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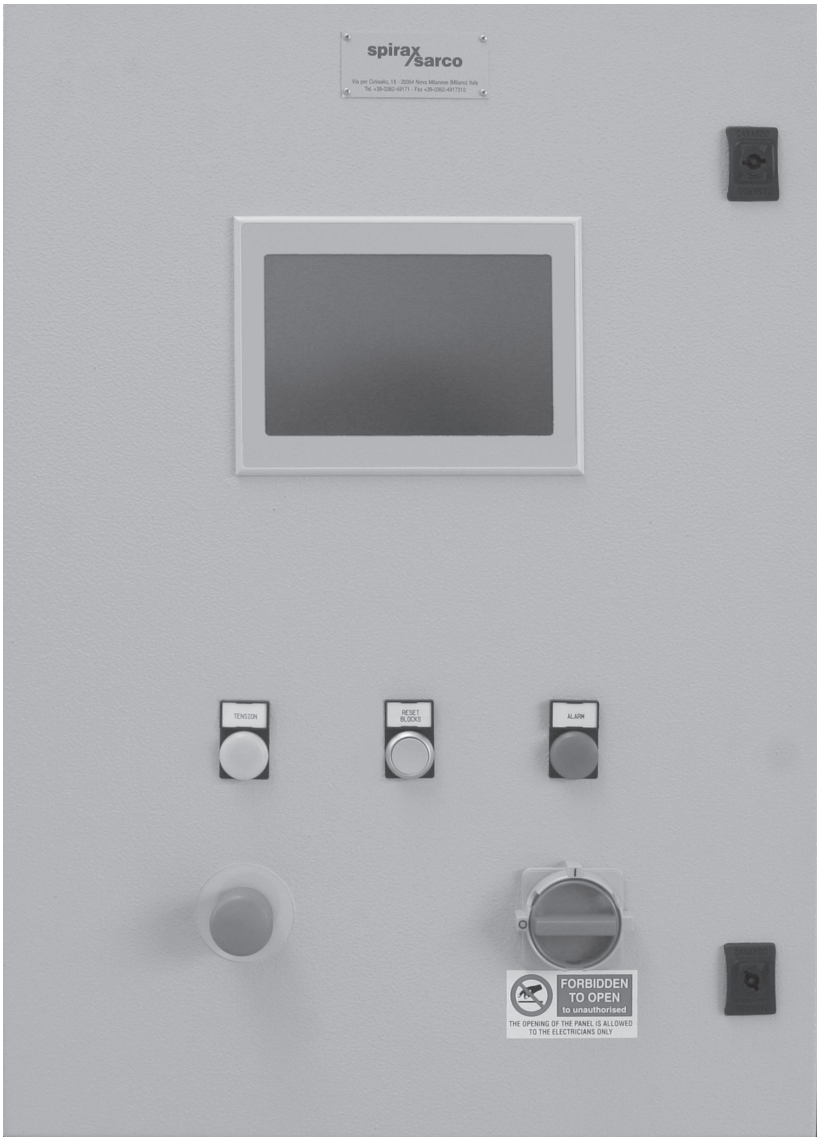
PLC Control Unit
for CSM-C Steam Compact Clean Steam Generators
Installation, Start-up and Operation Manual

The PED Directive 97/23/EC is repealed and replaced by the new **PED Directive 2014/68/EU** with effect from 19 July 2016.

The ATEX Directive 94/9/EC is repealed and replaced by the new **ATEX Directive 2014/34/EU** with effect from 20 April 2016.



ATTENZIONE

Lavorare in sicurezza con apparecchiature in ghisa e vapore
Working safely with cast iron products on steam

Informazioni di sicurezza supplementari - *Additional Informations for safety*

Lavorare in sicurezza con prodotti in ghisa per linee vapore

I prodotti di ghisa sono comunemente presenti in molti sistemi a vapore.

Se installati correttamente, in accordo alle migliori pratiche ingegneristiche, sono dispositivi totalmente sicuri.

Tuttavia la ghisa, a causa delle sue proprietà meccaniche, è meno malleabile di altri materiali come la ghisa sferoidale o l'acciaio al carbonio.

Di seguito sono indicate le migliori pratiche ingegneristiche necessarie per evitare i colpi d'ariete e garantire condizioni di lavoro sicure sui sistemi a vapore.

Movimentazione in sicurezza

La ghisa è un materiale fragile: in caso di caduta accidentale il prodotto in ghisa non è più utilizzabile. Per informazioni più dettagliate consultare il manuale d'istruzioni del prodotto.

Rimuovere la targhetta prima di effettuare la messa in servizio.

Working safely with cast iron products on steam

Cast iron products are commonly found on steam and condensate systems.

If installed correctly using good steam engineering practices, it is perfectly safe.

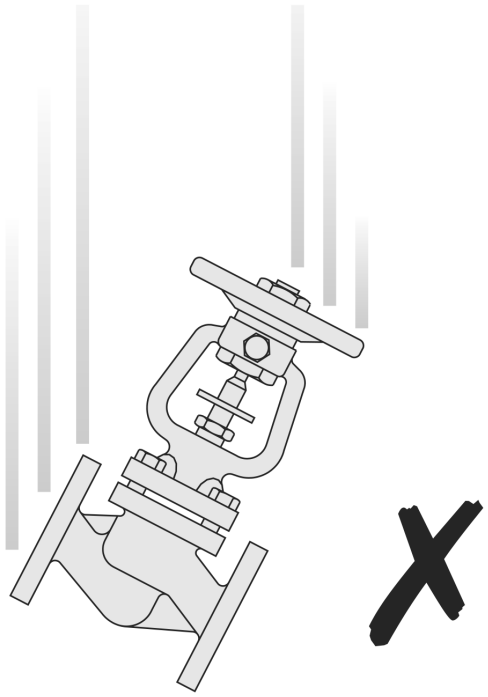
However, because of its mechanical properties, it is less forgiving compared to other materials such as SG iron or carbon steel.

The following are the good engineering practices required to prevent waterhammer and ensure safe working conditions on a steam system.

Safe Handling

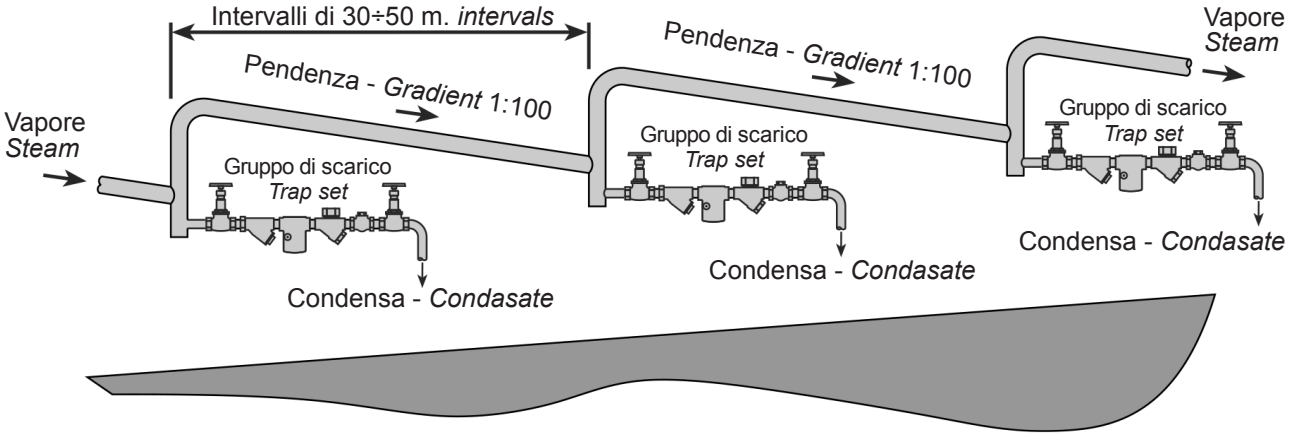
Cast Iron is a brittle material. If the product is dropped during installation and there is any risk of damage the product should not be used unless it is fully inspected and pressure tested by the manufacturer.

