

Hydraulic Air Compressor



Hydraulic Motor

NAILI Hydraulic Air Compressor efficiency ration and compact size make it perfect!

It have small volume & light weight. We can use it instead of old heavy type air compressor. To operate at maximum efficiency the hydraulic power is converted into compressed air, Its very easy to use.

Features:

To provide perfect compressed air for mining machinery, excavator, drilling machine etc. Naili hydraulic rotary vane compressor is composed of rotating blades structure, cooling system, lubrication system, oil separating device. Pressure reducing valve & automatic speed controller. Can be installed in all kinds of excavator, mining machine, drilling machine and can continuously operate under the required condition.



AH PRODUCT CLASSIFICATION SERIES

AH4L-AH22L

TECHNICAL PARAMETERS

Model		AH4L	AH7L	AH15L	AH18L
	8 Bar	✓	✓	✓	✓
F.A.D (m3/min)	Min. F.A.D.	0.7	1.38	2.7	3.28
	Max. F.A.D.	1.44	2.85	5.55	6.72
Discharge Capacity (ml/r)		42	42	56.1	56.1
Rotational Speed (rpm)	Max.	3000	3000	3000	3000
	Min.	1400	1400	1400	1400
Oil Pressure (mpa)	Max.	20	20	35	35
	Min.	18	18	25	30
Measurement (LxWxH)		695x350x550	858x489x599	980x520x781	980x520x781

Model		AH4H	AH11H	AH15H	AH22L
	10 Bar	✓	✓	✓	8 Bar
F.A.D (m3/min)	Min. F.A.D.	0.53	1.70	2.2	3.75
	Max. F.A.D.	1.08	3.51	4.53	7.71
Discharge Capacity (ml/r)		42	42	56.1	56.1
Rotational Speed (rpm)	Max.	3000	3000	3000	3000
	Min.	1400	1400	1400	1400
Oil Pressure (mpa)	Max.	20	20	35	35
	Min.	18	20	25	33
Measurement (LxWxH)		695x350x550	858x489x599	980x520x781	980x520x781



NAILI provide compressor for drilling & other operations

NAILI Hydraulic compressor provides compressed air anytime. It can easily take place of the old hydraulic air compressor models. Compressed air can be supplied for pneumatic tools and accessories for drilling and other operations.

Applications: Excavator, Mining Machinery, Loader, Tractor, Truck, Platform lifts, Harvesters etc.



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NAILI 
NAILI Co.,Ltd

AFTER-TREATMENT EQUIPMENT FOR COMPRESSED AIR SYSTEM



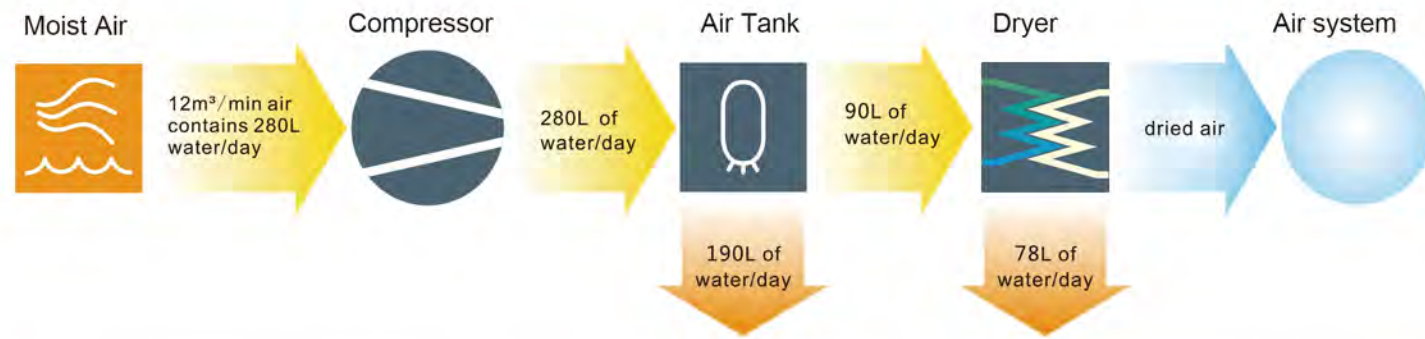
*AIR DRYER
COMPRESSED AIR FILTER
AIR COOLED - AFTER COOLED*

NAILI
NAILI Co.,Ltd

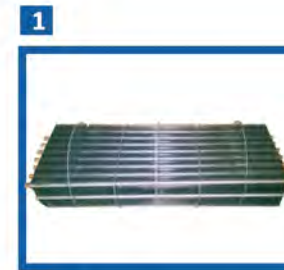
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WHY Need To Use The Refrigerated Air Dryer



- ◆ Usually compressed air contains 100% vapor, these vapors are condensed together when the air would be cooled, The condensed water not only damages the compressor system, reduces tool efficiency, but also destroys your terminal products, corrodes piping and increases your maintenance costs.
- ◆ More than 90L water will enter into the compressor system everyday if without the air dryer. NAILI refrigerated air dryer removes approximately 90% of water and ensures your application in good performance.



1 Pre-Cooler(Heat Exchanger)
Inter air and outlet air exchanges temperature in here which result in hot inlet air gets cool and cool outlet air gets warm.

Reducing the stress of the air dryer, prolong the service life of dryer. Solving the pipe frosting problem.



2 Evaporator
The core component of the air dryer.- Most vapor are condensed into liquid water due to compressed air is cooled by refrigerant, then water is discharged.

Evaporator is made from aluminum plate and thickness 0.5mm cooper pipe. It oversize and long cooling distance which result in good cooling effect.

Good welding technology that greatly reduce the refrigerant leakage rate.



3 Air-cooled Condenser
Refrigerant flows with S-shaped, cooling area increased greatly. continual cooling process, good cooling performance.



4 Refrigerant Compressor
The "HEART" of the air dryer, and refrigerant like "BLOOD".

We adopt Japan Panasonic refrigerant compressor, stable and high efficiency.



5 High Pressure Switch
High/Low Pressure Switch
An Important protective device.

Prevent fan and compressor from burning caused by high outlet pressure or low inlet pressure.

Ps: all model with a high pressure switch. Model BL0080-BL0500 with a high/low pressure switch.



6 Dry Filter
Filtering the impurities in the refrigerant, it ensures the cooling system not effected by moisture and impurity, it protects the compressor, prolongs the service life of refrigerant.



7 Expansion Valve
It is one of the basic component of refrigerant system. It reduces the pressure and controls the flow rate of refrigerant to improve the cooling efficiency.

Ps: model BL0080-BL0500 with an expansion valve.



8 Hot Gas Bypass Valve
While air capacity of air dryer decrease, inner temperature of an evaporator will be down to 0°C. Meanwhile the pipe will be blocked caused by the condensate water freeze-up. Hot gas bypass valve can solve this freeze-up problem, ensure air dryer operate smoothly.

