

WORLD CLASS · EFFICIENCY · RELIABILITY

# k|r|s|p 2

TWO STAGE ROTARY



- ▶ WORLD CLASS
- ▶ SUPER EFFICIENT
- ▶ RELIABLE
- ▶ SILENT



Kaishan Compressor India

# WORLD WIDE SUPPORT

## Globally recognized industrial presence

Over the last sixty years, Kaishan has steadily grown to become a significant and 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 1,00,000 rotary screw and 2,50,000 reciprocating compressors annually. Kaishan is the world's third largest manufacturer of Compressed air equipment, 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 highly skilled engineering with highly efficient manufacturing allows us to provide performance proven and reliable equipment at a significant cost savings to our customers. Additionally, Kaishan's manufacturing processes are 85% vertically integrated ensuring full control of the material supply chain. This approach enables to supply high quality components at a lower cost and maintain agility to respond rapidly to changing market demands.



## Environmental sustainability

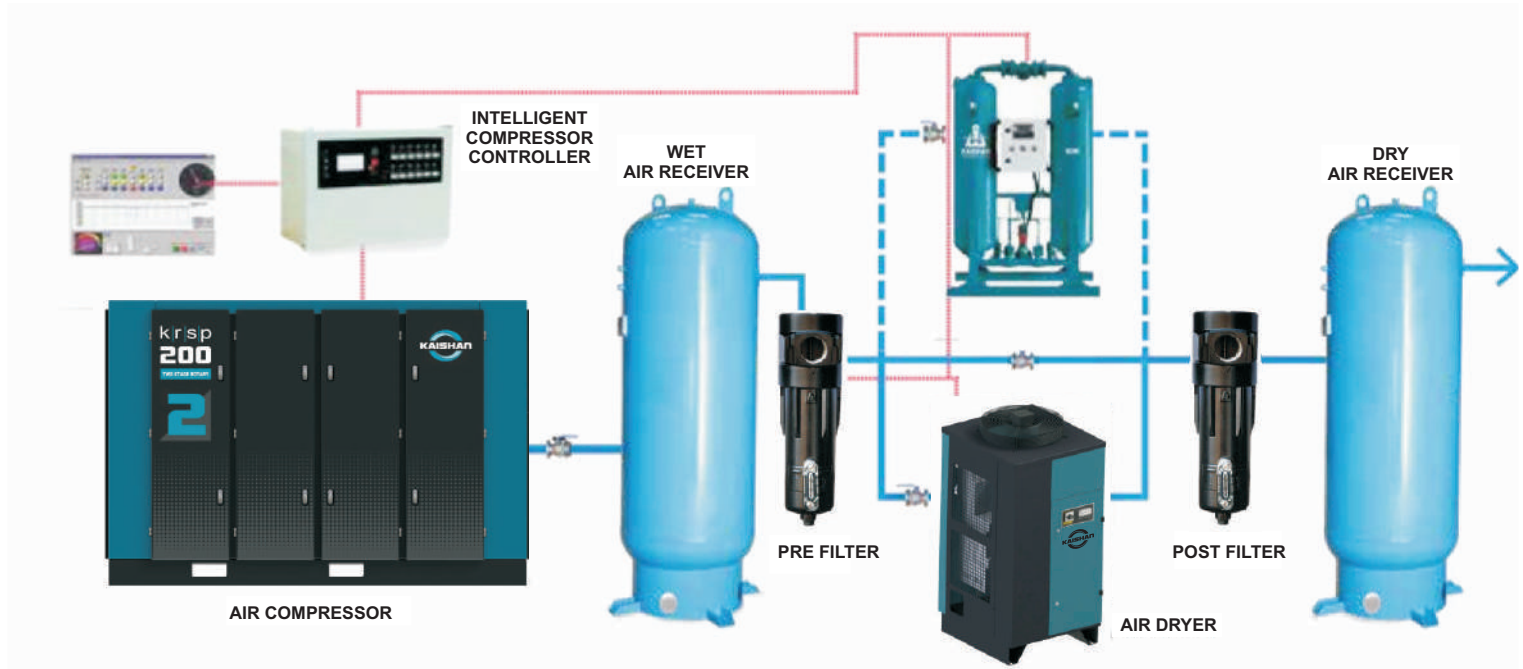
Integral to the design and manufacture of our products is outstanding energy efficiency. Kaishan's fundamental belief in environmental sustainability drives us to produce products that maximize energy efficiency and help to preserve precious energy resources. Single and two-stage compressors that produce more compressed air per unit of power input as well as expanders that utilize waste heat 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 maximize the use of raw materials. This approach translates to lower initial costs and lower operating costs for our customers and a smaller environmental footprint that helps us all. Kaishan's commitment to environmental responsibility ensures that we will continue to develop technologies and manufacturing solutions that provide industry with "Good and Green" products of exceptional value - now and well into the future.