Please remove label before commissioning

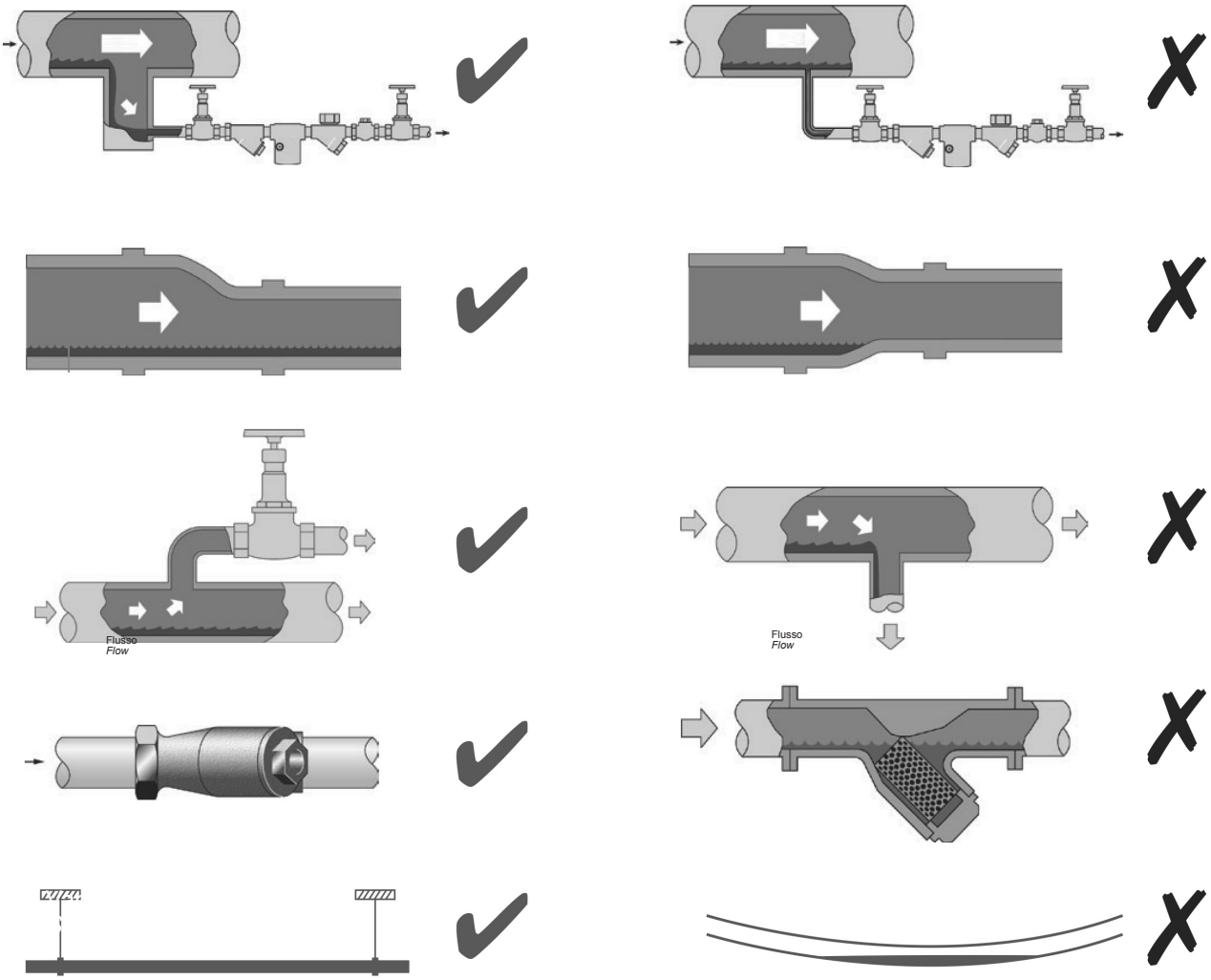


Prevenzione dai colpi d'ariete - *Prevention of water hammer*

Scarico condensa nelle linee vapore - *Steam trapping on steam mains:*



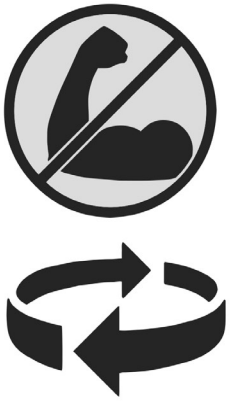
Esempi di esecuzioni corrette (✔) ed errate (✗) sulle linee vapore: *Steam Mains - Do's and Dont's:*



Prevenzione delle sollecitazioni di trazione
Prevention of tensile stressing

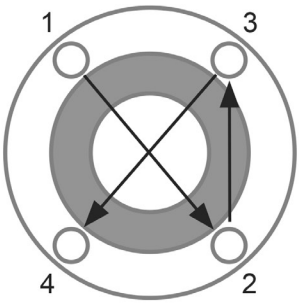
Evitare il disallineamento delle tubazioni - *Pipe misalignment:*

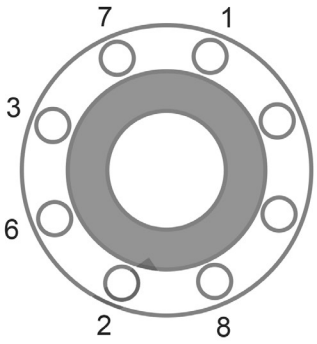
Installazione dei prodotti o loro rimontaggio post-manutenzione:
Installing products or re-assembling after maintenance:



Evitare l'eccessivo serraggio.
Utilizzare le coppie di serraggio raccomandate.

Do not over tighten.
Use correct torque figures.





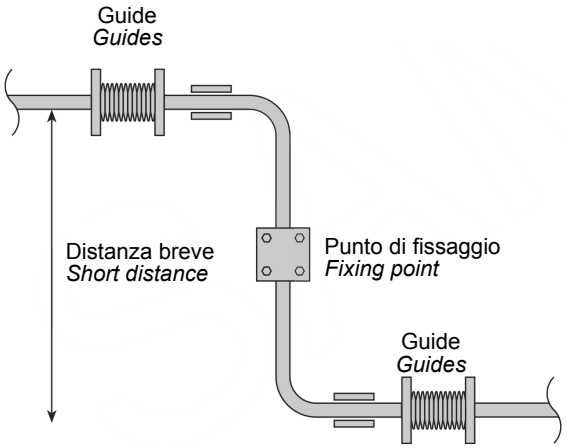
Per garantire l'uniformità del carico e dell'allineamento, i bulloni delle flange devono essere serrati in modo graduale e in sequenza, come indicato in figura.

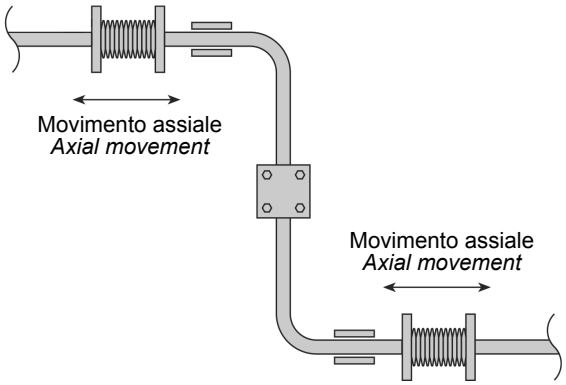
Flange bolts should be gradually tightened across diameters to ensure even load and alignment.

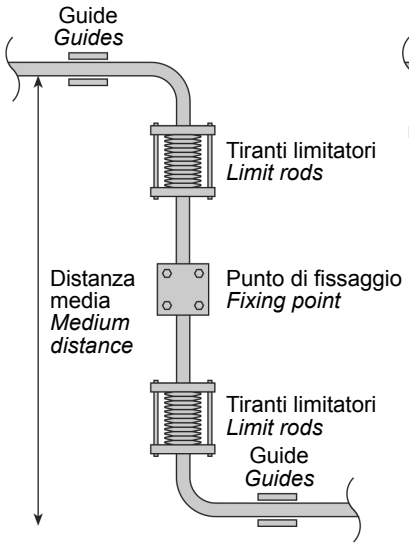
Dilatazioni termiche - *Thermal expansion:*

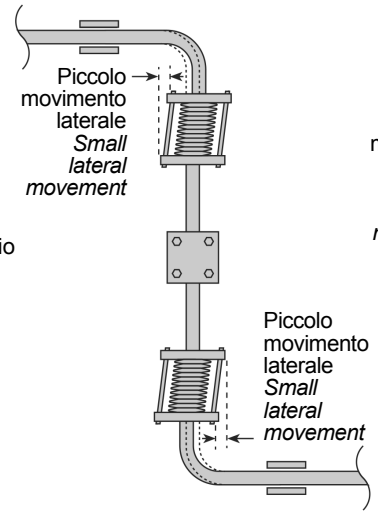
Gli esempi mostrano l'uso corretto dei compensatori di dilatzione. Si consiglia di richiedere una consulenza specialistica ai tecnici dell'azienda che produce i compensatori di dilatazione.

Examples showing the use of expansion bellows. It is highly recommended that expert advise is sought from the bellows manufacturer.









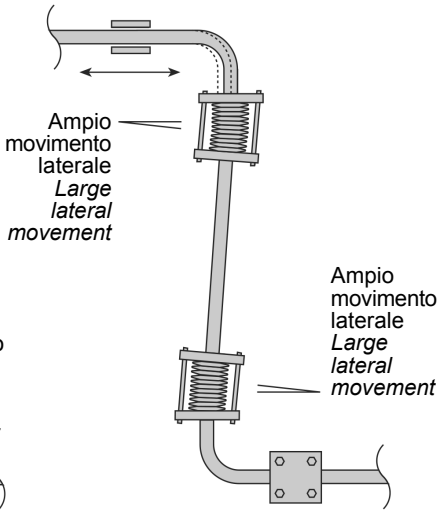


Table of contests

Limits of Responsability

This Installation, Start-up and Maintenance manual is intended to be as complete and up to date as possible. It describes installation, start-up and maintenance procedures for the PLC control unit for Spirax Sarco indirect clean steam generators. Spirax Sarco reserves the right to update this manual and other product information regarding installation, start-up and maintenance, at any time and without having to notify owners of the product.

Spirax Sarco is not responsible for any inaccuracies in the specifications, procedures and /or content of other product documents provided by other manufacturers of components used on Spirax Sarco steam generators.

