Rotary Blowers
BB – HB Series
with the world-renowned OMEGA PROFILE®
Flow capacities 0.59 to 160 m³/min – Pressure up to 1000 mbar, vacuum to 500 mbar
KAESER – The world-renowned rotary blower manufacturer

KAESER was established in 1919 as a machine workshop, but started on the road to becoming one of the world’s leading compressed air system providers in 1948 when the first reciprocating compressor left the Coburg production line.

The final breakthrough came in the 1970s with development of KAESER’s rotary screw airend featuring SIGMA PROFILE rotors.

In 1991, KAESER acquired the “Geraer Kompressorenwerke”, a company with a proud heritage of over 100 years of compressor and blower construction.

Production of KAESER’s newly developed OMEGA rotary blowers began at the plant in 1993 and today these highly efficient systems are exported, together with all necessary accessories and equipment, to every corner of the planet.

Gera plant

Covering an area of over 60,000 m², the Gera plant currently employs 300 people and produces KAESER’s extensive range of rotary blowers.

All companies in the international KAESER group are linked by the very latest information and network technology.

KAESER blowers are used in a wide range of applications, such as oil-free conveying of gases and bulk materials, sewage treatment (aeration and filter cleaning), liquid homogenisation and forced air for combustion equipment.

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OMEGA Profile – Advanced blower design

How a KAESER rotary blower works

As the rotors turn, air in the inlet is trapped between the rotor lobes and the casing (fig. 1, left rotor) and is carried round to the outlet without being compressed. There is minimal clearance between the rotors and the casing so oil is not needed as a lubricant or to form a seal. The more precise the machining of the rotors and casing the smaller the gap between them, which consequently enables higher volumetric efficiency and keeps air discharge temperature to a minimum. Both of these factors significantly extend blower service life. The casing bore toward the discharge port is slightly eccentric so that as the lobe approaches the port the gap between it and the casing begins to widen. This allows gradual equalisation of pressure between the air in the discharge port and that in the chamber behind the advancing lobe (figs. 2 and 3, left rotor). This is the main reason why three-lobe blocks generate significantly less pulsation than two-lobe blocks. Pressure equalisation in two-lobe blocks occurs abruptly as the advancing lobe crosses the lip of the discharge port. The air is then finally pushed out against the pressure resistance in the connected pipework (Fig. 4).

OMEGA PROFILE Pulsation Graph

Three-lobe KAESER OMEGA blower block

The negligible pulsation characteristics of three-lobed blower blocks make them the perfect choice for applications where thin-wall piping or ducting is used, for example, and where minimal discharge noise and resonance are essential. The precision machined OMEGA rotor profile ensures outstanding energy-efficiency.

Quality: Made in Germany

KAESER rotary blowers – Made in Germany: KAESER blower blocks and rotors are manufactured using the most advanced production technology to ensure optimum product quality.
Intelligent solutions for outstanding durability

Durable construction
KAESER’s compact rotary blower blocks are the result of decades of experience in rotary blower construction and intensive research. All KAESER blocks are suitable for operation up to 1000 mbar(g). This means that the smallest and most efficient block can be chosen for any particular application, which is not only a benefit in terms of investment cost, but also significantly reduces operating costs, as smaller, fast-turning blocks are more efficient than larger slow-turning models. In addition, the faster airflow of the smaller blocks provides more effective cooling, consequently enhancing durability still further.

Heavy-duty cylinder roller bearings completely absorb the continuously changing radial gas-forces that are exerted on the rotors. As a result, they avoid the springing effect of self-aligning bearings and last up to ten times longer with the same loading.

Optimised lubrication
Oil slinger-discs at each shaft end ensure that all relevant bearings and gears are evenly lubricated.

Precise synchronisation
High precision 5f 21-rated spur-ground timing gears have minimal flank clearance and a play major role in contributing to the block’s outstanding volumetric efficiency.

Stable rotors
Kaeser OMEGA PROFILE rotors are manufactured from single work pieces to ensure stable, vibration-free performance with minimal sound levels. The rotor lobes are equipped with integrated sealing strips that reduce sensitivity to contaminated intake air and thermal overloading.