# Air is free, Compressed Air is Not!

Compressed Air is the Fourth Largest Utility for an Industry after Electricity, Gas and Water. Very few people understand the cost associated with compressed air production. Compressed air is the most expensive form of energy used in an industry.

## Energy Cost

Consider a compressor of 500 cfm and 100 psi (g). This will use a 100 HP / 75 kW motor. Running for 24 hrs a day, 365 days a year, with a 70% load factor, it would consume approximately 600000 units annually. At Rs 7 per kWh, it would cost 42 lakhs a year. That is 3-4 times the cost of the compressor itself.



## PATENTED 'KRSP-2' TWO-STAGE AIREND

### Larger Rotor Size

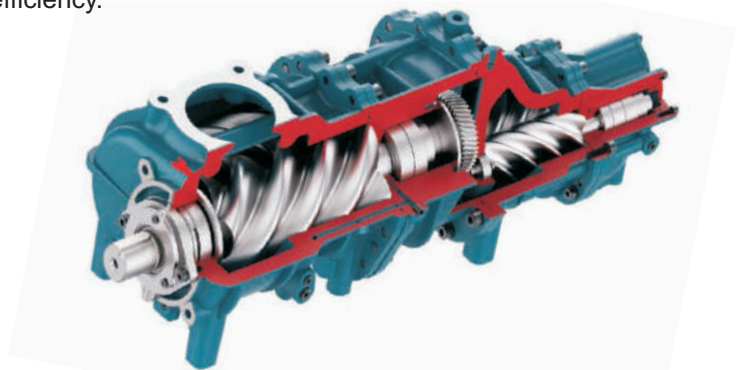
To increase the rotor throughput, the Airends of our Compressors are larger than usual. Our Air Compressors are built with 5/6 lobes and larger rotor size which reduces the specific power Consumption and runs at slow speed.

### Lower inter-lobe leakage losses

Pressure differences between two neighbouring working chambers is small due to a greater number of lobes. This reduces inter-lobe leakage losses. Hence leakage to delivery ratio decreases as the number of rotor lobes increases.

### Larger wrap angle & discharge port

A greater number of lobes combined with a larger wrap angle ensures multiple rotor contact. This reduces vibrations and thus minimizes noise. Larger discharge ports decrease the discharge velocity and therefore reduce the discharge pressure losses, thereby increasing the compressor's overall efficiency.





