WORLD CLASS · SUPER EFFICIENT · RELIABLE · SILENT

k|m|l|b

MAGNETIC LEVITATION CENTRIFUGAL BLOWER

MEMBER OF CAGI Compressed Air & Gas Institute

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

SYSTEM CERTIFICATION ISO 14001 SGS

KAISHAN

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KAISHAN

Kaishan Compressor Global

WORLD WIDE SUPPORT

Globally recognized industrial presence

Kaishan has steadily grown to become a significant, diversified engineering company developing high value machinery for industries worldwide.
With modern, specialized manufacturing facilities positioned in seven strategic locations, Kaishan's group of thirty-two subsidiary companies produce over 70,000 rotary screw and 250,000 reciprocating compressors annually. Kaishan is the world's third largest manufacturer of compressed air, mining and drilling equipment and supports industries in more than 60 countries including: USA, Australia, Germany, Japan, Korea, Russia, Africa and throughout Latin America.

Vertically integrated global strategy

Kaishan's global strategy of combining skilled engineering with highly efficient manufacturing allows us to provide performance proven, reliable equipment at a significant cost savings to our customers. Additionally, Kaishan's manufacturing processes are 85% vertically integrated insuring full control of the material supply chain. This vertical approach supplies high quality components at a lower cost, and affords Kaishan the ability to respond rapidly to changing market demands.

Practiced environmental sustainability

Integral to the design and manufacture of our products is outstanding energy efficiency. Kaishan's fundamental belief in environmental sustainability drives us to produce products that maximize energy efficiency and help to preserve precious energy resources. Single and two-stage compressors that produce more compressed air per unit of power input as well as expanders that utilize waste energy to produce electricity are just two of the fundamental products in our sustainable approach.

Throughout our manufacturing processes, unused waste materials are recycled at every stage to minimise the use of raw materials. This approach translates to lower initial costs and a smaller environmental footprint that helps us all. Kaishan's committment to environmental responsibility ensures that we will continue to develop technologies and manufacturing solutions that provide industry with machinery of exceptional value - now and well into the future.

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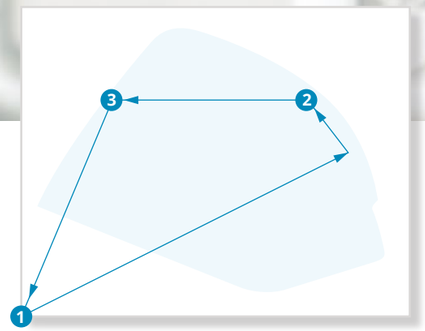
MAGNETIC LEVITATION CENTRIFUGAL BLOWER



1: Unloaded load: 1.5%
2: Full load: 100%
2→3: Efficient operating interval
1→2: Rapid speed up interval
3→1: Rapid speed reduction interval

High efficiency and energy saving

Adopting high-speed magnetic levitation motor technology and direct drive technology, and equipped with ternary flow high-efficiency impeller, the motor efficiency can reach more than 97%, saving energy and consumption, and saving energy costs.

Low maintenance cost

By adopting magnetic suspension bearing, the whole machine runs without wear, lubrication and wearing parts; Replace the air filter regularly (add or replace the coolant regularly for water-cooled models), simple maintenance.

Oil-free and clean

The air can reach F6 standard after passing through the air intake filter; In addition, the whole machine has no gearbox and no bearing lubrication, the compressed air produced is clean and oil-free, and the rear end can meet the IS08573-1Class0 oil-free standard without any oil removal device.

class zero
OIL-FREE ROTARY

Extra large inter-cooler

The design of the super-large inter-cooler makes the second-stage intake temperature very close to the second-stage intake temperature, which greatly improves the efficiency of the air compressor.

Highly integrated

The whole machine has a high degree of integration. It integrates the magnetic levitation high-speed permanent magnet synchronous motor, centrifugal host, cooling system, dynamic monitoring system, high-speed frequency conversion system, control system, air inlet filtration system, sound insulation system and machine base into the chassis. Integrated design, compact structure, no need for installation foundation, simple and fast installation, and low on-site installation requirements.

Low carbon and environmental protection

The rotor relies on magnetic suspension bearings to rotate, and there is no mechanical friction noise during operation. The unit system does not need lubricating oil. The special air intake impedance composite eliminator and sound insulation cover ensure that noise does not overflow; The running noise of the whole machine is extremely low, and it is friendly and environmentally friendly to the surrounding environment.