Ps: Model BL0080-BL0500 with a hot gas bypass valve.

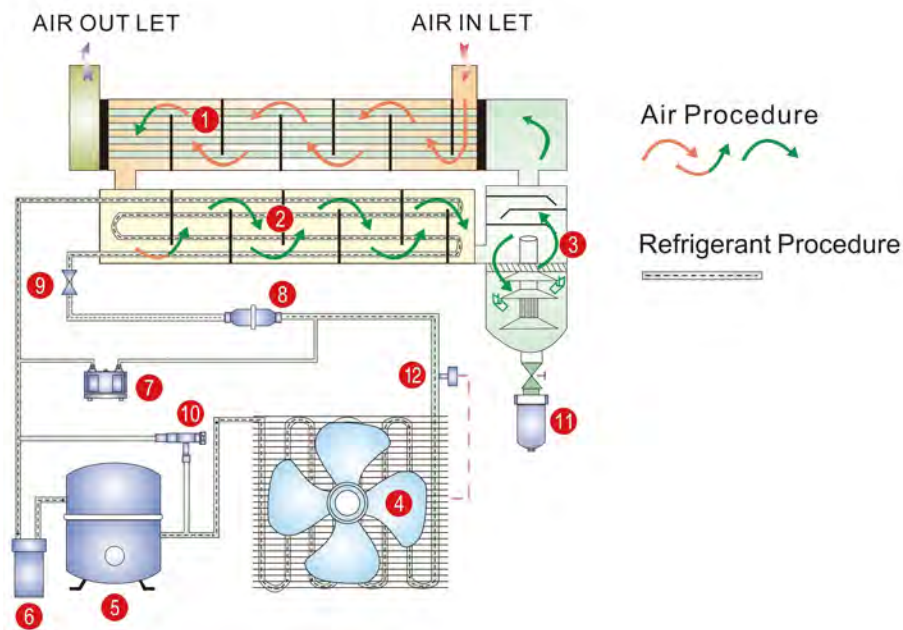


9 Electric Auto-Drain
Discharge the condenser water from air dryer automatically. Discharge time and interval time can be adjusted by users. It's automatic, intelligent and low failure rate.

REFRIGERATED Air Dryer

► Operation Process

1. Pre-cooler / Heat Exchanger
2. Evaporator
3. Air / Water Separator
4. Air-cooled Condenser
5. Refrigerant Compressor
6. Refrigerant Reservoir
7. High-low Pressure switch
8. Dry Filter
9. Expansion Valve (Capillary)
10. Hot Gas Bypass Valve
11. Electric Auto-Drain
12. High Pressure Switch



Air Procedure

Refrigerant Procedure

Air Procedure:

The compressed air from "AIR INLET" enters into air dryer and goes through (1)Pre-cooler, the compressed air will be pre-cooled first, after that it flows through (2)Evaporator to get further cooler, the vapor of the compressed air is condensed because the air gets cool, when the cooled compressed air passed (3)Air/water separator, water will be discharged by (11) Electric auto-drain automatically, At last the dry and cool compressed air enters into the copper pipe of (1)Pre-cooler again, the outlet air and inlet air exchange the temperature in pre-cooler. Dry compressed air out from "AIR OUTLET".

Refrigerant Procedure:

The refrigerant will be compressed by (5)Refrigerant compressor, after that it is in a high temperature and high pressure vapor, the refrigerant vapor enters into (4)Air-cooled condenser to get lower temperature, this moment refrigerant from a vapor to a liquid state, and then liquid refrigerant goes through (8)Dryer filter to get purer, and then it passes by the (9)Expansion valve, the pressure of refrigerant becomes lower. Gas and liquid mixed refrigerant flow into copper pipe of (1)Evaporator to lower down the compressed air temperature, finally refrigerant gets back to (6)Refrigerant reservoir, this is a circular process.

REFRIGERATED Air Dryer

Technical Parameters

Model	Air Flow Rates		Compressor Power	Air Connection	N.W	Dimension(L×W×H)
	m ³ /min	CFM				
BL0005	0.8	28	0.25	DN20(G3/4")	50	400x700x640
BL0010	1.8	64	0.35	DN20(G3/4")	55	400x700x640
BL0020	2.8	99	0.5	DN25(G1")	65	400x700x780
BL0030	3.8	134	0.75	DN25(G1")	68	400x700x780
BL0040	5.5	194	1.25	DN40(G1-1/2")	90	500x860x880
BL0060	6.8	240	1.5	DN40(G1-1/2")	95	500x860x880
BL0080	8.8	311	2	DN50(G2")	130	700x900x1000
BL0100	11.5	406	2.5	DN50(G2")	135	700x900x1000
BL0120	14	494	3	DN65(G2-1/2")	160	700x1000x1000
BL0150	16	565	4	DN65(G2-1/2")	165	800x1000x1000
BL0200	22.8	805	5	DN80(F3)	250	800x1300x1160
BL0250	28.5	1007	6	DN80(F3)	300	800x1300x1160
BL0300	35	1236	8	DN80(F3)	400	1800x1000x1360
BL0400	45	1589	10	DN100(F4)	500	2000x1000x1360
BL0500	55	1943	12.5	DN100(F4)	600	2200x1100x1480



Operating Range:

- ◆ Working Pressure: 0.6-1.3Mpa
- ◆ Max. Inlet Temperature: <80 °C
- ◆ Ambient Temperature: 5-45 °C

Standard Conditions:

- ◆ Air Inlet Temperature: 38 °C ◆ Ambient Temperature: 35 °C
- ◆ Working Pressure: 0.7Mpa ◆ Pressure Dew Point: 2-10 °C
- ◆ Refrigerant: R-22 ◆ Cooling Method: air-cooled
- ◆ Power supply: BL0005-BL0120: 220v/50hz/1ph
BL0150-BL0500: 380v/50hz/3ph
- ◆ If need the refrigerated air dryer is not in standard, please contact with the supplier.

The COMPONENTS OF Adsorption Air Dryer



Adsorption Tower

Reasonable design and good drying efficiency. There is a large air diffuser inside the tower that can ensure compressed air contacts with the adsorbent more than 5 seconds, also make sure compressed air 100% through the adsorbent. Tower can be used more than 10 years because of the rust prevention treatment.



Check Valve

It prevents compressed air backflow, low compressed air consumption and saves energy. It is sensitive and stable.



**Pneumatic Valve
Pneumatic Butterfly Valve**

Control compressed air enters into A/B tower intelligently. It has a long service life and is reliable.
Ps: B0005-BX0150 with pneumatic valves, BX0200-BX0500 with pneumatic butterfly valve.



Controller

The controller consists of several microprocessor chips. Very simple and easy to handle the controller. The operation cycle and switch state are shown by the LED display clearly.



Absorbent

Perfect match of activated alumina and molecular sieves that result in high performance. Durable and high quality adsorbent.



