

Oil-free compressor stations

EN



Installation and Operating Instructions

CE

0678106020L02



 **DÜRR
TECHNIK**

1708V004

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Addresses

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Important information

1 About this document

These installation and operating instructions represent a part of the unit. They correspond to the relevant version of the unit and the status of technology valid at the time of its market launch.



In the event that the instructions and notes in these installation and operating instructions for are not observed, Dürr Technik accepts no warranty or liability of any kind for the safe operation and reliable function of the units.

This translation was prepared to the best of our knowledge. The original German language version of the manual is the definitive version. Dürr Technik is not liable for translation errors.

1.1 Warnings and symbols

Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.

The following warning symbols are used:



General warning symbol



Warning – dangerous high voltage



Warning - automatic start-up of the unit

The warnings are structured as follows:



SIGNAL WORD

Description of the type and source of danger

Here you will find the possible consequences of ignoring the warning

- › Follow these measures to avoid the danger.

The signal word differentiates between four levels of danger:

- **DANGER**
Immediate danger of severe injury or death
- **WARNING**
Possible danger of severe injury or death
- **CAUTION**
Risk of minor injuries
- **NOTICE**
Risk of extensive material/property damage

Other symbols

These symbols are used in the document and on or in the unit:



Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.



CE labelling



De-energize the unit prior to working on it or in the event of potential danger (e. g. pull the mains plug) and prevent it from being switched back on again.



Comply with the specification in the accompanying documents.



Dispose of the unit properly and in accordance with applicable national, regional and local laws.



Dispose of the packaging material in an environmentally responsible manner.

1.2 Copyright information

All names of circuits, processes, names, software programs and units used in this document are protected by copyright.

The reprinting of the installation and operating instructions, even in extracts, is only permitted with the written permission of Dürr Technik.

2 Safety

Dürr Technik has developed and constructed the units in such a way that danger is to a large extent excluded if the units are used as intended. Nevertheless, residual risks can remain. You should therefore observe the following notes.

2.1 Intended use

The unit is intended for the compression of atmospheric air. The unit has been designed for operation in dry, ventilated rooms. The unit must not be operated in a damp or wet environment. Its use in the vicinity of gases or flammable liquids is prohibited. Only operate the mobile units in an upright position.

2.2 Improper use

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damages resulting from this. In these cases the user/operator will bear the sole risk.



WARNING

Serious injury and material damage due to improper usage

- › Conveying explosive mixtures in any way other than that specified is not permitted.

2.3 General safety information

- › When operating this device always observe all guidelines, laws, and other rules and regulations that are applicable at the site of operation.
- › Prior to each use, check condition of the device and make sure it is in perfect working order.
- › Do not convert or modify the units.
- › Observe the Installation and Operating Instructions.
- › Make the Installation and Operating Instructions available to the person operating the device at all times.

2.4 Qualified personnel

Operation

Persons who operate the units must ensure safe and correct handling based on their training and knowledge.

- › Instruct or have every user instructed in handling the unit.

Installation and repairs

- › Always arrange for any assembly work, readjustments, alterations, extensions, and repairs to be performed by Dürr Technik or by personnel authorised and trained by Dürr Technik. Qualified personnel are defined as those trained by Dürr Technik; who are familiar with the unit technology; and are aware of the dangers presented by the unit.

2.5 Protection from electric shock

- › When working on the units observe all the relevant electrical safety regulations.
- › Immediately replace any damaged cables or plugs.

2.6 Only use genuine parts

- › Only use accessories specified or approved by Dürr Technik.
- › Only use original working and spare parts.



Dürr Technik accepts no liability for damage resulting from the use of non-approved accessories or any non-original working or spare parts.

2.7 Transportation and storage

The original packaging provides optimum protection for the unit during transport.



Dürr Technik will not accept any responsibility or liability for damage occurring during transport due to the use of incorrect packaging, even where the unit is still under guarantee.

- Only transport the unit in its original packaging.
- Keep the packing materials out of the reach of children.

**WARNING****Risk of explosion of the pressure vessel and pressure hoses**

- › The pressure vessel and the pressure hoses must be vented before they are stored or transported.
- › Protect the unit from moisture during transportation.
- › Always transport the unit in an upright position.
- › Only transport the unit using the transport handles provided.
- › Do not transport the unit by the air intake filter.

The unit may be stored in its original packaging

- in warm, dry and dust-free rooms;
- protected from contaminants.



If possible, retain the packaging material.

Ambient conditions during storage and transport**Ambient conditions during storage and transport**

| | | |
|---------------|----|--------------|
| Temperature | °C | -25 to +55 |
| Rel. humidity | % | 10 % to 90 % |

Please refer to the labels on the packaging padding.

2.8 Disposal**Unit**

Dispose of the unit properly and in accordance with applicable national, regional and local laws.

Packaging

Dispose of the packaging material in an environmentally responsible manner.

- Note current disposal routes.
- Keep the packing materials out of the reach of children.



3 Overview

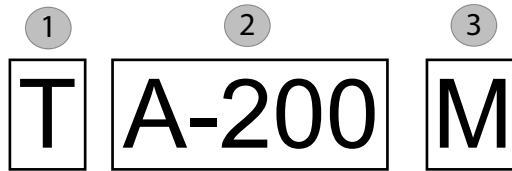
3.1 Flexible modular system

The compressor stations can be assembled individually from various components according to requirements.

The following components are available:

- Oil-free compressor units with outputs from 25 l/min to 600 l/min. Fitted with single-phase AC motors or 3-phase AC motors or special designs with DC permanent-magnet motors.
- Different pressure vessels with a capacity of 3 l, 10 l, 25 l, 55 l or 90 l.
- Different designs of fittings with the necessary safety valve, pressure gauge and power cord as well as automatic condensate drainage (optional) or starting relief via a solenoid valve (optional).
- A wide range of accessories such as air intake filters, quick-release couplings, pressure hoses (optional), pressure reducers (optional) etc.
- Membrane-drying unit (optional) as a separate component.

Explanation of the product code



EN

| 1 Vessel | |
|----------|------|
| U | 3 l |
| W | 10 l |
| T | 25 l |
| H | 55 l |
| P | 90 l |

* Vessel with a maximum pressure (PS) of 10 bar (exception: compressor stations with 25-l vessel: PS = 8 bar)

| 2 Compressor units | |
|--------------------|--|
| A | Compressor units with single-phase AC motors |
| B | Compressor units with 3-phase AC motors |
| M | Compressor units with DC permanent-magnet motors |

| 3 Auxiliary modules | |
|---------------------|--|
| K | Automatic condensate drainage system |
| AK | Automatic condensate drainage system + starting relief |
| L | Membrane-drying unit (also performs the function of the AK module) |

The compressor station TA-200M used as an example comprises:

- 25-l vessel (T)
- Compressor unit: A-200 (with single-phase AC motor)
- Membrane-drying unit (M)

