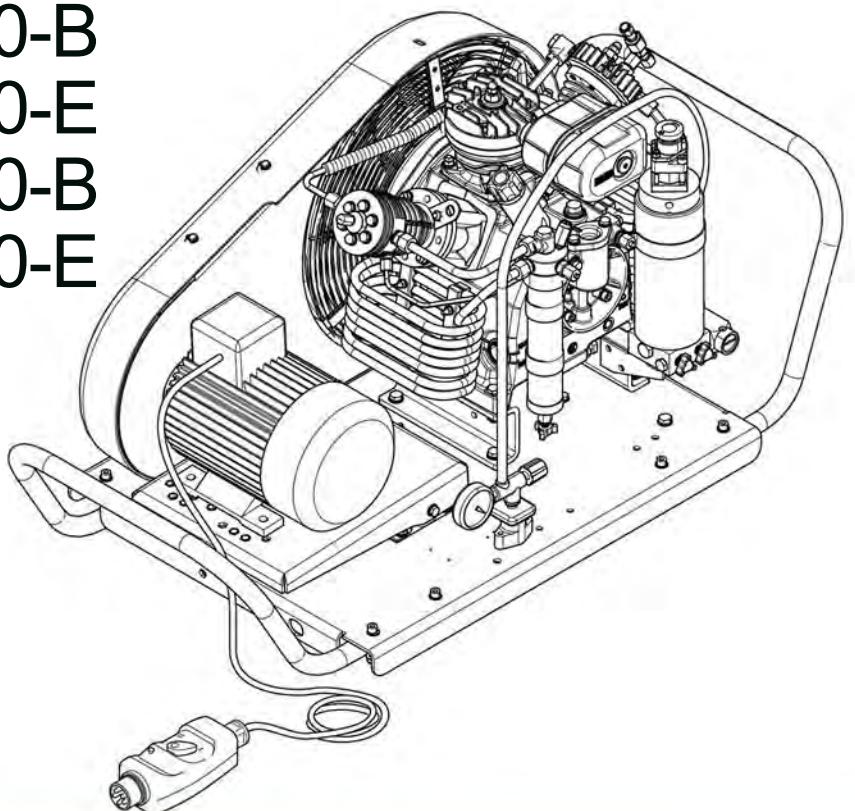


# OPERATING MANUAL

High Pressure Compressors for Breathing Air

## Profi-Line

- › CAPITANO 140-B
- › CAPITANO 140-E
- › MARINER 200-B
- › MARINER 200-E
- › MARINER 250-B
- › MARINER 250-E
- › MARINER 320-B
- › MARINER 320-E





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## 1 Preface

### 1.1 Manufacturer's details

#### 1.1.1 Contact data BAUER KOMPRESSOREN

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Fax: +49 89 7 80 49-167  
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[info@bauer-kompressoren.de](mailto:info@bauer-kompressoren.de)

## 1.2 About this manual



Depending on the version, the unit may look different from the images in this document.

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### 1.2.1 Purpose of this manual

This manual will make it easier to become familiar with the product and make use of its intended application possibilities. The manual contains important information for operating the product safely, properly and economically. Following the instructions in this manual will help to avoid dangers, minimise repair costs and down-times, and increase the reliability and service life of the product.

### 1.2.2 Contents of this manual

In addition to general safety instructions and a product description, this manual contains instructions for all life phases of the product ranging from unpacking to disposal.

Further information like drawings, diagrams, spare parts list or accompanying booklets as well as manuals of additional devices (if available) are enclosed at the end of this manual and are a part of this manual, refer to [Chapter 11.1, Page 133](#) and the following.

All the information in this manual is correct at the time of printing.

BAUER KOMPRESSOREN reserves the right to make technical changes that facilitate an improvement or raise the safety standard.

### 1.2.3 Target groups of this manual

The manual is intended for the following target groups:

- Operating company of the machine
- Operating personnel
- Assembly personnel and maintenance personnel
- Testing personnel

### 1.2.4 Symbols used

The following symbols are used in the manual:

Symbol	Meaning
	Dangers for persons. For more information, see <a href="#">Chapter 2.3 Display and meaning of warnings, Page 16</a> .
	Information for understanding or optimising the work processes.
	Information for solving problems or for troubleshooting.
	Prerequisite for an operating procedure.
	Operating procedure, also measures in a warning.
1. 2. ...	Step-by-step operating procedure. Follow the sequence.
	End result
	Follow the instructions for safe disposal.

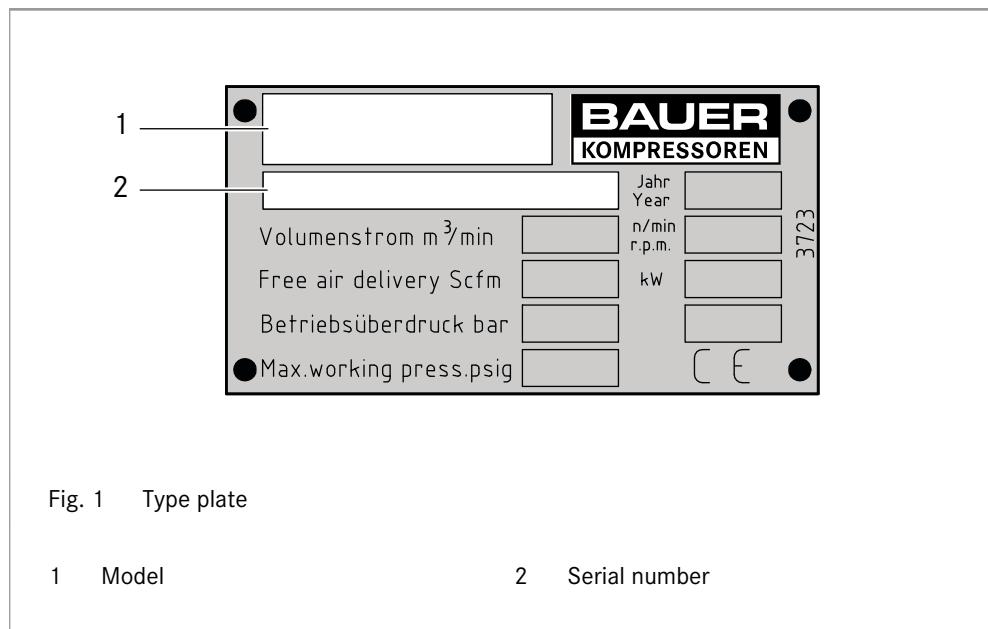
Tab. 1 Symbols used and their meaning

## 1.3 About this product

### 1.3.1 Identifying the product

This manual is applicable for the models and series specified on the title page.

- Take the exact model and serial number from the type plate and enter into the figure below.
- In case of customer service enquiries, always specify the model and serial number of the product.



### 1.3.2 Application

The machine is intended exclusively for the compression and the storage of the medium specified, under consideration of the conditions specified, see Technical Data.

### 1.3.3 Scope of supply

The minimum scope of supply comprises:

- the product
- all necessary consumable material such as oil and filter (except fuel), filled in an accessory kit already installed
- this manual

### 1.3.4 Variants

Type designation	Operating pressure max. [bar]	Delivery rate [l/min]	Drive motor
CAPITANO 140-B	350	140	Petrol 4-stroke
CAPITANO 140-E	350	140	3-Phase AC 400V, 50 Hz
MARINER 200-B	350	200	Petrol 4-stroke
MARINER 200-E	350	200	3-Phase AC 400V, 50 Hz
MARINER 250-B	350	250	Petrol 4-stroke
MARINER 250-E	350	250	3-Phase AC 400V, 50 Hz
MARINER 320-B	420	320	Petrol 4-stroke
MARINER 320-E	420	320	3-Phase AC 400V, 50 Hz

Tab. 2 Versions

### 1.3.5 Equipment

The models contain the following components as standard:

- Carrier frame
- Operating voltage 400 VAC / 50 Hz (only units with electric motor)
- Intake hose (only units with petrol engine)
- Motor protection switch (units with 400V / 50Hz including plug)
- Filter system:
  - CAPITANO 140 and MARINER 200: Filter system P21
  - MARINER 250 and MARINER 320: Filter system P31
- TÜV type-tested final pressure safety valve
- Filling device:
  - CAPITANO 140: 1 x 200 bar or 1 x 300 bar
  - MARINER 200 & 250: 2 x 200 bar or 2 x 300 bar
  - MARINER 320: 4 x 200 bar or 4 x 300 bar
- manual condensate drain

### 1.3.6 Options



The actual range of options of the unit can be read about in the sales documents.

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The following additional equipment is optionally available:

- Trolley
- Special operating voltage (standard operating voltage = 400 V / 50 Hz)
- Automatic condensate drain
- Intake hose (only units with petrol engine)
- Telescopic intake tube (only CAPITANO 140 and MARINER 200)
- Intermediate separator after 1st compressor stage
- Compressor control system with semi-automatic or fully-automatic final pressure switch-off
- Filter system:
  - CAPITANO 140 and MARINER 200: Filter system P31
  - MARINER 200, MARINER 250 and MARINER 320: Filter system P41
- Filter monitoring:
  - B-TIMER Mini-Computer
  - SECURUS monitoring unit (only in connection with filter system P41 and compressor control system)
- Additional filling devices
- Switch-over device for the filling of 200 bar and 300 bar cylinders

### 1.3.7 Applied standards

#### Declaration of conformity

The product has been constructed in line with the directives listed in the conformity declaration or the state of the art and recognised safety-related regulations; see [Chapter 11.1 Declaration of conformity, Page 133](#).

#### CE mark



With the EC mark affixed on the product, BAUER KOMPRESSOREN declares that the product satisfies the application requirements specified in the harmonisation legislation of the European Community provided for its affixing.

## 2 For your safety

### 2.1 Intended usage

The machine is intended exclusively for the compression and the storage of the medium specified, under consideration of the conditions specified, see Technical Data.

Proper use also includes:

- the compliance with this manual and the installation instructions as well as the fulfilment of the installation requirements.
- the compliance with the maintenance intervals and the fulfilment of the maintenance works
- the fulfilment of the applicable regulations

Any use apart from those mentioned above is considered to be not intended.

### 2.2 Improper use

Any use apart from the intended use mentioned above is considered to be not intended. The manufacturer/supplier can assume no liability for damage resulting from this type of usage. The user alone bears the risk of this. A claim for guarantee shall be rendered inapplicable in the following cases:

- In the event of improper use.
- In the event of non-compliance with the performance limits and the authorized operating conditions of the machine.
- When operating without safety equipment or with incorrect or non-functional safety equipment.
- If unauthorized or unqualified persons work with or on the machine.
- If unauthorized operating supplies are used.
- If accessories and spare parts that are not made for the machine are used. Only original spare parts may be used.
- If unauthorised modifications, alterations or program changes are carried out on the machine.
- If modifications or repairs are carried to pressure vessels that must be accepted, without having obtained consent or another acceptance by an expert technician or audit authority of the operator's country.

## 2.3 Display and meaning of warnings

### 2.3.1 Hazard classes

Important instructions regarding personal protection and safe operation are indicated in the manual in distinct hazard classes. The hazard classes explain how states or individual steps of an operation sequence are dangerous and can cause damage.

Hazard class	Description
DANGER	Indication of an immediate imminent danger. If the warning is not observed, this will result in death or serious injuries.
WARNING	Indication of a potentially dangerous situation. If the warning is not observed, this can result in death or serious injuries.
CAUTION	Indication of a potentially dangerous situation. If the warning is not observed, this can result in minor injuries.
NOTICE	Indication of a potentially dangerous situation. If the warning is not observed, this can result in material damage.

Tab. 3 Hazard classes

### 2.3.2 Structure of the warnings

The warnings describe the type and source of danger, the consequences of not heeding these warnings, and measures to be taken to avert the danger. A warning is always structured according to the following pattern:

#### **WARNING**

##### **Type and source of danger.**

Consequences of not heeding the warning

➤ Measures for averting the danger.

### 2.3.3 Danger warnings on the machine

Depending on the construction and purpose of use, the following indications are affixed to the machine and included in the manual; these indications point to potential dangers:

Symbol	Meaning
	Caution, automatic control!
	Caution, hot surfaces!
	Caution, electric shock!
	Follow the instructions
	Wear hearing protection
	Pay attention to the direction of rotation

Tab. 4 Danger warnings on the machine

## 2.4 Product safety

### 2.4.1 Fundamental safety information

#### Fundamental dangers

The following safety measures always include:

- The machine should only be used in a technically perfect condition and in an intended, safety and danger-aware method, taking into account the operating instructions.
- Faults that have a negative effect on safety must be immediately rectified.
- In addition to the manual, follow and advise the generally applicable binding regulations for accident prevention and for environmental protection.

#### Danger due to electric current

Work on electrical units or operating equipment may only be carried out by an electrical technician or other trained persons working under the guidance and supervision of an electrical technician and must be performed in accordance with electrotechnical regulations.

- Only use original fuses with the current stipulated. In the event of faults in the electrical power supply, switch off the machine immediately.
- Disconnect machine parts on which inspection, maintenance or repair work is carried out. Once the components have been isolated from the supply, first check that they are de-energised and then short-circuit them before also isolating neighbouring energised components.
- Check the electrical equipment of a machine on a regular basis. Defects such as loose connections or scorched cables must be rectified immediately.
- If work on live parts is required, enlist a second person who can activate the emergency stop switch in an emergency. Cordon off the working area with a red-and-white safety chain and a warning sign. Only use insulated tools.
- All persons who handle electrical components and equipment that is fitted in electrical components must be earthed.
- Measuring instruments and devices must be earthed. Measuring tips on potential-free measuring instruments must be briefly earthed on suitable earthed surfaces before being used to take measurements.

#### Danger due to pneumatics

Work on pneumatic devices must only be carried out by persons having special skills and experience with pneumatics.

- All lines, hoses and screwed fittings should be checked regularly for leaks and externally detectable damage. Any damage must be rectified immediately. Compressed air or gases coming out can cause injuries and fires.
- Before commencing repair work, depressurise any sections of the system and pressure lines that are going to be opened.
- Lay and fit the pressure lines properly. Do not swap the connections over. The fittings, length and quality of the pressure lines must comply with requirements.

**Danger due to gas, dust and smoke**

- When working with smothering gases, you must monitor the oxygen concentration in the room using a mobile gas measuring device.
- When working in confined spaces, ensure adequate ventilation and follow existing national regulations where applicable.
- Execute welding, flame-cutting and grinding work on and next to the machine only when the work has been specifically approved.
- Before welding, flame-cutting and grinding, clean the machine and surroundings of dust and flammable materials and ensure adequate ventilation to avoid a danger of explosion.

**Danger due to oil, grease and other chemical substances**

- When handling oils, grease and other chemical substances, observe the safety regulations applicable to the product.

**Danger due to noise**

- The noise protection equipment on the machine must be in the protection position when the equipment is running.
- Wear the specified personal hearing protection.

**2.4.2 Safety instructions regarding transport and loading work**

Carry out the following measures to ensure safe transport:

- Machines, individual parts and larger components must be securely fastened to lifting tackles.
- Do not stand or work under suspended loads.
- Use only experienced persons for slinging the loads and instruct the crane drivers. The instructor must be in view of the operator or in voice contact with him.
- Use only suitable lifting tackles, load carrying equipment and transport vehicles with adequate carrying capacity.
- Secure the load in a reliable manner. Use suitable lashing points.
- Fit transport securing devices to the machine for transporting if necessary. Fix the relevant sign. Remove the transport securing devices before commissioning/recommissioning.
- Re-fit and secure the parts removed for transport purposes before recommissioning.
- Isolate the machine from all external energy supplies, even if the location to be changed is over a small distance. Connect the machine properly to the mains before recommissioning.

### 2.4.3 Safety information regarding operation

Carry out the following measures to ensure safe operation:

- Refrain from any working practices which may compromise safety.
- Only operate the machine if all protection equipment and safety-related equipment (e.g. detachable protection equipment, emergency stop equipment and noise reduction devices) are present and functioning correctly.
- In the event of malfunctions, stop and secure the machine immediately. Any fault must be rectified or eliminated immediately.
- Switch the machine on and off and manage indicator displays as stipulated in the operating manual.
- Before switching on / starting up the machine, make sure that there is no risk of it harming anyone whilst in operation.
- Adhere to the activities and dates for setting, maintenance and inspection as stipulated in the manual, including specific information on replacing parts / fitting components. These activities may only be carried out by specialist personnel.
- Inform the operating personnel about the special tasks and service work before starting it. Nominate a supervisor.

#### 2.4.4 Safety instructions regarding maintenance, service and repairs

Carry out the following measures for ensuring safe maintenance, service and repair work:

- For all work that affects the operation, adjustment of production capacities, changeover or setting of the machine and its safety-relevant equipment and inspection, maintenance and repair, observe the switching on and switching off procedures in accordance with the operating instructions and instructions for servicing work.
- Service area to be made and secured as large as possible if required.
- If the machine is switched off completely for maintenance and repair work, you must ensure that it is secured against unexpectedly starting up: Lock the main control systems and affix a warning sign to the main switch.
- Begin maintenance/repair work by cleaning any oil, fuel or cleaning agents off the machine; in particular, the connections and screw fittings. Do not use aggressive cleaning agents. Use lint-free cleaning cloths.
- During maintenance and repair work, any screw connections that have been loosened must always be tightly screwed back in again.
- Use suitable tools for all the work to be carried out.
- If safety equipment needs to be removed for maintenance and repair purposes, it must be reattached and inspected as soon as the maintenance and repair work is complete.
- Working with safety equipment removed is only allowed for trained or competent personnel. The personnel must not have loose long hair, loose clothing or jewellery, including rings. There is a danger of injury e.g. by being caught up or being drawn in.
- Make sure that auxiliary materials and replacement parts are disposed of safely and in an environmentally-friendly manner.
- When working above head height you must use access equipment and working platforms provided for the purpose or other safety-compliant equipment. Do not use machine parts as access aids. When carrying out maintenance work at higher levels you must wear fall arresting equipment.
- Carry out the function test after maintenance work and repair work only after leaving the danger area.

#### 2.4.5 Safety instructions regarding cleaning

Carry out the following measures to ensure safe cleaning:

- Before cleaning the machine with water, a steam jet (high pressure cleaner) or other cleaning agents, cover or seal off all openings that must not be penetrated by water/steam/cleaning agents for reasons of safety and/or functionality. Electric motors and control cabinets are particularly at risk.
- When carrying out cleaning work in the machine room, make sure that the temperature sensor on the fire alarm and extinguisher equipment does not come into contact with hot cleaning agents to prevent triggering the extinguisher equipment.
- After the cleaning work, completely remove the covers / seals.
- After cleaning, inspect all lines for leaks, loose connections, chafe marks and damage. Repair any defects detected immediately.

## 2.4.6 Particular dangers

### Safe handling of pressure vessels

There are two types of pressure vessels:

- Pressure vessels for static load: The pressure vessels are under virtually constant operating pressure, and the pressure fluctuations are very small. Pressure vessels for static load are not specially marked and can be operated as long as no safety-relevant faults are found during the regular vessel repeat testing procedures.
- Pressure vessels for dynamic load: The pressure vessels are under fluctuating operating pressure, and the pressure can fluctuate between atmospheric pressure and the maximum permissible operating pressure. In the technical documents for these vessels, you will find details concerning the permissible operating duration in the form of the permissible cycle figures depending on the fluctuation of the operating pressure. The change between two different pressures is designated as a load change. Two load changes, i.e. one pressure approach and one pressure departure, are a cycle.

Follow the following safety instructions to ensure safe handling of pressure vessels:

- Always observe the permissible operating method of the pressure vessel.
- Never open or release the vessel covers or pipe connectors under pressure. Always depressurise the vessel or machine.
- Never exceed the permissible vessel operating pressure.
- Never heat the vessel or other individual parts above the stated maximum operating temperature.
- Damaged pressure vessels should always be replaced completely. Pressurised vessel components cannot be obtained as spare parts because the vessels are only ever tested and documented as a unit (see pressure vessel documentation, serial numbers).
- Check pressure vessels regularly internally and externally for corrosion damage.
- Do not use used pressure vessels if the number of load cycles and previous operating mode are not clearly known.
- In order not to load the pressure vessel unnecessarily, always check the non-return valves and pressure retention valves at regular intervals for internal and external leaks and functionality.
- Replace aluminium pressure vessel at the latest after 15 years.
- In the case of pressure vessels for dynamic load: Record the number of cycles completed. Note down the number of cycles run if there is no automatic cycle counter.
- In the case of pressure vessels for dynamic load: When half of the permissible cycles are reached (aluminium vessel: 1/4 of the permissible number of cycles) is reached, the vessel must be subjected to an internal test which includes testing the critically loaded vessel areas using suitable test procedures in order to ensure operational safety.
- In the case of pressure vessels for dynamic load: After reaching the permissible number of permissible cycles, the vessel must be replaced and scrapped.

## Instructions regarding handling combustion engines

Follow the following instructions to ensure the safety of the users:

- Do not inhale the exhaust gases.
- Combustion engines should never be operated in closed rooms.
- Do not operate combustion engines in the proximity of flammable objects.
- Do not operate combustion engines in the proximity of persons and animals.
- Keep the exhaust free from objects.
- Do not top-up the engine fuel tank in enclosed spaces.
- Do not open the lid of the fuel tank during operation.
- Switch the engine off and allow it to cool down for at least 2 minutes before topping-up with fuel.
- Do not overfill the fuel tank.
- If you spill fuel on the engine, carefully wipe away the fuel. Wait until the fuel has evaporated before commissioning the engine.
- Fit the lid back on the fuel tank after topping-up. Ensure it is installed in the correct position.

## Instructions regarding handling breathing air

Follow the following instructions to ensure the safety of the user:

- Adhere to the filter service life.
- When changing the cartridge, particular attention must be paid to hygiene and general cleanliness.
- Use permissible lubricant and cleaning agent only for breathing air.
- Get a replacement cartridge and store it properly.
- Keep in mind the storage period of the filter cartridge.
- Do not use filter cartridges with damaged packaging.
- Record filling processes in a logbook.
- Check the air quality or have it checked at regular intervals.
- Do not fill breathing air from rooms that are used as a working space.

## 2.5 Instructions regarding emergency

### 2.5.1 Behaviour in case of faults and emergencies

If safety-relevant faults occur in the machine or the operating behaviour indicates this:

- Switch off the machine using the emergency stop switch and notify the authority/person responsible of the fault.
- Only trained and authorised specialist personnel may rectify the faults.
- Restart the machine only after the cause of the fault has been determined and rectified.

### 2.5.2 Detecting a critical condition

Following occurrences indicate a critical condition:

- Increased heat generation
- increased vibrations
- Smoke emission
- Smell of burning
- Leackage
- Safety valve triggering
- Deformation of pressurised parts
- Cracking or crackling noise from pressurised parts

## 2.6 Organisational duties

### 2.6.1 Duties of the operating company

The operating company is responsible for the intended use of the machine.

- Keep the instruction manual to hand near the machine and must be available to the personnel at all times. Ensure that the informations are complete and readable. If the product is resold, the manual must be handed over along with the product.
- In addition to the operating instructions, observe the local applicable regulations for accident prevention and environmental protection. The operator must instruct the personnel accordingly.
- Complement this manual with local applicable regulations.
- Complement this manual with specificities about the operational processes and with informations about supervision and reporting obligations.
- Ensure the intended use of the machine and take appropriate measures to prevent the improper use of the machine.
- Take measures to ensure safe operation and fault-free condition of the machine.
- Ensure that only personnel with the relevant qualifications work on the machine. Observe the legal minimum age permissible.
- The operator must provide the necessary personal protective equipment, such as hearing protection or protective goggles.

## 2.6.2 Personnel selection and qualification

Pay attention to the following points when selecting the personnel:

- Ensure that statutory minimum age limits are observed.
- Ensure that only entrusted personnel work on the assigned tasks.
- Deploy only the trained, instructed or competent personnel.
- Ensure that only trained personnel operate the machine.
- Ensure that only the service personnel trained and authorised by BAUER KOMPRESSOREN carry out the assembly and installation activities.
- Ensure that only competent personnel carry out the first commissioning and recurrent tests.
- Ensure that only trained personnel carry out maintenance activities.
- Clearly define the responsibilities that personnel have in terms of operation, maintenance and repairs.
- Establish who is in charge of the machine and give him/her authorisation to reject any instructions by third parties that are in breach of safety procedures.
- Only allow apprentices or other personnel who are undergoing instruction or general training to work on/use the machine while under constant supervision by an experienced member of staff.

The qualification and knowledge of personnel can be summarised as follows:

Personnel	Qualification
Trained personnel (e.g. operators and employees)	The manual was read and understood. Instruction by the manufacturer or a person authorised by the manufacturer for this purpose.
Trained personnel and/or experts (e.g. expert electricians and maintenance personnel)	Completed professional education in metal working and electrical engineering in accordance with the statutory education ordinance with professional experience and regular follow-up training.
Competent personnel (e.g. service personnel of BAUER KOMPRESSOREN and experts)	Completed professional education in metal working and electrical engineering in accordance with the statutory education ordinance with professional experience, recent professional activity and regular follow-up training by a person certified by BAUER KOMPRESSOREN or by a person certified by the relevant authority.

Tab. 5 Personnel qualifications

### 2.6.3 Duties of the personnel

The personnel must comply with the following safety requirements:

- Read and understand the operating instruction manual.
- Refrain from any working practices which may compromise safety.
- Use personal protection equipment if required.
- Observe all the safety instructions and danger warnings on the machine.
- Check the machine for outwardly noticeable damage and defects before taking it into operation and at regular time intervals during operation. If changes occur in the machine or in its operating behaviour and these could impact on safety, stop the machine immediately and report the fault to the department/ person responsible.

## 2.7 Safety regulations



The following list of safety regulations does not claim to be exhaustive and up-to-date, and is applicable only for the Federal Republic of Germany.

- Ensure that the equivalent provisions of the operator's country are observed.
- Ensure that all other statutory regulations and provisions, in particular, safety regulations, pertaining to the operation or conveying medium are observed.