SINGLE PASS OIL & AFTER COOLERS

Long Life / Easily Accessible

- Minimize thermal stress
- Cooler running temperatures. Designed for running temperature @ 122F° (50°C) ambient.
- Low oil carryover increases bearing life
- Low cooling air velocity reduces dust build up



ULTRAWEB® AIR INTAKE FILTERS

Increased Filtration Efficiency

- Full airflow, low restriction, nanofiber technology
- Deep bed media ensures excellent dust capture
- Increased free air delivery for further savings in energy and running costs

COOLING FANS

Increased Cooling Efficiency

- Higher static pressure allows for heat recovery ducting
- Even air flow across the cooler face.
- Optional VSD cooling fan (150 HP & above) provides energy savings as cooling airflow is reduced during periods of light load or low temperatures
- Cooling air bypasses main compressor compartment resulting in minimal internal dust build up

LAMINAR FLOW INLET VALVE

Minimum Pressure Drop / Increased Output

- Laminar flow inlet valve results in lower pressure drop through the intake, increasing output and saving energy

3 STAGE TANGENTIAL OIL SEPARATION

Lower Pressure Drop / Lower Absorbed Power

- Excellent oil mechanical pre-separation/ reduced direct oil impingement onto separator element
- Lower dust contact resulting in lower pressure drop / longer element life / lower energy consumption
- Residual oil carryover limited to 3 ppm

DIGITAL CONTROL PANEL

Monitors & Controls Key Compressor Functions

- Protects compressor in the event of a fault
- Provides required service alerts
- Sequencing of up to 16 compressors
- Remote monitoring via RS 485 interface
- WYE Delta starter is standard on all models
- MODBUS capability



SAFETY AND THE ENVIRONMENT

Reduced OSHA Risk and Injury

- The entire Kaishan range of compressors includes full safety features such as guarded rotating components and shrouded electrical components

INDUSTRIAL GRADE ELECTRICAL COMPONENTS

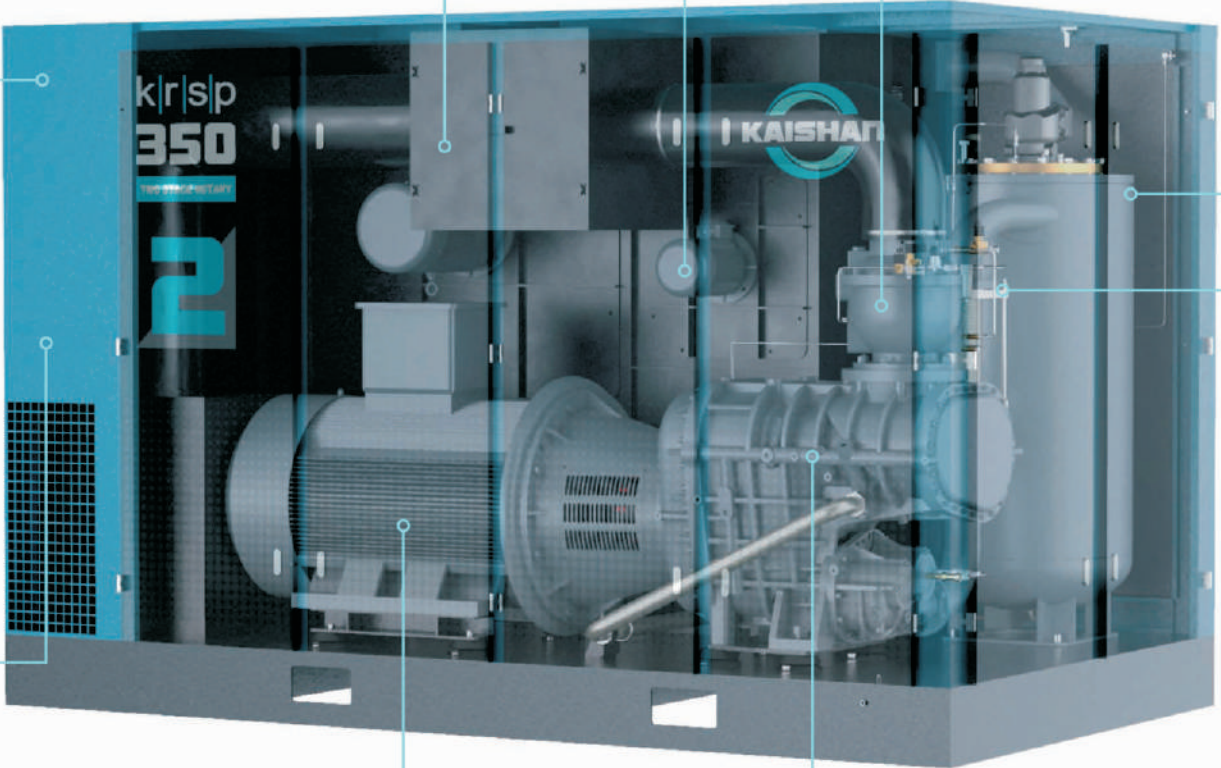
Increased Reliability / Lower Servicing Cost