Combination options for a compressor station with single-phase AC motor

| Compressor units | | Vessels | | | | | Auxiliary modules | | | |
|------------------|-------|-------------------------|-----|------|------|------|-------------------|---|--|---|
| Series | Unit | Output at 0 bar (l/min) | 3 l | 10 l | 25 l | 55 l | 90 l | Module K = automatic condensate drainage system | Module AK = module K + automatic starting relief | Module M = module AK + membrane-drying unit |
| KK8 | A-025 | 25 | ● | ● | ● | ● | — | ● | ● | — |
| KK15 | A-038 | 38 | ● | ● | ● | ● | — | ● | ● | — |
| | A-061 | 60 | — | ● | ● | ● | — | ● | ● | — |
| | A-062 | 70 | ● | ● | ● | ● | — | ● | ● | — |
| KK40 | A-065 | 65 | — | ● | ● | ● | — | ● | □ | ● |
| | A-132 | 130 | — | ● | ● | ● | ● | ● | □ | ● |
| KK70 | A-100 | 105 | — | — | ● | ● | ● | ● | ● | ● |
| | A-200 | 195 | — | — | ● | ● | ● | ● | ● | ● |
| Marathon | A-080 | 90 | — | — | ● | ● | — | ● | ● | ● |
| | A-160 | 160 | — | — | ● | ● | ● | ● | ● | ● |
| | A-234 | 230 | — | — | — | ● | ● | ● | ● | ● |

- Standard combination
- Already included in unit
- Not standard



Combination options for a compressor station with 3-phase AC motor

| Compressor unit | | | Vessels | | | | | Auxiliary modules | | |
|-----------------|----------|-------------------------|---------|------|------|------|------|---|--|---|
| Series | Unit | Output at 0 bar (l/min) | 3 l | 10 l | 25 l | 55 l | 90 l | Module K = automatic condensate drainage system | Module AK = module K + automatic starting relief | Module M = module AK + membrane-drying unit |
| KK15 | B-038 | 38 | ● | ● | ● | ● | ● | ● | ● | — |
| | B-062 | 73 | ● | ● | ● | ● | — | ● | ● | — |
| KK40 | B-065 | 65 | — | ● | ● | ● | — | ● | □ | ● |
| | BG-132 | 130 | — | ● | ● | ● | ● | ● | □ | ● |
| KK70 | B-100 | 105 | — | — | ● | ● | ● | ● | ● | ● |
| | B-200 | 195 | — | — | ● | ● | ● | ● | ● | ● |
| Marathon | B-080 | 90 | — | — | ● | ● | — | ● | ● | ● |
| | B-160 | 160 | — | — | ● | ● | ● | ● | ● | ● |
| | B-304 | 295 | — | — | — | ● | ● | ● | ● | ● |
| | 2x B-304 | 590 | — | — | — | — | ● | — | — | ● |

- Standard combination
- Already included in unit
- Not standard

Combination options for a compressor station with a DC permanent-magnet motor

| Compressor unit* | | | | Vessels | Notes on the compressor station |
|------------------|-------|---------------|-------------------------|---------|---|
| Series | Unit | Item number | Output at 0 bar (l/min) | in l | Version |
| KK15 | D-040 | 0832-25B-01 | 40 | 10 | 12 VDC |
| KK8 | D-030 | 0590 1000 | 30 | 3 | 24 VDC |
| KK15 | D-040 | 0832-22B-01 | 40 | 10 | 24 V DC including interference suppression filter |
| | D-040 | 0832-22B-02 | 40 | 10 | 24 V DC including interference suppression filter with automatic condensate drain |
| | D-040 | 0832-22B-03 | 40 | 10 | 24 V DC including interference suppression filter with automatic condensate drain and automatic starting relief |
| | D-040 | ZK429T7091298 | 40 | 25 | 24 VDC |
| KK70 | D-100 | 0652 0000 | 105 | 10 | 24 VDC |

* Other versions of the compressor unit are available on request

3.2 Examples of compressor stations



The item numbers designate the spare parts (see "3.4 Wear parts and spare parts").

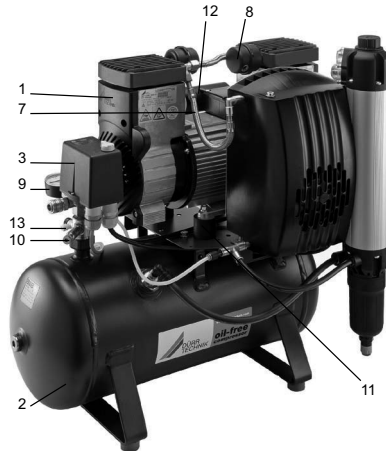


Figure 1: TA-200M combination: A-200 compressor unit with 25 l vessel (T) and auxiliary module M (membrane-drying unit)

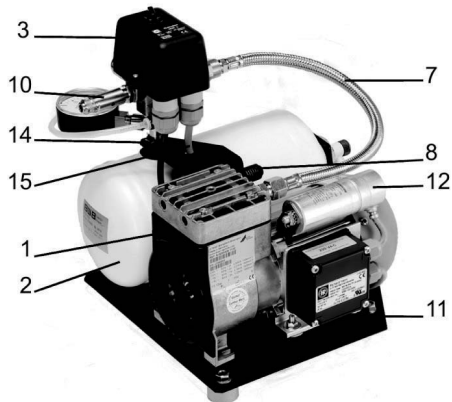


Figure 2: UA-025 combination: A-025 compressor unit with 3 l vessel (U)

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Figure 3: WA-062AK configuration: A-062 compressor unit with 10-l receiver (W) and auxiliary module AK (automatic condensate drainage system + automatic starting relief)

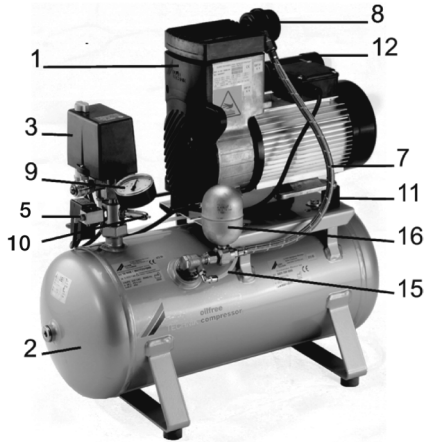


Figure 4: TA-100K combination: A-100 compressor unit with 25 l vessel (T) and auxiliary module K (automatic condensate drainage system)

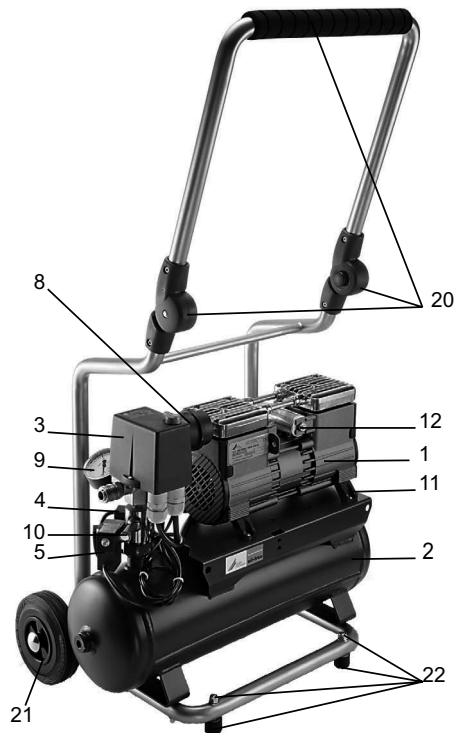


Figure 5: WA-062 mobile AK configuration: A-062 compressor unit with 10-l vessel (W), auxiliary module AK (automatic condensate drainage system + automatic starting relief) and transport rollers