The following regulations, provisions and trade association rules must be observed for commissioning and operation of compressor units as filling units in the Federal Republic of Germany:

- 14. ProdSV – German Ordinance on Pressure Vessels - fourteenth ordinance for the Product Safety Law dated 27 September 2002
- ProdSG – German Product Safety Law - law regarding the provision of products in the market dated 8 November 2011
- BetrSichV – German Ordinance on Industrial Safety and Health - ordinance on safety and health protection when using resources dated 3 February 2015

Adhere to the TRBS (technical regulations for operational safety) and TRGS (technical regulation for dangerous substances) for concrete specifications regarding the details of the German Ordinance on Industrial Safety and Health:

- TRBS 1111 - hazard assessment and safety assessment - TRBS dated 5 September 2006
- TRBS 1201 - tests of resources and units that need monitoring - TRBS dated 6 August 2012
- TRBS 1203 - competent persons - TRBS dated 17 March 2010
- TRBS 2141 - risks due to vapour and pressure - general requirements - TRBS dated 31 January 2007
- TRBS 3145 / TRGS 725 - transportable compressed gas tanks - filling, provision, intra-company transportation, emptying - TRBS / TRGS dated 14 June 2013
- TRBS 3146 / TRGS 726 - stationary pressure units for gases - TRBS / TRGS dated 14 April 2014

If a high pressure compressor is used for filling pressurised gas containers (cylinders) or for supplying pneumatic systems, the trade association regulations, rules, information and principles of safety and health while working apply to commissioning and operation within the Federal Republic of Germany:

- BGV A1 / DGUV Regulation 1 - principles of prevention (edition 04/2005; 01/2008; 01/2009)
- BGR 500 / DGUV Rule 100-500 - operating the resources (edition 10/2004; 07/2005; 09/2005; 11/2005; 12/2005; 03/2006; 08/2006; 10/2006; 03/2007; 04/2008)

### Instructions for the licensing process and the testing of filling stations before commissioning



For further instructions for the licensing process and the testing of filling stations before commissioning, refer to the information sheet (can be obtained from BAUER KOMPRESSOREN).

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The test certificates and documents supplied with the compressor are important and must be included in the application documents as part of the licensing process. The documents that relate to recurrent tests also have an important role to play and must, therefore, be stored carefully.

In accordance with the German Ordinance on Industrial Safety and Health (Betr-SichV), compressor units used as filling stations must be subjected to an acceptance test by the relevant monitoring authority (TÜV in the Federal Republic of Germany) prior to commissioning.

If the compressor is going to be used for filling pressurised gas containers (cylinders) which are intended for others, the unit must be licensed by the relevant authority before the acceptance test (Trade Supervisory Board in the Federal Republic of Germany).

Tests governed by accident prevention regulations are carried out by the manufacturer or a specialist.

### 3 Product description

#### 3.1 Structure and function

##### 3.1.1 Structure

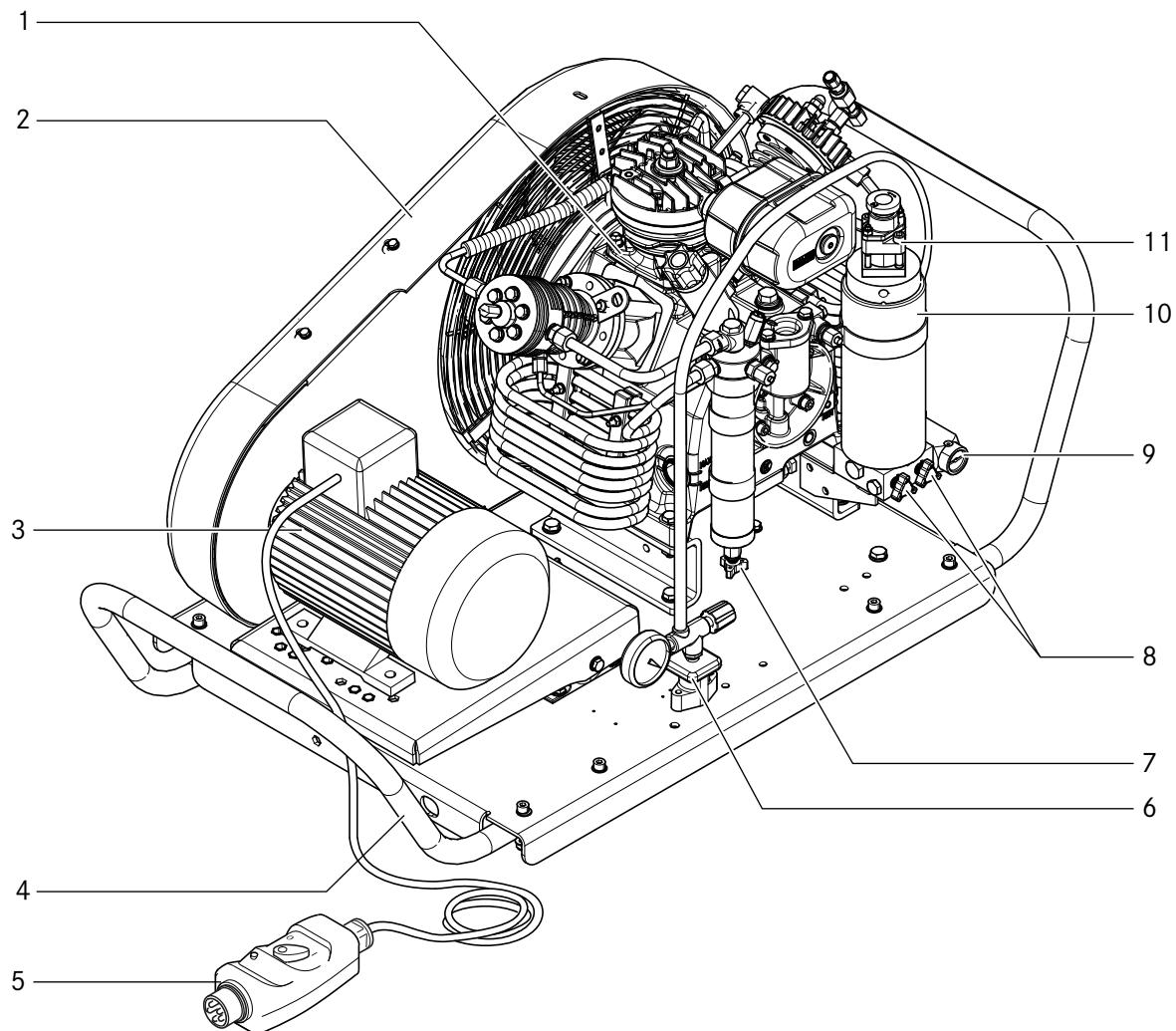


Fig. 2 CAPITANO140-E

1	Compressor block	5	Motor protection switch (option)	9	Pressure maintaining/non-return valve
2	Belt guard	6	Filling device with pressure gauge	10	Filter system P21

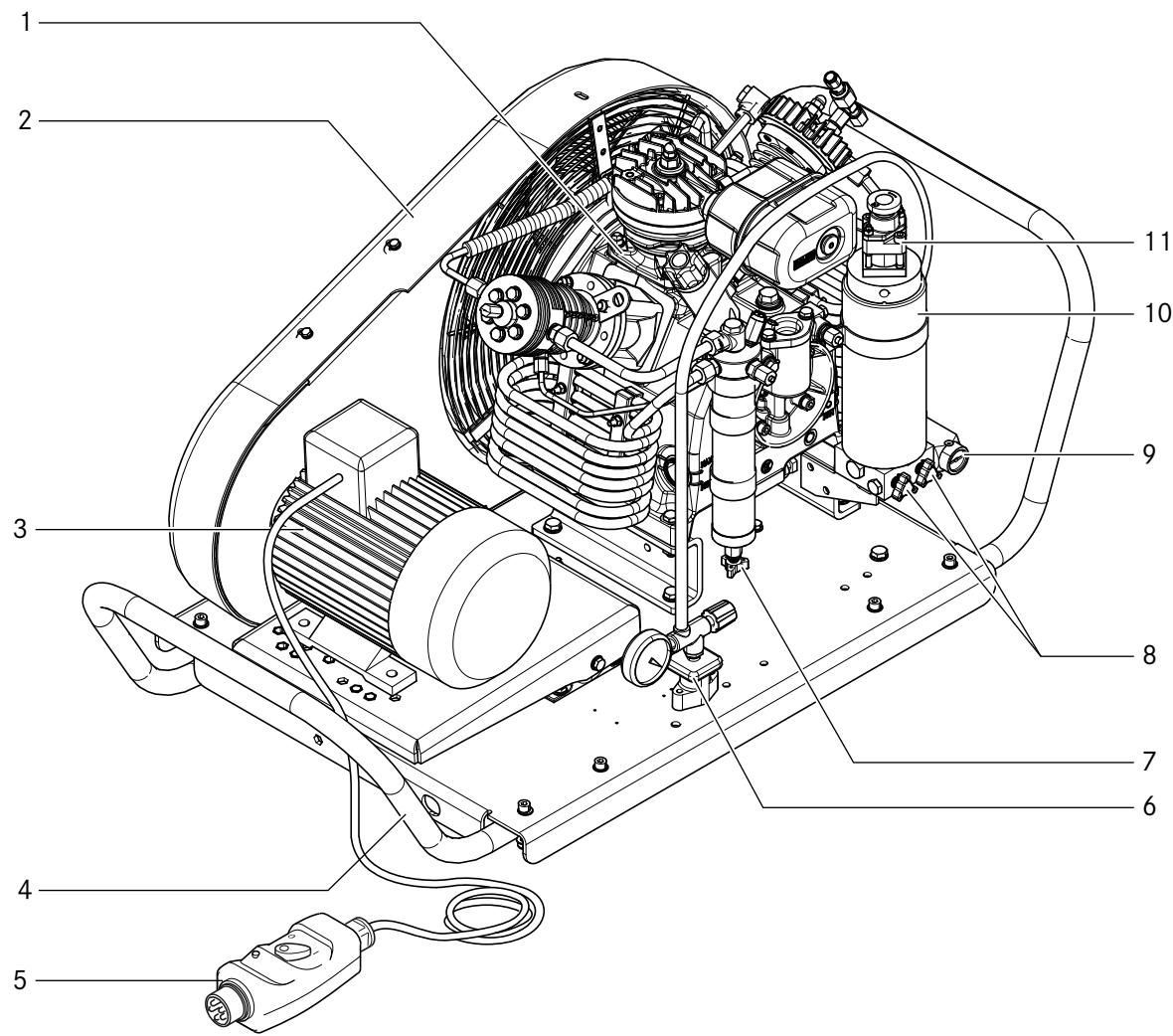


Fig. 2 CAPITANO140-E

3 Drive motor	7 Condensate drain cock, intermediate separator	11 Final pressure safety valve
4 Carrying handle	8 Condensate drain cocks, filter system	

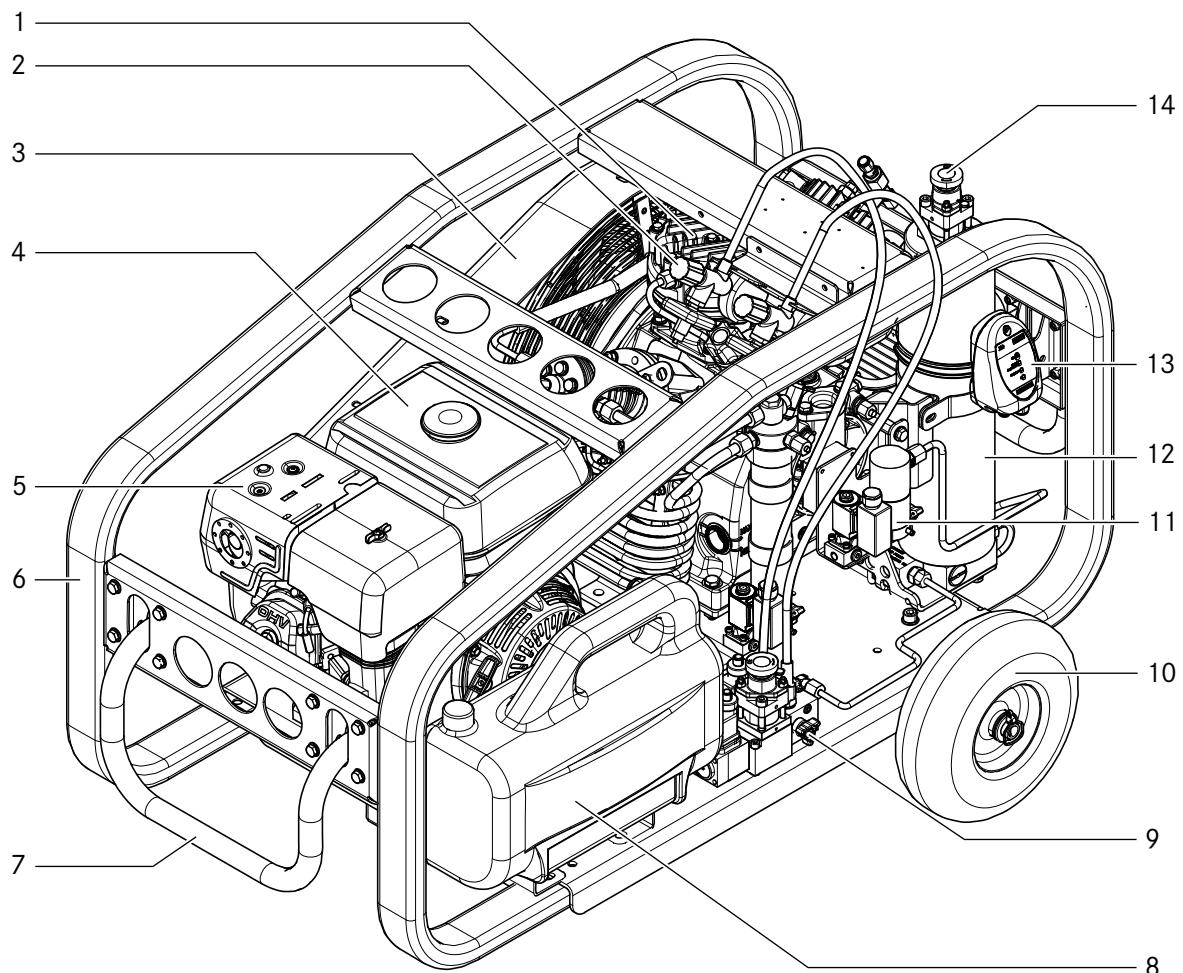


Fig. 3 MARINER 200-B with trolley and automatic condensate drain

1	Compressor block	6	Fall frame	11	Condensate drain valve (option), filter system
2	Filling device with pressure gauge	7	Carrying handle	12	Filter system P31
3	Belt guard	8	Condensate vessel (option)	13	B-TIMER (Option)
4	Petrol tank	9	Switch-over device (option)	14	Final pressure safety valve
5	Exhaust	10	Trolley (option)		

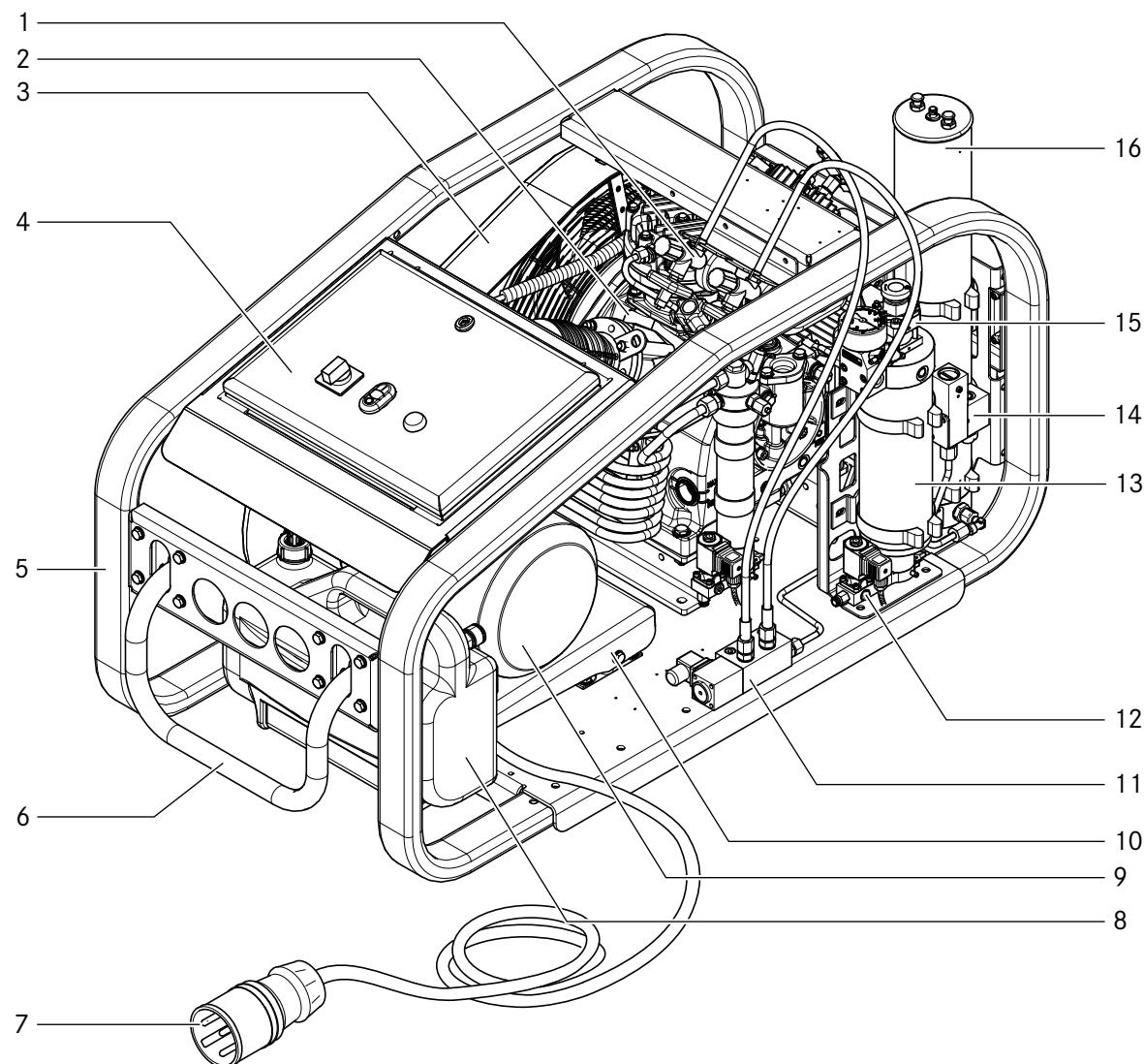


Fig. 4 MARINER 250-E with compressor control system and filter system P41

1	Filling device with pressure gauge	7	CE sticker (option)	13	Final separator
2	Compressor block	8	Condensate vessel (option)	14	Pressure maintaining/non-return valve
3	Belt guard	9	Drive motor	15	Final pressure safety valve
4	Compressor control system (option)	10	Motor rocker	16	Filter system P41 (option)
5	Fall frame	11	Filling panel with pressure switch		
6	Carrying handle	12	Condensate drain valve (option), final separator		

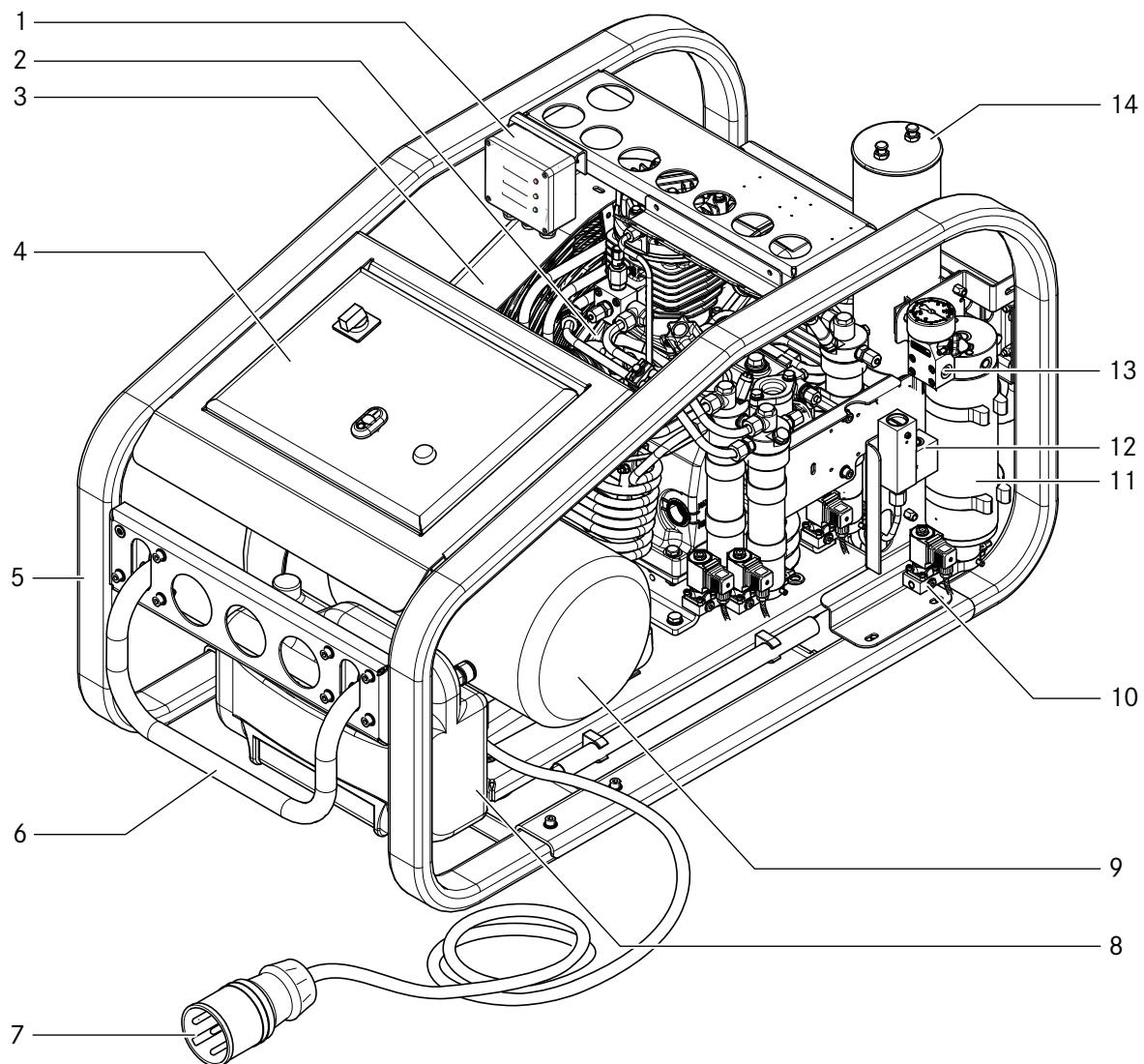


Fig. 5 MARINER 320-E with compressor control system, filter system P41 and SECURUS monitoring unit

1	B-SECURUS monitoring unit	6	Carrying handle	11	Final separator
2	Compressor block	7	CE sticker (option)	12	Pressure maintaining/non-return valve
3	Belt guard	8	Condensate vessel (option)	13	Final pressure safety valve
4	Compressor control system (option)	9	Drive motor	14	Filter system P41 (option)
5	Fall frame	10	Condensate drain valve (option), final separator		

### 3.1.2 Function schematic

The function schematic shows the route of the air through the compressor unit. The type and scope of the components depend on the unit configuration, the functional principle and arrangement of the components remain the same, however.

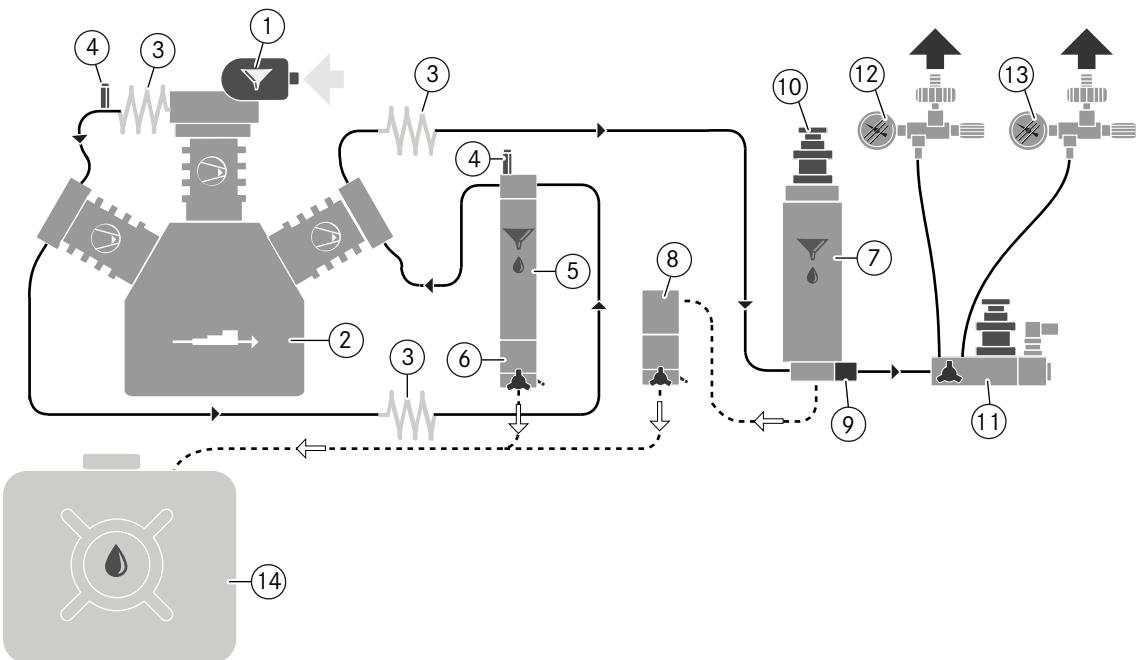


Fig. 6 Function schematic

1	Intake filter	6	Condensate drain valve (option)	11	Changeover device (option)
2	Compressor block	7	Cartridge filter with integrated final separator	12	Filling valve, PN300
3	Cooler	8	Condensate drain valve, final separator (option)	13	Filling valve, PN200
4	Safety valve	9	Pressure maintaining valve	14	Condensate vessel (option)
5	Intermediate separator	10	Safety valve, final pressure		

### 3.1.3 Functional principle

#### Intake

The compressor unit draws the medium to be compressed or the air via the intake filter. This contains a replaceable filter insert for removing the solid particles from the drawn-in medium.

