BAUER KOMPRESSOREN

Operating manual and Spare parts list

Fail-safe Filling Ramp

B-SAFE 300

www.bauer-kompressoren.de

INTRODUCTION

This manual contains information and instructions for the service and maintenance of the following type of fail-safe filling ramps:

B-SAFE 300

In order to avoid damage or premature wear and tear of the machine, strictly follow the prescribed operating instructions.

The defects and damages caused by the failure to follow these instructions are not covered by the guarantee.

! Pneumatic high pressure system !

Edition January 2012

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Spare parts catalogue:	Code
B-SAFE 300	G71.2

Modification notice

The modifications with respect to the previous edition are shown to the right of a vertical line.

Modification no.	Modification date
0	January 2012, first edition

1. DESCRIPTION

The B-SAFE 300 fail-safe fill ramp can be used, with any type of breathing air compressor, for the purpose of safe and controlled filling of breathing air cylinders.

An enclosed filling chamber protects the operator from cylinder or flexible hose explosions during the filling process. In addition, electronic control allows precise configuration of the filling.

2. COMPOSITION

The B-SAFE 300 ramp consists of the following main components:

- Explosion-proof filling chamber
- Filling accessories
- Proportional/solenoid valve[a)]
- Automatic depressurisation system
- Electronic control for filling

2.1. FILLING CHAMBER

The body of the enclosed safety chamber, built using steel sheets, is extremely stable:

- Two explosion-proof sliding doors protect the filling chamber where the cylinders are connected.
- The automatic locking system of the doors prevents the doors from opening during the filling of cylinders. At the same time, it prevents the filling of cylinders while the doors are open.
- Openings on the sides and top of the ramp allow a controlled release of compressed air in case of an explosion of a cylinder or a flexible hose.

Openings for handling are provided on all sides to facilitate the transport.

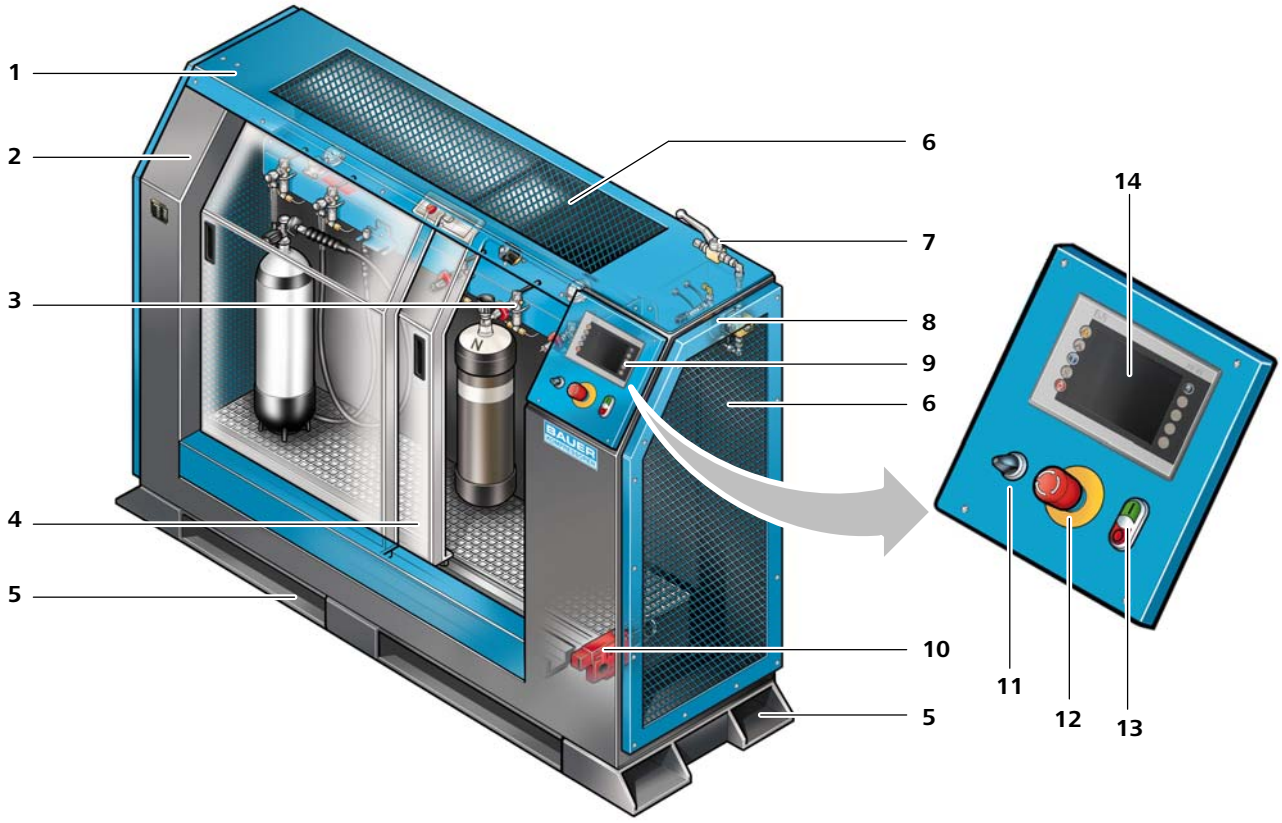


Fig. 1 B-SAFE 300 with integrated filling ramp (optional)

1 Body
2 Name plate
3 Filling valves
4 Sliding door
5 Openings for handling
6 Openings for air release
7 Manual inlet valve
8 Proportional valve
9 Control panel
10 Door locking system
11 Main switch
12 Emergency stop
13 On/Off switch with light indicator
14 Touch screen

a) Option

2.2. FILLING ACCESSORIES

In its standard configuration, the B-SAFE filling ramp is equipped with flexible hoses and filling valves.

The B-SAFE ramp is available without any accessories or with an integrated BAUER external filling ramp upon request. All the BAUER external filling ramps that are available for the B-SAFE are equipped with filling valves and direct filling valves.

The B-SAFE ramp is available with:

- pressure range (PN200 or PN300), or
- two pressure ranges (PN200 and PN300).

The second pressure range is obtained using a regulator which allows you to fill two cylinders with different pressures simultaneously.

The B-SAFE 300 ramp allows simultaneous filling of a maximum of:

- 6 diving cylinders, or
- 10 HP cylinders[a] .

The number of connections must be determined according to the output of the compressor as the time taken to fill the cylinders depends on the latter.

2.3. PROPORTIONAL/SOLENOID VALVE

The B-SAFE filling ramp is available with:

- a proportional valve (can be used only with a storage bench), or
- a solenoid valve.

2.3.1. Proportional valve

The proportional valve helps regulate the speed used to fill the cylinders between 20 and 50 bar/min. This reduced filling speed limits the risk of explosion and wear and tear of the cylinders, particularly of those made of composite materials.

The filling speed is adjusted using electronic controls. Refer to Fig. 11, page 5.

2.3.2. Solenoid valve

The solenoid valve is used to open or isolate the internal pneumatic circuit. Thus, it only allows direct filling of cylinders i.e. the time required for filling depends directly on the output of the compressor.

2.4. AUTOMATIC DEPRESSURISATION SYSTEM

The B-SAFE ramp can be equipped with a depressurisation system which automatically aerates the internal pneumatic circuit when a door is opened or emergency stop function is activated.

The compressed air in the cylinders does not escape into the atmosphere during the depressurisation as the filling valves are fitted with a non-return valve. In order to be able to disconnect the cylinders with minimum risk, the valves are also provided with an air valve that opens when the valve is loosened.

2.5. EMERGENCY STOP

In case of danger, it is possible to stop filling the cylinders immediately by pressing the emergency switch (12, Fig. 1). It interrupts the electric supply and:

- the proportional valve or solenoid valve shuts down and the internal pneumatic circuit is depressurised,
- the doors remain locked,
- the indicator light flashes and the message "Emergency stop" is displayed at the bottom of the screen.

To restart the B-SAFE ramp, rotate the emergency switch (12, Fig. 1) by a quarter turn to the left and then press the "0" key (13). The indicator light stops flashing and the message "EMERGENCY STOP" disappears from the screen. The filling of cylinders can start again.

2.6. ELECTRONIC CONTROL FOR FILLING

The electronic control system has a 6-inch touch screen (Fig. 2) for displaying and regulating filling parameters.

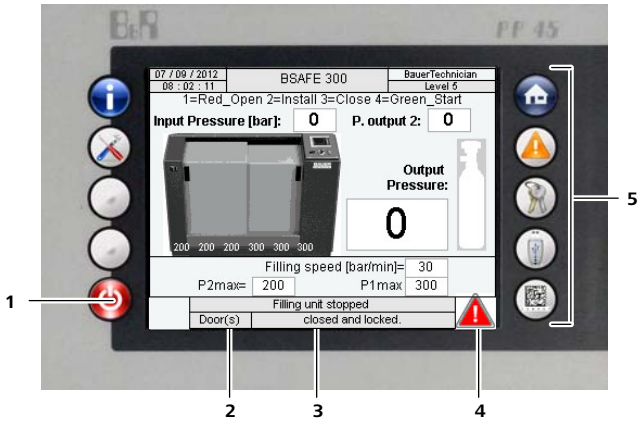


Fig. 2 Screen

1 Stand by button
2 Double status bar
3 Touch screen
4 Alarm indication
5 Navigation keys

2.6.1. Communication with the compressor

The electronic control system of the B-SAFE ramp can be connected to that of the compressor. This allows remote start or shut down of the compressor (only possible with direct filling i.e. without storage or proportional valves).

In addition, the B-SAFE control panel can display a compressor breakdown message. In such a case, the Alarm sign is displayed and the message "Cycle interrupted: Comp. error" is displayed to indicate that the compressor has shut down. The filling process is stopped. After the repair work, the error must be acknowledged by pressing the red button "0". The flashing stops and the error message disappears. The filling process can start again.

a) Only if combined with the standard filling accessories (maximum diameter of cylinders = 18 cm, maximum height = 60 cm)

2.6.2. Navigation

The electronic control panel has 6 to 8 navigation keys (Fig. 3) depending on the version installed; the "Export files" and "Scan" keys are available only with the Traceability option (see page 8).

Also refer to chapters 11.2. "Program structure" and 11.3. "Program structure – Traceability" provided in the annexe.

On the entire screen, the active fields (values, text, arrows, buttons, etc.) are black and the inactive or inaccessible fields are grey.

ON / OFF

Unlike other navigation keys, the function of the ON/OFF switch is not to open a window but to switch on or switch off the screen and exit the current access level.

Main page

The main page (Fig. 4) comprising the basic information related to the status of B-SAFE 300 ramp is displayed during every start-up. This information includes the supply pressure (input pressure), filling pressure(s) and filling speed (only for proportional valves) as well as the doors status.

- The output pressure (P1) is regulated through the software.
- The output pressure 2 (P2, option) is mechanically regulated using a regulator.

Filling not allowed

In case the filling is not allowed the doors and locks can be regulated from the main page. Example of Filling not allowed:

- Doors closed and unlocked – icon flashing (Fig. 5)
- Doors open – message at the bottom of the screen "Right open - filling not allowed" (Fig. 6)

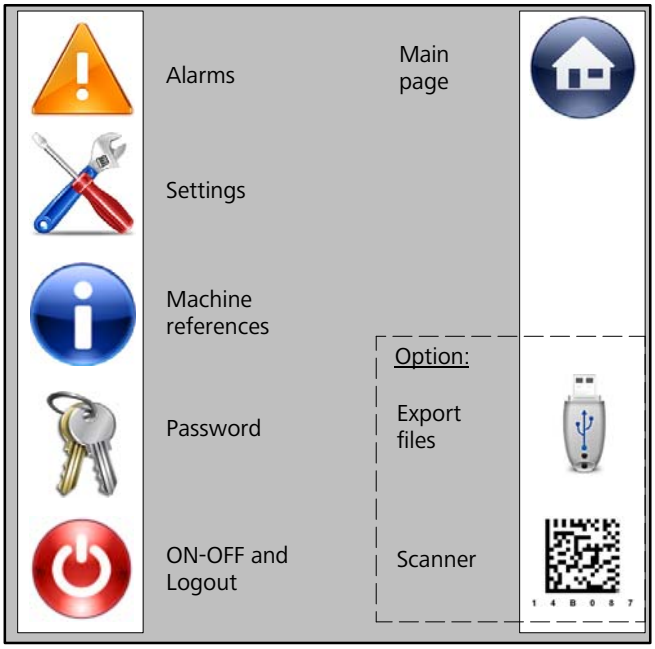


Fig. 3 Navigation keys

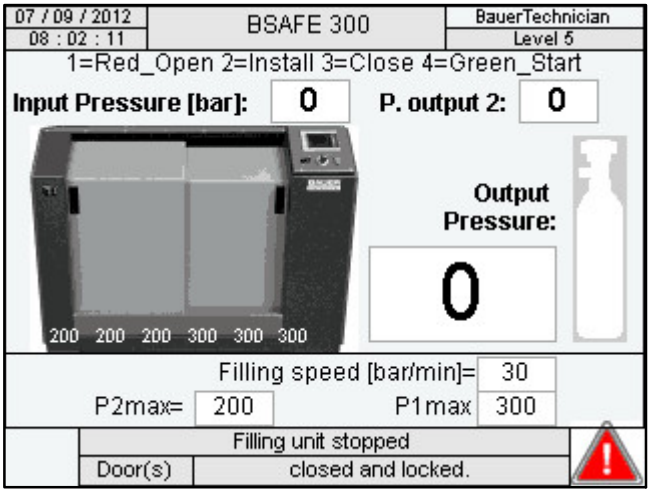


Fig. 4 Main page

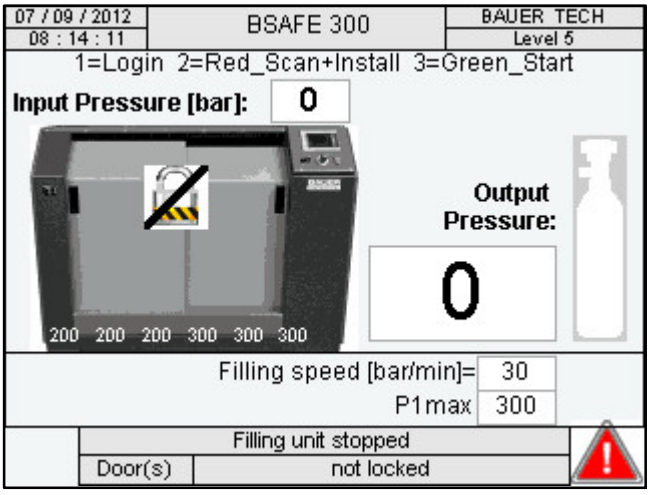


Fig. 5 Main page: filling not allowed (1/2)

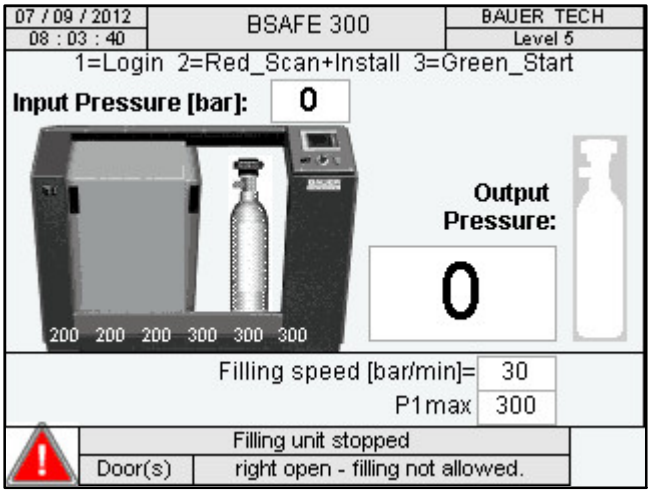


Fig. 6 Main page: filling not allowed (2/2)

MACHINE REFERENCES page

This page (Fig. 7) contains the information for quality control of the B-SAFE 300 and its main components.

Press the "Counters and Maintenance" arrow to open the "Maintenance" page (Fig. 8). See below.

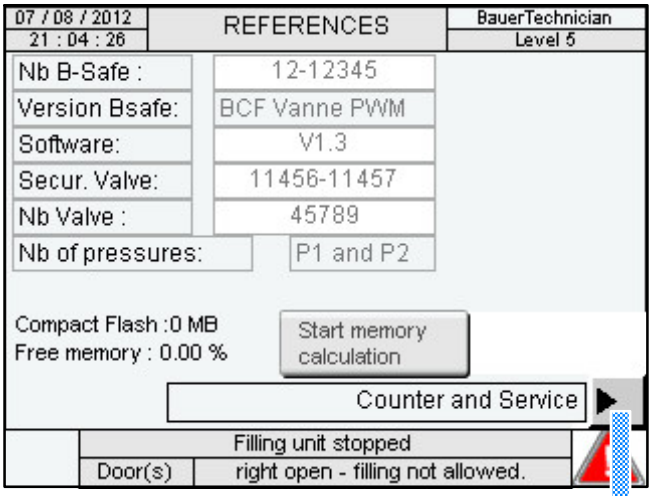


Fig. 7 MACHINE REFERENCES page

MAINTENANCE page

This page (Fig. 8) contains the counters and date of change of the solenoid or proportional valve and the date of the last maintenance work carried out:

- Total number of cycles: counts the number of fillings since the B-SAFE 300 was activated.
- Number of cycles since valve change: indicates the number of fillings since the valve was replaced and the replacement date.
- Last maintenance carried out on: indicates the date on which the last maintenance was carried out.

The counter-reset and modification of the maintenance date can be done only by a SAV BAUER technician using a factory password (level 5 required).

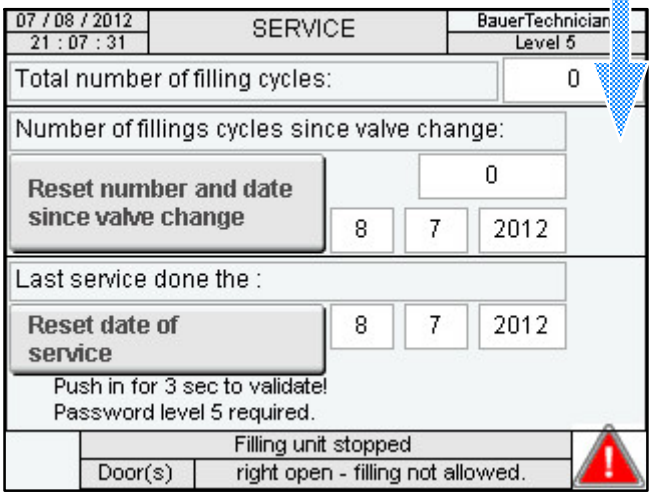


Fig. 8 MAINTENANCE page

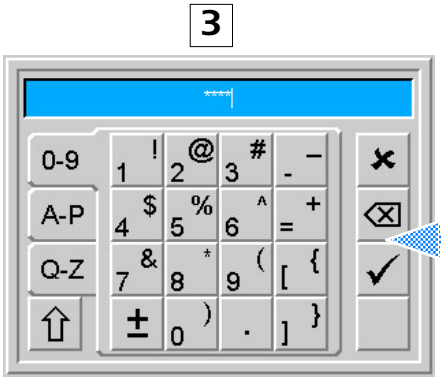
PASSWORD page

To access certain functions of the automatic controller, the operator must first open the corresponding access level (see "Password and access levels", page 5). The desired accesslevel is selected from the password page (Fig. 9) and then opened by entering the corresponding password :

– **1**- Selecting the level (1, 2, 4 or 5) using the arrows: 1

– **2**- Press the button: 2

– **3**- Enter the password corresponding to the level using the alphanumeric keyboard present below and validate by pressing ✓.



