KAESER COMPRESSORS

www.kaeser.com

Rotary Blowers Omega Series

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



KAESER COMPRESSORS

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

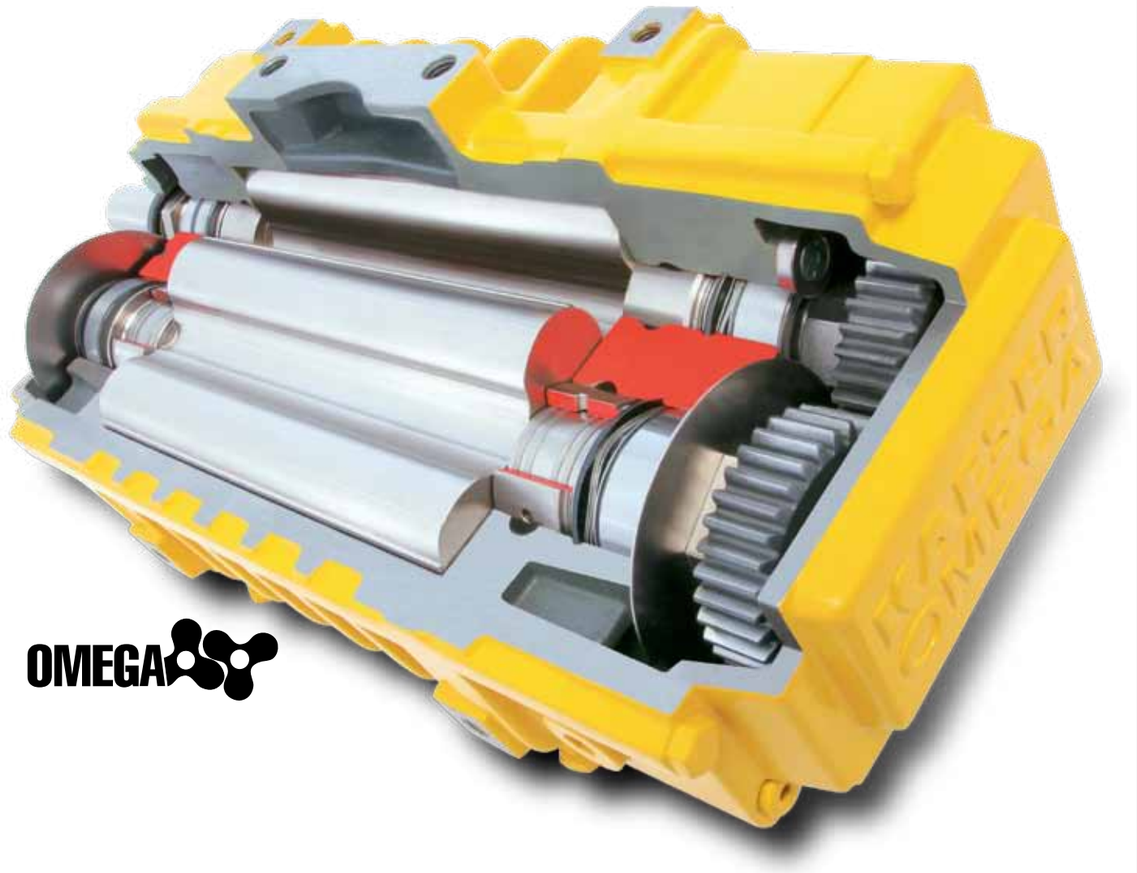


Pressure equalization



Discharge

Rotary blowers for oil-free air



OMEGA

Made in Germany!

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.



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.



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.



Rotors with sealing strip

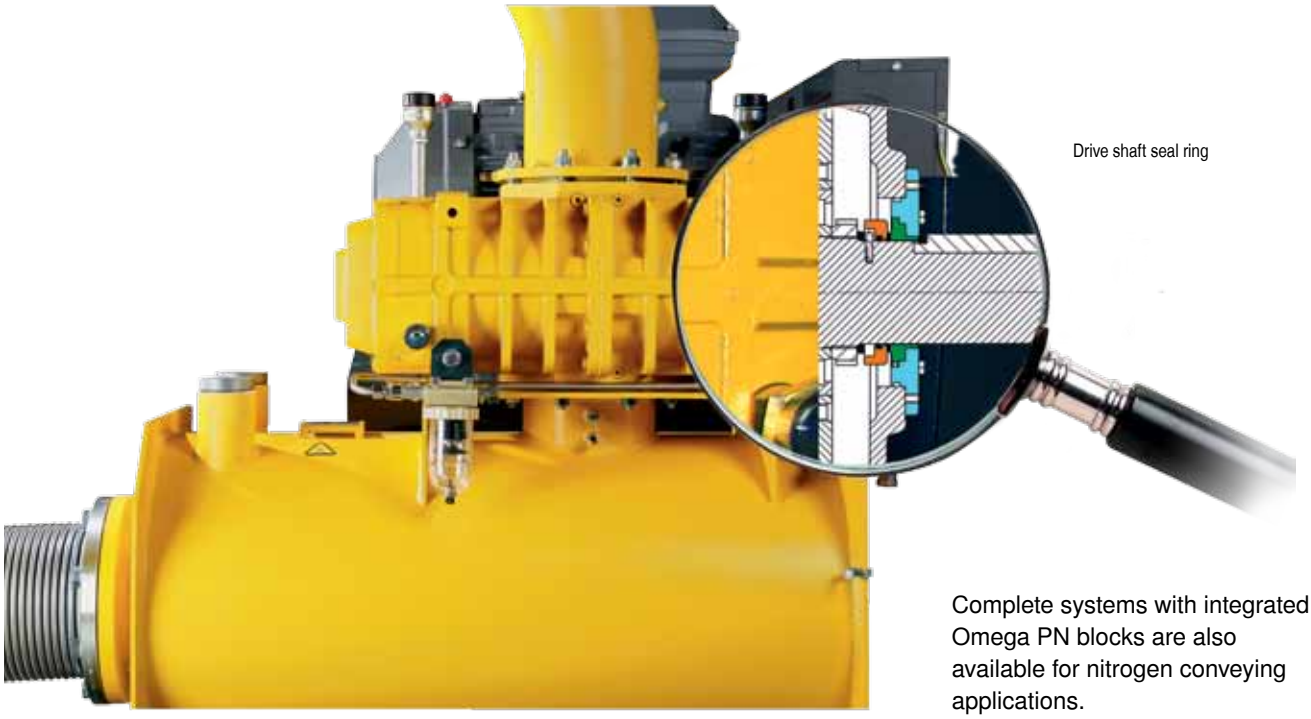
The rotor lobes are equipped with integrated sealing strips that reduce sensitivity to contaminated intake air and thermal overloading.