#### Compression

Compression takes place in the compressor block. The integrated compressor blocks operate on the displacement principle and are multi-stage piston compressors. Every compressor stage consists of a piston, cylinder and valve head. The intake and pressure valves, which are mounted in the valve heads, control the gas change of the individual compressor stages.

#### Safety

The individual compressor stages are secured against over-pressure by safety valves.

#### Cooling

Spiral heat exchangers cool the medium that is heated up during compression. The integrated fan wheel provides the necessary cooling air flow. The fan wheel also serves as the flywheel for driving the compressor.

#### Filtration

The condensate incorporated in the compressed medium, consisting of water and oil, is separated from the medium and collected after each compressor stage by special separators (separator after the first stage is optional).

A cartridge filter continues cleaning of the compressed gas mixture. Depending on the filter cartridge being used, moisture, oil, residual particles and/or CO are filtered out.

The pressure maintaining valve ensures that adequate pressure builds up in the filters, even at the start of the filling process, and thus that constant, optimum filtering is carried out.

#### Condensate drain

Manual condensate drain cocks serve the necessary draining of the separator during operation.

On units having an automatic condensate drain (option), electro-pneumatic drain valves drain the separators at regular intervals. The condensate from the separators is then directed to a collection vessel.

#### Distribution

Filling devices are used to distribute the compressed gas mixture. The consumers are connected to the compressor unit using special filling valves with pressure gauges and filling couplings. The pressure gauges indicate the filling pressure.

With the switch-over device (option) you can fill 200 bar cylinders or 300 bar cylinders from a 300 bar compressor unit.

#### Drive

The compressor is driven by V-belts by the motor. The motor is mounted on a rocker and the V-belts are tensioned by the weight of the motor.

### **Control system**

Operation and switching the unit on and off is carried out, as standard, manually using the motor protection switch.

The electrical control system (option) permits semi-automatic or fully-automatic operation of the compressor unit, depending on the filling pressure. Monitoring the filling pressure is via pressure switches.

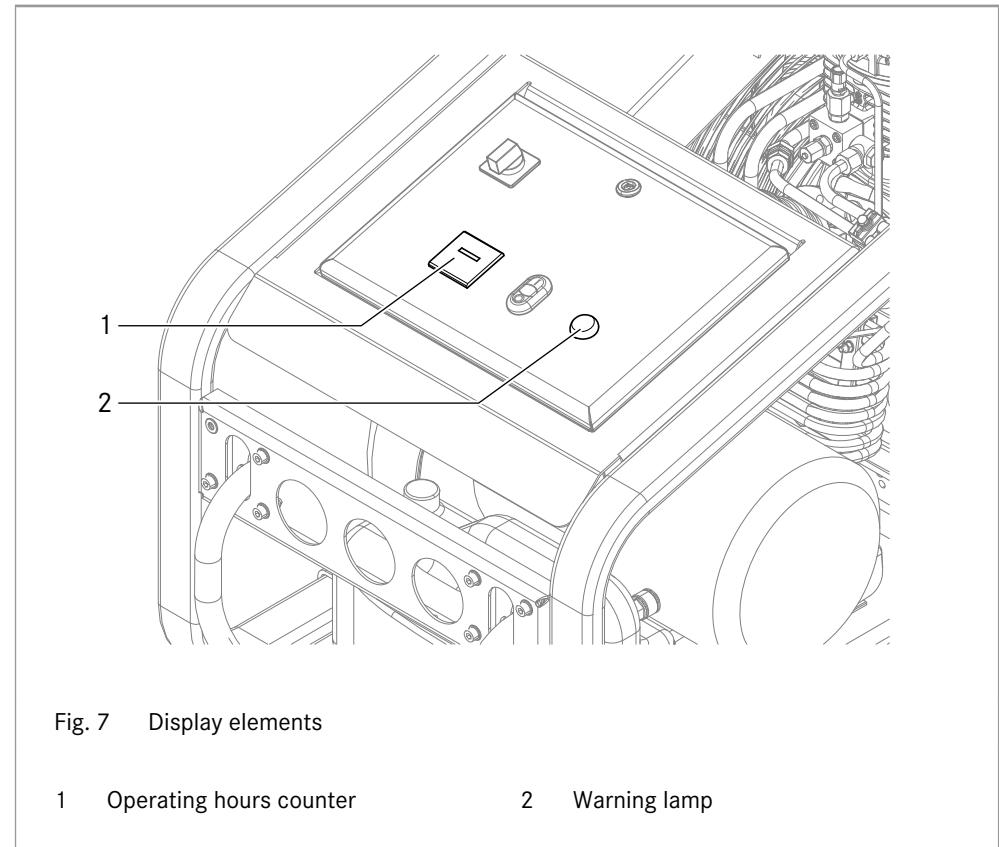
### **Filter monitoring (option)**

The B-TIMER is a self-activating mini-computer that keeps track of the compressor's operating hours and calculates the filter cartridges' lifetime for the filter systems P21 and P31, with the help of the time, the temperature, the type of cartridge and the delivery volume of the compressor. It displays the operating hours, the cartridge's service life and the compressor's upcoming maintenance-related tasks. All units can be retrofitted with the B-TIMER at any time.

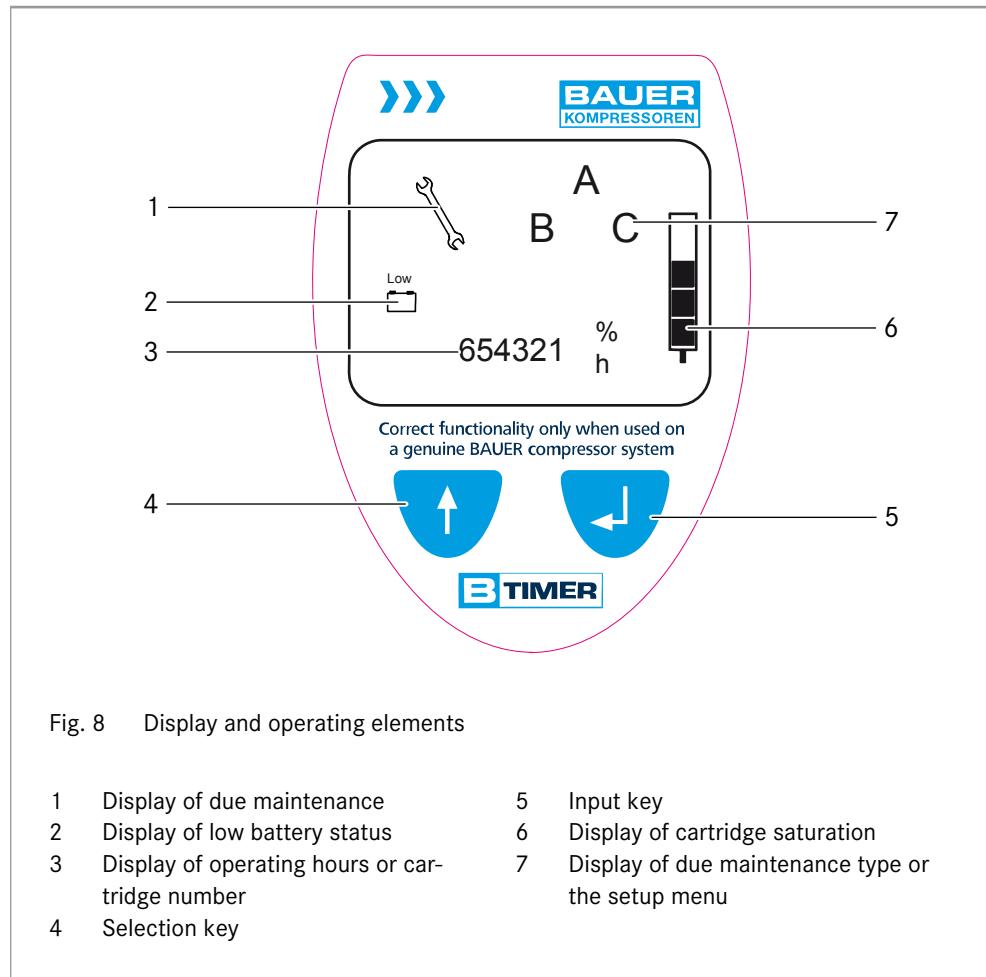
On units with filter system P41 and electric compressor control system, the filter monitoring is carried out using the SECURUS monitoring unit. The SECURUS monitoring unit continuously monitors the drying capacity of the filter cartridge. Depending on the size of the compressor, a warning signal is issued between 1 and 7 hours before saturation of the cartridge. If the cartridge is not replaced after the warning signal lights up, the SECURUS monitoring unit switches the compressor unit off after the cartridge has been finally used up.

## 3.2 Display elements

### 3.2.1 Control



### 3.2.2 B-TIMER display and operating elements



### 3.2.3 SECURUS monitoring unit

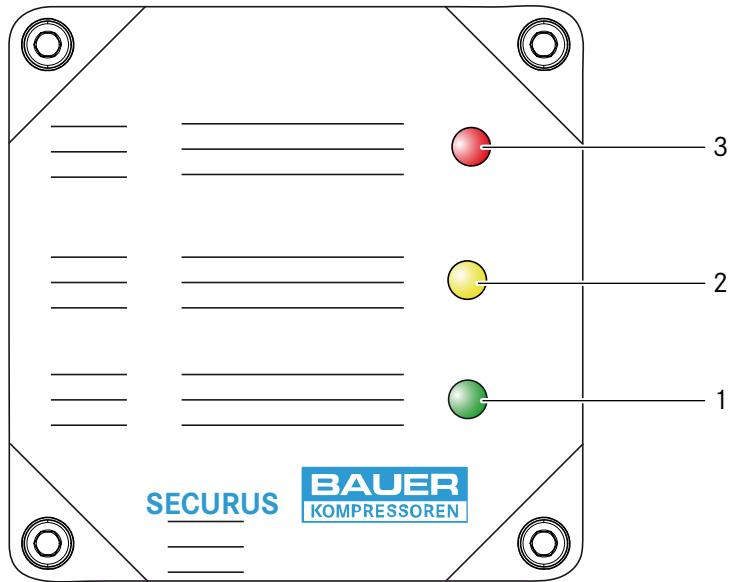


Fig. 9 SECURUS monitoring unit display elements

1 Flashing green light  
2 Yellow flashing light

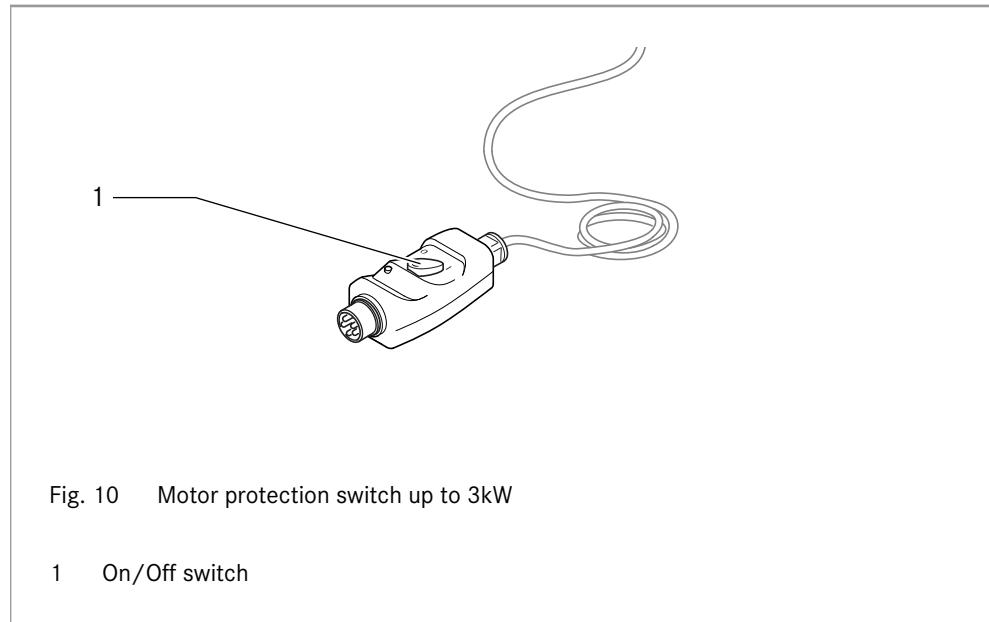
3 Red flashing light

LED	Cartridge or unit condition
Red flashing light	Compressor shutdown due to used-up cartridge
Yellow flashing light	Cartridge change due (pre-warning)
Continuous green light	Unit in operation, cartridge OK
Continuous red light	Compressor shutdown due to missing cartridge or interruption of the line to the cartridge

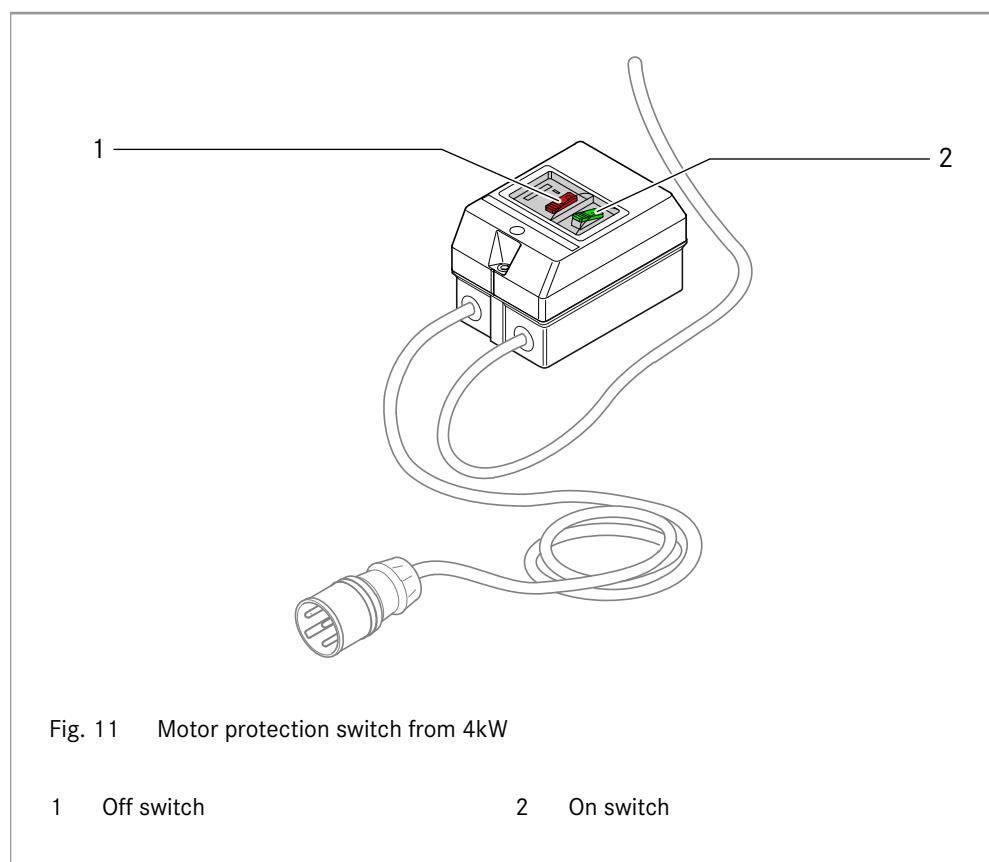
Tab. 6 SECURUS monitoring unit display elements

### 3.3 Control elements

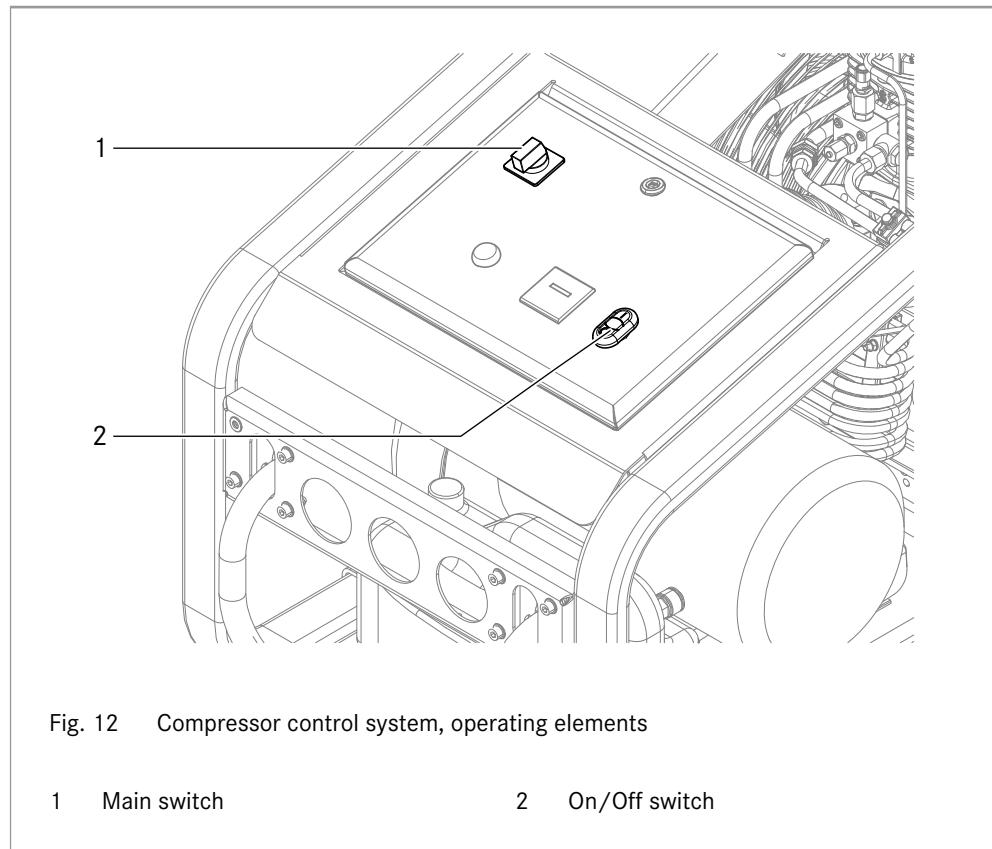
### 3.3.1 Motor protection switch



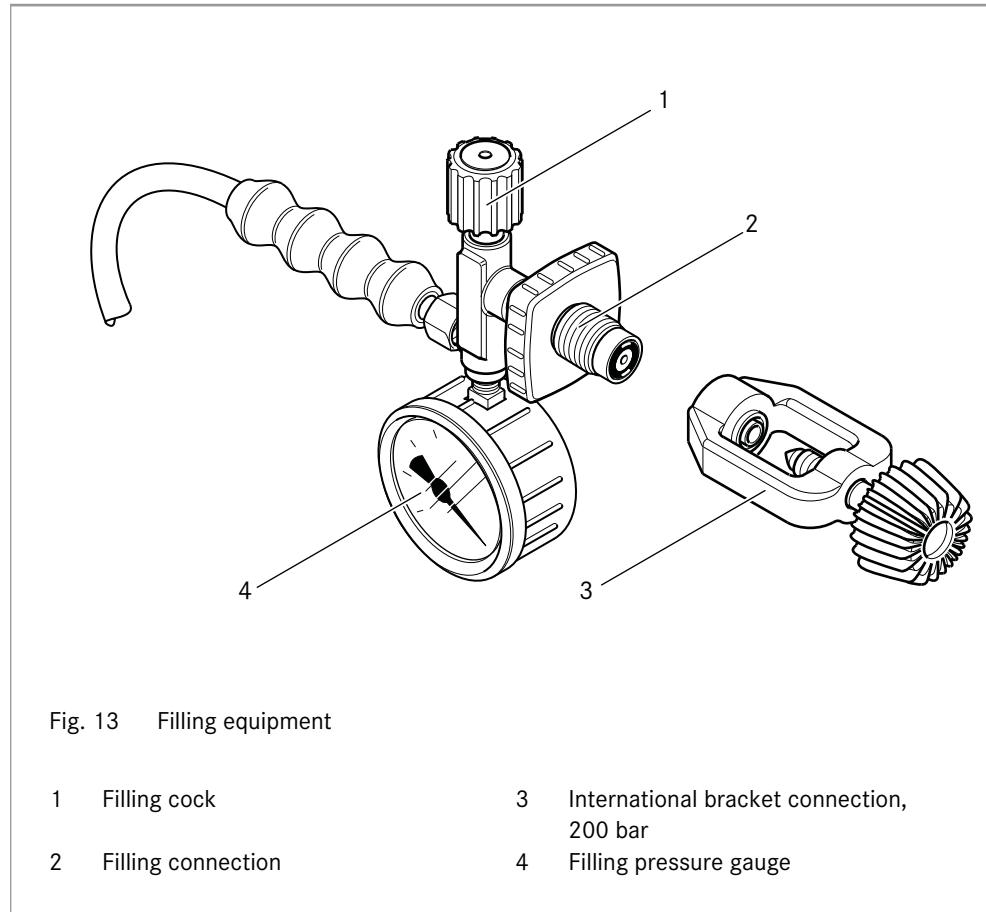
### 3.3.2 Motor protection switch



### 3.3.3 Control system



### 3.3.4 Filling equipment



## 3.4 Operating modes

### 3.4.1 Manual

After switching the compressor on manually, this must then also be switched off again manually.

### 3.4.2 Semi-automatic

After the compressor is switched on manually, it switches off automatically on reaching the switch-off pressure. It needs to be restarted manually. It can be switched off manually at all times.

## 4 Technical data

### 4.1 Technical data compressor unit

#### 4.1.1 Technical data CAPITANO 140-B

Compressor unit		CAPITANO 140-B
<b>Performance characteristics</b>		
Medium		Air
Intake pressure		atmospheric
Operating pressure max. [bar]		PN200 or PN300
Blow-off pressure, final pressure safety valve [bar]		225 / 330
Compressor block		IK100
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5%		140
Speed [rpm]		1300 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]		15 / 6
Drive motor type		Petrol engine
<b>Ambient conditions</b>		
Maximum permissible ambient temperature [°C]		+5 ... +45
Location [m above sea level]		0 ... 1000
Explosion protection		no
Maximum permissible inclination of the compressor		15°
<b>Weights and measures</b>		
Dimensions standard unit (L x W x H) [mm]		1150 x 590 x 550
Weight [kg]		95
<b>Operating and auxiliary materials</b>		
Oil		see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
Fuel		Normal lead-free petrol
Consumption [l/h]		approx. 1.2
<b>Emissions</b>		
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance		
Noise output level [dB(A)] in accordance with DIN EN ISO 2151		

#### 4.1.2 Technical data CAPITANO 140-E

Compressor unit		CAPITANO140-E
<b>Performance characteristics</b>		
Medium	Air	
Intake pressure	atmospheric	
Operating pressure max. [bar]	PN200 or PN300	
Blow-off pressure, final pressure safety valve [bar]	225 / 330	
Compressor block	IK100	
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5 %	140	
Speed [rpm]	1300 ±20	
Setting times of automatic condensate drain (option), interval [min] / duration [s]	15 / 6	
Drive motor type	Three phase AC squirrel-cage motor	
<b>Ambient conditions</b>		
Maximum permissible ambient temperature [°C]	+5 ... +45	
Location [m above sea level]	0 ... 1000	
Explosion protection	no	
Maximum permissible inclination of the compressor	15°	
<b>Weights and measures</b>		
Dimensions standard unit (L x W x H) [mm]	1150 x 590 x 550	
Weight [kg]	102	
<b>Operating and auxiliary materials</b>		
Oil	see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>	
<b>Emissions</b>		
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance		
Noise output level [dB(A)] in accordance with DIN EN ISO 2151		
<b>Electricity</b>		
Standard operating voltage [V]	400	
Standard frequency [Hz]	50	
Motor power [kW]	3.0	
Power consumption [kW/h]		

#### 4.1.3 Technical data MARINER200-B

Compressor unit		MARINER200-B
<b>Performance characteristics</b>		
Medium		Air
Intake pressure		atmospheric
Operating pressure max. [bar]		PN200 or PN300
Blow-off pressure, final pressure safety valve [bar]		225 / 330
Compressor block		IK120
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5%		200
Speed [rpm]		1250 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]		15 / 6
Drive motor type		Petrol engine
<b>Ambient conditions</b>		
Maximum permissible ambient temperature [°C]		+5 ... +45
Location [m above sea level]		0 ... 1000
Explosion protection		no
Maximum permissible inclination of the compressor		15°
<b>Weights and measures</b>		
Dimensions standard unit (L x W x H) [mm]		1250 x 590 x 630
Weight [kg]		115
<b>Operating and auxiliary materials</b>		
Oil		see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
Fuel		Normal lead-free petrol
Consumption [l/h]		approx. 2.3
<b>Emissions</b>		
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance		
Noise output level [dB(A)] in accordance with DIN EN ISO 2151		

#### 4.1.4 Technical data MARINER200-E

Compressor unit	MARINER200-E
<b>Performance characteristics</b>	
Medium	Air
Intake pressure	atmospheric
Operating pressure max. [bar]	PN200 or PN300
Blow-off pressure, final pressure safety valve [bar]	225 / 330
Compressor block	IK120
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5 %	200
Speed [rpm]	1250 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]	15 / 6
Drive motor type	Three phase AC squirrel-cage motor
<b>Ambient conditions</b>	
Maximum permissible ambient temperature [°C]	+5 ... +45
Location [m above sea level]	0 ... 1000
Explosion protection	no
Maximum permissible inclination of the compressor	15°
<b>Weights and measures</b>	
Dimensions standard unit (L x W x H) [mm]	1250 x 590 x 630
Weight [kg]	115
<b>Operating and auxiliary materials</b>	
Oil	see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
<b>Emissions</b>	
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance	
Noise output level [dB(A)] in accordance with DIN EN ISO 2151	
<b>Electricity</b>	
Standard operating voltage [V]	400
Standard frequency [Hz]	50
Motor power [kW]	4.0
Power consumption [kW/h]	