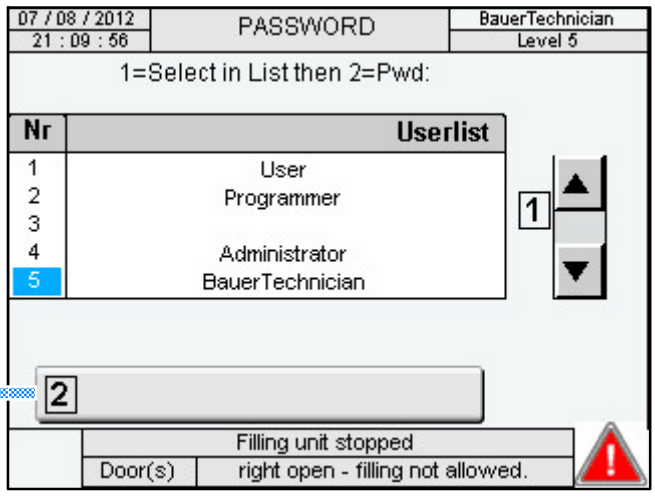


Fig. 9 PASSWORD page

PASSWORD AND ACCESS LEVELS:

- Level 1 "Operator": default level,to carry out the filling process. PWD (password) = "0"
- Level 2 "Programmer": to regulate the final pressure and filling speed. PWD (password) = "1000".
- Level 4 "Administrator": to regulate the screen settings. PWD (password) = "0100".
- Level 5 "Factory settings": access reserved for personnel authorised by BAUER.

Entering the password

After selecting the desired level, an alphanumeric keyboard is displayed on the screen (Fig. 10) where the access code can be entered.

In case of a typing error, the last character can be deleted with the help of the key ⌫. The key ✕ cancels the password entry operation and returns to the "Password" screen.

After entering the password, press ✓ to access the selected level.

The keyboard letters are useful only for the TRACEABILITY function (A-P and Q-Z). The key ⇧ can be used to enter symbols and capital letters.

SETTINGS page (level 2, 4 and 5)

This page (Fig. 11) allows the operator to change the following parameters:

Level 2 access required:

- FINAL PRESSURE P1: Select the value to change it.
- FILLING SPEED[a] : Select the value to change it. Enter the desired speed (between 20 and 50 bar/min) using the keyboard displayed on the screen.

Level 4 access required:

- DATE AND TIME: Select the value to change it.
- LANGUAGE: Select the desired language from the drop-down menu.
- BRIGHTNESS AND CONTRAST OF THE SCREEN: Select the values to change them.
- TOUCHSCREEN CALIBRATION: Select the targets in the order in which they appear to re-align the touch detection.

Level 5 access required:

- I/O DEBUGGING and FACTORY SETTINGS: Access reserved for personnel authorised by BAUER.

Once the modifications are complete, press "Save Configuration" to save it.

a) Option available only with a proportional valve

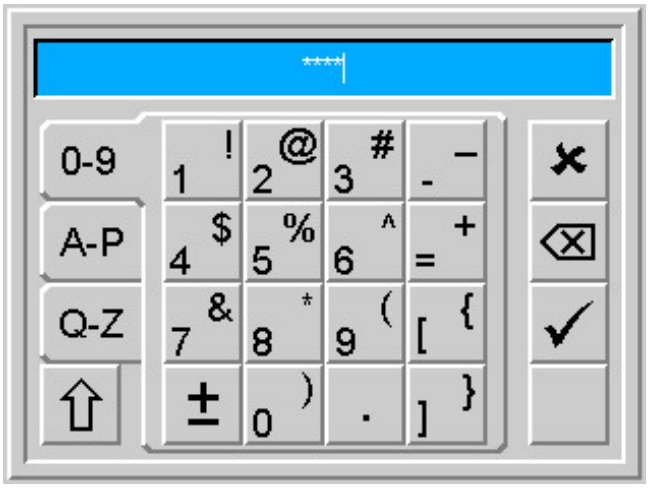


Fig. 10 Alphanumeric keyboard

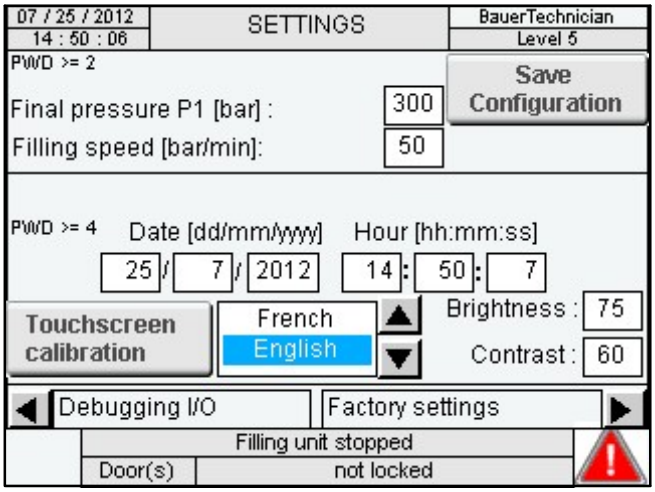


Fig. 11 SETTINGS page

ACTIVE ALARM LIST page

This page (Fig. 12) allows the operator to view the active alarms of the B-SAFE 300.

In case an alarm is active, the filling stops automatically and two warning signs ( ) flash at the bottom of the screen.

Once the cause of activation of the alarm is identified and the problem is resolved, all the alarms must be reset to return to normal functioning. Press the red stop switch "0" (13, Fig. 1) to reset the alarm and then press the green start switch "I" to restart the filling of cylinders.

Also see the list of alarms in annexe, chap.11.4.3.

An alarm cannot be reset until the corresponding fault is repaired.

Press the "History" button to display the chronological list of alarms (Fig. 13). See below.

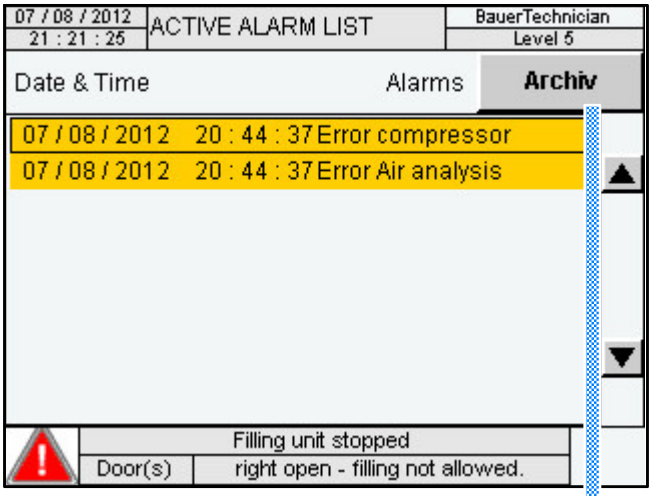


Fig. 12 ACTIVE ALARM LIST page

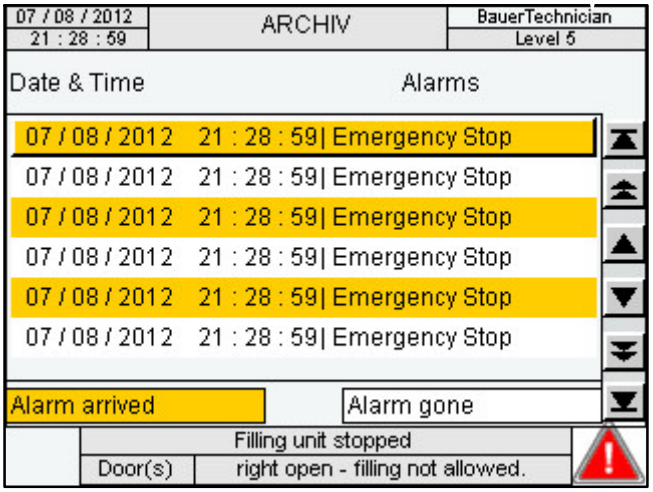


Fig. 13 Alarms HISTORY page

HISTORY page

On the"HISTORY" page (Fig. 13), all the alarms displayed during the operation of the ramp are automatically saved in a file of 1,000 lines. Use the vertical arrows to scroll through the history. The bottom arrow allows the user to view previous records.

TRACEABILITY OPTION

The traceability option allows a simple and effective check of the cylinders. For this, the cylinders must have a label with a 2D code containing the filling information of every cylinder. Once the label is scanned, the B-SAFE 300 displays the characteristics of the cylinders, thus allowing a quick check of the filling data. In addition, after filling the cylinders, the B-SAFE 300 saves the filling parameters of each cylinder. This data can then be saved on a USB key and exported to an operating file.

Main page – traceability

If the B-SAFE 300 is configured and has the option "TRACEABILITY", with the 2D code included, the main page is displayed as shown in the image (Fig. 14).

To access the "Scan Cylinders" screen, the user must first identify himself by accessing the "Password" screen. See below.

PASSWORD – LOGIN CHANGE page

On the machines that have the "TRACEABILITY" option, access to the screens is limited, i.e., the operator must select the pre-saved user that corresponds to him. It is the responsibility of the person in charge of operating the station to save and manage the users, see "Login change" below.

- **1**- Select the user using the arrows: [1], Fig. 15.
- **2**- Press the bar: [2].
- **3**- Enter the password corresponding to the level using the alphanumeric keyboard present below and validate by pressing ✓.

User no. 50 is reserved for BAUER Compressor (level 5).

User Number 49 is pre-saved as Administrator in order to give the operator in-charge access to login change. The operator in-charge is advised to change and customise his password.

LOGIN CHANGE page

On this page (Fig. 16), the station administrator may:

- Create a user (name, password, level: min. 2)
- Change password
- Delete a user
- Logout: exit from the administrator level.

The station administrator can create 50 users (0-49) having different levels: level 2 for a regular operator, level 3 for an operator authorised to load the data on the USB key, level 4 for the station administrator

Each user created must have a different password.

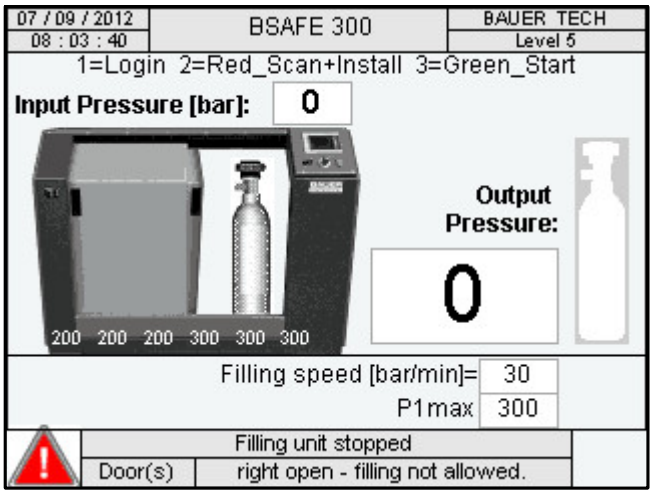


Fig. 14 Main page – traceability

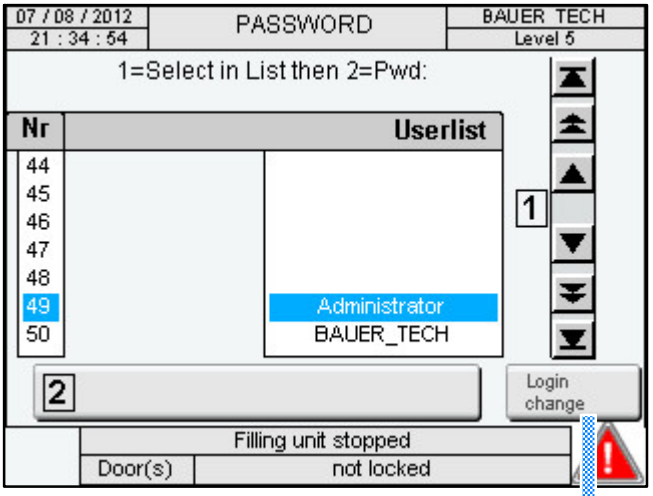


Fig. 15 PASSWORD page – traceability

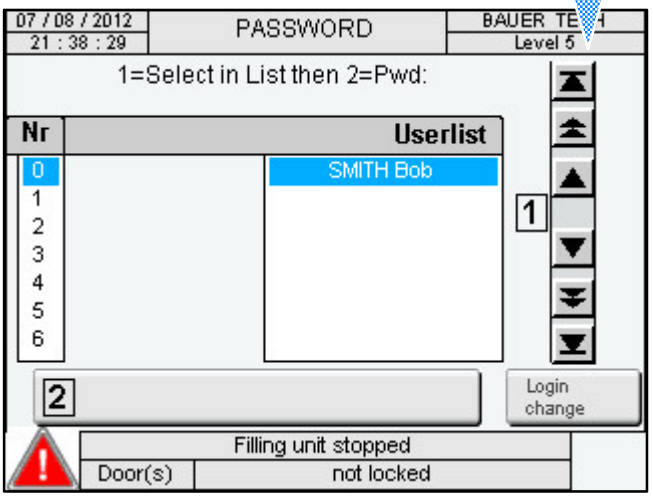


Fig. 16 LOGIN CHANGE page – traceability

SETTINGS page – traceability

With the traceability option, this page (Fig. 17) allows the operator to change the station name as well as the pressure settings, filling speed, date, time, brightness, contrast and realignment of the touch detection (also see SETTINGS, page 5).

Level 4 access required:

– Station name (traceability): Press the box to enter the station name using the alphanumeric keyboard, then press "Save Configuration".

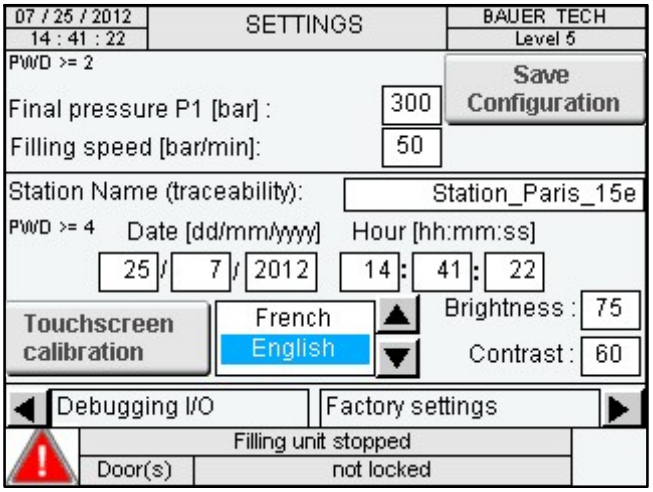


Fig. 17 SETTINGS page - traceability

SCAN CYLINDERS page

This page (Fig. 18) allows the operator to scan the cylinder labels in order to save and check each cylinder before filling it.

In order to fill the values in the table, just scan the labels of the cylinders that are to be filled using the 2D code reader.

If an ERROR message is displayed upon scanning a cylinder, it means that the label was rejected due to inappropriate format or because the expiry date has passed. Press OK to remove the message and cancel the saving operation. Do not fill the cylinder and verify its expiry date!

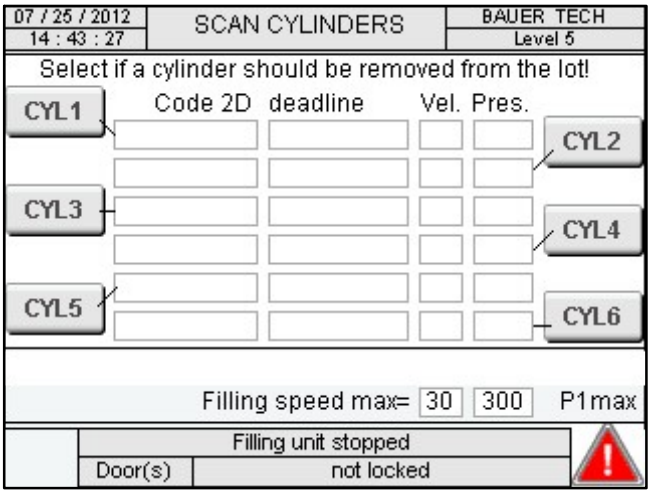


Fig. 18 SCAN CYLINDERS page

Fig. 20 2D code reader

SCAN CYLINDERS – EXAMPLE page

This page (Fig. 19) shows the results of the 5 cylinders in the B-SAFE scanned before starting the secure filling.

Before starting the filling process, it is possible, to remove a scanned cylinder. For this, press the corresponding CYLx button; the line is thus erased.

- "Filling speed max" = the lowest filling speed authorised among the scanned cylinders.
- "P1max" = final pressure set on the Settings page. The scanned information related to the pressure of the cylinders is for information purposes only.

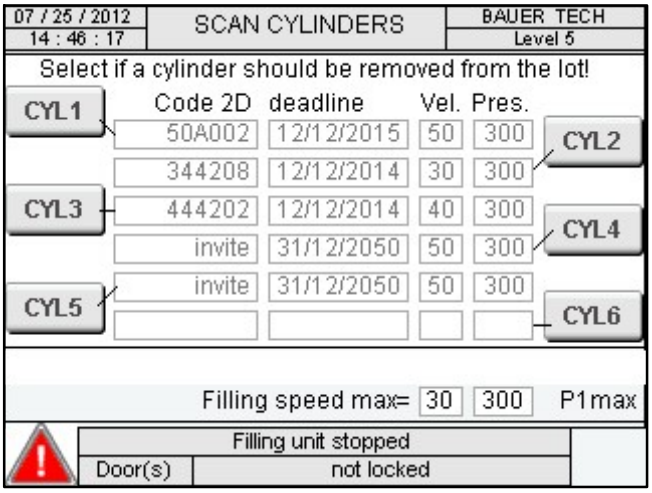


Fig. 19 SCAN CYLINDERS – EXAMPLE page

USB KEY page

This page (Fig. 21) allows the operator to transfer the following files on a USB key:

- the history of the previous fillings by pressing the button: "Usual procedure: Cut and Paste the last recordings to USB stick",
- a backup of the entire history of the traceability since the B-SAFE 300 was activated by pressing the button: "Troubleshooting procedure: Copy all history to USB stick"

Only a registered user with the appropriate access level may carry out this data transfer. See the "LOGIN CHANGE" page 7.

The USB port for inserting the key is located on the top-right inside the B-SAFE 300.

Pressing the "View of last filling saved" arrow key displays the LAST FILLING page (Fig. 22).

