

INSTRUCTION MANUAL AND SPARE PARTS CATALOGUE

**HIGH PRESSURE
REGENERATIVE TYPE DRYER**

SECCANT IV SECCANT IV A

with B-Control Unit



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Instruction Manual SECCANT IV

INTRODUCTION

This manual contains operating and maintenance instructions for the high pressure regenerative dryers

SECCANT IV SECCANT IV A

All instructions should be observed and carried out in the order laid down to prevent damage and premature wear to the equipment and the units served by it. The company voids all warranties for malfunction and damage resulting from failing to follow these instructions.

All information and illustrations are without obligation – we reserve the right to make changes to state of the art requirements, in improving performance, or as required by safety or commercial restrictions.

We are happy to give you advice on any questions regarding your BAUER unit, and help as soon as possible with any arising problems.

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ANNEX

Flow diagram	
Seccant IV/IV-A-350 bar	76936*
Seccant IV/IV-A-420 bar	90965*
Seccant IV/IV-AH-350 bar (helium version)	82727-01 + 82727-02*

Drawing of regenerative dryer	
Plan de construction SECCANT IV/IV A	81983
Plan de construction SECCANT IV/IV A-420 bar	82828

Schematic diagrams:	
100 – 127 V	82948*
220 – 240 V	82949*

Applicable parts list:	Code
SECCANT IV, SECCANT IV A (air)	G25
SECCANT IV, SECCANT IV A (gas)	G29

Change notice

Change No.	Change date
1.	Basic edition July 1996
2.	January 2003
3.	August 2004
4.	June 2005

*) or according to order



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1. GENERAL

APPLICATION AND SHORT DESCRIPTION

The regenerative dryers of the **SECCANT** series are used for automatic drying of compressed air and non-explosive gases.

A significant feature of this series is the simultaneous occurrence of drying phase and regeneration phase during one operating cycle: as one filter dries the compressed medium, the other is being regenerated. This ensures continuous and effective operation.

To avoid excessive wear of the filter fillings, the **SECCANT** dryers are equipped with a pressure compensation system which

ensures a slow and gentle pressurization when switching from regeneration phase (low pressure) to drying phase (high pressure).

Regenerative dryers which are used for drying gases, are equipped with a gas feed-back system which leads the regeneration and the control gas back to the compressor intake (see flow diagram in the annex).



Fig. 1 High pressure regenerative dryer **SECCANT IV**

DESIGN

For all mentioned parts and numbers refer to dryer design **SECCANT IV**, Fig. 2 and **SECCANT IV A**, Fig. 3.

The regenerative dryer consists of two filters (1 and 2), which are equipped with replaceable cartridges. The cartridges are filled with a highly porous dehydrating agent (molecular sieve).

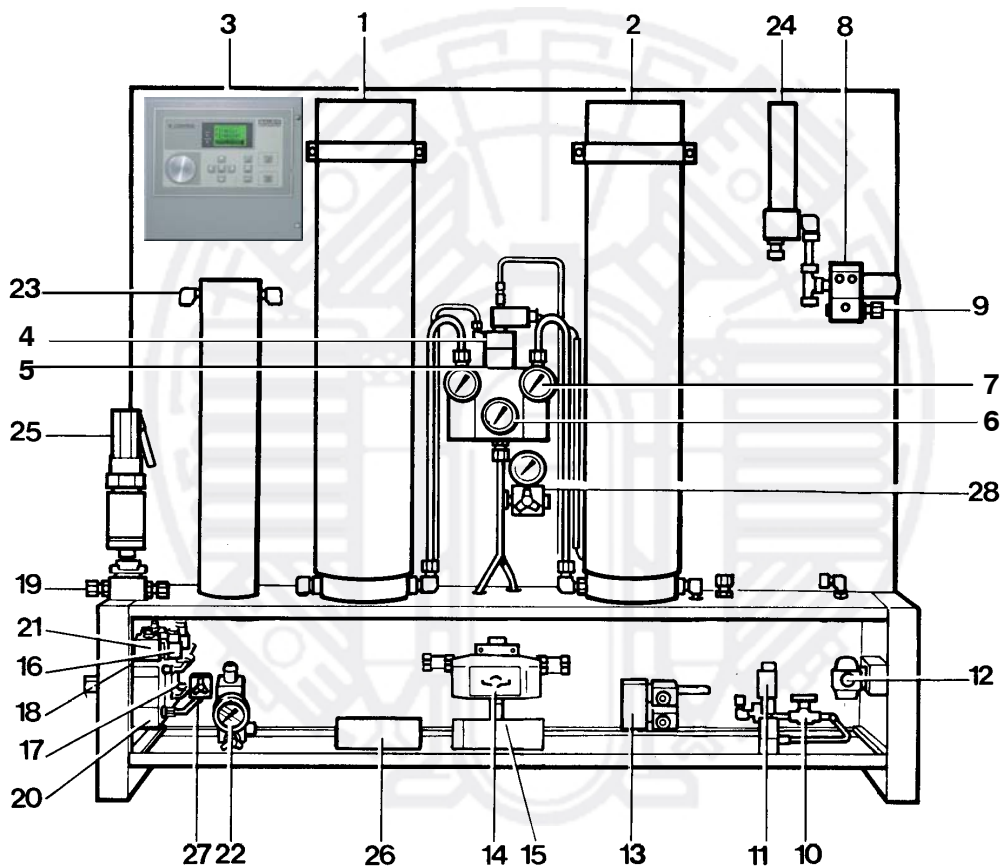
Upstream of the drying and regenerating system, an oil and water separator (23) should be mounted. It absorbs any fluid oil and water particles out of the pressurized air or gas from the compressor. Safety valve (25) protects the pressure system from excessive pressure.

The non-return valve with gauge and venting valve (22) which is situated downstream from the oil and water separator pre-

vents the dried medium from flowing back to the separator when draining condensate.

For breathing air processing, a final purifier (27, Fig. 3) should be placed downstream of the drying and regenerating filters. It is equipped with a filter cartridge with activated charcoal which removes residual oil vapours and makes the air tasteless and odourless as required for breathing air quality. The final purifier can also be installed in industrial air or gas dryers if air or gas of the purest quality is required.

A discharge valve with pressure gauge (28) is placed downstream of the valve block.

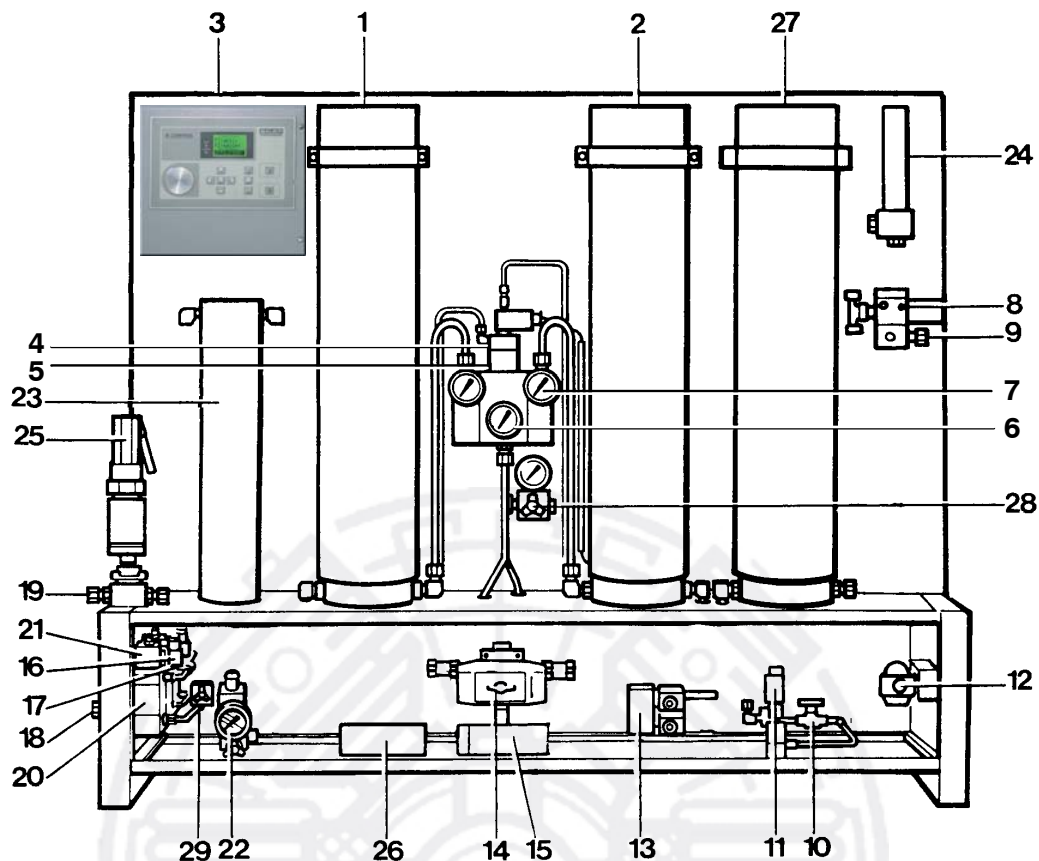


- | | | |
|--|--|---|
| 1 Drying filter | 12 Pressure reducer | 21 3/2-way solenoid valve, condensate drain |
| 2 Drying filter | 13 4/2-way solenoid valve, drying/regeneration phase | 22 Non-return valve with pressure gauge and venting valve |
| 3 Control unit | 14 Switch-over valve, drying/regeneration phase | 23 Oil and water separator |
| 4 3/2-way solenoid valve, pressure comp. | 15 Pneumatic actuator | 24 Particle filter |
| 5 Pressure compensation valve | 16 3/2-way solenoid valve, shut-off | 25 Safety valve, final pressure |
| 6 Pressure gauge, regeneration pressure | 17 Shut-off valve | 26 Feed back manifold (only gas models) |
| 7 Pressure gauge, operating pressure | 18 Control/regeneration air/gas outlet | 27 Manual condensate drain tap |
| 8 Pressure maintaining/non-return valve | 19 Air/gas inlet | 28 Discharge valve with pressure gauge |
| 9 Air/gas outlet | 20 Condensate drain valve | |
| 10 Regulating valve | | |
| 11 Safety valve, 14 bar | | |

