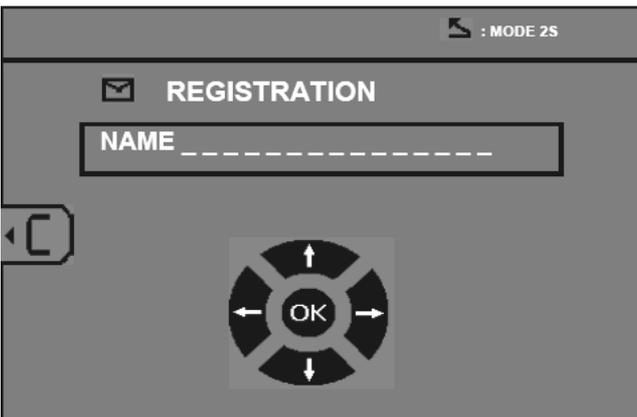


Display : 'User ID'

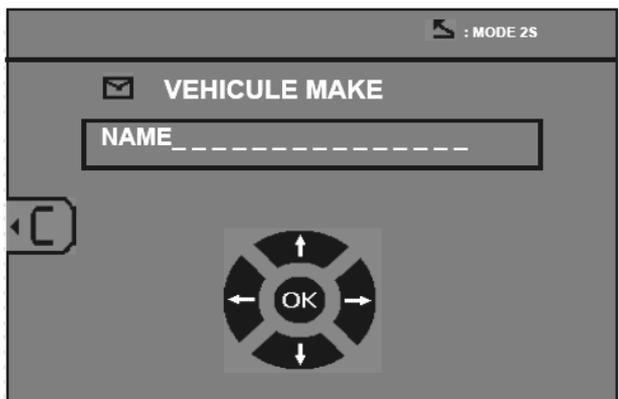


Keys 'left' and 'right' moves the cursor in the field. The up and down buttons allow you to change the letters or numbers. The short press the Esc key clears the field. The mode button allows scrolling fields for the modification or reading.

Display : 'Registration' (optional)

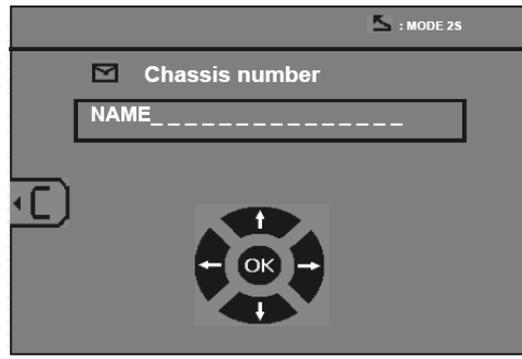
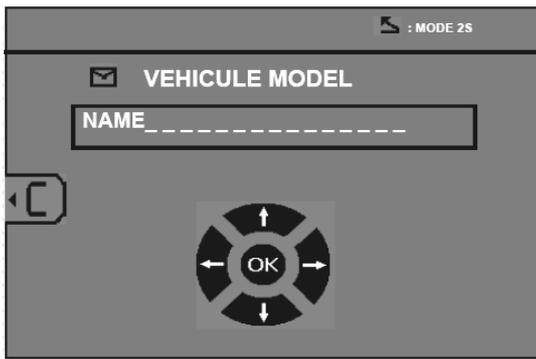


Display : 'Vehicle make' (optional)



Display : 'Vehicle model' (optional)

Display : Chassis number (optional)

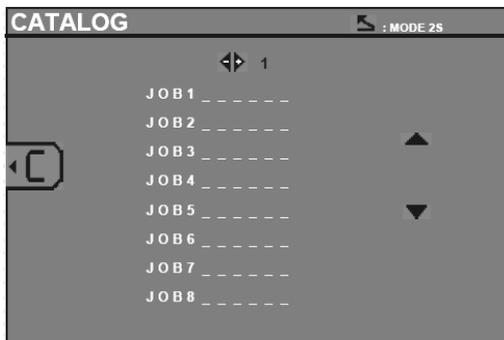


catalogue

When consulting jobs with the View key , the screen CATALOG appears :

The page number is displayed (13 maxi)

Keys 'left' and 'right' are used to change the page. The up and down keys are used to select the next or previous Job number. The "mode" key allows displaying the selected repair order.