**Solenoid Valve
Pneumatic Control Valve**

Best cooperation of solenoid valve and pneumatic control valve, they ensure inlet pressure above 0.4MPa to guarantee the adsorption air dryer operates smoothly.



Muffer

It maximizes to lower the exhaust noise.



Throttle valve

It adjusts the regeneration air flow rate to reduce compressed air consumption.



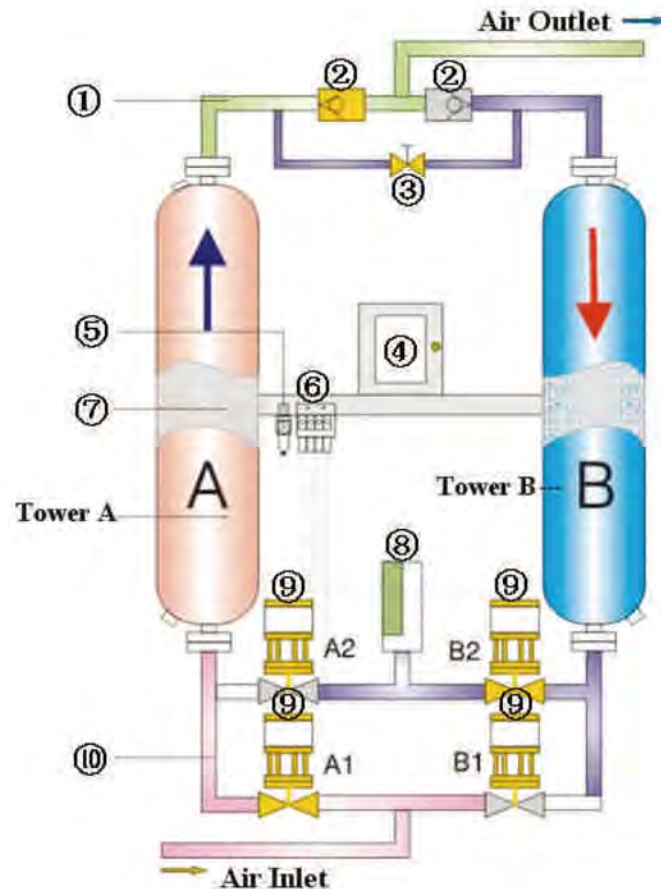
Heater

Only need 7% compressed air as regeneration air to revive the adsorbent if the air dryer has a heater. Due to that, compressed air is saved greatly. The low hot adsorption air dryer is suitable for the user who needs a large amount of compressed air.
(ps: low hot adsorption air dryer with a heater)

HEATLESS ADSORPTION Air Dryer

ADSORPTION Air Dryer Technical Parameters

- ① Upper Tube System
- ② Check Valve
- ③ Throttle Valve
- ④ Controller
- ⑤ Pneumatic Control Valve
- ⑥ Solenoid Valve
- ⑦ Absorbent (activated alumina and molecular sieves)
- ⑧ Muffler
- ⑨ Pneumatic (Valve A1, A2, B1, B2)
- ⑩ Underside Tube System



Operation process

Adsorption—the compressed air enters into tower A from (9) Pneumatic valve A1, and then flows past the (7) Adsorbent from bottom to top, after that the compressed air comes out from the (1) Upper tube.

Regeneration—a part of dry compressed air (about 14%) as regeneration air enters into the tower B from (3) Throttle valve, it flows past the (7) adsorbent from top to bottom, adsorbent in tower B recovers the adsorption function. After that regeneration air will be discharged from (9) Pneumatic valve B2 and (8) Muffler.

Pressure equalizing—finish the regeneration program, (9) Pneumatic valve B2 turn off, the pressure of tower B rises to working pressure, and it ready to adsorb.

Task switch—(9)Pneumatic valve B1 turns on, A1 turns off, A2 turns on and B2 turns off. Task of tower A & B is changed, tower B adsorbs vapor and tower A regenerates adsorbent. The operation task and time are controlled by controller automatically.

Model	Air Flow Rates		Air connection	Net Weigh	Dimension (L×W×H)
	Nm ³ /min	CFM	mm	kg	mm
BX0005	0.8	28	DN15	70	560x350x1420
BX0010	1.8	64	DN20	80	600x350x1720
BX0020	2.8	99	DN20	100	700x450x1750
BX0030	3.8	134	DN25	130	800x450x1800
BX0040	5.5	194	DN40	250	1000x650x1800
BX0060	6.8	240	DN40	280	1000x650x1800
BX0080	8.8	311	DN50	450	1060x760x2000
BX0100	11.5	406	DN50	500	1160x760x1900
BX0120	14	494	DN65	550	1160x750x2050
BX0150	16	565	DN65	580	1260x800x2000
BX0200	22.8	805	DN80	860	1500x1000x2050
BX0250	28.5	1007	DN80	1200	1600x1000x2180
BX0300	35	1236	DN80	1600	1700x1100x2200
BX0400	45	1589	DN100	1900	1800x1100x2400
BX0500	55	1943	DN100	2300	2100x1100x2500
BX0600	65	2296	DN125	2800	2400x1200x2650
BX0800	85	3002	DN150	3400	2600x1300x2900
BX1000	105	3709	DN150	4100	3000x1500x3000
BX1200	120	4238	DN200	4500	3200x1600x3000
BX1600	160	5651	DN200	6000	3800x1800x3000
BX2000	200	7064	DN250	7500	4200x2000x3000

(Back View)



(Front View)



Standard Condition

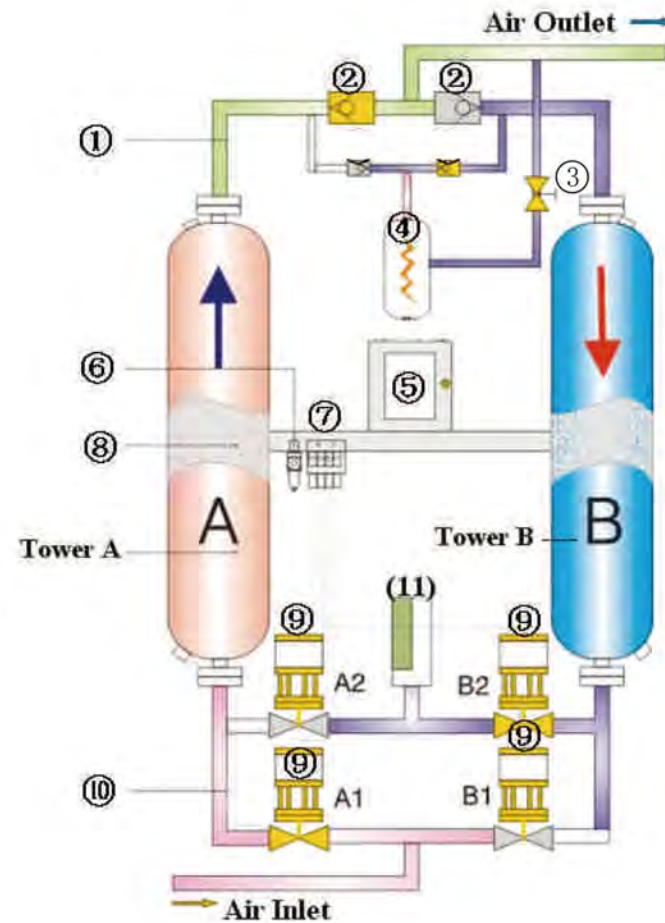
- ◆ Working pressure: 0.6-1.0Mpa
- ◆ Pressure dew point: -20℃ ~ -40℃
- ◆ Air inlet temperature: 0℃ ~ 45℃
- ◆ Compressed air consumption: ≤14%
- ◆ Pressure drop: ≤0.025Mpa
- ◆ Absorbent: activated alumina & molecular sieves
- ◆ Power supply: BX0005-BX0120: 220v/50hz/1ph
BX0150-BX2000: 380v/50hz/3ph