Figure 6: HA-160M combination: A-160 compressor unit with 55 l vessel (H) and auxiliary module M (membrane-drying unit) and pressure reducer

3.3 Accessories

Accessories for compressor stations



When ordering accessories, always quote the type designation (e.g. WA-038/0643 1000) and the serial number.

| Item no. | Spare parts / accessories |
|----------|---|
| | Pressure reducer |
| | Quick-release coupling (art. no. 9000-312-03) |
| | Hose adapter pieces for SW 10 (art. no. 9000-312-06) |
| | Hose adapter pieces for SW 6 (art. no. 9000-311-46) |
| | Operating time counter |
| | Clip* (art. no. 0835-999-00) |
| 20 to 22 | Transport roller, complete (art. no. 0643 0100) ¹⁾ |

*Clip for WA-025 to WA-062

¹⁾ available as optional accessory for WA-038 mobile AK, WA-061 mobile AK, WA-062 mobile AK, WA-065 mobile AK, WAG-132 mobile K

3.4 Wear parts and spare parts

Spare parts for compressor station with membrane-drying unit



When ordering spare parts, always quote the type designation (e.g. WA-038/0835-43B-01) and the serial number.

| Item no. | Spare parts for the compressor station |
|----------|--|
| 1 | Compressor |
| 2 | Vessel without stopper |
| 3 | Pressure switch |
| 4 | Start-up solenoid valve (not shown in pictures) |
| 5 | Condensate solenoid valve |
| 7 | Pressure hose |
| 8 | Air intake filter, complete Air intake filter cartridge |
| 9 | Pressure gauge |
| 10 | Safety Valve |
| 11 | Vibration damper |
| 12 | Condenser |
| 13 | Manual condensate drain (not shown in all pictures) |

| Item no. | Spare parts for the compressor station |
|----------|--|
| 14 | Relief valve |
| 15 | Air evacuation hose |
| 16 | Surge tank (art. no. 9000-330-09) Quick-release coupling (art. no. 9000-312-03) Seal Complete control gear Relay (DC current only) Power cord Complete interference suppression filter (DC current only) Carbon brushes (DC current only) Sealing cap/screw plug (DC current only) |

Spare parts for membrane-drying unit



When ordering spare parts, always quote the type designation (e.g. WA-038/0835-43B-01) and the serial number.

| Article no. | Spare parts for the membrane drying station |
|-----------------|---|
| 1650-981-0000 | Purge air nozzle set |
| 1650-101-00 | Sintered filter |
| 1610-121-00 | Fine filter cartridge 3 µm |
| 9000-416-0035ET | Fine filter cartridge 0.01 µm |

4 Technical data



For detailed information on the technical data of the compressor units, refer to the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV".

5 Pressure tank

5.1 Overview

Pressure vessels from Behälter-Werk Burgau GmbH are installed in the units.

The instructions for use given below apply to the following types of pressure vessel:

| Type | Pressure ¹⁾ | Vessel ²⁾ | APP ³⁾ | c ⁴⁾ | Remark ⁵⁾ |
|-----------------------|------------------------|----------------------|-------------------|-----------------|----------------------|
| 316033 / 0834-000-010 | PS 8 bar | V 3 l | A | c = 1.0 mm | 2 |
| 316053 / 0654-0900 | PS 8 bar | V 3 l | A | c = 1.0 mm | 2 |
| 316030 / 0833-320-60 | PS 11 bar | V 10 l | A | c = 1.0 mm | 4; 5 |
| 316034 / 5430-200-51 | PS 10 bar | V 25 l | B | c = 0 mm | 1; 6 |
| 316016 / 4220-200-50 | PS 10 bar | V 55 l | A | c = 1.0 mm | 3; 5 |
| 235791 /5450-200-90 | PS 11 bar | V 90 l | A | c = 1.0 mm | 4 |

For serial number and build year refer to the labelling on the vessel.

| | |
|-----------------------------------|--|
| ¹⁾ Pressure | Maximum operating pressure PS in bar |
| ²⁾ Vessel | Vessel volume V in litres |
| ³⁾ Application (APP) | A = Pressure vessel for compressors B = Pressure vessel for stationary systems |
| ⁴⁾ Corrosion allowance | c in mm |
| Maximum temperature | +100 °C |
| Minimum temperature | -10 °C |
| Medium | Air/nitrogen |
| ⁵⁾ Remark | 1: The vessel is capable of sustained operation within a pressure fluctuation range of 1.6 bar (10% PS). 2: The vessel is capable of sustained operation within a pressure fluctuation range of 1.6 bar (20% PS). 3: The vessel is capable of sustained operation within a pressure fluctuation range of 2.0 bar (20% PS). 4: The vessel is capable of sustained operation within a pressure fluctuation range of 2.2 bar (20% PS). 5: The wall thicknesses must not be less than 2 mm. 6: The condensate must be drained at internal pressure in accordance with the operating instructions. |
| Applied standards | EN 286-1:1998 |

5.2 Instructions for use for the pressure vessel (explanation by Behälter-Werk Burgau GmbH)

The pressure vessel must only be used in accordance with the aforementioned intended purpose and in accordance with the specified technical data. Other forms of use are not permitted for reasons of safety. The pressure vessel has been designed in accordance with Directive 2014/29/EU and has been manufactured as a single component without safety equipment for the application area detailed above. The unit has been designed for internal pressure loads.

Before commissioning, the vessel must be fitted with the necessary safety equipment such as a pressure gauge and safety equipment designed to protect against overpressure, etc. These parts are not included in our scope of delivery.

No welding work or heat treatment may be carried out on the pressure-retaining walls of the vessel. It must be ensured that the internal pressure does not exceed the operating pressure PS specified in the labelling on the vessel during operation. However, this pressure may be temporarily exceeded by up to 10%. Vibration stress that would be damaging for the pressure vessel and corrosion on the vessel must be prevented using appropriate measures.

The assembly or installation of the pressure vessel must be carried out in such a way that safe use of the vessel is ensured (e.g. no rigid connection to the floor or machine base frame without vibration dampers).

The operating instructions to be provided by the equipment supplier must include the following information in accordance with the equipment fitted:

- a) Instructions for draining the condensate
- b) Instructions and information about maintenance to ensure safety of use

The supplier must also specify whether the pressure vessel, when fully equipped for operation, has to undergo an acceptance test before commissioning. The supplier/owner must observe the laws and regulations regarding the operation of the pressure vessel that apply in the country of operation.

The design is intended for predominantly static internal pressure loads and covers the following operating parameters: 1000 load changes from 0 to PS and capable of sustained operation within a pressure fluctuation range of 1.6 bar to 2.2 bar.

Refer to the "5.1 Overview" **Remarks**.

6 Declaration of conformity for machines in accordance with the 2006/42/EC Directive

We hereby declare that the unit described below conforms to all requirements of the machine directive 2006/42/EC.