Key Technology Of Magnetic Levitation Centrifugal Blower

• Magnetic suspension bearing

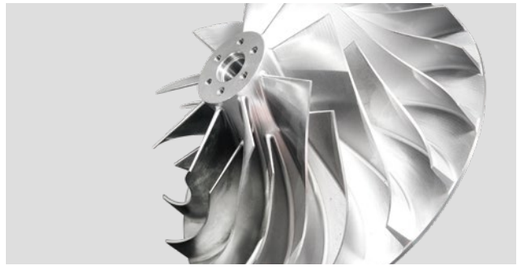
Magnetic suspension bearing makes the rotor stably suspend in the air through controllable electromagnetic force. During the rotation process, there is no mechanical contact between the rotor and the stator, so there is no need for lubrication, no wear, no transmission loss, and the bearing life is close to semi-permanent. It is the best solution for high-speed rotating machinery bearings. Kaishan magnetic suspension bearing is a brand-new product successfully developed by several experts through nearly 10 years' efforts, with completely independent intellectual property rights.

• Magnetic bearing controller

Magnetic suspension bearing controller consists of high-precision displacement sensor, power amplifier, axis trajectory controller and actuator. According to the shaft displacement signal detected by the sensor, the controller adjusts the control current of the magnetic suspension bearing at a speed of tens of thousands of times per minute through calculations to accurately control the electromagnetic force.

• Impeller

It adopts a semi-open ternary flow back-bending design, uses high-strength aviation aluminum alloy/titanium alloy materials, and is integrally milled from a five-axis center. After 115% over-speed test, it is safer and more reliable. It has the characteristics of high strength and good corrosion resistance.

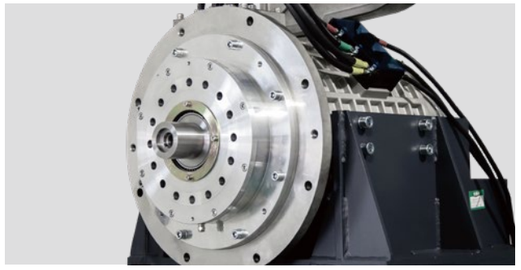


• Diffuser and volute

A vane diffuser and a logarithmic spiral volute are employed to reduce flow loss and reduce noise.

• High-speed permanent magnet synchronous motor

High-speed permanent magnet synchronous motor has the characteristics of small volume, light weight, high power density, high efficiency and low noise, and can realize step-less speed control. Kaishan high-speed permanent magnet synchronous motor fully cooperates with the high efficiency point of the impeller to design the rated speed of the motor, which further improves the efficiency of the whole machine. At present, the maximum speed of the motor can reach 58000rpm.



• High frequency vector frequency converter

The custom-developed high-performance frequency converter suitable for high-speed permanent magnet motor control has excellent control performance and reliability beyond similar products, and also has the ability to adapt to harsh power grids, temperatures, humidity and dust. Through the overall design of PWM control technology and electromagnetic compatibility, it meets the environmental protection requirements of low noise and low electromagnetic interference in customer application places.

• Intelligent monitoring and control

The operation and control of the whole machine equipment is composed of an intelligent monitoring and control system composed of logic controller, HMI touch screen, and various high-performance sensors. It realizes a series of automatic functions such as startup diagnosis, readiness, component detection, machine operation, abnormal alarm and process-ing, and has an intelligent and excellent good man-machine interface. Users only need to make simple operations on the touch screen to complete the adjustment of magnetic bearing control parameters and the operation mode suitable for customer process needs. The operation modes of the whole machine include constant voltage, constant flow, constant power and constant speed for customers to choose from.

