

Rotary Blowers Omega Series

Air delivery from 0.5 to 160 m³/min – Pressure up to 1000 mbar, vacuum to 500 mbar



Rotary blowers for oil-free air



Made in Germany

Made in Germany to the highest quality standards, KAESER blower blocks and rotors are manufactured using the most advanced production technology to ensure optimum product quality.

KAESER Rotary Blowers – Efficient and Durable

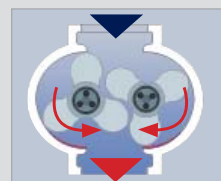
Renowned throughout the world for their efficiency and durability, KAESER's compact blower blocks are the result of decades of experience in blower manufacture and design. All KAESER blocks are suitable for operation at pressures up to 1000 mbar(g) and temperatures up to 160 °C. If a lower operating pressure is required, users can be safe in the knowledge that their KAESER blower will still deliver outstanding performance even at high intake temperatures. This high temperature capacity ensures a wider control range for speed-controlled operation and provides additional energy savings by allowing operation at minimal flow volumes. Each blower block's rotors and shafts are perfectly balanced to Q 2.5 standards for smooth, trouble-free running. This not only significantly enhances durability, but also keeps total operating costs to an absolute minimum.

KAESER blower blocks use heavy duty cylinder roller bearings which are able to withstand ten times the dynamic load exerted on conventional self-aligning bearings. As a result, they last significantly longer – 100,000 h – which means reduced maintenance costs (expense for new bearings) and increased system availability.

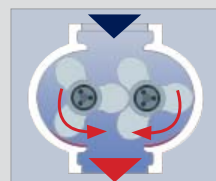
Furthermore, KAESER blower blocks use high precision spur-ground timing gears and minimal flank clearance plays a major role in contributing to the block's outstanding volumetric efficiency (Nm³ per kWh). These spur gears allow the use of highly durable cylinder roller bearings, as the radial forces associated with beveled gears are completely eliminated.

How a KAESER rotary blower works OMEGA P

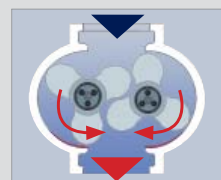
As the rotors turn, air in the inlet is trapped between the rotor lobes and the casing and is carried round to the outlet without being compressed. The casing bore toward the discharge port is slightly eccentric so that as the lobe approaches the port the gap between it and the casing begins to widen. This allows gradual equalisation of pressure between the air in the discharge port and that in the chamber behind the advancing lobe. Pressure equalisation in two-lobe blocks occurs abruptly as the advancing lobe crosses the lip of the discharge port. This is the main reason why three-lobe blocks generate significantly less pulsation than two-lobe blocks. The air is then finally pushed out against the pressure in the pipework.



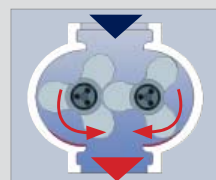
Suction



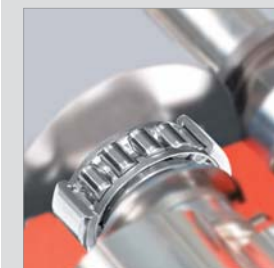
Conveying to discharge side



Pressure equalization



Discharge



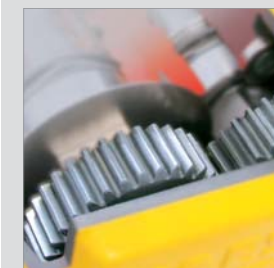
Highly durable bearings

Heavy-duty cylinder roller bearings completely absorb the continuously changing radial gas-forces that are exerted on the rotors and achieve an operational life of up to 100,000 hours.



Non-wearing seal

The well-proven labyrinth seals with pressure equalising channels are fitted as standard. Other types of seal are available on request.



Precision 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.



Optimised lubrication

Oil slinger-discs at each shaft end ensure that all relevant bearings and gears are evenly lubricated. The gear and drive side are both lubricated.



Stable rotors

The rotors and shafts are machined in one piece and balanced to Q 2.5 standards for smooth, trouble-free running. This provides exceptional reliability and durability. The moulding cavities at both ends of the rotors are closed off with end caps.



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.



