

Stationary High Pressure Compressor for Air and Breathing Air Compression

Types:

KAP15.1-7.5-HN | KAP150-11-HN | KAP 180-15-HN

Production status: F02



KAP-HN

| General | |
|---------------------------------------|--|
| Medium | Air |
| Intake pressure | Atmospheric |
| Filling pressure | PN200 / PN300 |
| Pressure setting, final pressure SIV | 225 bar / 330 bar |
| Pressure setting, pressure sensor | 220 bar / 320 bar |
| Permissible ambient temperature range | +5...+45°C |
| Permissible altitude | 0...1500 m AMSL |
| Max. permissible tilt | 15° |
| System type | Open |
| Standard operating voltage | 400 V; 50 Hz |
| Other operating voltage | On request |
| Compressor oil, standard | Synthetic |
| Oil change interval | Synthetic : every 2 years / 2,000 h Mineral: annually / 1,000 h |
| Finish | CYAN (front) / RAL 7024 (frame) |

| Compressor system | KAP15.1-7,5-HN | KAP150-11-HN | KAP180-15-HN |
|---------------------------------|-------------------------|-------------------------|-------------------------|
| Charging rate ¹ | 370 l/min | 540 l/min | 660 l/min |
| Purification system | P 41 DUO | P 41 DUO | P 41 DUO |
| Cooling air flow, min. | 2.700 m ³ /h | 3.960 m ³ /h | 5.400 m ³ /h |
| Weight ² | 370 kg | 370 kg | 385 kg |
| Dimensions (LxWxH) ² | 1650 x 725 x 920 mm | | |

¹ Measured during cylinder filling from 0-200 bar tolerance +/- 5% at + 20°C ambient temperature.

² Standard model. Weight and dimensions may vary depending on accessories.

| Drive system: e-motor | KAP15.1-7,5-HN | KAP150-11-HN | KAP180-15-HN |
|--|---------------------------------|----------------------------|----------------------------|
| Motor | Three-phase Squirrel-Cage-Motor | | |
| Power | 7,5 kW | 11 kW | 15 kW |
| Type | 160 M | 160 M | 160 M |
| Type of construction | B3 | B3 | B3 |
| Operating voltage / frequency ¹ | 50 Hz / 400 V ¹ | 50 Hz / 400 V ¹ | 50 Hz / 400 V ¹ |
| Speed | 2.850 1/min | 2.850 1/min | 2.850 1/min |
| Protection class | IP55 | | |

¹ Different voltage / different frequency available at extra charge on request.

STANDARD SCOPE OF SUPPLY:

› Compressor block with following features

- Oil pump for forced-feed lubrication
- Micronic intake filter: 10 µm
- Intermediate coolers, air cooled, stainless steel
- Aftercooler, air cooled, outlet temperature approx. 10-15 °C above cooling air temperature
- Intermediate separators after 2nd stage
- Final separator for oil and water condensate after last stage
- Sealed safety valves after each stage
- TÜV approved final pressure safety valve
- Pressure maintaining and check valve after the final stage

| Compressor block | IK15.1 | IK150 | IK180 |
|--|----------------------|----------------------|----------------------|
| Compressor unit | KAP15.1-7.5-HN | KAP150-11-HN | KAP 180-15-HN |
| Charging rate ¹ | 370 l/min | 540 l/min | 660 l/min |
| Speed | 1,050 U/min | 1,230 U/min | 1,320 U/min |
| Number of stages | 4 | 4 | 4 |
| Number of cylinders | 4 | 4 | 4 |
| Cylinder bore 1st stage | 110 mm | 120 mm | 130 mm |
| Cylinder bore 2nd stage | 60 mm | 60 mm | 60 mm |
| Cylinder bore 3rd stage | 32 mm | 32 mm | 32 mm |
| Cylinder bore 4th stage | 14 mm | 14 mm | 14 mm |
| Stroke | 50 mm | 50 mm | 50 mm |
| Direction of rotation from flywheel side | Left | Left | Left |
| Drive type | V-belt | V-belt | V-belt |
| Intermediate pressure 1st stage | 2,9 - 3,5 bar | 2 - 3 bar | 2,5 - 4 bar |
| Intermediate pressure 2nd stage | 14 - 16 bar | 14 - 16 bar | 16 - 18 bar |
| Intermediate pressure 3rd stage | 50 - 69 bar | 65 - 70 bar | 70 - 80 bar |
| Compressor block oil volume | 5 l | 5 l | 5 l |
| Oil pressure | 4,5 bar ± 1,5 bar | 4,5 bar ± 1,5 bar | 4,5 bar ± 1,5 bar |
| Intake pressure / Inlet pressure | 1,0 bar _a | 1,0 bar _a | 1,0 bar _a |

