

PE-NITROX SYSTEMS

POSEIDON EDITION



SPORTS & SAFETY



BAUER PE-NITROX – SECURITY WITHOUT COMPROMISES

For divers, nitrox gas has plenty of advantages compared to “normal” breathing air: longer no-stop times, less nitrogen saturation in the blood, and accordingly less exhaustion and faster recovery after a dive. However, using oxygen-enriched gas is a safety-critical procedure, and the strictest safety standards must be applied to both the equipment and its operation. The B-NITROX concept was developed by BAUER KOMPRESSOREN, market leader in the diving sector. B-NITROX sets standards for the technical design, construction and materials of equipment as well as state-of-the-art gas purification to guarantee uncompromising safety, and holds exclusive certification from international technical services corporation TÜV SÜD for its nitrox compressor.



ADVANTAGES FOR DIVERS

- › Extends divers’ “no-stop times”
- › Reduces decompression and (nitrogen) narcosis problems
- › Lower nitrogen saturation
 - › Lower risk during multiple daily dives
 - › Reduces exhaustion after diving
- › Shorter surface recovery periods

ADVANTAGES FOR FILLING STATIONS

- › Extended training program is available for courses using nitrox
- › Competitive edge over filling stations that do not offer nitrox or safe nitrox systems
- › Lower exhaustion levels for dive teachers engaging in regular dives

BAUER – THE SAFETY-CONSCIOUS CHOICE

Dive4Life, Germany's biggest indoor diving pool, now offers a new and extremely attractive service: divers can now dive there with nitrox. Manfred Narres, owner and managing director of the premium location, insisted on a BAUER B-NITROX system with TÜV SÜD certification, reflecting his top priorities of safety for his customers and staff, plus absolute reliability of the compressor systems in use at his dive centre.



BAUER nitrox systems produce breathing air mixtures with oxygen content of up to 40 percent or diving instructors, ambitious recreational divers, professional divers and members of the armed forces on manoeuvres.

The law imposes clear and strict regulations on gas compression processes, which require exceptionally high certified safety levels. Our BAUER Nitrox Compressors hold

certification from the international technical services corporation TÜV SÜD, upholding our principle that "Safety is non-negotiable".

An important aspect with respect to product liability in cases of accidents – especially for travel operators and hotels with diving centres on their premises.

ONE-STOP SAFETY

The challenge is clear: reliable supply of nitrox 365 days a year, around the clock, without the need for outside oxygen logistics. BAUER's solution was to design a complete membrane system. BAUER supplies a perfectly coordinated turnkey system including all components from a single source, from the company's own ROTORCOMP screw compressor and the O₂ membrane to a custom nitrox compressor for compressing the nitrox mixture with oxygen content of up to 40 percent.



1 B-MEMBRANE SYSTEM

Produces nitrox mixtures with oxygen content of up to 40 percent

2 AERO-GUARD-OX

Reduces CO₂

3 PE-VE-OX

Compresses the nitrox mixture to pressures up to 200 bar



TAILOR-MADE FOR NITROX

For your safety, all BAUER B-NITROX Compressors are equipped with temperature sensors after each compressor stage and in the oil and water separator. To minimize reaction times – and thus maximize safety – if system temperatures rise, the temperature sensors are integrated into the gas flow and monitor its values directly. All components and oils have been designed and tested for use in high-oxygen environments.

4 B-DETECTION PLUS s

Continuous monitoring of breathing air quality

5 FILLING PANEL

For filling breathing air cylinders with nitrox

B-MEMBRANE - THE COMPACT ALL-IN-ONE SOLUTION

BAUER's nitrox membrane system is a compact, safe way of producing breathing air mixtures with oxygen content of up to 40 percent. All components are exactly matched for maximum safety. The system is designed for reliable nitrox supply to stationary professional diving centres, safari boats, liveboards, yachts and cruise ships and for commercial diving missions. The B-NITROX membrane system is ideal for professional diving centres that prioritize safety, high charging rates, low maintenance and low operating costs.