## 4.1.5 Technical data MARINER250-B

Compressor unit		MARINER250-B
<b>Performance characteristics</b>		
Medium		Air
Intake pressure		atmospheric
Operating pressure max. [bar]		PN200 or PN300
Blow-off pressure, final pressure safety valve [bar]		225 / 330
Compressor block		IK120
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5%		250
Speed [rpm]		1450 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]		15 / 6
Drive motor type		Petrol engine
<b>Ambient conditions</b>		
Maximum permissible ambient temperature [°C]		+5 ... +45
Location [m above sea level]		0 ... 1000
Explosion protection		no
Maximum permissible inclination of the compressor		15°
<b>Weights and measures</b>		
Dimensions standard unit (L x W x H) [mm]		1250 x 590 x 630
Weight [kg]		120
<b>Operating and auxiliary materials</b>		
Oil		see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
Fuel		Normal lead-free petrol
Consumption [l/h]		approx. 2.9
<b>Emissions</b>		
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance		
Noise output level [dB(A)] in accordance with DIN EN ISO 2151		

#### 4.1.6 Technical data MARINER250-E

Compressor unit	MARINER250-E
<b>Performance characteristics</b>	
Medium	Air
Intake pressure	atmospheric
Operating pressure max. [bar]	PN200 or PN300
Blow-off pressure, final pressure safety valve [bar]	225 / 330
Compressor block	IK120
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5 %	250
Speed [rpm]	1450 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]	15 / 6
Drive motor type	Three phase AC squirrel-cage motor
<b>Ambient conditions</b>	
Maximum permissible ambient temperature [°C]	+5 ... +45
Location [m above sea level]	0 ... 1000
Explosion protection	no
Maximum permissible inclination of the compressor	15°
<b>Weights and measures</b>	
Dimensions standard unit (L x W x H) [mm]	1250 x 590 x 630
Weight [kg]	135
<b>Operating and auxiliary materials</b>	
Oil	see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
<b>Emissions</b>	
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance	
Noise output level [dB(A)] in accordance with DIN EN ISO 2151	
<b>Electricity</b>	
Standard operating voltage [V]	400
Standard frequency [Hz]	50
Motor power [kW]	5.5
Power consumption [kW/h]	

#### 4.1.7 Technical data MARINER320-B

Compressor unit		MARINER320-B
<b>Performance characteristics</b>		
Medium		Air
Intake pressure		atmospheric
Operating pressure max. [bar]		PN200, PN300, PN400
Blow-off pressure, final pressure safety valve [bar]		225 / 330 / 420
Compressor block		IK12.14
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5%		320
Speed [rpm]		1450 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]		15 / 6
Drive motor type		Petrol engine
<b>Ambient conditions</b>		
Maximum permissible ambient temperature [°C]		+5 ... +45
Location [m above sea level]		0 ... 1000
Explosion protection		no
Maximum permissible inclination of the compressor		15°
<b>Weights and measures</b>		
Dimensions standard unit (L x W x H) [mm]		1300 x 650 x 700
Weight (420 bar units) [kg]		138 (145)
<b>Operating and auxiliary materials</b>		
Oil		see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
Fuel		Normal lead-free petrol
Consumption [l/h]		approx. 3
<b>Emissions</b>		
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance		
Noise output level [dB(A)] in accordance with DIN EN ISO 2151		

#### 4.1.8 Technical data MARINER320-E

Compressor unit	MARINER320-E
<b>Performance characteristics</b>	
Medium	Air
Intake pressure	atmospheric
Operating pressure max. [bar]	PN200 / PN300 / PN400
Blow-off pressure, final pressure safety valve [bar]	225 / 330 / 420
Compressor block	IK12.14
Delivery volume [l/min] measured using cylinder filling (10 l) from 0 to 200 bar, ± 5 %	320
Speed [rpm]	1450 ±20
Setting times of automatic condensate drain (option), interval [min] / duration [s]	15 / 6
Drive motor type	Three phase AC squirrel-cage motor
<b>Ambient conditions</b>	
Maximum permissible ambient temperature [°C]	+5 ... +45
Location [m above sea level]	0 ... 1000
Explosion protection	no
Maximum permissible inclination of the compressor	15°
<b>Weights and measures</b>	
Dimensions standard unit (L x W x H) [mm]	1300 x 645 x 700
Weight (420 bar units) [kg]	154 (165)
<b>Operating and auxiliary materials</b>	
Oil	see <a href="#">Chapter 9.3.4 Lubrication oil, Page 92</a>
<b>Emissions</b>	
Noise pressure level [dB(A)] in accordance with DIN EN ISO 2151 at 1m distance	
Noise output level [dB(A)] in accordance with DIN EN ISO 2151	
<b>Electricity</b>	
Standard operating voltage [V]	400
Standard frequency [Hz]	50
Motor power [kW]	7.5
Power consumption [kW/h]	

## 4.2 Technical data Compressor block

### 4.2.1 Technical data compressor block IK100

Category and unit	Value
Number of stages	3
Number of cylinders	3
Cylinder bore 1st stage [mm]	70
Cylinder bore 2nd stage [mm]	36
Cylinder bore 3rd stage [mm]	14
Piston stroke [mm]	40
Direction of rotation (looking onto the fly-wheel)	left
Drive type	V-belt
Blow-off pressure of safety valve 1st stage [bar]	9.9
Blow-off pressure of safety valve 2nd stage [bar]	60
Oil quantity [l]	2.8
Oil pressure [bar]	4.5 ± 1.5
Intake pressure / inlet pressure [bar]	0 (atmospheric)

#### 4.2.2 Technical data compressor block IK120

Category and unit	Value
Number of stages	3
Number of cylinders	3
Cylinder bore 1st stage [mm]	88
Cylinder bore 2nd stage [mm]	36
Cylinder bore 3rd stage [mm]	14
Piston stroke [mm]	40
Direction of rotation (looking onto the fly-wheel)	left
Drive type	V-belt
Blow-off pressure of safety valve 1st stage [bar]	9.9
Blow-off pressure of safety valve 2nd stage [bar]	60
Oil quantity [l]	2.8
Oil pressure [bar]	4.5 ± 1.5
Intake pressure / inlet pressure [bar]	0 (atmospheric)

#### 4.2.3 Technical data compressor block IK12.14

Category and unit	Value
Number of stages	4
Number of cylinders	3
Cylinder bore 1st stage [mm]	105 /88
Cylinder bore 2nd stage [mm]	28
Cylinder bore 3rd stage [mm]	12
Piston stroke [mm]	40
Direction of rotation (looking onto the fly-wheel)	left
Drive type	V-belt
Pressure of safety valve 1st stage [bar <sub>a</sub> ]	5
Pressure of safety valve 2nd stage [bar <sub>a</sub> ]	24
Pressure of safety valve 3rd stage [bar <sub>a</sub> ]	100
Oil quantity [l]	2.8
Oil pressure [bar]	4.5 ± 1.5
Intake pressure [bar <sub>a</sub> ]	1.0

## 4.3 Technical data Filter system

### 4.3.1 Technical data filter system P21



CO The processable air volume refers to a filter system P31 without CO removal. If a cartridge with CO removal is used, the processable air volume reduces by approx. 26%.

Filter system	P21
Operating pressure max. [bar]	350
Filter content [l]	0.57
Classification as per the Pressure Equipment Guideline	Vessel category II
Residual water content max. [mg/m <sup>3</sup> ]	10
Residual oil content max. [mg/m <sup>3</sup> ]	0.1
Residual carbon monoxide (CO) content* max. [mg/m <sup>3</sup> ]	5
Max. permissible number of load cycles	See accompanying pressure equipment operating instructions

\* Only when using filter cartridges with CO removal and a maximum CO concentration of 25 ml/m<sup>3</sup> in the intake area of the compressor.

### 4.3.2 Technical data filter system P31



CO The processable air volume refers to a filter system P31 without CO removal. If a cartridge with CO removal is used, the processable air volume reduces by approx. 26%.

Category and unit	Value
Operating pressure max. [bar]	350
Filter content [l]	1.3
Classification as per the Pressure Equipment Guideline	Vessel category II
Residual water content max. [mg/m <sup>3</sup> ]	10
Residual oil content max. [mg/m <sup>3</sup> ]	0.1
Residual carbon monoxide (CO) content* max. [mg/m <sup>3</sup> ]	5
Max. permissible number of load cycles	See accompanying pressure equipment operating instructions

\* Only when using filter cartridges with CO removal and a maximum CO concentration of 25 ml/m<sup>3</sup> in the intake area of the compressor.

#### 4.3.3 Technical data filter system P4 1

Category and unit	Value
Number of cartridge filters	1
Operating pressure max. [bar]	350 / 420 / 550
Operating pressure min. [bar]	90
Deployment temperature range [°C]	+5 ... +50
Residual water content max. [mg/m <sup>3</sup> ]	10
Residual oil content max. [mg/m <sup>3</sup> ]	0.1
Residual carbon monoxide (CO) content* max. [mg/m <sup>3</sup> ]	5
Max. permissible number of load cycles	See accompanying pressure equipment operating instructions

\* Only when using filter cartridges with CO removal and a maximum CO concentration of 25 ml/m<sup>3</sup> in the intake area of the compressor.

#### 4.4 Technical data Motor



For technical data about the motor, see the motor rating plate.

## 5 Transport and storage

### 5.1 Transport

#### 5.1.1 Checking the cargo

The shipping agent shall be liable for damage that can be traced back without a doubt to improper transport. The passage of risk is contractually regulated.

1. Ensure that the delivery item is packed by authorised personnel.
2. Check the delivered item immediately for transport damage.
3. Check the delivered item immediately against the packing lists for to ensure completeness.
4. Report any irregularities to BAUER KOMPRESSOREN immediately. Complaints made later cannot be considered.
5. Never put the machine into operation if it is damaged.

#### 5.1.2 Preparing for transport

1. Ensure that the machine is neither electrically nor pneumatically connected.
2. Allow the machine to cool down to ambient temperature.
3. Fluids such as oil and possibly cooling water should be drained.
4. Pack loose parts such as tools and accessories in suitable individual packaging.
5. Secure moving parts on the machine.
6. Protect electric and electronic components and their connections from moisture and mechanical damage.
7. Ensure that the packaging and/or vessels are such that the parts inside can be handled safely and cannot be damaged during the transport.

### 5.1.3 Transport

#### **WARNING**

##### **Danger of crushing due to falling, tilting or swinging loads!**

Crushing can result in death or serious injuries.

- Follow the safety instructions and safety regulations when transporting the machine.
- Follow the transport instructions.
- Keep in mind the transport weights and measurements.
- Use suitable transport equipment.
- Wear appropriate personal protection equipment.

---

#### **CAUTION**

##### **Danger of accident on inclined ground!**

Machines having a travel kit do not have any brakes and can become out of control on inclined ground.

- Move machines having a travel kit must be moved with great care on inclined ground. Get help from an additional person.

---

1. Ensure that the transport of machine has been properly prepared, see [Chapter 5.1.2, Page 57](#).
2. The machine must be carried by four persons using the transport handles provided, and as horizontal as possible. Observe the transport weight!
  - Or -**
  - Transport the machine with travel kit carefully and exclusively using the transport handles provided.

## 5.2 Storage and preservation

### 5.2.1 Selecting the storage location

➤ Ensure that the storage space fulfils the following conditions: dry, frost-free, vibration-free.



Covering with plastic sheets is recommended only if it prevents condensation from being formed. Lift plastic sheets from time to time for monitoring.



Recommendation: Protect from direct sunlight.

Direct sunlight can lead to changes in colour and premature ageing of the plastic parts.

### 5.2.2 Preparing for preservation

1. Bring unit to operating temperature.
2. Operate unit for 10 minutes once the required operating pressure is reached.
3. Check all pipes, filters and valves (including safety valves) for leaks.
4. Open the outlet cock and run the unit at the set minimum pressure for 5 minutes.
5. Stop the unit.
6. Drain the condensate from the intermediate separators and the final separator.
  - The pressure goes down to 0 bar.
7. Close the filling cocks and outlet cock.
8. Open the fittings on the intermediate separators and lubricate the thread.
9. Tighten all the fittings on the unit.
10. For unit with filter system: Keep the cartridge in the cartridge filter in order to absorb the penetrating moisture.
11. Let the unit cool down.
  - The unit is prepared for preservation.

### 5.2.3 Preservation



If the unit has to be stored for more than 2 years, request special instructions from BAUER KOMPRESSOREN, see [Chapter 1.1.1 Contact data](#) [BAUER KOMPRESSOREN, Page 9](#).

If the unit is put out of operation for more than 6 months, preserve it as follows:

1. Start up the unit.
2. Spray approximately 5 cm<sup>3</sup> of compressor oil (approx. 10 cm<sup>3</sup> for compressor series K22 and above) into the intake opening of the 1st stage whilst the compressor is running. Do not allow the compressor to run too long, in order to prevent heating of the oil, thus reducing the compressor oil's adhesive properties.
3. Switch the unit off.
4. Close all cocks.
5. Uncouple the V-belt, if necessary.
6. Leave the cooling water in the cooling circuit, if appropriate.

#### Preserving the motor



Treat the motor as per the instructions issued by the motor manufacturer.

### 5.2.4 Inspecting the unit during storage

When a unit is preserved and stored: Put unit into operation every 6 months as follows:



After an extended period of storage the oil in the compressor and the motor will age. For this reason, you should drain the old off after 2 years and then replace it with new oil, see [Chapter 9.4 Maintenance activities - Lubricating oil system, Page 96](#).

1. Open the outlet cock.
2. Operate unit for 10 minutes.
3. For compressors with compressed oil lubrication: Ensure that the compressed oil lubrication is working correctly. In doing so, check the oil flow in the sight glass and/or oil pressure at the pressure gauge.
4. Stop the unit.
5. Open the condensate drain cocks and release the pressure.  
The unit is pressure-free.
6. Close condensate drain cocks.
7. Preserve unit again, see [Chapter 5.2.3 Preservation , Page 60](#).

## 6 Installation

### 6.1 Preparing the installation site

1. Make sure that the installation site complies with the required ambient conditions, see technical data.
2. Make sure that the surface is flat and clean.
3. Make sure that the surface can support the weight of the machine and that the machine is stable.
4. Make sure that the surface is suitable for fixing the machine down.
5. Make sure that there is adequate space around the unit. Observe the minimum distances and opening area of the doors.
6. Make sure that the discharge and air inlet openings are free from obstruction. Take appropriate measures to ensure that the openings remain clear.

## 6.2 Installing the unit

### 6.2.1 Installing the unit

#### DANGER

##### **Danger of poisoning due to pollutants in breathing air!**

- Units with petrol engines should never be operated in closed rooms!
- When filling breathing air cylinders using petrol units, each filled cylinder must be CO checked since, even with careful handling and the use of special cartridges with a catalyser (CO filter cartridges), contamination of the compressed air cannot be ruled out.
- Never operate the unit in the vicinity of open flames.

#### WARNING

##### **Danger of injuries due to improper assembling!**

Improper assembling can result in personal and material damage.

- Install and connect the unit properly and in accordance with the relevant guidelines.

1. Install the unit such that it is not exposed to direct sunlight.
2. Maintain adequate distance (at least 2 metres) from flammable objects.
3. Ensure that the machine can be accessed from all sides.
4. Ensure that there is 50 cm of space around the machine for fitting and disassembling the lines as well as for maintenance work and disassembling and assembling the machine.
5. On machines with combustion engines maintain a minimum distance of 1 metre around the cooling air inlet and the exhaust from the engine.
6. The unit should be installed in such a way that the cooling fan on the compressor can draw in cool air from the outside. For this, install the unit as close as possible to the intake opening.
7. Install the unit in such a way that intake of heated up or even hot air is avoided.

## Erecting the unit outdoors

### DANGER

#### **Danger of poisoning!**

Exhaust gases could get drawn in if there is no wind or swirling winds. This may lead, in the worst possible scenario, to fatal concentrations of CO in the cylinder.

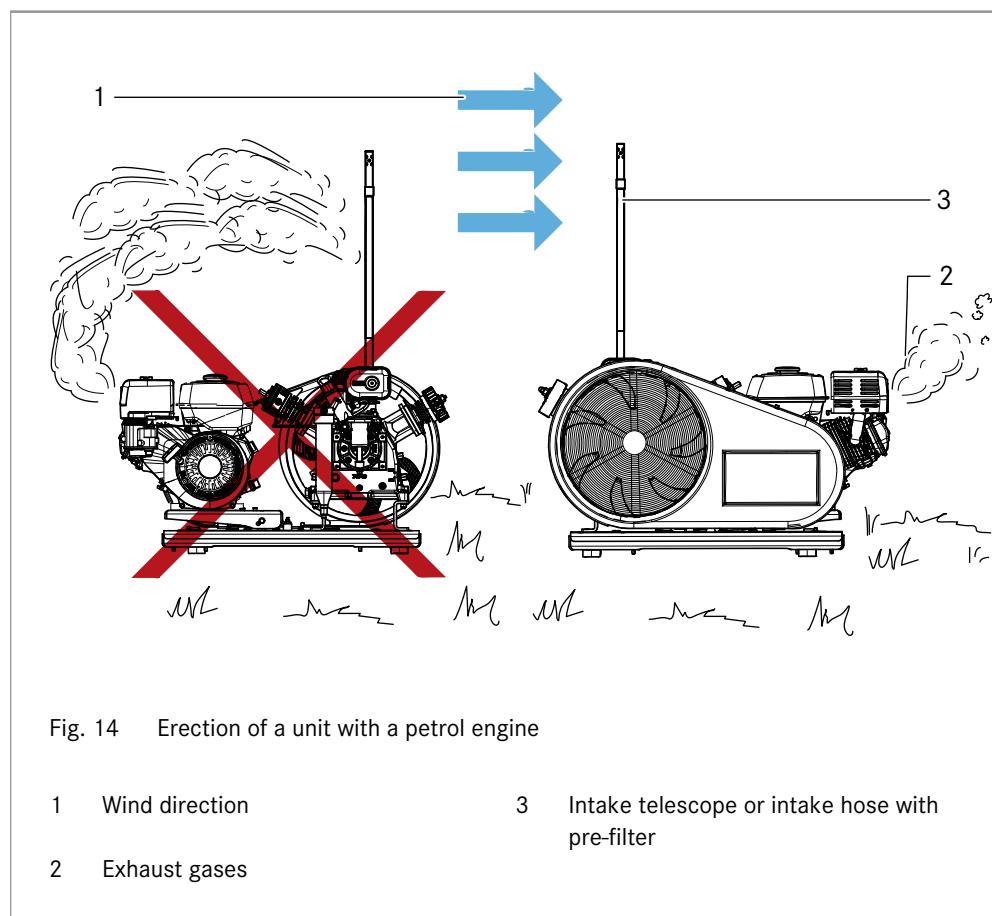
- Do not fill cylinders if there is a possibility that exhaust gases could be drawn in.
- Check the concentration of CO in the compressed air using a suitable gas measuring instrument.

### NOTICE

#### **Material damage caused by seawater and corrosion!**

- If operating in salt-containing atmospheres, the compressor must be sprayed with a corrosion-protection agent.
- Units with electric motors must always be operated and stored indoors.
- Units with petrol engines must be stored indoors after use.

1. Install the unit in a horizontal position.
2. Erect the unit with respect to the wind direction so that the exhaust gases are not drawn in. Use the intake telescope or intake hose with pre-filter to increase the distance between the exhaust gases and the air intake. If the wind changes you must turn the unit accordingly.



3. Make sure that there are no vehicles with their engines running close to the intake section.

### 6.3 Electrical connection of the unit



#### ⚠ DANGER

##### Danger to life due to electric voltages!

Contact with live parts leads to death or serious injuries.

- Work on the electrical unit may be carried out by an electrician only.
- Make sure that the unit is tension-free for the necessary work.

1. Follow the basic safety instructions, see [Chapter 2.4.1 Fundamental safety information, Page 18](#).
2. Observe the local electricity supply company's regulations.
3. On units that are supplied without a connection plug, provide a tested plug connector in the version applicable in the specific country.
4. Check for perfect protection line laying.
5. Check that the motor voltage, switchgear voltage and frequency agree with the mains voltage and mains frequency.
6. Apply the correct fuses. For this, use only slow-acting fuses.
7. The customer must supply the required cabling, main fuse and a main switch (power circuit breaker).
8. Ensure that the main switch can be related distinctly and directly to the unit.
9. For permanently fixed installations: Fit an isolator for isolation from the mains having a contact opening distance of at least 3mm at each terminal.

### 6.4 Having the unit accepted



At the BAUER KOMPRESSOREN factory, components such as the compressor, storage system and other accompanying assemblies are subjected to a technical partial acceptance inspection by the TÜV.

- Before commissioning the unit, have it inspected at the installation site by a qualified person or authorised inspection agency, see [Chapter 2.7 Safety regulations, Page 29](#).



## 7 Commissioning and operation

### 7.1 Starting up the unit

#### 7.1.1 Checks before each commissioning

- ✓ The unit is correctly installed and connected.
- ✓ All the safety equipment is installed and tested for proper function.
- 1. Ensure that only trained, instructed or competent personnel operate the machine, see [Chapter 2.6.2 Personnel selection and qualification, Page 27](#).
- 2. Determine whether maintenance work needs to be performed, see [Chapter 9.2 Maintenance table, Page 89](#).
- 3. Perform oil level check and if needed, refill oil, see [Chapter 9.4 Maintenance activities - Lubricating oil system, Page 96](#).
- 4. Perform a visual inspection of all components. If there are any irregularities, switch off the unit immediately and locate and rectify any errors or get in touch with the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).
- 5. For first commissioning, observe chapter 'Commissioning the unit for the first time' in addition.
- 6. When commissioning after a long standstill, observe chapter 'Commissioning the unit after longer downtimes' in addition.

☞ The unit is ready for operation.

### 7.1.2 Commissioning the unit for the first time



All compressor units are checked before delivery in the factory so that commissioning can be carried out after proper erection, installation and successful acceptance tests. However, the following points must always be observed.

1. Observe the Chapter 'Check before each commissioning'.
2. Install the accompanying filter cartridge(s). See [Chapter 9.6 Maintenance activities filter system, Page 103](#)
3. Turn the compressor over by hand using the flywheel to check that all components are capable of moving freely.
4. Check all fixing screws for tightness. If needed, re-tighten them with the specified torque.
5. Check all screwed pipe fittings for leaks. If needed, re-tighten them with the specified torque.
6. Make sure that the rotation direction of the motor is correct, see [Chapter 7.1.4 Checking the direction of rotation of the motor, Page 71](#).

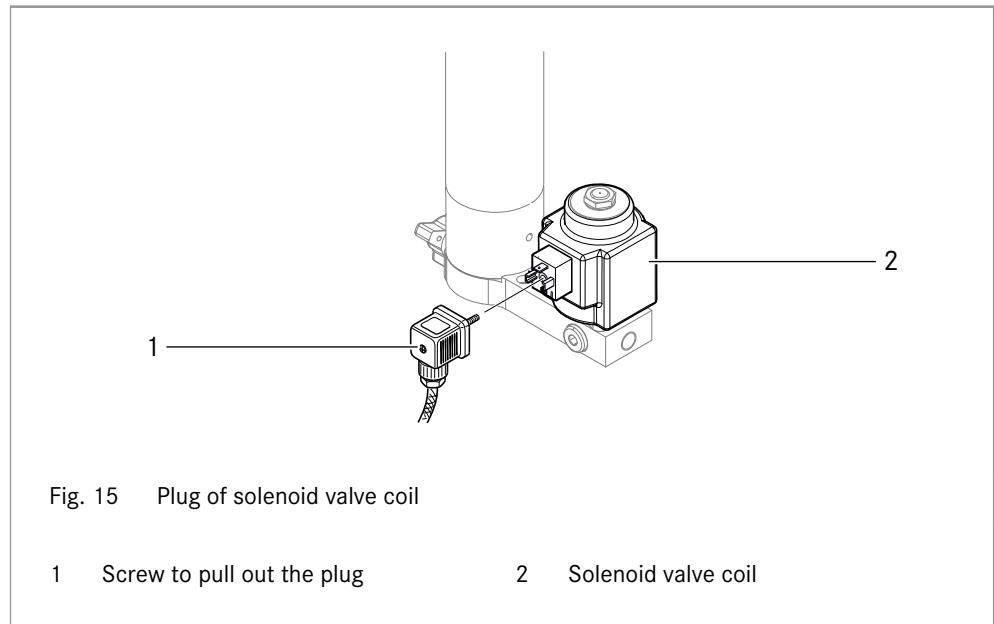


Fig. 15 Plug of solenoid valve coil

1 Screw to pull out the plug

2 Solenoid valve coil

7. Remove the plug from the solenoid valve coil and allow the compressor to run with open condensate drain valves for 10 minutes in order to ensure perfect lubrication before starting to build up the pressure.

- Or -

On units without automatic condensate drain, allow the compressor to run for 10 minutes with the condensate drain cocks open.

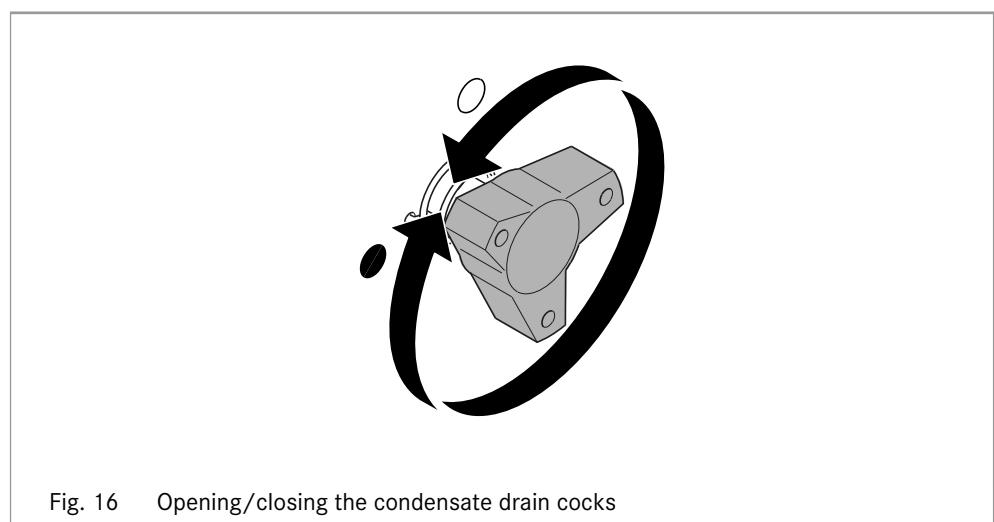


Fig. 16 Opening/closing the condensate drain cocks

8. After 10 minutes, fit the plug of the solenoid valve coil again.  
- Or -  
Close all the condensate drain cocks.
9. Observe the pressure build-up in the unit properly. If there are any irregularities, switch off the unit immediately and locate and rectify any errors or get in touch with the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

### 7.1.3 Commissioning the unit after longer downtimes

1. Please see chapter “Checks before each commissioning”.
2. Treat the motor in accordance with the instructions provided by the motor manufacturer.
3. After an extended period of storage, or after a standstill time of more than 2 years: the oil should be drained off and replaced with fresh oil, see [Chapter 9.4 Maintenance activities - Lubricating oil system, Page 96](#).
4. After the unit has been at a standstill for longer than 6 months: replace the filter cartridge, see [Chapter 9.6 Maintenance activities filter system, Page 103](#).