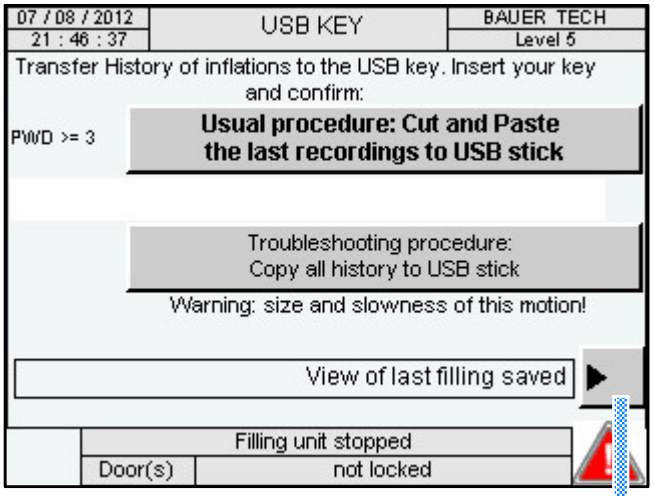


Fig. 21 ACTIVE ALARM LIST page

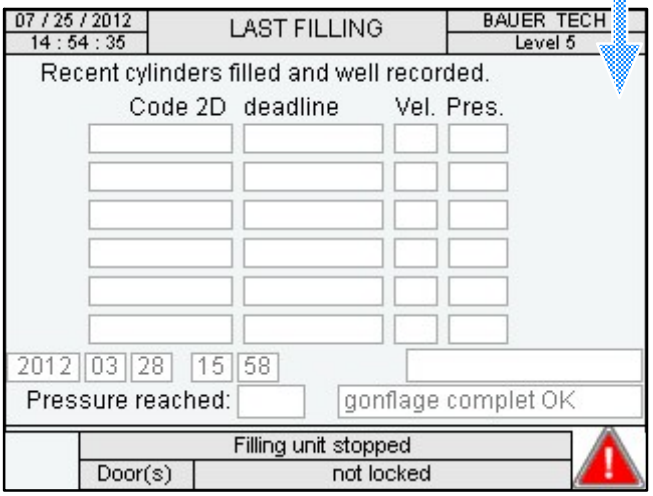


Fig. 22 LAST FILLING page

LAST FILLING page

The operator can view the last filling carried out once it is complete and the doors are open. It remains open till the next filling.

3. OPERATING PRINCIPLE

The operating principle of the B-SAFE 300 ramp is described below with the help of two examples:

- **B-SAFE 300** with proportional valve and two pressure ranges,
- **B-SAFE 300** with solenoid valve and two pressure ranges.

3.1. B-SAFE 300 WITH PROPORTIONAL VALVE,

The references indicated below refer to the positions of the pneumatic diagram (Fig. 23).

The compressed air supplied by the compressor and storage enters through the V1 manual shut-off valve.

The supply pressure and residual pressures of the cylinders are measured by pressure sensors PA, P1 and P2 respectively. The proportional valve F1-VP1 regulates the filling pressure according to the values measured by the sensors. In addition, the proportional valve opens and automatically isolates the internal pneumatic circuit while starting and stopping the filling process.

The secondary pressure is obtained by reducing the primary pressure with the help of the J12 regulator.

The primary and secondary pressures are pneumatically limited by the S13 and S12 safety valves respectively.

The compressed air is transferred to the cylinders through flexible hoses Z3 and Z2 and the filling valves RC3 and RC2.

The depressurisation system consists of J15 regulators, an EVD solenoid valve and a Z1 silencer. The EVD solenoid valve opens automatically when a door of the machine is open (or when the emergency stop option is activated), thus depressurising the internal pneumatic circuit.

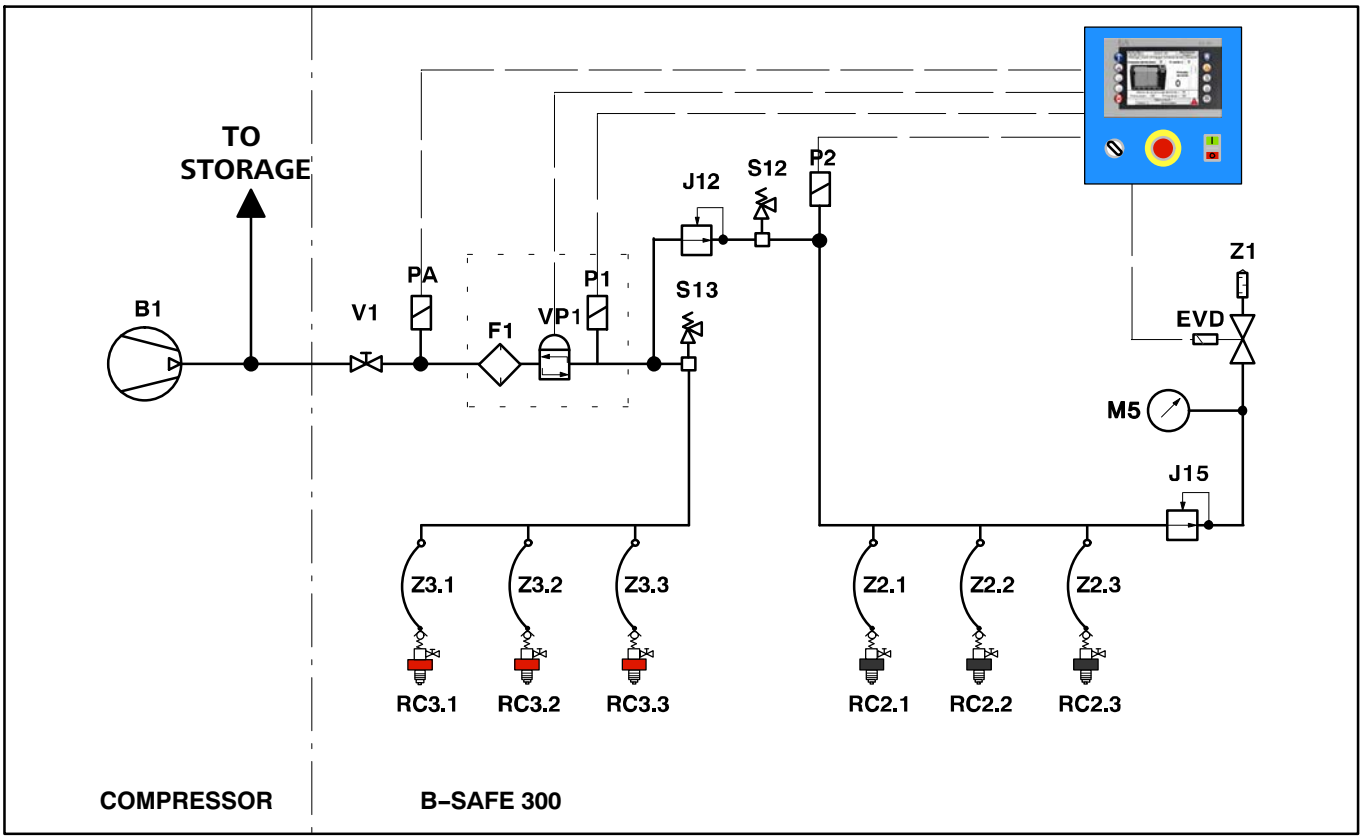


Fig. 23 Pneumatic diagram, B-SAFE 300 with proportional valve and 2 pressure ranges.

B1	HP compressor
EVD	Solenoid valve, depressurisation
F1-VP1	Proportional valve (VP1) with filter (F1)
J12	Regulator
J15	Regulator
M5	Pressure gauge, depressurisation
PA	Pressure sensor, input
P1	Pressure sensor, primary filling pressure
P2	Pressure sensor, secondary filling pressure
RC2	Filling valves, secondary pressure
RC3	Filling valves, primary pressure
S12	Safety valve, secondary pressure
S13	Safety valve, primary pressure
V1	Manual inlet valve
Z1	Silencer
Z2	Flexible filling hoses, secondary pressure
Z3	Flexible filling hoses, primary pressure

3.2. B-SAFE 300 WITH SOLENOID VALVE AND TWO PRESSURE RANGES

The references indicated below refer to the positions of the pneumatic diagram (Fig. 24).

The compressed air supplied by the compressor enters through the V1 manual shut-off valve.

Compressed air directly enters (i.e. without being regulated) the cylinders. The only function of the Y1 solenoid valve is to allow or stop the supply of compressed air while starting or stopping the filling process.

The secondary pressure is obtained by reducing the primary pressure with the help of the J12 regulator.

The primary and secondary pressures are pneumatically limited by the S13 and S12 safety valves respectively.

The compressed air is supplied to the cylinders through the flexible hoses Z2 and Z3 and the filling valves RC2 and RC3.

The depressurisation system consists of J15 regulators, an EVD solenoid valve and a Z1 silencer. The EVD solenoid valve opens automatically when a door of the machine is open (or when the emergency stop option is activated), thus depressurising the internal pneumatic circuit.

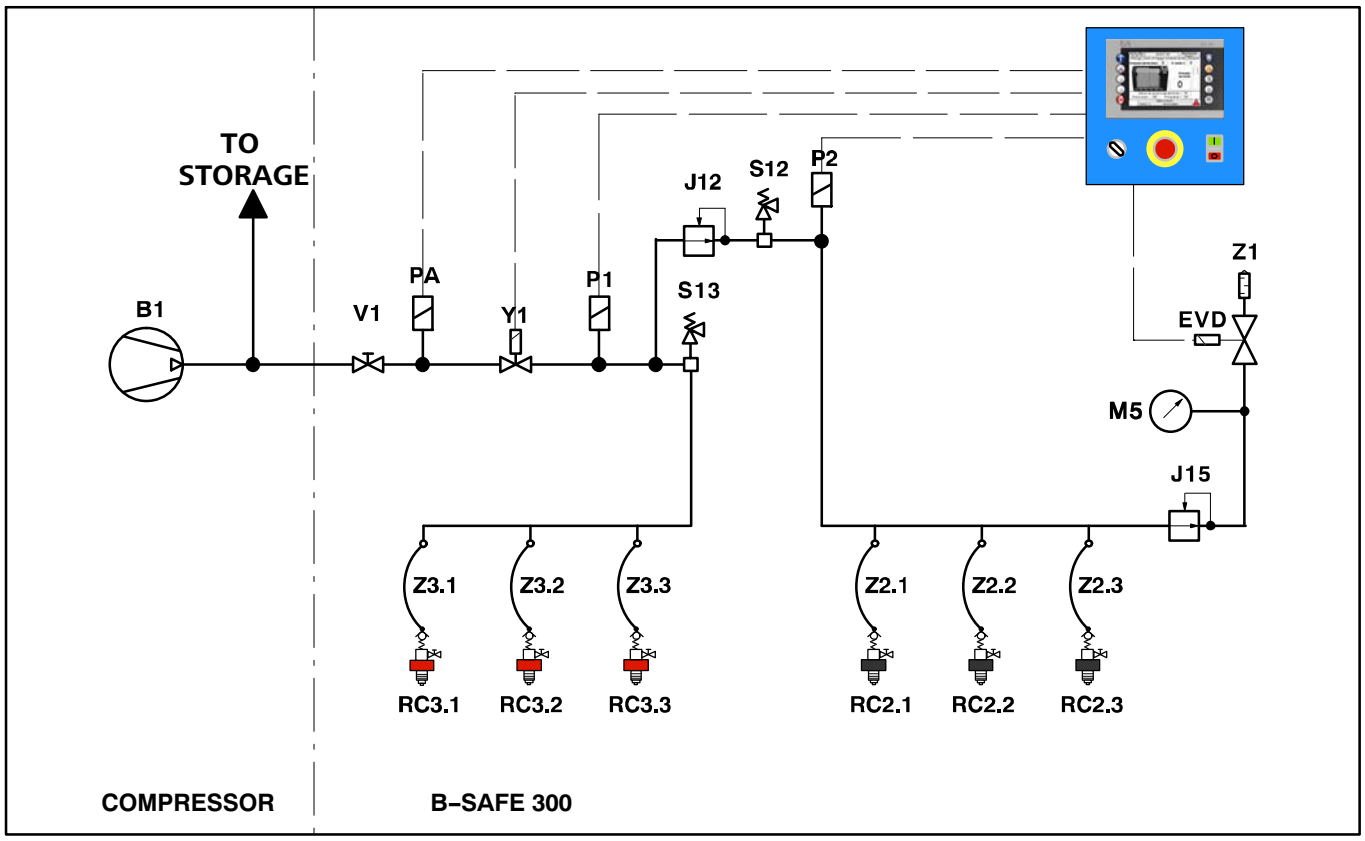


Fig. 24 Pneumatic diagram, B-SAFE 300 with solenoid valve and two pressure ranges.

B1	HP compressor
EVD	Solenoid valve, depressurisation
J12	Regulator
J15	Regulator
M5	Pressure gauge, depressurisation
PA	Pressure sensor, entry
P1	Pressure sensor, primary filling pressure
P2	Pressure sensor, secondary filling pressure
RC2	Filling valves, secondary pressure
RC3	Filling valves, primary pressure
S12	Safety valve, secondary pressure
S13	Safety valve, primary pressure
V1	Manual inlet valve
Y1	Solenoid valve
Z1	Silencer
Z2	Flexible filling hoses, secondary pressure
Z3	Flexible filling hoses, secondary pressure

4. TECHNICAL CHARACTERISTICS

Fluid	Breathable air in conformity with EN 12021
Operating pressure	Max. 410 bar
Filling pressure (max. 2)	PN200/PN300 bar
Standard setting, final safety valve PN200	225 bar
Standard setting, final safety valve PN300	330 bar
Standard setting, final safety valve for operating with proportional valve	320 bar
Control range of the filling speed	20 to 50 bar/min
Number of filling items	Max. 6 diving cylinders (max. 10 option[a]))
Max. temperature permitted	+5 to +45 °C
Dimensions	See Fig. 25
Internal dimensions of the filling chamber	1300 x 400 x 700 mm
Weight (standard version)	About 350 kg
Supply voltage	240 V, 50 Hz
Power consumption	100 W
Inlet connector for the compressed air	8S

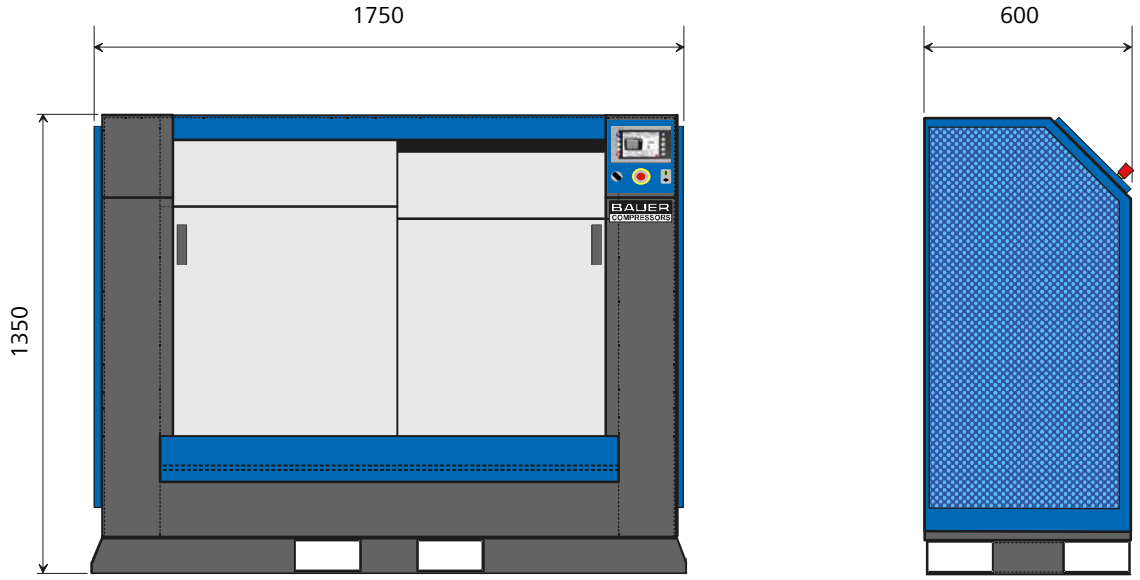


Fig. 25 Dimensions (in mm)

a) Only if combined with the standard filling accessories (max diameter of cylinders = 18 cm, max height = 60 cm)

5. INSTALLATION

During installation, note that:

The B-SAFE 300 ramp is not designed for an external installation.

5.1. INSTALLATION ROOM

- It must be possible to install the machine on the floor and the floor must be capable of supporting the weight of the machine.
- The room must be clean and dry.
- The temperature in the room must not exceed the maximum admissible temperature. Refer to chapter 4. Technical characteristics.

5.2. FITTING

- The machine must be installed horizontally.
- The machine **MUST** be secured to the ground using coach screws (M8). Use the screws provided for this purpose for the base of the ramp. Wall mounting is not necessary unless it is impossible to install the machine on the ground.
- Leave an open space of at least 5 cm between the rear side of the machine and the wall. Refer to Fig. 26 and the installation plan provided in the annexe.
- The space on the sides and above the machine (see Fig. 26) must be left vacant in order to allow compressed air to escape in case of explosions as well as for the practical purposes of maintenance.
- Ensure that the minimum distances indicated on the Fig. 26 are complied with.

5.3. CONNECTIONS

5.3.1. Pneumatic connection

The type of inlet fitting for the compressed air is 8S (8 mm external diameter, nominal working pressure of 630 bar).

5.3.2. Electrical connection

The electrical connection between the B-SAFE ramp and the compressor for the transfer of On/Off controls and the display of error messages is the responsibility of the client and must be carried out by a professional.