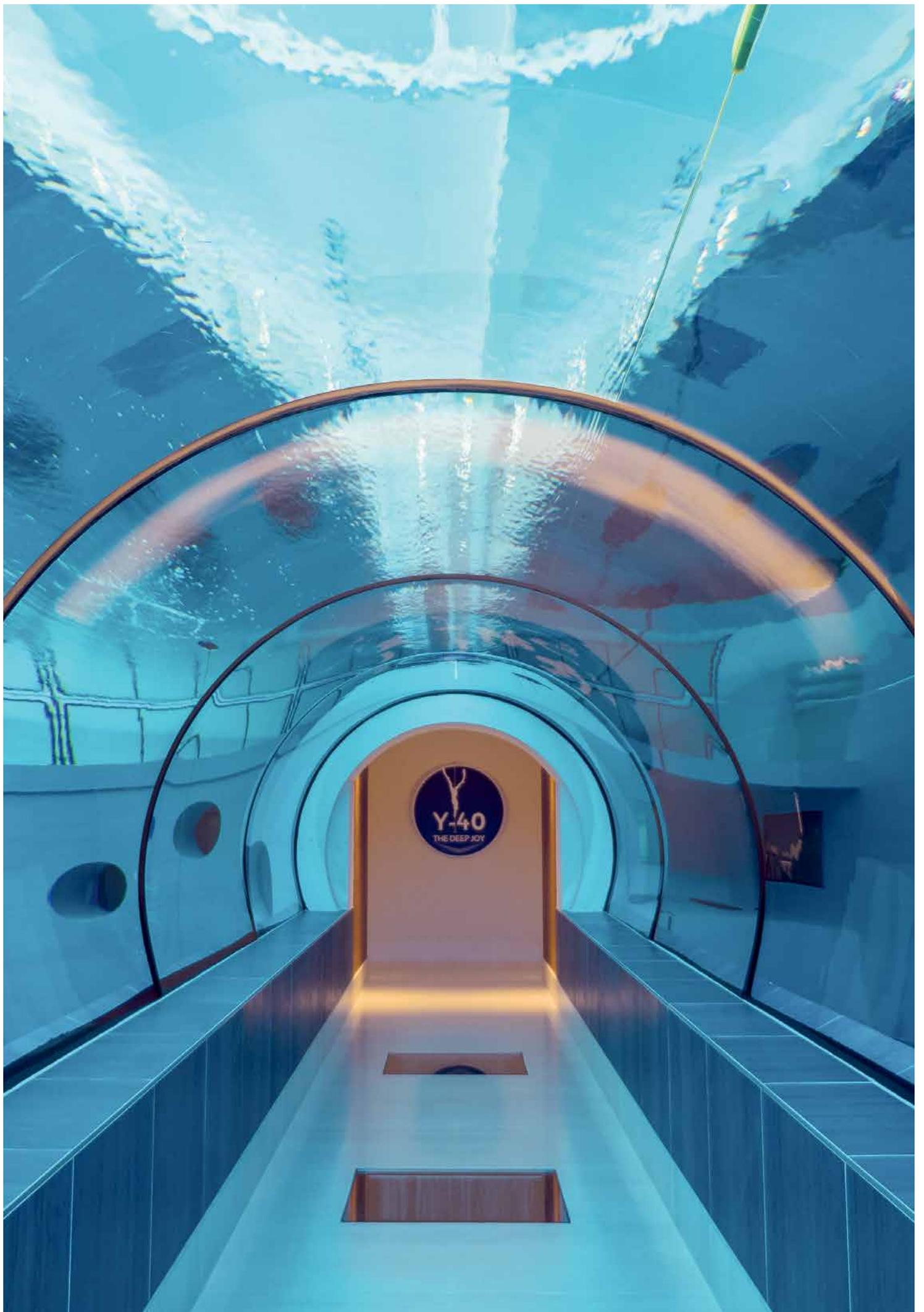
- 1 Screw compressors** have an intake pressure of approx. 10 bar, required to supply the oxygen membrane in the system. The screw compressor with ultra-efficient “rolling profile” is a product of ROTORCOMP (BAUER GROUP).
- 2 Refrigerant dryer** for efficient cooling and condensate separation. Enables oxygen mixture to be produced irrespective of the ambient temperature: the continuously cooled membrane delivers optimum efficiency at all times.
- 3 Filter system** reliably removes oil and particulate to protect the membrane from harmful influences and extend its service life.
- 4 The oxygen membrane** boosts oxygen content by separating N₂ from the breathing air. The oxygen content of the breathing air can be set at any level between 21 and 40 percent ¹.