Spirax Sarco uses only top-quality components in the construction and control of its steam generators. Spirax Sarco accepts responsibility for complete systems only when it supplies all the components of the system. Otherwise Spirax Sarco accepts responsibility only for those parts that it has supplied, since it has no direct control over other manufacturers or their quality standards.

Note: the symbol ⚠ indicates "warnings".

⚠ Spirax Sarco is not responsable for accident at people or damage at product due at incorrect installation/maintenance intervention.

Only trained, authorised personnel must carry out all installation, start-up and maintenance procedures. The personnel who carry out these procedures must read carefully and completely, and understand, all relevant product manuals before beginning any of the activities described in the procedures. Personnel must pay great attention to any Notes, Precautions and Warnings contained in the procedures described in this manual.

⚠ When Spirax Sarco provides only the steam generator without any control accessories, then this manual applies only to the generator.
In this case, responsibility for the additional components, their respective manuals, and for the entire system, rests with the provider of the accessories for the generation system.

Notices

This Installation, Start-up and Maintenance manual is intended as a procedural guide for the control unit for Spirax Sarco clean steam generators. Since each unit is manufactured according to the customer's specifications, the instructions contained in the manual may sometimes appear rather general. Where procedures differ greatly from those described in the manual, specific notes are provided.

Should this manual not answer all possible questions, or should the procedures described in it not be clearly understood, please contact Spirax Sarco for further clarification.

Warning

The following pages contain several points with specific warnings. In addition, in the manual, "warnings" are repeated when the procedures concerned refer to potentially hazardous areas. All warnings must be carefully read and understood. All precautions contained in the warnings must be carefully followed to reduce the risk of injury. They must be carefully studied before beginning any installation, start-up or maintenance operation.

⚠ **Every product or system that uses steam, diathermic oil or superheated water under pressure, or electricity, presents a potential hazard of serious injury to persons if the relative installation, start- up and maintenance procedures are not followed attentively.**

⚠ **The simultaneous presence of water and electrical energy can create potentially hazardous conditions.**

⚠ **Potentially hazardous areas**

1. **All electrical connections and cables.**
2. **All steam lines, joint valves and pressure regulators**
3. **All steam, diathermic oil and superheated water lines, joints, valves and pressure regulators.**

Connection of power lines

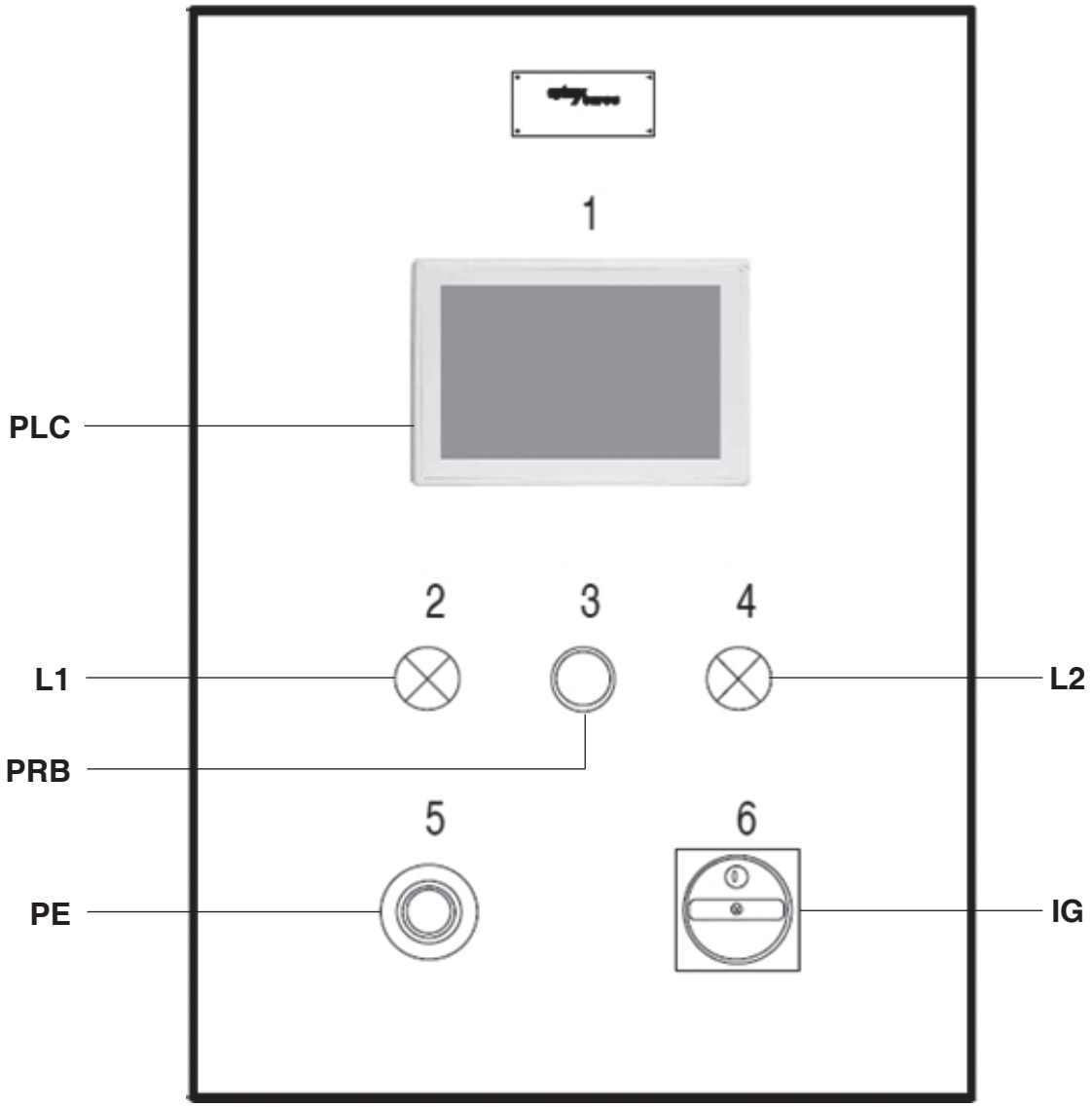
Expert, trained and qualified personnel must only carry out all procedures. Control units for Spirax Sarco steam generators are designed only for installation indoors, unless otherwise specified by the customer.

⚠ **Always ensure that the power supply is switched off before beginning any installation or maintenance operation.**

Control Unit

Description of control unit

The control and safety unit is a smart PLC unit, designed to start-up, control and manage the indirect clean steam generation system locally and even from a remote system.



Components and locations

Front panel

IG: mains switch
This is a fours-pole switch with a door blocking handle that switches off the mains current and allows the door to be opened when it is in the "OFF" position.

⚠ **Warning: the user must install an external circuit for interrupting the electricity supply. This circuit must be able to cut off the electrical power supply in the event of incorrect operation or to allow maintenance to be carried out on the unit. Failure to cut off the electricity supply could lead to hazardous conditions for personnel.**

L1: led indicator
When it is on, it indicates that the unit is on and that electricity is present (24 UDC).

PRB: Button
This is the block-reset button.

L2: led indicator
When it is on (red light), it indicates that the system has been stopped by the intervention of one or more alarms.

PE: Button
This is the emergency stop button.

PLC
This is the control PLC (touch screen).

Control Features

SPIRAMAX control unit is a PLC control unit, designed for the regulation of pressure, water level, bleeding, and the management of the blow-down function and alarm limits for Spirax-Sarco indirect clean steam generators. The unit can be supplied with a video interface for the generator, or parts of it, with a graphic display of error messages, test functions, etc. Set-point values can be displayed and changed during operation, using the function keys.

As well as automation of individual generators, the system also enables computer structures to be created, such as networks of PCs, PLCs and microprocessor systems, thus allowing a high degree of integration between the automation systems for the various parts of the system. The supervisor system can be seen in terms of a display of machine, configuration and production control data. The unit has a main switch and is mounted in an IP 54 metal container, measuring 700x500x250 mm.

External Connections

All electrical connections have to be carried out by trained and qualified installation electricians. It is important to verify that the main power switch is in "OFF" position before connecting the line voltage. The installer has to route the power cables, reach the terminals located on the main power switch mounted on the panel and run the ground wire to the earth ground terminal. For the feed voltage see the electric diagram inside the control board.

⚠ Attention: Prior to drilling a hole in the panel for the connection of power cables, carefully open the panel door and verify there are no impediments inside the panel. Make sure to avoid contacts with drilling residuals or with any mechanical part left on the base or on the transformer or on the switch.

Main Power Supply

Input voltage: 400 V ac - 50 Hz
Output contacts: 3 A - 220 V for inductive loads
Output contacts: 6 A - 220 V for resistive loads
Operational ambient temperature: Min 0°C, Max 50 °C
Relative Humidity (RH): from 5% to 95% non condensing
LCD Display with energy saving dimmer function

Note: if the environmental conditions bring the temperature inside the cabinet to overcome 50°C conditioning devices are available.
Please contact your nearest Spirax Sarco branch or agency.