Fig. 2 **SECCANT IV**, regenerative dryer design^{a)}

a) to ensure clarity, piping is not shown

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- | | | |
|--|--|---|
| 1 Drying filter | 12 Pressure reducer | 21 3/2-way solenoid valve, condensate drain |
| 2 Drying filter | 13 4/2-way solenoid valve, drying/regeneration phase | 22 Non-return valve with pressure gauge and venting valve |
| 3 Control unit | 14 Switch-over valve, drying/regeneration phase | 23 Oil and water separator |
| 4 3/2-way solenoid valve, pressure comp. | 15 Pneumatic actuator | 24 Particle filter |
| 5 Pressure compensation valve | 16 3/2-way solenoid valve, shut-off | 25 Safety valve, final pressure |
| 6 Pressure gauge, regeneration pressure | 17 Shut-off valve | 26 Feed back manifold |
| 7 Pressure gauge, operating pressure | 18 Control/regeneration air/gas outlet | 27 Final purifier |
| 8 Pressure maintaining/non-return valve | 19 Air/gas inlet | 28 Discharge valve with pressure gauge |
| 9 Air/gas outlet | 20 Condensate drain valve | 29 Manual condensate drain tap |
| 10 Regulating valve | | |
| 11 Safety valve, 14 bar | | |

Fig. 3 SECCANT IV A, regenerative dryer design^{a)}

Particle filter (24) is placed downstream of the drying and regenerating filters/the final purifier. After the filters, a pressure reducer (12) is connected into the line. It provides the air or gas that is needed to control the regenerating and switch-over procedures, the pressure compensation and the automatic condensate drain.

After the pressure reducer, within the regeneration circuit, a safety valve (11) and a regulating valve (10) are situated. The regulating valve regulates the amount of regenerative air or gas supplied according to its setting.

The regeneration dryer is also equipped with a switch-over valve (14), controlled by solenoid valve (13) and pneumatic actuator (15), which switches to and from the regenerating and drying process.

Pressure compensation valve (5), controlled by solenoid valve (4) makes sure that before switching over from regenerating to

a) to ensure clarity, piping is not shown

drying phase, a compensation of pressure takes place in the regenerating filter.

The operating pressure is indicated by pressure gauge (7). The regenerating pressure is indicated by pressure gauge (6).

A combined pressure maintaining/non-return valve (8) is placed at the gas and/or air outlet (9) of the regenerative dryer, which keeps the pressure at the set minimum.

TECHNICAL DATA

Operating pressure, max. (Setting pressure of safety valve)	90 – 350 bar (2,175 – 5,000 psi)
Flow rate at 200 bar	1500–3500 l/min. (53 – 124 c.f.m.)
Regeneration volume related to 1 bar absolute (equiv. to 5% of delivery)	75 – 175 l/min. (2.65 – 6.6.2 c.f.m.)
Intake temperature, max.	+50 °C (122 °F)
Intake temperature, min.	+ 5 °C (41 °F)
Ambient temperature	+ 5 °C...+ 40 °C (41 °F ...113 °F)
Pneumatic intake and outlet connections, tube diameter	12 mm
Power consumption	0.02 kWh
Pressure dew point of dried medium	-20 °C (- 4 °F)
Length (mm)	1545
height (mm)	1285
Width(mm)	260
Operating voltages	24 VAC, 50/60 Hz
	100 VAC, 50/60 Hz
	110 VAC, 50/60 Hz
	115 VAC, 50/60 Hz
	120 VAC, 50/60 Hz
	127 VAC, 50/60 Hz
	220 VAC, 50/60 Hz
	230 VAC, 50/60 Hz
	240 VAC, 50/60 Hz
	250 VAC, 50/60 Hz
	3800 VAC, 50/60 Hz
	400 VAC, 50/60 Hz
	415 VAC, 50/60 Hz
	440 VAC, 50/60 Hz

Subject to change without prior notice

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2. FUNCTION



The following position numbers refer to standard air flow diagram SECCANT IV, Fig. 4. For detailed information, also see air flow diagram corresponding to your dryer type in the annex.

DRYING CIRCUIT

Both filters of the dryer (1 and 2) are passed through alternately by humid, compressed medium applied from the compressor, and by already dried, expanded medium for regeneration.

Non-return valves (3 and 4) are built into the drying circuit and non-return valves (5 and 6) are built into the regeneration circuit. They prevent the medium from flowing back into the filters as well as overstream of high pressure medium into the depressurized filter which is in the regeneration process.

The humid medium coming from the compressor flows through 4-way switch-over valve (7) to drying filter (1). The switch-over valve is operated by pneumatic actuator (8). The desiccant contained in the dryer cartridge absorbs the humidity from the compressed medium.

Non-return valve (4) prevents the air from flowing over to the depressurized regeneration filter.

Through non-return valve (3), discharge valve with pressure gauge (28), particle filter (9) and pressure maintaining/non-return valve (10) the compressed, and now dry and clean medium flows to the consuming devices.

The dryer operating pressure is indicated at pressure gauge (29).

The drying phase is coupled to the operation of the compressor. When shutting off the compressor, 3/2-way solenoid valve (16) closes, so do the shut-off valves (14) and (15). The **SECCANT** unit is then hermetically sealed to prevent loading of the cartridge with ambient humidity. On restarting the compressor the drying phase will be reassumed where it was interrupted and will continue until the process is switched over by the timer.

REGENERATION CIRCUIT

Drying phase and regenerating phase occur simultaneously during one cycle, i. e. while the drying phase is taking place in filter (1), as shown in flow diagram Fig. 4, the regeneration phase is taking place in filter (2). For that purpose a small amount of the compressed and dried medium is deviated after particle filter (9) and expanded by pressure reducer (11) to approx. 10 bar (145 psi). This pressure is monitored by safety valve (12).

Through regulating valve (13) and non-return valve (5) the regenerative medium flows to filter (2). The desiccant moisturized during the previous drying phase transfers the humidity to the dry, depressurized medium, and will thus be regenerated.

The flow rate of the regenerative medium depends on the adjustment of regulating valve (13). It is set at the required value in the factory. Should the setting have been changed for some reason, the regeneration air or gas flow must be re-adjusted by our technical service. For the flow rate refer to Technical Data in chapter 2.

Non-return valve (6) prevents high pressure air or gas coming from drying filter from entering the regeneration circuit. Pressure gauge (27) indicates the pressure in the regenerated filter.

After the regeneration medium has dried the cartridge, it passes through 4-way change-over valve (7), and shut-off valves (14) and (15) into the open air or to the compressor intake.

PESSURE COMPENSATION

Regeneration is performed at atmospheric pressure. When switching from regeneration to drying phase, abruptly loading the filter with the highly compressed medium coming from the compressor at up to 350 bar (5,000 psi) must be avoided. This would cause excessive wear or even destruction of the molecular sieve filter filling and the cartridge. For this reason, the dryer is equipped with a pressure compensation system.

At the end of the regeneration phase, i.e. every 15 minutes, pressure compensation valve (18) opens by applied control air from 3/2-way solenoid valve (17). At the same time, shut-off valves (14) and (15) receive control medium from 3/2-way solenoid valve (16) and close to avoid regenerative medium from escaping into the open air/to the compressor intake.

A certain quantity of the medium, which is determined by nozzle (19), now flows over non-return valve (31) into the regenerated filter until the pressure inside the two filters is compensated. After 80 seconds, pressure compensation valve (18) closes again, a 3/2-way solenoid valve (16) opens shut-off valves (14) and (15). Switch-over by valve (7) can now take place.

SWITCH-OVER

After a predetermined time interval, e.g. 15 minutes, 4-way switch-over valve (7) changes state. The compressed medium produced by the compressor unit will now be dried in dryer cylinder (2, previously regenerated) while the regeneration of the dehydrating agent takes place in cylinder (1, previously loaded with moisture by drying). Cycle switching, i. e. status change of 4-way switch-over valve (7), is performed automatically by 4/2-way solenoid valve (30) activating pneumatic actuator (8). Pressure gauge (27) now monitors the operating pressure.