N°	X/C	I(kA)	F(daN)	Observation
1	X1	8.1	200	
4	X1	8.0	200	
3	X1	8.0	115	P FAIBLE
2	X1	8.1	115	P FAIBLE
1	X1	8.0	110	

The "mode" key is used to leave from viewing the report.

- ◆ The library management of the SD card can handle SD cards > 2 GB.
- ◆ Each job has an associated log file xxx.dat. (where xxx = id from 001 to 100). In every report, the maximum recorded spot welds is 500. the job number and the user id of the file are displayed.
- ◆ No. The page is shown in the top left.
- ◆ All jobs are stored in the file catalog.GYS.
- ◆ It contains the total number of job, name of each job and user id (max 100 jobs).

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.

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.

Important : Switch off the machine, insert the SD card, and switch the machine ON again. The machine shall be switched off before removing the SD card from the reader indeed data on the SD card can be destroyed.

GYSPOT SOFTWARE FOR PC

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 GYSPOT 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, Danish, Finnish, Italian, Russian, Swedish, Turkish.

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 GYSPOT 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 information :

Company name

Adress/ Postal code/ Town

Telephone/ Fax

Email/ Website/ 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 GYSPOT machine, insert the SD memory card in the card reader of your PC, and then start the GYSPOT 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 information of a report

The following information can be automatically added on each report :

Operator, Brand, Vehicle model
Registration, First registration,
Chassis number, Operation, Remarks.

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 report :

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

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

GYS POT INVERTER BP. LC (0000001000)

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

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

The maximum pressure is 200 DaN.

X clamp's 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).

Purge 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

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.

Replacement of the caps/electrodes :

- To guarantee an efficient welding spot, it is necessary to replace the caps every 200 spots, using the dedicated tool.
- 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

Warning : The caps must be in perfect line. If not, check that the electrodes are in line. (cf. replacement of arms p. 18 and 19).

Replacement or adjustment of X-Clamp arms

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

- The machine must be switched off.
- 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).

X (Ø 25mm) + Caps Ø 13mm

X1 Ref 050501 8 bar / 550 daN $l = 120$ mm

X2 Ref 050518 8 bar / 400 daN $l = 220$ mm

X3 Ref 050525 8 bar / 100 daN $l = 350$ mm

X5 Ref 050549 8 bar / 200 daN $l = 180$ mm (with Ref 049253)

X6 Ref 050587 8 bar / 400 daN $l = 220$ mm

X7 Ref 050600 8 bar / 100 daN $l = 350$ mm

X4 Ref 050532 8 bar / 120 daN $l = 440$ mm

X11 Ref 051607 3 bar / 150 daN $l = 200$ mm (with Ref 051614)

X4A Ref 020702 8 bar / 150 daN $l = 350$ mm

X4B Ref 020719 8 bar / 150 daN $l = 350$ mm

X4C Ref 020726 8 bar / 150 daN $l = 350$ mm

X4 (A,B & C) combinations

X4A + X4A X4A + X4C

X4B + X4B X4A + X4B

X4C + X4C X4C + X4B

X (Ø 25mm)

RX1 $l = 120$ mm Ref 051034
8 bar / 500 daN

RX2 $l = 220$ mm Ref 051041
8 bar / 300 daN

RX3 $l = 220$ mm Ref 051058
8 bar / 300 daN

Panneaux de bras

X2 + X3 + X5
Ref 018785 (LIQUID)

X4A (x2) + X4B + X4C + X2
Ref 020733 (LIQUID)