If need the heatless adsorption air dryer is not in standard, please contact the supplier.

Low Hot ADSORPTION Air Dryer

ADSORPTION Air Dryer Technical Parameters

- ① Upper Tube System
- ② Check Valve
- ③ Throttle Valve
- ④ Heater
- ⑤ Controller
- ⑥ Pneumatic Control Valve
- ⑦ Solenoid Valve
- ⑧ Absorbent (actiavated alumina and molecular sieves)
- ⑨ Pneumatic Valve (A1、A2、 B1、 B2)
- ⑩ Underside Tube System
- ⑪ Muffler



Operation process

Adsorption—the compressed air enters into tower A from (9) Pneumatic valve A1, and then flows past the (7) Adsorbent from bottom to top, after that the compressed air comes out from the (1) Upper tube.

Regeneration—a bit of dry compressed air (about 7%) as regeneration air will be warmed up by (4) Heater and then enters into the tower B from (3) Throttle valve, it flows past the (7) adsorbent from top to bottom, adsorbent in tower B recovers the adsorption function. After that regeneration air will be discharged from (9) Pneumatic valve B2 and (11) Muffler.

Pressure equalizing—finish the regeneration program, (9) Pneumatic valve B2 turn off, the pressure of tower B rises to working pressure, and it ready to adsorb.

Task switch— (9)Pneumatic valve B1 turns on, A1 turns off, A2 turns on and B2 turns off. Task of tower A & B is changed, tower B adsorbs vapor and tower A regenerates absorbent. The operation task and time are controlled by controller automatically.

Model	Air Flow Rates		Air connection mm	Heater Power kw	Net Weigh kg	Dimension (L×W×H) mm
	Nm ³ /min	CFM				
BX0020LH	2.8	99	DN20	0.5	120	700x450x1750
BX0030LH	3.8	134	DN25	0.75	140	800x450x1800
BX0040LH	5.5	194	DN40	1.25	270	1000x650x1800
BX0060LH	6.8	240	DN40	1.5	300	1000x650x1800
BX0080LH	8.8	311	DN50	2	480	1060x760x2000
BX0100LH	11.5	406	DN50	2.5	530	1160x760x1900
BX0120LH	14	494	DN65	3	580	1160x750x2050
BX0150LH	16	565	DN65	3.75	620	1260x800x2000
BX0200LH	22.8	805	DN80	5	900	1500x1000x2050
BX0250LH	28.5	1007	DN80	6.25	1250	1600x1000x2180
BX0300LH	35	1236	DN80	7.5	1700	1700x1100x2200
BX0400LH	45	1589	DN100	10	2000	1800x1100x2400
BX0500LH	55	1943	DN100	12.5	2500	2100x1100x2500
BX0600LH	65	2296	DN125	15	3000	2400x1200x2650
BX0800LH	85	3002	DN150	20	3800	2600x1300x2900
BX1000LH	105	3709	DN150	25	4500	3000x1500x3000
BX1200LH	120	4238	DN200	30	5000	3200x1600x3000
BX1600LH	160	5651	DN200	40	6500	3800x1800x3000
BX2000LH	200	7064	DN250	50	8000	4200x2000x3000



Standard Condition

- ◆ Working pressure: 0.6-1.0Mpa
 - ◆ Pressure dew point: -20℃ ~ -40℃
 - ◆ Air inlet temperature: 0℃ ~ 45℃
 - ◆ Compressed air consumption: ≤7%
 - ◆ Pressure drop: ≤0.025Mpa
 - ◆ Absorbent: activated alumina & molecular sieves
 - ◆ Power supply: BX0020LH-BX0120LH: 220v/50hz/1ph
BX0150LH-BX2000LH: 380v/50hz/3ph
- If need the low hot adsorption air dryer is not in standard, please contact the supplier.

Refrigerated & Adsorption Air Dryer

COMBINE AIR DRYER



Working Process

- Hot and humidity Inlet compressed air exchanges temperature with cool & dry compressed air in the heat exchanger of refrigerated air dryer. After preliminary cooling, inlet compressed air will be cool again by refrigerant, most of water will be condensed together and will be discharge. At this time dew point of compressed air about 2-10°C.
- In order to get lower dew point compressed air, compressed air enter into adsorption air dryer to have further drying. After four processes: adsorption, regeneration, pressure equalizing and task exchange, the dew point of compressed air about -20 ~ -40°C. At last cool & dry compressed air flow through heat exchanger to low down the inter air compressor, thus we get dry and low dew point compressed air.

Advantages

- Low pressure dew point: Compressed air is treated by refrigerated air dryer and adsorption air dryer, due to that the dew point can be -20 ~ -40°C. Combine air dryers are widely used in high precision product line.
- Best Adaptable: No ambient temperature limited.
- Low consumption: Only need 3-5% compressed air to revive the absorbent, low compressed air consumption.
- Integrative structure design: Refrigerated air dryer and adsorption air dryer are connected before leaving manufactory, save space. All pipes are connected, no need to install the foundation, just put it on the flat ground and connect the power, the combine dryer can be operated.