¹ Measured during cylinder filling from 0-200 bar tolerance +/- 5% at + 20°C ambient temperature.

➤ **P 41 DUO Purification System - Filter with separate oil and water separator**

SCOPE OF DELIVERY:

- 2x filter housing with long-life filter cartridge
- Separator unit with final pressure safety valve
- Check valve between separator and micro filter
- Micro filter
- Air bleeder valve with manometer
- Pressurizer / check valve
- Filter key for cartridge renewal



P 41 DUO purification system

Air quality as per DIN/EN 12021:

| Contamination with | Maximum content as per DIN EN 12021 | Air quality by BAUER |
|--------------------|-------------------------------------|------------------------------------|
| H ₂ O | 25 mg/m ³ | ≤ 10 mg/m ³ |
| CO | 5 ppm(v) | Depends on cartridge ¹ |
| CO ₂ | 500 ppm(v) | Depends on intake air ² |
| Oil | 0,5 mg/m ³ | ≤ 0,5 mg/m ³ |

1 Only with BAUER special filter cartridge with hopcalite up to maximum concentration of 25 ppm CO in intake air. The compressed clean breathing air then contains a maximum of 5 ppm CO.

2 Where the intake air exceeds the maximum permissible level of CO₂ as per DIN EN 12021, use of a BAUER AERO-GUARD system is **urgently recommended!**

| Purification system | P 41 DUO |
|---|--|
| Operating pressure (Standard) | PN200 / PN300 |
| Operating pressure max (PS) | 350 bar |
| Pressure dew point | < -20 °C, equivalent to 3 mg/m ³ at 300 bar |
| Piping connections | G 3/8" (condensate drain G 1/4") |
| Filter housing volume | 2.1 l |
| DGRL 97/23/EG | Vessel category II |
| Processable air capacity (at ambient temperature 20°C and 300 bar) ¹ | 3,440 m ³ |

1 When using a BAUER P 41 Duo filter cartridge without hopcalite.

➤ **B-CONTROL MICRO electronic control unit**

The B-CONTROL MICRO is a modern, easy-to-operate compressor control unit with colour display that intelligently controls and all basic compressor functions and monitors their safety. User-friendly navigation and clear display of all main compressor parameters.



B-CONTROL MICRO Display

| Compressor control unit | B-CONTROL-MICRO |
|------------------------------------|---|
| Ambient temperature: | -10°C to + 60°C (5-90% humidity; non-condensing) |
| Standard operating voltage | 24 V DC |
| Protection class, control cabinet: | IP 55 |
| Protection class, display: | IP 65 |
| Type, display | 3.5" colour display with clear text |

FEATURES

- Displays current operating pressure, operating hours and operation type
- Displays remaining filling time for breathing air cylinders
- Semiautomatic and fully automatic operation options
- Standard SI unit selection for pressure and temperature
- User-friendly navigation and display (user interface)
- Displays service and maintenance intervals and maintenance information
- Password protection for various menu levels
- Log stores incident history
- Simple software update uses SD card
- Cycle counter and operating hours counter
 - Safety: Information when pressure vessels require replacement
- Numerous language options (German, English, French, Chinese, Czech, Danish, Dutch, Finnish, Italian, Japanese, Norwegian, Polish, Portuguese, Russian, Swedish, Spanish, and more)