X clamp overheating

Number of spots before the machine stops due to overheating default

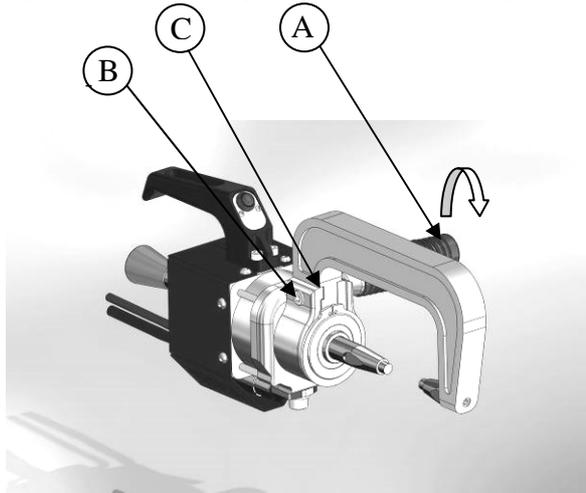
	0,6mm	0,8mm	1mm	1,2mm	1,5mm	1,8mm	2mm	2,5mm	3mm
STEEL	77	65	55	46	37	31	28	23	20
HSS	60	50	44	39	33	27	25	21	18
UHSS	45	37	33	30	25	21	19	16	14
BORON	50	44	39	35	28	24	20	17	15

The time for cooling the clamp can reach 15mn.

Number of spots between 2 stops due to overheating default

	0,6mm	0,8mm	1mm	1,2mm	1,5mm	1,8mm	2mm	2,5mm	3mm
STEEL	23	20	16	15	14	13	12	10	8
HSS	18	16	14	13	12	11	10	8	7
UHSS	14	12	11	10	9	8	7	6	5
BORON	16	14	13	12	10	9	8	7	6

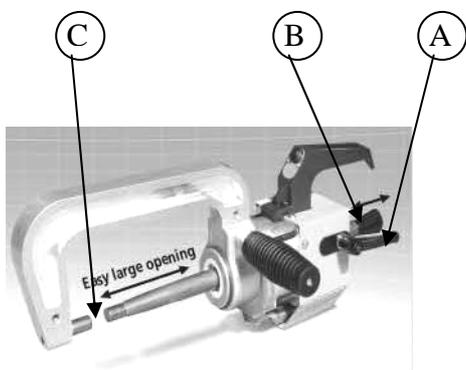
Replacement or adjustment of C-Clamp arms :



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

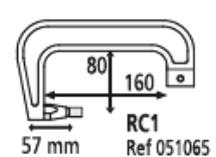
C clamp mobile electrode setup :



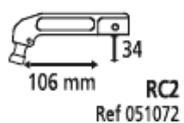
Proceed as follows :

1. The machine must be switched off.
2. Unleashing the movable electrode of the nut by unscrewing the locking handle (A).
3. Adjust the position of the movable electrode by sliding through the sleeve (B).
4. opening between the 2 caps (C) should be about 10 mm.
5. Set the movable electrode in the nut tightening the locking handle (A).

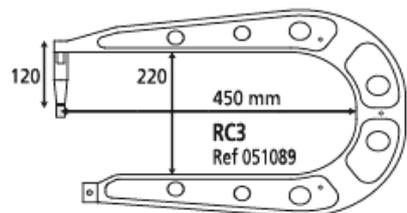
Types of arms for the C clamp



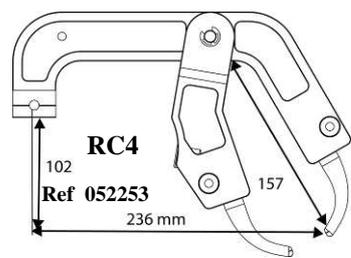
RC1
Ref 051065
8 bar / 300 daN



RC2
Ref 051072
8 bar / 300 daN



RC3
Ref 051089
8 bar / 300 daN



RC4
Ref 052253
8 bar / 120 daN

C clamp overheating

Nombre de points avant la première coupure thermique

	0,6mm	0,8mm	1mm	1,2mm	1,5mm	1,8mm	2mm	2,5mm	3mm
ACIER	110	90	76	61	48	39	36	22	18
HLE	90	75	62	48	38	32	26	18	15
UHLE	62	48	44	36	28	23	19	15	12
BORON	75	60	47	40	33	25	22	16	13

The time for cooling the clamp can reach 15mn.