Initial Screen

The control unit is fitted with a touch-screen display. To interact with the control screens, simply press with bare fingertips on the screen surface. When the unit is switched on, the screen displays the following image:

Fig. 1

Selecting the  key gives:

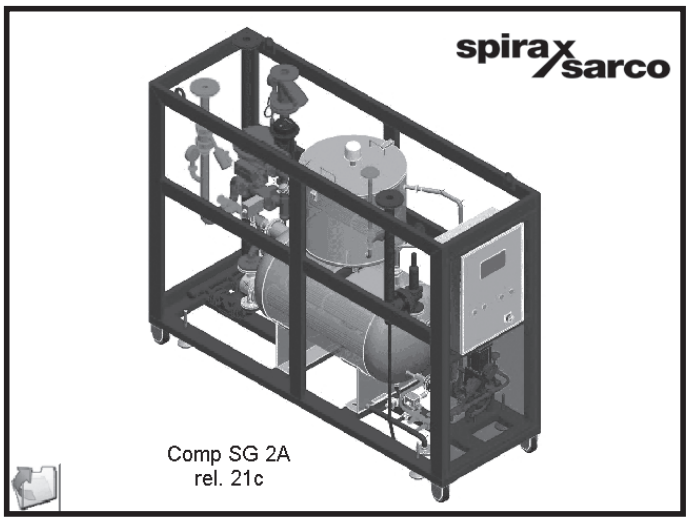


Fig. 2

Nota: This screen shows the version of the installed program.

Selecting the key  again, takes the user to the screen shown in Fig. 3, where a start-up menu offers three alternatives:

1. Spirax Sarco addresses
2. Status: for start/stop and for information about generator operation.
3. Protected Parameters: Machine configuration parameters, necessary to be able to use the generator.

Fig. 3

Protected parameters

Touch lightly the screen. PROTECTED PARAMETERS This opens the Password insertion table screen:

Fig. 4

Insert the digit 3 and validate it by selecting ENTER key. Next image is now displayed:

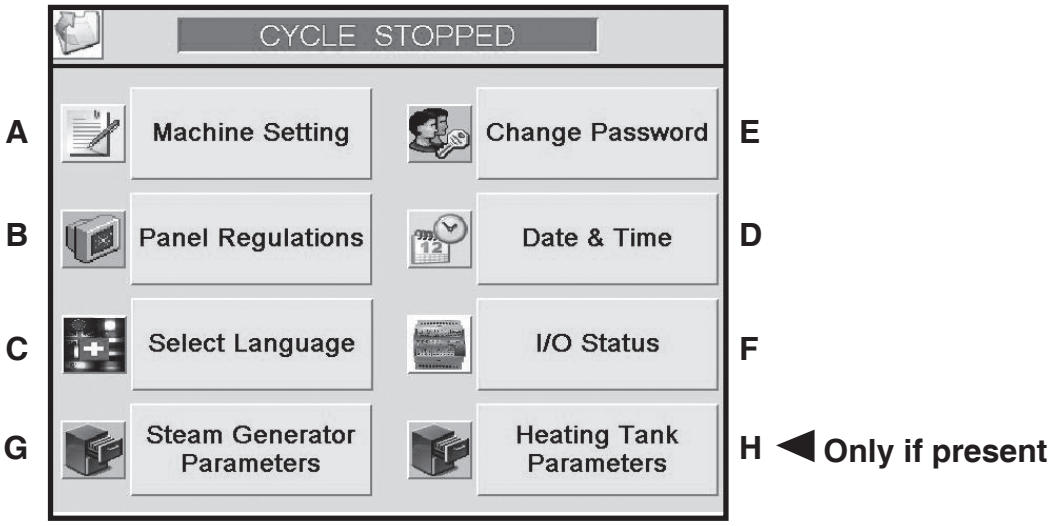
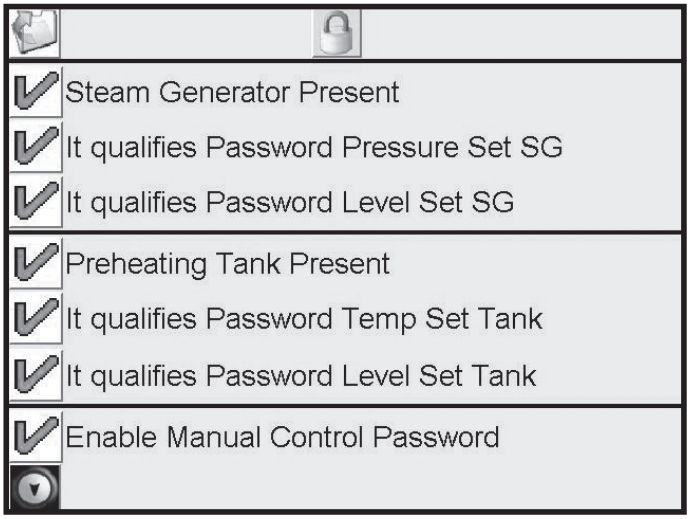


Fig. 5

A)

Lightly touch the key. This screen will be displayed:



◄ **Enable only if present**

Fig. 6

Press the key to view the next image

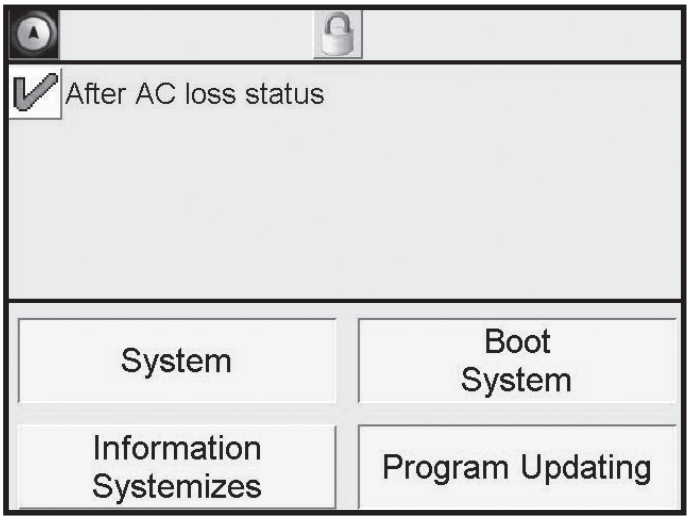


Fig. 6.1

Press the key. The padlock will open. . Press the box to the screen's left to enable or disable different options. Once selected, press the Padock key and it will close .

Boot System : touching this key, PLC will recharge the whole system, like always happens turning on the control panel.

System : strictly reserved for the installer.

Information Systemizes : strictly reserved for the installer.

Program Updating : strictly reserved for the installer.

To return to the screen shown in Fig. 5, press .

B)

Then, lightly press the key. This screen will be shown:

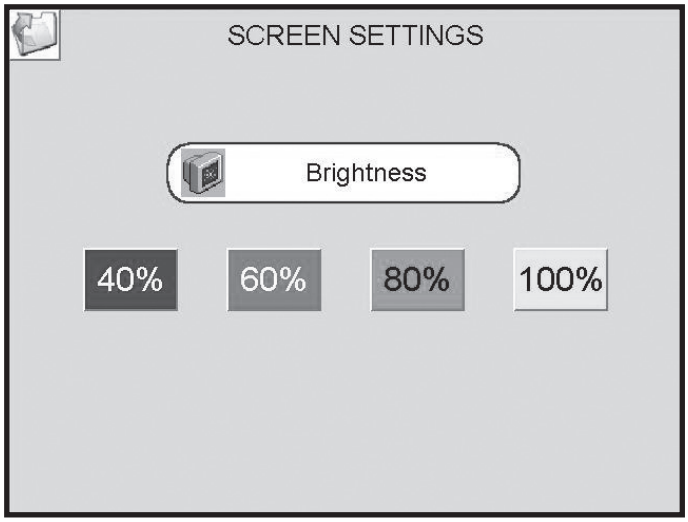


Fig. 7

To change the brightness, press the key corresponding the percentage desire.

To return to the screen shown in Fig. 5, press .

C)

Lightly touch the key. This screen will be displayed:

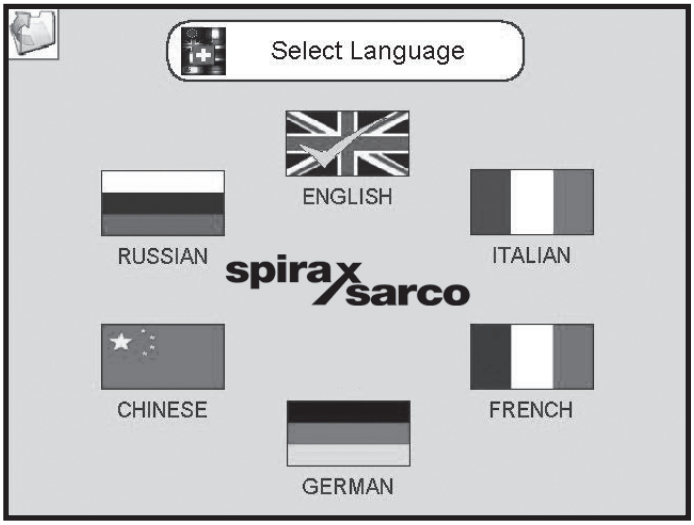


Fig. 7.1

To change language, press the required button. On the pressed key will appear the symbol, to confirm that the choice was made.