Rotors with sealing strip

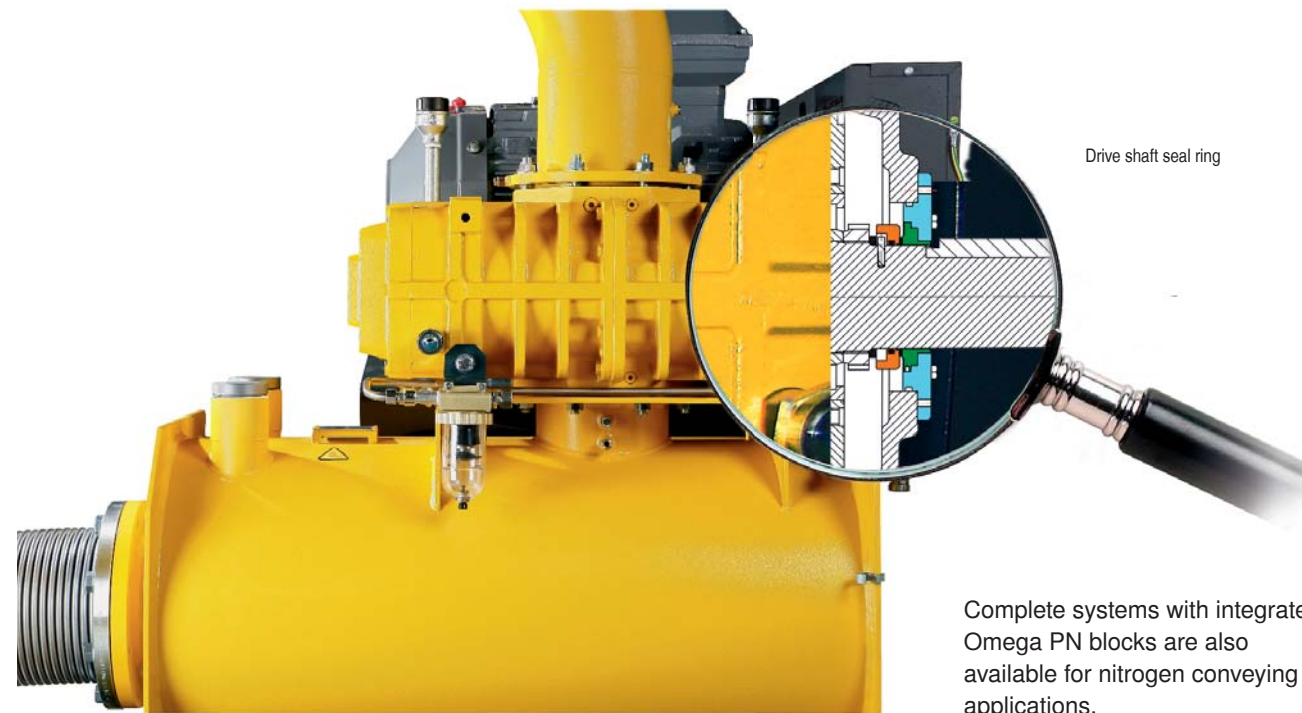
The rotor lobes are equipped with integrated sealing strips that reduce sensitivity to contaminated intake air and thermal overloading.

Rotary blowers for nitrogen conveying Model: Omega PN

Field of application

Some bulk materials have to be transported within a closed system under a nitrogen atmosphere.

Leakages from all system components – including rotary blowers – should therefore be kept to an absolute minimum. For such applications, specially-developed PN series blowers are available with three different drive shaft rotary feedthrough seals, as well as wear-free slide ring seals.

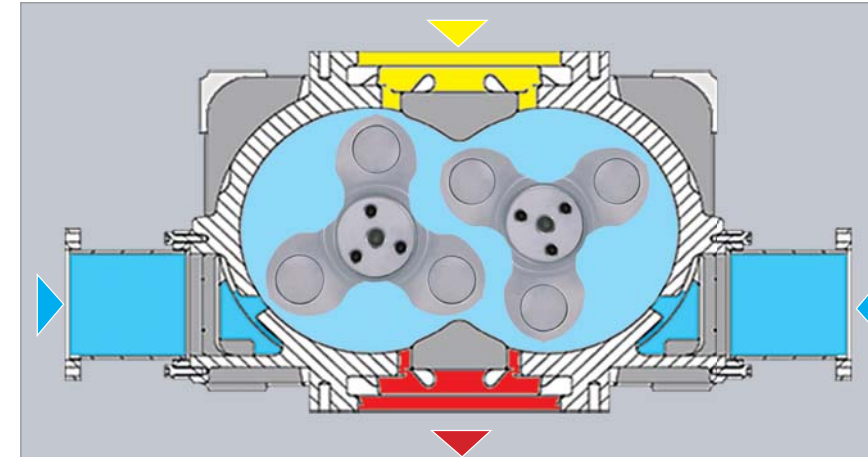


Vacuum blowers with pre-inlet cooling Model: Omega PV

Field of application

For use in low vacuum ranges up to 100 mbar (a) or 900 mbar vacuum.