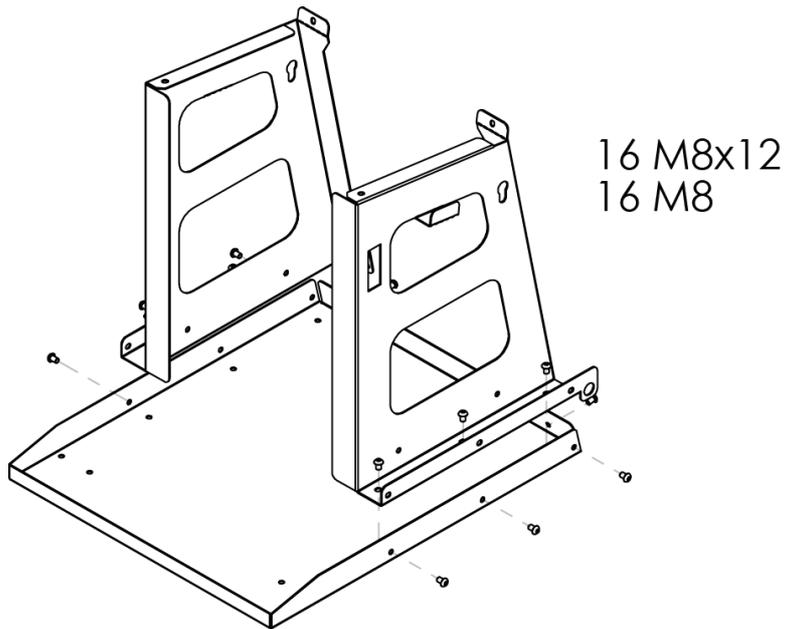
Number of spots between 2 stops due to overheating default

	0,6mm	0,8mm	1mm	1,2mm	1,5mm	1,8mm	2mm	2,5mm	3mm
ACIER	64	56	42	32	20	16	14	10	8
HLE	54	36	32	22	16	13	12	10	8
UHLE	32	22	18	15	12	10	9	8	7
BORON	42	36	20	16	14	11	10	8	7