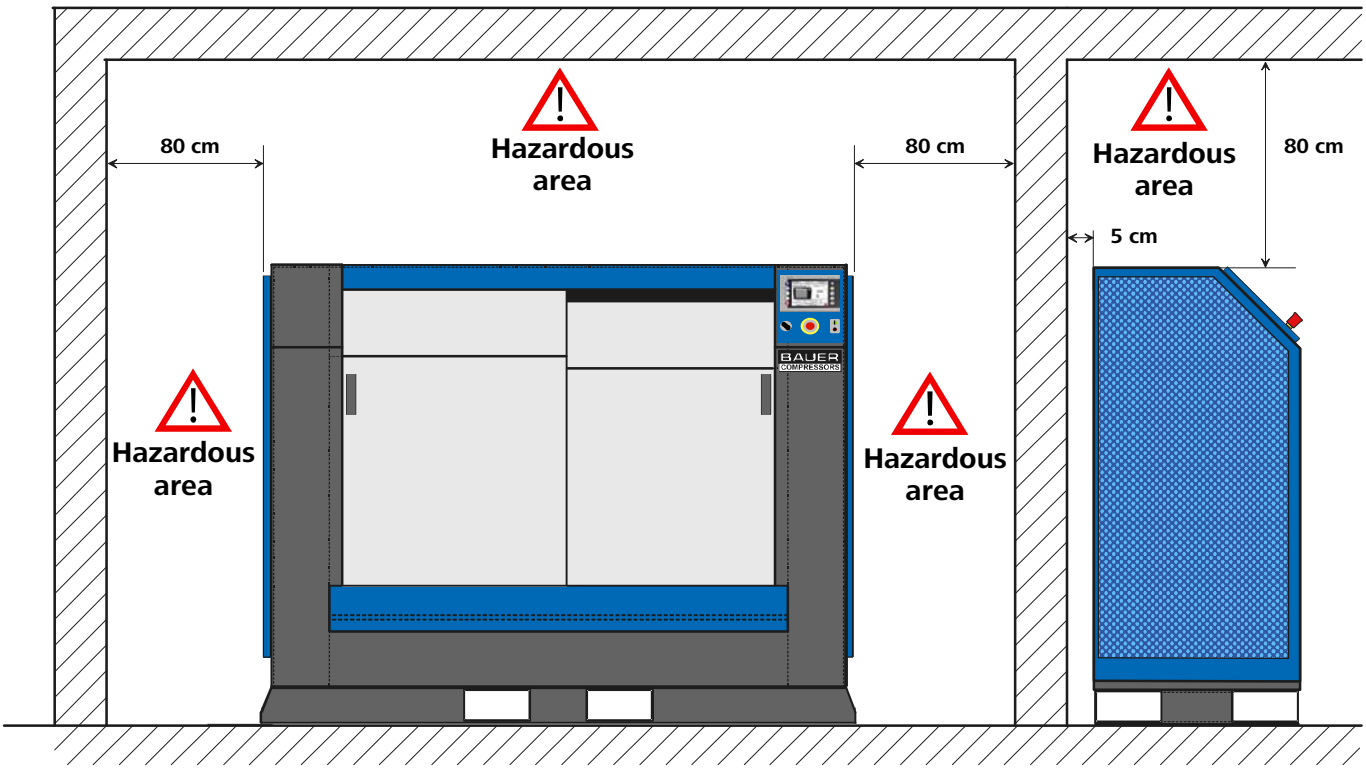


Fig. 26 Minimum distances and hazardous areas

5.4. SECURE FILLING STATION, MODEL

The figure given below (Fig. 27) shows a secure filling station comprising the following components:

1. HP compressor for supplying compressed air
2. B-KOOL refrigeration dryer to increase the service life of the filter cartridges
3. B-SAFE 300 Fail-safe loading ramp for safe filling of cylinders
4. Switching controller for the appropriate selection of the source of compressed air
5. Storage battery for quick filling of the cylinders

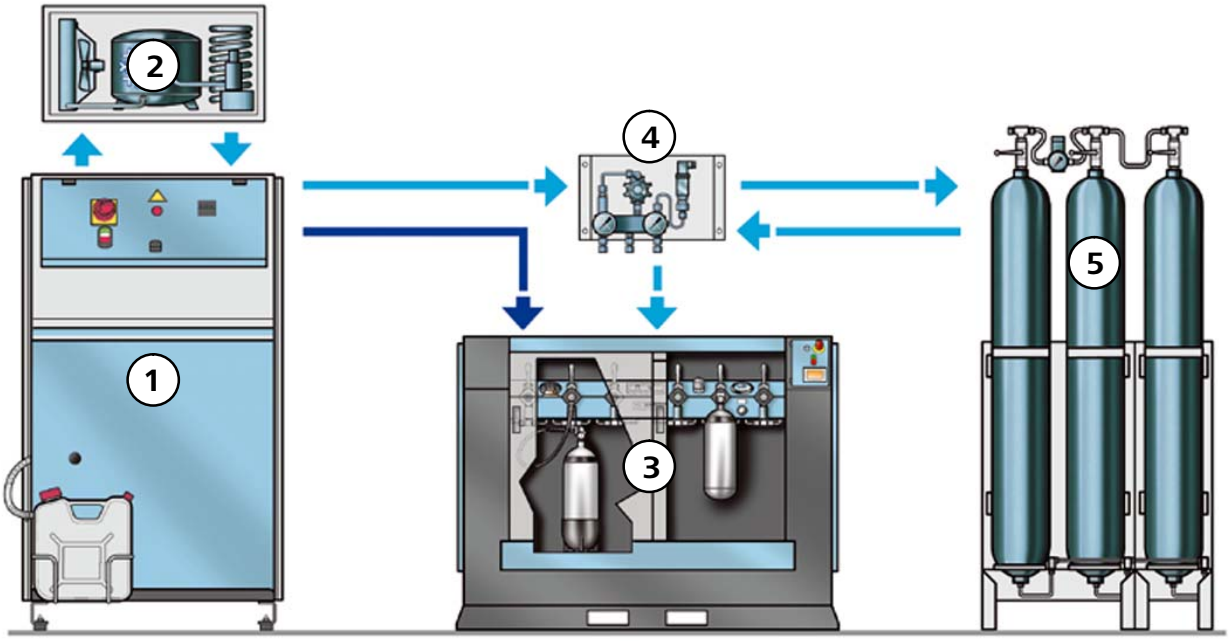


Fig. 27 Secure filling station

6. SAFETY MEASURES

6.1. WARNING NOTICES AND SIGNS

Warning

Caution, high voltage!!

Danger of fatal electric shock. The maintenance works of the electrical equipment must be carried out only by an electrician or a person instructed by and under the supervision of an electrician, in conformity with the current laws.

6.2. SIGNS FOR SAFETY INSTRUCTIONS

The important instructions relating to the health of the personnel and safety and protection of the equipment will be indicated as follows. They correspond to precise actions to be implemented:

Indicates the exact working and handling procedures to be followed in case of a risk of personal injury.

Follow these instructions to avoid causing damage to property.

Technical precautions that the user must strictly take.

6.3. BASIC SAFETY INSTRUCTIONS

6.3.1. Normal use

- Themachine is built in accordance with the latest state of the art technology and technical safety regulations. However, its operation may be hazardous for the operator or third parties or may damage the machine and equipment.
- Operate the machine only if it is in perfect technical condition in accordance with the regulations and safety warnings provided in the operating manual. In particular, rectify all defects that may affect safety without any delay (or have them rectified).
- The machine is to be used exclusively for filling air as specified in the chapter 4. “Technical characteristics”. Do not use any other gas. The manufacturer/supplier is not responsible for damages resulting from improper use. The user is solely responsible in such an event. The usage is authorised provided that the operating manual is adhered to and the maintenance and inspection conditions are respected.

6.3.2. Organisation measures

- Always keep the operating manual within reach and near the unit.
- Complete the operating manual relating to the responsibilities and features of the company like work organisation, its functioning, etc.
- It is imperative for the operators working with or on the machine to read the operating manual beforehand, particularly the chapter containing the safety notices. It will be too late while operating the machine! This is particularly applicable for persons working with the machine occasionally! (for example, maintenance personnel.)
- Ensure from time to time that the personnel is aware of the dangers involved and that he/she knows the operating instructions well.
- Follow all the safety and danger warnings on the equipment.
- Ensure that all the warning signs on the equipment are kept in excellent condition and are thus readable.
- In case of any changes affecting the safety or functioning of the equipment, stop the machine immediately and refer the problem to a competent person with minimum delay.
- Do not make any changes to the equipment that may affect the safety, without prior authorisation of the supplier. This is also applicable for the installation and configuration of safety mechanisms, safety valves as well as the welding of the pipes and tanks.
- The spare parts must be in conformity with the technical requirements specified by the manufacturer. This is guaranteed in case of original Bauer parts.
- Do not make any changes to the control program.
- The pipes must be regularly inspected by the operator even in case of no visible or foreseeable problem.

6.3.3. Basic responsibilities and competencies

- Only a reliable and competent personnel must be allowed to work with/on the equipment. Ensure that the minimum legal age of 18 years is adhered to.
- Only persons having the required expertise and skills must be employed. Clearly define the skills of the personnel with respect to the operation, handling and repair-work of the equipment.
- Ensure that only authorised personnel work with and on the equipment.
- The responsibility of the operator must be determined and he/she may reject any instruction given by a third party that is likely to harm safety.
- Trainees must be allowed to operate the equipment or work on it only under constant supervision of an experienced person.

6.3.4. Safety notices relating to the operation

- Do not undertake any operation that does not conform to the basic safety regulations.
- Take the necessary steps to ensure that the equipment is always in use when it is in perfect working condition and complies with the safety regulations.

- Ensure, at least on a daily basis, that there is no evidence of wear and tear or malfunctioning. In case of any changes affecting the safety or functioning of the equipment, stop the machine immediately and refer the problem to a competent person with minimum delay.
- In case of malfunctioning, shut the equipment down immediately. Rectify the problem immediately.
- Before starting the machine, ensure that it does not pose any danger to anybody.
- Carry out the configuration, maintenance and inspection procedures including the replacement of spare parts/equipment according to the time intervals specified in the operating manual. These procedures must be carried out only by authorised personnel.
- Inform the personnel before carrying out any repair-work. Name the persons carrying out the work.
- Follow the start-up and shut down procedures and the essential precautions indicated in the operating manual for all operations related to the settings, maintenance, equipment or repairs of the machine.
- Ensure safety in the working area.
- If the machine is switched-off for repairs or maintenance work, ensure that it is not restarted or does not restart automatically. Disconnect, remove the keys and/or place a warning sign on the control panel.
- While replacing the parts use appropriate lifting tools/devices and place the load on them carefully. Do not use lifting devices that are not in perfect working condition. Do not walk or work under a suspended load.
- Employ only qualified persons for moving loads using a crane. In case of a person guiding the crane driver, he/she must be within sight and hearing range.
- Clean the machine, particularly the oil and fuel stains on the fittings and joints, before starting work on the equipment. Do not use strong detergents or fluffy cloths.
- Close all doors before cleaning (with high pressure, steam or water) for safety purposes and to ensure that the equipment is not damaged, especially the electronic equipment if water is used for cleaning.
- While cleaning the compressor room, ensure that the temperature sensors of the fire alarm do not come into contact with the hot cleansing fluids so that the fire-fighting system does not start.
- Remove all the lids, caps, etc. after cleaning the machine.
- After cleaning the machine, check all the pipes and connections. Repair the defects immediately.
- Always tighten the connections that were loosened for maintenance or repair work.
- If the safety equipment has been disassembled for maintenance or repair work, ensure that it is reassembled and then tested immediately after the work is complete.
- Ensure that the dismantled parts and hazardous products are disposed taking safety and the environment into consideration.

6.3.5. Specific hazards

- Use only original fuses having the specified current flow. In case of inadequate power supply, stop the equipment immediately.
- Disconnect the machine from the electrical network if it has to undergo maintenance or repairs. First check if the disconnected components are not carrying any current and then insulate them from short circuits and ensure that they are earthed. They must also be insulated from adjoining live parts.
- Inspect the electrical equipment of the unit regularly. Repair defects like loose connections or burnt wires immediately.
- If you are working on live parts, work with another person who can operate the emergency stop switch or main switch in case of emergency. Use a red and white safety chain and a warning sign in order to prohibit access. Do not use tools that are not insulated.
- Do not carry out welding, brazing and grinding on the unit unless these operations are approved. They may involve fire or explosion risks.
- Before carrying out welding, brazing or grinding operations, ensure that there is no dust or inflammable material on and around the unit and make sure that there is sufficient ventilation (explosion hazard!)
- Follow the local regulations in force for all operations to be carried out in a small room.
- Only those who have specific knowledge and are experienced in pneumatics may work on the pneumatic equipment.
- Check the pipes and screwed connections for visible damage and leaks on a regular basis. Repair the defects immediately. The high pressure gas can cause accidents or fires.
- Depressurise the system and pressurised pipes before starting the repairs.
- The pipes must be assembled by a qualified person. Do not interchange the connections. The frame, length and quality of the pipes must conform to the regulations.
- The safety equipment must be in working condition and activated during the operation of the machine.
- Follow the safety regulations applicable for oil, grease and other chemical substances.
- Use appropriate equipment when shifting loads.
- Set the load securely. Use the anchor points provided for this purpose.
- Before restarting the machine, reassemble the parts of the machine that were removed for its transport.

6.4. SAFETY REGULATIONS (valid in France)

The installation and use of compressors as a filling station on French territory must comply at least with the legal provisions specified by:

- the Pressure Equipment Directive 97/23 EC
- the Machinery Directive 89/392, updated in the 98/37 EC directive
- the European standards

- the Order of 15 March 2000 relating to the use of Pressure Equipment
- the Order of 13 December 1999 relating to safety valves
- the Labour code.

This list is not exhaustive and is provided for information purposes only. These regulations are not intended to substitute the local and global regulations. To obtain the regulations applicable to your installation, we recommend that you consult a specialised service provider.

No responsibility shall be accepted in case of damages resulting from the non-compliance with these regulations. The maintenance of our compressors must be carried out by persons having the required expertise (BAUER technicians or a BAUER agent).

6.4.1. European directives

- Pressure Equipment Directive 97/23 EC
- 89/392 Directive, updated in 98/37 EC

These directives are related to the design of your equipment. They require the manufacturer, to follow certain minimum safety instructions (provided in the annexe of these directives) and, based on the type of equipment, provide specific documentation.

Examples of implementation of these directives for a compressor unit:

- The safety valve(s) are regulated in such a way that "the pressure of the equipment that they control cannot exceed 1.1 times its operating pressure". (Annexe 1 of the Pressure Equipment Directive 97/23 EC).
- The filter and separator housings are subject to different conformity assessment procedures depending on their pressure/volume characteristics. This is why some pressure tanks have individual certificates. (Pressure Equipment Directive 97/23 EC).
- There is an emergency stop option on your machine. The type, functionality, consequences and operating procedure is taken from the Machinery Directive 98/37 EC.

The operating manual and certificates that we provide with our machines are also designed in conformity with these Directives.

The 97/23 EC Directive was transposed into French law by the Decree 99-1046 of 13 December 1999.

6.4.2. European standards

The following list is not exhaustive:

- EN12021: Definition of breathable air.
  This standard sets the maximum amount of CO, CO_2, etc. defined for "breathable air".
- EN60204: Safety of machinery/electrical equipment of the machines.
  This harmonised standard of the Machinery Directive defines the regulations for electrical safety of the equipment (sectioning, interface, wiring, etc.).
- EN1012: Instructions for the safety of compressors.
  This standard lays down the rules for designing compressors in order to guarantee a minimum level of safety.

6.4.3. French regulations

There are many French regulations. The main regulation in force today is the **Order of 15 March 2000** that defines the operating rules of the pressure equipment.

The list of regulations provided below is not exhaustive and is thus insufficient for defining your operating rules. We advise you to consult a specialised service provider.

We draw your attention to the following points of this Order:

(1) It is responsibility of the owner to ensure that the applicable rules are followed during the assembly and integration of the pressure equipment as well as for all modifications and replacements.

(2) The personnel using the equipment must be trained and informed about the risks involved in the usage of the equipment and its safe operation, especially for the category IV EC equipment (refer to point 9).

(3) The equipment documentation must be recorded in a register under the responsibility of the owner and sent in case of change in the site or operator (notices, certificates, monitoring log, etc.)

(4) The owner must record all the dated operations relating to checks with dates and inspections and periodic re-qualifications in a file.

(5) The tanks included in category IV in accordance with the 97/23 EC are subject to a commissioning declaration to the prefecture.

(6) This Order specifies the minimum frequencies for carrying out inspections. They can also be determined by the manufacturer (take note of the number of cycles allocated for the tanks). This inspection includes an internal and external check of the equipment as well as the safety accessories. It is to be conducted, under the responsibility of the owner, by a person capable of identifying the defects.
(BAUER informs you that if the mandatory number of cycles are not carried out before the inspection (see 1.3.8. of this part), the latter must be carried out with a minimum frequency of 40 months).

(7) This Order also specifies the minimum frequencies for the periodic re-qualifications. They can also be determined by the manufacturer (take note of the number of cycles allocated for the tanks). This re-qualification includes an internal and external visual check, an inspection of the documents and a hydraulic test. It is the responsibility of the owner to ensure that this inspection is carried out by a Drire [Regional Directorate for Industry, Research and Environment] official. If the re-qualification is validated, the Drire official marks the tank with a "tête de cheval" stamp, even if it is EC.
(BAUER informs you that if the mandatory number of cycles are not carried out before the equipment is ofno further use (see 1.3.8.), this re-qualification must be carried out every 10 years).[b)]

b) This is applicable for the tanks that were previously subject to the regulations of 1943 (Service des Mines [Vehicle Registration Authority] tanks) and the new EC tanks of category II to IV (filters, separators, storage cylinders).

(8) The operation results must be included in the monitoring log of the equipment.

(9) The EC containers of category IV (storage tanks) are subject to a commissioning declaration. This declaration is to be addressed to the prefecture under the responsibility of the owner (this is also applicable if a storage unit is integrated in your compressor).

Other texts are published with details about this Order, particularly the DM-T/P 31555.

We also draw your attention to **the order of 04/12/1998 relating to safety valves**.

This order requires a descriptive document to be provided with every valve so that the inspection bodies can check if the valves are original or if not, they ensure at least equivalent protection. The frequency of the inspections of these valves is set by the manufacturer.

Other provisions:

- Ministerial order of 09/02/1982 relating to the manufacturing and filling of seamless cylinders used for the purpose of storing compressed, liquefied or dissolved gas.
- Labour code the body is responsible for the safety of its employees. Consequently, it must take into consideration the safety factors of the environment in which its employees develop and work.

7. ACTIVATION/OPERATION

7.1. ACTIVATION

We recommend that the installation of the B-SAFE 300 ramp be carried out by a BAUER Kompressoren technician.

7.1.1. Steps to be taken before starting the machine

Before starting the machine, please take note of the following:

- Ensure that all persons using the compressor or high-pressure system know the function of all the operating and display controls; all the warnings in the chapter 6. must be strictly followed.
- Ensure that the body is closed.
- Ensure that the room temperature is within the authorised temperature range: Min. = +5 °C, max. = +45 °C.
- Before starting, always ensure that all the components of the machine are functioning properly. In case of a fault, stop the machine immediately, locate the defect and repair it, or notify the after-sales service.
- Ensure that the cylinders to be filled are not defective or damaged.
- Ensure that the pipes are not damaged.
- Ensure that the pressure gauge is not leaking.
- Ensure that the machine is depressurized.
- Ensure that starting the machine does not involve any danger.
- Ensure that all the electrical and pneumatic connections have been installed correctly.

WARNING **High pressure hoses must be in perfect working order at all times. Connection threads must be dimensionally correct and free from defects. In particular, look out for damage at the transition point between the hose fitting and hose itself. If the outer hose covering is torn, do not continue to use the hose. Damage can cause water to penetrate right down to the wire mesh level and lead to rusting and, as a result, corrosion. If this happens, applications involving pressure pose a risk to safety.**

7.2. FILLING

7.2.1. General

No operator may be present in the area around the B-SAFE 300 ramp when the cylinders are being filled. Avoid the hazardous areas, see Fig. 26.

The filling valve is manually connected. Its design helps connect compressed air cylinders without using tools. The sealing is ensured by the internal pressure and an O-ring.

According to the standards for the valves of compressed air cylinders used for pressures exceeding 200 bar (DIN 477, page 5), the filling valves for pressures up to 200 bar and 300 bar can be distinguished from one another based on their design. It is thus not possible to connect damaged cylinders. **Do not use adapters!**

The compressed air cylinders heat up during the filling due to the effect of the recompression of air. After the filling process, set the cylinders aside for cooling; the pressure in the cylinders will decrease. Connect the new cylinders in order to fill them at the nominal filling pressure.

7.2.2. Starting the ramp

The following instructions only describe the procedure to be followed by the operator. For a description of the operation and electronic control settings refer to chap. 2.6.

- Ensure that the manual input valve is open.
- During the **first start-up**, switch on the B-SAFE ramp using the main switch (1, Fig. 28). The main page is displayed on the screen(4).

After switching on the machine, the electronic control takes about 90 seconds to load the program. The ramp is then ready.

- To switch the B-SAFE ramp on after the first start-up, use the ON/OFF switch of the screen: .
- Press the red button “0” (3, Fig. 28) to unlock the doors. The doors can be opened as soon as the corresponding message (“DOORS UNLOCKED”) is displayed on the screen.

