Water-cooled and with built-in frequency control:

BOGE screw compressor S 110-4 LF

- EFFICIENCY-OPTIMISED AIREND
- EASY ACCESS PRINCIPLE FOR SIMPLE MAINTENANCE
- LONGEVITY THANKS TO INTELLIGENT DESIGN
- QUIET FOR IMPROVED FLEXIBILITY

THE NEW S..-4 MAYBE THE MOST ECONOMICAL WAY OF MAKING VARIABLE COMPRESSED AIR .

If you need continuous compressed air, then BOGE screw compressors are your first choice. The S..-4 series from BOGE sets the standard for the quiet, efficient and reliable generation of compressed air. Compressed air is, after all, one of the most important auxiliary supplies in industry and trade. And as varied as your demands might be, their long-lasting technology, minimal need for maintenance and improvements to achieve maximum efficiency will fit perfectly wherever you need a reliable compressed air supply.

Most important characteristics:

BOGE AIREND

The core of the new S..-4 range, the BOGE airend, is not just the first airend with this design, it is also the promising new test vehicle in technologies aiming to reduce energy consumption and noise pollution. All of the components are generously sized, which explains the low internal pressure losses and its enormous efficiency levels.

NEW TASKS FOR COOLING AIR

The drive and airend naturally generate sound pressure. With the new S..-4, every effort has been made to ensure none of the pressure escapes: the multi-deflection cooling air duct deals with noise in a very effective manner. And to ensure this does not cause any losses in cooling performance, the space for the cooling air duct has been designed very generously from the start.

ADVANTAGE OF RADIAL FAN

The low-volume radial fan operates at a particularly low speed which not only has a positive effect on the sound pressure, but also lowers the drive power of the fan, increase efficiency and reduce energy costs. As an extra, the fan can also be fitted with a speed control to further reduce noise levels and power demand.

SIMPLICITY AS PRINCIPLE

Irrespective of whether there is revision work at the compression stage or the oil regulator has to be maintained – fast and simple access at all times to all components of the S..-4 is guaranteed: Victaulic© connections permit rapid dismantling and Thanks to the built-in swivel mechanism, changing the oil separator cartridge is a faster and safer process without risk of injury.

TECHNICAL DATA

Effective free air delivery of complete unit (minimum)..... **5,80 m³/min**
Effective free air delivery of the complete system (maximum)..... **19,2 m³/min**
according to ISO 1217 Annex F, at positive compressor operating pressure ..... **7,50 bar**
Rated capacity of fan motor ..... **0,75 kW**
Rated capacity of main drive motor..... **110 kW**
Protection type / insulation class of the motor..... **IP 55 / F**
Operating voltage (compressor)..... **400 V / 50 Hz**
Control voltage (compressor)..... **230 V AC / 24 V DC**
Cooling air flow volume (if connected to ducting)..... **1.700 m³/h**
Suction or ambient temperature (min to max)..... **+5...+45 °C**
Compressed air outlet temperature above cooling water intake temperature..... **10 K**
Residual oil content in compressed air..... **< 3 mg/m³**

DIMENSIONS AND WEIGHT

silenced version (acc. to dimensional drawing): ..... **M 1200.1210**
Sound pressure level standard (acc. to DIN EN ISO 2151) ..... **76 dB(A)**
Width ..... **2.480 mm**
Depth..... **1.490 mm**
Height..... **1.990 mm**
Weight ..... **2.270 kg**

Characteristics of the BOGE S 110-4 LF:

THE EASY ACCESS PRINCIPLE

No other screw compressor has been so carefully designed with maintenance in mind. All of the sound insulation panels on the S…-4 can be removed simply and quickly by hand. Access is limited to just two sides for all maintenance work required – the oil and air coolers are easy to reach via the drawer principle and the use of Victaulic© clamping joints proves what the specifications state: it is the most maintenance-friendly screw compressor on the market.

THE OIL SEPARATING CONTAINER

The reason why BOGE is once again promoting a vertical solution for its S..-4 series is because vertical receivers are much easier to protect against vibration which can reduce noise levels considerably. At the same time, the newly designed oil separation concept results in minimal residual oil content and pressure losses and long service life lives for the separation elements. To make it easier to exchange the internal oil separator cartridge, we have developed a built-in swivel mechanism with which the heavy lid to the oil separation tank can be moved easily to one side. As well as making it much quicker to exchange the cartridge, this also removes the chance of injury due to crushing.

ELASTIC “SILENTMOUNT” SUSPENSION

The principle of isolation from vibrations is key across the whole design of the S..-4. This also explains why a vertical oil separation tank is used, as they help minimise vibration and oscillation effectively. The drive motor and the airend are attached flexibly to the base frame, thereby also separating them from the effects of vibration. Each of these characteristics helps reduce the noise level from the device.

ENVIRONMENTALLY FRIENDLY INSULATING MATERIAL

Sound insulation measures including redirection of the cooling air are complemented by the use of a new environmentally friendly insulating material which can be applied directly to the redirection points. It consists of non-flammable recycled materials and – thanks to its adsorption potential – contributes quite substantially to a reduction in noise.