The unit named below fulfills the requirements of the following directives:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Simple pressure vessel directive 2014/29/EU
- RoHS directive 2011/65/EU

| | |
|-------------------------|--|
| Manufacturer's name: | Dürr Technik GmbH & Co. KG |
| Manufacturer's address: | Pleidelzheimer Straße 30 D-74321 Bietigheim-Bissingen |

| | |
|-------------------------|--|
| Reference number: | UA-025K, WA-038..., TA-100, HB-200..., XB-304..., ZK..., AATA-100..., BBTAG-132..., CCHA-234..., DDHB-304..., SAS... |
| Article designation: | Compressor stations / dryer stations |
| From the serial number: | H400000 |

We hereby declare that the unit may only be commissioned once it has been established that the machine into which this unit is to be installed complies with the provisions as set out in Machinery Directive 2006/42/EC.

The following harmonised standards and other standards have been applied:

- DIN EN 1012-1:2011-02
- DIN EN 60034-1:2011-02
- DIN EN 60034-5:2007-09
- DIN EN 60034-7:2001-12
- DIN EN 60034-8:2014-10
- DIN EN 60335-1:2014-11
- DIN EN 61000-6-2:2011-06
- DIN EN 61000-6-3:2012-11
- DIN EN 60204-1:2010-05
- DIN EN ISO 12100:2013-08

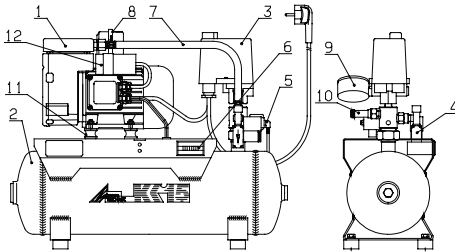
Bietigheim-Bissingen, 20/04/2016

Andreas Ripsam
Executive Board of Dürr Technik

Proof of signature in the
Original document held by Dürr Technik

7 Operation

7.1 Compressor station without membrane-drying unit



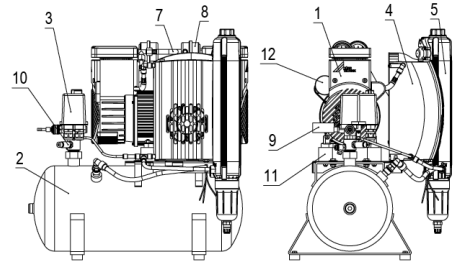
- 1 Compressor unit
- 2 Pressure vessel
- 3 Pressure switch
- 4 Start-up solenoid valve*
- 5 Condensate solenoid valve*
- 6 Operating time counter*
- 7 Pressure hose
- 8 Air intake filter
- 9 Pressure gauge
- 10 Safety Valve
- 11 Vibration damper
- 12 Condenser*

*If included in the scope of delivery

Air is drawn in from the surrounding atmosphere through the air intake filter. This air is compressed by the piston in the cylinder. The inlet or outlet valve blocks off one of the directions of flow. The compressed air is guided through the pressure hose via the integrated non-return valve into the pressure vessel.

The compressor unit supplies compressed air until the set cut-off pressure is reached. The unit switches off. The pressure is indicated by the pressure gauge. The pressure hose is made pressureless by the integrated relief valve (on stations with a starting solenoid valve possibly not until the unit is started). If compressed air is removed for a consumer, the pressure in the vessel drops. When the switch-on pressure is reached, the compressor is switched on automatically again via the pressure switch. A safety valve prevents the maximum permissible vessel pressure from being exceeded.

7.2 Compressor station with membrane-drying unit



- 1 Compressor unit
- 2 Pressure vessel
- 3 Pressure switch
- 4 Cooler
- 5 Membrane dryer
- 6 -
- 7 Pressure hose
- 8 Air intake filter (quick-release coupling)
- 9 Pressure gauge
- 10 Safety Valve
- 11 Vibration damper
- 12 Condenser*

*If included in the scope of delivery

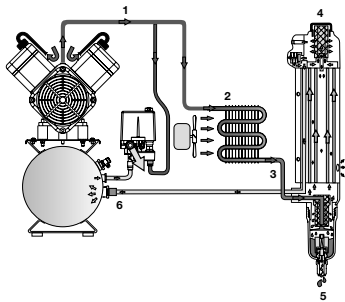
Air is drawn in from the surrounding atmosphere through the air intake filter. This air is compressed by the piston in the cylinder. The inlet or outlet valve blocks off one of the directions of flow. The hot and moist compressed air that comes from the compressor flows into the cooler. In the cooler, the compressed air is cooled down. Water condenses. 100% saturated compressed air and condensate leave the cooler and flow into the water separator.

The condensate that is contained is separated via the sinter filter and accumulates in the water collecting container. The automatic condensate solenoid valve discharges the water at cyclic intervals.

The air then flows to the membrane element. The air flows through the membrane fibres. The water molecules contained in the air diffuse through the membrane wall and accumulate on the outside of the fibre. The dried air flows through the fine filter, the pressure relief valve and the non-return valve to the vessel.

For regeneration, a small partial flow of dried air flows in the membrane via the purge air nozzle to the outside of the membrane fibre. This absorbs the collected moisture and dissipates it to the environment. This regeneration takes place continuously during operation. Standstill periods are not required.

The pressure relief valve in the upper part of the membrane ensures that the membrane-drying unit reaches its rated operating pressure within the shortest time possible. A moisture indicator installed in the upper part of the membrane is visible through the transparent upper part. If the air is not dried sufficiently, the colour changes from blue to pink.



- 1 Hot air
- 2 Cooler with ventilating fan
- 3 Cold air
- 4 Membrane dryer
- 5 Condensate drain
- 6 Dry air

The compressor unit supplies compressed air until the set cut-off pressure is reached. The unit switches off. The pressure is indicated by the pressure gauge. The pressure hose is made pressureless by the relief valve. If compressed air is removed for a consumer, the pressure in the vessel drops.

When the switch-on pressure is reached, the compressor is switched on automatically again via the pressure switch. A safety valve prevents the maximum permissible vessel pressure from being exceeded.

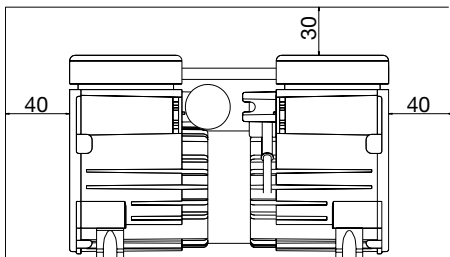
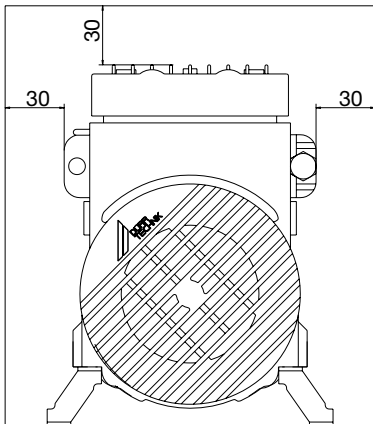


8 Requirements

8.1 Installation/setup room

The room chosen for set up must fulfil the following requirements:

- Dry, well ventilated room
- Should not be a purpose-made room (e. g. boiler room or wet room)
- Set up the unit on a clean, level and sufficiently stable surface (take the weight of the unit into account).
- The socket-outlet must be easily accessible.
- The type plate of the unit must be easily readable (also after installation).
- The unit must be easily accessible for operation and maintenance.
- Once the unit has been installed, the connecting terminals must be easily accessible when removing/opening housing access.
- Maintain sufficient distance from the wall (min. 30 mm to 40 mm).