¹ Maximum oxygen level depends on the specifications of the selected membrane system..

TECHNICAL DATA

Model number	Oxygen content	Compressor charging rate ¹		Max. operating pressure		Motor / motor output		Net weight approx.	Dimens. L x W x H
	%	l/min	cfm	bar	psig	Motor	kW	kg	cm
B-NITROX Membrane Units									
B-MEMBRANE 260/32	32	260	9.2	225	3,200	Three-phase current 400 V, 50 Hz	7.5	420	165 x 85 x 152
B-MEMBRANE 320/32	32	320	11.5	225	3,200	Three-phase current 400 V, 50 Hz	11	420	165 x 85 x 152
B-MEMBRANE 320/36	36	320	11.5	225	3,200	Three-phase current 400 V, 50 Hz	11	420	165 x 85 x 152
B-MEMBRANE 320/40	40	320	11.5	225	3,200	Three-phase current 400 V, 50 Hz	15	420	165 x 85 x 152

¹ Measured by cylinder filling from 0–200 bar (0–3000 psi), ± 5 %



COMPRESSION TECHNOLOGY TÜV APPROVED

The compressor is the heart of any nitrox system. This is where the oxygen-enriched gas is compressed to a pressure of 200 bar. If heated and pressurized oxygen comes into contact with oil, things can get critical. BAUER therefore developed the OX compressor family tailored to nitrox compression, which easily fulfils the rigorous standards for this process –and gained the blessing of TÜV SÜD, the international technical testing and certification company.



PE320-VE-OX

NONE PURER

As a diver, you rely on pure breathing air. Because your health and your needs are our top priority, BAUER B-NITROX Compressors supply pure breathing air in compliance with DIN EN 12021:20141.

BAUER offers decades of experience in air purification, in-depth research and tough material testing, adding up to outstanding quality and maximum safety.

In highly compressed air and gas purification, our aim is to minimize contamination from moisture, CO, CO₂, oil and particulates.

As the market leader, BAUER KOMPRESSOREN supplies air purification systems that have built an excellent reputation worldwide for their cost-effectiveness and quality.

We supply a range of purification systems for many different applications: cartridge filter systems, refrigerant dryers, CO₂ removal systems and an array of monitoring systems to ensure compliance with breathing air quality specifications.

¹ Assuming compliance with intake conditions as detailed in the BAUER installation manual.

TECHNICAL DATA

Model number	Compressor charging rate ¹		Max. operating pressure		Purification system	No. stages	Speed approx.	Motor / motor output		Net weight approx. ²	Dimens. ³ L x W x H
	l/min	cfm	bar	psig				U/min	Motor		
PE-NITROX Compressors											
PE 320-VE-OX	320	11,5	225	3,200	P 41	4	1,450	Three-phase current 400 V, 50 Hz ⁴	7,5	299	114 x 83 x 152
PE 550-VE-OX	550	20	225	3,200	P 41	4	1,230	Three-phase current 400 V, 50 Hz ⁴	11	378	114 x 83 x 152
PE 700-VE-OX	700	25	225	3,200	P 61	4	1,400	Three-phase current 400 V, 50 Hz ⁵	15	403	114 x 83 x 152

¹ Measured by cylinder filling from 0–200 bar (0–3000 psi), ± 5 %

² Weight increases by approx. 90 kg in the Super Silent version.

³ Dimensions in Super Silent version: 148 x 83 x 152 cm

⁴ Power plug: 32 A

⁵ Power plug not supplied

B-CONTROL MICRO

The B-CONTROL MICRO is a modern, easy-to-use compressor control unit with colour display that provides intelligent control and safe monitoring of all basic functions. It is integrated into the PE-VE-OX systems. Interaction between user and control unit is user-friendly and logical. An extensive language selection is now available.