CONDENSATE DRAIN

The condensate resulting from the cooling of the compressed medium is drained automatically. Every 15 minutes, 3/2 way solenoid valve (22) applies control pressure to condensate drain valve (23) and the condensate is purged via condensate drain valve (23) and nozzle (24). The condensate can also be drained manually using tap (25) which is used to check the function of the automatic drain device. Refer to maintenance procedures in chapter 6.

Non-return valve with pressure gauge and venting valve (26) prevents already dried air/gas from flowing back to the separator when the condensate is drained.

CAUTION

Disposal of condensate according to applicable local regulations; (in Germany: special waste disposal no. 54405).

PNEUMATIC CONTROL

The air or gas needed to regenerate the filter and to control the pressure compensation, the switch-over and the condensate drain, is regulated by pressure reducer (11). The pressure is approx. 10 bar.

Regeneration

The air or gas needed for regeneration flows through regulating valve (13) and non-return valve (5) into the regenerating filter where it absorbs the humidity in the drying agent. Then it flows through switch-over valve (7) and open shut-off valves (14) and (15) into the open air or to the compressor intake (optional for gas compressors). The shut-off valves are controlled pneumatically by the 3/2 way solenoid valve (16).

Pressure compensation

Every 15 minutes, 3/2-way solenoid valves (17, n.o.) and (16, n.c.) are activated for approx. 80 seconds: solenoid valve (17) receives an electrical impulse, closes and interrupts the flow of control medium to pressure compensation valve (18), which opens then. Solenoid valve (16) receives no electrical impulses, closes and interrupts the flow of control medium to shut-off valves (14) and (15) which also close.

Switch-over

Immediately after pressure compensation, 4/2-way solenoid valve (30) receives an electrical impulse and opens.

Depending on the position of the 4/2-way solenoid valve, the control air or gas flows either to the right or to the left chamber of pneumatic actuator (8). The chamber is put under pressure and so switch-over valve (7) is actuated.

Condensate drain

Every 15 minutes 3/2-way solenoid valve of automatic condensate drain (22) receives an electrical impulse and opens. The control medium now flows to condensate drain valve (23), which also opens.

When drying gas, the control medium flows from solenoid valves (16), (17), (22) and (30) to the intake tube of the compressor.

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FLOW DIAGRAM

A = Inlet
B = Outlet
C = Condensate outlet
D = Regeneration outlet

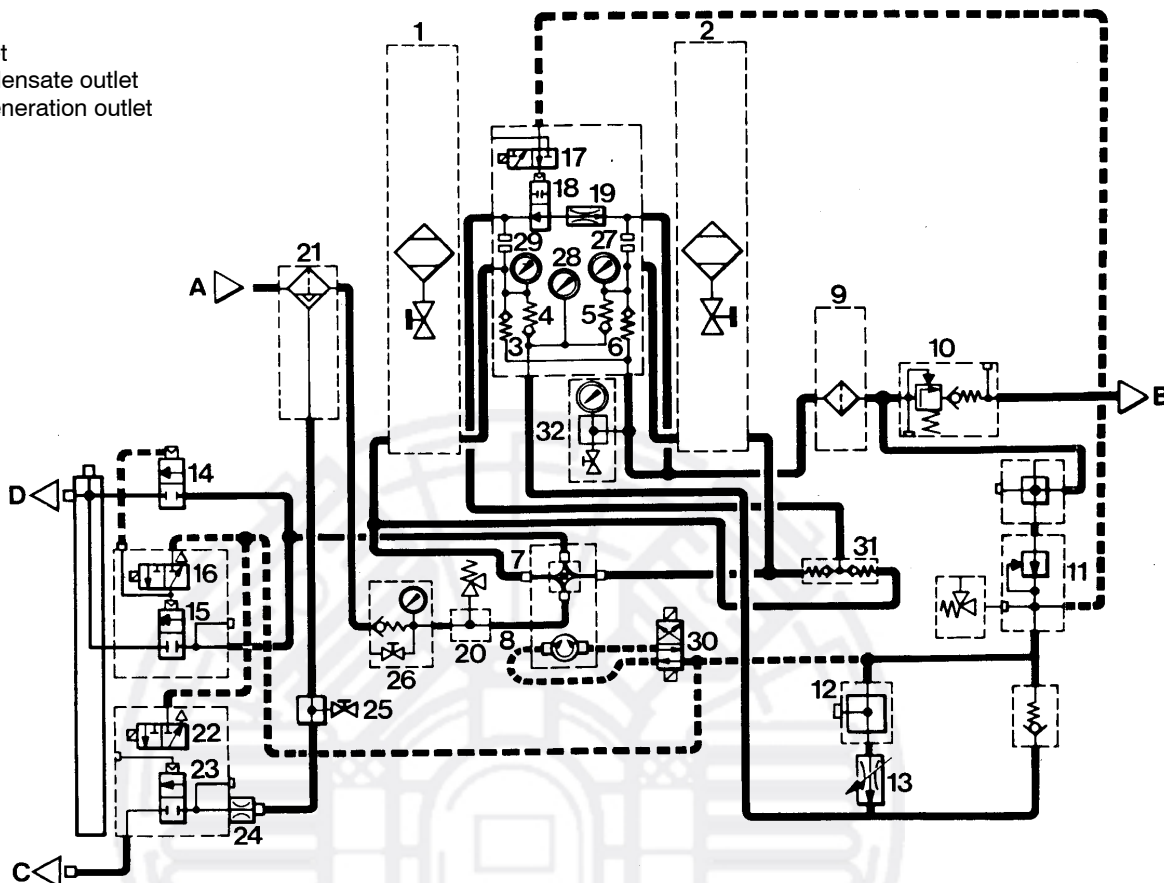


Fig. 4 Standard flow diagram, example SECCANT IV

- | | |
|---|--|
| 1 High pressure filter | 30 4/2-way solenoid valve |
| 2 High pressure filter | 31 Non-return valve |
| 3 Non-return valve | 32 Discharge valve with pressure gauge |
| 4 Non-return valve | |
| 5 Non-return valve | |
| 6 Non-return valve | |
| 7 Switch-over valve | |
| 8 Pneumatic actuator | |
| 9 Particle filter | |
| 10 Pressure maintaining/non-return valve | |
| 11 Pressure reducer | |
| 12 Safety valve 14 bar, control pressure | |
| 13 Regulating valve | |
| 14 Shut-off valve | |
| 15 Shut-off valve | |
| 16 3/2-way solenoid valve for shut-off valves | |
| 17 3/2-way solenoid valve for pressure compensation | |
| 18 Pressure compensation valve | |
| 19 Nozzle | |
| 20 Safety valve, final pressure | |
| 21 Oil and water separator ^{b)} | |
| 22 3/2-way solenoid valve | |
| 23 Condensate drain valve | |
| 24 Nozzle | |
| 25 Manual drain tap | |
| 26 Non-return valve with pressure gauge and venting valve | |
| 27 Pressure gauge, operating pressure | |
| 28 Pressure gauge, regenerating pressure | |
| 29 Pressure gauge, operating pressure | |
| b) Optional extra | |

B-CONTROL UNIT

GENERAL

BAUER B-CONTROL is a free-programmable electronic compressor control system with a modern display. The control system is specially designed for **BAUER units**, and can be set and configured for all **BAUER** models.

HARDWARE AND CONNECTIONS

For reference to the hardware and connections refer to the respective schematic diagram in the annex.

- Power supply for the unit is connected to terminal strip X0/F1, 1 and PE. According to the supply voltage, the power is connected to the respective connection at transformer T1.
- Collective warning signal from the SECCANT dryer to a max. number of 3 compressors is at terminals X0/2 to X0/7.
- Operating status signal from a max. number of 3 compressors to the SECCANT dryer is from terminals X0/9 to X0/14.

CONFIGURATION DATA

The configuration of the software with respect to the hardware is performed in the configuration file. This file is automatically generated at factory start-up, and normally does not need any further modification. If a change should become necessary due to modifications on the unit, please contact the **BAUER** after-sales service dept.

CONTROL AND MONITORING ELEMENTS

The control and monitoring panel features a display, 2 indicating lamps (LED's), as well as 10 soft touch keys to control the compressor and the display.

The function of the control keys is as follows:

- O** Shuts the compressor off. On a higher menu level, returns you to the main menu.
 - I** Starts the compressor, provided there are no failure messages present or maintenance work due. On a higher menu level, returns you to the main menu.
 - ▲** Moves the cursor up. If already in the top line, jumps to the bottom line.
 - ▼** Moves the cursor down. If already in the bottom line, jumps to the top line.
 - ◀** Decreases a selected value. Press and hold will decrease the value increasingly faster.
 - ▶** Increases a selected value. Press and hold will increase the value increasingly faster.
- menu change to the next page of the same menu level
 enter accept the new value and refresh page
 reset change to next higher menu level without storing the changed values.
 code combination key to start initialization routines (setting "restore defaults" in combination with reset key).

General notes on the use of the keys

Please do not be impatient. Allow some seconds for the windows to build up, the time will depend on the amount of information. In the meantime, please do not press any keys, even if you know how to proceed.

The red and yellow LED's next to the display indicate fault and warning messages. The details for the message are shown on the display. The red LED indicates a compressor failure, and the unit will be shut down automatically. The yellow LED indicates a warning, e.g. imminent maintenance work, the compressor will not be shut down.