MONITOR / CONTROL FUNCTIONS

- Oil pressure monitoring
 - Protection from incorrect rotation direction
- B-SECURUS monitoring (via CAN bus)
 - Safety: Shuts down compressor when filter cartridge is fully saturated
- Temperature monitoring
 - Safety: Monitors temperature (final stage)
- Motor overcurrent (indirect by PTC)

INTERFACES

- CAN bus for internal use
- Remote Start/Stop (dry contact)
- External emergency off switch
- Centralised alarm (dry contact)
- External connection options for: B-SECURUS, SECCANT, B-KOOL , external display, external operating field, gas measurement systems, 40 litre condensate collector

| Automatic condensate drain system | |
|------------------------------------|--------------------|
| Type | Dual |
| Control voltage | 24 V DC |
| Interval operation (closed / open) | 15 min / 10 sec |
| Solenoid valve | normally open (NO) |
| Condensate collector capacity | approx. 10 l |

› Characteristical Data for Allowed Shock Loads:

The base frame is designed to withstand an acceleration of min. 6 g in a 20ms (half-sine), e.g. acc. BV 0430, Appendix H.

Design data of the shock absorbers:

Input pulses (double-half-sine):

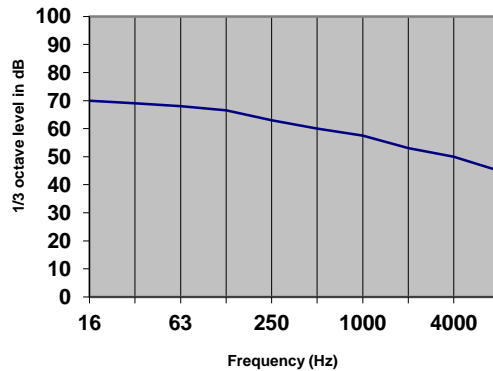
| Area of installation | Shock direction | Acceleration of positive pulse (m/s ²) | Duration of positive pulse (msec) | Acceleration of negative pulse (m/s ²) | Duration of negative pulse (msec) |
|----------------------|-----------------|--|-----------------------------------|--|-----------------------------------|
| 1 | vertical | 500 | 5.3 | -144 | 18.4 |
| | transversal | 250 | 6.2 | -64 | 24.2 |
| | longitudinal | 125 | 7.0 | -30 | 28.9 |

Shock design response spectra data:

| Area of installation | Shock direction | Shock response acceleration a ₀ (m/sec ²) | Parameters pseudo velocity v ₀ (m/sec) | Rel. Deflection d ₀ (m) |
|----------------------|-----------------|--|---|------------------------------------|
| 1 | vertical | 1000 | 2.5 | 0.020 |
| | transversal | 500 | 1.5 | 0.015 |
| | longitudinal | 250 | 0.8 | 0,010 |

STRUCTURE BORN NOISE:

Structure born noise limit curve(at the foundation, mean value in vertical direction, nominal load, below the elastic mounting) with measurement tolerances of the structure borne noise:



Tolerances: 16 Hz - 4000 Hz 2dB average excess
 4000 Hz – 10000 Hz 1dB average excess
 4 dB maximum for two thirds

AIRBORNE NOISE:

The sound pressure level of the KAP-HN range is 85 ± 2 dB(A), measured in a distance of 1m acc. ISO 3744.

ROLL AND PITCH:

- Roll: $\pm 30^\circ$ for 10 sec. or
- Pitch: $\pm 30^\circ$ for 6 sec.