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.



Drive shaft seal ring

Complete systems with integrated Omega PN blocks are also available for nitrogen conveying applications.

Technical Specifications: OMEGA P and OMEGA PN

Model OMEGA-P		21P	22P	23P	24P	41P	42P	43P	52P	53P	61P	62P	63P	64P	82P	83P	84P
Max. delivery	m³/min	5.0	6.3	8.4	10.6	12.4	15.9	22.5	28.3	41.5	33.2	41.6	58.6	74.2	96.7	129.3	156
	m³/h	300	380	500	630	745	950	1350	1700	2490	1990	2500	2500	4450	5800	7760	9360
Max. speed	rpm	6200	6000	5800	5450	5000	4800	4500	4200	4200	3900	3700	3700	3400	3000	2700	2500
Max. pressure drop	mbar																
Pressure	mbar	1000	1000	1000	800	1000	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	500
Max. drive power	kW	10	12.5	15	16	23	31	43	55	75	65	81	81	110	183	200	250
Dimensions	mm																
Length, w/o drive shaft	mm	325	360	415	480	395	445	545	545	785	550	625	625	1070	825	1040	1370
Width	mm	206	206	206	206	300	300	300	365	365	440	440	440	480	625	625	625
Height	mm	170	170	170	170	240	240	240	290	290	330	330	330	440	460	610	710
Connection flange DN	mm	50	65	65	80	80	100	100	150	150	150	200	200	250	250	300	300
Weight	kg	32	36	42	51	86	100	114	163	205	264	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.

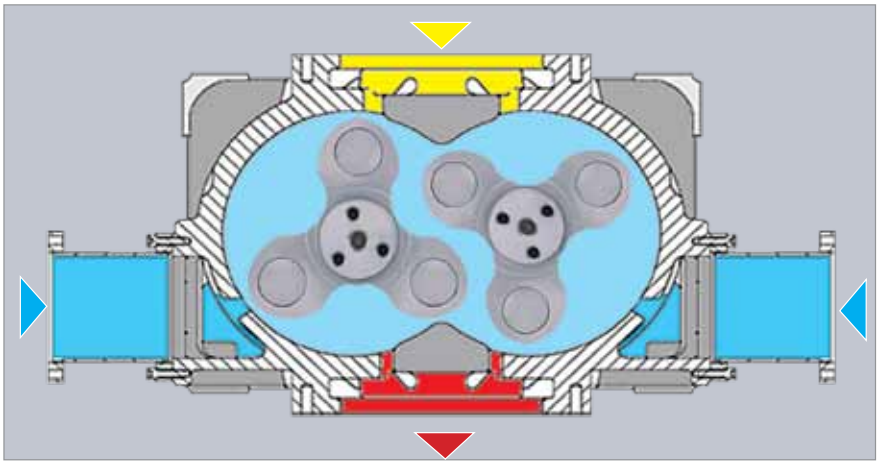
KAESER COMPRESSORS

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 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.

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	See 21P	See 23P	See 41P	See 43P	See 61P	See 63P	See 82P	See83P
Length, without drive shaft	mm								
Width	mm								
Height	mm								
Connection flange, inlet & discharge ports DN	mm								
Weight	kg	40	43	90	120	280	350	750	1020

*) With 500 mbar vacuum and water injection cooling

KAESER COMPRESSORS

Rotary vacuum pump WVC



When producing fine vacuum in combination with a corresponding backing pump, the WVC significanltly 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: WVC

Model		WVC 180	WVC 360	WVC 800	WVC 1200	WVC 2500	WVC 4000	WVC 5000
Rated pumping speed 50 Hz[1)]	m³/h	170	310	745	1120	2450	3670	4890
Max. effective pumping speed of backing pump	m³/h	150	280	660	990	2210	3260	4270
With a backing pump pumping speed of	m³/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	m³/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 COMPRESSORS

www.kaeser.com

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.



LGA InterCert
Certified QM/EM System
ISO 9001:2008 / ISO 14001:2004

KAESER KOMPRESSOREN SE
P.O. Box 2143 – 96410 Coburg – GERMANY – Tel +49 9561 640-0 – Fax +49 9561 640130
e-mail: productinfo@kaeser.com – www.kaeser.com

P-073ED.13/13 Specifications are subject to change without notice