Once configuration is finished, press the key to return to the screen shown in Fig. 5.

D)

Lightly press the key. This screen will be displayed:

Fig. 7.2

To change date/hour press on each box an insert the new value. To confirm press RET.

To change from standard time to daylight time and vv press

Once configuration is finished, press the key to return to the screen shown in Fig. 5.

F)

Lightly press the key. It will be displayed the following screens, which shows the plant inputs status. The input state "on" is visualized in green, the input state "OFF" is visualized in red.

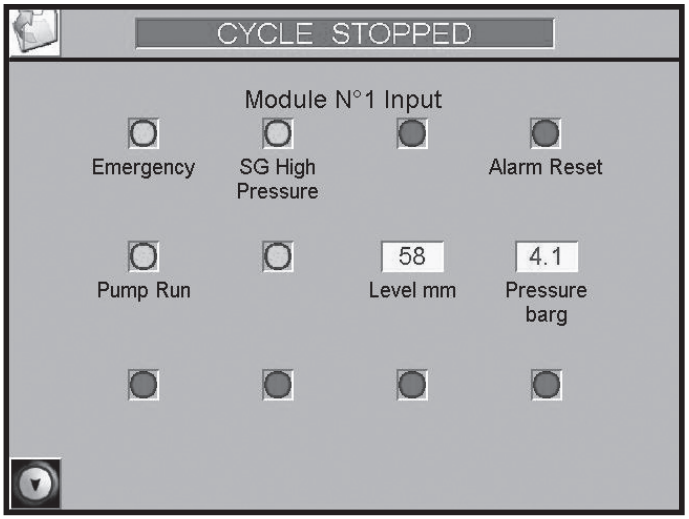


Fig. 8

Press the key to view the module 2 input screen.

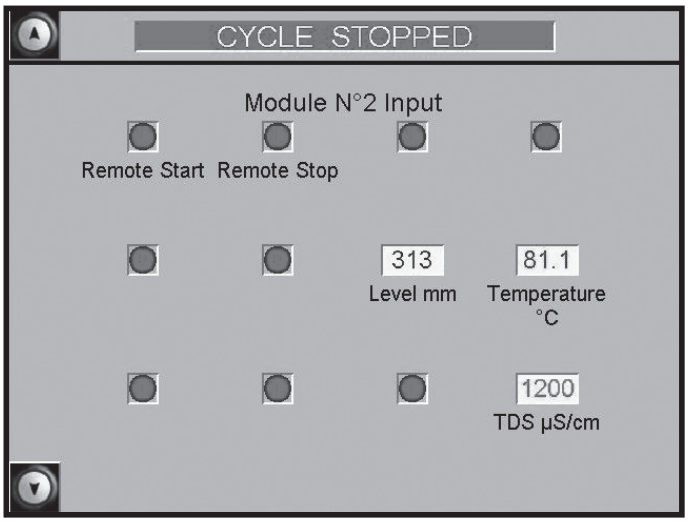


Fig. 8.1

Press the key to view the module 1 outputs screen.

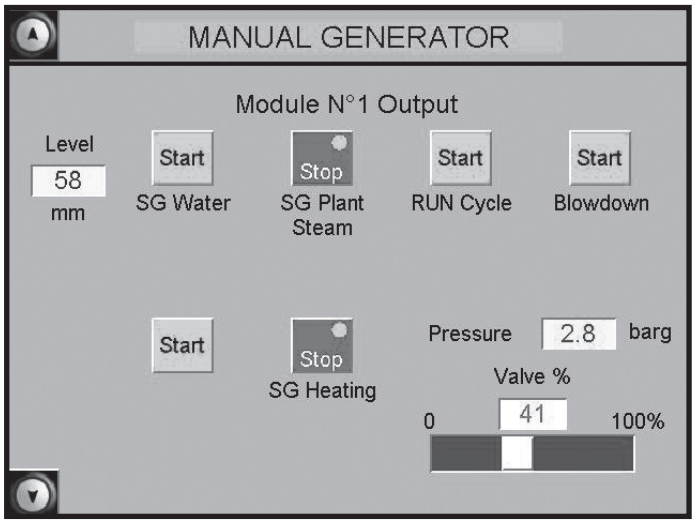
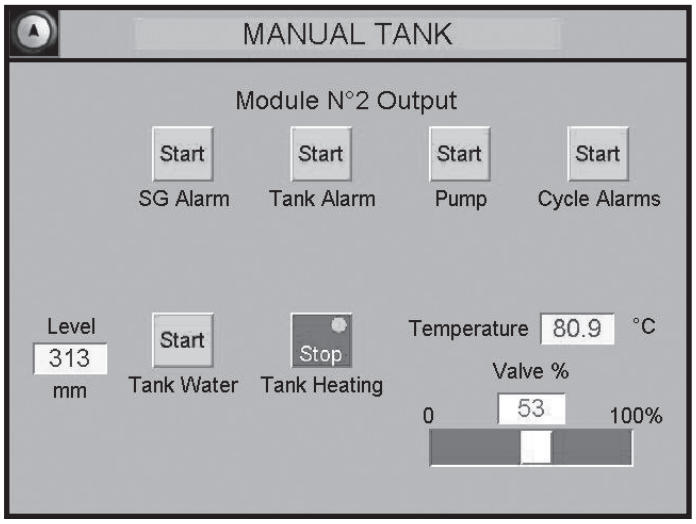


Fig. 9

Press the key to view the module 2 output screen.



◄ **Active only when present**

Fig. 10

When the generator is not active (STOP), it is possible to override the outputs module status Press Start relative to the output you want to activate the key be comes red with a green ball. To deactivate press Stop key as shown in Fig.9/10. To command the modulating valve press "Tank/SG Heating" key and with the cursor set the percentage of aperture of the valve.
To reset outputs, press the same key again.

To return to the screen shown in Fig. 5, press the key for several times.

E)

Lightly press the key. Next screen will be shown:

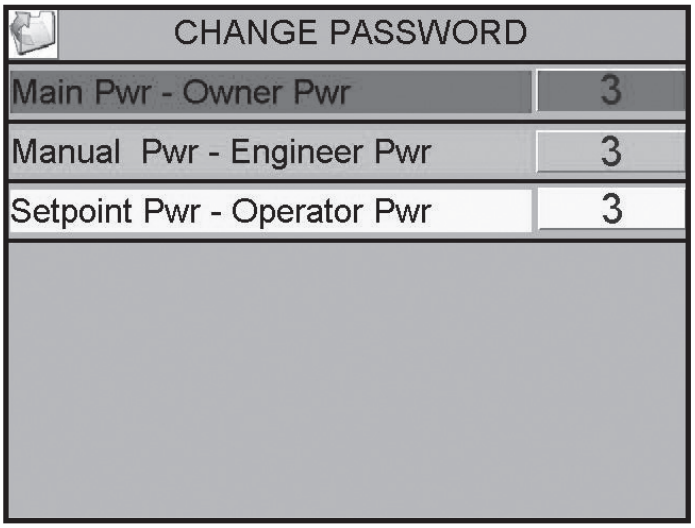


Fig. 11

Change password: this section enables the user to change the password giving access to parameters and manual controls.

Using the numerical table, press the selected key and insert the new value.

Confirm now the new PWD, and press RET to confirm

To return to the screen shown in Fig. 5, press the key.

H)

Lightly press the key **(only if present)**. Next screen will be entered:

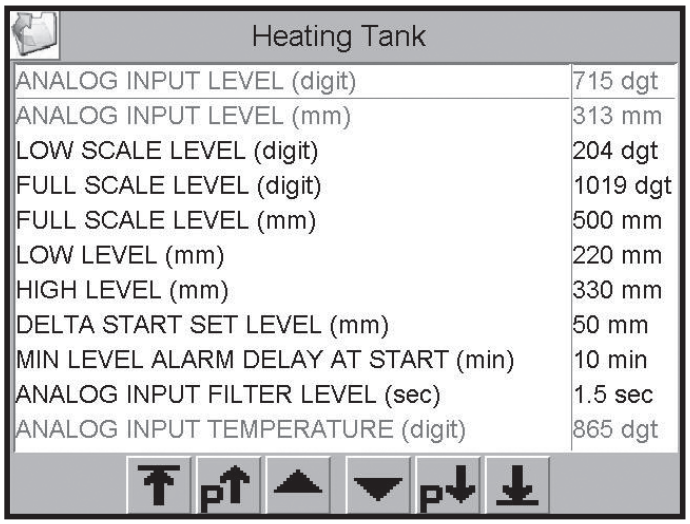


Fig. 12

Enter the next screen by selecting  and  .