The air is filtered when it is sucked in. This does not alter the composition of the air. The source of the air taken in should be free of any harmful substances (e.g. do not draw in air from an underground garage or directly next to a suction machine).



NOTICE

Risk of overheating due to insufficient ventilation

The units generates heat. Possibility of heat damage and/or reduced service life of the unit.

- > Do not cover the unit.
- > Air must be able to flow in and out unobstructed.
- > Ventilation openings must be sufficiently large.
- > Installed units may require an independent ventilation system in unfavourable cases.

8.2 Vibration damping between compressor unit and vessel

The unit generates vibrations. Suitable vibration dampers must be used to damp these vibrations.



CAUTION

The use of rigid connections may damage the units or the system in which the units have been installed.


- > Do not install rigid connection lines between unit and system.

8.3 Installation position and fastening

Install the units as near as possible to the horizontal. Other fitting positions must be agreed in advance with Dürr Technik.

8.4 Silencer

In vacuum operation, the noise levels are raised at the venting port. For this reason, a suitable noise reducer should be used that discharges the aspirated air into the atmosphere. Noise reducers are available as accessories (see "Accessories for piston vacuum pumps KV" for the relevant series).

 For detailed information on the accessories and spare parts sets for the compressor units, refer to the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV".

8.5 Start-up cycles

The motors in the compressor stations are designed for 10 starts/stops per hour. More frequent switching will lead to increased wear.


9 Commissioning and first start-up

9.1 Remove the transport locks

The unit is securely protected with packaging material to ensure safe transportation.

- › Remove the packaging material.
- › Remove the protective film.
- › Check the unit for damage in transit.

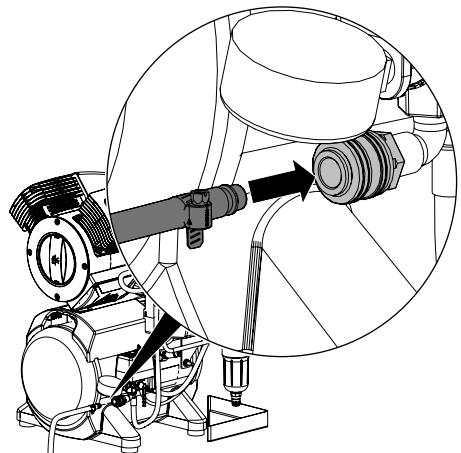
9.2 Establishing the compressed air connection

 The devices are designed as standard for a nominal pressure of 7 bar. Exceeding the nominal pressure on a regular basis will reduce the service life of the device.

The unit is equipped as standard with a control gear, which consists of a pressure switch, pressure gauge, safety valve, non-return valve and condensate drain.


In order to avoid the transfer of vibrations, we recommend installing a flexible pressure hose between the pressure hose and the pressure switch. A pressure reducer can also be connected.

- › The compressed-air supply is connected to the quick-release coupling (incl. hose adapter piece) or to the pressure switch by means of a G 1/4" internal thread.
- › Secure the pressure hose to the hose adapter piece using a hose clip.
- › Connect the hose adapter piece to the quick-release coupling.




9.3 Condensate

During operation, condensed water is continuously separated off in the compressor station.

-  The condensate can be drained through a hose into the waste water system.
- › Fasten the condensate drain hose to the unit and secure it so that it cannot slip out.
- › Secure the condensate drain hose by guiding it or fastening it to the drain.

9.4 Electrical installation

-  For detailed information on electrical installations refer to the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV".

Electrical connection using a mains plug

- › The unit may only be connected to a correctly installed socket outlet.
- › Make sure that none of the electrical cables leading to the unit are under any mechanical tension.
- › The socket-outlet must be easily accessible.
- › Before commissioning, verify that the power supply voltage complies with the voltage specifications of the model identification plate.



DANGER

Risk of electric shock due to defective power cord

- › The power cord must not be allowed to come into contact with any hot surfaces on the unit.
- › Route power cords without mechanical tension.
- › Connect the mains plug to an earthed socket outlet.
- › The unit will start immediately after connection of the mains plug.

Electrical connection without a mains plug



DANGER

Connection to the power supply may only be performed by a qualified electrician.

9.5 Check of the pressure switch


The cut-off pressure is generally set to 7 bar (0.7 MPa).


- › Switch on the device at the pressure switch by rotating the switch to the "I" position.
- › Read off the cut-off pressure from the pressure gauge.

If the value read from the pressure gauge differs from the factory setting, the pressure switch can be adjusted (see "10.1 Adjusting the pressure switch").

9.6 Checking the safety valve

The safety valve must be checked to establish that it is working correctly when the unit is started up for the first time.

-  At the factory, the safety valve is set to 10 bar (1 MPa) or 8 bar (0.8 MPa) (depending on the maximum pressure), inspected and stamped (see also "5.1 Overview").

 **DANGER**
Explosion of the pressure vessel and pressure hoses

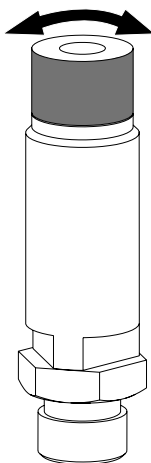
- › Do not change the safety valve settings.

 **WARNING**
Risk of damage to the safety valve

Risk of explosion of the pressure vessel and pressure hoses due to a defective safety valve

- › Do not use the safety valve to vent the pressure vessel.


- › Switch on the unit at the pressure switch and fill the pressure vessel to the cut-off pressure.
- › Rotate the cap of the safety valve a few turns anti-clockwise until the valve begins to blow off. Only allow the safety valve to blow for a short period.
- › Turn the cap clockwise as far as it will go.




The valve is closed.


10 Adjustment options

10.1 Adjusting the pressure switch

 **DANGER**
Exposed live parts

- Risk of electric shock due to live parts
- › Unplug the unit from the socket-outlet.
 - › Use insulated tools.
 - › Do not touch live parts.

-  The cut-off pressure must be at least 0.5 bar (0.05 MPa) below the maximum pressure of 10 bar (1 MPa) or 8 bar (0.8 MPa) (depending on the maximum pressure) of the safety valve. Otherwise the safety valve can open too early, which will prevent the compressor unit from attaining the cut-off pressure, and as a result it will run continuously. The maximum pressure is marked by a red line on the attached pressure gauge.

-  The adjustment of the pressure switch must be performed under pressure. The code for the pressure switch (MDR3 or MDR2) can be found on the pressure switch cover.