- › Fully automatic monitoring of relevant parameters; compressor shuts down automatically if values exceed permissible limits
- › Oil pressure monitoring protects against incorrect rotation direction and other potential faults
- › Easy software update using SD card
- › Unique feature: Display of remaining time to fill your pressurised air cylinder
- › Improved filter monitoring: If a B-SECURUS filter monitoring system is installed in your compressor system, the start display already shows predicted results such as current cartridge saturation level and cartridge change date.
- › Ethernet connection for communication with B-APP



B-CONTROL MICRO

PERFECT TECHNOLOGY IN EVERY DETAIL

B-DRAIN is the new patented automatic condensate drain system. Its individually controlled solenoid valves at the compressor separators ensure reliable automatic condensate drainage and maximize filter cartridge life.

The principle is this: Condensate – an emulsion of humidity, lubricant and particulates from the ambient air – is created during the compression process. All separators in the system are therefore drained continuously during compressor operation and after shutdown, to remove the aggressive oil/water mixture (condensate) produced by the compression process.

The innovative concept of B-DRAIN provides for smooth, controlled condensate drainage with minimum pressure loss. This saves energy and improves the efficiency of the compressor system. At the same time the new B-DRAIN is significantly quieter than conventional solutions.

The condensate is collected in a tank for eco-friendly disposal.



B-DRAIN

CO₂ UNDER CONTROL WITH AERO-GUARD

There is no doubt that the CO₂ level of the atmosphere is rising. This presents a problem for increasing numbers of breathing air filling stations, which can no longer automatically comply with the strict limit of 500 ppm specified in the DIN EN 12021:2014 Breathing Air Standard. This problem is particularly critical for nitrox membrane systems because of their design; the process of separating out N₂ by the membrane increases not only the oxygen content in the nitrox mixture, but also the CO₂ content. AERO-GUARD is BAUER's ultra-efficient solution for permanently reducing CO₂ content below the limit specified in the Breathing Air Standard.

AIR AND GAS PURIFICATION

AERO-GUARD-OX CO₂ Adsorber

The AERO-GUARD-OX CO₂ Adsorber is highly recommended as an add-on accessory for the nitrox membrane system, as the nitrogen separation process by the membrane significantly increases not only oxygen, but also CO₂ content. AERO-GUARD-OX reduces the CO₂ content of the oxygenated air – a function that is even more vital in nitrox production than in breathing air compression.



AERO-GUARD-OX CO₂-Adsorber

UNCOMPROMISING AIR QUALITY MONITORING

The P-Purification systems integrated into the high-pressure compressor do an outstanding job of removing oil and moisture from the compressed air, with optional carbon monoxide (CO) removal. BAUER AERO-GUARD-OX efficiently removes CO₂ from the air after its oxygen content has been increased by the membranes. However, adverse environmental factors such as excessive CO or CO₂ levels may cause limit values to be exceeded if changing of the filter cartridge is inadvertently delayed. To combat this, BAUER developed the B-DETECTION PLUS gas measurement systems, which identify these situations and prevent contaminated air from being filled into the cylinders. Solid legal certainty is ensured by an integrated data logger with SD card functions for performing defined individual measurements. Measuring values can be logged at any time and accessed in Excel format.

GAS MEASUREMENT TECHNOLOGY

B-DETECTION PLUS m

Portable carry-case solution for rapid temporary measurement of O₂, CO, CO₂ (plus optional measurement of absolute moisture and total oil values (VOCs)¹ in breathing air cylinders, filling hoses and other high-pressure outlets.

The patented special design of the dewpoint sensor delivers an extra-rapid response for virtually instantaneous moisture measurement.



B-DETECTION PLUS m



B-DETECTION PLUS s

B-DETECTION PLUS i and s

Compressor-integrated or standalone gas measurement solution for measuring O₂, CO, CO₂ (plus optional measurement of absolute moisture and total oil values (VOCs)¹. If limit values are exceeded the control unit activates visual and acoustic alarm signals and shuts down the system before contaminated air can pass into the cylinders being filled.

In cases where limit values are briefly exceeded, an automatic flush valve (optional) discharges contaminated air to the outside without interrupting operation of the system.

¹ Oil measurement based only on volatile organic compounds (VOCs). Sensor calibration based on isobutene.