Performance Comparison

		Roots blower	Gear speed increasing centrifugal blower	Air suspension centrifugal blower	Kaishan magnetic levitation centrifugal blower
Bearing	Bearing form	Rolling bearing	Sliding bearing	Platinum plate bearing	Magnetic suspension bearing
	Bearing life	1-2 years	3-5 years	3-5 years	Over 20 years
	Mechanical loss	2%	2%	<1%	<1%
	Lubricating oil	Periodic replacement Oil change cost is moderate	Regular oil changes are expensive	No lubricant required	No lubricant required
	Bearing wear	Wear and tear, need to be replaced regularly	Wear and tear, need to be replaced regularly	Wear at start/stop needs to be replaced regularly	No abrasion
High-speed motor	Motor type	AC asynchronous motor	AC asynchronous motor or DC s ynchronous motor	High-speed permanent magnet synchronous motor	High-speed permanent magnet synchronous motor
	Motor efficiency	Below 94%	93-96%	Over 97%	Over 97%
	Power Range	1.1 ~ 500kW	110 ~ 2000kW	22 ~ 150kW	37 ~ 1000kW
	Transmission mode	Belt	Gear speed increase	High-speed direct drive	High-speed direct drive
Impeller	Impeller type	Two-or three-leaf	Semi-open ternary flow	Semi-open ternary flow	Semi-open ternary flow
	Impeller life	3-5 years	Over 20 years	Over 20 years	Over 20 years
	Aerodynamic efficiency	Low	High	High	High
	Overall machine efficiency	50-60%	65-75%	75-85%	75-85%
Complete machine	Transmission loss	5-8%	10-12%	<1%	<1%
	Noise	Above 100dB	90-100dB	75-85dB	75-85dB
	Vibration	Very large	Medium	Very small	Very small
	Operating expenses	High	Medium	Low	Low
	Vulnerable parts	Gears, Bearings, Lubricating Oil, Filters	Gears, Bearings, Lubricating Oil, Filters	Bearings, Filters	Filter
	Intelligent control	Without	Medium	Medium	High
	Maintenance	Short maintenance cycle and low cost	Long maintenance cycle and extremely high cost	Long maintenance cycle and extremely high cost	Long maintenance cycle and extremely low cost
	Overall dimensions	Larger volume	Larger volume	Small size	Small size

KMLB Series Specifications

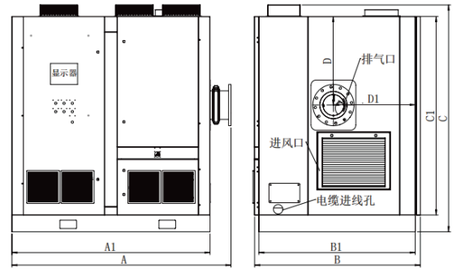
m^3/min (20°C, 1 atm, 65% RH)

MODEL KMLB	Pressure					
	40kPa	50kPa	60kPa	70kPa	80kPa	90kPa
KMLB 037	48	40	34	30	/	/
KMLB 045	59	48	41	36	/	/
KMLB 050	66	50	60	70	/	/
KMLB 060	80	65	56	49	44	40
KMLB 075	101	83	71	62	56	50
KMLB 090	121	99	85	75	67	61
KMLB 110	148	122	104	91	82	74
KMLB 132	180	148	126	111	99	90
KMLB 160	218	179	153	135	120	109
KMLB 185	254	209	178	157	140	127
KMLB 200	277	227	194	170	153	139
KMLB 220	304	250	214	188	168	153
KMLB 250	348	286	244	214	192	175
KMLB 315	440	362	310	272	244	221
KMLB 355	500	411	351	308	276	251

Remarks: Due to technical updates and design changes, the installation dimensions may be adjusted. Please refer to the actual technical scheme.

Vertical air-cooled magnetic levitation centrifugal blower

MODEL KMLB	A	A1	B	B1	C	C1	D	D1	Exhaust port
KMLB037	1504	1300	1300	1200	1810	1498	799	589	DN200
KMLB045	1504	1300	1300	1200	1810	1498	799	589	DN200
KMLB050	1504	1300	1300	1200	1810	1498	799	589	DN200
KMLB060	1504	1300	1300	1200	1810	1498	799	589	DN200
KMLB075	1604	1400	1350	1250	1910	1598	665	620	DN250
KMLB090	1604	1400	1350	1250	1910	1598	665	620	DN250
KMLB110	1704	1500	1400	1300	2010	1698	665	620	DN250
KMLB132	1704	1500	1400	1300	2010	1698	665	620	DN250
KMLB160	2079	1800	1500	1400	2070	1795	717	654	DN300
KMLB185	2119	1900	1592	1500	2170	1900	717	654	DN300
KMLB200	2119	1900	1592	1500	2170	1900	717	654	DN300



Horizontal air-cooled magnetic levitation centrifugal blower

MODEL KMLB	A	B	B1	C	C1	D	D1	Exhaust port
KMLB185	2440	1530	1450	2054	1784	696	376	DN300
KMLB200	2440	1530	1450	2054	1784	696	376	DN300
KMLB220	2600	1900	1820	2104	1834	1335	907	DN300
KMLB250	2600	1900	1820	2104	1834	1335	907	DN350
KMLB315	2900	1980	1900	2154	1884	1410	977	DN350
KMLB355	2900	1980	1900	2154	1884	1410	977	DN350