Precise machining
Advanced CNC-controlled machining centres enable rotor profiles and gears to be precision machined within a tolerance of a thousandth of a millimetre. Minimal clearance between the ends of the rotors and the block casing ensures outstanding efficiency due to exceptionally low air reflow – this also allows low speed blower operation. Discharge air temperatures of up to 160°C are possible, as the blower block is heated very little during operation. All block casings and rotors are manufactured within exact tolerances to guarantee consistently high product quality.

Generously sized bearings
Well-proven piston ring labyrinth seals with pressure relief channels between the flow- and oil-chambers are fitted as standard.

Solid block casing
Cast as a single piece, the casing has a distinctive ribbed structure that not only provides added strength and rigidity, but also ensures optimum heat dissipation.

Optimised lubrication
Oil slinger-discs at each shaft end ensure that all relevant bearings and gears are evenly lubricated.

KAESER COMPRESSORS
COMPACT blowers – Significant savings

Ground-breaking blower technology
First introduced in 2000, the revolutionary design of KAESER’s COMPACT series rotary blowers makes maintenance work simple, as all serviceable components and maintenance points are accessed from the front, whilst all pipe connections & ventilation openings are located at the rear of the units. This not only reduces maintenance costs, but also means that several units can be placed right next to each other to save even more space. All COMPACT series models are equipped with high efficiency drive motors, durable bearings and functional service components. The latest addition to the range features a powerful integrated control system and a star-delta starter or frequency converter. System operators therefore benefit from significant energy and operational cost savings and are also able to take advantage of considerable savings for installation, planning, commissioning and certification.

The COMPACT blower series
– Nominal widths from NW 50 to NW 250
– Flow capacities from 1.5 to 93 m³/min
– Pressure from -500 to 1000 mbar(g)

Three-lobe OMEGA blower block
For pressures up to 1000 mbar(g), discharge temperatures up to 160 °C, wide control range with frequency-controlled operation, Q 2.5 rotor balancing for quieter operation, extended service life and minimal maintenance requirement.

Oil level inspection at a glance
Large, easy to view sight-glasses enable quick and easy oil level inspection.

Sensors
A wide range of sensors and switches for monitoring pressure, temperature, speed, oil level and filters ensures dependable blower operation and enables remote monitoring and visualisation of operational status.

OMEGA CONTROL
The OMEGA CONTROL monitors all operational parameters, displays data in plain text and is able to communicate both with master control systems (SIGMA AIR MANAGER) and centralised control systems.

Automatic tensioning
Precise belt-tensioning ensures outstanding efficiency and extends belt service life, consequently reducing the need for service and maintenance work.
Maximum efficiency, minimal space requirement

Compact design
Intelligent system design allows all service and maintenance work to be carried out either from the top or front of each unit. COMPACT series blowers can therefore be installed directly next to one another, because all components are integrated within each unit. All pipe connections and cooling air apertures are located at the rear of the unit, which makes side-by-side installation of several packages even easier.

Optimum component accessibility from the front
- V-belt tensioning device and tension indicator (two-section belt guard for larger units)
- Inlet filter inspection and change
- Motor connection terminal block
- Oil drain and filling plug, oil level inspection

Low operating costs
Energy costs taken over the lifetime of any blower system add up to many times that of the initial capital cost. Every KAESER blower is therefore equipped with a high efficiency blower block featuring OMEGA Profile rotors and an IE2 or IE3 electric motor to ensure maximum energy savings and outstanding system performance.

Air intake
The system’s blower and motor cooling air is drawn in from outside the sound enclosure from the cooler ambient surroundings. This not only improves motor and bearing cooling efficiency, but, for the same drive power, also achieves higher flow capacity volumes (Nm³) and therefore lower specific power demand.

Minimal pulsation and quiet operation
As pulsations from the conveying air can cause the connected pipework to generate noise, the soundproofing on KAESER rotary blowers is designed to minimise sound emissions from both the machine itself and from the conveying air. The three-lobe blower blocks in KAESER Compact series blower units minimise conveying air pulsation, whilst remaining noise emissions are absorbed by the units’ highly effective soundproofing enclosure which uses heat-resistant polyester wool.