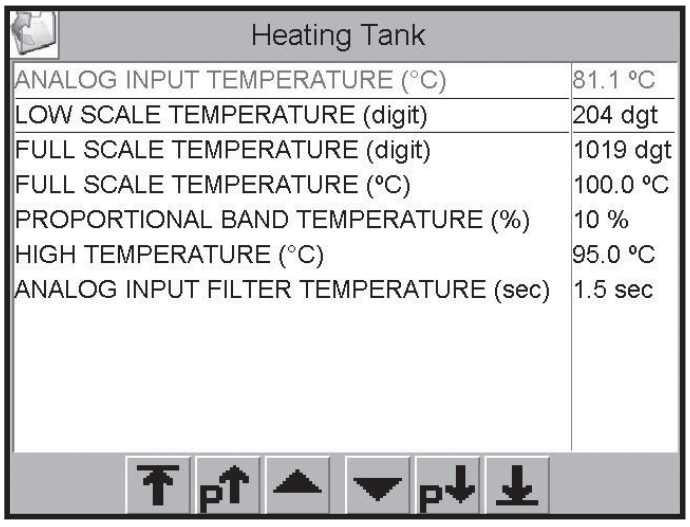


Fig. 13

To modify the default values, use the  keys.

Press now the digit on the numerical table, then set the new value using the keypad and confirm it by selecting RET key.

Return to Fig. 5 screen by selecting  key.

Valve table to be assigned to the SG protected parameters				
Parameter name	**Description**	**Range/Units**	**Factory Default**	**Comm. Value**
Analog Input Level (Digit)	Digital rapresentation of analogue signal	0-1023	not changeable	
Analog Input Level (mm)	Rapresentation in ingegneristic unit of analogue signal	0-1000 mm	not changeable	
Low Scale Level (Digit)	Minumum digital value of the analogue signal	0-1023	204	
Full Scale Level (Digit)	Maximum digital value of the analogue signal	0-1023	1019	
Full scale Level (mm)	Full scale value of level trasmitter in mm	0-1000 mm	110 mm	
Low Level (mm)	Minimum level alarm threshold	0-1000 mm	20 mm	
High Level (mm)	Maximum level alarm threshold	0-1000 mm	100 mm	
Level Delta start set	Differential Level below level where water feed starts	0-20 mm	20 mm	
Del Minimum level alarm at startup	Alarm delay for minimum level alarm	0-120 min	10 min	
Analog Input Filter Level (s)	Analogue input level filter time	0-10 s	1.50 s	
Analog Input Temperature (Digit)	Digital rapresentation of analogue signal	0-1023	not changeable	
Analog Input Temperature (°C)	Rapresentation in ingegneristic unit of analogue signal	0-100°C	not changeable	
Low Scale Temperature (Digit)	Minumum digital value of the analogue signal	0-1023	204	
Full Scale Temperature (Digit)	Maximum digital value of the analogue signal	0-1023	1019	
Full Scale Temperature (°C)	Range of Temperature trasducer	0-100°C	100°C	
Proportional Band Temperature	Proportional band as percentage of input scan	0-100%	10%	
Full Scale Temperature (°C)	Full scale value of temperature transmitter in °C	0-100°C	100°C	
High Temperature (°C)	Maximum temperature alarm threshold	0-100 °C	95°C	
Analogue Input Filter Temperature (Digit)	Digital value of Temperature trasducer analogue signal full scale	0-10 s	1.50 s	

G)

Lightly press key to enter next screen.

To enter other three screens, press P↑ and P↓ keys. (Fig. 16-17-18)

Steam Generator	
ANALOG INPUT LEVEL (digit)	636 dgt
ANALOG INPUT LEVEL (mm)	58 mm
LOW SCALE LEVEL (digit)	204 dgt
FULL SCALE LEVEL (digit)	1019 dgt
FULL SCALE LEVEL (mm)	110 mm
LOW LEVEL (mm)	20 mm
HIGH LEVEL (mm)	100 mm
DELTA START SET LEVEL (mm)	20 mm
MIN LEVEL ALARM DELAY AT START (min)	10 min
ANALOG INPUT FILTER LEVEL (sec)	1.5 sec
ANALOG.INPUT PRESSURE (digit)	580 dgt

Fig. 15

Steam Generator	
ANALOG INPUT PRESSURE (barg)	2.8 barg
LOW SCALE PRESSURE (digit)	204 dgt
FULL SCALE PRESSURE (digit)	1019 dgt
FULL SCALE PRESSURE (barg)	6.0 barg
PROPORTIONAL BAND PRESSURE (%)	10 %
INTEGRAL ACTIVATION PRESSURE (1=Active)	1
INTEGRAL TIME PRESSURE (sec)	10 sec
LOW PREALARM PRESSURE (barg)	1.0 barg
CLEAN STEAM PRESENCE 0=(Not) 1=(Yes)	1
CLEAN STEAM PRESSURE DELTA SET (barg)	0.2 barg
CLOSED CLEANED STEAM LOW LEVEL (mm)	0 mm

Fig. 16

Steam Generator	
Del Steam-CI Steam CLOSED for MAX LEV (sec)	60 sec
ANALOG INPUT FILTER PRESSURE (sec)	1.5 sec
TDS PRESENCE 0=(Not) 1=(Yes)	1
ANALOG INPUT TDS (digit)	1019 dgt
ANALOG INPUT TDS (µS/cm)	1200
LOW SCALE TDS (digit)	204 dgt
FULL SCALE TDS (digit)	1019 dgt
LOW SCALE TDS (µS/cm)	400
FULL SCALE TDS (µS/cm)	1200
ANALOG INPUT FILTER TDS (sec)	1.5 sec
BLOWDOWN PRESENCE 0=(Not) 1=(Yes)	1

Fig. 17

Steam Generator	
LOW SCALE TDS (digit)	204 dgt
FULL SCALE TDS (digit)	1019 dgt
LOW SCALE TDS (µS/cm)	400
FULL SCALE TDS (µS/cm)	1200
ANALOG INPUT FILTER TDS (sec)	1.5 sec
BLOWDOWN PRESENCE 0=(Not) 1=(Yes)	1
BLOWDOWN LIMITSW. ON 0=(Not) 1=(Yes)	0
BLOWDOWN OPEN (sec)	5 sec
BLOWDOWN CLOSED (hours)	24 Hour
SCREENSAVER (1=Active)	0
MODBUS 0=(Not) 1=(Yes)	0

Fig. 18

Press the ▲ ▼ keys to select the parameter to modify then set the new value selecting it on the keypad and confirm by pressing RET.

Return to Fig. 5 screen by selecting key.

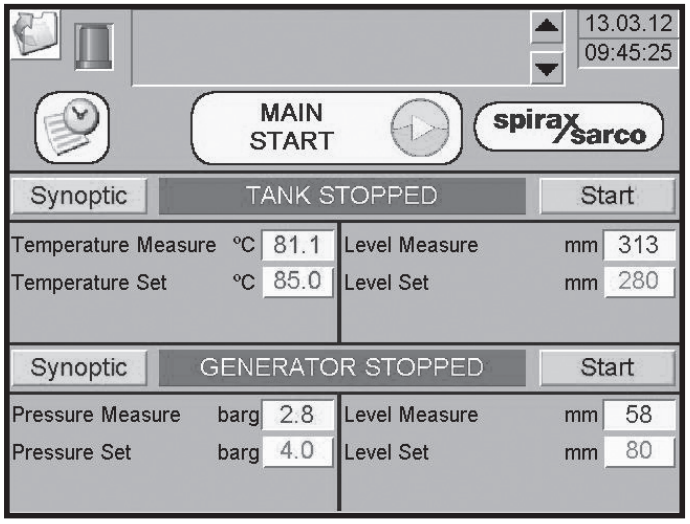
Valve table to be assigned to the SG protected parameters

Parameter name	Description	Range/Units	Factoey Default	Comm. Value
Analog Input Level (Digit)	Digital rapresentation of analogue signal	0-1023	not changeable	
Analog Input Level (mm)	Rapresentation in ingegneristic unit of analogue signal	0-1000 mm	not changeable	
Low Scale Level (Digit)	Minumum digital value of the analogue signal	0-1023	204	
Full Scale Level (Digit)	Maximum digital value of the analogue signal	0-1023	1019	
Full scale Level (mm)	Full scale value of level trasmitter in mm	0-1000 mm	110 mm	
Low Level (mm)	Minimum level alarm threshold	0-1000 mm	20 mm	
High Level (mm)	Maximum level alarm threshold	0-1000 mm	100 mm	
Level Delta start set	Differential Level below level where water feed starts	0-20 mm	20 mm	
Del Minimum level alarm at startup	Alarm delay for minimum level alarm	0-120 min	10 min	
Analog Input Filter Level (s)	Analogue input level filter time	0-10 s	1.50 s	
Analog Input Pressure (Digit)	Digital rapresentation of analogue signal	0-1023	not changeable	
Analog Input Pressure (bar)	Rapresentation in ingegneristic unit of analogue signal	0-10 bar	not changeable	
Low Scale Pressure (Digit)	Minumum digital value of the analogue signal	0-1023	204	
Full Scale Pressure (Digit)	Maximum digital value of the analogue signal	0-1023	1019	
Full Scale Pressure (bar)	Range of pressure trasducer	0-10 bar	6.0 bar	
Proportional Band Pressure	Proportional band as percentage of input scan	0-100%	10%	
Integral Activation	Activates Integral control parameter	1=on 0=off	1	
Integral Time (s)	Integral action time	10-1000 s	10 s	
Low Pre-Alarm Pressure (bar)	Low pressure alarm	0-10 bar	1bar	
Closed Cleaned Steam Low Level (mm)	Clean steam valve closing for minumum level alarm	0-1000mm	0	
DEL Steam-CL Steam closed From max level (s)	Delay Clean steam valve closing for maximum level alarm	0-180 s	60 s	
Clean Steam presence	Clean Steam Valve presence	1 or 0	1	
Del Cl Steam (bar)	Differential from set to open clean steam valve	0-5,0 bar	0.2 bar	
Analog Input Filter Pressure (s)	Analogue input pressure filter time	0-10 s	1.50 s	
TDS Presence	Presence TDS controller	1 or 0	0	
Analog Input TDS (Digit)	Digital rapresentation of analogue signal	0-1023	not changeable	
Analog Input TDS (bar)	Rapresentation in ingegneristic unit of analogue signal	0-10 bar	not changeable	
Low Scale TDS (Digit)	Minumum digital value of the analogue signal	0-1023	204	
Full Scale TDS (Digit)	Maximum digital value of the analogue signal	0-1023	1019	
Low Scale TDS (ms/cm)	Minumum Range of TDS trasducer	0-9999	400 µs/cm	
Full Scale TDS (ms/cm)	Maximum Range of TDS trasducer	0-9999	1200 µs/cm	
Blowdown Presence 0=off 1=on	Blowdown presence	1 or 0	1	
Blowdown LS Presence 0=off 1=on	Blowdown LS presence	1 or 0	1	
Blowdown closed (h)	Time between blowdown operations	0-24h	1h	
Blowdown Open (sec)	Opening time of blowdown valve	0-60 s	5 s	
Screensaver	Screensaver presence	1=on 0=off	0	
Modbus 0=not 1=yes	Modbus presence	1 or 0	0	