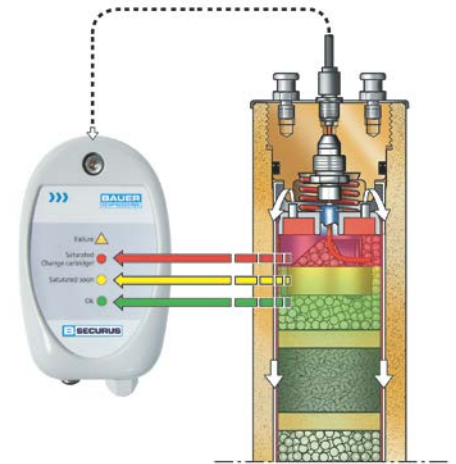
Continuous duty:

- Trim: $\pm 15^\circ$

OPTIONS:

› **B-SECURUS filter cartridge monitoring system**

The B-SECURUS System continuously monitors filter cartridge saturation levels by measuring the moisture in the molecular filter and showing a warning in the display of the B-CONTROL MICRO unit when it is time to change the cartridge. When the dryer cartridge is 100% saturated the B-SECURUS automatically shuts down the system.



B-SECURUS Filter Cartridge Monitoring System

The B-CONTROL unit displays the following warnings:

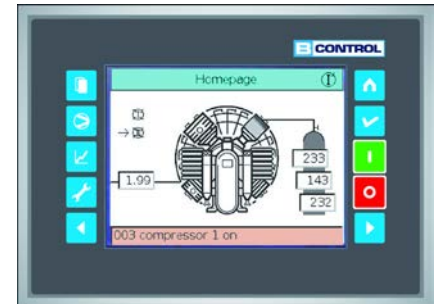
- Green segment: Filter cartridge OK
- Yellow segment: Cartridge nearing saturation
- Red segment: Cartridge saturated or contact fault. Compressor is shut down

| Filter cartridge monitoring system | B-SECURUS |
|------------------------------------|-----------|
| Supply voltage | 24 V DC |
| Power consumption | 3 VA |
| Contact switching capacity | 6 A/250 V |
| Protection class | IP 65 |

➤ **B-CONTROL II compressor control unit**

BAUER B-CONTROL II is the advanced version of the B-CONTROL MICRO basic compressor control unit. It features a touch screen display:

- Fully automatic operation in line with customer-specific parameters
- Monitors all relevant operating data
- Shuts down the system in the case of deviation from defined operating parameters
- Displays operating data, maintenance information, fault messages and trends
- Can be used as a master control unit



B-CONTROL II display

| Compressor control unit | B-CONTROL II |
|-------------------------|---|
| Motor drive | Star delta starter |
| Output | 7.5 kW |
| Control voltage | 24 V DC |
| Type | Semi-automatic |
| Operating elements | 5.7" TFT colour display 240 x 320 pixels; touch screen plus 10 function buttons, clear text display |
| Standard features | <ul style="list-style-type: none"> ▪ 5.7" TFT colour touch screen display with clear text ▪ Fully automatic monitoring of relevant parameters; compressor shutdown if values exceed permissible ranges ▪ Choice of languages ▪ Oil pressure monitoring protects against incorrect rotation direction ▪ Maintenance information shown in display ▪ Log stores incident history ▪ Password protection for various menu levels ▪ Base load cycle and interconnected operation for up to 4 connected compressors ▪ Integrated data logger ▪ Cycle counter records load cycles of final separator stage ▪ Interface: USB 2.0, Ethernet 10/100, CAN bus Layer 2, Modbus RTU RS485, Profibus DP slave (optional) ▪ Remote On/Off (galvanically isolated) ▪ Centralised alarm (galvanically isolated) ▪ Simple software update via CF card or USB ▪ External connections for: B-SECURUS, SECCANT, B-KOOL, external display, external operating panel, fill level, gas balloon, gas measurement systems |

OPTIONS

- Monitoring of intermediate pressure throughout all compressor stages (using pressure sensor, values displayed in B-CONTROL II, compressor shutdown where permissible intermediate pressure is exceeded)
- Monitoring of temperature throughout all compressor stages (using Pt1000, values displayed in B-CONTROL II, compressor shutdown where permissible intermediate pressure is exceeded/underreached)