Outdoor installation
Outdoor installation of KAESER blowers is simple and inexpensive. With the addition of specially designed rainproof air inlets with bird protection screens, the units are able to operate as normal. Outdoor installation also means that work-environment sound levels are further reduced.
Performance with energy savings

Maximum versatility
All units can be supplied with a two- or three-lobe blower block as required.
KAESER blowers can be easily switched over on site from pressure to vacuum applications. Variable speed blowers with frequency converters are fitted with absorption soundproofing right from the outset.
This eliminates the need for subsequent installation of additional soundproofing measures and potential adjustment to individual frequency ranges.

Simple maintenance
Removable panels in the sound enclosure allow easy access for all servicing work e.g. oil and filter inspection / changes, V-belt tensioning.

High-efficiency motors
IE2 or IE3 drive motors (IP 55, insulation class F) ensure optimum blower efficiency and generate considerably less heat during operation than other motors.

Automatic belt tensioning
Irrespective of motor weight, the pivoted motor base with tensioning spring automatically ensures optimum belt tension and, as a result, transmission efficiency. This system consequently also reduces servicing and maintenance costs.

Simple oil change
An oil drain-line is installed next to the enclosure door to enable quick and easy oil changes without having to carry out complicated disassembly work.

Unloaded starting
The optional Unloaded-Start Valve (USV) is located under the sound enclosure.

Independent fan
The ventilation fan for the sound enclosure has its own separate motor to ensure optimum cooling performance, which is especially important for frequency-controlled units.

High efficiency cooling air flow system
Outstanding cooling performance is assured, as the drive motor is equipped with its own cooling air intake and ambient air is used for the blowing air. This results in maximum efficiency and high capacity.
Special systems for specialised applications

Corrosion-resistant blowers (OMEGA B)
- Rotors and block casings made from cast chromium-nickel alloy
- Special internal block-sealing available
- Suited to e.g. compression of water vapour

Vacuum blowers with pre-inlet cooling (OMEGA PV)
- For use in low vacuum ranges up to 100 mbar, or 900 mbar vacuum
- Flow capacity up to 120 m³/min
- Particularly suited to centralised vacuum installations (e.g. in the paper industry and truck installation)
- Block cooling via additional external cooling air flow (blue arrow)

Rotary vacuum pumps (WVC)
- For fine-vacuum applications
- Nominal flow capacity up to 6800 m³/h
- Dry compression
- Particularly suited for pumping stations with rotary sliding-vane booster pumps that require high flow capacity

Nitrogen blowers
For pneumatic conveying use under nitrogen atmosphere conditions in closed loops for example, where leakages of any kind have to be kept to an absolute minimum.
KAESER blowers – Planning and accessories

For a wide range of applications

Rotary blower applications often require a specific air quality: For example, some materials are sensitive to heat, whilst others may clump if humidity is too high. Another potential problem is contamination of the blower air by particles in the ambient air. As one of the world’s leading system providers, KAESER has a wide range of coolers, dryers and filters designed to cope with these and many other factors. Decades of experience in air generation and treatment also enables KAESER’s experts to precisely match each individual component to achieve optimum system performance. In addition, a variety of control techniques and systems allows the flow rate of every blower installation to be specifically tailored to meet actual air demand.

Manage up to 16 blowers

Depending on the model, the SIGMA AIR MANAGER control system is able to co-ordinate operation of 4, 8 or 16 blowers within a blower installation and ensures even load distribution between the units.

Start-Control

Installed within the control cabinet are: a star-delta starter (with remote operation capability), a sound enclosure ventilator control, an operating hours counter and KAESER CONTROL (the interface for KAESER’s service facility).

OFC-type frequency control

Frequency control enables infinite blower speed adjustment and, with the addition of a pressure sensor, also allows pressure regulation. The control unit co-ordinates operation of the frequency controller and the blower unit. Flexibility is further enhanced by the provided signal outputs / inputs and Profi-Bus connection.

Heat exchanger

Easily integrated into heat recovery systems, the heat exchanger enables exceptional process-air cooling even at high ambient temperatures.

The operating environment...

...is controlled by specially tailored components, such as protective gratings, fans and inlet / outlet silencers, that are designed to work seamlessly with one another.

Drying

The desired humidity / dew-point of the blower air is achieved and maintained by using desiccant and / or refrigeration dryers.