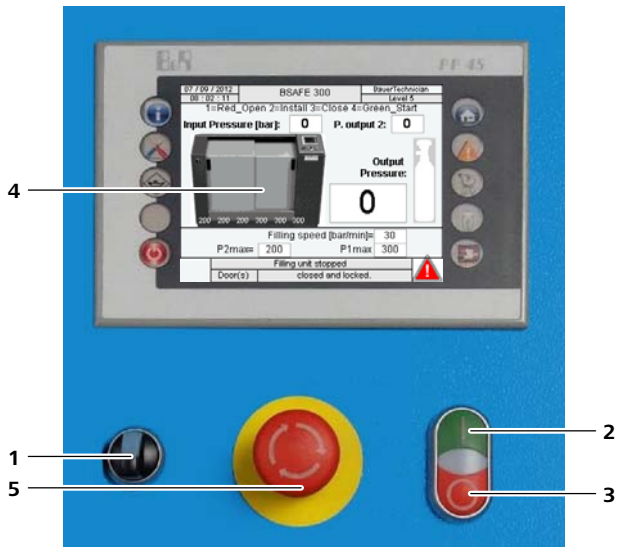


Fig. 28 Control panel

1 Main switch
2 Start button
3 Stop button
4 Screen
5 Emergency switch

7.2.3. Connecting the compressed air cylinders

– Connect the cylinders to the cylinder fitting, see 1, Fig. 29. Tighten the fitting properly. Ensure that the flexible hoses are not bent or damaged.

Never connect unsuitable cylinders to 300 bar pressure fittings (refer to the sign on the cylinder neck).

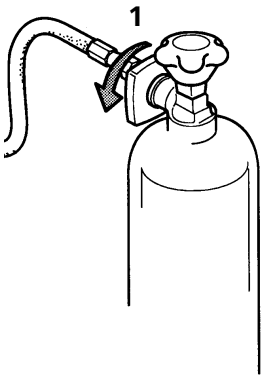


Fig. 29 Connecting the compressed air cylinders

The compressed air cylinders with an international fitting can be connected either to the German fitting using the cylinder fitting - order no. 79375, or directly to the flexible filling hose using the cylinder fitting - order. no. 03147, see Fig. 30.

The international fitting (U-handle fitting) is neither authorised in Germany nor for nominal pressures higher than 200 bar! This fitting cannot be used with the H series (300 bar) models for design reasons.

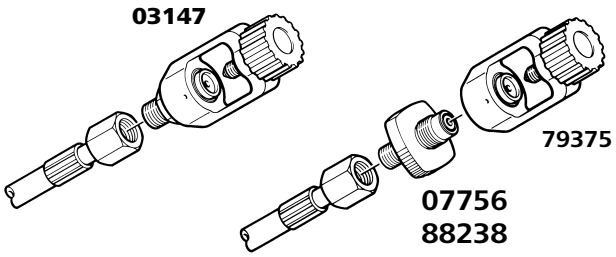


Fig. 30 International fitting

– Open the cylinder valve (Fig. 31).

– Close the door manually and wait for about 5 seconds. Once the doors are locked, the message "DOORS CLOSED AND LOCKED" is displayed on the screen. The filling process can be started.

Fig. 31 Filling the compressed air cylinders

7.2.4. Filling the compressed air cylinders

– Press the green button "I" (2, Fig. 28) to start the filling. The button starts flashing and the message "FILLING..." is displayed on the screen till the final pressure is achieved.

– Regulate the pressure values (Output pressure and/or output P. 2) displayed on the screen during the filling

The filling can be stopped at any moment by pressing the red button "0" (3, Fig. 28). Press the green button "I" (2) to resume the filling process. If, in case of a ramp equipped with a proportional valve, a door is open when the filling is stopped, the ramp will depressurise automatically and the filling should resume at 0.

– As soon as the final pressure is achieved, the warning light switches-off and the message "Filling complete _ Open the doors" is displayed on the screen.

– Ensure that the pressure(s) indicated on the screen correspond to the desired filling pressure(s).

If the final pressure is not achieved even at the end of an hour, the message "Cycle interrupted: filling time > 1 hour" is displayed on the screen, which indicates that the compressed air supply is insufficient. Check the functioning of the compressor and sealing of the complete station.

7.2.5. Removing the compressed air cylinders

– Press the button "0" (3, Fig. 28) to unlock the doors. The message "DOORS UNLOCKED" is displayed on the screen. For about 5 seconds the doors can be opened manually.

– Close the cylinder valves (3, Fig. 32).

– Unscrew the filling valves (4, Fig. 32). The valves are depressurised automatically from the first quarter turn even before the thread is released. The valves can thus be unscrewed easily with minimum risk.

– Set the valves on the fixture.

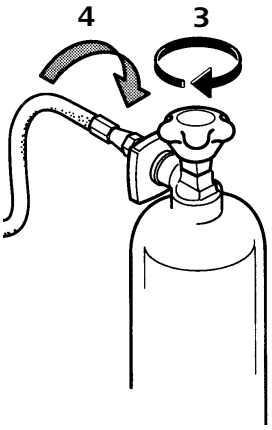


Fig. 32 Removing the compressed air cylinders

7.2.6. Stopping the ramp

– Close the doors and wait 5 seconds for them to lock and the message "DOORS CLOSED AND LOCKED" to be displayed on the screen.

– Switch the B-SAFE 300 screen off using the ON/OFF switch: .

– For maintenance or prolonged storage, switch the B-SAFE 300 ramp off using the main switch (1, Fig. 28).

7.3. USING THE TRACEABILITY OPTION

This option helps store a history of the fillings in a system file and ensures that filling is impossible if the expiry date of the cylinder has lapsed thus making the process safer.

7.3.1. Making the cylinder labels

The labels with the 2D code must be put on the cylinders beforehand. In order to make them, please contact BAUER Compresseurs France. The information of the cylinder appearing on these labels will be:

Cylinder code	Expiry date	Speed limit	Pressure limit

7.3.2. Making the list of users

Refer to the instructions on page 7: PASSWORD – LOGIN CHANGE page.

7.3.3. Station name – location

The name of the station must be entered on the SETTINGS screen when the B-SAFE 300 is used for the first time with the traceability option, before scanning the cylinders (refer to details on page 8).

7.3.4. Filling with the "Traceability" option

– Follow the instructions given in chapters 7.2.1. and 7.2.2.

– Go to the "PASSWORD" page, select a username and enter the corresponding password.

– Return to the main page and scan the cylinder labels using the 2D code reader (Fig. 33).

– Check the information relating to the cylinders displayed on the screen (Fig. 34). If there are no changes, continue the filling process by following the instructions given in chapters 7.2.3. to 7.2.5.

Fig. 33 2D code reader

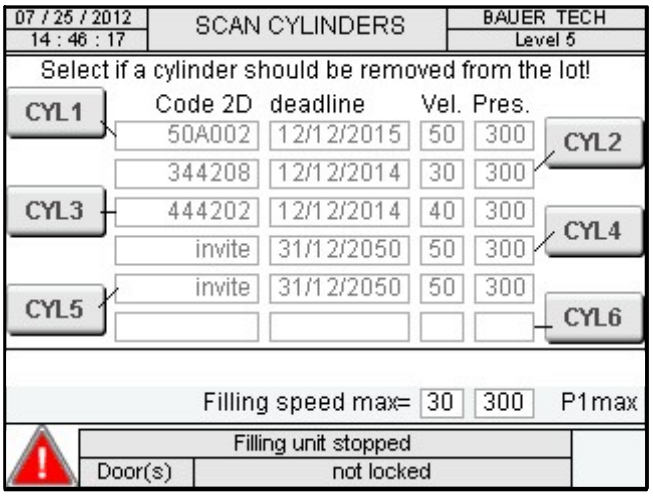


Fig. 34 Scanned labels _ example

7.3.5. Removing a scanned cylinder

After scanning the cylinders and before starting the secure filling process, it is possible to remove one or more cylinders voluntarily. For that purpose, press the CYLx button of the corresponding cylinder (see Fig. 34), the 'save' line disappears and the cylinder can be removed from the B-SAFE 300.

7.3.6. Saving the fillings

All the fillings are saved in a memory file of the system. Every line of the backup file corresponds to a scanned cylinder and contains the following information:

- Cylinder code
- Expiry date
- Maximum authorised speed
- Maximum authorised pressure
- Station name/location
- Filling no.
- Date and time of filling
- Name of the operator
- Final status after filling
- Filling speed
- Final pressure achieved during the filling

A copy of the backup file is provided in the annexe, chapter 11.4.5.

7.3.7. Recovering the backup file

Refer to the instructions on page 9: USB KEY page.

7.3.8. Format of the backup file on the USB key

The format of the file copied to the USB key is .txt.

The file name will be as follows: "*Station name_Date_Time.txt*"

The fields of this file are separated by commas.

Instruction: BCF may provide a copy of the Excel macro file (in Windows 7 or XP) which would help consolidate and use the inventory files of the cylinders of the client.

8. MAINTENANCE

8.1. PROOF OF MAINTENANCE

It is our recommendation that you record all the maintenance work and its date in a maintenance log. You can thus avoid expensive repair-work resulting from neglected maintenance works. With regard to guarantee, you can provide proof of having carried out these works and prove that the damages are not a result of insufficient maintenance. Also refer to paragraph 23 of our General Business Conditions.

8.2. INSTRUCTIONS

WARNING **Stop, disconnect and then depressurise the machine before carrying out any maintenance works or repairs.**

WARNING **Do not weld or braze the pipes.**

Use only original BAUER spare parts.

Check the sealing of the completestation regularly. For this, apply soapy water on all the valves and fittings using a brush. Repair the leaks.

8.3. MAINTENANCE WORKS

8.3.1. Flexible hoses for filling

It is imperative to check the flexible hoses and connections for leakages on a regular basis. BAUER Kompressoren recommends the following:

- Check the condition of the flexible hoses before pressurising them (pinching, cracks, etc.),
- Replace the flexible hoses after every 5 years/20,000 fillings, or in accordance with the manufacturer's recommendations.

8.3.2. Safety valves

Please contact BAUER Kompressoren for the inspection or replacement of safety valves.

We recommend an annual maintenance of the safety valves.

8.3.3. Regulator

Check the regulator configuration regularly. Contact BAUER Kompressoren in case of loss of configuration values.

In case of leakage, depressurise the B-SAFE 300 ramp, prohibit its use and contact BAUER Kompressoren.

9. TRANSPORT

The B-SAFE 300 ramp can be transported using a forklift truck. The distance between the forks must be greater than or equal to 580 mm.

10. STORAGE

If the B-SAFE 300 ramp is inoperative for a prolonged period:

- Disconnect the power supply cable,
- Isolate the ramp from the compressed air supply pneumatic circuit by closing the V1 input valve.

Take the necessary steps given in Chap. 7.1.1. before restarting the ramp.

11. ANNEXE

11.1. QUICK START


Main page


Alarms


Settings


Machine references


Password


ON-OFF and Logout


Export files


Traceability

1 Main switch
2 Emergency switch
3 Screen
4 Stop button
5 Start button

Passwords and access levels

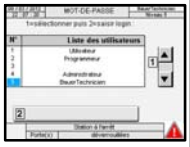
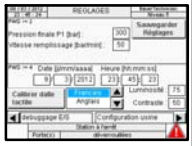
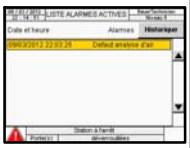
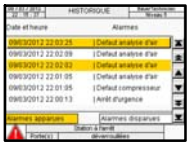
- **Level 1**: "0"
  helps initiate a filling.
- **Level 2**: "1000"
  helps regulate the filling pressure and speed.
- **Level 4**: "0100"
  helps configure the screen settings.
- **Level 5**:
  for the configuration of the B-SAFE 300; reserved for BAUER personnel.

QUICK START PROCEDURE FOR THE B-SAFE 300

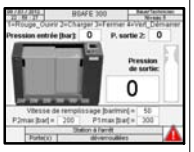
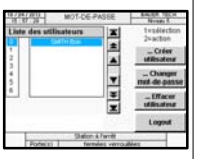
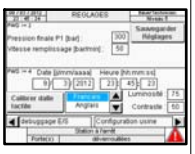

High pressure machine!

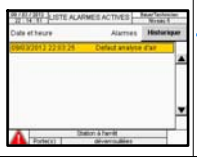
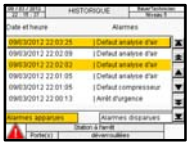
1.- Pressurize the B-SAFE 300.
2.- Switch the controller on: set the main switch (1) to ON.
3.- Unlock the doors: press the red stop button "0" (4).
4.- Open the doors within 5 seconds after carrying out the previous operation.
5.- Place the cylinders in the B-SAFE 300 and connect them.
6.- Close the doors.
7.- Start the filling: press the green start button "I" (5).
8.- When the filling is complete, press the red stop button "0" (4): the doors unlock automatically.
9.- Open the doors and remove the cylinders.

11.2. PROGRAMME STRUCTURE

Key	Display	Information	Operation	Display	Information	Operation
B-SAFE 300 main page						
		- Input pressure - Output pressure - Output pressure 2 (option) - Filling speed (option) - P1 max - P2 max (option) - Machine/filling status - Door status	- View the data			
Machine references page				**Counters and maintenance** page		
		- Machine references (machine no., machine version, software version, secur.valve no., valve no., no. of depressions, storage space, etc.)	- Open "Counters and maintenance" page		- Maintenance data (maintenance date, no. of cycles carried out, etc.)	- Reinitialisation of the maintenance data
Password page						
		- List of access levels	- Choose the access level - Enter password			
Settings page						
		- Final pressure P1 settings - Filling speed settings - Date/time settings - Language settings - Brightness settings - Contrast settings	- Set final pressure P1 - Set filling speed - Set date/time - Set language - Configure screen - Debugging - Factory settings			
Active alarm list page				**History** page		
		- Active alarms	- Acknowledge the alarms - Open the "History" page		- Alarm history	
			- ON/OFF: switch-on/switch-off the screen - Logout: exit from the access level			

11.3. PROGRAMME STRUCTURE – TRACEABILITY

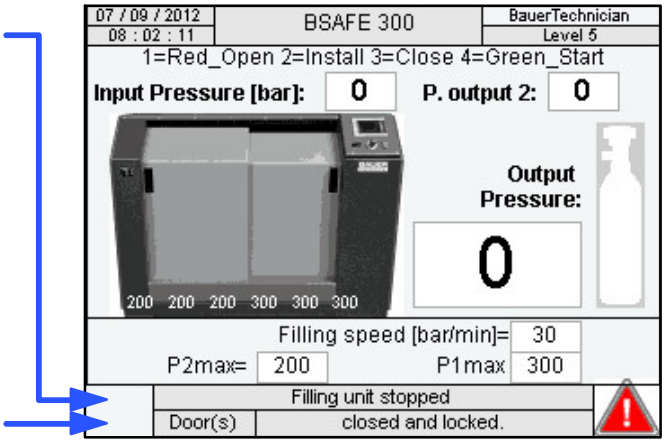
Key	Display	Information	Operation	Display	Information	Operation
B-SAFE 300 main page						
		- Input pressure - Output pressure - Output pressure 2 (option) - Filling speed (option) - P1 max - P2 max (option) - Machine/filling status - Door status	- View the data			
Machine references page				**Maintenance** page		
		- Machine references (machine no., machine version, software version, secur.valve no., valve no., no. of depressions, storage space, etc.)	- Open "Counters and maintenance" page		- Maintenance data (maintenance date, no. of cycles carried out, etc.)	-Reinitialisation of the maintenance data (level 5 required)
Password page				**Login change** page		
		- List of users	- Select user - Enter password		- List of users	- Select a user - Create a user - Change the password - Delete a user
Settings page						
		- Final pressure P1 settings - Filling speed settings - Station name settings - Date/time settings - Language settings - Brightness settings - Contrast settings	- Set final pressure P1 (level 3 required) - Set filling speed (level 3 required) - Set station name (level 3 required) - Set date/time (level 4 required) - Set language (level 4 required) - Configure screen (level 4 required) - Debugging (level 5 required) - Factory settings (level 5 required)			
Scan cylinders page						
		- Scanned cylinder information - Max. filling speed - P1 max	- Delete scanned information (remove cylinder)			
USB key page				**Last filling** page		
			- Transfer history of the latest fillings on to the USB key - Transfer complete history on to the USB key - Open the "Last filling" page		- Last filling data	

Key	Display	Information	Operation	Display	Information	Operation
Active alarm list page				**History** page		
		- Active alarms	- Acknowledge the alarms - Open the “History” page		- Alarm history	
			- ON/OFF: switch-on/switch-off the screen - Logout: exit from the access level			

11.4. LISTS

11.4.1. List of messages displayed on the bottom of the screen_ line 1

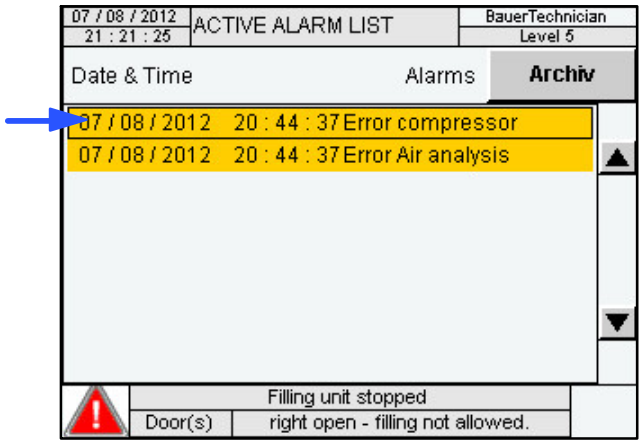
- Filling unit stopped
- Filling...
- Filling complete. Open the doors
- Cycle interrupted by the user
- Cycle interrupted due to: comp. error
- Cycle interrupted due to: air quality error
- Cycle interrupted due to: door safety
- Cycle interrupted due to: filling time > 1 hour
- Cycle interrupted due to: emergency stop



11.4.2. List of messages displayed at the bottom of the screen_ line 2

- Closed and locked
- Not locked
- Right open – filling not allowed
- Left open – filling not allowed
- Open – filling not allowed