THE IDEAL SOLUTION FOR EVERY SITUATION

BAUER's extensive range of accessories enables you to customize your system to your personal needs – with B-KOOL for cutting filter cartridge costs, B-SECURUS for monitoring cartridge saturation, or AERO-GUARD-OX for CO₂ adsorption where ambient limits are exceeded.

MOISTURE? NO CHANCE!

The B-SECURUS system monitors the saturation level of the filter cartridge(s) by measuring residual moisture in the compressed air of the molecular sieve of the P-Purification system

B-SECURUS displays the current filter cartridge status with an integrated “traffic light” warning light system and in the display of the B-CONTROL unit. An amber light indicates the cartridge needs to be changed soon. When the cartridge is fully saturated a red warning light is shown and the compressor shuts down. This effectively prevents the cartridge filter life from being exceeded. As an additional safety feature, the compressor does not power up if there is no filter cartridge in the cartridge housing.

B-SECURUS helps to save compressor operation costs by using filter capacity to the maximum.

The B-SECURUS system does not require calibration.



B-SECURUS: Uses a “traffic light” system to track remaining filter cartridge life

CUTTING COSTS AND HELPING THE ENVIRONMENT

The B-KOOL Refrigerant Dryer extends the life of filter cartridges many times over, offering huge potential for cutting costs and saving resources.

B-KOOL uses refrigerant drying to lower the temperature of the warm compressed air before it passes into the final separator. This causes the oil and water vapour to condense in the separator before reaching the filter cartridge, multiplying the filter cartridge life. The warmer and moister the ambient conditions, the greater the potential savings, enabling purchase costs to be rapidly recouped.

By reducing cartridge consumption, B-KOOL also makes a major contribution to saving resources and avoiding waste.



B-KOOL Refrigerant Dryer

SAFE FILLING, MAXIMUM CONVENIENCE

External BAUER filling panels can be wall-mounted for flexible positioning. The physical separation of the filling panel and the compressor provides for maximum convenience and safety in operation, particularly when combined with a remote control unit.

High-quality Unimam filling hoses with integrated kinkproof function have swivel connectors for enhanced ease of use. They are also available with pressure reducer for parallel filling of breathing air cylinders with differing pressures. Non-return functions in the filling valves effectively protect the operator even if the filling valve is opened by mistake.