OPTIONS LISTED FOR THIS SERIES

Please note that equipment in this list may be contradictory or may not be available for individual models of the series. For the correct selection, please refer to the current product price list.

- **Super silencer** allows installation of the screw compressor directly in the workplace suitable for the silenced version

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- **High-pressure hose 500 mm** for vibration-free compressed air connection to the mains or downstream components

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- **Mains disconnecting device (EMERGENCY STOP switch)** 3-phase 400-690 V integrated into switch cabinet

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- Master control trinity, installed at delivery

- **Oil-tight base frame**
- Transport preservation

- **BOGE connect**Thanks to the BOGE connect smart service and monitoring tool, your compressor is optimally equipped for intelligent compressed air management. Not only do the fast, paper-free commissioning, continuous monitoring of the most important operating parameters and the individual alarms (e.g. for upcoming maintenance) ensure a full service package providing efficient compressed air monitoring, but thanks to the digital machine file, the required information can be called up from anywhere. BOGE connect can be used in combination with compressors throughout their entire life cycle, ensuring reduced operating costs right from the start, lowering administrative costs and minimising the risk of failure and downtime.

- First fill BOGE Syprem SX
- First fill BOGE FoodLub-H1 SX for use in the food and pharmaceutical industries

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- Oil separation tank manufactured in accordance with AS 1210
- Oil separation tank with China stamp
- Combi-receiver with single TÜV-approval

- Mounted condensate drain (230 V / 50 Hz) connected electrically
- Connection with fuse protection for separate refrigerant dryer 230 VAC, at a supply voltage of 400 V +N +PE
- Load separation switch for integrated refrigerant compressed air dryer
- Internal connection with fuse protection for heatless adsorption dryer 230 VAC, at a supply voltage of 400 V +N +PE
- Internal connection with fuse protection for heatless adsorption dryer 230 VAC, only active in the loading phase of the compressor, at a supply voltage of 400 V +N +PE
- Connection for heatless adsorption dryer 230 VAC, with synchronisation control at a supply voltage of 400 V +N +PE

- Relay module for connection to base load change control or isolated contacts
- 2 relay modules for connection of base load change control or isolated contacts
- 3 relay modules for connection of base load change control or isolated contacts

- 4 relay modules for connection of base load change control or isolated contacts
- 5 relay modules for connection of base load change control or isolated contacts

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- **Automatic lubrication** of drive motor lifetime of cartridges: 1 year in 3-shift operation

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- **Premium efficiency** Frequency-regulated fan motor

- **quick-acting valve** installed as standard

- Connection for trinity master control system, comes as standard

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- **Motor storage temperature control**
- Intake filter monitoring (display/maintenance message)
- Oil filter monitoring (display/maintenance message)
- Direction of rotation monitoring (display/fault message)

- **Heat recovery** prepared for external heat exchanger
- **BOGE duotherm BPT**, Δt 50K, tmaxOut = 70°C integrated
- **BOGE duotherm BSW**, Δt 35K, tmaxOut = 55°C supplied loose

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- **Water-cooled version** plate heat exchanger max. water inlet temperature +30°C

- **Supply air filter** fitted at the cooling air inlet of the compressor, effective for extremely dusty environments

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- Connection for external control contact for remote On/Off switching, with coupling relay (other voltages upon request)
- Preselection local/remote via key-switch instead of preselection via parameters
- serial interface RS485 (Modbus RTU) for connection to the remote diagnostics tool airstatus or integration into client visual display system insofar as the internal interface is occupied
- Profibus interface in separate casing for wall mounting
- Automatic (load-free) restart following loss of voltage (programmable)

- **Cyclone separator** with electronic condensate drain connected to focus control 2.0

- **Commissioning** by certified BOGE service technician
- **Commissioning** by certified BOGE service technician excluding travel

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- **BOGE** best**cair** Five-year warranty on all category A exchanged parts (compressor airends up to 36,000 operating hours), cf. best**cair** warranty conditions at the end of this document **Only for compressors installed in Germany**

Subject to technical modifications.
The identified performance values refer to compressors with standard features.

Water connection (for water cooling)

COOLING WATER CHARACTERISTICS

Electrical conductivity (at pH values of 7-9)	**50...500 µS/cm**
Cooling water pressure	**2,00 bar**
Cooling water inlet	**+5...+30 °C**
Carbonate hardness ($CaCo_3$)	**< 16 °dH**
Cooling water quantity at Δt 15K	**6,00 m³/h**
Cooling water volume at Δt 30 K	**3,00 m³/h**

COOLING WATER QUALITY

Ammonia (NH_3)	**2 mg/l**
Chloride (Cl) < 70°C	**100 mg/l**
Iron (Fe) dissolved	**10 mg/l**
Free aggressive carbonic acid (CO_2)	**10 mg/l**
Manganese (Mn) dissolved	**1 mg/l**
Nitrate (NO_3)	**100 mg/l**
Oxygen (O_2)	**2 mg/l**
Silica (SiO_2)	**8 mg/l**
Sulphate (SO_4)	**60 mg/l**
Sulphite, free chlorides (Cl)	**5 mg/l**
Total of dissolved media – TDM	**600 mg/l**

coolers are equipped with non-ferrous metal heat exchangers as standard. In order to prevent damage to these components and to ensure long-lasting function, the contents must not exceed the values stated.