11.4.3. Alarm list from the page "ACTIVE ALARM LIST"



- Emergency stop
- Compressor error
- Air analysis error
- Filling incomplete

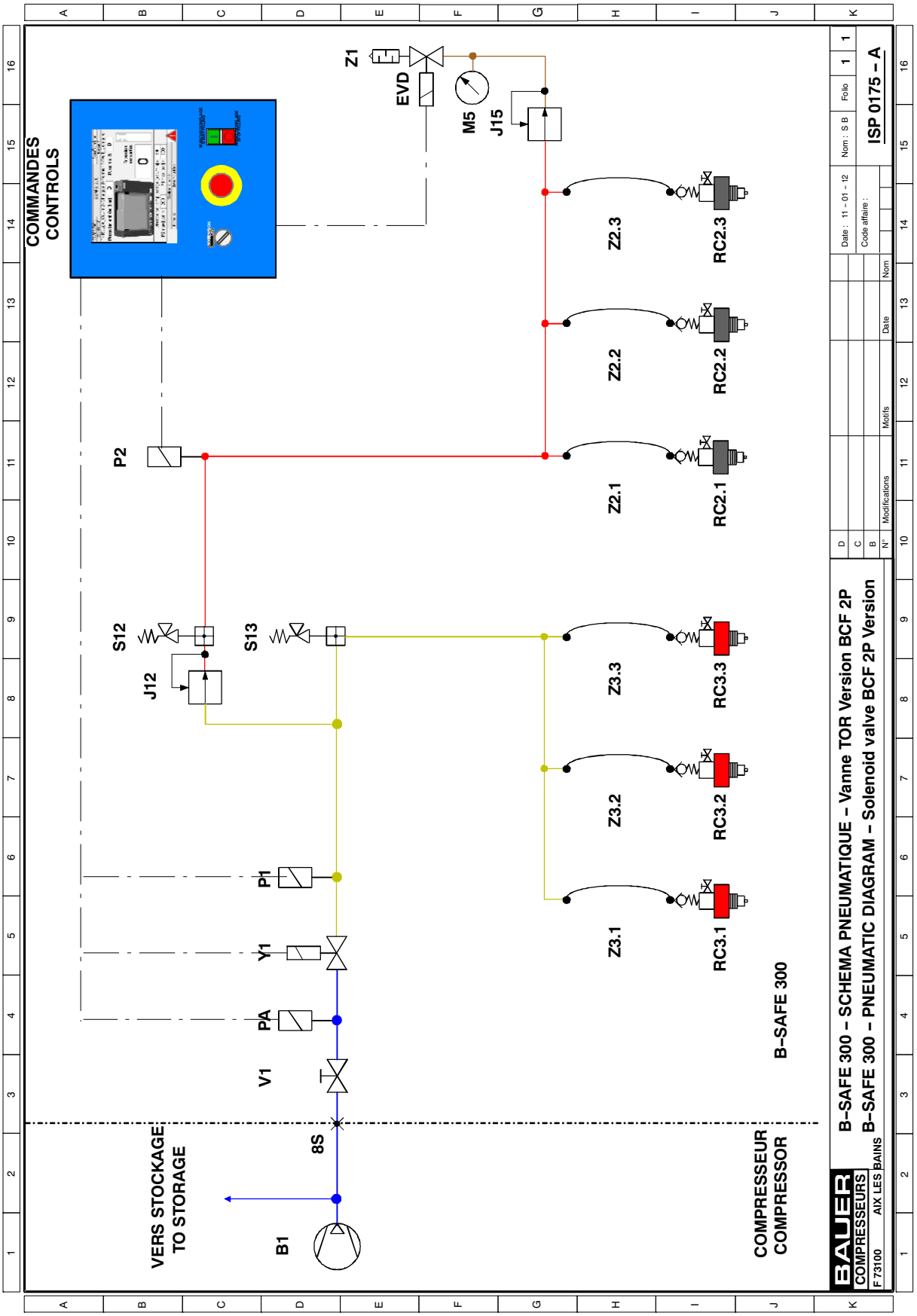
11.4.4. Status list after filling for the traceability history

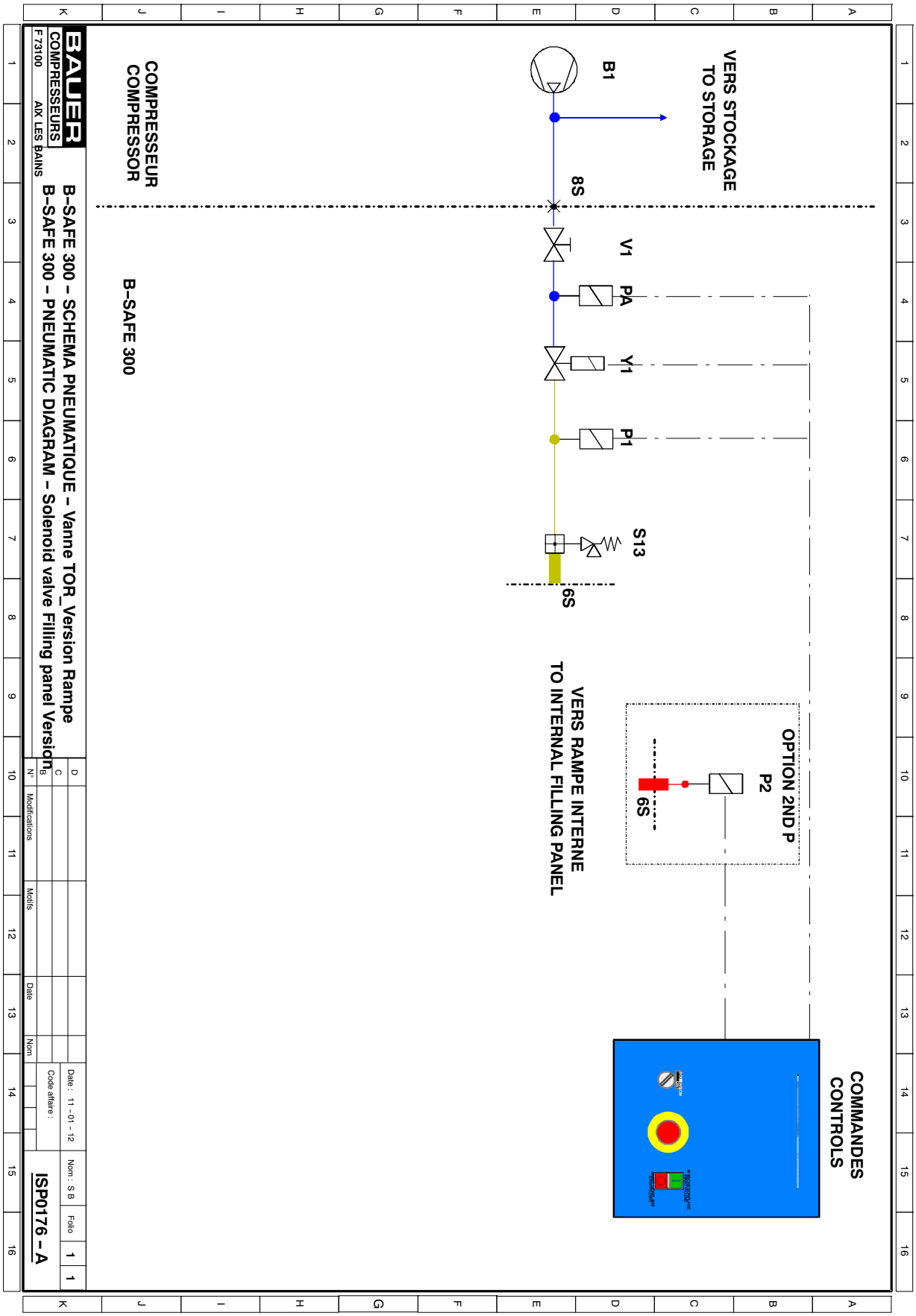
- Filling complete – OK
- NOK_power failure
- NOK_stop button
- NOK_filling>1h
- NOK_Compressorerror
- NOK_BLaberror
- NOK_Doorerror
- NOK_scan_cancelled

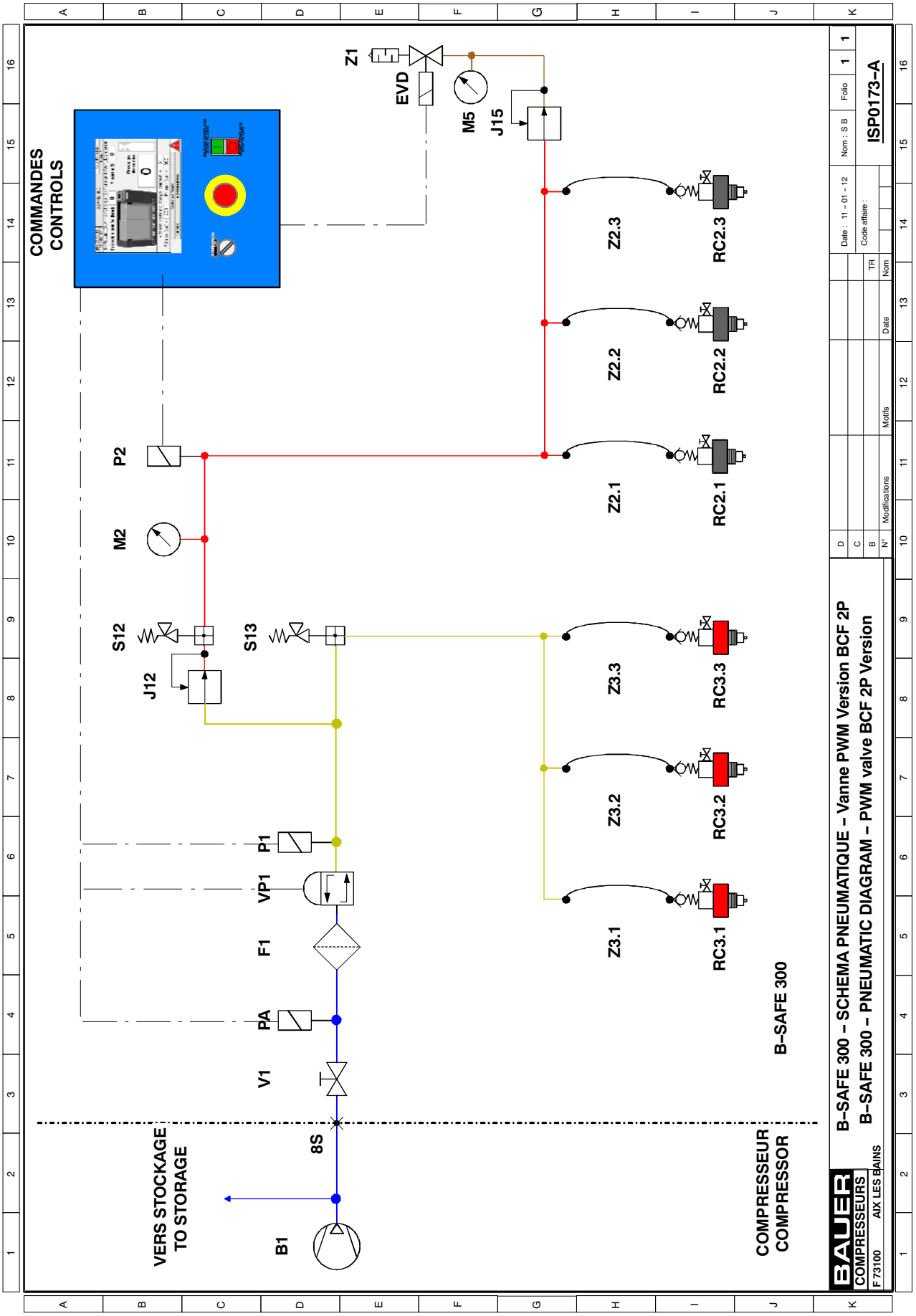
11.4.5. Traceability history table

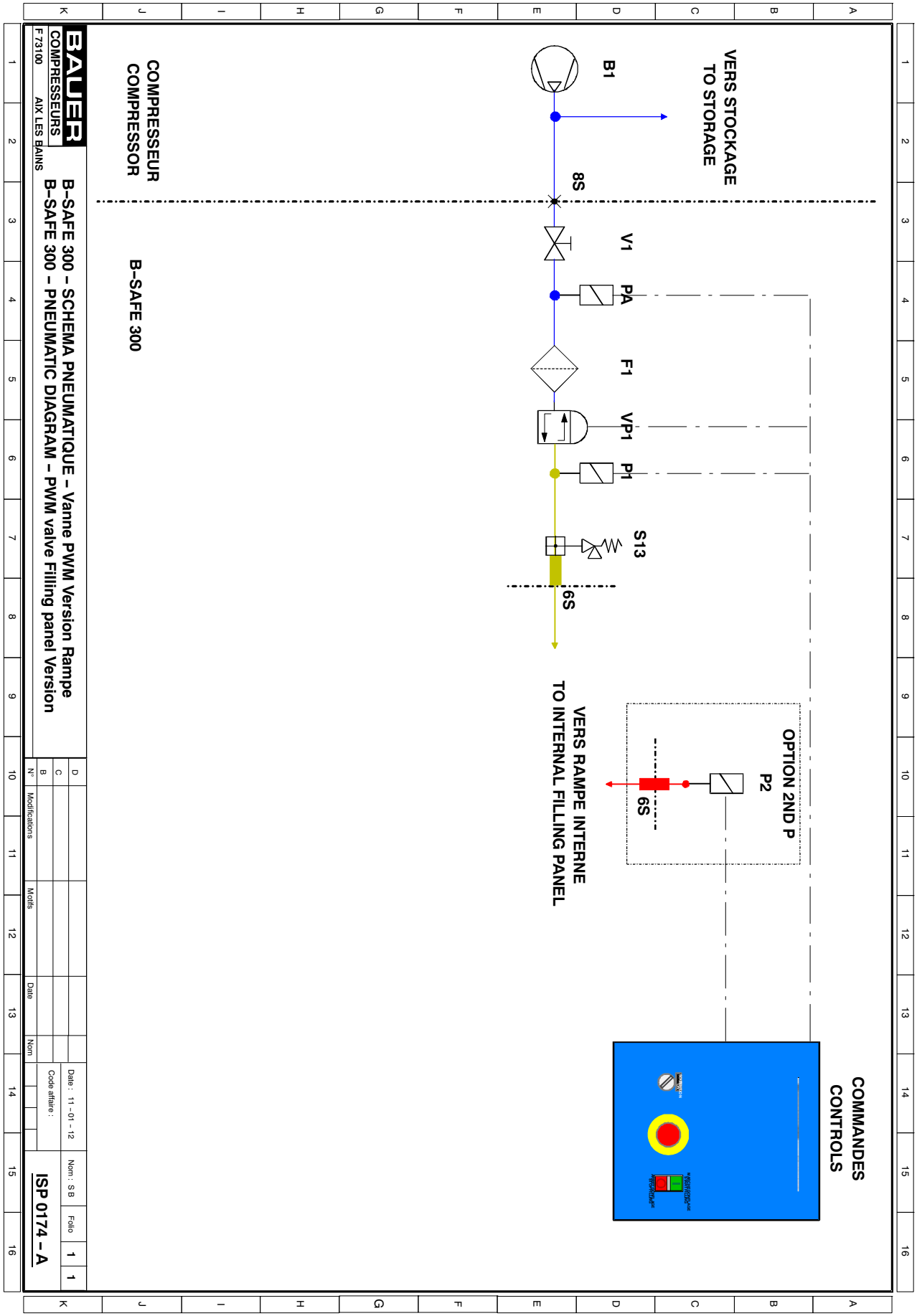
Cylinder				Filling							
Code	Expiry date	Speed	P.	Station name	Fill. no.	Fill. date	Time	Name User	Final filling status	Speed (actual)	P. (actual)
12A007	31/10/2012	50	320	Paris15 Caserne12345	100237	23/01/2012	14:30	Dupont Stephane	Filling complete OK	50	300
12A014	31/12/2 012	50	320	Paris15 Caserne12345	100237	23/01/2012	14:30	Dupont Stephane	Filling complete OK	50	300
12A035	31/12/2012	50	320	Paris15 Caserne12345	100237	23/01/2012	14:30	Dupont Stephane	Filling complete OK	50	300
12A109	31/10/2012	50	300	Paris15 Caserne12	100237	23/01/2012	14:30	Dupont Stephane	Filling complete OK	50	300
13A045	31/01/2013	50	300	Paris15 Caserne12345	100238	23/01/2012	16:30	Dupont Stephane	NOK_STOP_button	50	19
12A021	30/06/2012	50	320	Paris15 Caserne12345	100239	23/01/2012	18:30	Dupont Stephane	NOK_filling>1h	50	12
13Z201	31/10/2013	30	200	Paris15 Caserne12345	100240	24/01/2012	09:14	Durand Jean -Y.	Filling complete – OK	30	300