- Outstanding reliability
- Excellent component life
- Worldwide support
- Standard electrical parts available locally

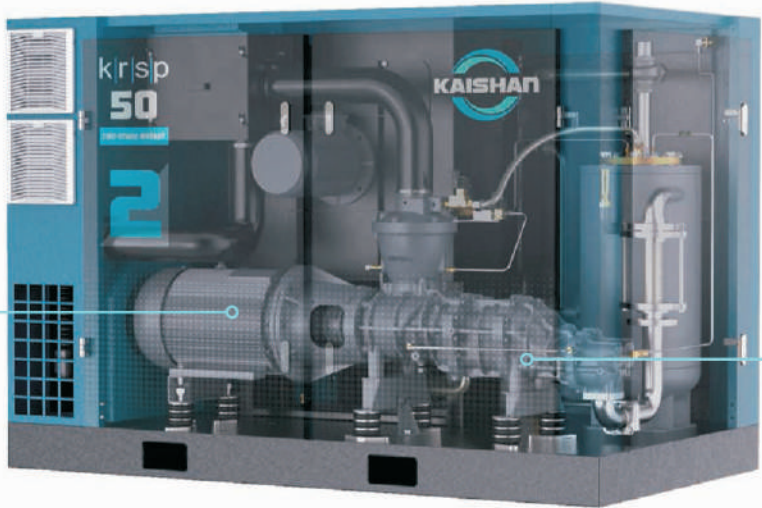
HIGH EFFICIENCY ELECTRIC MOTORS

Long Operating Life / Lower Power Use

- Kaishan uses high efficiency motors, which comply with all international standards
- Motors are standard TEFC to IP 54 protection from dust and moisture
- Class F insulation
- Cooling air bypasses main compressor compartment resulting in lower component operating temperatures and longer life



SKY2 125-600HP



SKY2 Inline series 30-100HP

316 STAINLESS STEEL CONTROL TUBING

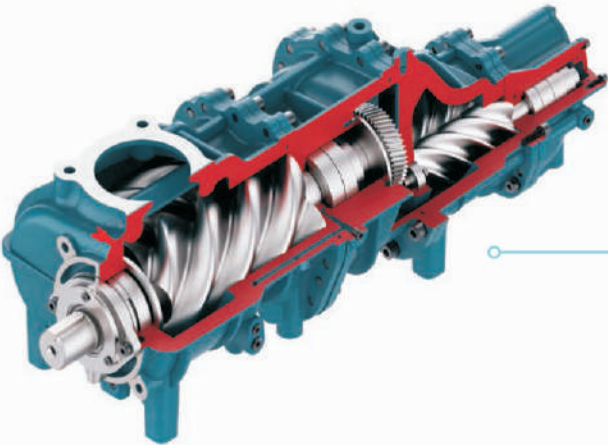
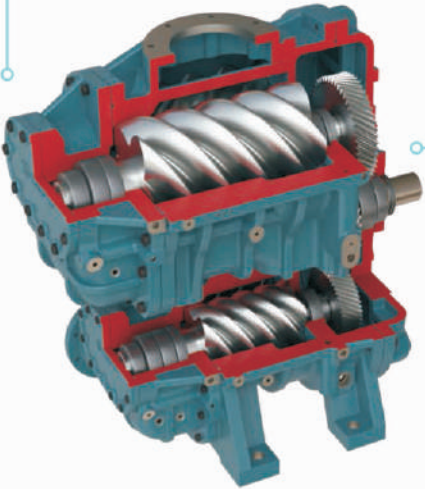
Long Tubing Life / Reduced Downtime