› **Condensate collection system 40 I**

- 60-litre PVC tank, capacity approx. 40 litres
- Exhaust air is filtered by a soundproofed active charcoal filter
- Filling level display with visual warning when the collector requires emptying (optionally with signal for B-CONTROL)
- Drain tap for condensate, connector thread G ½"
- Dimensions: Ø 400 mm x 1.000 mm, weight approx. 15 kg



40 I Condensate collection system

› **Additional interstage separator after 1st stage**

In operation in regions with high humidity, e.g. tropical regions, we recommend installing an interstage separator after the first compression stage. This can lengthen the service life of the system and reduce maintenance costs.



Interstage separator

➤ **PN200 filling device**

| Filling Device | Direct filling connection | Hose filling connection |
|----------------------------------|--|--|
| Nominal pressure (PN) | 200 bar | 200 bar |
| Valve type | 4 lever filling valves with integrated air bleeder, with German cylinder connector G 5/8" DIN 477 and manometer, PN200 | 4 lever filling valves with integrated air bleeder, with German cylinder connector G 5/8" DIN 477 and manometer, PN200 |
| Filling hose | 4 Unimam high pressure filling hoses, length 1 m | 4 Unimam high pressure filling hoses, length 1 m |
| International cylinder connector | 1 international cylinder connectors | 1 international cylinder connectors |

➤ **PN300 filling device**

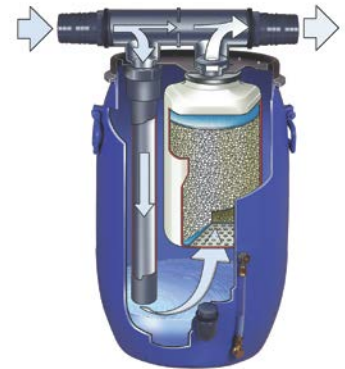
| Filling Device | Direct filling connection | Hose filling connection |
|-----------------------|--|--|
| Nominal pressure (PN) | 300 bar | 300 bar |
| Valve type | 4 lever filling valves with integrated air bleeder, with German cylinder connector G 5/8" DIN 477 and manometer, PN200 | 4 lever filling valves with integrated air bleeder, with German cylinder connector G 5/8" DIN 477 and manometer, PN200 |
| Filling hose | 4 Unimam high pressure filling hoses, length 1 m | 4 Unimam high pressure filling hoses, length 1 m |

➤ **AERO-GUARD CO₂ Absorber**

Efficient removal of CO₂ from breathing air: A sophisticated bypass system feeds the compressor intake air through the AERO-GUARD. Only around two-thirds of the air passes through the filter cartridge that absorbs the CO₂ from the air. This process reduces the CO₂ content to one-third of that of the intake air.

SCOPE OF DELIVERY, AERO-GUARD:

- Intake pipe (order connections separately)
- Water barrel, 60 l (for AERO-GUARD DUO – 2 x water barrels each 60 l)
- Filter cartridge; filling: 9 kg special carbon dioxide absorber



AERO-GUARD

MODELS:

| Type / Size | Suitable for charging rate ¹ | Dimensions (W x D x H) | Operating weight ² |
|----------------------------|---|------------------------|-------------------------------|
| | l/min | cm | |
| Aero-Guard-S | 100 – 150 | 50 x 46 x 72 | 26 kg |
| Aero-Guard-M | 160 – 230 | | |
| Aero-Guard-L | 240 – 320 | | |
| Aero-Guard-XL | 330 – 450 | | |
| Aero-Guard-XXL | 460 – 700 | | |
| Aero-Guard Duo 1000 | 650 – 1000 | 85 x 62,5 x 87 | 54 kg |

¹ Charging rate of the connected compressor measured with cylinder filling from 0 – 200 bar ± 5%