For new faults or warnings the respective LED will flash quickly until the message is acknowledged with the "reset" key. If the message is still present after pressing the reset key, the LED will change to slow flashing, and would extinguish if the cause of the message would not be present any more. After that, the compressor can be switched on again.

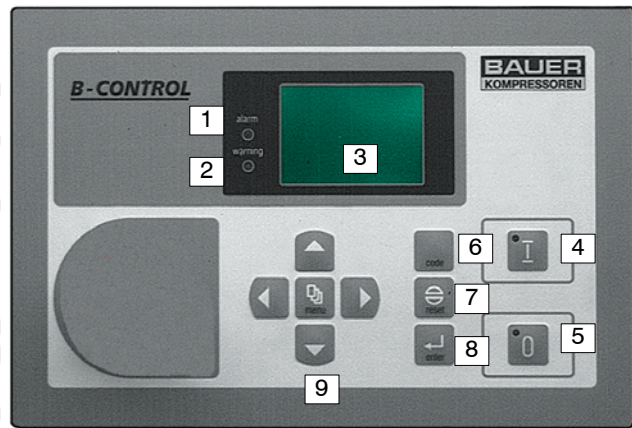


Fig. 5 Controls and monitors

- 1 Alarm indicator (Shut-off)
- 2 Warning indicator
- 3 8 line, 21 char. display
- 4 ON-key with indicator
- 5 OFF key with indicator
- 6 Code key
- 7 Reset key
- 8 Enter key
- 9 Cursor keys with menu key in the centre

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MENU AND NAVIGATION

The 8-line, 21-digit display contains all the important information on the present condition of your **BAUER** unit. Normally, the start page is displayed which shows the most important general data in a very clear presentation. This way you can find out the actual unit status.

According to the operating requirements the menu is split into four levels:

- Level 0:** Main page and survey
- Level 1:** Operation level
- Level 2:** Maintenance level
- Level 3:** Configuration level

Each menu level again consists of several windows or pages which can be paged through comfortably, finally leading back to the start page (roundabout system). In all higher levels consisting of a larger number of pages, direct access to the desired pages from the select menu is possible.

Due to different access codes, changing between operation, maintenance, and config levels is allowed only from the main menu. Within one level, you have free movement without being asked for an access code again. If a higher level has been accessed by entering the required code, the yellow LED will start flashing slowly to indicate that you are staying in a protected area.

The following describes the pages in each level.

LEVEL 0: START PAGE AND SURVEYS

This level consists of four windows or pages giving a quick survey on the status of your **BAUER** unit. At unit start, and also when a signal is received the following page will be displayed showing the most important data at a glance.

By pressing the *menu* key repeatedly, the following three pages of this level are displayed in the order shown below.

By each pressing of the *reset* key the respective previous page will be shown, until finally the main page is reached again.

At the bottom of the main menu page you find the data important and required by the **BAUER** service dept. At the left you find the serial no. of the unit unit, at the right in brackets the installed software version.

From the maintenance page pressing the *menu* key will get you back to the start page, pressing the *reset* key takes you back to the Main Menu page.

HIGHER MENU LEVEL BRANCHING AND CODE REQUEST

In order to divert into the next higher menu level you have to select the Main Menu page (Fig. 8). Select the desired level using the ▲ and ▼ keys and press *enter* key.

Before you can select pages at this level, you are requested to enter the access code. There are different codes for each level which cannot be overridden.

As long as the unit is operating, access to the adjustments of the maintenance and configuration levels is disabled. A respective note will show up in the code window and the display will automatically change back to the main menu page.

Different from the legend to Fig. 5 the cursor (i.e. the highlighted figure) will move to the left or right using the ◀ or ▶ key, respectively. With the ▲ and ▼ keys the highlighted value can be increased or decreased by one. By finishing the code input with the enter key, you will get access to the selected level.

If a wrong code should have been entered, a respective note will be displayed, then the menu returns automatically to the

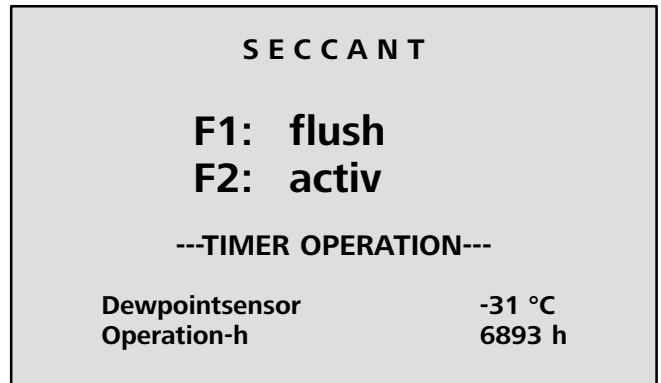


Fig. 6 Start page

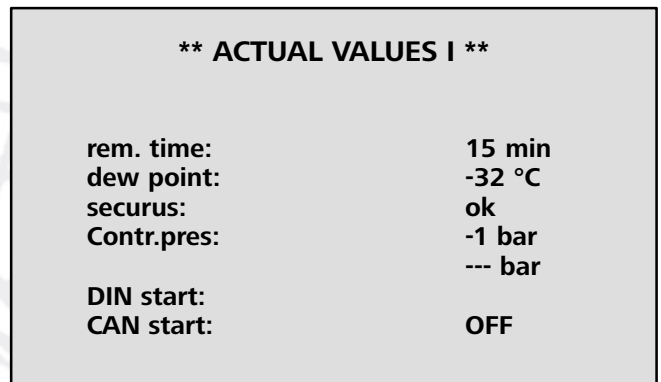


Fig. 7 Actual values page I

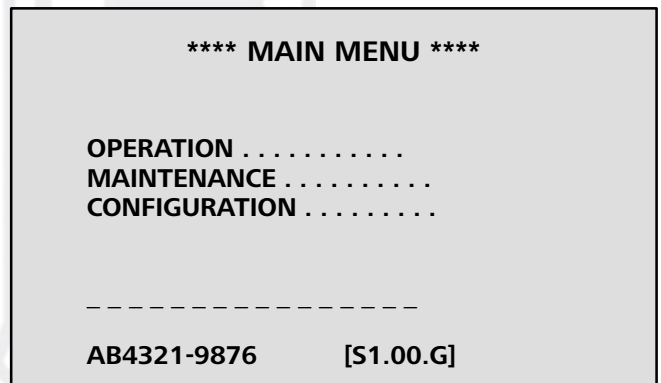


Fig. 8 Main menu page

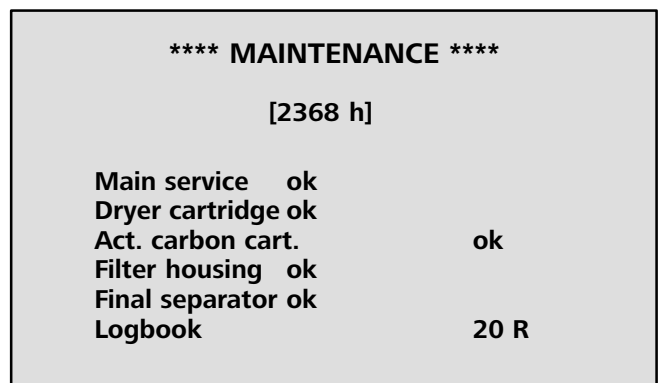


Fig. 9 Maintenance menu

main menu. A new entry may be tried now. The number of attempts is not limited.

With higher priority (level) codes you will automatically get access to all lower priority levels, also, e.g. with the code for the configuration level you will have access to all levels, whereas with the operation code you would have access to the operation level, only.

After entry of the correct access code the display changes to the selected menu level.

OPERATION LEVEL

Entering the operation level, a survey menu will be opened at first (Fig. 10).

The desired parameter can be selected with the ▲ and ▼ keys. By pressing the *enter* key the selected adjustment page will be shown. As an alternative, after having selected a menu point, you may browse through the rest of the pages with the *menu* key.

Operation mode

On the Operation modes page (Fig. 11) you can select between different operation modes:

- Time operation mode
- Test sequence
- Manual change

Time operation mode

When the operation mode is set to time, the filter change-over is controlled by the filter parameters setting for filter/regeneration time, see Fig. 12.

Test sequence

When set to yes, a complete test cycle of the regeneration dryer will be started, including automatic condensate drain, for test purposes.

Manual change

When set to yes, filters will be changed over from filtering to regeneration and vice versa.