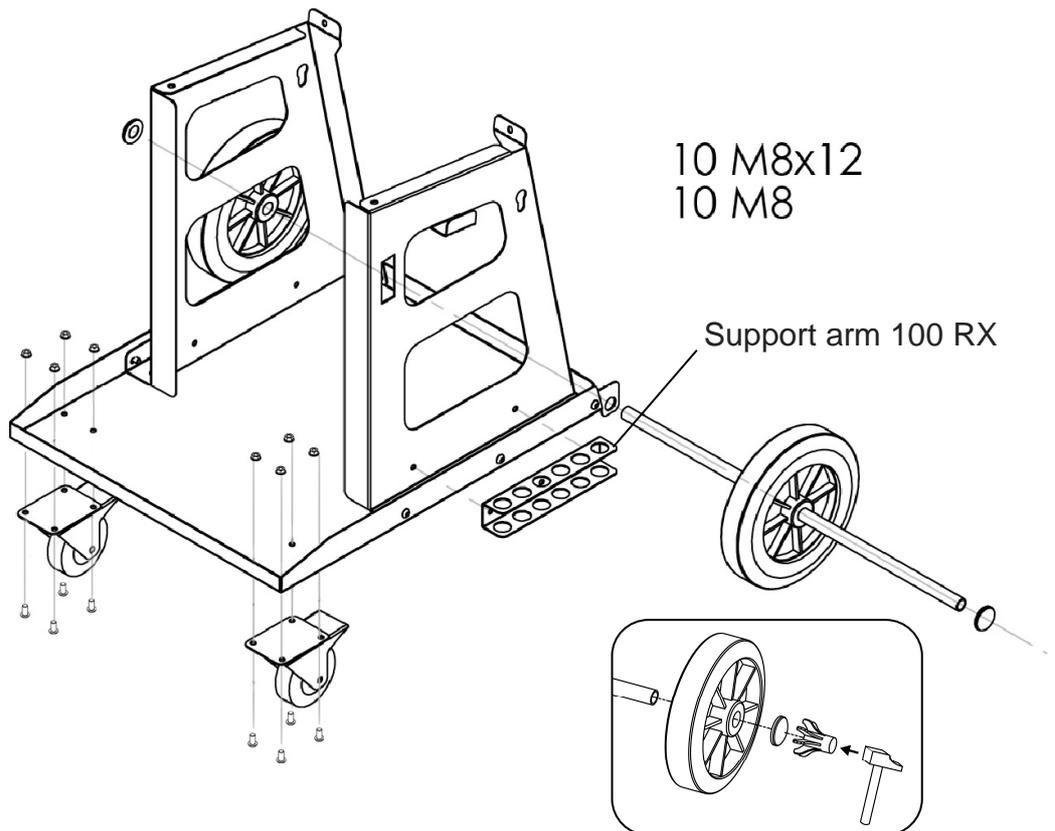
6 – ASSEMBLY INSTRUCTIONS

M8 x 12	M8 x 85	M8 x 100	M6 x 20	M8
				
X30	X1	X1	X6	X26

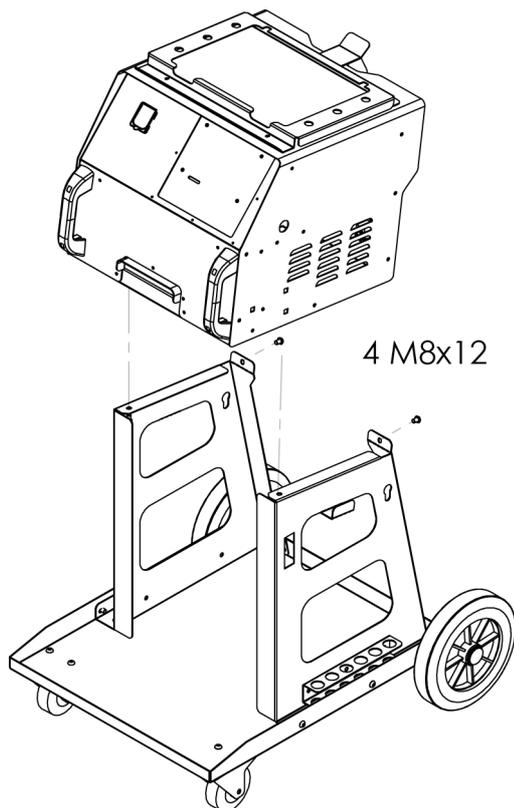
1



2

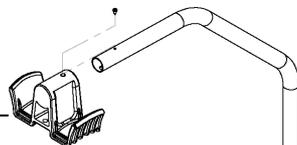


3



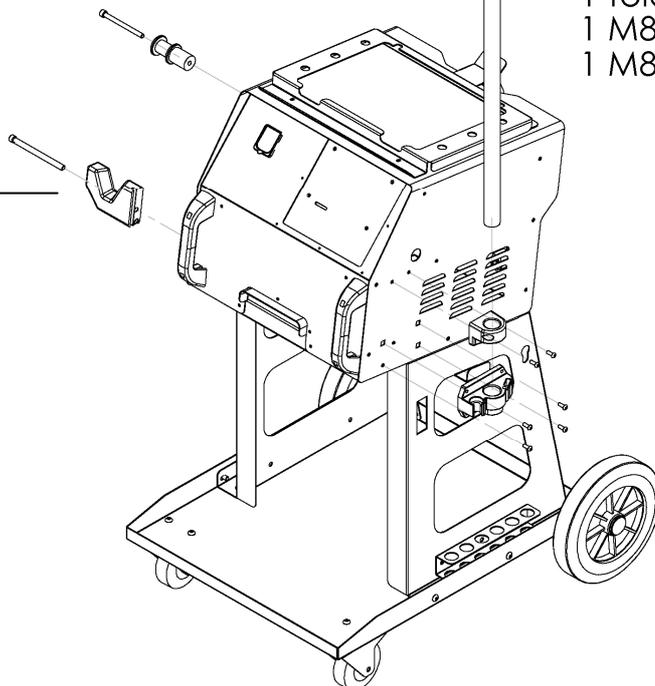
4

Assembling clamp
stand 100RC

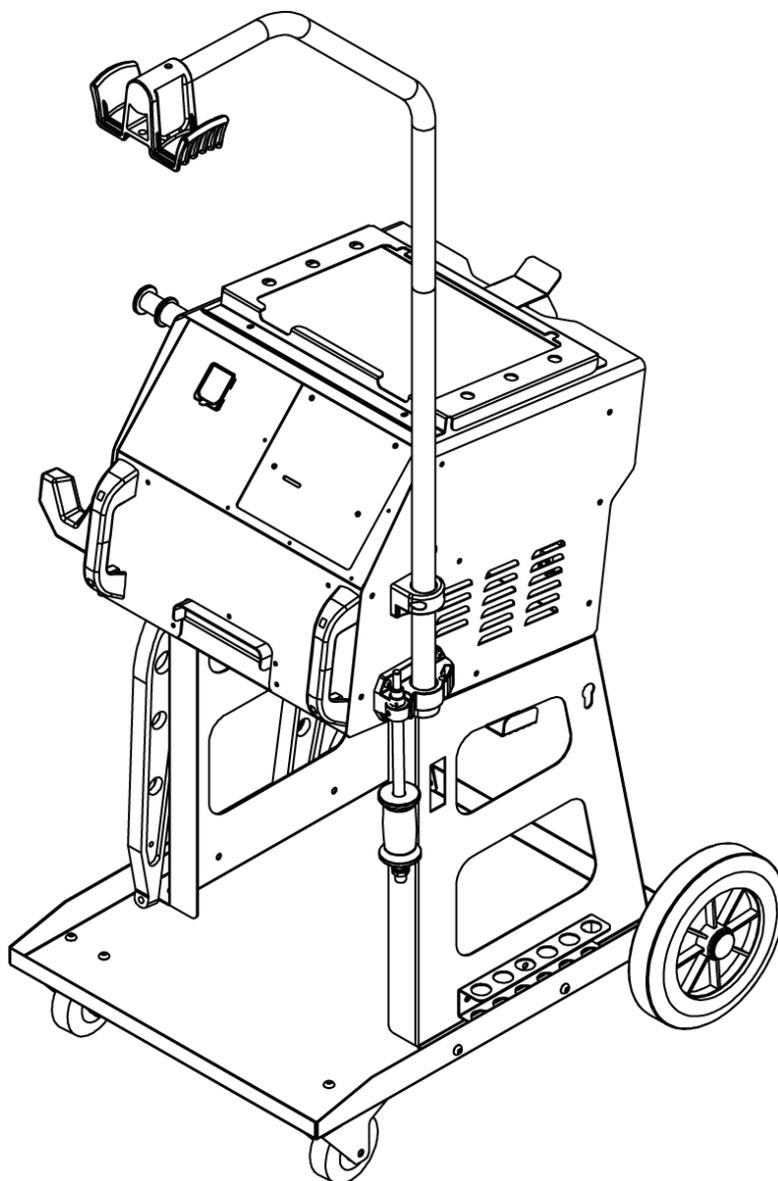


- 6 M6x20
- 1 tôle
- 1 M8x85
- 1 M8x100

Assembling clamp
stand 100RX



5



7 – TECHNICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS	
Nominal input voltage : U1N	400V 3 phases + earth 50/60Hz
Permanent input current : I1N	32
Power at 50 % duty factor : S50	6,4 kVA
Permanent input power : Sp	4,5 kVA
Maximum welding input power : Smax	70 kVA
Secondary voltage : U2d	16 VDC
Maximum short-circuit output current: I2cc	10 000 A
Maximum permanent output current : I2P	560 A
Maximum regulated welding current	10 000 A
Circuit breaker	32 A courbe D
Duty cycle	0.5 %
THERMAL CHARACTERISTICS	
Ambient temperature range	+5°C +45°C
Transport and storage temperature range	-20°C +70°C
Hygrometry	80 %
Altitude	2000m
Thermal protection on the rectifier	70 °C
MECHANICAL CHARACTERISTICS	
Protection degree	IP21
Width	700mm
Depth	990 mm
Height	208 mm
Weight	105 kg
PNEUMATIC CHARACTERISTICS	
Maximum air pressure P1	8 bar
Minimum regulated force : F min	100 daN
Maximum regulated force with X clamp and 120 mm arms : F max	500 daN
Maximum regulated force with X clamp and 440 mm arms : F max	130 daN