Technical Parameters

Model	Air Flow Rates		Air connection	Net Weigh	Dimension (L×W×H)
	Nm ³ /min	CFM			
BC0030	3.8	134	DN25	220	1150x700x1800
BC0040	5.5	194	DN40	370	900x1300x1800
BC0060	6.8	240	DN40	400	1000x1300x1800
BC0080	8.8	311	DN50	600	1060x1400x2000
BC0100	11.5	406	DN50	650	1160x1400x1900
BC0120	14	494	DN65	800	1160x1600x1900
BC0150	16	565	DN65	900	1260x1600x2000
BC0200	22.8	805	DN80	1500	1500x2000x2050
BC0250	28.5	1007	DN80	1700	1700x2000x2180
BC0300	35	1236	DN80	2100	1700x2000x2220
BC0400	45	1589	DN100	2500	2000x2100x2400
BC0500	55	1943	DN100	3100	2200x2100x2500
BC0600	65	2296	DN125	3500	2400x2200x2650
BC0800	85	3002	DN150	4200	2600x2600x2900
BC1000	105	3709	DN150	5200	3000x2800x3000
BC1200	120	4238	DN200	5800	3200x3000x3000
BC1600	160	5651	DN200	7600	3800x3300x3000
BC2000	200	7064	DN250	9500	4200x3500x3000

Standard Condition

- Working pressure: 0.6-1.0Mpa
- Pressure dew point: -20°C ~ -40°C
- Air inlet temperature: 0°C ~ 45°C
- Power supply: BC0030-BC0120: 220v/50hz/1ph
BC0150-BC2000: 380v/50hz/3ph
- Compressed air consumption: ≤5%
- Pressure drop: ≤0.025Mpa
- Absorbent: activated alumina & molecular sieves

If need the combine air dryer is not in standard, please contact with the supplier.

FILTER Series product Classification

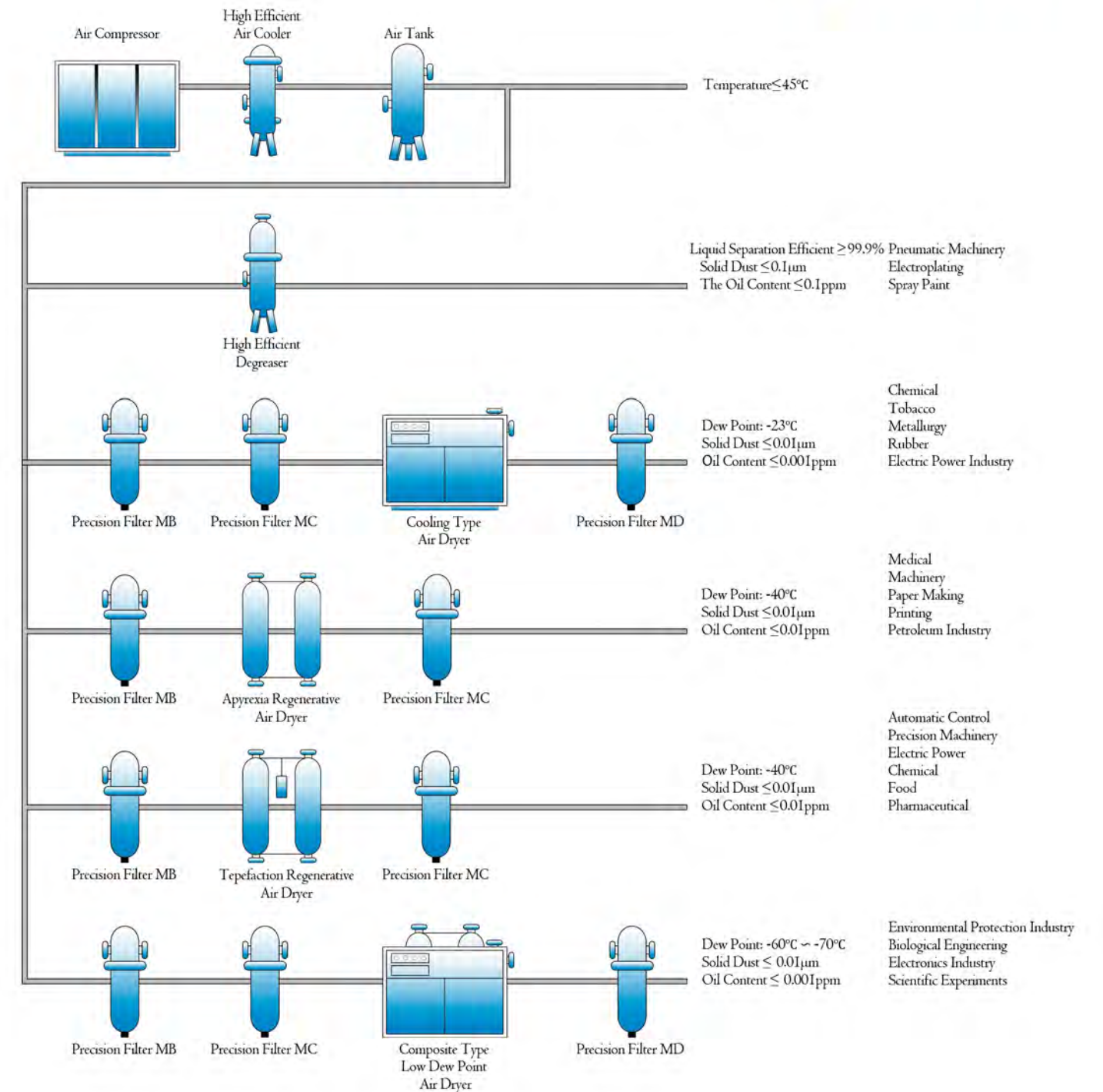


Model	Connection Size (Inch)	F.A.D		Size (mm)			
		M3/min	Cfm	A	B	C	D
F0020	1/2"	0.57	20	95	220	197	95
F0021	3/4"	0.57	21	95	220	197	95
F0045	1/2"	1.3	45	95	220	197	110
F0046	3/4"	1.3	46	95	220	257	110
F0070	3/4"	2	70	95	280	257	145
F0100	3/4"	2.8	100	95	280	290	175
F0125	1"	3.5	125	125	320	290	185
F0126	1-1/2"	3.5	126	125	320	290	185
F0180	1"	5.1	180	125	320	290	185
F0181	1-1/2"	5.1	181	125	320	370	185
F0265	1-1/2"	7.5	265	125	400	370	230
F0370	1-1/2"	10.5	370	125	400	478	270
F0515	2"	14.6	515	170	520	658	390
F0745	2"	21.1	745	170	700	938	570
F0900	2-1/2"	25.5	900	200	995	938	570
F0901	3"	25.5	901	200	995	938	570
F1060	2-1/2"	30	1060	200	995	938	630
F1061	3"	30	1061	200	995	938	630
F1280	3"	36.3	1280	200	995	938	700
F1650	3"	46.7	1650	200	995	938	700

FEATURES:

Wide range of models and filtration level for every kind of industry application Certified performances. The body configuration, with an innovation design, is able to reduce pressure drops assuring high energy savings Increase of efficiency and reduction of productions stops. Reductions of maintenance costs Tools and machinery protection.

COMPRESSED AIR Purification System



The perfect fit to maximise productivity

The growing industrial demand for compressed air requires compressor manufacturers to provide more reliable, economic and versatile compressors within a small footprint.