11.5. PNEUMATIC DIAGRAMS

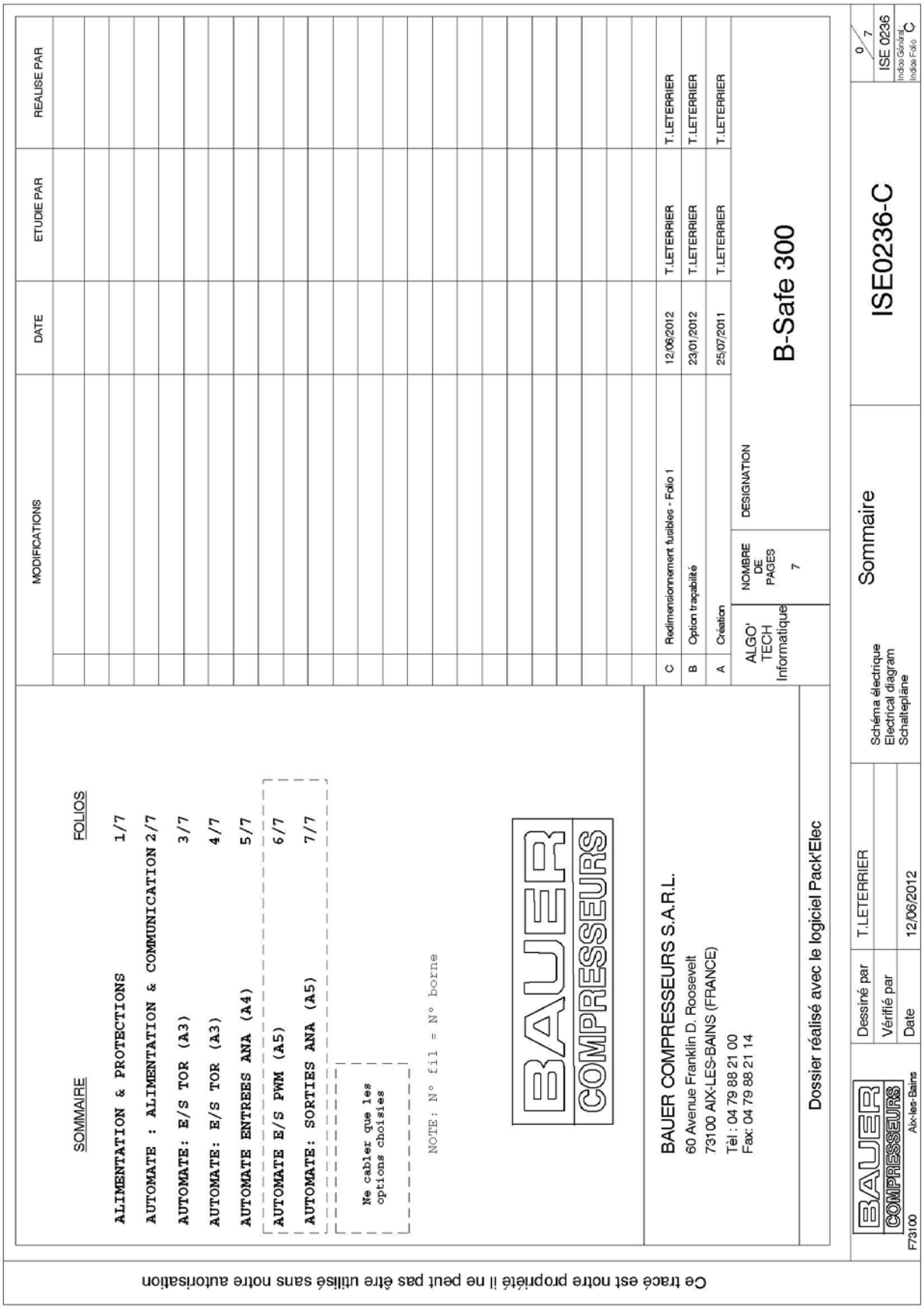


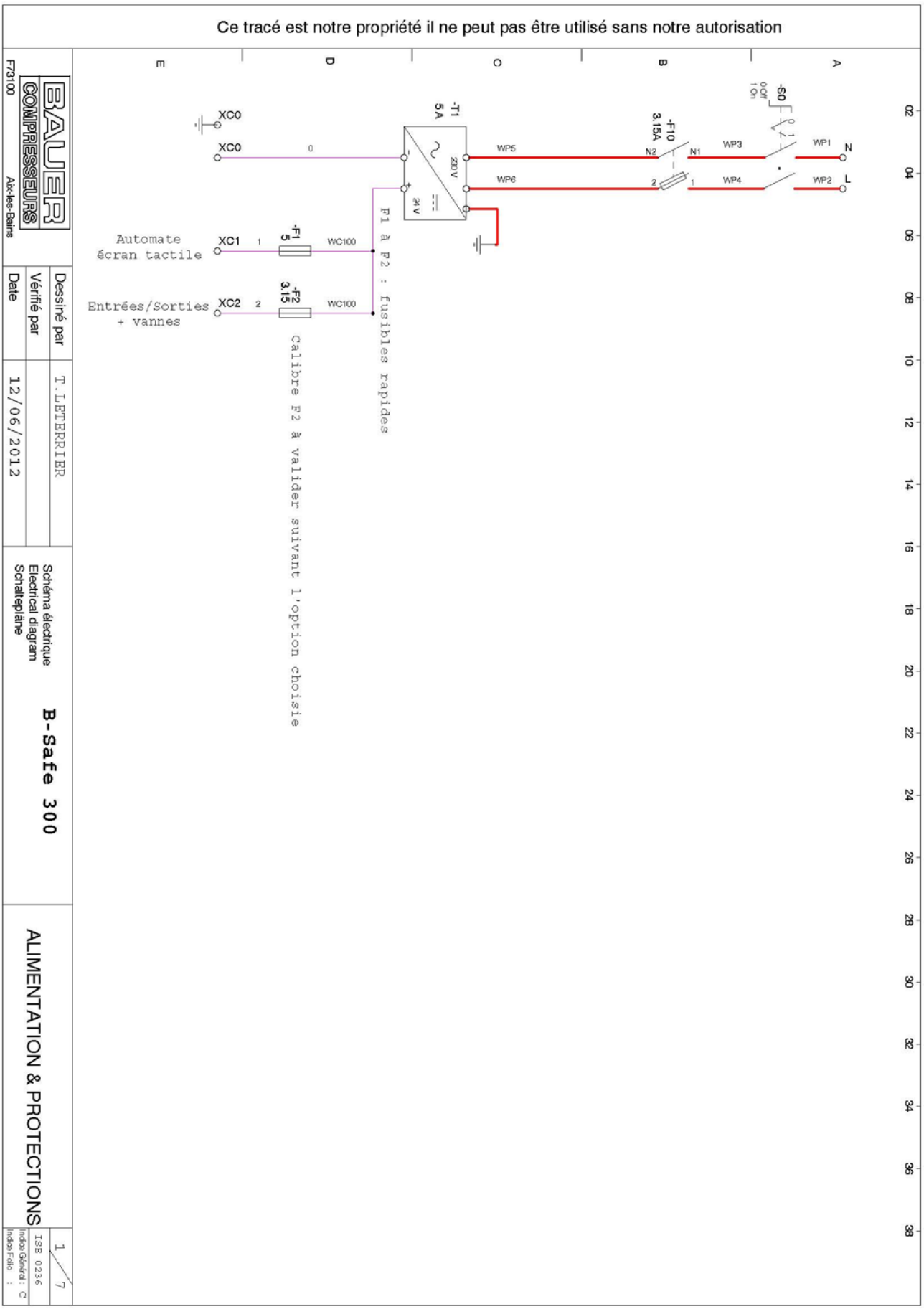

VERS STOCKAGE
TO STORAGE
B1
8S
V1
PA
Y1
P1
S13
6S
COMPRESSEUR
COMPRESSOR
B-SAFE 300
OPTION 2ND P
P2
6S
VERS RAMPE INTERNE
TO INTERNAL FILLING PANEL
COMMANDES
CONTROLS
BAUER
COMPRESSEURS
F 73100 AIX LES BAINS
B-SAFE 300 - SCHEMA PNEUMATIQUE - Vanne TOR_Version Rampe
B-SAFE 300 - PNEUMATIC DIAGRAM - Solenoid valve Filling panel Version
N° Modifications Motifs Date Nom
Date : 11 - 01 - 12
Code affaire :
Nom : S B
Folio 1 1
ISP0176 - A

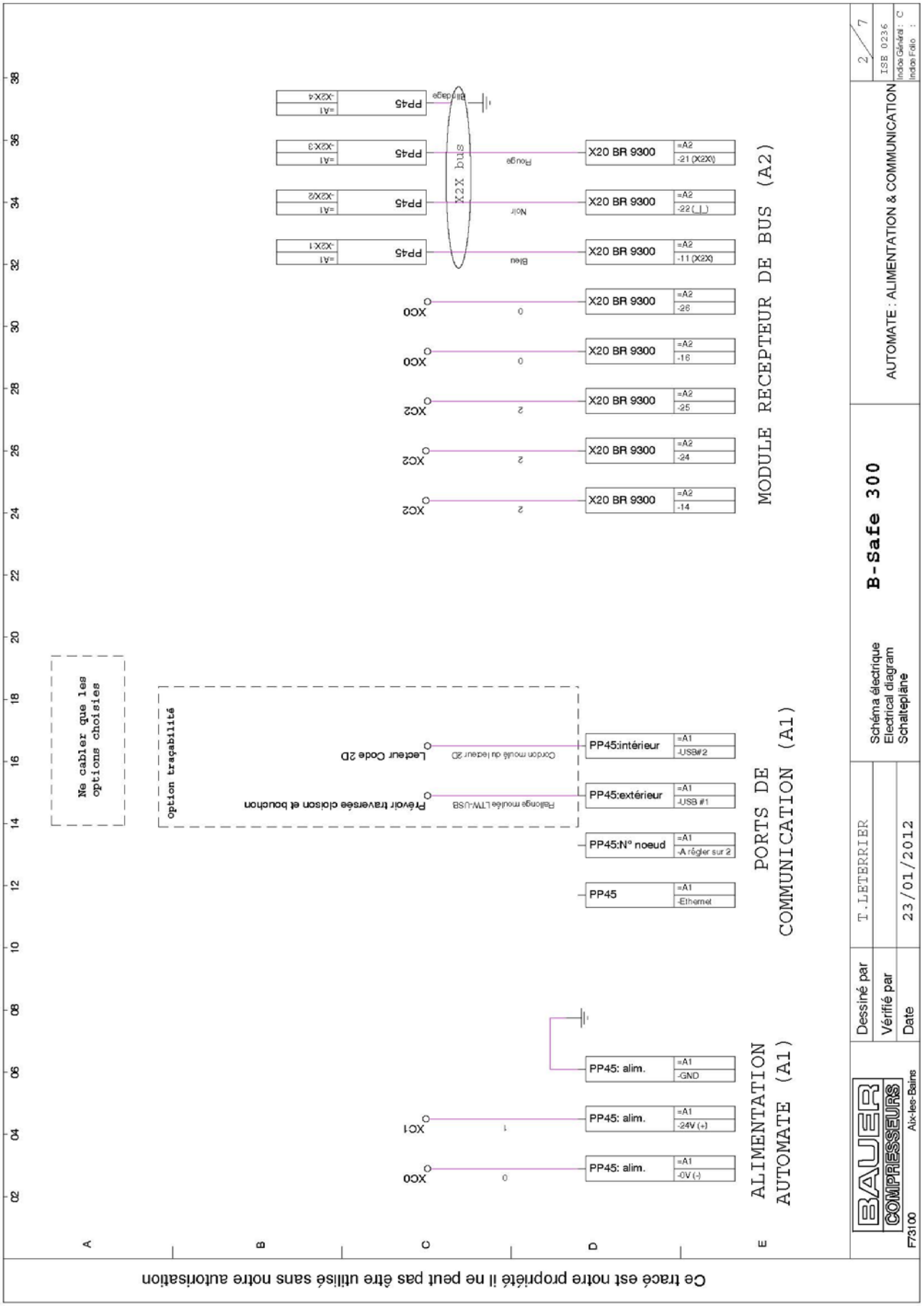

COMMANDES
CONTROLS
Z1
EVD
M5
J15
P2
M2
S12
J12
S13
Z2.3
RC2.3
Z2.2
RC2.2
Z2.1
RC2.1
Z3.3
RC3.3
Z3.2
RC3.2
Z3.1
RC3.1
P1
VP1
F1
PA
V1
8S
B1
VERS STOCKAGE
TO STORAGE
COMPRESSEUR
COMPRESSOR
B-SAFE 300
B-SAFE 300 – SCHEMA PNEUMATIQUE – Vanne PWM Version BCF 2P
B-SAFE 300 – PNEUMATIC DIAGRAM – PWM valve BCF 2P Version
ISP0173-A
BAUER
COMPRESSEURS
F 73100 AIX LES BAINS

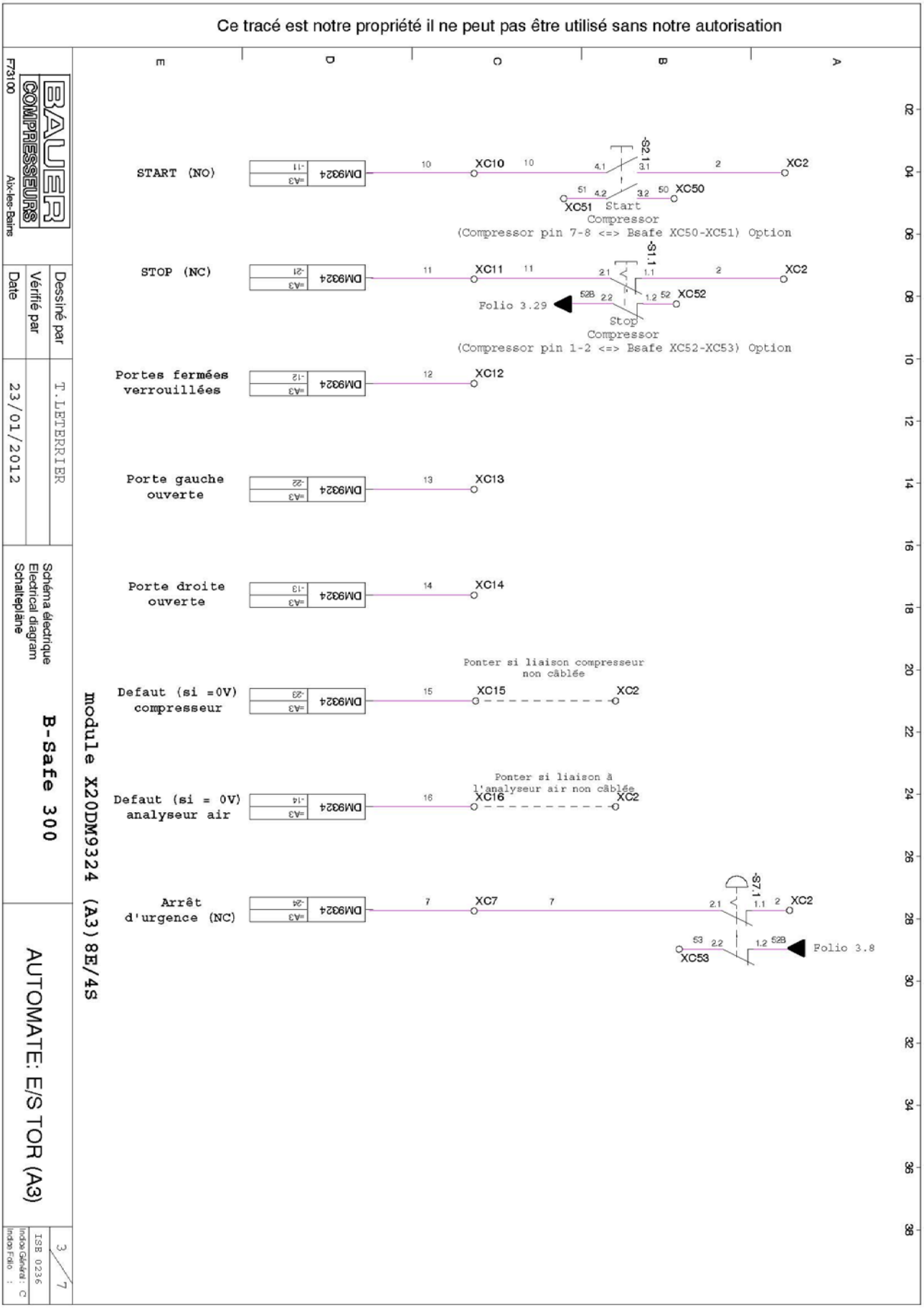

VERS STOCKAGE
TO STORAGE
B1
8S
V1
PA
F1
VP1
P1
S13
6S
COMPRESSEUR
COMPRESSOR
B-SAFE 300
OPTION 2ND P
P2
6S
VERS RAMPE INTERNE
TO INTERNAL FILLING PANEL
COMMANDES
CONTROLS
BAUER
COMPRESSEURS
F 73100 AIX LES BAINS
B-SAFE 300 – SCHEMA PNEUMATIQUE – Vanne PWM Version Rampe
B-SAFE 300 – PNEUMATIC DIAGRAM – PWM valve Filling panel Version
N° Modifications Motifs Date Nom
Date : 11 - 01 - 12
Code affaire :
Nom : S.B
Folio 1 1
ISP 0174 – A