#### **WARNING**

##### **Danger of injuries due to highly compressed escaping gas!**

The escaping gas stream may cause uncontrolled movements of hoses and flexible pressure lines. In addition, the noise generated can cause hearing damage.

- Wear ear defenders.
- Fasten or hold the valves that are attached to hoses before opening them.

5. Start the unit with open outlet cock or filling valve and run for 10 minutes to warm up.
6. Check the oil flow and/or oil pressure.



##### *Is the oil flow and/or oil pressure incorrect?*

- Check the compressed oil lubrication and, if necessary, vent the oil circuit.
- 7. Close the outlet cock or the filling valve.
- 8. Test the final pressure safety valve for proper function, see [Chapter 9.9 Maintenance activities safety valves, Page 116](#).
- 9. Check the intermediate pressure safety valve for leaks.
- 10. If the unit operates normally, stop it.

☞ The unit is ready for operation.

### 7.1.4 Checking the direction of rotation of the motor



#### ⚠ DANGER

##### Danger to life due to electric voltages!

Contact with live parts leads to death or serious injuries.

- Work on the electrical unit may be carried out by an electrician only.
- Make sure that the unit is tension-free for the necessary work.
- Switch off the unit and secure it from being accidentally switched on again.
- Do not make any changes in the motor terminal box.
- Before switching on the unit, make sure that all panels have been fitted properly.

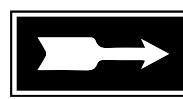
#### NOTICE

##### Material damage due to incorrect direction of rotation of the unit!

The integrated oil pump lubricates the compressor block only if the direction of rotation is correct. Inadequate lubrication can lead to damage to the unit within a few seconds.

- Ensure that the direction of rotation of the motor corresponds to the direction of rotation arrow on the unit.

1. Switch on the unit and switch off after max. 2 seconds.
2. Check the direction of rotation of the motor immediately after switching on with the direction of rotation arrow on the unit (Position and appearance of the



rotation arrow can vary, depending on the unit):



*Does the direction of rotation of the motor not correspond with the direction of rotation arrow on the unit?*

- Swap two of the three phases at the input terminals in the switchgear box.

### 7.1.5 Preparing for the operation with B-TIMER

1. Ensure that the compressor's pressure retention valve is set to 160 bar and that it is functioning correctly. Otherwise, the operation detection and the display of filter capacity do not function correctly.
2. Ensure that the settings in the setup menu are correct. Otherwise, the B-TIMER can only be used as an operating hours counter.
3. Reset all maintenance counters, see [Resetting the B-TIMER, Page 78](#). Otherwise, incorrect maintenance intervals are shown since storage periods are not taken into account.

## 7.2 Operation



### ⚠ CAUTION

#### Danger of injury due to automatic re-start of the unit!

The unit can re-start automatically depending on the version.

- Follow the safety instructions for the unit.
- Operate the unit only if the safety devices are installed.
- Ensure that a suddenly restarted unit does not pose dangers to people or the machine.

### 7.2.1 Switching on the unit

1. On units without automatic condensate drain: Open the condensate drain cocks to allow the pressure to dissipate and to allow the engine to start under zero load.



The compressor is automatically unloaded on units with automatic condensate drain.

2. For units with motor protection switch: Set switch to **I**.

**- Or -**

For units with compressor control system: Set the main switch to **I** and push the green start button.

**- Or -**

For units with petrol engine: Open the fuel tap. Set ignition switch to **I**. Set the choke on the petrol engine to Start and start the engine using the pull starter. As soon as the engine starts and is running smoothly, set the choke to Run.

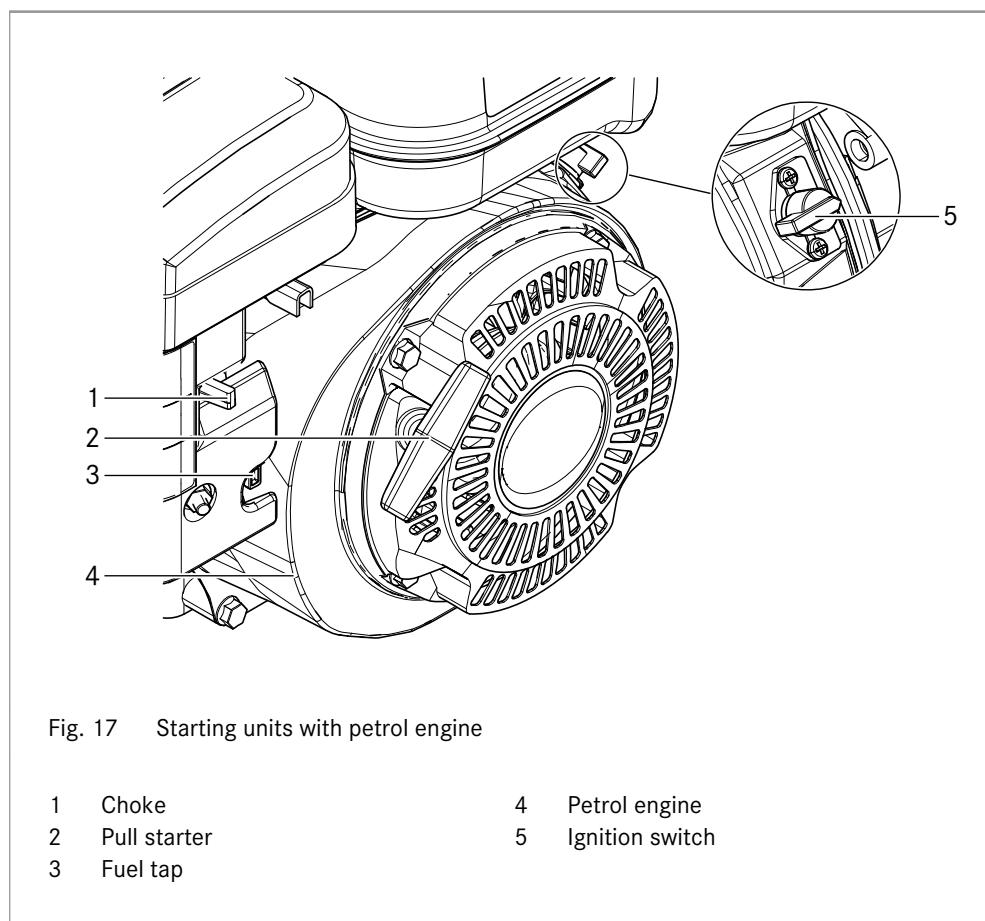


Fig. 17 Starting units with petrol engine

1	Choke	4	Petrol engine
2	Pull starter	5	Ignition switch
3	Fuel tap		

3. Close the condensate drain cocks and run the unit to final pressure.
4. Check the final pressure safety valve and pressure gauge.
5. Open the condensate drain cocks and drain the condensate when the final pressure is reached.

☞ The unit is ready for filling.

### 7.2.2 Switching the unit off

1. Close filling valve.
2. For units with electric motor: Set main switch to **0**.  
- Or -  
For units with petrol engine: Set the ignition switch to **0** and close the fuel tap.
3. Drain the condensate.
4. De-pressurize the unit to approx. 50-80 bar using the filling valve.
5. Close the condensate drain cocks and filling valve to prevent moisture from penetrating and causing saturation of the filter cartridge.

### 7.2.3 Behaviour in case of emergency

#### Switch off units with electric motor in the event of an emergency

➤ Pull out the mains plug.  
- Or -  
Set the motor protection switch or main switch to **0**.  
☞ The unit stops operation and switches to a safe condition.

#### Switch off units with petrol engine in the event of an emergency

➤ Set ignition switch to **0**.  
☞ The unit stops operation and switches to a safe condition.

#### Restarting the unit after an emergency

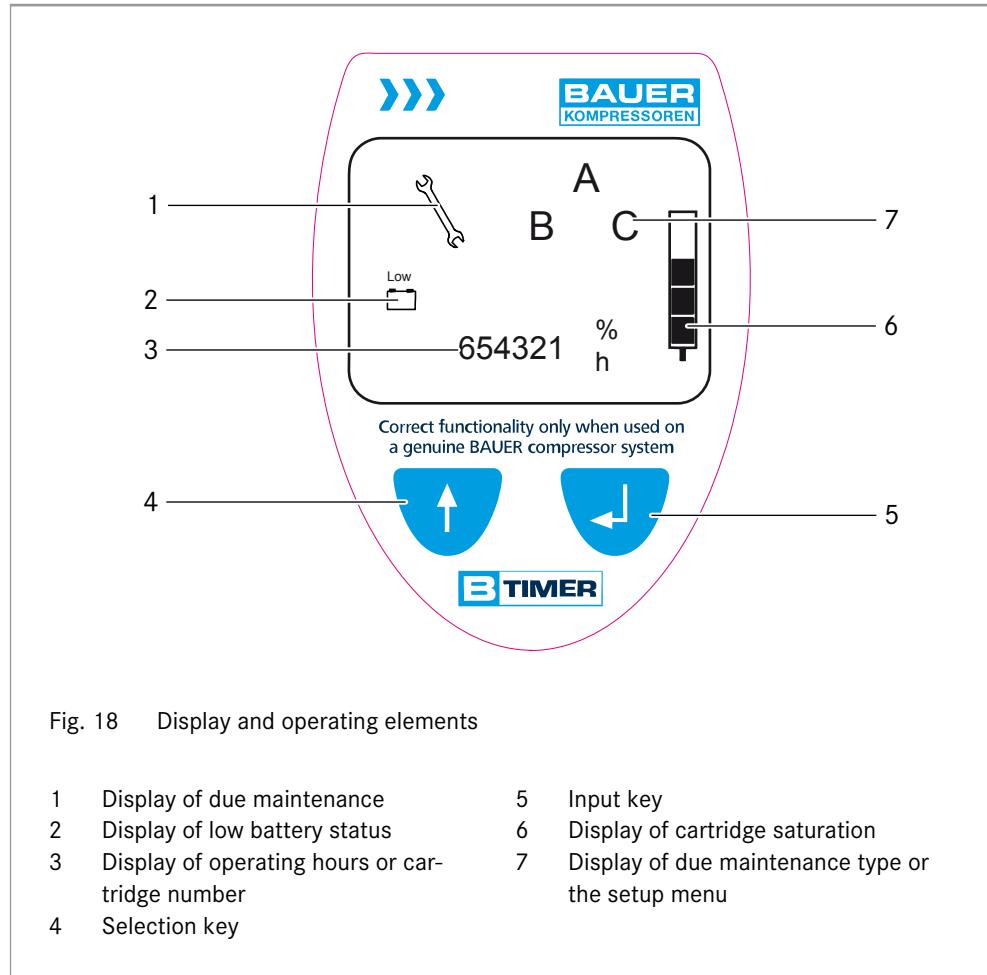
✓ The emergency situation no longer exists. The cause has been rectified.

1. Turn the red button of the emergency stop switch clockwise.
2. If applicable, reset the alarm message on the control unit.
3. Switch the unit on.

#### 7.2.4 Monitoring operation

1. For units without an operating hours counter: Note the operating hours down in order to ensure precise compliance with the maintenance intervals.
2. Monitor the operating hours to observe the permissible cartridge idle times of the filter system, see [Chapter 9.6 Maintenance activities filter system, Page 103](#).
3. Monitor the number of load cycles to adhere to the permissible load cycle numbers of pressure vessels, see [Safe handling of pressure vessels, Page 23](#).  
If there is no automatic cycle counter: Note down the number of load cycles run.
4. Drain condensate every 15 minutes.  
**- Or -**  
For units with an automatic condensate drain, ensure that it drains water off every 15 minutes.

### 7.2.5 Operating the B-TIMER



#### Switching on the B-TIMER



The B-TIMER switches itself on when the compressor is activated. The compressor operation is indicated in the display of the B-TIMER using a flashing "h".

➤ Press one of the buttons to switch on the B-TIMER without compressor operation.

☞ The main menu is displayed.



If no button is actuated within 1 minute, the display reverts to the main menu.

2 minutes without pressing a button and compressor operation causes the B-TIMER to switch off.

### Toggling the display

The B-TIMER shows the following information:

- Main menu
- Remaining filter capacity in percent
- Number of operating hours until service interval A (500 hours or yearly)
- Number of operating hours until service interval B (1000 hours or every 2 years)
- Number of operating hours until service interval C (2000 hours or every 4 years)
- Filter cartridge number (the filter icon blinks)

➤ Press the selection key to toggle between the displays.

### Resetting the B-TIMER

- ✓ The filter cartridge was replaced or corresponding maintenance activities have been carried out.

1. Switch to the corresponding display to reset the filter capacity of maintenance interval A, B, C.
2. Press the input key on the corresponding display for longer than 5 seconds.

## Setting the B-TIMER

The following values can be set on the B-TIMER:

- Enter the numbers of filter cartridges used
- Set the delivery volume
- Set the operating pressure
- Set the operating hours



After changing the set values, the B-TIMER must be reset.

1. Invoke the display of cartridge number to access the setup menu.
2. Press the selection key and the input key on the display simultaneously for longer than 5 seconds.  
↳ The filter icon blinks and shows the setup menu.



Press the selection key twice to return to the main menu.

## Setting the filter cartridge number

1. In the setup mode, press the selection key until the corresponding sub-menu is reached.  
↳ The filter icon blinks and "A" is shown.
2. Refer to the order documents for the number of the filter cartridge used.
3. Press the input key for 3 seconds if you want to change the setting.  
↳ The filter cartridge number starts blinking.
4. Use the selection key to select the desired filter cartridge number.  
**- Or -**  
For filter cartridge numbers that start with 999: Select 999000 using the selection key. Then set the respective flashing zero using the selection key and always confirm the changes using the input key.
5. Confirm the change using the input key.

### Setting the delivery volume

1. In the setup mode, press the selection key until the corresponding sub-menu is reached.  
↳ The filter icon blinks and "B" is shown.
2. Refer to the order documents for the delivery volume of the compressor in l/min.
3. Press the input key for 3 seconds if you want to change the setting.  
↳ The 1stposition starts blinking.
4. Use the selection key to set the 1stposition as desired.
5. Confirm the change using the input key.  
↳ The 2ndposition starts blinking.
6. Set the 2nd and 3rdpositions accordingly.

### Setting the operating pressure

1. In the setup mode, press the selection key until the corresponding sub-menu is reached.  
↳ The filter icon blinks and "C" is shown.
2. Press the input key for 3 seconds if you want to change the setting.
3. Use the selection key to set the operating pressure (200 bar, 200 bar or 200/300 bar).
4. Confirm the change using the input key.

### Setting the operating hours

1. In the setup mode, press the selection key until the corresponding sub-menu is reached.  
↳ The filter icon blinks.
2. Press the input key for 2 seconds if you want to change the setting.  
↳ The last position starts blinking.
3. Use the selection key to set the last position as desired.
4. Confirm the change using the input key.  
↳ The next position starts blinking.
5. Set the next positions accordingly.

### 7.2.6 Filling operation

#### DANGER

##### **Danger of poisoning due to pollutants in breathing air!**

Inhaling harmful gases can be dangerous to life.

- Make sure that the air drawn in is free from toxic gases, exhaust gases or solvent vapours.
- Do not fill breathing air cylinders with air from workrooms.
- Do not fill breathing air cylinders if the air drawn has a CO component of more than 25 ppmV (parts per million by volume). This is applicable even when using a CO filter cartridge.
- The bound CO<sub>2</sub> is released from the filter cartridge again after a pressure drop and an extended standstill period. For this reason, after a standstill period of more than 6 hours, purge the compressor unit before connecting breathing air cylinders, as described below.

### Flushing the unit



#### CAUTION

##### **Increased noise level!**

Danger of acute hearing damage or noise-related hearing impairment!

- Wear ear defenders.

1. Switch on unit.
2. Secure the filling valve, point it downwards and open it slowly.
3. Release the compressed air into the atmosphere for 2 minutes.
4. Close filling valve.

➤ The unit is ready for the filling operation.

### Filling the compressed air cylinders

#### **WARNING**

##### **Danger of injuries due to the use of non-approved or damaged filling equipment and compressed air cylinders!**

Unsuitable or damaged material may burst or tear under pressure.

- Use only approved filling devices and compressed air cylinders.
- Ensure that filling equipment and compressed air cylinders are in a flawless condition.
- Ensure that the compressed air cylinder to be connected for the filling pressure are approved; refer to the stamp on the shoulder of the cylinder.

#### **NOTICE**

##### **The final pressure safety valve is not designed for continuous operation.**

- Shut off the unit after reaching the filling pressure.
- For units with automatic switch-off, check if the unit shuts off when the filling pressure has been reached.
- Start safety valve only within the periodic maintenance.



Compressed air cylinders with an international filling connection can be connected with the international bracket filler connection (order number 79375).



Fig. 19 Filling the compressed air cylinders

1	Connect compressed air cylinder	3	Open cylinder cock	5	Close filling cock
2	Open filling cock	4	Close cylinder cock		

1. Connect the compressed air cylinder to the cylinder connection.
2. Open filling cock.

3. Open cylinder cock.  
    ⇒ The compressed air cylinder is filled.
4. Close the cylinder cock once the final pressure is reached.
5. Close filling cock.
6. Remove the compressed air cylinder.



During filling, the compressed air cylinder heats up because of the subsequent compression in the compressed air cylinder. Allow the cylinder to cool after removing it: this causes the pressure in the compressed air cylinder to drop. The compressed air cylinder can then be reconnected and filled until the relevant nominal filling working pressure is achieved.

## Switching over the filling pressure

### NOTICE

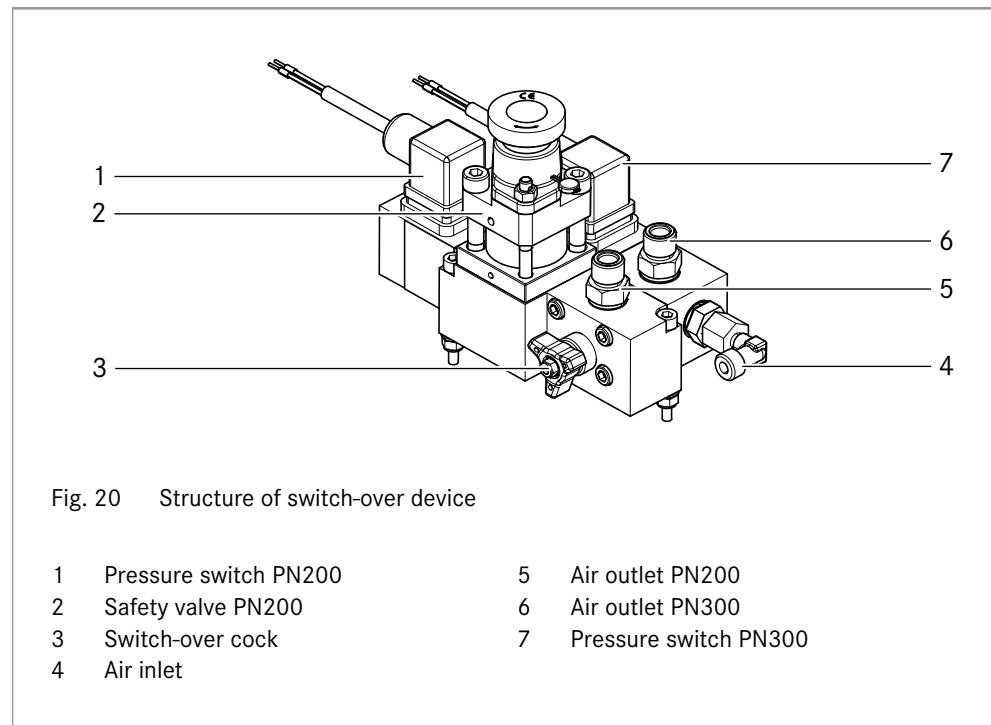
#### Danger of damage when switching over the filling pressure!

The switching over of the filling pressure damages the valve if it is under pressure.

- Do not actuate the switch-over device during the filling process.
- Depressurise the unit before actuating the switch-over device, see [Chapter 9.6.3, Page 105](#).

Switch over the filling pressure as follows:

- ✓ The compressor unit is switched off.
- ✓ The switch-over device is de-pressurised.



- Turn the switch-over cock counter-clockwise in order to fill compressed air cylinders to 200 bar.

- Or -

Turn the switch-over cock clockwise in order to fill compressed air cylinders to 300 bar.

## 8 Troubleshooting

### 8.1 Fault finding and fault correction

#### 8.1.1 Fault finding in drive motor

Description	Cause	Rectification
Motor does not start.	Fault in the electrical power supply.	Check lines and fuses. Compare the motor data with the mains supply.

#### 8.1.2 Fault finding in compressor block

Description	Cause	Rectification
No oil pressure.	Air in the oil pump. Direction of rotation is incorrect.	Vent the oil pump and lines. Check and rectify direction of rotation.
The compressor does not achieve final pressure.	Line or condensate drain valves leaking. Final pressure safety valve blows off too early. Piston rings stuck or worn. Piston clearance too large.	Tighten and seal lines. Clean condensate drain valves and replace if worn. Clean and reset final pressure safety valve. Free the piston rings or replace them if needed. Check clearance and replace parts if necessary.
Delivery rate drops.	Piping leaking.	Tighten and seal lines.
Intermediate pressure safety valve blows off.	Intermediate pressure too high, suction valves or pressure valves leaking.	Check suction and pressure valves and replace if needed.
Compressor getting too hot.	Cooling air feed is inadequate. Suction valves or pressure valves leaking. Direction of rotation is incorrect.	Check installation. Observe a max. ambient temperature of +45 °C. Check suction and pressure valves and replace if needed. Check and rectify direction of rotation.
Taste of oil in the air.	The filters are not serviced, and the filter cartridges are saturated. Incorrect oil type used.	Maintain the filters and replace the filter cartridge. Use approved oil. Carbonised valves should be cleaned.

### 8.1.3 Fault finding in automatic condensate drain

Description	Cause	Rectification
Inadequate water removal or much condensate coming out (>40 ml at function check)	Opening time or cycle time of solenoid valve set incorrectly	check the set opening time or cycle time at the timer and have it adjusted if necessary
	Solenoid valve does not open fully	Check solenoid valve, clean and replace if necessary
	Solenoid valve does not open; solenoid valve is defective	Check solenoid valve and replace if necessary
	Solenoid valve does not open; continuous voltage at the solenoid valve	Check electrical control system and timer
Only a small amount of air/ condensate comes out during function check	Condensate valve/ sieve insert contaminated	Dismantle condensate valve, remove sieve insert, dismantle and clean the components or replace them
The operating pressure is not achieved or the condensate valve is dripping	Solenoid valve leaking, pilot pressure greater than 15 bar, valve seat defective	Remove condensate valve, dismantle and clean; replace valve seat
	Solenoid valve leaking, pilot pressure greater than 15 bar, valve piston moves with difficulty	Remove the condensate valve, dismantle and clean; check ease of movement of the piston in the valve body after cleaning, replace piston if necessary
	Solenoid valve leaking, pilot pressure greater than 15 bar, valve piston surface damaged	Replace valve piston
	Solenoid valve leaking, solenoid valve contaminated	Clean solenoid valve and replace if necessary
	Solenoid valve leaking, solenoid valve seat is damaged	Replace solenoid valve
	Solenoid valve does not close, solenoid valve is defective	Replace solenoid valve
	Solenoid valve does not close, solenoid valve not getting power	Check power supply and re-establish it if necessary
	Condensate valve/ solenoid valve hose is leaking	Check the hose; check correct seating of the hose in the connections; replace hose and/ or plug connections if necessary

#### 8.1.4 Fault finding in electrical control system

Description	Cause	Rectification
Control system does not switch on.	No control voltage present. Control fuse defective. Control voltage circuit interrupted due to loose line or terminals. Thermal over-current relay has responded.	Check the supply line. Replace fuse and rectify the cause. Tighten the terminals. Check compressor drive and correct the settings.
Thermal over-current relay for drive motor responds.	Power consumption too high. Over-current relay is set too low.	Check compressor drive. Rectify the setting.
Control system does not switch off; the final pressure safety valve blows off.	Final pressure monitor is set too high. Final pressure safety valve defective.	Rectify the setting. Replace the safety valve.
On-site residual current device (RCD) responds.	Residual current device is unsuitable.	Use all-current sensitive RCD (type B).

#### 8.1.5 Error display B-TIMER

Description	Cause	Rectification
"Error 1" or "Error 2" is shown on the display.	Temperature sensor defective.	B-TIMER must not be used any longer. BAUER Contact the Customer Service and get the device repaired.



## 9 Maintenance

### 9.1 Evidence of maintenance

For the evidence of regular maintenance activities, we recommend using the maintenance booklet supplied with every unit (see appendix), in which details of all work carried out should be entered together with the date on which it took place and signature. This helps to prevent the need for costly repairs as a result of neglecting to carry out maintenance work.

In the event of warranty claims being made, the maintenance booklet will help you to prove that this work has been carried out and that damage cannot be attributed to inadequate maintenance. BAUER KOMPRESSOREN refers to its General Terms and Conditions.

### 9.2 Maintenance table

The following chapters describe the maintenance activities that are listed in the maintenance table, and which are necessary for optimal and fault-free operations. If the regularly scheduled checks reveal an enhanced degree of wear and tear, the required maintenance intervals must be shortened in accordance with the observed wear and tear.

Information regarding the maintenance intervals can be found in the maintenance booklet.