PLEASE ALSO NOTE:

- If the set limit levels are exceeded, coolers made from other materials must be used instead.
- If the water figures change, the coolers may need to be re-designed.
- Incorrectly arranged coolers can lead to malfunctions and to shutdown of the compressor.

Continuous profit:

BOGE duotherm for heat recovery

- FULL INTEGRATION INTO SCREW COMPRESSOR
- STAINLESS STEEL PLATE HEAT EXCHANGERS
- OPTIMAL HEAT TRANSFER
- THERMOSTATICALLY CONTROLLED OIL VALVE

USE YOUR COMPRESSOR TO SAVE COSTS!

Whether with or without pre-treatment, screw compressors convert the majority of the energy used into heat. Thanks to the BOGE duotherm system, around 72% of this energy can be recovered by using the compressor heat to warm your heating or domestic water. The complete system is integrated in the housing of the screw compressor – including the internal piping. As a result, you can give your compressor a 'licence to save energy' for very little effort!

TECHNICAL DATA

Quantity of water	**3,06 m³/h**
at maximum water inlet temperature	**40 °C**
and max. water outlet temperature	**65 °C**
Quantity of water	**1,530 m³/h**
at maximum water inlet temperature	**20 °C**
and max. water outlet temperature	**70 °C**
Pressure loss, water side	**< 0,1 bar**
Max. operating pressure	**16,0 bar**
Connection, water side	**G 1**

REQUIRED WATER QUALITY

Electrical conductivity (at pH values of 7-9)	**50...500 µS/cm**
Ammonia (NH_3)	**2 mg/l**
Chloride (Cl) < 70°C	**100 mg/l**
Iron (Fe) dissolved	**0,2 mg/l**
Free aggressive carbonic acid (CO_2)	**20 mg/l**
Manganese (Mn) dissolved	**0,1 mg/l**
Oxygen (O_2)	**2 mg/l**
Sulphate (SO_4)	**60 mg/l**
Sulphite, free chlorides (Cl)	**1 mg/l**
Pore size of on-site pre-filter	**0,6 mm**

The heat exchangers are made out of stainless steel (1.4401) and copper as standard. In order to prevent damage to these components and to guarantee long-lasting reliable function, the contents must not exceed the values stated.

WHAT MAKES THE BOGE duotherm SYSTEM STAND OUT?:
The core of our energy-saving technology is the plate heat exchanger made out of a series of thin, stacked profiled stainless steel plates. In this design they create a dual-channel system. In order to ensure optimum heat transfer, the individual plates are hard-soldered together in a specially process which means no need for seals which can lead to leaks.

The system integrated completely into the screw compressor casing includes a thermostatic oil control valve in addition to the internal pipework. This ensures constant oil temperature in all conditions.

PLEASE ALSO NOTE:
- If the set limit levels are exceeded, coolers made from other materials must be used instead.
- If the water figures change, the coolers may need to be re-designed.
- Incorrectly arranged coolers can lead to malfunctions and to shutdown of the compressor.

Subject to technical modifications.
The identified performance values refer to components with standard features.

focus control 2.0

Discover the next generation BOGE control unit: with the **focus** control 2.0, it's simple to keep everything under control – with the emphasis on 'simple'. Up to four rigid or frequency-controlled compressors can be managed. They are self-authorised by RFID chip and control the numerous functions intuitively. Just how easy modern compressor management can be is proven by the rapid switchover between the two main displays: the system-based display shows an overview of all the connected compressors (base load switching), or alternatively the compressor-based display can be used to show the individual status of each connected compressor.

Most important characteristics:

SIMPLY EASY

The multicolour LCD display with backlight is setting new standards in operator comfort: thanks to its 5" screen and the excellent resolution, it is extremely easy to read and operate using the capacitative keys on the touchscreen. A clear structure with machine symbols makes operating the device particularly easy.

SIMPLY VERSATILE

Up to four rigid or frequency-controlled compressors can be controlled by the **focus** control 2.0. You can choose between two main displays: a system-based display for an overview of all connected compressors (base load switching) or compressor-based display for individual monitoring of each connected compressor.

SIMPLY MODERN

Authorised operators can log in hands-free to the device quickly and easily with an RFID chip. In addition, the RFID interface allows the cairpac 3000 maintenance pack to be identified as an original spare part thanks to the chip in it. The maintenance documentation for the bestcair warranty program can also be called up at any moment via the interface.

SIMPLE UPDATING

All updates and upgrades can be saved directly into the control unit using a USB stick or notebook (notebook not strictly required).