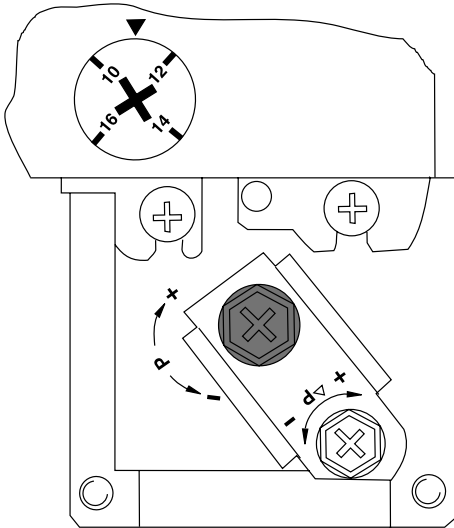
Adjustment of the MDR3

If the read-off values differ from the factory settings or if other settings are required, the cut-off pressure of the compressor can be adjusted at the setting screw on the pressure switch. The switch-on pressure can then be adjusted using the pressure differential Δp .

- › Take off the pressure switch cover.

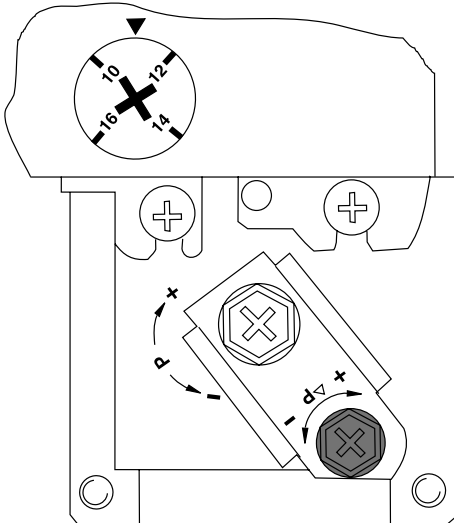
- › Adjust the cut-off pressure p using the setting screw.

The cut-off pressure increases in the "+" arrow direction and decreases in the "-" arrow direction. The pressure differential Δp is also influenced by this adjustment.



- › Use the setting screw to readjust the pressure differential Δp between the switch-on pressure and the cut-off pressure.

The pressure differential increases in the "+" arrow direction and decreases in the "-" arrow direction.

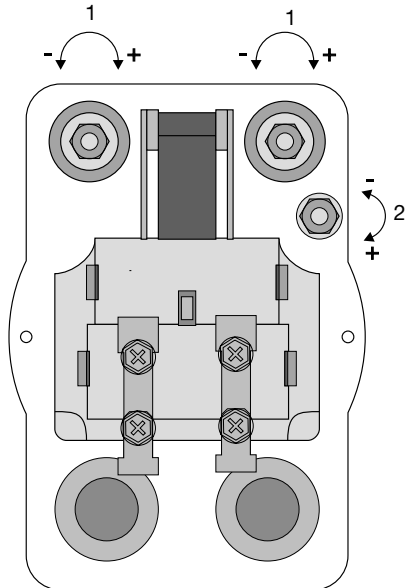


Adjustment of the MDR2

If the read-off values differ from the factory settings or if other settings are required, the cut-off pressure of the compressor can be adjusted at the setting screw on the pressure switch. The switch-on pressure can then be adjusted using the pressure differential Δp .

- › Undo the fixing screws in the pressure switch cover.
- › Take off the pressure switch cover.
- › Adjust the cut-off pressure p using the two setting screws (1).

The cut-off pressure increases in the "+" arrow direction and decreases in the "-" arrow direction.



- › The pressure differential Δp between the switch-on pressure and the cut-off pressure is set using the setting screw (2).

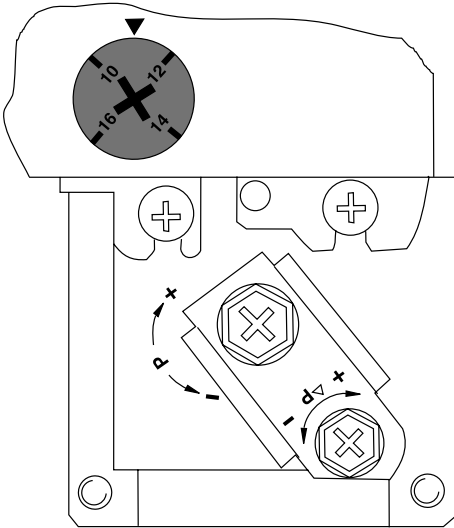
Turning the screw in the arrow direction "+" increases the pressure differential (lower switch-on pressure), while turning it in the arrow direction "-" decreases the pressure differential (higher switch-on pressure).

10.2 Adjusting the motor protection switch

i Not all units have a motor protection switch.

- › The motor protection switch is adjusted and marked at the factory.
- › Take off the pressure switch cover.
- › Adjust the motor protection switch with the setting screw according to the motor current (note the range between min. permissible setting and max. permissible setting of the motor protection switch).

The max. permissible motor current is the current rating on the type plate + 10%.

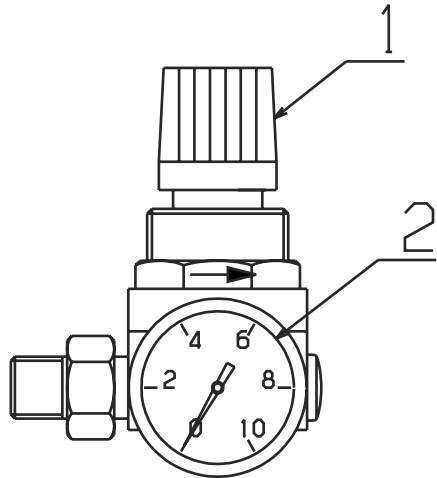


10.3 Setting the pressure reducer

The pressure reducer (optionally available) regulates the vessel pressure (primary pressure) to the required operating pressure (secondary pressure). An increase of pressure when the consumer is switched off is prevented by an additional secondary vent. The pressure reducer is mounted on the pressure switch (G1/4").

Adjusting the pressure reducer:

- › Pull up the adjuster knob (1).
- › **To increase the supply pressure:** Turn the adjuster knob (1) clockwise towards "+".
- › **To decrease the supply pressure:** Turn the adjuster knob (1) anti-clockwise towards "-".
- › Once you have reached the required supply pressure (this can be read from the pressure gauge (2)), push the adjuster knob (1) down until it clicks into place.
- › Check the supply pressure on the pressure gauge (2).



- 1 Adjuster knob
- 2 Pressure gauge

10.4 Adjusting the condensate solenoid valve

The condensate solenoid valve (optionally available) controls the draining of condensate from the vessel.

Adjustment of the switching times on the condensate solenoid valve with timer 9000-303-0010 (670-000-104) and 9000-303-0013 (601-001-347)

| Condensate solenoid valve | Switching time T_{on} (valve switched on) | Switching time T_{off} (valve switched off) |
|---------------------------|--|--|
| 9000-303-0010 | 0.1 s min. to 10 s max. | 36 s min. to 60 min max. |
| 9000-303-0013 | 1 s min. to 5 s max. | 18 s min. to 30 min max. |

s = seconds
min = minutes



T_{on} Adjuster knob "Timer valve switched on"
 T_{off} Adjuster knob "Timer valve switched off"



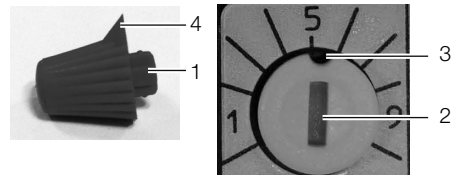
NOTICE
Damage to the condensate solenoid valve during adjustment of the switching times

If a screwdriver is used to turn the adjuster knobs for the switching times, this can result in irreversible damage to the solenoid valve.