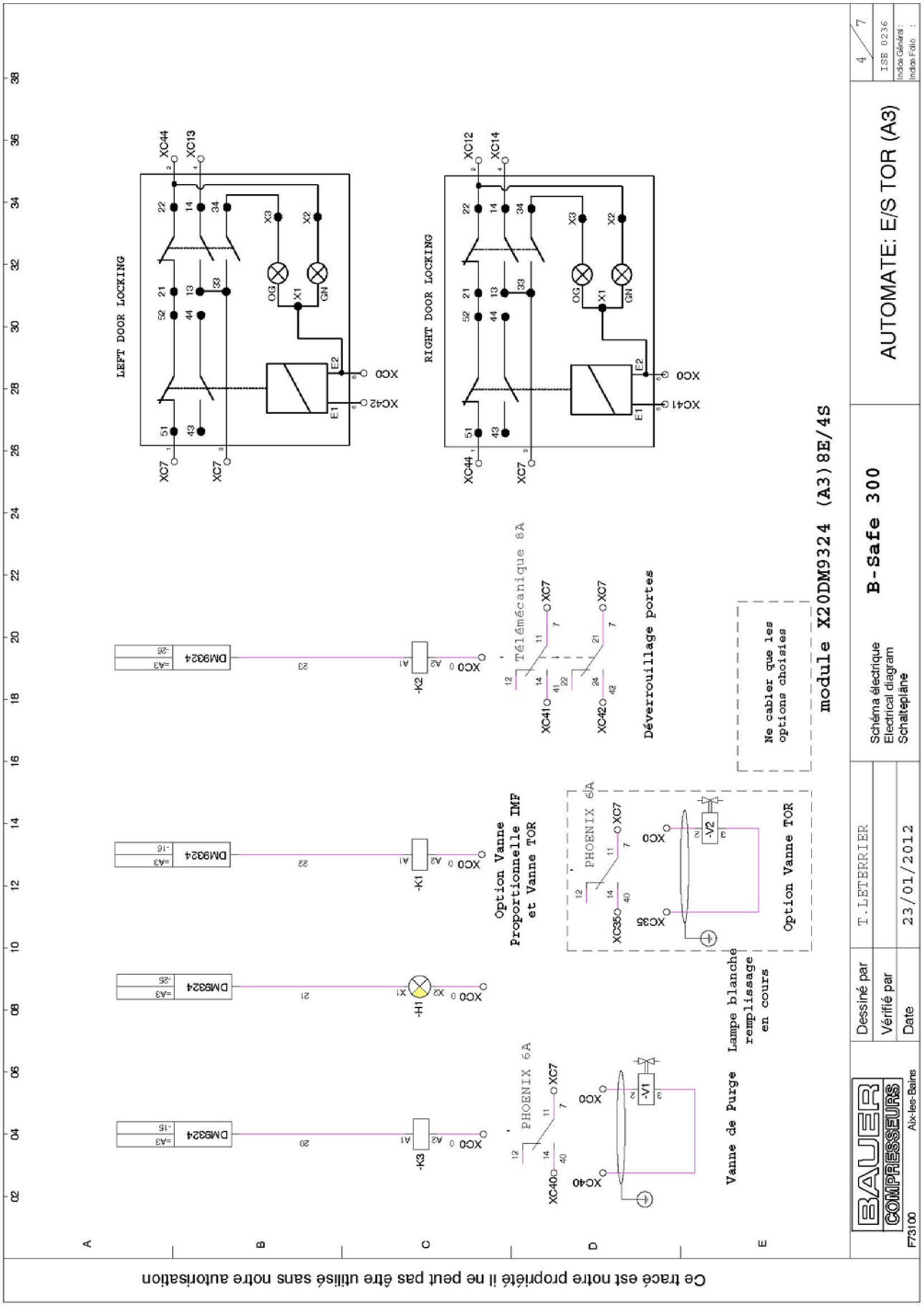
11.6. WIRING DIAGRAM

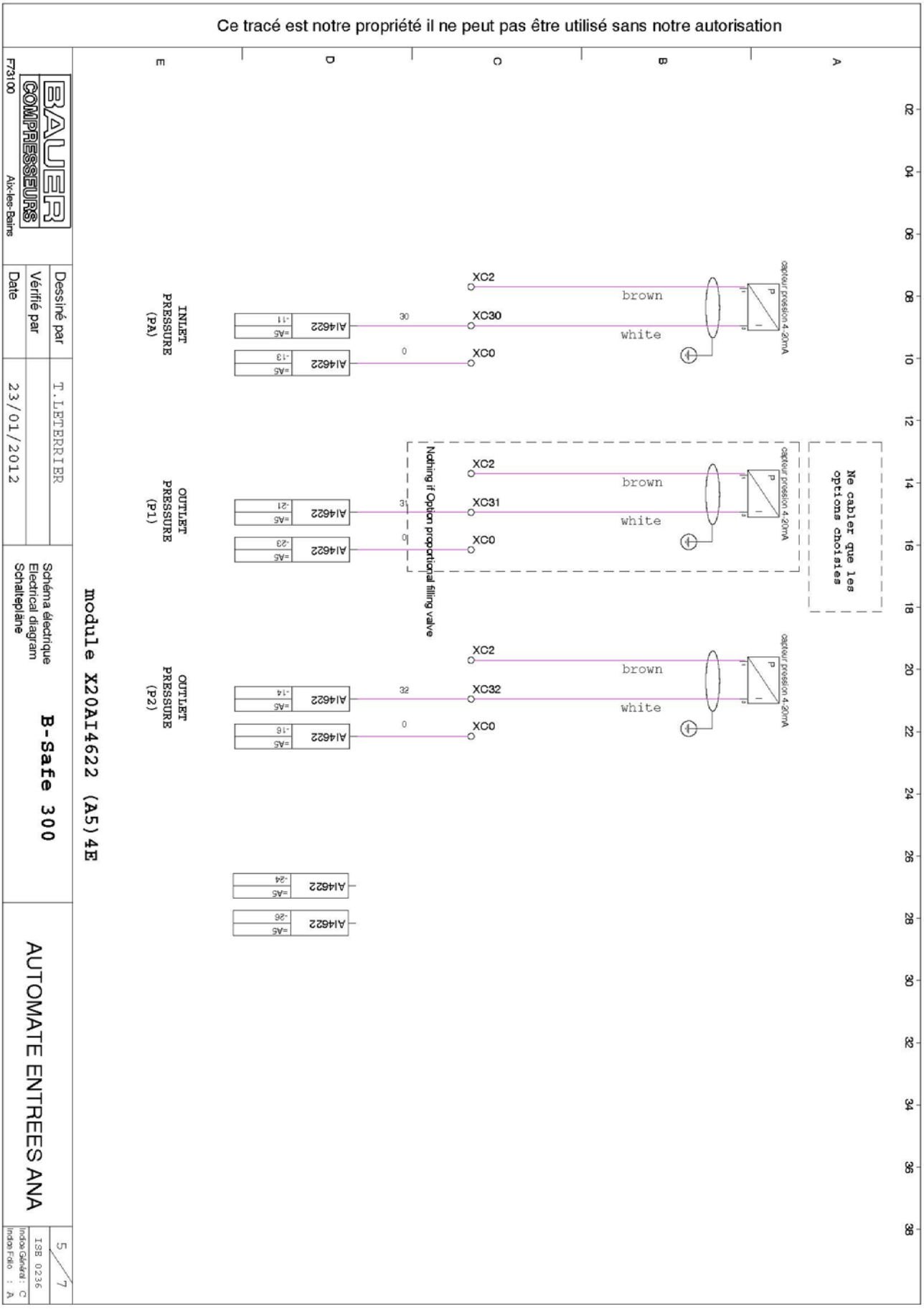


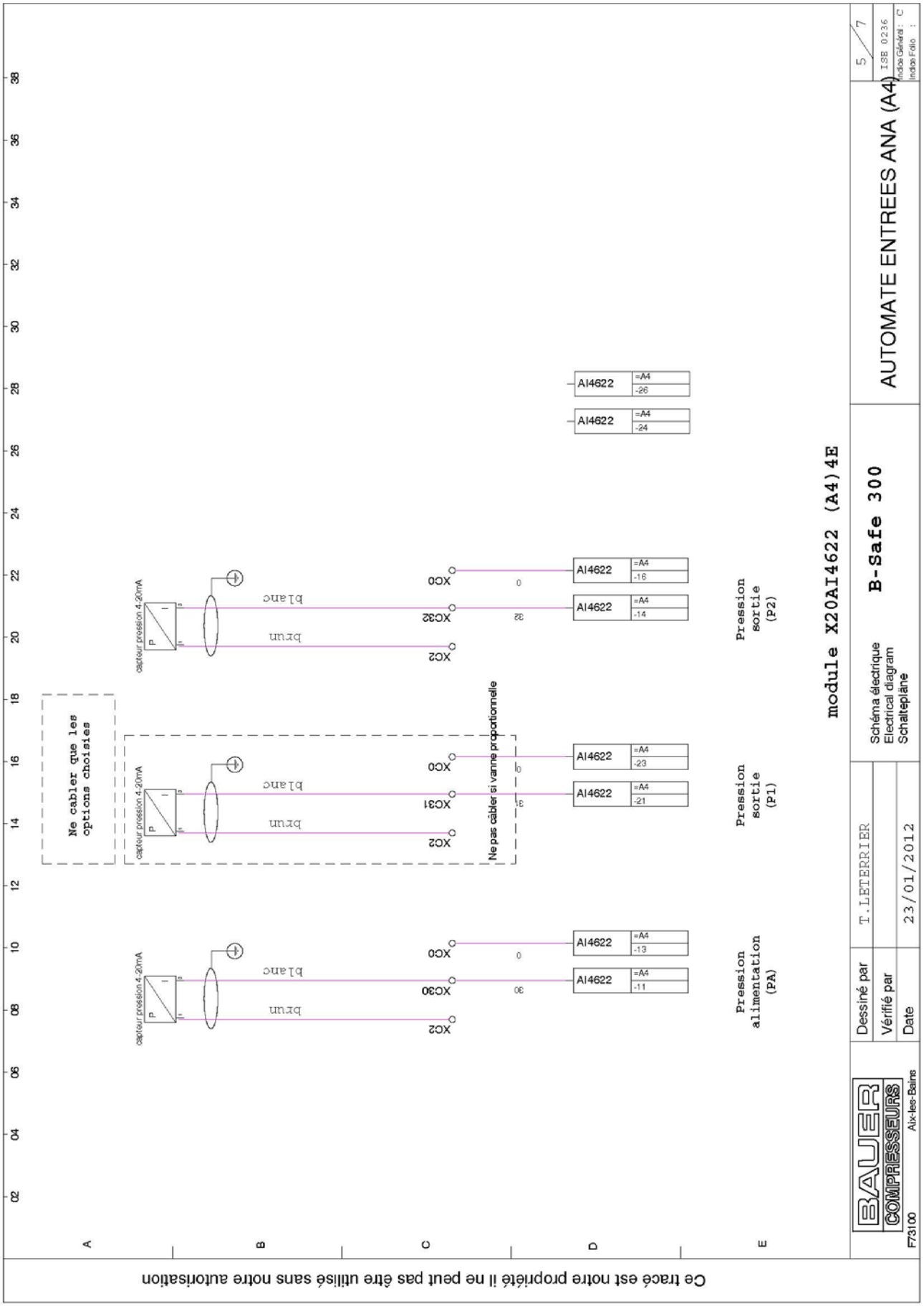

Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation
BAUER COMPRESSEURS
F73100 Aix-les-Bains
Dessiné par T.LETERRIER
Vérifié par
Date 12/06/2012
Schéma électrique
Electrical diagram
Schaltepläne
B-Safe 300
ALIMENTATION & PROTECTIONS
Indice Général : C
Indice Folio : ISB 0236
1/7
-S0
-T1 5A
-F10 3.15A
-F1 5
-F2 3.15
XC0
XC1
XC2
WP1
WP2
WP3
WP4
WP5
WP6
WC100
230 V
24 V
N1
N2
N
L
Automate écran tactile
Entrées/Sorties + vannes
F1 à F2 : fusibles rapides
Calibre F2 à valider suivant l'option choisie

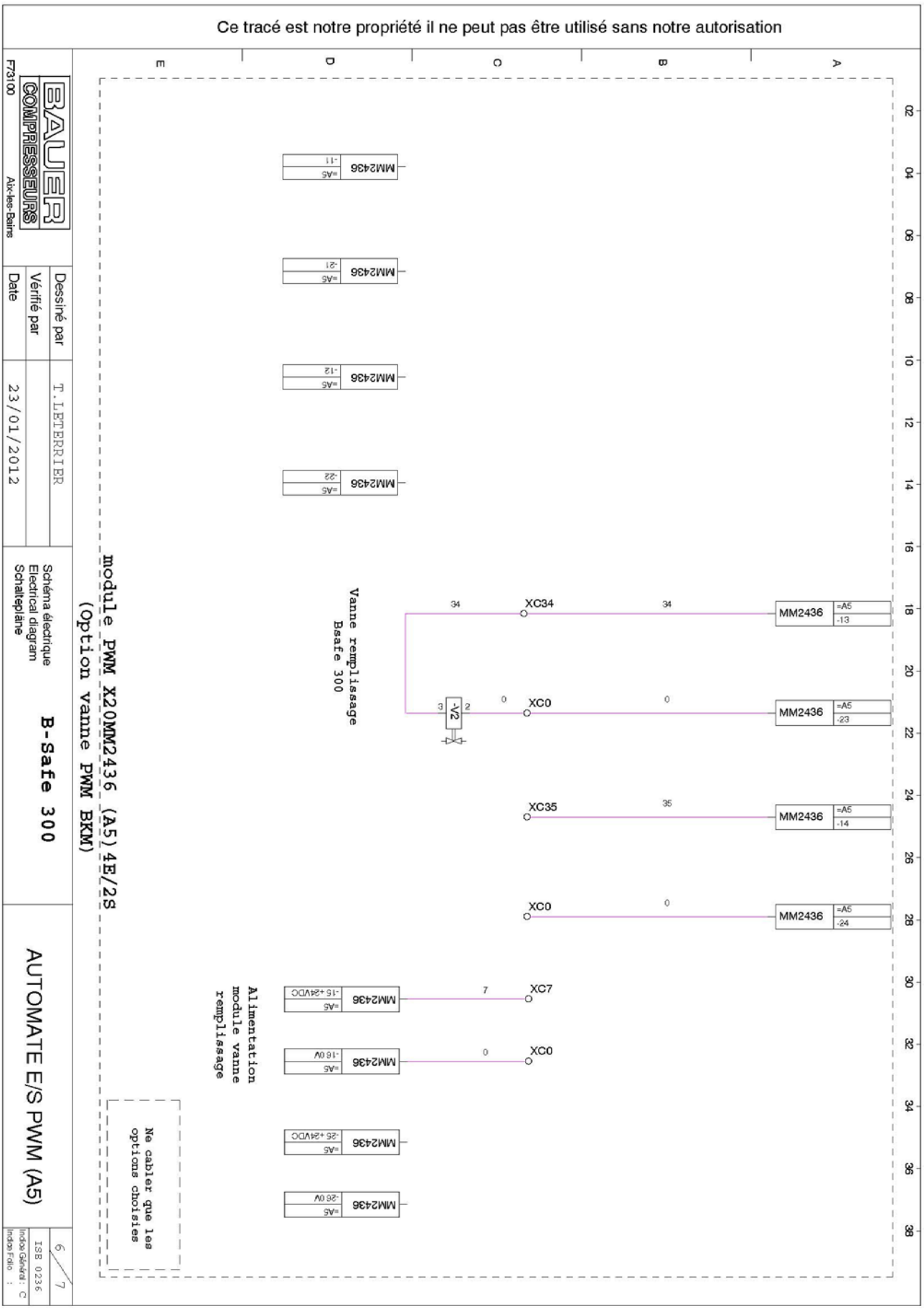

Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation
ALIMENTATION AUTOMATE (A1)
PORTS DE COMMUNICATION (A1)
MODULE RECEPTEUR DE BUS (A2)
X2X bus
PP45: alim. =A1 -0V (-)
PP45: alim. =A1 -24V (+)
PP45: alim. =A1 -GND
PP45 =A1 -Ethernet
PP45:N° noeud =A1 -A régler sur 2
PP45:extérieur =A1 -USB #1
PP45:intérieur =A1 -USB#2
Option traçabilité
Ne cabler que les options choisies
X20 BR 9300 =A2 -14
X20 BR 9300 =A2 -24
X20 BR 9300 =A2 -25
X20 BR 9300 =A2 -16
X20 BR 9300 =A2 -26
X20 BR 9300 =A2 -11 (X2X)
X20 BR 9300 =A2 -22 (_|_)
X20 BR 9300 =A2 -21 (X2X\)
PP45 =A1 -X2X1
PP45 =A1 -X2X2
PP45 =A1 -X2X3
PP45 =A1 -X2X4
Blindage
Bleu
Noir
Rouge
Dessiné par T.LETERRIER
Vérifié par
Date 23/01/2012
Schéma électrique Electrical diagram Schaltepläne
B-Safe 300
AUTOMATE : ALIMENTATION & COMMUNICATION
ISB 0236
2/7
F73100 Aix-les-Bains


Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation
BAUER COMPRESSEURS
F73100 Aix-les-Bains
Dessiné par T.LETERRIER
Vérifié par
Date 23/01/2012
Schéma électrique
Electrical diagram
Schaltepläne
B-Safe 300
AUTOMATE: E/S TOR (A3)
module X20DM9324 (A3) 8E/4S
START (NO)
STOP (NC)
Portes fermées verrouillées
Porte gauche ouverte
Porte droite ouverte
Defaut (si =0V) compresseur
Defaut (si = 0V) analyseur air
Arrêt d'urgence (NC)
DM9324
XC10
XC11
XC12
XC13
XC14
XC15
XC16
XC7
XC2
XC50
XC51
XC52
XC53
-S2.1
-S1.1
-S7.1
Start Compressor
Stop Compressor
(Compressor pin 7-8 <=> Bsafe XC50-XC51) Option
(Compressor pin 1-2 <=> Bsafe XC52-XC53) Option
Folio 3.29
Folio 3.8
Ponter si liaison compresseur non câblée
Ponter si liaison à l'analyseur air non câblée


LEFT DOOR LOCKING
RIGHT DOOR LOCKING
Télémécanique 8A
PHOENIX 6A
Déverrouillage portes
Option Vanne Proportionnelle IMF et Vanne TOR
Option Vanne TOR
Vanne de Purge
Lampe blanche remplissage en cours
Ne cabler que les options choisies
module X20DM9324 (A3)8E/4S
B-Safe 300
AUTOMATE: E/S TOR (A3)
Schéma électrique
Electrical diagram
Schaltepläne
Dessiné par
Vérifié par
Date
T.LETERRIER
23/01/2012
BAUER COMPRESSEURS
Aix-les-Bains
F73100
Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation


Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation
BAUER COMPRESSEURS
F73100 Aix-les-Bains
Dessiné par T.LETERRIER
Vérifié par
Date 23/01/2012
Schéma électrique
Electrical diagram
Schaltepläne
B-Safe 300
AUTOMATE ENTREES ANA
ISB 0236
Indice Général : C
Indice Folio : A
5/7
module X20AI4622 (A5)4E
INLET PRESSURE (PA)
OUTLET PRESSURE (P1)
OUTLET PRESSURE (P2)
AI4622
XC2
XC30
XC31
XC32
XC0
brown
white
capteur pression 4-20mA
Nothing if Option proportional filling valve
Ne cabler que les options choisies


Ce tracé est notre propriété il ne peut pas être utilisé sans notre autorisation
module X20AI4622 (A4)4E
B-Safe 300
Schéma électrique
Electrical diagram
Schaltepläne
AUTOMATE ENTREES ANA (A4)
Dessiné par
T.LETERRIER
Vérifié par
Date
23/01/2012
BAUER COMPRESSEURS
Aix-les-Bains
F73100
Ne cabler que les options choisies
Ne pas câbler si vanne proportionnelle
capteur pression 4-20mA
brun
blanc
Pression sortie (P2)
Pression sortie (P1)
Pression alimentation (PA)
AI4622
=A4 -26
=A4 -24
=A4 -16
=A4 -14
=A4 -23
=A4 -21
=A4 -13
=A4 -11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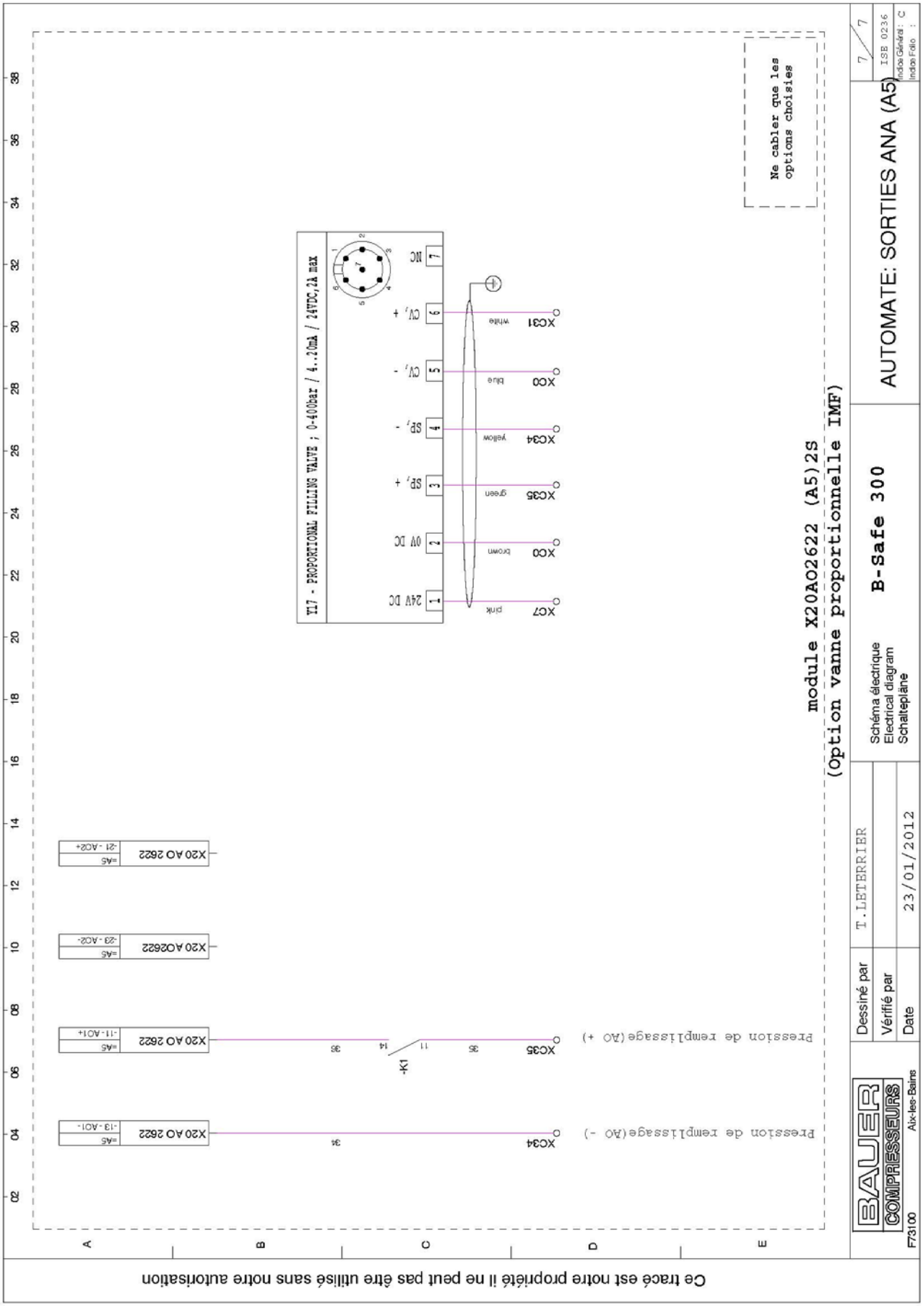
BAUER COMPRESSEURS
F73100 Aix-les-Bains
Dessiné par T.LETERRIER
Vérifié par
Date 23/01/2012
Schéma électrique
Electrical diagram
Schaltepläne
B-Safe 300
AUTOMATE E/S PWM (A5)
module PWM X20MM2436 (A5) 4E/2S
(Option vanne PWM BKM)
Vanne remplissage
Bsafe 300
Alimentation
module vanne
remplissage
Ne cabler que les
options choisies
MM2436 =A5 -11
MM2436 =A5 -21
MM2436 =A5 -12
MM2436 =A5 -22
MM2436 =A5 -15 +24VDC
MM2436 =A5 -16 0V
MM2436 =A5 -25 +24VDC
MM2436 =A5 -26 0V
XC34
XC0
XC35
XC0
XC7
XC0
-V2
MM2436 =A5 -13
MM2436 =A5 -23
MM2436 =A5 -14
MM2436 =A5 -24
ISB 0236
6/7


Ne cabler que les options choisies
module X20AO2622 (A5)2S
(Option vanne proportionnelle IMF)
Pression de remplissage(AO +)
Pression de remplissage(AO -)
X20 AO 2622
X20AO2622
XC35
XC34
-K1
Y17 - PROPORTIONAL FILLING VALVE ; 0-400bar / 4..20mA / 24VDC,2A max
24V DC
0V DC
SP, +
SP, -
CV, -
CV, +
NC
XC31
XC0
XC34
XC35
XC0
XC7
white
blue
yellow
green
brown
pink
Schéma électrique
Electrical diagram
Schaltepläne
B-Safe 300
AUTOMATE: SORTIES ANA (A5)
Dessiné par
Vérifié par
Date
T.LETERRIER
23/01/2012
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Aix-les-Bains
F73100
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