Cycle Section

Press 

The picture is shown in Fig. 19.



Only if present

Fig. 19

2) Manual Cycle Generator

Press the SYNOPTIC button in Fig. 19, Fig. 20 will be displayed:

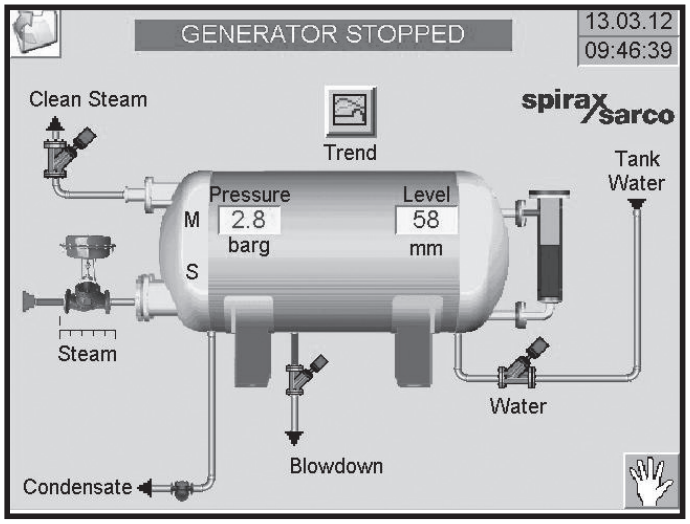


Fig. 20

Pressing the  key opens the keypad to digit the password. Insert the value 3 and confirm with ENTER.
The Synoptic screen (Fig.21) with the function keys is now shown.

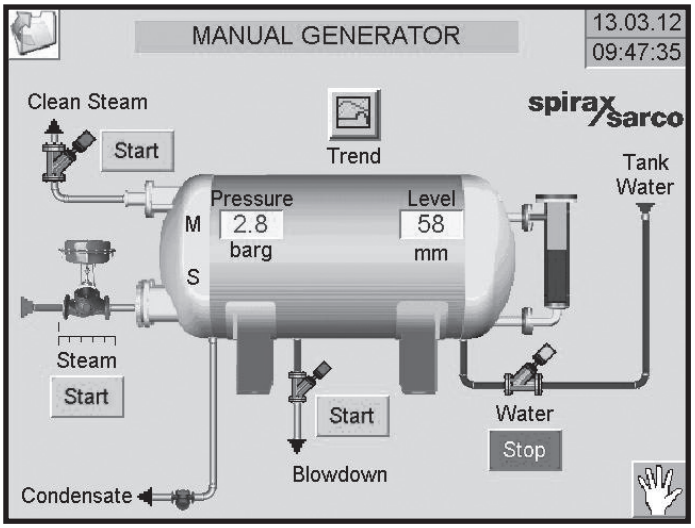


Fig. 21

Press the related buttons to control the valves opening. Press the control key again to bring valves into rest position.

Note: each time you change the video image enabling manual control is lost. To restore this commands must repeat the password introduction.

Heating: for analogic controls (e.g. pressure), press the functional key placed at the valve to be controlled; then it will be displayed a new button used to insert the pressure value to get inside the generator.

Selecting this button, a digit keypad will be displayed. Digit the required pressure value and confirm by selecting the RET key.

The button previously pressed now shows this value.
Pressure control starts now on a continuous basis, up to maintain the programmed value by the modulation of steam valve.
Press again the same functional key to reset the control.

Note: the heating is subject to the presence of minimum level.

The intervention of the maximum pressure switch ensures the closure of the valve and gives the respective alarm.
Return to the operating value pressure of the GV (lower than the set of calibration of the pressure switch).
To re-open the steam valve first press the reset button blocks placed in front of the panel.

Filling

The function of filling depends on the presence of the minimum level of the tank. If it's no present, will be given on screen the alarm.
To activate the function, press the green Start button under the respective valve.
Starts the pump and the valve.
The arrest of the pump for anomaly also provides for the closing of the valve with corresponding alarm.
Reached the level of operation to stop the filling, press the button underneath the valve.
If the level reaches the programmed maximum level, the pump will be stopped automatically and the valve will be colsed. In this case the anomaly will be reported to the video.

Blowdown (If present)

To activate the function, press the green Start button at the side of the respective valve.
To close the valve press again the same button. If the valve is equipped with the corresponding limit switch closed, when the command of the valve is off, the limit switch is controlled to the closed position.
If this proves not to be active, will be given on-screen visual indication of the alarm.
Also this valve, in case of intervention of the maximum pressure, is automatically closed.
To re-open the valve is first necessary to bring the GV to the value of operation and press the reset button placed in the front panel

Clean Steam Valve (if present)

Before proceeding with the opening of the clean steam verify that the pressure of the generator has reached the expected value.
To activate the function, press the green Start button at the side of the respective valve.
To close the valve press again the same button.
Also this valve, in case of intervention of the maximum pressure, is automatically closed.
To re-open the valve is first necessary to bring the GV to the value of operation and press the reset button placed in front panel.

Manual Cycle Tank (only if present)

Press the SYNOPTIC key; in the Fig. 19 this screen is now displayed:

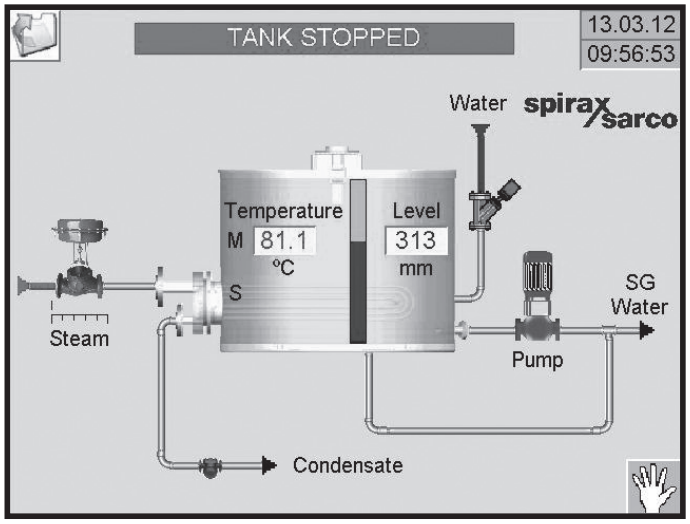


Fig. 22

Selecting this key, opens the keypad to insert the password. Insert the digit 3 and confirm with Enter.
Now is shown the Synoptic screen Fig. 23 and his functional buttons.