- › Use the enclosed red push-on adjuster caps to adjust the switching times.

› Adjusting the switching times

- › Position the pointer of the push-on adjuster cap (4) above the notch (3) of the adjuster knob.
- › Insert the tongue of the push-on adjuster cap (1) in the slot (2) of the adjuster knob.
- › Turn the red push-on adjuster cap between the min. and max. positions on the adjuster knob to select the required switching time for T_{on} and T_{off} .
- › The position of the pointer (4) on the line scale shows the selected switching time.
- › The values on the line scale correspond to the following percentage values for the switching times of T_{on} and T_{off} :
1 corresponds to 10%
5 corresponds to 50%
9 corresponds to 90%



- 1 Tongue of the push-on adjuster cap
- 2 Slot on the adjuster knob
- 3 Notch on the adjuster knob
- 4 Pointer of the push-on adjuster cap



11 Operation



De-energize the unit prior to working on it or in the event of potential danger (e. g. pull the mains plug) and prevent it from being switched back on again.

11.1 Switching the unit on/off

- › Switch on the device at the pressure switch by rotating the switch to the "I" position.

The compressor unit will start up automatically and fill the pressure vessel. When the cut-off pressure is reached, the compressor unit switches itself off automatically.

- › The unit can be switched off whenever required by turning the pressure switch to the "0" setting.

11.2 Switching the unit on after a power cut

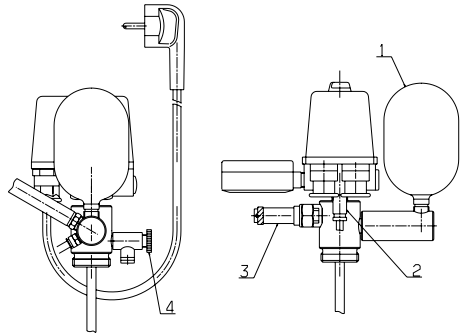


Some units will generally not start up against pressure. These units can optionally be equipped either with a start-up volume (1) and a mechanical relief valve (2) or with an automatic start-up valve.

Units with an automatic start-up valve:

If the unit is fitted with an automatic start-up valve, the valve allows the unit to start up without being pressurised.

Units with a start-up volume and mechanical relief valve and units with a membrane-drying unit



- 1 Start-up volume
- 2 Mechanical relief valve
- 3 Safety Valve
- 4 Condensate drain (manual)

- › Switch off the unit using the pressure switch.
- › Switch the unit back on using the pressure switch once the air has escaped from the start-up volume (duration: approximately 5 seconds) or via the membrane-drying unit.

11.3 Pressure vessel test



The owner must comply with the national directives.

Example for Germany: German Ordinance on Industrial Safety and Health (BetrSichV)

11.4 Mobile compressor station



NOTICE

Risk of crushing when operating the articulated joints

- › Keep your fingers away from the area around the articulated joints where crushing may occur when the angle and height of the sliding handle are being adjusted.
- › Press both of the black knobs on the articulated joints pressed at the same time to adjust the height and angle of the sliding handle.

12 Maintenance



De-energize the unit prior to working on it or in the event of potential danger (e. g. pull the mains plug) and prevent it from being switched back on again.

12.1 Maintenance schedule

Units without a membrane-drying unit

| Maintenance interval | Maintenance work |
|---|---|
| Weekly | › Requirement on units without a K module: drain the condensed water – once a day if humidity is high (see "12.2 Draining the condensation water"). |
| Every six months | › Check the safety valve (see "9.6 Checking the safety valve"). |
| Annually | › Replace the air intake filter – if there is a high concentration of dust, this must be carried out every six months (see "12.3 Replacing the air intake filter"). |
| Every 4 years | › Replace the vibration dampers. |
| In accordance with national directives | › Carry out recurring safety tests (e.g. pressure vessel testing, electrical safety testing) in accordance with the national directives. |
| Observe the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV" | › Maintenance of the compressor unit |

Unit with membrane-drying unit

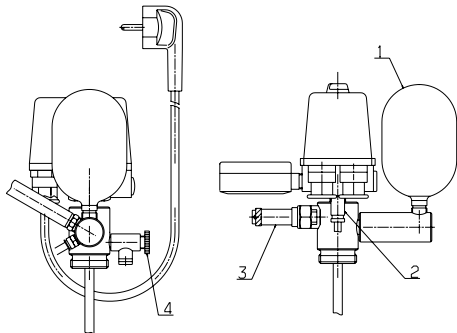
| Maintenance interval | Maintenance work |
|---|---|
| Every six months | › Drain off the condensed water (see "12.2 Draining the condensation water"). › Check the safety valve (see "9.6 Checking the safety valve"). |
| Annually | › Replace the air intake filter – if there is a high concentration of dust, this must be carried out every six months (see "12.3 Replacing the air intake filter"). › Replace the fine filter 3 µm or fine filter 0.01 µm (see "12.4 Replacing the filter of the membrane drying unit"). › Replace the sinter filter (see "12.4 Replacing the filter of the membrane drying unit"). |
| Every 4 years | › Replace the vibration dampers. |
| In accordance with national directives | › Carry out repeat safety tests (e.g. pressure vessel test, electrical safety test) in accordance with the national directives. |
| Observe the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV" | › Maintenance of the compressor unit |

12.2 Draining the condensation water

Units with an automatic condensate solenoid valve and/or with membrane-drying units do not have a manual drainage system.

Condensed water collects in the pressure vessel during operation.

- › When the vessel is at maximum pressure, open the condensate drain.



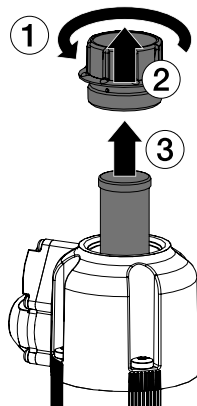
4 Condensate drain (manual)

- › Close the condensate drain once all the accumulated condensed water has been blown out.

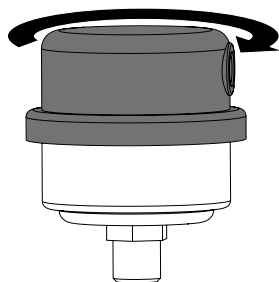
12.4 Replacing the filter of the membrane drying unit

Fine filter

- › Switch off the unit.
- › Disconnect all power from the device.
- › Unscrew and remove the filter cover.
- › Remove the fine filter.
- › Insert the new fine filter.
- › Replace the filter cover and close.