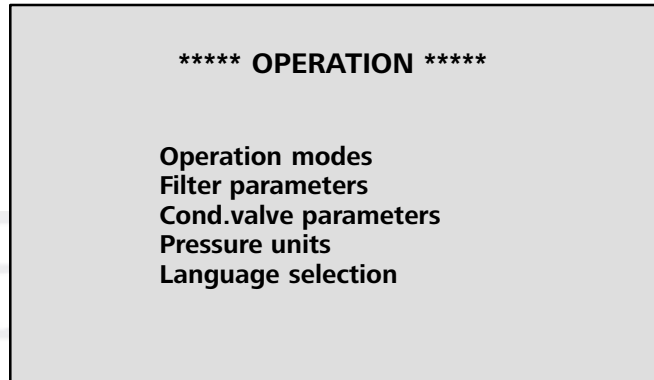


Fig. 10 Operation menu

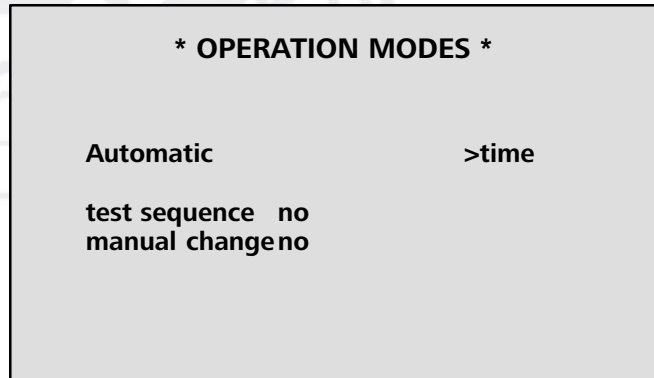


Fig. 11 Operation modes

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Filter parameters

Filter regeneration

This parameter sets the time periods for filter change-over, and pressure balance. The factory setting is 15 minutes and 40 seconds.

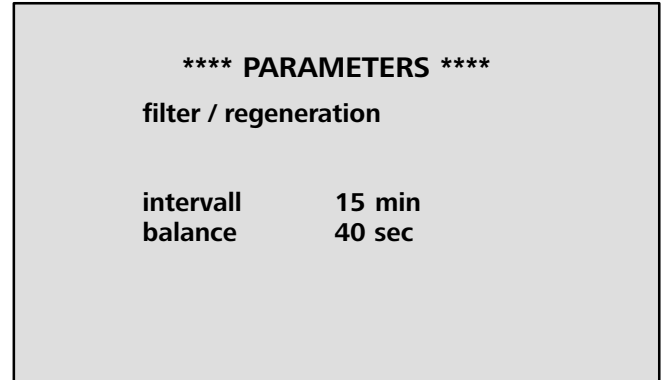


Fig. 12 Filter parameters

Condensate drain valve parameters

Pushing the *menu* key again will lead you to the adjustment of the 1st condensate drain valve.

Consecutive pressing then leads to the adjustment of the other condensate drain valves, if provided.

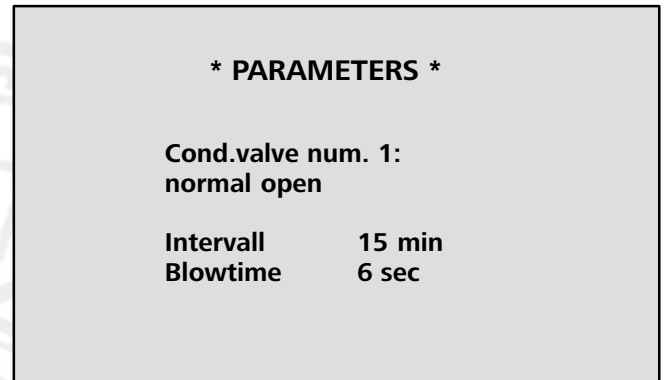


Fig. 13 Condensate drain valve parameters

Pressure units

Pushing the *menu* key again or by directly selecting in the operation menu will lead you to the pressure units page.

With the ▲ and ▼ keys and the *enter* key you can select between the different pressure units.



If you are still using bar or psi units please note that MPa is the only internationally valid pressure unit !

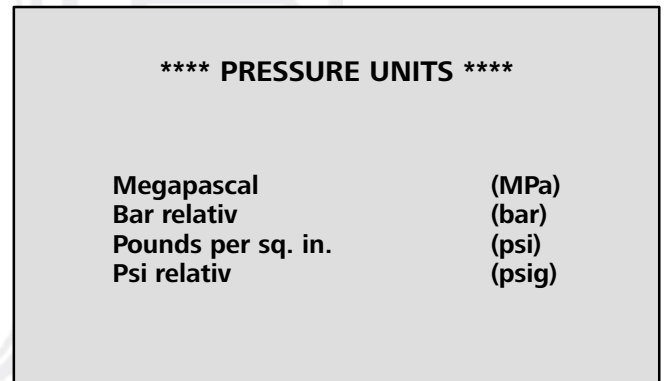


Fig. 14 Pressure units

Language selection

Pushing the *menu* key again or by directly selecting in the operation menu will lead you to the language selection page.

With the ▲ and ▼ keys and the *enter* key you can select between the different languages.



Fig. 15 Language selection

MAINTENANCE LEVEL

The maintenance level is accessible after prompting the correct access code. At first you will come upon the maintenance data window:

The difference now is that there will be a cursor which enables you to jump to additional pages.

For the maintenance data of the first five criteria a similar window will appear where you can see the expired operating time since the last service, and also the allowed interval time in between two services. As soon as the actual time period reaches 90 % of the max. allowed time, the status indication changes from "ok" to "warn" to point out that a service will be due in foreseeable time.

If still no service should be accomplished, indication would then change to "crit", when the unit reaches 100% of the allowed operating hours.

Always keep an eye on the maintenance interval display and service your unit in time! This will not only extend the lifetime of your BAUER unit significantly, but also save you expensive repairs at the most unfavourable point of time.

When the necessary service has been done, then quit the reset by selecting "yes" on the lower right hand side of the display by pressing the ◀ or ▶ key and confirm with the *enter* key. This step is not reversible!

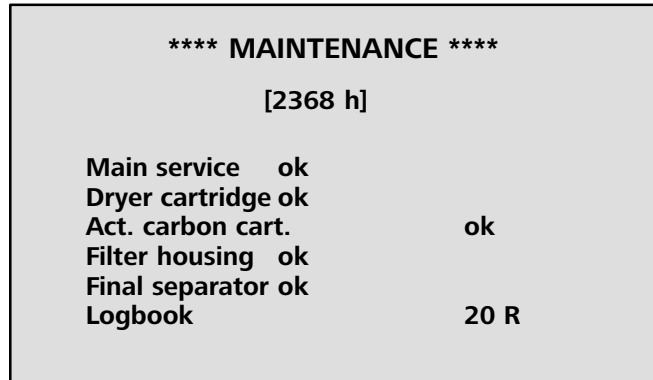


Fig. 16 Maintenance data page

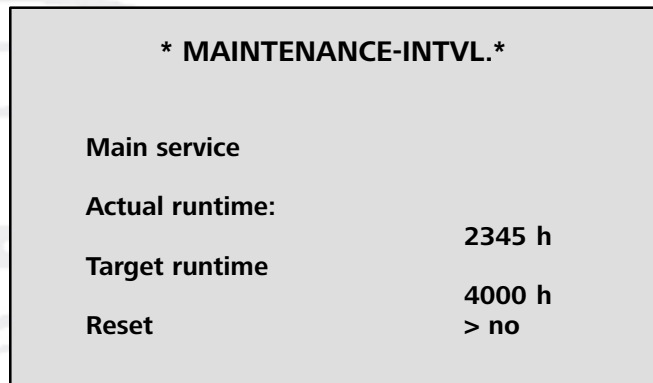


Fig. 17 Main service data page

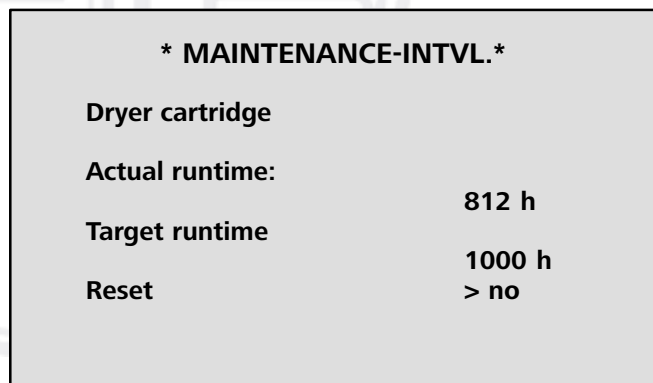


Fig. 18 Dryer cartridge service data page

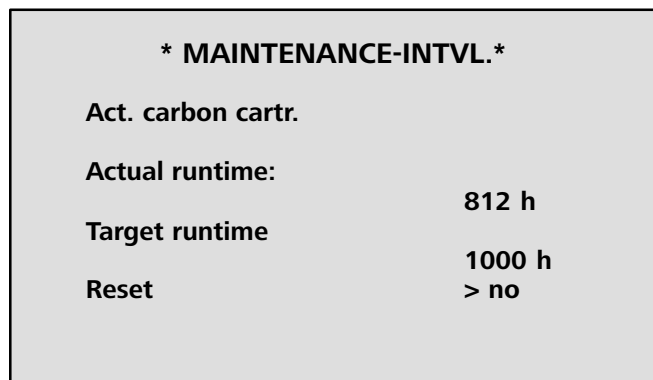


Fig. 19 Activated carbon cartridge data page

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By consecutively pressing the menu key, you can browse through the different maintenance pages.

Direct selection from the maintenance menu is also possible.