Function



If vacuum (yellow) occurs between the rotor and the casing ambient air (blue) enters the blower block via so-called pre-inlet channels as the rotors continue to turn. The two volume flows subsequently combine and the arising compression heat is dissipated throughout a much larger volume of trapped air. This approach therefore achieves the same discharge temperatures that are produced by normal blower blocks.



Application examples

Stationary application: Centralised vacuum production (left photo)

Portable application: Suction and silo vehicles (right photo)

Technical Specifications: OMEGA P and OMEGA PN

| Model OMEGA-P | 21P | 22P | 23P | 24P | 41P | 42P | 43P | 52P | 53P | 62P | 63P | 64P | 82P | 83P | 84P |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|
| Max. delivery m ³ /min | 5.0 | 6.3 | 8.4 | 10.6 | 12.4 | 15.9 | 22.5 | 28.3 | 41.5 | 41.6 | 58.6 | 74.2 | 96.7 | 129.3 | 156 |
| m ³ /h | 300 | 380 | 500 | 630 | 745 | 950 | 1350 | 1700 | 2490 | 2500 | 2500 | 4450 | 5800 | 7760 | 9360 |
| Max. speed rpm | 6200 | 6000 | 5800 | 5450 | 5000 | 4800 | 4500 | 4200 | 4200 | 3700 | 3700 | 3400 | 3000 | 2700 | 2500 |
| Max. pressure drop mbar | | | | | | | | | | | | | | | |
| Pressure mbar | 1000 | 1000 | 1000 | 800 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 800 | 1000 | 1000 | 800 |
| Vacuum mbar | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Max. drive power kW | 10 | 12.5 | 15 | 16 | 23 | 31 | 43 | 55 | 75 | 81 | 81 | 110 | 183 | 200 | 250 |
| Dimensions mm | | | | | | | | | | | | | | | |
| Length, w/o drive shaft mm | 325 | 360 | 415 | 480 | 395 | 445 | 545 | 545 | 785 | 625 | 625 | 1070 | 825 | 1040 | 1370 |
| Width mm | 206 | 206 | 206 | 206 | 300 | 300 | 300 | 365 | 365 | 440 | 440 | 480 | 625 | 625 | 625 |
| Height mm | 170 | 170 | 170 | 170 | 240 | 240 | 240 | 290 | 290 | 330 | 330 | 440 | 460 | 610 | 710 |
| Connection flange DN mm | 50 | 65 | 65 | 80 | 80 | 100 | 100 | 150 | 150 | 200 | 200 | 250 | 250 | 300 | 300 |
| Weight kg | 32 | 36 | 42 | 51 | 86 | 100 | 114 | 163 | 205 | 326 | 326 | 410 | 600 | 890 | 1150 |

The technical specifications for Omega PN blocks are the same as those for Omega 21 P to Omega 83 P models.
Inlet pressure for Omega PN blowers is limited to 900 - 1100 mbar(a) for models operating at over-pressure and to discharge pressure for vacuum versions.

Technical Specifications: Omega PV

| Model: OMEGA-P | 62PV | 63PV | 82PV | 83PV | 84PV |
|--|---------|-----------|----------|------------|------------|
| Max. suction capacity at 600 mbar vacuum m ³ /min | 37 | 51 | 87 | 117 | 145 |
| Max. suction capacity at 800 mbar vacuum m ³ /min | 29 | 39 | 72 | 97 | 120 |
| Max. speed rpm | 3700 | 3700 | 3000 | 2700 | 2500 |
| Max. pressure drop mbar | | | | | |
| Pressure mbar | 1000 | 1000 | 1000 | 1000 | 800 |
| Vacuum mbar | 900 | 900 | 900 | 900 | 800 |
| Max. drive power kW | 80 | 100 | 180 | 220 | 250 |
| Dimensions mm | | | | | |
| Length, without drive shaft mm | 625 | 625 | 825 | 1040 | 1370 |
| Width mm | 440 | 440 | 625 | 625 | 625 |
| Height mm | 330 | 330 | 460 | 610 | 710 |
| Connection flange, inlet & discharge ports DN mm | 200 | 200 | 250 | 300 | 300 |
| Connection flange, pre-inlet channels mm | 2x □ 90 | 2x2x □ 90 | 2x □ 130 | 2x2x □ 130 | 2x3x □ 130 |
| Weight kg | 326 | 326 | 600 | 890 | 1150 |

Vapour compression blowers Model: OMEGA B



Field of application

Specially designed for compression of water vapour with vacuum operation in combination with water injection cooling.

- Rotors and block casings made from cast stainless steel or chromium-nickel alloy.
- Various, special internal seals for drive shaft rotary feedthrough (corrosion-resistant and wear-free)
- Various, special seals for drive shaft rotary feedthrough
- Conveying direction:
Vertical, from top to bottom.