- Increased reliability due to corrosion free material
- Material such as nylon, copper or mild steel will fail in time causing downtime

TRIPLE DISCHARGE BEARINGS

Longer Bearing Life / Quieter Operation

- The “SKY2” series airend uses three discharge bearings on the first stage and four bearings on the second stage
- Longest bearing life in the industry



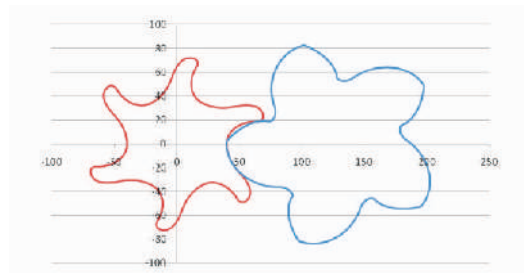
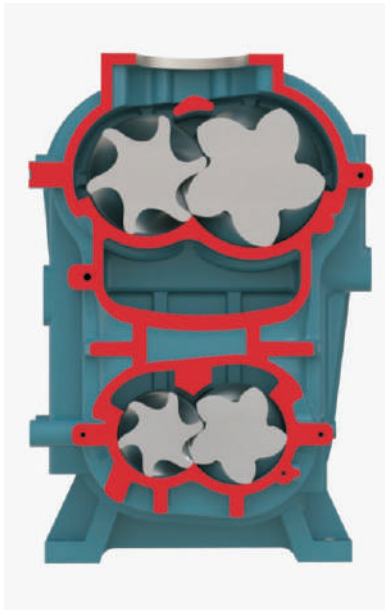
‘SKY’ SERIES AIR END

Maximum Output with Less Energy Usage

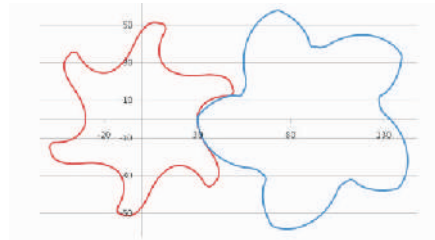
- Asymmetric 5 / 6 rotor profile with 100% SKF bearings
- KAPP Grinder rotor technology for tighter clearances and world class efficiency and performance
- Precision machined bell housing to maintain rigid alignment

## TWO STAGE SCREW COMPRESSOR

Two-stage compressors have power advantage of 8% to 15% over equivalent size single-stage compressors for two key reasons: Inter Cooling System and Division of Compression Ratio.



1<sup>st</sup> stage: 2.8 to 1



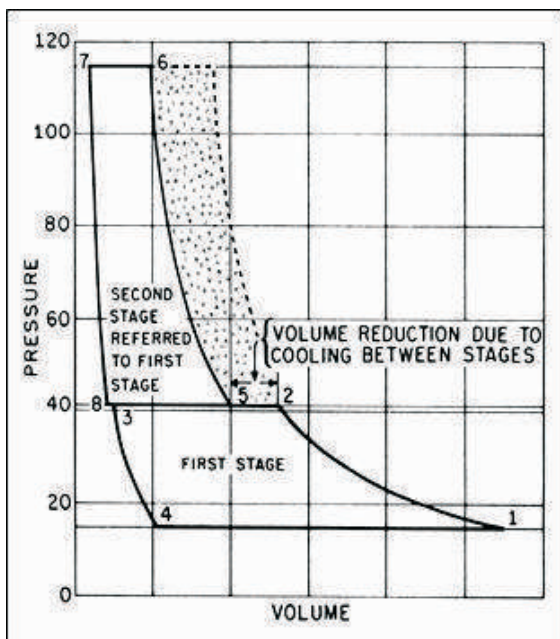
2<sup>nd</sup> stage: 2.8 to 7.8

Kaishan two-stage compressors use two sets of rotors arranged in a unique parallel design that achieve higher efficiencies than other two-stage rotor arrangements. The KRSP 2 series compressors offer unmatched full-load efficiency often providing two-year paybacks in energy savings compared with a single-stage compressor.