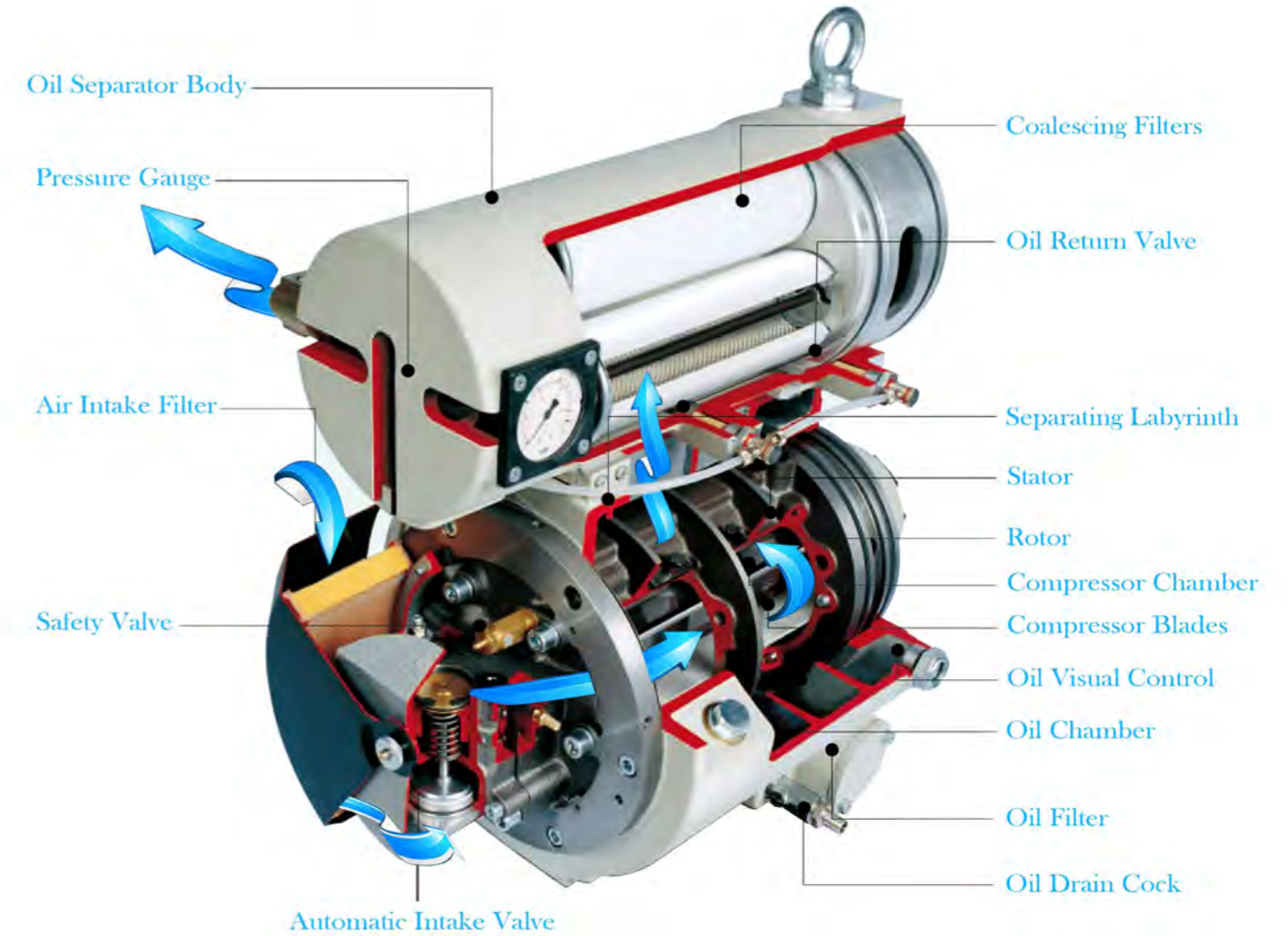
Why? customers choose NAILI Compressors

- * Reliability
- * Simple Installation
- * Lesser Parts
- * Easy Maintenance
- * Constant Pressure
- * Efficiency of Operation
- * Reduced Power Consumption
- * Extended Service Intervals
- * Lower Service Costs
- * Low Maintains Cost



Technical Parameters

Model	AZ1.5H	AZ2.2H	AZ3.0H	AZ4.0H
Working Pressure (bar)	10	10	10	10
Motor Power (KW)	1.5	2.2	3.0	4.0
F.A.D (m ³ /min)	0.16	0.22	0.32	0.40
Rotational Speed (rpm)	1390	1410	1410	1410
Noise Level Db(A)	70	70	70	70
Oil Consumption (L)	1.35	1.35	1.35	1.35
Weight (Kg)	52	65	68	74
Measurement (LxWxH)	609x260x432	669x270x432	669x270x432	715x420x445



Technical Parameters

Model	ASM4.0		ASM5.5		ASM7.5		
Working Pressure (bar)	10	8	10	8	13	10	8
Motor Power (KW)	0.16		0.22		10		
F.A.D (m ³ /min)	0.53	0.68	0.77	0.90	0.95	1.15	1.39
Rotational Speed (rpm)	1435		1440		1440		
Noise Level Db(A)	71		71		75		
Oil Consumption (L)	2.50		2.50		3.50		
Weight (Kg)	110		115		170		
Measurement (LxWxH)	960x430x648		960x430x648		1175x480x755		



ASM SERIES



NAILI 
NAILI Co.,Ltd.



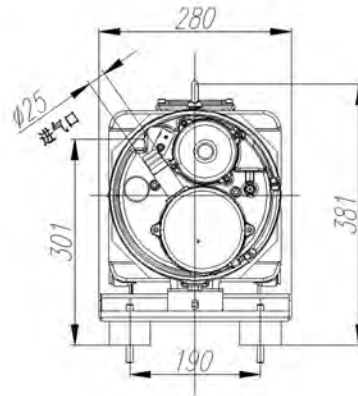
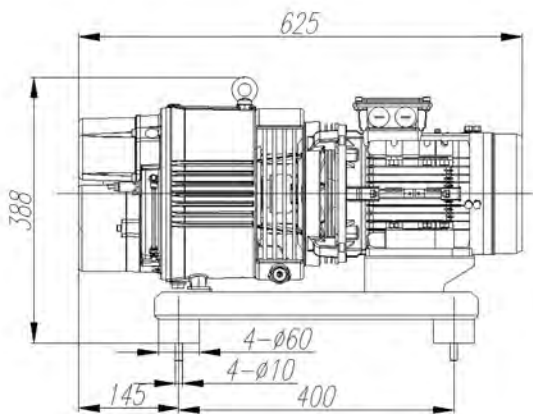
RELIABLE, ECONOMIC & ADVANCED VANES

AZF Series



www.nailicomp.com

AZF Product Classification Series



AZF 1.5H - AZF 3.0H

TECHNICAL PARAMETERS

MODEL	AZF 1.5H	AZF 2.2H	AZF 3.0H
PRESSURE (Bar)	7 - 10	7 - 10	7 - 10
F.A.D. (L/min)	160	240	320
Motor Power (Kw)	1.5	2.2	3.0
ROTATIONAL SPEED (r.p.m)	1430 - 2880	1430 - 2880	1430 - 2880
POWER RANGE	Customized According To Customer Requirements		
CONNECTION SIZE	M22 x 1.5	M22 x 1.5	M22 x 1.5
WEIGHT (Kg) Without Motor	18	18	18

INNOVATIVE TECHNOLOGY:

NAILI's AZF Series is designed as a compression module to provide the best performance, highest efficiency and most convenient maintenance, modular design reduce leakage and pressure loss inside the unit.