In case of queries related to maintenance work and maintenance intervals, please contact the service department of BAUER KOMPRESSOREN, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

## 9.3 Resources for maintenance and repairs

### 9.3.1 Bolt torques

Unless otherwise stated, the following torques must be used. The specified values apply to greased bolts.

Valve head screws must be tightened with a torque wrench. Self-locking nuts must not be re-used, replace them.



Exception related to the following torques: Ensure that the fixing screws for the final pressure safety valve (059410, M 8) are only tightened with 10 Nm (7 ft. lbs.).

Type of bolt	Thread	Max. torque
Hex head bolts, hexagon socket bolts	M 6	10 Nm (7 ft. lbs.)
Hex head bolts, hexagon socket bolts	M 8	25 Nm (18 ft. lbs.)
Hex head bolts, hexagon socket bolts	M 10	45 Nm (32 ft. lbs.)
Hex head bolts, hexagon socket bolts	M 12	75 Nm (53 ft. lbs.)
Hex head bolts, hexagon socket bolts	M 14	120 Nm (85 ft. lbs.)
Hex head bolts, hexagon socket bolts	M 16	200 Nm (141 ft. lbs.)
Pipe connections (cutting ring screwed fittings)		hand tight + 1/2 turn

Tab. 7 Bolt torques

### 9.3.2 Bolt tightening sequence

All the valve head screws, cylinder fixing screws and the corresponding nuts must be tightened evenly in a cold condition, and this must be done in the following order.

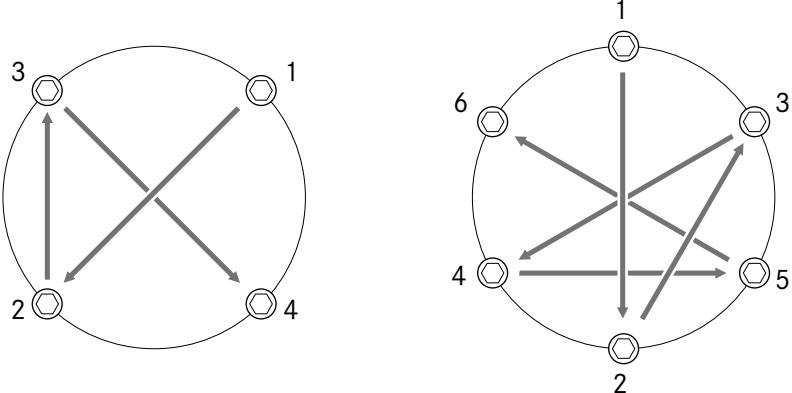


Fig. 21 Bolt tightening sequence

### 9.3.3 Lubricant

Application range	Lubricant
Rubber parts, plastic parts, thread of the filter housing	BAUER special grease, order number N19752 (container - 350 g) or BAUER special grease, order number 072500 (container - 3 g)
O-rings	BAUER special grease, order number 072500 (container - 3 g)
Shaft seal rings: Ring and shaft	BAUER special grease, order number 072500 (container - 3 g)
Bolts, pins, threaded pins	BAUER special grease, order number N19753 or similar material with copper or MoS <sub>2</sub> additive

Tab. 8 Lubricant table

### 9.3.4 Lubrication oil

Depending on the type of application of the unit, the following is demanded of the lubrication oil that is used:

- low residue formation
- no carbon deposits in the valves
- good corrosion protection
- emulsification of condensed water in crankcase

To ensure perfect operation, BAUER KOMPRESSOREN recommends using only those oils listed in this operating instructions and that have been tested and approved by us.

### Lubrication oil list

The exclusive use of high-quality branded oils is essential because of the thermal loads encountered in the compressor. In order to ensure perfect operation, we recommend using only those oils listed below from BAUER in the quoted operating conditions tested and approved by us.



- If the compressor unit is operating under difficult conditions, e.g. continuous running or high ambient temperatures, we recommend exclusive use of the BAUER special synthetic compressor oils.
- When operating under less hard conditions, for intermittent use or when using with extended standstill times, we can also recommend the use of mineral oils.
- These oils have been tried and tested at ambient temperatures listed below. At low ambient temperatures you will need compressor heating that is capable of heating the plant up to the permissible ambient temperature.

BAUER special compressor oils			
Designation	Oil type	Permissible type of application	Permissible environmental temperature
N28355	Synthetic oil	<ul style="list-style-type: none"> <li>• Breathing air</li> <li>• Industrial air</li> <li>• Helium, argon</li> <li>• Nitrogen</li> </ul>	+5...+45°C
N26303	Synthetic oil	<ul style="list-style-type: none"> <li>• Natural gas</li> </ul>	+5...+45°C
N30387	Synthetic oil	<ul style="list-style-type: none"> <li>• Industrial air</li> <li>• Helium, argon</li> <li>• Nitrogen</li> <li>• Natural gas</li> </ul>	+10...+45°C
N22138	Mineral oil	<ul style="list-style-type: none"> <li>• Breathing air</li> <li>• Industrial air</li> </ul>	+5...+45°C

Tab. 9 Lubrication oil list

BAUER special compressor oils can be delivered in the following packing units:

Volume	Oil type			
	N28355	N26303	N30387	N22138
0.5-l cylinder	N28355-0.5	—	—	N22138-0.5
1-l cylinder	N28355-1	N26303-1	N30387-1	N22138-1
5-l can	N28355-5	N26303-5	N30387-5	N22138-5
20-l can	N28355-20	N26303-20	N30387-20	N22138-20

Tab. 10 Packing units - BAUER special compressor oils

### 9.3.5 Adhesive and sealant

Application range	Adhesive or sealant
High-strength bolt locking, gluing in of threaded studs	Order number N25834 (50 ml)
Medium strength bolt locking	Order number N28220-S02 (50 ml)
Thread sealing cord, sealing of conical threads	Order number N42644
Temperature-resistant silicone sealant, metal-on-metal sealing, high-temperature bonds, e.g. valve heads, cylinders	Order number N18247 (50 g)
Thread sealing tape, sealing of water connections	Order number N19943

Tab. 11 Adhesive and sealant table

### 9.3.6 Test medium

Application range	Test medium
Screwed fittings, lines	Leak detection spray, order number N25833

Tab. 12 Test medium table

### 9.3.7 Filter cartridges

#### Filter cartridges for the breathing air application P21

Order number	Filter system	Filtration of	SECURUS monitoring
057679	P21	H <sub>2</sub> O/Oil	-
059183	P21	H <sub>2</sub> O/Oil/CO	-

#### Filter cartridges for the breathing air application P31

Order number	Filter system	Filtration of	SECURUS monitoring	Length [inch]
80100	P31	H <sub>2</sub> O/Oil	-	10
80114	P31	H <sub>2</sub> O/Oil/CO	-	10

#### Filter cartridges for the breathing air application P41

Order number	Filter system	Filtration of	SECURUS monitoring	Length [inch]
061686	P41	H <sub>2</sub> O/Oil	X	20
062565	P41	H <sub>2</sub> O/Oil	-	20
061687	P41	H <sub>2</sub> O/Oil/CO	X	20
067224	P41	H <sub>2</sub> O/Oil/CO	-	20

## 9.4 Maintenance activities - Lubricating oil system



### CAUTION

#### Danger of burns!

Even after switching off the installation, pressure lines, heat exchangers, compressors, condensate valves, oil and possibly cooling water can be at high temperatures. There is a danger of burns if they are touched!

- Wear appropriate personal protection equipment or gloves.

### 9.4.1 Checking the oil level

#### NOTICE

#### Damage to unit due to incorrect oil level!

- Make sure that the oil level is between the minimum mark and the maximum mark.

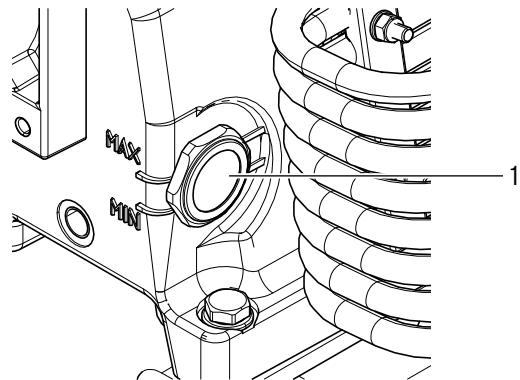


Fig. 22 Oil level gauge

- Use the oil level gauge to check the oil level. The oil level must be within the two markings on the oil level gauge.



*Is the oil level under the minimum mark?*

- Refill oil, see [Filling oil, Page 100](#).

#### 9.4.2 Oil change



##### ⚠ CAUTION

###### Danger of burns!

Even after switching off the installation, pressure lines, heat exchangers, compressors, condensate valves, oil and possibly cooling water can be at high temperatures. There is a danger of burns if they are touched!

- Wear appropriate personal protection equipment or gloves.

##### NOTICE

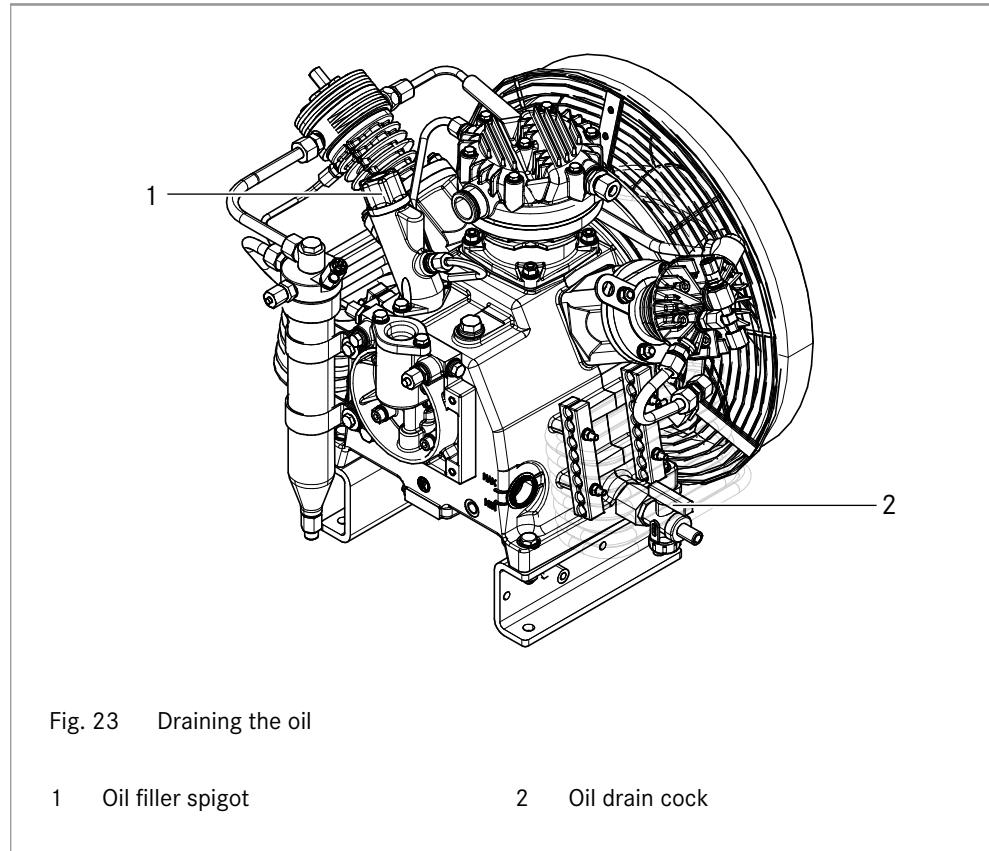
###### Damage to the compressor due to contaminated oil filter!

If the oil filter is contaminated, the bypass valve in the oil filter opens. The unfiltered oil then circulates through the compressor.

- Replace the oil filter after each oil change operation.

### Draining the oil

- ✓ Unit is at operating temperature.
- ✓ Suitable container is available for collecting the oil.



1. Open oil filler spigot.
2. Open the oil drain cock and collect the oil in a suitable container.



If the red plastic handle of the oil drain cock is damaged or lost, the cock can be opened using the cover cap.

For this purpose, unscrew the cover cap, turn it 90° upwards, place it on the cock and open it.

3. Close oil drain cock.
4. Use a suitable wrench to unscrew the oil level gauge.
5. Clean the inner side (prism) of the oil level gauge.
6. Check sealing ring and replace if necessary.
7. Screw in the oil level gauge with a torque of 10 Nm.

**NOTICE****Environmental damage caused by improper disposal of waste oil!**

➤ Dispose of used oil as special waste. Be mindful of the local regulations relating to the disposal of special waste.

## 8. Dispose of used oil.

**Changing the oil filter**

- ✓ The required replacement parts are available.

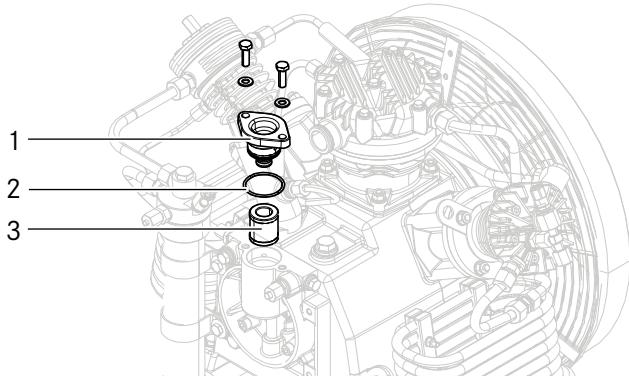


Fig. 24 Replacing the oil filter

1	Cover of the oil filter housing	3	Filter element
2	Sealing ring	4	Closing slug

1. Use key SW 13 to undo the screws on the cover of the oil filter housing.
2. Pull the oil filter out of the oil filter housing, along with the cover.
3. Detach the oil filter from the cover.
4. Insert new oil filter.
5. Install and fasten cover.
6. Fill oil, see [Filling oil, Page 100](#).

## Filling oil

### NOTICE

#### Risk of damage when changing the oil type!

➤ Before changing the oil type note the chapter "Oil change".

- ✓ Suitable BAUER compressor oil is available, see [Chapter 9.3.4 Lubrication oil, Page 92](#). Refer to technical data for the required quantity.
- 1. Open oil filler spigot.
- 2. Fill fresh oil until the oil reaches the maximum-mark on the oil level gauge.  
- **Or** -  
If a new oil (as opposed to the type that has been used so far) is supposed to be used: Change the oil.
- 3. Close oil filler spigot.
- 4. Use the oil level gauge to check the oil level.  
↳ The oil level must be between the two markings on the oil level gauge.
- 5. Wait for a few minutes, then start up the unit when the oil level is as it should be.

### 9.4.3 Changing the oil type

- ✓ Oil is drained.
- ✓ Oil filter is replaced.

### NOTICE

#### Damage to unit due to improper change of oil type!

➤ Adhere to the following instructions when switching over to another oil type.

1. Check the valves, coolers, separators and lines for deposits.



*Are deposits present in valves, coolers, separators or lines?*

➤ Remove deposits, or replace valves, coolers, separators and lines.

2. Fill compressor with new oil.
3. After 100 operating hours: Replace oil filter and check the overall contamination degree of the compressor oil. Change the oil if it is severely contaminated.

#### 9.4.4 Venting the oil pump

If no oil pressure builds up after the compressor starts running, the oil pump may need to be vented. This is particularly applicable after maintenance and servicing work, or if the unit was operated in conjunction with an incorrect rotational direction.

1. If the compressor is running and the condensate drain valves are open, remove the plug (see [\(Fig. 24-4\)](#)).
2. Re-attach the plug when bubble-free oil emerges.
3. Check the oil level, see [Chapter 9.4.1 Checking the oil level, Page 96](#).

## 9.5 Maintenance activities - Intake section

### 9.5.1 Replacing the intake filter

Maintain the filter insert of the intake filter regularly and/or as per the maintenance plan.



The maintenance intervals are dependent on the condition of the air being drawn in. If there is a lot of dust it may be necessary to carry out maintenance monthly or weekly.

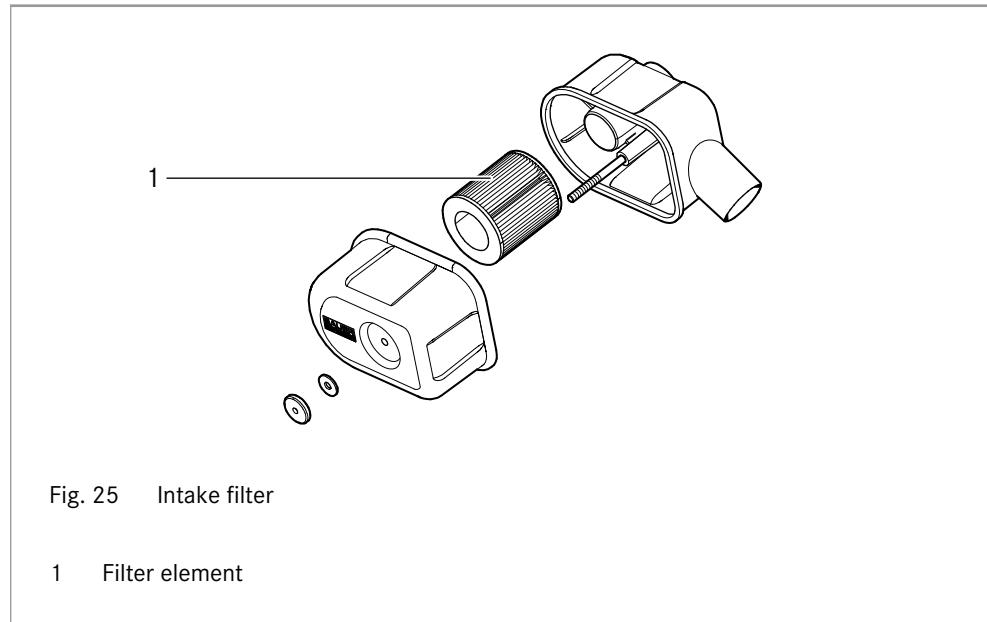


Fig. 25 Intake filter

1 Filter element

#### **WARNING**

**Danger of poisoning due to contaminated breathing air!**

- Ensure cleanliness and hygiene.
- Only use cleaning agents and sealant that are suitable for breathing air.

1. Remove the cover.
2. Remove filter element.
3. Brush off or blow out the filter element dry and change it if necessary.
4. Clean the filter housing with a damp cloth. Make sure that no dust gets into the intake tube.
5. Insert new filter element.
6. Place the cover.

## 9.6 Maintenance activities filter system

### 9.6.1 General maintenance advices

#### **WARNING**

##### **Risk of damages and injuries during maintenance!**

When disregarding the maintenance instructions, injuries and/or damages may occur. Observe following advices:

- Depressurise system before starting any maintenance work.
- Replace filter cartridges in time.
- Do not exceed the approved service life limit of the pressure vessels.
- Pay attention to cleanliness and hygiene.
- Use suitable cleaning and sealing products.
- Do not use cartridges with damaged package.
- Do not use cartridges after expiration date.

### 9.6.2 Checking the load cycles

The separators and filters are dynamically loaded and need to be checked and, if necessary, replaced at set intervals and number of load cycles.

The load cycles of the filter depend on the operating conditions and will need to be determined individually.

For further information see the accompanying operating instructions for pressure equipment.

The responsibility for monitoring the load cycles of all pressure vessels is with the operator.



The determination of the load cycles depends on the unit configuration. Determine the load cycles as follows, depending on the equipment level:

- Units with electrical control system: the load cycles are counted by the cycle counter in the switchgear box of the compressor control system and can be read off there at any time.
- Units without electrical control system: the operating hours should be written down. With the proviso that a number of load cycles of 4 cycles per hour is maintained, i.e. the condensate drain takes place every 15 minutes, the service life of the container in operating hours is a quarter of the max. number of load cycles. Example: At a max. number of load cycles of 4000 load cycles and 4 cycles per hour, the service life of the container is 1000 hours.
- Units with B-TIMER: read off the operating hours on the display of the B-TIMER and derive the load cycles as described above.

1. Determine the already carried out load cycles. See note above.
2. Determine the max. permissible number of load cycles of the container with the aid of operating instructions provided for pressure vessels.
3. Compare the determined or read-off load cycles with the max. permissible number of load cycles of the relevant container. If necessary, test the container or have it replaced.

### 9.6.3 De-pressurising the unit



#### ⚠ CAUTION

##### Increased noise level!

Danger of acute hearing damage or noise-related hearing impairment!

- Wear ear defenders.

- ✓ The unit is switched off.
- 1. Open all the condensate drain cocks.
- 2. Secure the filling valve, point it downwards and open it slowly.
- 3. Channel the compressed air out in the open until the pressure gauge shows 0 bar.
- 4. On units having a separate final separator (starting with filter system P41), also open the venting valve of the filter until the pressure gauge shows 0 bar.
- 5. Close the valves and condensate drain cocks.
- The unit is pressure-free.

#### 9.6.4 Determine the cartridge service life

In case of units without filter monitoring, BAUER recommends the use of the BAUER KOMPRESSOREN APP (B-APP) and of the contained calculation tool for the determination of the cartridge service life. The calculation tool takes into account a variety of parameters and thus enables a precise determination of the service life. Tolerances in the cartridge filling and varying operating temperatures can nonetheless lead to considerably deviations from the stated details which can, as a result, only be considered to be reference values for the operating company.



You can download the B-APP free of charge from the AppStore and from Google Play.

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In case of units with filter monitoring, the drying capacity of the filter cartridge is continuously monitored and upcoming cartridge changes are automatically displayed.

### Determine cartridge service life on the basis of tables

The number of operating hours or the number of possible cylinder fillings per filter cartridge can be determined using the tables in the appendix, with due regard to the ambient temperature and the cartridge being used.



The tables contain calculated cartridge service life figures, which refer to defined and constant operating conditions. Tolerances in the cartridge filling and varying operating temperatures can lead to considerably deviations from the stated details which can, as a result, only be considered to be reference values for the operating company.

### Determining the cartridge service life in cylinder fillings

The cartridge service life values and the maximum number of cylinder fillings per filter cartridge or cartridge combination is to be determined as follows:

			Number of bottle fillings n and bottle size [l]	
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	Moisture content of air, saturated X [g/m³]	7 l	10 l
10	20 - 24	17,31 - 21,80	4433 - 3520	3103 - 2464
15	25 - 29	23,07 - 28,79	3327 - 2666	2329 - 1866
20	30 - 34	30,40 - 37,63	2524 - 2039	1767 - 1428
25	35 - 39	39,65 - 48,64	1936 - 1578	1355 - 1104
30	40 - 44	51,21 - 62,41	1499 - 1230	1049 - 861

Fig. 26 Example: Determining the cartridge service life in cylinder fillings

1. Take the cartridge number from the sticker on the filter and select the relevant table in the appendix to these instructions.
2. Select the column with the relevant cylinder size e.g. 10 l.
3. Select the row with the average ambient temperature e.g. 30°C.
4. Read off the number of maximum permitted cylinder fillings e.g. 1049 - 861.

The cartridge service life can also be determined on the basis of the operating hours, see [Determining the cartridge service life in hours, Page 108](#).

### Determining the cartridge service life in hours

The cartridge service life values and the maximum number of operating hours per filter cartridge or cartridge combination is to be determined as follows:

Cartridge Life time [hours]						
Filling pressure $p = 200$ bar		Delivery [l/min]				
Ambient temperature $t_U$ [°C]	Temperature in final separator $t_{Ab}$ [°C]	150	200	320	450	
10	20 - 24	690 - 548	517 - 411	323 - 257	230 - 183	
15	25 - 29	517 - 415	517 - 415	517 - 415	172 - 138	
20	30 - 34	393 - 317	393 - 317	393 - 317	131 - 106	

Fig. 27 Example: Determining the cartridge service life in operating hours

1. Take the cartridge number from the sticker on the filter and select the relevant table in the appendix to these instructions.
2. Select the table with the correct filling pressure e.g. 200 bar.
3. Select the column with the correct delivery volume e.g. 320 l/min.
4. Select the row with the average ambient temperature e.g. 20°C.
5. Read off the number of maximum permitted operating hours e.g. 393 - 317.

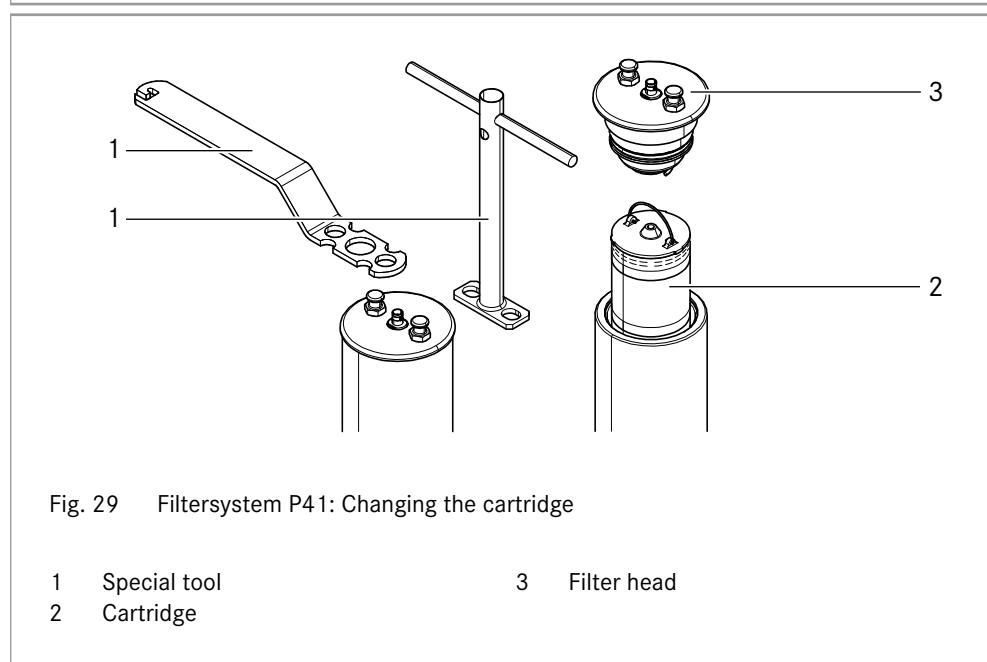
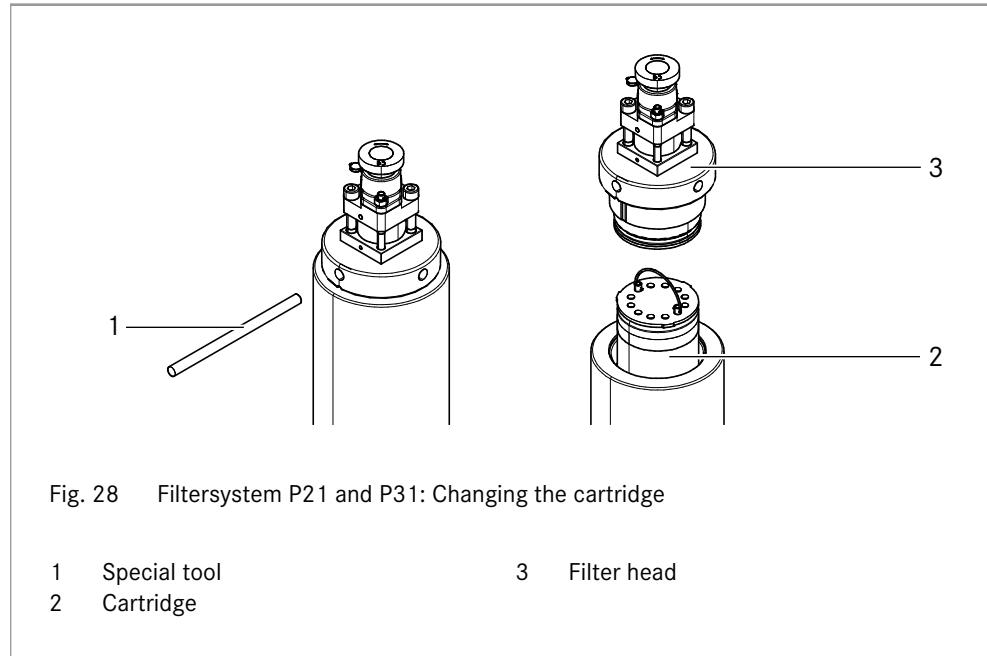
The cartridge service life can also be determined on the basis of the cylinder fillings, see [Determining the cartridge service life in cylinder fillings, Page 107](#).