Rotary vacuum pump WVC



When producing fine vacuum in combination with a corresponding backing pump, the WVC significantly increases pump suction capacity and vacuum performance. The use of a frequency converter is particularly beneficial, as the converter enables simultaneous activation of rotary vacuum and backing pumps at atmospheric pressure, thereby significantly reducing pumping time.

Technical Specifications: OMEGA B

| Model: OMEGA-B | | 21B | 23B | 41B | 43B | 61B | 63B | 82PB | 83PB |
|---|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Max. delivery* | m ³ /min | 2.9 | 4.1 | 8.3 | 14.7 | 22.8 | 33 | 72 | 93 |
| Vapour volume | kg/h* | 54 | 76 | 153 | 273 | 422 | 612 | 1325 | 1715 |
| Max. speed | rpm | 5000 | 4700 | 3800 | 3400 | 3000 | 2700 | 2800 | 2500 |
| Max. vacuum | mbar | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Max. inlet temperature | °C | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Max. drive power | kW | 5.5 | 8.5 | 12 | 20 | 30 | 47 | 93 | 139 |
| Dimensions | mm | | | | | | | | |
| Length, without drive shaft | mm | See 21P | See 23P | See 41P | See 43P | See 61P | See 63P | See 82P | See 83P |
| Width | mm | | | | | | | | |
| Height | mm | | | | | | | | |
| Connection flange, inlet & discharge ports DN | mm | | | | | | | | |
| Weight | kg | 40 | 43 | 90 | 120 | 280 | 350 | 750 | 1020 |

*1 With 500 mbar vacuum and water injection cooling

Technical Specifications: WVC

| Model | | WVC 180 | WVC 360 | WVC 800 | WVC 1200 | WVC 2500 | WVC 4000 | WVC 5000 |
|---|-------------------|--|------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|
| Rated pumping speed 50 Hz ¹⁾ | m ³ /h | 170 | 310 | 745 | 1120 | 2450 | 3670 | 4890 |
| Max. effective pumping speed of backing pump | m ³ /h | 150 | 280 | 660 | 990 | 2210 | 3260 | 4270 |
| With a backing pump pumping speed of | m ³ /h | 40 | 100 | 200 | 300 | 630 | 800 | 1250 |
| Final partial pressure ²⁾ | mbar | < 4 x 10 ⁻³ | < 3 x 10 ⁻³ | < 3 x 10 ⁻³ | < 2 x 10 ⁻³ | < 2 x 10 ⁻³ | < 2 x 10 ⁻³ | < 2 x 10 ⁻³ |
| Total ultimate pressure ²⁾ | mbar | < 4 x 10 ⁻³ | < 4 x 10 ⁻³ | < 4 x 10 ⁻³ | < 3 x 10 ⁻³ | < 3 x 10 ⁻³ | < 3 x 10 ⁻³ | < 3 x 10 ⁻³ |
| Max. permitted pressure drop in cont. operation ³⁾ In short-term operation < 3 min. | mbar mbar | 130 180 | 100 150 | 80 120 | 80 115 | 50 90 | 50 70 | 35 60 |
| Motor power | kW | 1.1 | 1.5 | 3 | 4 | 7.5 | 11 | 11 |
| Rated speed at 50 Hz | rpm | 3000 | | | | | | |
| Min. - max. permitted speed with frequency | rpm Hz | 1200-5400 20-90 | 1200-5400 20-90 | 900-4800 15-80 | 900-4800 15-80 | 600-4500 10-75 | 600-4500 10-75 | 600-4200 10-70 |
| Rated pumping capacity at max. speed | m ³ /h | 310 | 560 | 1190 | 1790 | 3670 | 5500 | 6850 |
| Shaft sealing and gearbox cooling | | Air | | | | Water/air ⁴⁾ | | |
| Flange connection: inlet and pressure side PN6 DIN 2501 | mm | 50 | 65 | 100 | 100 | 200 | 200 | 250 |
| Flow direction | | Standard: Vertical, from top to bottom | | | | | | |
| Weight approx. ⁵⁾ | kg | 48 | 60 | 145 | 160 | 360 | 365 | 520 |

¹⁾ As per DIN 28400 ff;

²⁾ Achievable discharge pressure with single-stage oil rotary pump

³⁾ For a grading ratio of 1:5 in relation to the backing pump

⁴⁾ For sealing via magnetic coupling

⁵⁾ For sealing with oil barrier, incl. E-motor

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.



KERR Compressor
Engineers
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Kerr Compressor Engineers (EK) Ltd

37 Fairfield Place, College Milton, East Kilbride, **Glasgow** G74 5LP

Tel: 01355 248 222 • web.enquiry@kerrcompressors.co.uk

www.kerrcompressors.co.uk

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