Maximum regulated force with C clamp : F max	330 daN
Maximum regulated force with C clamp and RC4 arms : F max	120 daN

8 – TROUBLESHOOTING

ANOMALIES		CAUSES	REMEDIES
Clamps	The 'spot' weld is poor quality	The metal surface has not been prepared properly	Check the preparation of the surface
		The caps are worn	Change the caps
		The arm fitted is incorrect	Check the arm that has been installed in the software
	The clamps have pierced the metal	Insufficient air-pressure	Check the system pressure (min. 7 bar)
		The caps are worn	Change the caps
		The metal surface has not been prepared properly	Check the preparation of the surface
	Lack of power on clamps C or X	Electrical supply problem	Check the stability of the power supply
		Caps dirty or damaged	Change the caps
	The generator has gone into Thermal Protection Mode	The machine has been used intensively	Refer to the Heating Tongtable (p 18 & 19)
		Insufficient cooling-Air pressure too low	Check the system pressure (min. 7 bar)
Gun	No power in the gun	Bad Earth connection	Check the Earth connection/cable
		Insufficient tightening of the chuck or accessories	Check the tightening of the chuck or accessories
		The consumables are damaged	Replace the consumables
	The gun over-heats	Insufficient tightening of the chuck or accessories	Check the tightening of the chuck , the chuck exit, and the sheath.