### 9.6.5 Changing the cartridge of the purifier

When the system has been used for the maximum permissible number of operating hours, change the cartridge as follows.

- ✓ Vacuum packing of the cartridge is undamaged.
- ✓ Special filter spanner (part of the scope of supply).
- ✓ A clean cloth is provided.
- ✓ A suitable grease for breathing air application is available, see [Chapter 9.3.3 Lubricant, Page 91](#).

1. De-pressurise the unit, see [Chapter 9.6.3 De-pressurising the unit, Page 105](#) .
2. In case of filter systems with SECURUS filter monitoring: Disengage union nuts detach the connector of the cable from the coupling.



3. Use the special filter spanner tool to unscrew and remove the filter head.
4. Pull the cartridge out of the filter using the bracket.
5. Wipe out the inside of the filter housing with a clean cloth. Check the filter housing for corrosion and, if necessary, replace the defective parts.
6. Remove the new cartridge from the vacuum packing, and remove the protection caps from both ends.
7. Insert the cartridge into the filter, and push it downwards into the slot.
8. Clean and lightly lubricate the screwed fitting and thread of the filter head.

9. Screw in the filter head manually, and use the special wrench to tighten it.  
Maximum torque: 1 Nm

**NOTICE****Environmental damage caused by improper disposal of filter cartridges!**

Dispose of saturated filter cartridges as special waste. Be mindful of the local regulations relating to the disposal of special waste.

10. Dispose of saturated cartridge.

## 9.7 Maintenance activities pressure retention valve

### 9.7.1 Checking the pressure retention valve

A pressure gauge is connected upstream to the pressure retention valve.

- Check the pressure retention valve for leak-tightness on both the inside and the outside, and check its functioning.



As long as the pressure delivered by the compressor is below the set opening pressure of the pressure retention valve, the display on the final pressure gauge and the final pressure shows zero, the pressure increase before the pressure retention valve can be watched on the pressure gauge. As soon as the pressure retention valve starts to open, the final pressure gauge and the final pressure display shows the initial rise in pressure. The opening pressure can be checked on the pressure gauge before the pressure retention valve.

See technical data for the opening pressure of the pressure retention valve.



*Does the opening pressure of the pressure retention valve deviate from the specified setting value?*

- Set the pressure retention valve.

### 9.7.2 Adjusting the pressure retention valve



The pressure retention valves may only be adjusted by trained personnel. For more information, contact the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

1. Disengage locknuts (if they are present).
2. Unscrew the setting screw a little.
3. Use the setting screw to re-adjust the opening pressure.



A rotation to the right increases the pressure, while a rotation to the left reduces it.

4. After the adjustment has been made, check whether the pressure retention valve is working properly, see [Chapter 9.7.1 Checking the pressure retention valve, Page 112](#).

## 9.8 Maintenance activities for filling equipment

### 9.8.1 Check filling hoses

The testing period for hose lines must be determined by operators as per the stipulations of the locally applicable regulations (the Industrial Safety Regulation applies in Germany). The hose lines must be tested by a competent person.



Based on the German regulations, Bauer recommends the following testing periods for compressors:

- Normal operating conditions:
  - Testing period: 6 months (including storage period)
  - Replacement schedules: 6 years
  - Storage period: max. 2 years
- Increased requirements (strong internal and external influences, short cycle times, pressure impulse):
  - Testing period: 6 months (including storage period)
  - Replacement schedules: 2 years
  - Storage period: max. 2 years

- ✓ The compressor unit is switched off.
- ✓ The compressor unit is depressurised

1. Check whether connection threads are dimensionally correct and free of errors.
2. Check whether the transition point between the hose fitting and hose is damaged.
3. Check whether the outer hose covering is torn.
4. Damaged hose lines must be exchanged and scrapped immediately.

### 9.8.2 Maintaining the filling valves

A sintered filter in the filling valve body protects the filling valve from contamination.

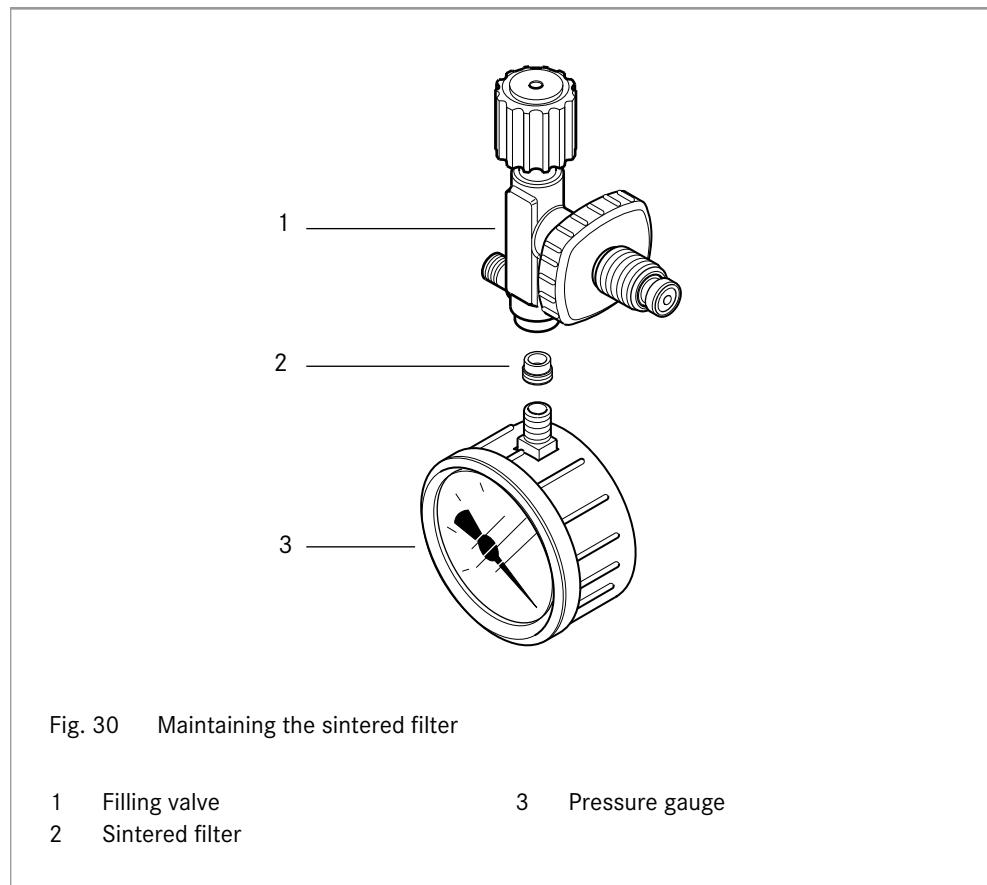
Dismantle and clean the sintered filter of the filling valve as follows; in case of severe contamination, replace it if necessary:

- ✓ The compressor unit is switched off.
- ✓ The compressor unit is secured against restarting.

#### **WARNING**

##### **Danger of poisoning due to contaminated breathing air!**

- Ensure cleanliness and hygiene.
- Only use cleaning agents and sealant that are suitable for breathing air.



1. De-pressurise the compressor unit, see [Chapter 9.6.3 De-pressurising the unit, Page 105](#).
2. Unscrew the pressure gauge from the filling valve body.
3. Unscrew the sintered filter using an adequately wide screwdriver.
4. Wash the sintered filter in a grease dissolving hot soap solution and blow out with compressed air; replace it in case of severe contamination or damage.

5. Screw in the sintered filter.
6. Seal the pressure gauge (see [Chapter 9.3.5 Adhesive and sealant, Page 94](#), sealing conical threads) and screw in up to the desired position.

## 9.9 Maintenance activities safety valves

### WARNING

#### Danger of injury for compressed gas escaping!

The resultant noise can damage hearing. Ejected particles may cause eye injuries.

- Wear protective goggles and personal ear defenders.
- Check the safety valves with utmost care when the compressor is running.
- Do not repair safety valves; replace them completely.



Follow the following instructions:

- The blow-off pressure of the safety valves must be checked at regular intervals. The country-specific statutory stipulations apply to the test intervals. BAUER KOMPRESSOREN however recommends an annual check of the safety valves.
- If a check of the response pressure is impossible for technical reasons, the safety valves will need to be replaced.
- Only competent personnel may check the safety valves, see [Chapter 2.6.2 Personnel selection and qualification, Page 27](#).
- The compliance with the test intervals and the organisation of the check is the responsibility of the operator.

### 9.9.1 Checking the function

The final pressure safety valve can be vented in order to check its function.

1. Start the compressor unit.

#### NOTICE

**Material damage due to excessively high test pressure!**

➤ Restrict the test pressure to 80% of the final pressure.

2. On reaching the test pressure, rotate the knurled knob at the top of the final pressure safety valve towards the right until the final pressure safety valve blows off.

➤ The final pressure safety valve blows off. It is functional.



*Does the final pressure safety valve not blow off?*

➤ Switch off the compressor unit immediately and replace the final pressure safety valve.

➤ Send the safety valve for repair, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

The functional test ensures only the mobility of moving parts. For checking the actual blow-off pressure, see [Chapter 9.9.2, Page 117](#).

### 9.9.2 Checking the blow-off pressure



BAUER KOMPRESSOREN recommends that the intermediate pressure safety valves be replaced very carefully. A the blow-off pressure can be tested only with considerable expenditure.

1. The final pressure switch is, if available, bypassed.  
Set the unit to the final pressure when the drain cock or filling valve is closed.  
➤ The final pressure safety valve blows off.
2. Compare the blow-off pressure of the final pressure safety valve with the final pressure display.

## 9.10 Maintenance activities pressure gauge

Pressure gauges must be checked in accordance with the maintenance schedule. Using a special testing pressure gauge is recommended for checking the pressure gauges, see BAUER KOMPRESSOREN catalogue of high-pressure accessories.



Allowances should be made for minor deviations during operation. If the pressure gauge shows large inaccuracies, however, it will need to be replaced.

- ✓ A testing pressure gauge is available.
- 1. Connect the testing pressure gauge parallel to the pressure gauge to be checked.
- 2. Compare the display of the pressure gauge under operating conditions.
- 3. If the pressure gauge shows large inaccuracies, however, it will need to be replaced.

## 9.11 Maintenance activities - Intake valves and pressure valves

### 9.11.1 Servicing the suction valves and pressure valves

While servicing the valves, be mindful of the following action steps:

1. Clean contaminated suction and pressure valves. Do not use any sharp tools. Instead, soak the valves with diesel oil or petroleum and clean them with a soft brush.
2. Check the individual parts for excessive wear. If the valve seats and valve plates are showing indentations, replace the valves, see [Chapter 9.11.2 Replacing the suction valves and pressure valves, Page 119](#).
3. Check the valve chamber in the valve heads for contamination and clean if required.
4. During reassembly, follow the correct sequence.
5. Check the seals and O-rings for perfect condition when re-assembling, and replace them if necessary.
6. Use a torque wrench to tighten the valve head screws, see [Chapter 9.3.1 Bolt torques, Page 90](#).
7. After all the maintenance work has been completed, turn the compressor over by hand at the flywheel in order to determine that all parts have been fitted correctly.
8. Start up the unit.
9. 30 minutes after re-starting, switch the unit off and allow it to cool down.
10. Re-tighten the valve head screws with the specified torque, see [Chapter 9.3.1 Bolt torques, Page 90](#). The settling of the seals can otherwise lead to loosening of the valves.

### 9.11.2 Replacing the suction valves and pressure valves



Only competent personnel may replace the valves of the compressor. For more information, contact the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

#### NOTICE

**Material damage due to dissimilar suction and pressure valves!**

➤ Replace the suction and pressure valves only in sets.

## 9.12 Maintenance activities - Automatic condensate drain

### 9.12.1 Checking the function of automatic condensate drain



#### ⚠ WARNING

**Danger of injury for compressed gas escaping!**

➤ Wear protective goggles and personal ear defenders.

#### ⚠ CAUTION

**Danger of poisoning!**

Condensate is toxic.

➤ Condensate must not be swallowed.

➤ Do not breathe condensate in. Ensure adequate air exchange.

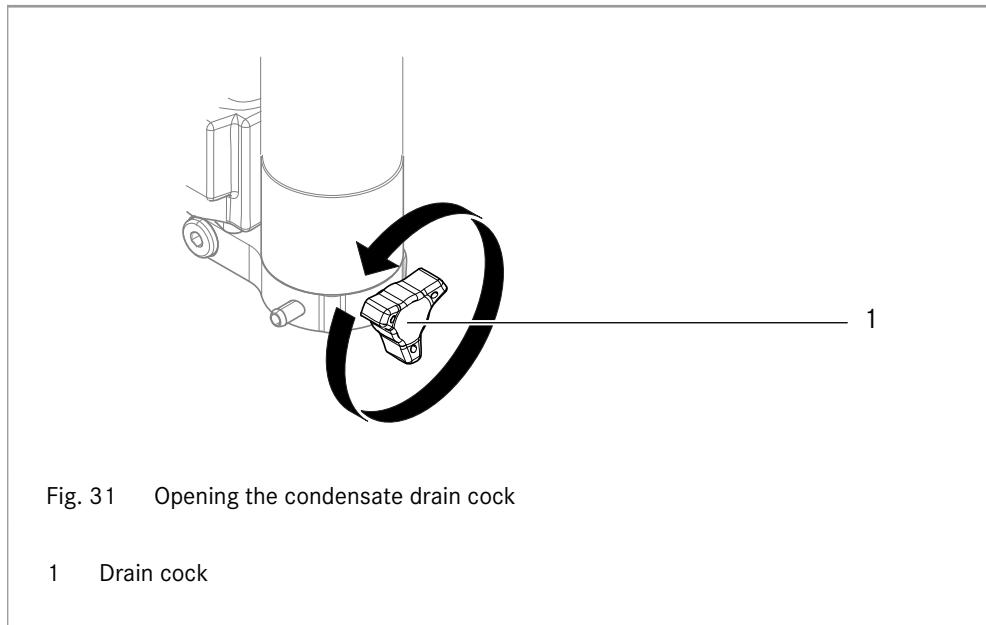


Fig. 31 Opening the condensate drain cock

1 Drain cock

1. After a water removal operation has been carried out by the condensate drain valve, open all the condensate drain cocks of the individual separators one after the other.
  - If almost no condensate is emerging, it means that the condensate drain valves are working properly.

*Is condensate emerging?*

The setting times are inappropriate or the condensate drain valves are not working correctly.

- Check the set times and adapt to the air or gas humidity if necessary.
- If the problem persists, look for the fault and rectify it. See [Chapter 8.1, Page 85](#).

---

2. Clean the float switch in the condensate collection vessel, if fitted, in order to prevent it from sticking on account of oil residues.

### 9.12.2 Adjusting the timer



Only competent personnel may set the timer. For more information, contact the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

#### NOTICE

##### Material damage due to unsuitable condensate drain intervals!

Excessively short condensate drain intervals lead to the flooding of the separator and damage the downstream units.

- In case of humid air and humid gas, set the condensate drain intervals accordingly lower or get their settings configured.

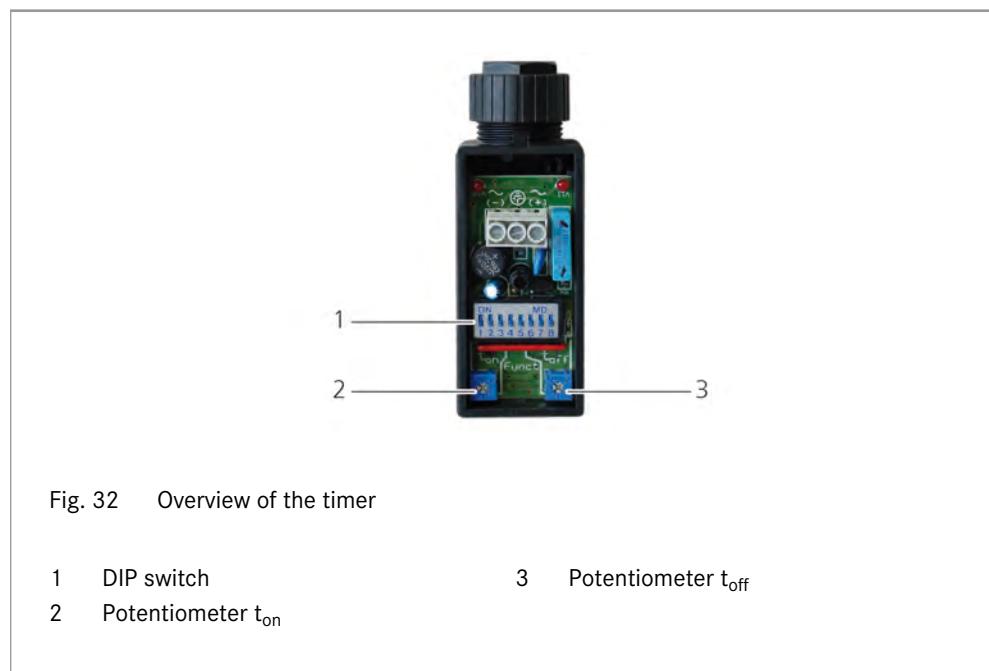


Fig. 32 Overview of the timer

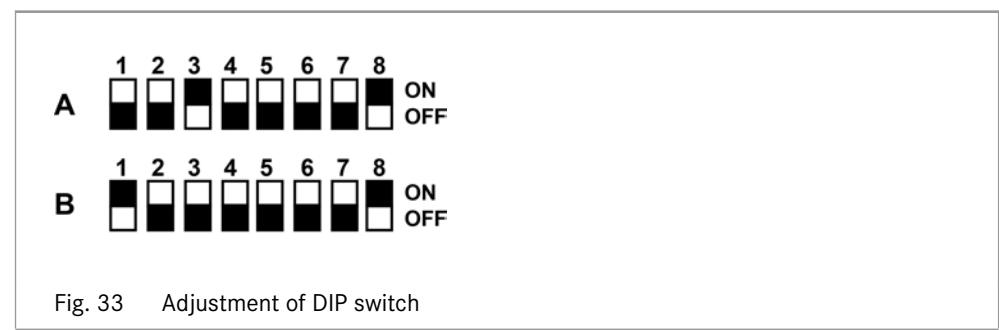
1 DIP switch  
2 Potentiometer  $t_{on}$

3 Potentiometer  $t_{off}$

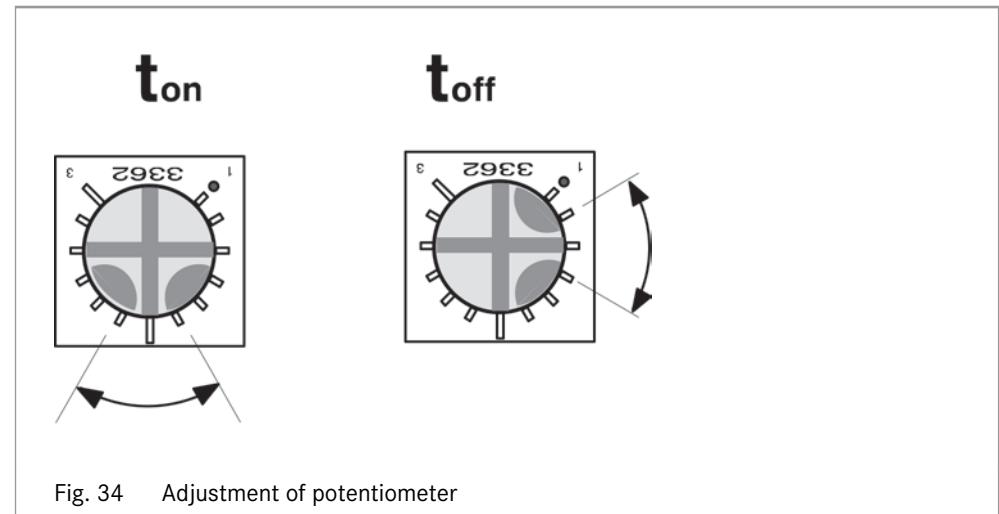
For the default setting of the timer, see .

Set the timer as follows:

- ✓ Voltage is turned off.
- 1. Disengage the screw and remove the cover.



2. Ensure that all DIP switches are set to OFF.
3. Set DIP switches 3 and 8 to ON, see part A.
  - ☞ This switch-over allows determining the drain interval in a setting range between 1.5 s and 30 s.
4. Switch on the voltage.



5. Use potentiometer  $t_{on}$ , which is assigned to DIP switches 1 to 3, to set the drain interval (temporarily 15 seconds). To do so, turn the potentiometer to the extreme left.
  - ☞ The temporary drain interval of 15 s in the set range from 1.5 to 30 s lies approximately between 5 o'clock and 7 o'clock.
6. Determine the exact position using a stopwatch, and correct it if necessary.
7. Set the drain duration (temporarily set to 6 s) with the help of the potentiometer  $t_{off}$ , which is assigned to DIP switches 6 through 8. To do so, turn the potentiometer to the extreme left.
  - ☞ The temporary drain duration of 6 s in the set range from 1.5 to 30 s lies approximately between 2 o'clock and 4 o'clock.
8. Determine the exact position using a stopwatch, and correct it if necessary.
9. Switch DIP switch 3 and DIP switch 1 to OFF and ON, respectively, see part B.
  - ☞ The drain interval is now counted by the switch-over in minutes.

### 9.12.3 Adjusting the timers



#### DANGER

##### Danger to life due to electric voltages!

Contact with live parts leads to death or serious injuries.

- Work on the electrical unit may be carried out by an electrician only.
- Make sure that the unit is tension-free for the necessary work.



Only competent personnel may set the timers. For more information, contact the BAUER customer service department, see [Chapter 1.1.1 Contact data BAUER KOMPRESSOREN, Page 9](#).

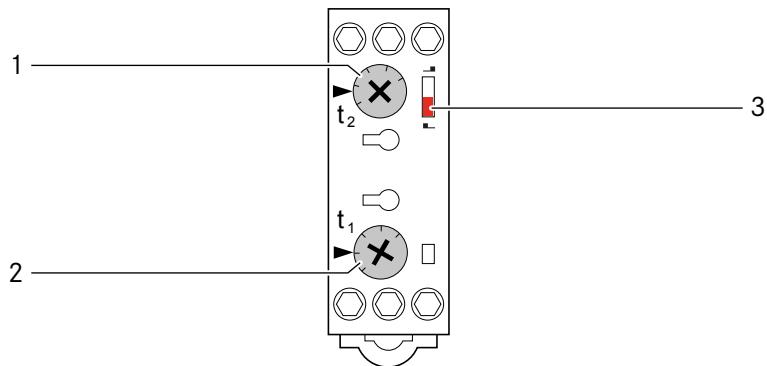


Fig. 35 Timer

1 Drain duration  
2 Cycle time

3 Slider regulator

For the default setting of the timer, see [Technical Data](#).

Proceed as follows in order to change the drain duration and cycle times of the automatic condensate drain:

1. Make sure that the power supply has been interrupted and remove the cover from the compressor control system.

**NOTICE****Material damage due to unsuitable condensate drain intervals!**

Excessively short condensate drain intervals lead to the flooding of the separator and damage the downstream units.

- In case of humid air and humid gas, set the condensate drain intervals accordingly lower or get their settings configured.
  
- 2. Use a suitable screwdriver to turn the setting regulator  $t_1$  to change the cycle times.
- 3. Use a suitable screwdriver to turn the setting regulator  $t_2$  to change the drain duration.
- 4. Fit the cover on the compressor control system and re-instate the power supply.
- 5. Run the unit and check the set times.

## 9.13 Maintenance activities electrical system

### 9.13.1 Maintaining the electrical control systems



#### **DANGER**

##### **Danger to life due to electric voltages!**

Contact with live parts leads to death or serious injuries.

➤ Work on the electrical unit may be carried out by an electrician only.

➤ Make sure that the unit is tension-free for the necessary work.

➤ Check all the screwed terminal connections in the switchgear box for tightness.  
Pay particular attention to the contacts on the power contactors.



Regardless of this, the required safety checks associated with BGV, DIN VDE or local regulations must be carried out by the operating company.

### 9.13.2 Adjusting the final pressure switch



Only competent personnel may set the final pressure switch. The warranty shall be void if the wax seal is removed.