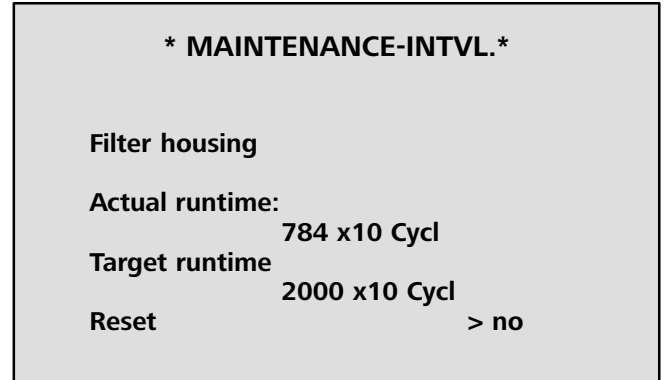


Fig. 20 Filter housing service data page

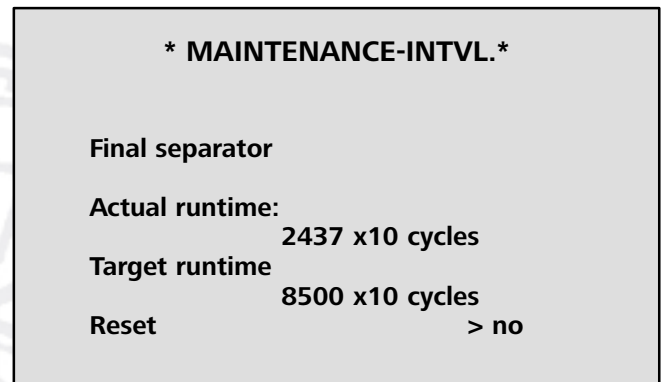


Fig. 21 Final separator service data page

Finally you will get to the logbook page:

Logbook page:

After selection of the menu point "Display" a second window will be opened showing the entries in the logbook. An example is shown in Fig. 23., provided there are entries at all.

The latest (newest) message is shown as entry no. 1. If this is an error message, it will be shown in bold letters and with two digits, if it is an operation message, it will be in one line with the respective headline.

Using the ▲ – und ▼-buttons, the different entries can be selected.

The print function is not activated for customer's use. It allows the logbook to be printed at **BAUER** service dept. with a special service printer.

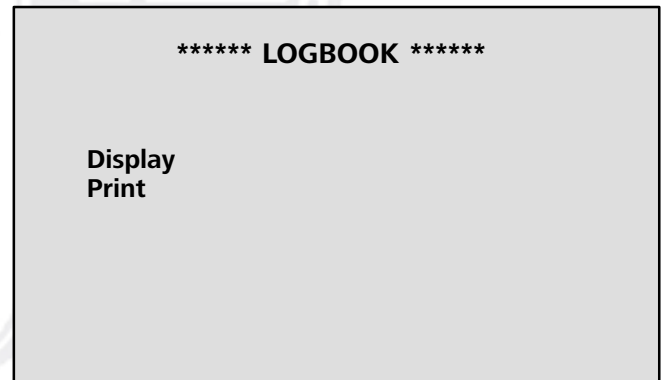


Fig. 22 Logbook page

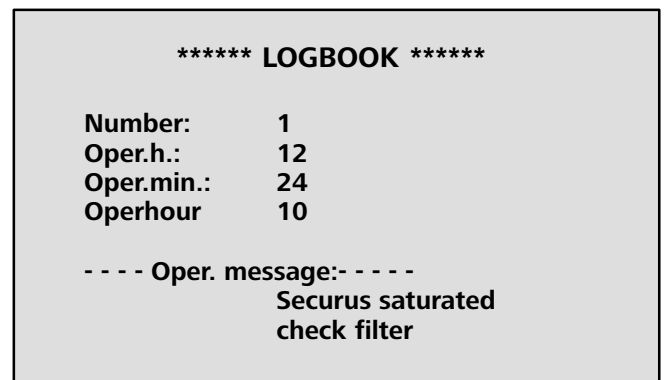


Fig. 23 Logbook page

CONFIGURATION LEVEL

The configuration level allows basic adjustments to be changed. Because of the possibility to change also values concerning the warning and safety adjustments, this level is accessible only with a special code.

The following menu pages can then be selected.

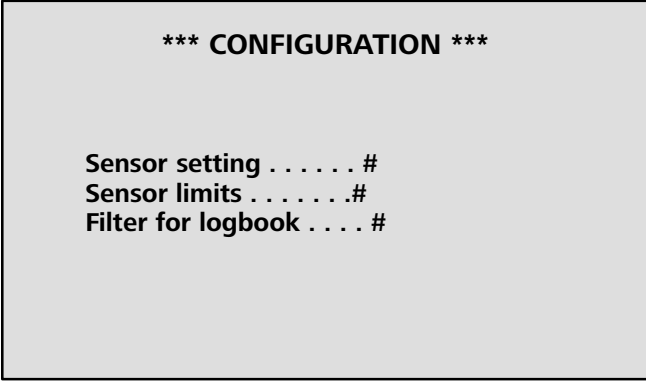


Fig. 24 Configuration page

Sensor setting

The sensor calibration is performed in the same way for all six possible sensors. Under "actual value" the present, uncorrected raw value is displayed. With "offset" the sensor characteristic can be shifted up or down, with "factor" the slope of the characteristic can be changed. With all BAUER sensors, this should be necessary in very special applications, only.

For both adjustments a reference instrument to measure the actual value is necessary. By changing the "offset" and "factor" values with the ◀ or ▶ keys you can adapt the calculated characteristics to your specific requirements. The resulting, corrected actual value will be displayed in the 4th line. Only this value will be shown in all the other windows.

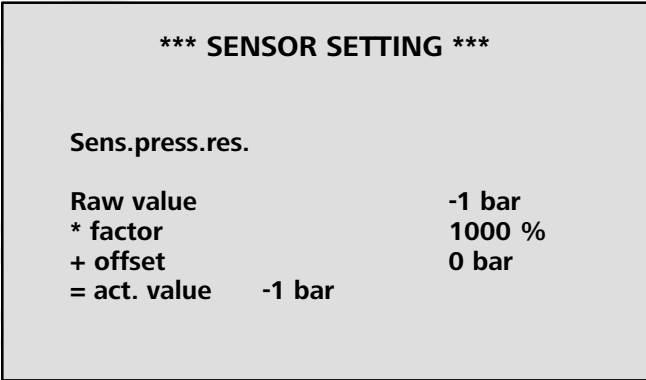


Fig. 25 Sensor setting page

Sensor limits

The sensor limits adjustment is performed in the same way for all six possible sensors.

Four values can be adjusted for each sensor.

The following table shows which values are actually processed for each sensor. Adjustment is performed as usual by selecting the value which you want to change with the ▲ and ▼ keys and increasing or decreasing the values with the ◀ and ▶ keys. After all values have been changed as desired, press the enter key to accept and store the new values. Now this new values are active throughout the program.

Please note that the limit values can only be adjusted in "bar" regardless of the pressure units you have selected for being displayed.

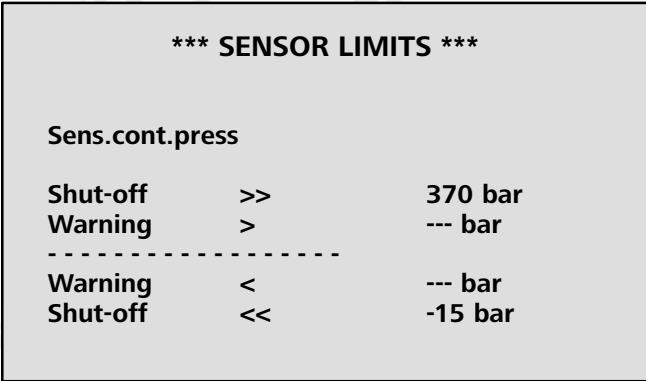


Fig. 26 Sensor limits page

Filter for logbook

The filter for the logbook is defined as follows: with the ▲ –and ▼– keys the respective message is selected. Pressing the ◀ – or ▶– keys sets the message or error to be recorded or not. On "Enable?" "yes" the message will be recorded. On "no" it will not be recorded.

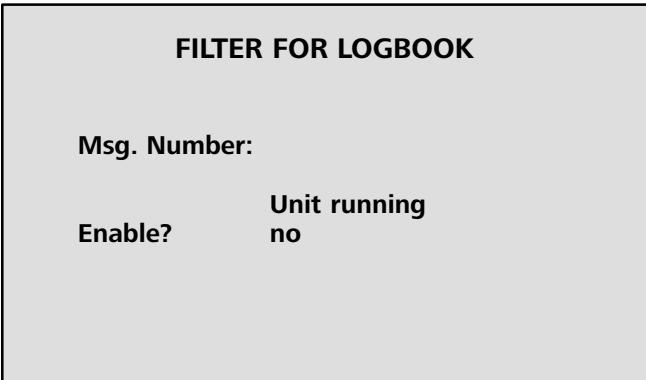


Fig. 27 Filter for logbook

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Initialization

RESETTING THE DEFAULT VALUES

To reset the B-Control to the default settings, press and hold the *code* and *reset* keys while switching on the main switch.

After a short period, while still pressing the *code* and *reset* keys, you will be asked if you want to select the default settings. With the ▲ or “I” key you select “yes”, with the ▼ or “0” key you select “no”. Accept the selection with the *enter* key. The start page of the selected menu will appear. With the exception of the maintenance data which of course will be carried on, you will find the original factory installed settings of your BAUER unit.