BAUER filling panel

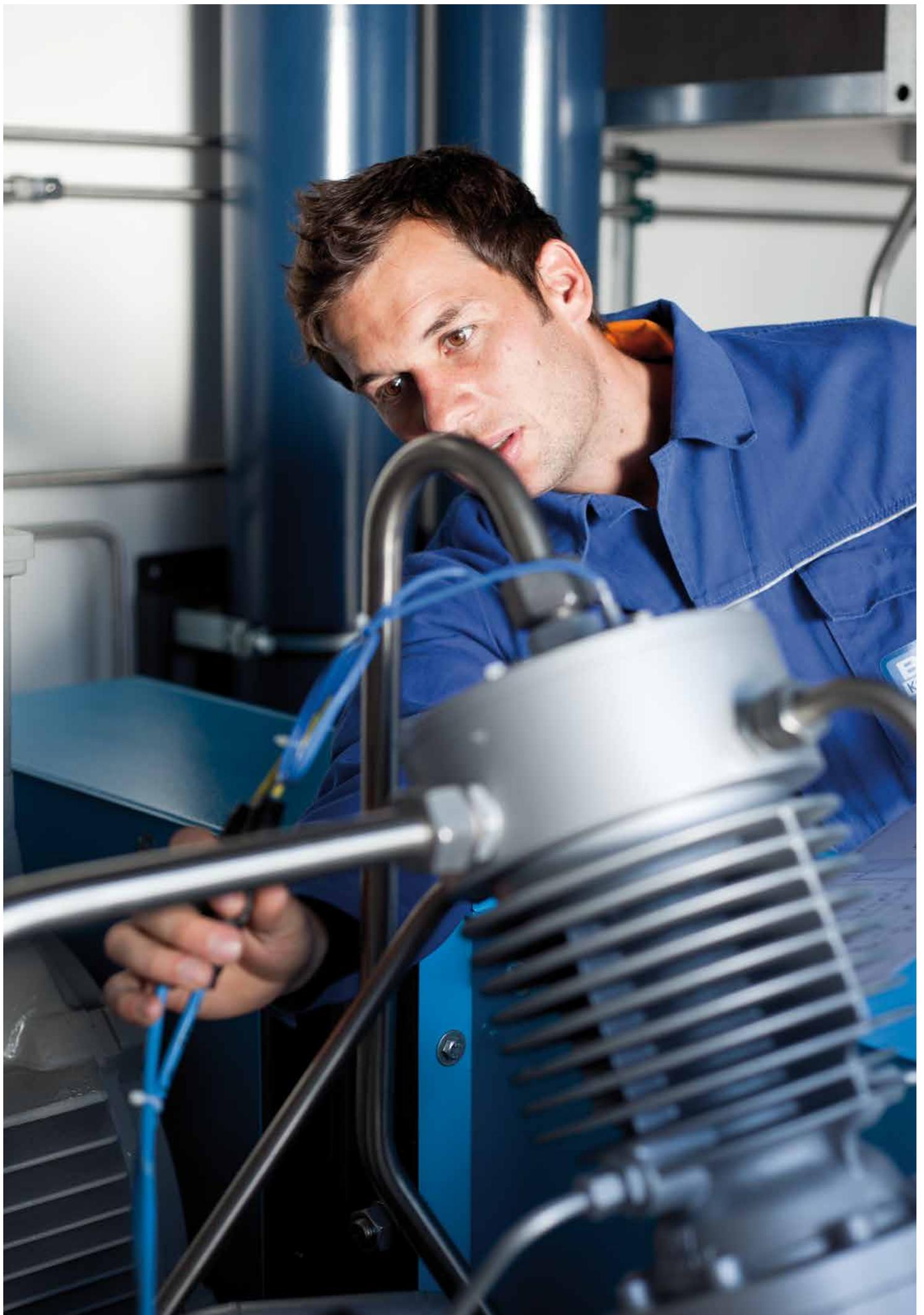
PERFECT PROTECTION FROM EXPLODING CYLINDERS

The B-SAFE-OX safety filling system offers enhanced protection of individuals and the compressor environment during filling.

The rugged steel safety module provides protection from severed or detached filling hose connections and cylinder explosions during filling. The doors are automatically locked during filling.



B-SAFE-OX



ACCEPTANCE AND SERVICES

MANUFACTURING IS ONLY PART OF WHAT WE DO:

ISO 9001 CERTIFICATION

- › BAUER assures consistent maximum product quality by applying extensive quality control measures during and after production in line with DIN EN ISO 9001

ACCEPTANCE TESTING

- › A factory acceptance test (FAT) or site acceptance test (SAT) in the presence of the customer or independent certifying body can be performed in addition to the standard BAUER final test. Many BAUER compressors can also be produced in compliance with other standards, e.g. ASME, KHK etc.

PACKING AND PRESERVATION

- › Our compressors are packed ex works for transport by truck or air freight. We offer appropriate packing designs tailored for shipping, transport to tropical regions or long storage periods as well as short or long-term storage.

INSTALLATION

- › Professional installation is a vital basic factor for safe operation of high-pressure systems. Our global network of branches and qualified partners provides smooth, trouble-free support in planning and implementation, wherever you are.

PLACING INTO SERVICE

- › When installation is completed, BAUER's specialist staff check the compressor functions to ensure everything works smoothly. Placing into service naturally includes in-depth instruction for the operators, as a basis to ensure optimum use of the system in the future. This pays off in terms of lower operating costs and higher added value.

TRAINING

- › To ensure your staff are always up-to-date, we provide a comprehensive range of practical training courses for our customers, where users and operators can benefit directly from our expertise.



**INTERESTED IN OUR
PRODUCTS?**

**CONTACT US – WE ARE HAPPY TO PROVIDE
INFORMATION AND ASSISTANCE.**

BAUER KOMPRESSOREN GmbH
Stäblistr. 8
81477 Munich, Germany
Tel. +49 (0) 89 78049-0
Fax +49 (0) 89 78049-167
info@bauer-kompressoren.de
bauer-kompressoren.de



PE NITROX SYSTEME EN
N44686
01.2020

Subject to technical change without notice