APPLICATIONS:

Can be used for the road and rail vehicles such as trolley buses, subways, trams, airports and commuter buses.

AIR APPLICATIONS:

Brake System, Air Suspension System, Windshield Wipers etc.

High Reliability | Lightweight | Compact Design | Good Air Quality

NAILI Co.,Ltd.

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NAILI Vane compressor

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Mobile&WhatsApp: 8618712986580

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Energy Efficient

SWISS

VANE AIR COMPRESSOR

CERTIFIED ISO 9001

NAILI



BIGGEST VANE COMPRESSOR MANUFACTURER IN CHINA

NAILI Co., Ltd. Is a high-tech organization which specializes in researching, developing & manufacturing of Rotary Vane & Oil-Free Piston Air Compressors.

Our products are used in a variety of industries including: transportation, mining, textiles, pharmaceutical, petroleum, chemical & packaging applications.



RESEARCH AND DEVELOPMENT



Naili Co., Ltd. has a R&D Center in Zurich, Switzerland.



COMPRESSOR DURABILITY

All the compressors that NAILI manufacture, working life will always satisfy you on basis of advance technology of the Low Rotation Speed (1480rpm only), low abrasion & low noise ensure long service life. The motor drives the compressor and the cooling fan simultaneously to reduce energy consumption.

KEY BENEFITS OF NAILI

- Simple Design
- High Reliability
- Energy Efficient
- Long Life
- Low Maintenance Cost
- Extremely Quiet

CONNECT WITH NAILI



LinkedIn



YouTube

TOP SELLING NAILI COMPRESSOR

- AZE/T Series
- A Series
- AB Series
- AH Series



NAILI AROUND THE WORLD

- North America(5.8%)
- South America(13.5%)
- Europe (38.7%)
- Africa(8.9%)
- Asia(31.9%)
- Australia(1.2%)

CERTIFICATION & ACCREDITATION

- ISO Certified
- CE Certification
- Energy Saving Certification
- EU Certificate of Adequacy

NAILI NEW COMPRESSOR

Model: HV
 Technology: Oil Free Piston
 Motor Power: 0.85Kw - 4.0Kw
 FAD (m3/min): 0.08 - 0.38
 Pressure: 10bar



1082 Factories are using NAILI Compressor → for COMPRESSED AIR



2018

2016

2014



NAILI Exports

TECHNICAL PARAMETERS:

AZE/T SERIES

FAD (l/min)
120 - 2350

Pressure
7Bar - 10Bar

Motor Power
1.5Kw - 15Kw

NAILI AZE & AZT Series have a compact design with rotary vane technology. Commonly used for compressed air supply in vehicles such as green buses, airport shuttle and in public transportation like Railway Train and Metro. The unit works with higher efficiency and it is easier to maintain when it is needed.



A SERIES

FAD (m3/min)
0.48 - 8.90

Pressure
8Bar - 13Bar

Motor Power
4Kw - 55Kw

NAILI A Series rotary vane compressor has a simplified appearance. With long lasting life of air end which decreases the service cost of whole machine without compromising performance. The machine structure is not enclosed which makes it easier to repair and maintain.



AB SERIES

FAD (m3/min)
0.48 - 8.90

Pressure
8Bar - 13Bar

Motor Power
4Kw - 55Kw

NAILI AB Series is the super silent rotary vane compressor that operates between 67dB(A) – 76dB(A). This series is best suitable for applications where demand noise is to be kept to a minimum. It features an intelligent control system. The machine is rain proof, dust proof. It can be used indoor, outdoor and in all kind of weather. The air compressor also have a friendly user control panels, which makes it very easy to operate and are available in different languages. Naili AB Series can also provide 0.003ppm oil-free air for pharmaceuticals, food & beverage industries by using NAILI oil-free kit.



AH SERIES

FAD (m3/min)
0.70 - 7.71

Pressure
8Bar - 10Bar

Motor Power
1.5Kw - 15Kw

NAILI AH Series hydraulic compressor converts hydraulic power into compressed air. Design is very compact, which makes it excellent and easy to install. NAILI hydraulic compressor can easily take place of the old hydraulic air compressor models. Compressed air can be supplied for pneumatic tools, accessories for drilling and other operations.



**THE LEADING SLIDING VANE AIR COMPRESSOR MANUFACTURER
IN THE WORLD!**

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W : www.nailicomp.com
F : www.facebook.com/nailicomp
C : +86-311-67509289

NAILI Vane Compressors, son ampliamente utilizados en una amplia variedad de Industrias, como; Transporte, Minería, Fundición de Metales, Textil, Farmacéutica, Petróleo, Química, Cemento, Alimentos, Impresión, Embalaje, Envío, Pintura, Transmisión de energía eléctrica, Médica, Calzado y otras industrias, abarcando mas 99% de la Industria en General.

Suministro de OEM



Industria



Textil



Tránsito

ROTARY VANE COMPRESSOR SOLUCIONA PARA ALTA EFICIENCIA DE PODER DEL AIRE

NAILI

NAILI Co.,Ltd

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Distribuido por



NAILI

NAILI Co.,Ltd

**SOLUCIONES DE ROTARY VANE COMPRESSOR
SEGUROS, ECONÓMICOS Y AVANZADA VANES**



www.nailicomp.com

El Principio



Los principales beneficios que la tecnología de los Naili Rotary Vane Compressor puede ofrecer; Máxima eficiencia del proceso de compresión de aire, excelente fiabilidad y bajos costos de funcionamiento y mantenimiento;

El aire es aspirado a través de un filtro y luego pasa a través de la válvula de aspiración, que regula el suministro de aire y mantiene una presión de trabajo constante. Gracias a su construcción simple: El rotor gira excéntricamente con respecto al estator y es el conjunto de ranuras verticales en el rotor en el que se colocan las blades y son empujados contra la pared del estator por la fuerza centrífuga. La lubricación y refrigeración están garantizados por un sistema de inyección eficaz que permite una lubricación perfecta y un consumo de lubricante mínimo. Una fina capa de aceite en la pared del estator evita el contacto directo de las piezas de metal que minimiza el contacto metal-metal y por consecuencia el desgaste de las partes. La compresión se produce durante la rotación con la reducción de volumen en los espacios formados entre las blades, el rotor y el estator. La mezcla comprimida de aire y aceite pasa por varias fases de separación dejando aire limpio con menos de 1,5 ppm (partes por millón) de aceite en el aire comprimido, mismo que se enfría en el postenfriador integrado; el condensado resultante se elimina por un drenaje de condensación electrónico al final o salida del aire comprimido en el postenfriador.