Control voltage transformer

The B-Control is operated with a control voltage of 24 VDC, the contactors and solenoid valves are operated with 24 VAC. These control voltages are generated by transformer T1 (Fig. 28).

The primary voltage is taken from 2 phases of a three-phase network. The transformer has a terminal strip on the primary side with connection possibilities for different supply voltages. The control system can therefore be adjusted quickly to the above-mentioned voltages. Only the power unit (contactor and overload relay) has to be individually adjusted to the motor current.

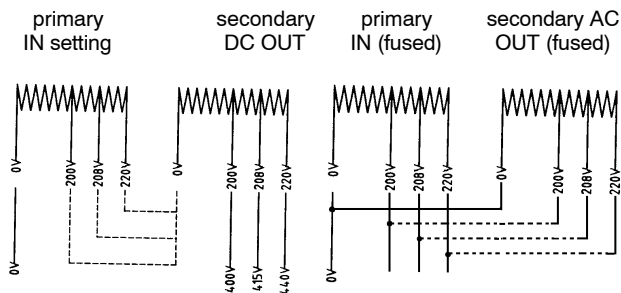
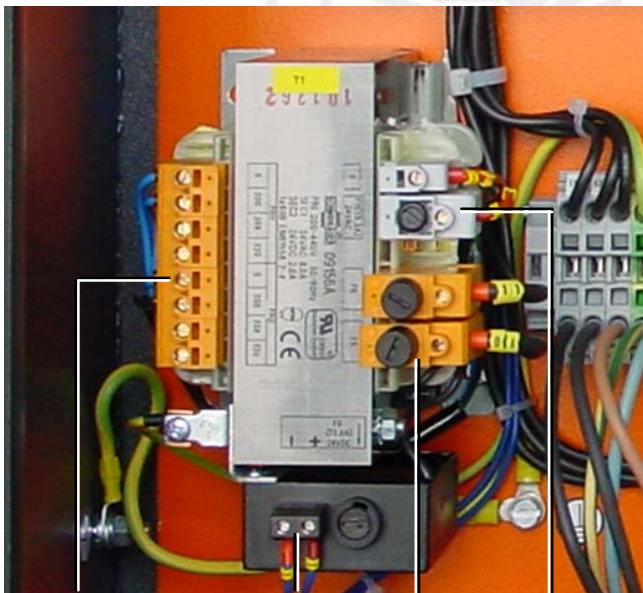


Fig. 28 Control voltage transformer

Technical data

Processor	Motorola 68332
Memory	512 kB flash memory (zero voltage protected)
	512 kB RAM
	256 kB EE-PROM configuration memory (zero voltage protected)
Serial interface	RS232 max.19200 Baud
	9 pole D-Sub plug (male)
CAN interface	CAN High-Speed ISO DIS 11898
	max. 500 kBit/s
Digital input	6 x 24V
	ON status at > 15 volts
	OFF status at < 5 volts
	max. input voltage: 30 volts
	Input resistance: 5 kOhm
Digital output	9 relays ;1 single pole, double throw (alarm)
	max. 8 A at 250 VAC
Analog input	3 x 4-20 mA active (pressure sensors)
	2 x KTY84 (temperature sensors -40...+300 °C)
	1 x 10 volts 3-wire, with supply voltage 10,5 volts (SECURUS)
Display	graphical LCD, 128x64 pixels, background illuminated
	8 rows with 21 digits ea. at standard letter size
Keyboard	10 soft touch keys
Operating voltage	24 VDC
	operative range 18-30 VDC
Environment	storage: -20 to +70 °C at 5 to 90% relative humidity, non-condensating
	operation: -15 to +60 °C at 5 to 90% relative humidity, non-condensating
Dimensions	over all dimensions: 270x180x60 mm (LxHxW; without emergency shut-off button)

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3. INSTALLATION, OPERATION

INSTALLATION

Install regenerative type dryer according to Fig. 29.

For maintenance purpose, shut-off valves (2) have to be provided before and after the dryer (1), as well as a bypass valve (3).

A pressure maintaining/non-return valve (4) is interconnected into the dryer outlet line. This will maintain the pressure within

the dryer at a constant level to ensure continuous operation and drying process.

Electrical connection of the dryer must be carried out by a specialist in accordance with the technical standards of the local electricity company.

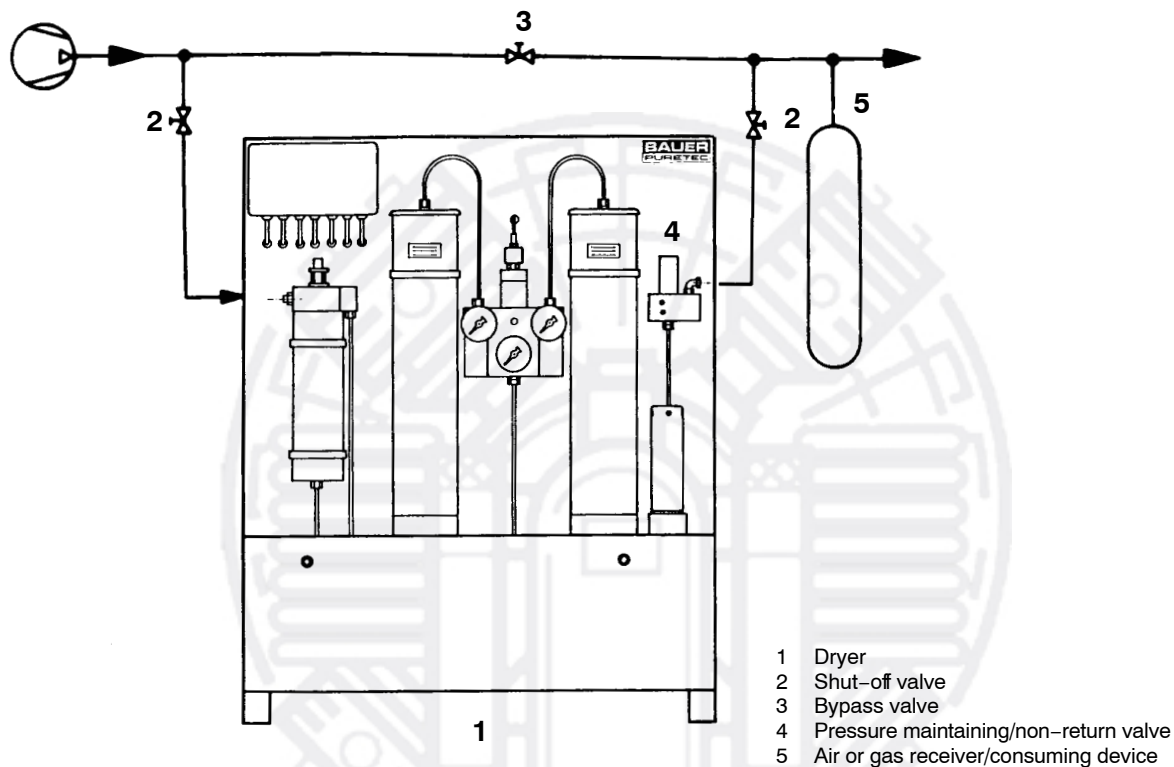


Fig. 29 Installation diagram

TAKING INTO OPERATION

When operating equipment for the first time, or reactivating it after maintenance, run up dryer to operational pressure. As a pressure maintaining/non-return valve is connected at the outlet side, this will happen automatically.

The dryer requires a run-up time of approx. 1 hour until full power is developed. Valid meter readings are not obtained before a stabilization period of approx. 2 to 3 hours, depending on the meter in use.

The dryer operation can be monitored with three pressure gauges mounted on the valve block.

The pressure gauge connected to the drying filter should indicate the applicable operating pressure. The other pressure gauge is connected to the regenerating filter, and should indicate zero during this phase. The lower pressure gauge should also indicate zero.

4. INSPECTION AND MAINTENANCE

WARNING

Depressurize system by means of discharge valve (28, Fig. 2 and 28, Fig. 3) and disconnect it from the electrical supply before starting any maintenance work.

CAUTION

Check the complete system for leakage from time to time by brushing all fittings and couplings with soapy water or spraying with leak test spray. Repair any leakage.

CAUTION

Never repair pressure lines by soldering or welding.

MAINTENANCE INTERVALS

Interval	Maintenance work
1/2 hour after start-up for first time operation or after maintenance work	Check all bolts and nuts for tightness, all tube connections for leakage
Daily before taking unit into operation	Operate unit to final pressure and check function of final pressure switch or sensor
Weekly or as required	Check automatic condensate drain; open manual condensate drain tap
1000 operating hours	Change purifier cartridge (SECCANT IV A, only)
2000 operating hours	Change both drying cartridges
	Change separator's coalescent filter cartridge
	Change particle filter cartridge
after max. number of cycles ^{a)}	Replace oil and water separator
after max. number of cycles ^{a)}	Replace both regenerating filters

a) Refer to pressure vessels instruction manual in the annex of this manual.

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CARTRIDGE CHANGE

The activated charcoal cartridge of the purifier requires maintenance every 1,000 operating hours, the drying cartridges have to be changed every 2,000 operating hours.