The final pressure switch is set to the final pressure as per the order. If a readjustment is required, set the final pressure switch as follows:

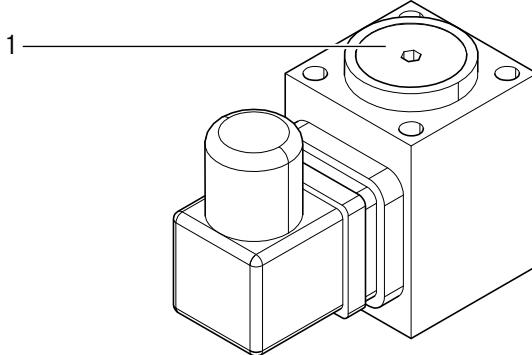


Fig. 36 Final pressure switch

1 Setting screw

➤ Use a 6-mm hexagon socket wrench to set the setting screw to the required pressure.



A rotation to the right increases the pressure, while a rotation to the left reduces it.

### 9.13.3 Replace the battery of the B-TIMER

The battery (BAUER order number: 82743) is placed in the battery compartment. A battery symbol is used to indicate that the battery is weak and must be replaced. The data is saved and is not lost when the battery is replaced.

Proceed as follows to replace the battery:

1. Unscrew the housing of the B-TIMER (2 screws).
2. Open the housing.
3. Pull out the plug.
4. Pull out the battery from the battery compartment.
5. Insert a new battery.
6. Connect the plug.
7. Close and screw the housing.

## 9.14 Maintenance activities drive system

### 9.14.1 Electric motor maintenance

1. Clean the exterior of the electric motor on an occasional basis.
2. Be mindful of the instructions on the electric motor that deal with additional maintenance activities.

### 9.14.2 V-belt maintenance

#### **WARNING**

##### **Danger of injury due to unit in operation!**

- Do not perform any work on the unit when it is in operation.
- For all assembly and maintenance work, disconnect the motor and secure it against switching on again.

#### **Checking V-belts**

The condition of the V-belts must be checked regularly or according to the maintenance schedule.

Check the V-belts as follows:

- ✓ The unit is switched off and secured against being automatically switched on again.
- 1. Remove the belt guard.
- 2. Check the V-belt for damage and wear and tear. If necessary replace, see following Chapter.
- 3. Refit the belt guard.

#### **Replacing V-belts**

The V-belts must be replaced regularly or in accordance with the maintenance schedule.

Replace damaged and worn V-belts as follows:



In case the situation involves multiple V-belts, always replace them in sets.

- ✓ The unit is switched off and secured against being automatically switched on again.
- 1. Remove the belt guard.
- 2. Remove the old V-belts. Lift the motor slightly during this operation.
- 3. Place the new V-belts around the flywheel on the compressor.
- 4. Lift the motor slightly and place the V-belts on the V-belt pulley on the motor.
- 5. Refit the belt guard.



## 10 Disassembly and disposal

### 10.1 Decommissioning

Shut off the unit as follows:

1. Disconnect the unit from the power supply or any energy supply.
2. Depressurize the unit.
3. Disconnect pneumatic connections.
4. Drain condensate and collect it.
5. If necessary remove the filter cartridges.
6. Drain oil and collect it.

Dispose the unit, dismantled components and the collected substances such as oil and condensate according to [Chapter 10.2, Page 131](#).

### 10.2 Dispose the unit

To exclude health and environmental damage when disposing the unit, assemblies and equipment, observe the following instructions.



#### NOTICE

##### Environmental damage in case of improper disposal!

Electrical waste, electronic components, lubricants and other auxiliary materials are subject to the provisions regarding the treatment of special waste.

➤ Ensure that these materials are only disposed of by licensed specialised companies.

1. Be mindful of the local regulations.
2. Before disassembly, switch off the unit properly according to [Chapter 10.1, Page 131](#).
3. Ensure that the disassembled components of the unit are, in accordance with the applicable local regulations, recycled or disposed of in an orderly fashion.



- Metallic components to be turned into scrap metal.
- Electrical and electronic components to be turned into electrical waste.
- Dispose chemicals according to the manufacturer's instructions in the safety data sheet.
- Plastic parts, cardboard and paper should be recycled.
- Dispose of the remaining components after sorting them with respect to the nature of the materials.



## 11 Appendix

### 11.1 Declaration of conformity



The following conformity serves as an example. The original conformity declaration bearing the serial number and signature is delivered along with the machine.

CE DECLARATION OF CONFORMITY BAUER KOMPRESSOREN

(1) The manufacturer  
BAUER KOMPRESSOREN GmbH, Stäblistraße 8, D-81477 München,

(2) confirms herewith that the product  
Model:  
Serial number:

(3) and meets the relevant requirements of the following directives:  
Machine directive 2006/42/EC  
Pressure equipment directive 2014/68/EU  
Directive about electromagnetic compatibility 2014/30/EU

The protective regulations of the low voltage directive 2014/35/EU are fulfilled according to annex I, No. 1.5.1 of the machine directive 2006/42/EC.

(4) Applied harmonised European standards:  
DIN EN1012-1:2011-02 Compressors and vacuum pumps – safety requirements – Part 1: compressors  
DIN EN 60204-1:2014-10 Safety of machines – electrical equipment of machines  
DIN EN ISO 12100:2011-03 Safety of machines – basic concepts, general principles for design  
DIN EN ISO 19352:2016-07 Safety of machines – preventive and defensive fire protection

(5) Authorised person for the compilation of technical documents:  
Mr Fassmann, Stäblistraße 8, D-81477 München

(6) Munich, , signature authorised person: A. Fassmann, Technical Director

Signature:

Fig. 37 Example of conformity declaration

## 11.2 Connection value table for three-phase motors (230 V)



This table contains non-binding guideline values, and is only valid for units manufactured by 'BAUER Kompressoren'.

DIN VDE 0100, DIN VDE 113 and the generally applicable technological regulations serve as the basis.

In case of units without start-up processes (direct switching), the line cross sections belonging to the category 'mains to contactor' must be used all the way up to the motor.

Motor rated power [kW]	Motor nominal current [A]	Fuse for sequence [A]		Supply line [mm <sup>2</sup> ]	
		direct	Star / Delta	from mains to contactor	from S / D to motor
1.1	4.6	6	—	1.5	1.5
1.5	6.3	16	—	1.5	1.5
2.2	8.7	20	—	1.5	1.5
3	11.5	20	—	2.5	1.5
4	14.8	25	20	2.5	1.5
5.5	19.6	35	25	4	2.5
7.5	26.4	50	35	6	4
11	38	63	50	6	4
15	51	80	63	10	4
18.5	63	100	80	16	6
22	71	100	80	16	6
30	96	160	125	25	10
37	117	200	160	50	16
45	141	250	160	50	16
55	173	300	200	70	25
75	233	355	300	95	35
90	279	425	355	120	50
110	342	500	400	—	—
132	401	630	500	—	—
160	486	630	630	—	—

Tab. 13 Connection value table for three-phase motors with operating voltage 230 V

### 11.3 Connection rating table for three-phase AC motors (400 V / 500 V)



This table contains non-binding guideline values, and is only valid for units manufactured by BAUER KOMPRESSOREN.

DIN VDE 0100, DIN VDE 113 and the generally applicable technological regulations serve as the basis.

In case of units without start-up processes (direct switching), the line cross sections belonging to the category 'mains to contractor' must be used all the way up to the motor.

Motor rated power [kW]	Motor nominal current [A]	Fuse for start-up [A]		Supply line [mm <sup>2</sup> ]	
		direct	Star / Delta	from mains to contactor	from S / D to motor
1.1	2.6	4		1.5	1.5
1.5	3.6	6		1.5	1.5
2.2	5	10		1.5	1.5
3	6.6	16		2.5	1.5
4	8.5	20	16	2.5	1.5
5.5	11.3	25	16 / 20	2.5	1.5
7.5	15.2	25	20	2.5	1.5
11	21.7	35	25	4	2.5
15	29.9	50	35	6	4
18.5	36	63	50	6	4
22	41	63	50	10	4
30	55	80	63	10	6
37	68	100	80	16	6
45	81	125	100	25	10
55	99	160	125	25	16
75	134	200	160	35	25
90	161	224	200	50	25
110	196	250	224	70	35
132	231	300	250	95	50
160	279	355	300	120	70

Tab. 14 Connection value table for three-phase motors with operating voltage 400 V / 500 V

## 11.4 Filter cartridge replacement intervals

The determination of the number of operating hours or the number of possible cylinder fillings per filter cartridge is carried out using the following information, with due regard to the ambient temperature and the cartridge being used.

The tables contain calculated cartridge service life figures, which refer to defined and constant operating conditions. Tolerances in the cartridge filling and varying operating temperatures can lead to considerably deviations from the stated details which can, as a result, only be considered to be reference values for the operating company.

Cylinder size I [l]	Cylinder fill volume VF [m <sup>3</sup> ] for pressure p	
	200 bar	300 bar
7	1.4	2.1
10	2	3
12	2.4	3.6

Tab. 15 The cylinder fill volume depends on the pressure and the cylinder size

### 11.4.1 Filter cartridge 057679

Cartridge service life [hours]						
Filling pressure p = 200 bar		Delivery volume [l/min]				
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	100	140	200	250	320
10	20 - 24	28 - 23	20 - 16	13 - 10	10 - 8	8 - 6
15	25 - 29	21 - 17	21 - 17	10 - 8	8 - 6	6 - 5
20	30 - 34	16 - 13	16 - 13	7 - 6	6 - 5	5 - 4
25	35 - 39	12 - 10	12 - 10	6 - 5	5 - 4	4 - 3
30	40 - 44	10 - 8	10 - 8	4 - 4	4 - 3	3 - 2
35	45 - 49	8 - 6	8 - 6	3 - 3	3 - 2	2 - 2
40	50 - 54	6 - 5	6 - 5	3 - 2	2 - 2	2 - 1

Cartridge service life [hours]						
Filling pressure p = 300 bar		Delivery volume [l/min]				
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	100	140	200	250	320
10	20 - 24	43 - 34	31 - 24	20 - 16	16 - 12	12 - 10
15	25 - 29	32 - 26	23 - 18	15 - 12	12 - 9	9 - 7
20	30 - 34	24 - 20	17 - 14	11 - 9	9 - 7	7 - 6
25	35 - 39	19 - 15	13 - 11	9 - 7	7 - 6	5 - 4
30	40 - 44	14 - 12	10 - 8	7 - 5	5 - 4	4 - 3
35	45 - 49	11 - 9	8 - 7	5 - 4	4 - 3	3 - 3
40	50 - 54	9 - 7	6 - 5	4 - 3	3 - 3	3 - 2

			Number of cylinder fillings n according to cylinder size [l]		
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	Air humidity, saturated X [g/m <sup>3</sup> ]	7 l	10 l	12 l
10	20 - 24	17.31 - 21.80	112 - 89	79 - 62	65 - 52
15	25 - 29	23.07 - 28.79	84 - 67	59 - 47	49 - 39
20	30 - 34	30.40 - 37.63	64 - 52	45 - 36	37 - 30
25	35 - 39	39.65 - 48.64	49 - 40	34 - 28	29 - 23

30	40 - 44	51.21 - 62.41	38 - 31	27 - 22	22 - 18
35	45 - 49	65.52 - 79.28	30 - 25	21 - 17	17 - 14
40	50 - 54	83.08 - 99.85	23 - 19	16 - 14	14 - 11

### 11.4.2 Filter cartridge 059183

Cartridge service life [hours]						
Filling pressure p = 200 bar		Delivery volume [l/min]				
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	100	140	200	250	320
10	20 - 24	22 - 18	16 - 13	11 - 9	9 - 7	7 - 6
15	25 - 29	17 - 13	17 - 13	8 - 7	7 - 5	5 - 4
20	30 - 34	13 - 10	13 - 10	6 - 5	5 - 4	4 - 3
25	35 - 39	10 - 8	10 - 8	5 - 4	4 - 3	3 - 2
30	40 - 44	8 - 6	8 - 6	4 - 3	3 - 2	2 - 2
35	45 - 49	6 - 5	6 - 5	3 - 2	2 - 2	2 - 2
40	50 - 54	5 - 4	5 - 4	2 - 2	2 - 2	1 - 1

Cartridge service life [hours]						
Filling pressure p = 300 bar		Delivery volume [l/min]				
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	100	140	200	250	320
10	20 - 24	34 - 27	24 - 19	17 - 13	13 - 11	10 - 8
15	25 - 29	25 - 20	18 - 14	13 - 10	10 - 8	8 - 6
20	30 - 34	19 - 15	14 - 11	10 - 8	8 - 6	6 - 5
25	35 - 39	15 - 12	10 - 9	7 - 6	6 - 5	5 - 4
30	40 - 44	11 - 9	8 - 7	6 - 5	5 - 4	4 - 3
35	45 - 49	9 - 7	6 - 5	4 - 4	4 - 3	3 - 2
40	50 - 54	7 - 6	5 - 4	3 - 3	3 - 2	2 - 2

			Number of cylinder fillings n according to cylinder size [l]		
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	Air humidity, saturated X [g/m <sup>3</sup> ]	7 l	10 l	12 l
10	20 - 24	17.31 - 21.80	96 - 76	67 - 53	56 - 44
15	25 - 29	23.07 - 28.79	72 - 58	50 - 40	42 - 34
20	30 - 34	30.40 - 37.63	55 - 44	38 - 31	32 - 26
25	35 - 39	39.65 - 48.64	42 - 34	29 - 24	24 - 20

30	40 - 44	51.21 - 62.41	32 - 27	23 - 19	19 - 15
35	45 - 49	65.52 - 79.28	25 - 21	18 - 15	15 - 12
40	50 - 54	83.08 - 99.85	20 - 17	14 - 12	12 - 10

### 11.4.3 Filter cartridge 80100

Cartridge service life [hours]					
Filling pressure p = 200 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	80 - 63	60 - 48	48 - 38	37 - 30
15	25 - 29	60 - 48	45 - 36	36 - 29	28 - 23
20	30 - 34	45 - 37	34 - 28	27 - 22	21 - 17
25	35 - 39	35 - 28	26 - 21	21 - 17	16 - 13
30	40 - 44	27 - 22	20 - 17	16 - 13	13 - 10
35	45 - 49	21 - 17	16 - 13	13 - 10	10 - 8
40	50 - 54	17 - 14	12 - 10	10 - 8	8 - 6

Cartridge service life [hours]					
Filling pressure p = 300 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	120 - 95	90 - 71	72 - 57	56 - 45
15	25 - 29	90 - 72	67 - 54	54 - 43	42 - 34
20	30 - 34	68 - 55	51 - 41	41 - 33	32 - 26
25	35 - 39	52 - 43	39 - 32	31 - 26	25 - 20
30	40 - 44	40 - 33	30 - 25	24 - 20	19 - 16
35	45 - 49	32 - 26	24 - 20	19 - 16	15 - 12
40	50 - 54	25 - 21	19 - 16	15 - 12	12 - 10

			Number of cylinder fillings n according to cylinder size [l]		
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	Air humidity, saturated X [g/m³]	7 l	10 l	12 l
10	20 - 24	17.31 - 21.80	513 - 408	359 - 285	299 - 238
15	25 - 29	23.07 - 28.79	385 - 309	270 - 216	225 - 180
20	30 - 34	30.40 - 37.63	292 - 236	205 - 165	171 - 138
25	35 - 39	39.65 - 48.64	224 - 183	157 - 128	131 - 107
30	40 - 44	51.21 - 62.41	174 - 142	121 - 100	101 - 83
35	45 - 49	65.52 - 79.28	136 - 112	95 - 78	79 - 65
40	50 - 54	83.08 - 99.85	107 - 89	75 - 62	62 - 52

#### 11.4.4 Filter cartridge 80114

Cartridge service life [hours]					
Filling pressure p = 200 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	60 - 48	45 - 36	36 - 29	28 - 22
15	25 - 29	45 - 36	34 - 27	27 - 22	21 - 17
20	30 - 34	34 - 28	26 - 21	20 - 17	16 - 13
25	35 - 39	26 - 21	20 - 16	16 - 13	12 - 10
30	40 - 44	20 - 17	15 - 12	12 - 10	9 - 8
35	45 - 49	16 - 13	12 - 10	9 - 8	7 - 6
40	50 - 54	12 - 10	9 - 8	7 - 6	6 - 5

Cartridge service life [hours]					
Filling pressure p = 300 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	90 - 71	67 - 53	54 - 43	42 - 33
15	25 - 29	67 - 54	50 - 40	40 - 32	32 - 25
20	30 - 34	51 - 41	38 - 31	31 - 25	24 - 19
25	35 - 39	39 - 32	29 - 24	24 - 19	18 - 15
30	40 - 44	30 - 25	23 - 19	18 - 15	14 - 12
35	45 - 49	24 - 20	18 - 15	14 - 12	11 - 9
40	50 - 54	19 - 16	14 - 12	11 - 9	9 - 7

			Number of cylinder fillings n according to cylinder size [l]		
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	Air humidity, saturated X [g/m³]	7 l	10 l	12 l
10	20 - 24	17.31 - 21.80	385 - 305	269 - 214	224 - 178
15	25 - 29	23.07 - 28.79	289 - 231	202 - 162	168 - 135
20	30 - 34	30.40 - 37.63	219 - 177	153 - 124	128 - 103
25	35 - 39	39.65 - 48.64	168 - 137	118 - 96	98 - 80
30	40 - 44	51.21 - 62.41	130 - 107	91 - 75	76 - 62
35	45 - 49	65.52 - 79.28	102 - 84	71 - 59	59 - 49
40	50 - 54	83.08 - 99.85	80 - 67	56 - 47	47 - 39

### 11.4.5 Filter cartridge 062565

Cartridge Life time [hours]					
Filling pressure p = 200 bar		Delivery [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	223 - 177	168 - 133	134 - 106	105 - 83
15	25 - 29	168 - 134	168 - 134	168 - 134	168 - 134
20	30 - 34	127 - 103	127 - 103	127 - 103	127 - 103
25	35 - 39	98 - 79	98 - 79	98 - 79	98 - 79
30	40 - 44	76 - 62	76 - 62	76 - 62	76 - 62
35	45 - 49	59 - 49	59 - 49	59 - 49	59 - 49
40	50 - 54	47 - 39	47 - 39	47 - 39	47 - 39

Cartridge Life time [hours]					
Filling pressure p = 300 bar		Delivery [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	335 - 266	251 - 200	201 - 160	157 - 125
15	25 - 29	251 - 201	189 - 151	151 - 121	118 - 94
20	30 - 34	191 - 154	143 - 116	114 - 92	89 - 72
25	35 - 39	146 - 119	110 - 89	88 - 72	69 - 56
30	40 - 44	113 - 93	85 - 70	68 - 56	53 - 44
35	45 - 49	89 - 73	66 - 55	53 - 44	41 - 34
40	50 - 54	70 - 58	52 - 44	42 - 35	33 - 27

Cartridge Life time [hours]					
Filling pressure p = 400 bar		Delivery [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	447 - 355	335 - 266	268 - 213	209 - 166
15	25 - 29	251 - 201	189 - 151	151 - 121	118 - 94
20	30 - 34	191 - 154	143 - 116	114 - 92	89 - 72
25	35 - 39	146 - 119	110 - 89	88 - 72	69 - 56
30	40 - 44	113 - 93	85 - 70	68 - 56	53 - 44
35	45 - 49	89 - 73	66 - 55	53 - 44	41 - 34
40	50 - 54	70 - 58	52 - 44	42 - 35	33 - 27

			Number of bottle fillings n and bottle size [l]		
Ambient tempera-ture tU [°C]	Temperature in fi-nal separator tAb [°C]	Moisture content of air, saturated X [g/m³]	7 l	10 l	12 l
10	20 - 24	17,31 - 21,80	1436 -1140	1005 -798	838 -665
15	25 - 29	23,07 - 28,79	1077 -863	754 -604	629 -504
20	30 - 34	30,40- 37,63	818 -661	572 -462	477 -385
25	35 - 39	39,65 - 48,64	627 -511	439 -358	366 -298
30	40 - 44	51,21 - 62,41	485 -398	340 -279	283 -232
35	45 - 49	65,52 - 79,28	379 -314	266 -219	221 -183
40	50 - 54	83,08 - 99,85	299 -249	209 -174	175 -145

### 11.4.6 Filter cartridge 067224

Cartridge service life [hours]					
Filling pressure p = 200 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	191 - 152	143 - 114	115 - 91	90 - 71
15	25 - 29	143 - 115	143 - 115	143 - 115	143 - 115
20	30 - 34	109 - 88	109 - 88	109 - 88	109 - 88
25	35 - 39	83 - 68	83 - 68	83 - 68	83 - 68
30	40 - 44	65 - 53	65 - 53	65 - 53	65 - 53
35	45 - 49	50 - 42	50 - 42	50 - 42	50 - 42
40	50 - 54	40 - 33	40 - 33	40 - 33	40 - 33

Cartridge service life [hours]					
Filling pressure p = 300 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	287 - 228	215 - 171	172 - 137	134 - 107
15	25 - 29	215 - 172	161 - 129	129 - 103	101 - 81
20	30 - 34	163 - 132	122 - 99	98 - 79	76 - 62
25	35 - 39	125 - 102	94 - 76	75 - 61	59 - 48
30	40 - 44	97 - 79	73 - 60	58 - 48	45 - 37
35	45 - 49	76 - 63	57 - 47	45 - 38	35 - 29
40	50 - 54	60 - 50	45 - 37	36 - 30	28 - 23

Cartridge service life [hours]					
Filling pressure p = 400 bar		Delivery volume [l/min]			
Ambient temperature tU [°C]	Temperature in final separator tAb [°C]	150	200	250	320
10	20 - 24	382 - 303	287 - 228	229 - 182	179 - 142
15	25 - 29	215 - 172	161 - 129	129 - 103	101 - 81
20	30 - 34	163 - 132	122 - 99	98 - 79	76 - 62
25	35 - 39	125 - 102	94 - 76	75 - 61	59 - 48
30	40 - 44	97 - 79	73 - 60	58 - 48	45 - 37
35	45 - 49	76 - 63	57 - 47	45 - 38	35 - 29
40	50 - 54	60 - 50	45 - 37	36 - 30	28 - 23

			Number of cylinder fillings n according to cylinder size [l]		
Ambient tempera-ture tU [°C]	Temperature in fi-nal separator tAb [°C]	Air humidity, satu-rated X [g/m³]	7 l	10 l	12 l
10	20 - 24	17.31 - 21.80	1114 - 885	780 - 619	650 - 516
15	25 - 29	23.07 - 28.79	836 - 670	585 - 469	488 - 391
20	30 - 34	30.40- 37.63	634 - 513	444 - 359	370 - 299
25	35 - 39	39.65 - 48.64	486 - 396	340 - 278	284 - 231
30	40 - 44	51.21 - 62.41	377 - 309	264 - 216	220 - 180
35	45 - 49	65.52 - 79.28	294 - 243	206 - 170	172 - 142
40	50 - 54	83.08 - 99.85	232 - 193	162 - 135	135 - 113

## 11.5 Maintenance booklet

### 11.5.1 Instruction form for the operator

An entry in this list certifies that the undersigned has participated in a training programme/briefing session dealing with the function and operation of the compressor unit. In addition, knowledge concerning the applicable safety regulations and stipulations were imparted. The form is to be kept with the operational documents (acceptance documentation, test book, operating manual), and it should be presented to the supervisory bodies upon request.



### 11.5.2 Maintenance schedule



Carry out the maintenance work after reaching the operating hours specified below, however, at the latest after reaching the specified months.

Maintenance	Operating hours	Months
Filter cartridge, replace	as required	as required
Empty condensate vessel (if available)	as required	as required
Check pressure hoses (if available) for tightness and damages	250	6
Unit, function test	500	12
Unit, leak test	500	12
Air filter, replace filter insert	500	12
Lubrication, clean and check oil lubrication nozzles	500	12
Separator, clean internally	500	12
Final separator, replace filter insert (if available)	500	12
Valve heads, check valves	500	12
Check piston bush	500	12
Drive, check V-belts and fan impeller	500	12
Pressure vessel, check number of load cycles	500	12
Pressure retention valve, check for internal leaks	500	12
Non-return valve, check for internal leaks	500	12
Condensate valves, check function, time settings and pressure drop	500	12
Safety valves, check and change blow-off pressure if there is no testing possibility	500	12
Pressure switch/pressure sensor, check settings	500	12
Check temperature sensors (where fitted)	500	12
Pressure gauge, check indicator	500	12
Lubricate electric motor (if lubricant is available)	500	12
Check vibration dampers	500	12
Service kit, install	500	12
Filling valves (if fitted), change sintered filter	500	12

Maintenance	Operating hours	Months
Oil change, mineral oil	500	12
Check intermediate pressures and oil pressure	500	12
Prepare maintenance report	500	12
Valve heads, replace valves	1000	24
Condensate valves, overhaul valves	1000	24
Oil change, synthetic oil	1000	24
Replace the piston bush	1000	24
Particle filter, replace filter insert	2000	24
Check cylinder and piston rings	2000	48
V-belts, replace	2000	48
Exchange pressure hoses (if available)	3000	72
Lubrication, replace oil lubrication nozzles	4000	96
Replace vibration dampers	4000	96
Drive, replace fan propeller blade (if possible)	—	120

### 11.5.3 Maintenance forms

#### After 500 operating hours or 1 year

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-a		
Breathing air sample		
Other items		

#### After 1000 operating hours or 2 years

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-ab		
Breathing air sample		
Other items		

#### After 1500 operating hours or 3 years

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-a		
Breathing air sample		
Other items		

**After 2000 operating hours or 4 years**

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-abc		
Breathing air sample		
Other items		

**After 2500 operating hours or 5 years**

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-a		
Breathing air sample		
Other items		

**After 3000 operating hours or 6 years**

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-ab		
Breathing air sample		
Other items		

**After 3500 operating hours or 7 years**

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-a		
Breathing air sample		
Other items		

**After 4000 operating hours or 8 years**

Actual operating hours		
Type of maintenance work	Carried out	Date, signature
Maintenance as per maintenance schedule (see operating instructions)		
Installation maintenance kit .....-abc		
Breathing air sample		
Other items		

#### 11.5.4 Cartridge change



State operating hours from operating hours counter, B-TIMER or other source.









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