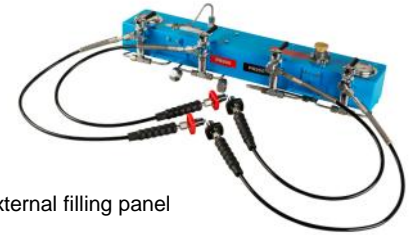
² Includes filter cartridge and 10-litre water ballast

TECHNICAL OPERATING DATA:

| Model | AERO-GUARD S-XXL | AERO-GUARD DUO 1000 |
|--|--|---|
| Medium | Pressurised air | |
| Ambient temperature | +5 to +45°C | |
| Intake air temperature | +5 to +45 °C | |
| Rel. humidity of intake air | 10 to 100 % | |
| CO ₂ intake air concentration | max. 1000 ppm _v CO ₂ | |
| CO ₂ output air concentration | 1/3 of intake concentration = max. 330 ppm _v CO ₂ at 1,000 ppm _v intake concentration CO ₂ | |
| Designed for compressor charging rate | 100 – 700 l/min | 650 – 1,000 l/min |
| Service life | Min. 44 operating hours (at 700 l/min output and intake concentration of 1000 ppm CO ₂). Cartridge must be changed after max. one year even if the maximum service life is not reached. | Min. 60 operating hours (at 1000 l/min output and intake concentration of 1000 ppm CO ₂). Cartridge must be changed after max. one year even if the maximum service life is not reached. |
| Maximum daily operating time: | 5 h | |
| Cartridge filling: | Approx. 9 kg special carbon dioxide absorber per cartridge | |
| Pressure loss | Approx. 20 mbar | |
| Max. permissible tilt | 15° | |
| Permissible altitude | 0 - 2000 m AMSL | |
| Finish | Container blue, cover black/silver, PVC pipes grey RAL7011 | |

➤ **External filling panels**

These external filling panels can be wall-mounted as separate panels and are suitable for remote operation for installation in a separate room.



External filling panel

SCOPE OF DELIVERY:

- Direct filling connection or hose connection
- One or two pressure ranges PN200 and/or PN300 (second pressure range can be selected with a switching tap or permanently connected with a pressure reducer)
- 4, 6 or 10 filling connections
- High-pressure check of all components
- Flushing valve prevents excessive CO₂ content in compressed breathing air
- CE Mark

| Filling connections | Dimensions (L x W x H) mm | Weight |
|------------------------|---------------------------|------------------|
| | mm | kg |
| 4 filling connections | 1140 x 138 x 183 | Depends on model |
| 6 filling connections | 1200 x 138 x 183 | Depends on model |
| 10 filling connections | 1120 x 352 x 370 | Approx. 33 kg |

Relevant EC Directives (where applicable)

- › EC Machinery Directive (2006/42/EC)
- › EC Pressure Equipment Directive (97/23/EC)
- › EC Low Voltage Directive 2006/95/EC
- › EC Electromagnetic Compatibility (EMC) 2004/108/EC

Applied national standards and technical specifications, in particular

- › Betriebssicherheitsverordnung (German Industrial Safety Regulation) of 27 September 2002
- › AD 2000
- › Technische Regeln Druckgase (TRG; **Technical Regulations for Compressed Gases**): TRG 400, 401, 402 (w/o permanent premises) and TRG 790
- › Unfallverhütungsvorschrift (BGR; German Accident Prevention Regulations) BGR 500
- › All BAUER filter housings are designed, manufactured and tested in line with Accident Prevention Regulations and regulations under AD-2000 provisions and DGRL97/23EG.

Documentation: 1x operating manual and parts list with exploded view drawing on DVD

Design: In line with the state of the art according to DIN, VDE, TÜV and Accident Prevention regulations

Testing: In line with Bauer Standard as per DIN EN 10204 - 3.1

Otherwise the **General Terms and Conditions of BAUER KOMPRESSOREN (AGB)** in the version valid at the time of contract conclusion apply. These Terms & Conditions can be viewed and downloaded at the website www.bauer-kompressoren.com, or sent by BAUER on request.

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