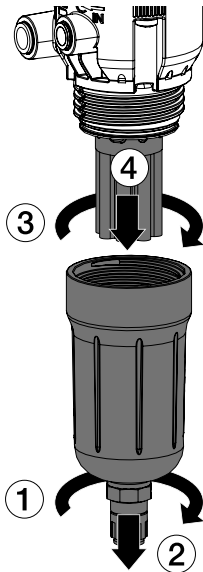
12.3 Replacing the air intake filter



- › Open the cover of the air intake filter by turning it clockwise.
- › Remove the filter element (white/green).
- › Insert a new filter element.
- › Close the cover of the air intake filter by turning it anti-clockwise

Sintered filter

- › Unscrew and remove the filter housing.
- › Remove the sintered filter.
- › Insert a new sintered filter.
- › Replace the filter housing and close.

**13 Taking out of use****13.1 Taking the unit out of use**

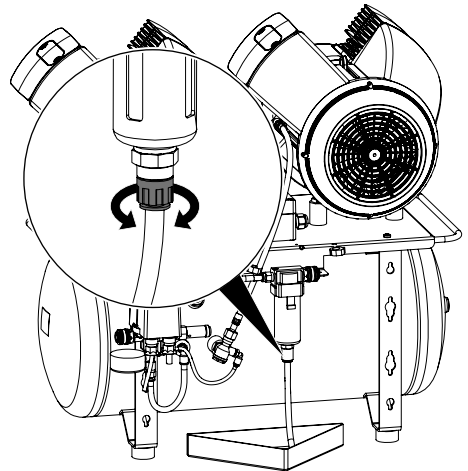
If the unit is not to be used for a prolonged period of time, we recommend that it is properly shut down and taken out of use.

To do this, the accumulated condensation water from the unit must be drained.

- › Switch on the unit and wait until the cut-off pressure is reached.

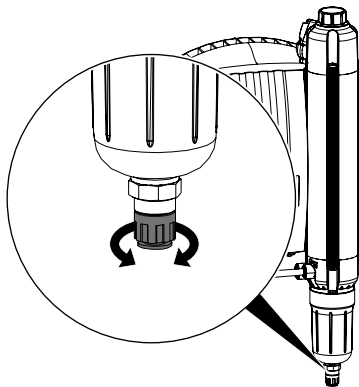
Unit with condensate separator

- › At maximum tank pressure, unscrew the bottom screw fitting on the condensate separator.
- › Close the screw connection as soon as all of the condensate has been blown out.



Membrane drying unit

- › Open the condensate drain valve on the membrane drying unit with the compressor unit running. When no more condensation water emerges, close the condensate drain valve.
- › Switch off the unit.



Pressure tank

- › Switch off the unit.
- › Disconnect the mains plug.
- › Relieve the full pressure from the compressed air vessel (e.g. using a blow-off gun connected to the quick-release coupling or via the condensate drain valve (if present)).
- › Disconnect the compressed air connection on the quick release coupling.

13.2 Storage of the unit



WARNING

Risk of explosion of the pressure tank and pressure hoses

- › The pressure tank and the pressure hoses must be vented before they are stored or transported.
- › Protect the unit against moisture, dirt and extreme temperatures during transport (refer to the section on "Ambient conditions").
- › Only store the unit when it has been completely emptied.



14 Tips for operators and service technicians



For further information on trouble-shooting refer to the assembly and operating instructions "Oil-free piston compressors KK and piston vacuum pumps KV".



Any repairs above and beyond routine maintenance must only be carried out by suitably qualified personnel or by one of our service technicians.



De-energize the unit prior to working on it or in the event of potential danger (e. g. pull the mains plug) and prevent it from being switched back on again.

| Fault | Probable cause | Solution |
|----------------------------|--|---|
| Unit does not start | No power supply voltage | › Inform an electrician. Check mains fuse and if possible, switch on unit again. If the safety fuse is defective, replace it. |
| | Undervoltage or overvoltage | › Inform an electrician. Measure power supply voltage. |
| | Condensator defective | › Notify electrician/engineer. Check condensator and replace if necessary. |
| | Motor defective | › Replace the unit. |
| | Temperature switch in the motor (not fitted in all units) has switched off 1. High ambient temperature 2. Mechanical sluggishness 3. Pressure in the line | 1. Allow the unit to cool down. Ensure better cooling. Warning: unit restarts automatically. 2. Factory repair. 3. Evacuate air from the suction volume. |
| | Air intake filter cartridge blocked | › Insert a new air intake filter cartridge. |

EN

| Fault | Probable cause | Solution |
|---|--|---|
| Output drops. | Lines, hoses or connections leaking | › Inform a service technician. Check / renew lines, hoses or connections. |
| | Defective membrane-drying unit | › Inform a service technician. Replace the membrane-drying unit. |
| | Air intake filter soiled | › Replace the air intake filter at least 1x per year. The air intake filter must never be cleaned. |
| | Head kit leaking as a result of wear and/or for one or more of the following reasons: – Soiling – Excessive ambient temperature – Unsuitable materials drawn in | Inform a service technician. Replace the head kit. – Install the filter upstream or replace the filter. – Ensure that cooling is more effective. – Only convey approved materials. |
| | Defective valve plate | › Inform a service technician. Replace the valve plate. |
| | Too frequent switching cycles | › Avoid switching on/off too frequently, or work with a larger compressed-air vessel. |
| Unit too noisy | Bearing damaged | › Inform a service technician. |
| | Vibrations are being transmitted to the housing | › Use suitable vibration dampers. |
| | Defective vibration dampers | › Install new vibration dampers. |
| Water dripping from air consumers | Compressor stations with membrane drying unit: Membrane-drying unit defective | › Inform a service technician. Replace the membrane-drying unit. |
| | Compressor stations without membrane drying unit: Condensed water in the vessel | › Regularly drain the condensed water. |
| Pressure dew point is not correct | Purge air nozzle too large or small | › Inform a service technician. Replace the purge air nozzle. |
| Moisture indicator on membrane drying unit is pink | Unit has not been used for a extended period of time | › When the unit is operated, the moisture indicator will regenerate itself and turn blue again. |
| | During operation: malfunction of the membrane-drying unit. Air drying insufficient | › Inform a service technician. Replace the membrane-drying unit. |



Service

Dürr Technik GmbH & Co. KG
74301 Bietigheim-Bissingen
Telephone 0 71 42 / 90 22 - 20
Fax 0 71 42 / 90 22 - 99
e-mail: service@duerr-technik.de

Replacement order

Telephone 0 71 42 / 9022 - 0
Fax 0 71 42 / 9022 - 99
e-mail: office@duerr-technik.de

The following information is required when ordering spare parts:

- Type designation and item number
- Order number as appears on the spare parts list
- Quantity required
- Exact shipping address
- Shipping information

Repairs/return delivery

Ensure that the unit is **depressurized** before transport! Use the original packaging when returning units, if possible. Always pack the units in a plastic bag. Use recyclable packing material.

Return delivery address:

Dürr Technik GmbH & Co. KG
Pleidelsheimer Straße 30
74321 Bietigheim-Bissingen
-Germany-

International addresses for Dürr Technik

www.duerr-technik.com

Dürr Technik GmbH & Co. KG
Pleidelsheimer Strasse 30
74321 Bietigheim-Bissingen
Germany
Fon: +49 7142-90 22 -0
www.duerr-technik.com
office@duerr-technik.de