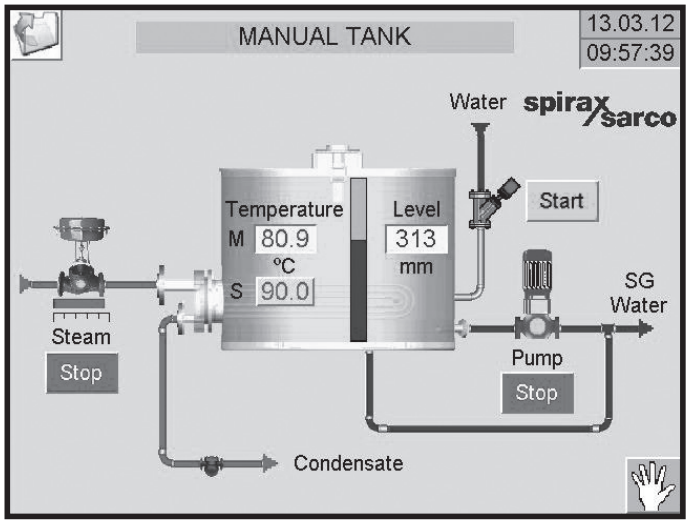


Fig. 23

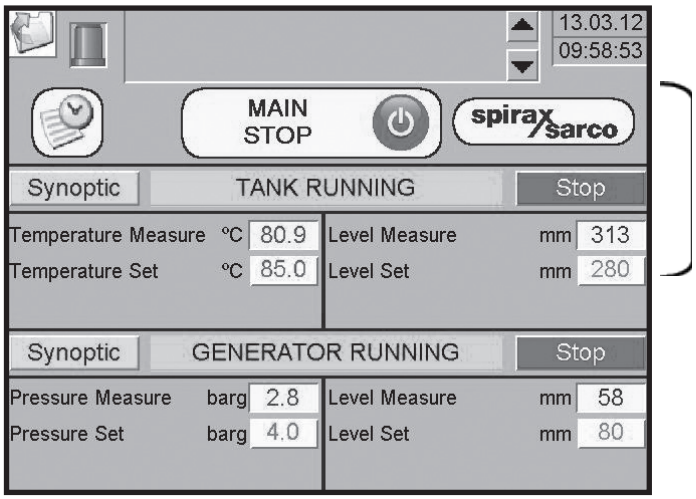
Press the correspondent keys to control the valves opening. Press the Control key again to bring valves into rest position.

Note: Each time the display is changed, the enabling of manual controls is lost. To restore these commands it is necessary to enter the password again.

During the manual operation are not active control devices except those of safety.
The heating valve can not be activated if there is not the minimum level that provides coverage of the tube bundle, and is not active the pump.
The water intake is stopped, however, if it reaches the maximum level.
Any anomalies described above, are reported on the screen and through the lamp.

Automatic Cycle

Before starting the automatic cycle, it is necessary to entry the generator control analogical data (pressure and level) and tank (temperature and level).



Only if present

Fig. 24

SG parameters

To introduce the pressure sets on the screen shown in Fig. 24, touch the related box (which indicates the set value) and then a keypad will appear where to digit the password. Insert the value 3 and confirm with ENTER. (This operation must be accomplished only when password enabling has been chosen in the system configuration (see Fig. 6).

Press again the enabled PRESSURE SET box digit the desired set value on the keypad visualized; then confirm the operation by selecting ENTER.

Perform the same operation to set the level of the generator.

Tank parameters (set the valves as described for GV)

Perform the same operation in according with the procedure described above for the parameters relating to the tank.
After completion of the values setting, press the GENERAL START key.

Now the cycle begins the automatic control of generator and tank. Press from the touch panel the GENERAL STOP key to reset the operating cycle.

During the cycle, some alarms trigger (High Pressure, Low Level, Pump thermal etc...) is displayed with the related wording.
When the alarm doesn't cause the block of the cycle (CYCLE STOPPED), once rectified the problem, the system resets automatically.

To restore the cycle in RUN mode when the displayed alarm caused the stop of the cycle, once rectified the problem, it is necessary to press the front panel RESET LOCKS (this operation is also reported with text on screen). To restart the cycle, press the START key.

During the automatic operation of the cycle, press the button GENERATOR SYNOPTIC on the Fig. 24 the GV image is displayed with the respective analog values, and active states of the outputs highlighted in green.

To return to general video page (Fig. 24) press  .

During the automatic operation of the cycle, press the button TANK SYNOPTIC on the Fig. 24 the GV image is displayed with the respective analog values, and active states of the outputs highlighted in green.

To return to general video page (Fig. 24) press  .

Note: During the cycle automatic operation (Fig. 24) it is possible to return to the screen shown in Fig. 3 and to protected parameters (to make any value change) by selecting the  key, without the settlement cycle is interrupted.

General considerations in Automatic Operation

During automatic operation if the STOP key is pressed the cycle is interrupted.
All active outputs are cleared.
Set point values are however stored in memory. With the STOP action Screen 25 will be displayed to allow the selection of different operation modes.

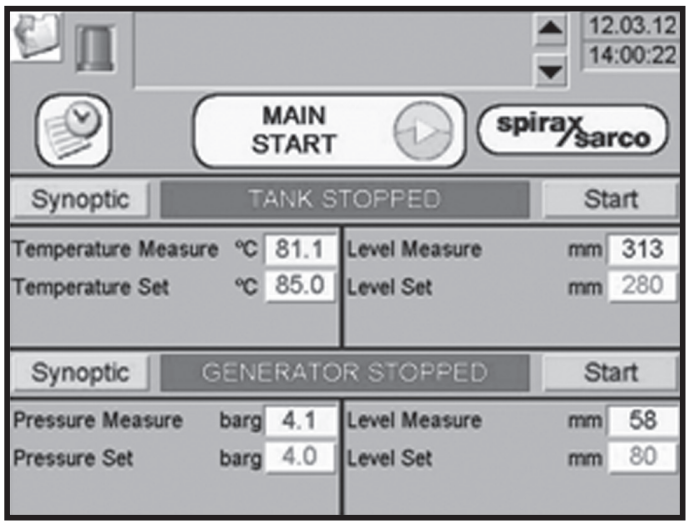


Fig. 25

In order to restart the interrupted cycle press the GENERAL START key.

The control outputs will return active, Screen 24
Manual control, if required, can be carried out during automatic operation as follows:

- press the GENERAL STOP key. All active outputs will be stopped and Screen 25 will be displayed.
- press the Synoptic key for the SG and Tank manual mode
- refer the paragraph CYCLE in MANUAL for manual operation.

In order to restart the automatic cycle and return to the relevant functional video screen, press the key.

Alarms and Blocks

As described in the manual operation mode all the block alarms are active during the automatic cycle.

In detail they are:
- Block of the feed water control when one of the following alarms occurs:
- stoppage of water pump
- minimum level of storage
- level transmitter
- maximum level
- high pressure
- pressure transmitter

- Block of the pressure control when one of the following alarms occurs:
- pressure transmitter
- minimum level
- maximum level
- high pressure

- Block of the bottom blowdown control when one of the following alarms occurs:
- F.C. bottom blowdown closed

- Alarm only of the T.D.S control, without block of the cycle, for the alarm due to:
- high T.D.S. value

Pressing the emergency pushbutton during the automatic operation the cycle will be interrupted, all active functions will be cleared and the relevant alarm will light up.

In order to resume the automatic operation place the emergency pushbutton in stand-by position and press the START key.
The cycle will restart.

Alarms and Blocks

All the cycle alarms, in addition to being displayed, are also stored in a special dedicated area.

To access them, press the display key on Fig. 24.

Next screen will be displayed:

Fig. 26

For each alarm, it is indicated: MONTH, YEAR, HOUR, MINUTE of alarm's start (1) and end (0).

Selecting the key the first stored Alarm will be displayed.

With the button displays the last alarm.

With keys it is possible to individually scroll the alarm list.

Selecting and it is possible to switch from one to another Alarm menu screen.

By selecting key all alarms is cleared.

Press key to return to synoptic screen.

Chart

Press the key in the GV Synoptic screen to enter next screen.

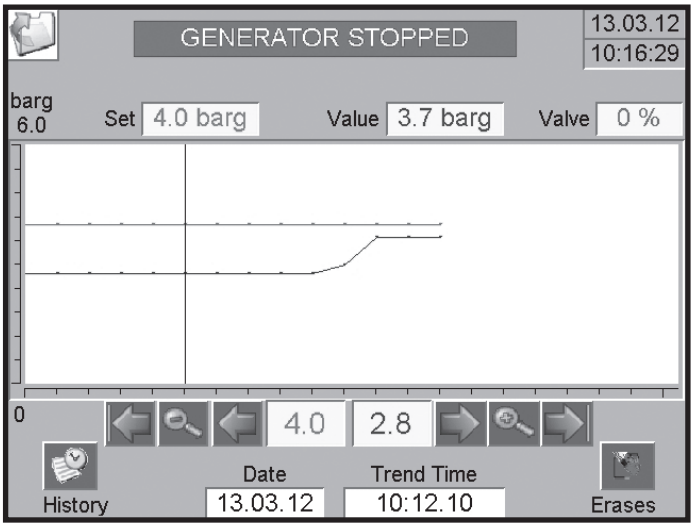


Fig. 27

By selecting keys you can zoom it to check the progress of the measure, according to the corresponding set.

When a latching Alarm or Cycle end stop the system, the chart recorded during the automatic cycle is saved in a folder and then removed from direct visualization.

When the cycle is stopped it is possible to display the list of resident charts by selecting the key.

Select the required chart using and , keys, then confirm with RET.
Il grafico selezionato viene presentato a video.

Selected chart is now displayed.

To delete it from the registered list, press RET key.

REPAIRS

Should it be necessary to return the equipment for repairs please contact our nearest Branch Office or Agent or directly: Spirax Sarco S.r.l. Via per Cinisello, 18 - 20834 Nova Milanese (MB)
Tel.: 0362 49 17.1 - Fax: 0362 49 17 307

Loss of Guarantee

Total or partial disregard of above instructions involves loss of any right of guarantee.

Spirax Sarco S.r.l. - Via per Cinisello, 18 - 20834 Nova Milanese (MB) - Tel.: 0362 49 17.1 - Fax: 0362 49 17 307