## DIVISION OF COMPRESSION RATIO

In a single stage compressor operating at 100 psig at sea level, the compression ratio is 7.8 to 1 (in absolute terms). A two-stage compressor operating at the same pressure will have a compression ratio of 2.8 to 1 in each stage (2.8 is the square root of 7.8) achieving the compressor's power savings.

1. Internal leakage losses are reduced - Reduced pressure difference across each stage facilitates reduction in leakage loss.
2. Extended bearing life - By dividing the compression ratio across two stages, the two-stage will significantly exceed the life of the average single-stage compressor. Bearing loads are reduced to 1/3 of single stage



## INTER COOLING SYSTEM

Incorporates inter-stage coolant injection which atomizes the cool lubricating fluid into fine mist. This dynamic process rapidly absorbs the heat of compression from the first stage and pre-cools the air entering the second stage prior to compression, drastically reducing power costs.



# KRSP-2 SERIES SPECIFICATIONS

Model No	Pressure Bar	Flow cfm	Power kW	END Connection	Dimension mm	Weight Kg
KRSP2 75	7	642	75	DN 65	2560 X 1620 X 1920	3300
	8	579				
KRSP2 90	7	768	90	DN 65	2560 X 1620 X 1920	3400
	8	712				
	10	612				
	13	556				
KRSP2 110	7	953	110	DN 65	3110 X 1790 X 2070	4650
	8	890				
	10	742				
	13	668				
KRSP2 132	7	1187	132	DN 80	3200 X 1930 X 2260	5200
	8	1038		DN 65	3110 X 1790 X 2070	4800
	10	890				
	13	779				
KRSP2 160	7	1409	160	DN 80	3460 X 1930 X 2260	6200
	8	1261				
	10	1150				
	13	1001				
KRSP2 200	7	1725	200	DN 100	3460 X 1930 X 2260	7300
	8	1595		DN 80		
	10	1446				
	13	1224				
KRSP2 250	7	2114	250	DN 125	4160 X 2340 X 2400	9800
	8	2021		DN 100	3860 X 2160 X 2400	9100
	10	1743				
	13	1558				
KRSP2 280	7	2262	280	DN 125	3530 X 2280 X 2270	8500
	8	2218				
	10	1992				
	13	1706				
KRSP2 315	8	2522	315	DN 125	3530 X 2280 X 2270	8600
	10	2299				
	13	2077				

## Note:

- For Model KRSP 2 - 355 / 400 / 450, consult your Local Sales representative for technical details
- Technical Specifications of compressor are subject to change without notice
- Flow as per ISO 1217 Annexure C
- Maximum Pressure can be 0.5 bar(g) higher than discharge pressure
- For any special combination of pressure & flow, kindly Consult Factory (CF)



MODEL	COMPRESSOR TYPE	FEATURES
KRSP2	Two Stage	Global leader in air compressor efficiency
KRSP	Single Stage	Patented 'SKY' air end, triple SKF bearings
KRSD	Single Stage	Direct drive, TEFC motor, low sound enclosure
KRSB	Single Stage	Belt drive, economical to own and operate
KRST	Single Stage	Belt drive, tank mounted
KRSH	Two Stage High Pressure	Pressure up to 40 Bar
KRSA	Single Stage Low Pressure	Pressure as low as 1.5 Bar
KRSV	Rotary Screw Vacuum Pump	World class vacuum efficiency



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