	The spot is poor quality	Bad Earth connection	Check the Earth connection / cable and the contact

9 - ICONS

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

10 – DECLARATION OF CONFORMITY

GYS confirm that the product described within this manual conforms to the following directives:

- Low Voltage Directive 2006/95/CE in respect of the harmonized norm EN 62135-1
- Electromagnetic Compatibility Directive EMC 2004/108/CE in respect of the harmonized norm EN62135-2
- Machine Directive 2006/42/EC in respect of the harmonized norm EN 60204-1

11 - WARRANTY

- 1) The warranty is valid for one year only when the certificate of warranty has been filled correctly by the seller.
- 2) The warranty covers every default or manufacture vice for one year, as from the purchase date (spare parts and labourforce).
- 3) THE WARRANTY DOESN'T COVER THE VOLTAGE ERRORS, damage due to a bad use, dropped product, dismantling or any more issue due to the carriage.
- 4) The warranty doesn't cover any issue due to a maintenance of the clamp or the generator.
- 5) The warranty doesn't cover the normal wear and tear of the spare parts (e.g.: cables, clamps, etc.).

In case of breakdown, please return the unit to the GYS factory GYS with:

- the following certificate of warranty validate by the seller and
- an explicative note of the breakdown.

After the warranty, our After-sales service provides the repairs by acceptance of the quotation.