- Depressurize system completely and disconnect from electrical supply.
- Remove filter head with special spanner supplied with the unit (1, 2, Fig. 30).
- Screw cartridge removal tool supplied with the unit (3, 4) onto cartridge and pull out cartridge (5).
- Clean filter housing.
- Remove upper and lower cap of the new cartridge.
- Lubricate threads and O-ring with Never-Seez White NSW-14 (part no. N18112) or white petrolatum (DAB9).
- Insert cartridge into filter housing and press down firmly.
- Screw in filter head with special spanner. Torquing is not required since air-tightness is effected by means of an O-ring.

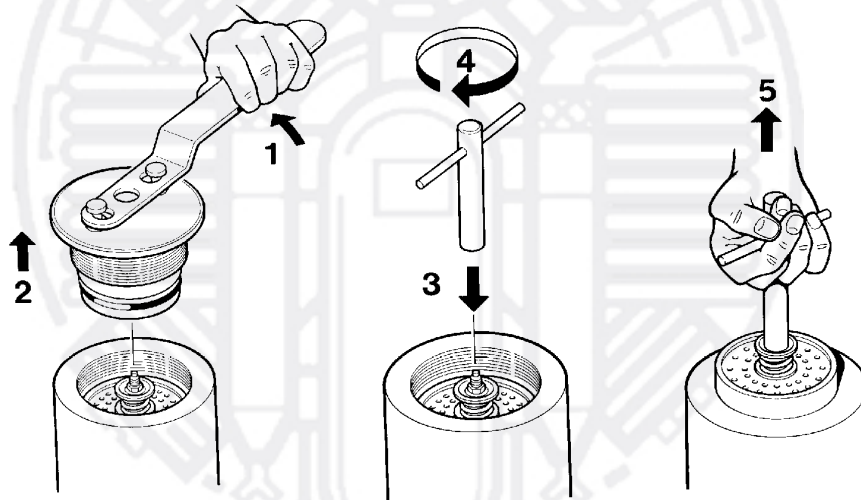


Fig. 30 Cartridge change

MAINTENANCE OF PRESSURE VESSELS**Oil and water separator**

The coalescent filter micro-cartridge of the oil and water separator requires maintenance every 2,000 operating hours or at least annually.

To remove the cartridge proceed as follows (see Fig. 31):

- Remove tubes from male elbow or non-return valve (2), respectively.
- Screw off filter head (3) and remove.
- Screw off micro-cartridge (1) from filter head (3) and screw a new one.

CAUTION

The oil and water separator is subject to dynamic load. It is designed to withstand a certain no. of load cycles. (1 load cycle = 1 pressurization, 1 depressurization) at the specified pressure range. The oil and water separator must be replaced when the maximum permissible no. of load cycles has been reached. Refer to the pressure vessel operating manual delivered with the unit.

The maximum recommended amount of four load cycles per hour should not be exceeded. If it is possible to regulate the operation of the unit to such a degree as to achieve four load cycles per hour, in our opinion this would be an optimum between usage and actual life.

Regenerative filters

Due to the continuous switching from drying (high pressure) to regeneration phases (low pressure), the drying filters are subject to dynamic load. The filter lifetime is restricted in this case to a maximum load cycle number.

The cycle counter provided in the control and monitoring unit indicates the number of load phases.

CAUTION

For determination of max. number of load cycles of pressure filters see pressure vessels instruction manual in the annex of this manual.

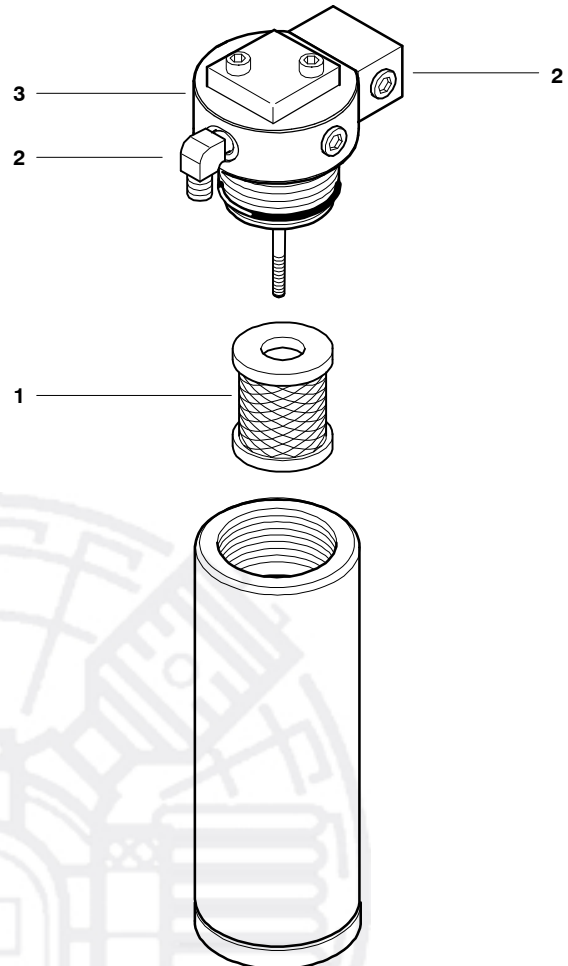


Fig. 31 Oil and water separator

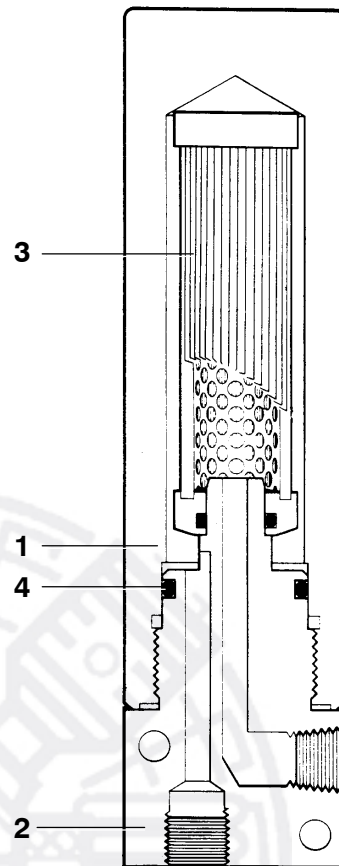
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Final purifier (on SECCANT IV A)

The final purifier is equipped with a cartridge filled with activated charcoal. The cartridge has to be replaced every 1,000 operating hours. To do so, depressurize system completely by discharge valve (28, Fig. 2 / Fig. 3) installed downstream of the final purifier. Then proceed as described on page 19.

Particle filter

The filter element (3, Fig. 32) has to be replaced every 2,000 operating hours. Remove filter housing (1) from filter head (2), then remove filter insert. Replace O-ring (4) on filter bottom before installing new filter element. Lubricate threads of particle filter and O-ring with white petrolatum. Apply sparingly.



CHECKING THE AUTOMATIC CONDENSATE DRAIN UNIT

The operation of the automatic condensate drain should be checked once a week. Proceed as follows:

Open once a week manual condensate drain tap shortly after the condensate drain unit has drained the oil and water separator. Observe the drainage of condensate from the tap. If a lot of condensate is drained, this is an indication that the automatic drain system is not working properly. If hardly any condensate emerges, the system is working normally.

Fig. 32 Particle filter

5. TROUBLE-SHOOTING

Trouble	Cause	Remedy
Excessive humidity of dried air/gas	Dryer does not switch from drying to regeneration due to defective switch-over valve	Check switch-over valve and/or control circuit and replace if necessary
	Desiccant in cartridge overaged	Replace cartridge or desiccant
	No or little regenerative air or gas through respective dryer cartridge, due to misalignment of the pressure regulating valve	Readjust valve
Switch-over valve does not switch	Lack of control air or gas, due to defective pressure reducer	Replace pressure reducer
	4/2-way valve defective	Replace 4/2-way solenoid valve
	4/2-way valve receives no switching signal, because of defective control circuit	Check control circuit and replace defective parts
	Pneumatic actuator defective	Check actuator and replace if necessary
Both pressure gauges indicate the same value	Non-return valve in valve block contaminated	Replace non-return valves
	Pressure compensation valve defective	Check valve, replace if necessary
Both pressure gauges indicate zero	Switch-over valve blocked, no air or gas flowing through dryer	Check switch-over valve and control circuit; replace if necessary
No regenerative air or gas out of shut-off valves	3/2-way solenoid valve or shut-off valves closed defective or not receiving electric control	Check 3/2-way solenoid valve and replace if necessary
	Regulating valve closed	Readjust regulating valve
	Non-return valve in valve block blocked	Replace non-return valve
Safety valve downstream of pressure reducer blows off	Pressure reducer defective	Check pressure reducer and replace if necessary
	Safety valve defective	Replace safety valve
	Regeneration pressure too high, because of defective non-return valve in valve block	Replace non-return valves

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6. ANNEX

- **Schematic diagrams, standard**
Air flow diagrams, standard
Drawings
Parts lists, standard

or, depending on order

- **Special documentation**
Schematic diagrams
Air flow diagrams
Illustrations
Parts lists

This special documentation supersedes and/or supplements the respective paragraphs/figures of the Instruction Manual