Cooling

At an ambient temperature of 20°C, the highly efficient ACA type aftercooler is able to reduce temperature to 30°C whilst perfectly maintaining pressure.

Filtering

Application-specific vacuum or pressure filters ensure that the required air quality is achieved.

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Unrivalled quality through advanced manufacture

Innovative, premium quality products
Ongoing research and development ensure that KAESER consistently maintains and extends its competitive edge to provide its customers with the most efficient, reliable and service-friendly blowers available.

Rotor machining
State-of-the-art CNC profile-grinding systems machine the blower block rotors to micron accuracy.

Measurement and inspection
To maintain the very best in product quality, we meticulously inspect and measure every block casing to ensure that it is manufactured to within the specified tolerances.

Case machining
Just like the rotors, the casing for every KAESER rotary blower block is machined using advanced climate-controlled CNC machining centres to ensure consistently high product quality.

Flexible production
The very latest production techniques and processes ensure exceptional product quality, minimal lead time and enable customer-specific requirements to be met.

Powder coating
The sound enclosure receives its surface coating in an environmentally compatible 180°C powder coating process. The result is a highly resilient scratch- and corrosion-resistant finish that provides exceptional protection even under the toughest conditions.

Comprehensive testing
Before installation in the relevant unit, every blower block must successfully pass a rigorous test run at full load.

Assured performance
All adjustments such as belt tensioning and alignment are carried out on site after delivery and every blower block is ready-filled with oil.
The right block for every application

Sizing-software to ensure optimum blower selection

Various KAESER blowers are available to suit any particular application (see “Performance Overview” below). Any size of blower can be used for applications up to 1000 mbar. This often avoids the issue of having to select a larger unit, which not only minimises investment costs, but running costs also. This is because smaller, faster running blocks are almost always more efficient than larger slower running blocks. The faster speed means that the block is cooled more effectively by the conveying flow and consequently a) significantly prolongs service life and b) minimises the need for cooling when conveying heat-sensitive materials.

KAESER has developed specialised software to help customers and planning engineers to quickly determine the most appropriate and economical blower for any given application.

Performance Overview

<table>
<thead>
<tr>
<th>Model (3 phase)</th>
<th>Max. pressure bar</th>
<th>Max. delivery (m³/h)</th>
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</thead>
<tbody>
<tr>
<td>HB 1600 PR</td>
<td>0.8</td>
<td>200</td>
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<td>200</td>
</tr>
<tr>
<td>BB 52 C</td>
<td>1.0</td>
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</tr>
</tbody>
</table>

Water management

Aeration of clarifiers and return-flushing of filters require highly efficient and reliable rotary blower systems that are able to deliver large volumes with minimal pulsation and sound levels.

Blowing-air

Rotary blowers as centralised, highly efficient sources of quality blowing- and / or cooling-air. KAESER management systems are able to coordinate operation of several units within an installation.

Pneumatic conveying

Rotary blowers deliver the means for conveying powder and granulate material (also for nitrogen environments), either by suction or blowing.

Mobile applications

Rotary blowers are used for blowing and suction in a wide range of mobile applications, e.g. mixing units and silo- and street-cleaning vehicles.
Closer to customers:

Global presence

KAESER’s subsidiaries and partners in over 90 countries are dedicated to providing compressed air users with the most innovative, reliable and efficient blower systems possible.

Experienced specialists and engineers are available to provide comprehensive advice for every blower need.

Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the Kaeser group’s global information network.

Last, but not least, KAESER’s worldwide service organisation ensures maximum availability of all KAESER products wherever you may be.

Worldwide service

Customers benefit from access to quality service and expert advice, which is why KAESER KOMPRESSOREN ensures its specialists are never far away when it comes to design, installation, and servicing of individually tailored blower systems, no matter where you are.
KAESER – The world is our home

As one of the world’s largest manufacturers of rotary screw compressors, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiary companies and authorised partners in over 100 countries.

With innovative products and services, KAESER KOMPRESSOREN’s experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency. Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the Kaeser group’s global computer network.

These advantages, coupled with KAESER’s worldwide service organisation, ensure that all products operate at the peak of their performance at all times and provide maximum availability.