ATTENTION

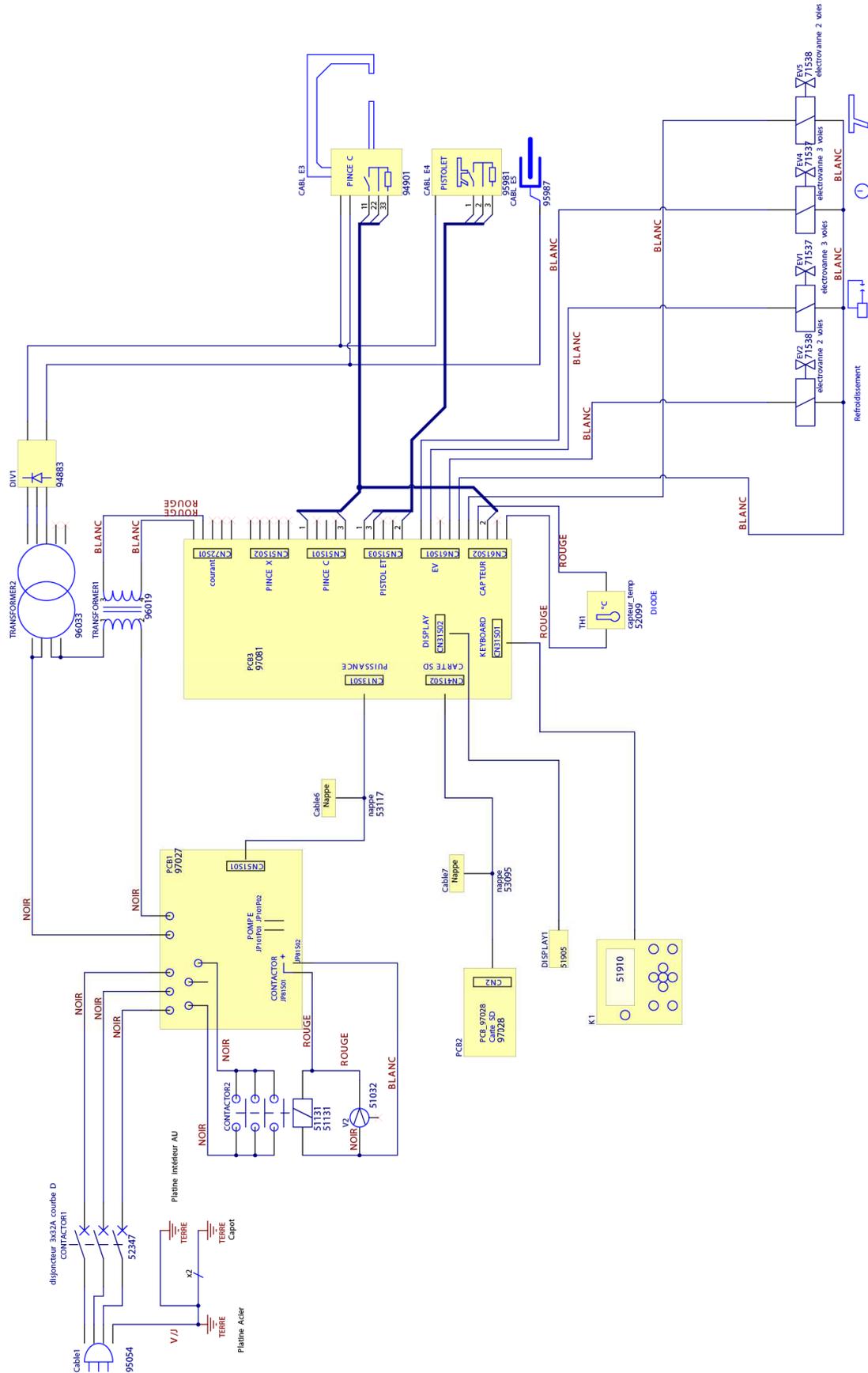
We remind you that we do not accept any product return with carriage cost not included.

SOCIETE GYS « S.A.V » : 134 Bd des Loges - BP 4159
53941 SAINT-BERTHEVIN cedex
FAX S.A.V : 02 43 01 23 75

Seller stamp:	<u>CERTIFICATE OF WARRANTY</u>
	Reference of the unit:.....
	Purchase date:.....
	Seller Name Company:
<i>Valid for one year as from the purchase</i>	

12 – CIRCUIT DIAGRAM

100 RC :



100 RX :