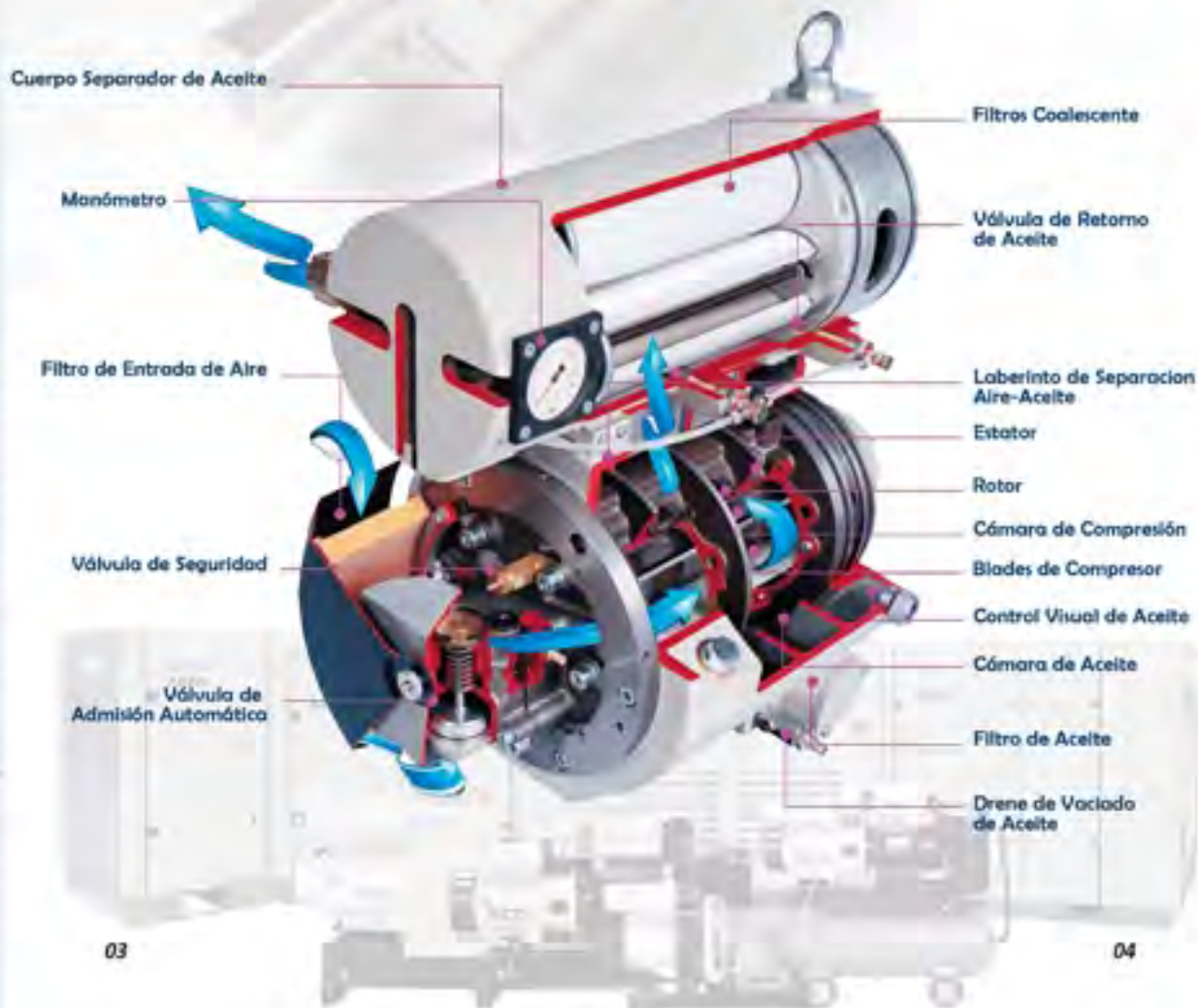
FIABLE ECONÓMICO Y AVANZADO VANES

Funciones de Vane



NAILI PODER DE AIRE

www.naili.com



Cuerpo Separador de Aceite

Manómetro

Filtro de Entrada de Aire

Válvula de Seguridad

Válvula de Admisión Automática

Filtros Coalescente

Válvula de Retorno de Aceite

Laberinto de Separación Aire-Aceite

Estator

Rotor

Cámara de Compresión

Blades de Compresor

Control Visual de Aceite

Cámara de Aceite

Filtro de Aceite

Drene de Vacío de Aceite

03

04

Control Automático de Caudal:

Además del clásico modo "ON / OFF", todos los modelos, aplicado a partir de 4 KW a 330KW, están equipados con una válvula de admisión proporcional de modulación, que permite el suministro de aire a una presión constante e incluso ofrece la posibilidad de trabajar sin un tanque de almacenamiento de aire.

Calidad del Aire:

El sistema separador aire/aceite consiste en tres etapas, mismas que garantizan un residuo de vapor de aceite en el aire comprimido entregado de menos de 1,5 ppm. Los enfriadores de aire garantizan temperaturas de 5 a 10 °C por encima de la temperatura ambiente.

Acoplamiento Directo:

Un acoplamiento flexible entre las flechas el motor eléctrico y compresor, elimina la necesidad de una correa de transmisión; y requiere menos mantenimiento que los conjuntos de tipo de engranaje o cojinete de bolas.

Duración:

La larga vida útil de Naili Rotary Vane Compressor, siempre satisficiera sus necesidades en base a la tecnología de punta que caracteriza los Naili Rotary Vane Compressor, por ejemplo, su baja velocidad de operación (sólo 1480 rpm), bajo nivel de abrasión y bajo nivel de ruido, garantizan una larga vida útil. El motor principal acciona el compresor y el ventilador de refrigeración de forma simultánea. Y lo más importante del sistema de refrigeración de alta eficiencia para asegurar que trabajará siempre en fiabilidad.





Panel de Control:
El panel de control es práctico, amigable y fácil de operar. Las funciones del panel de control: Modo automático/continuo, opciones de idioma: Inglés/Chino y conector de control remoto opcional.



Acoplamiento de Eje Flexible

Separador de Aceite:
Nuestro separador de aceite está hecho de material de alta calidad, que puede reducir las partículas de aceite del aire comprimido con alta eficiencia. La cantidad de aceite en el aire comprimido es menor o igual a 1,5 ppm después del mismo.



Filtro de Aire:
El filtro de aire de alta eficiencia Naili separa las partículas de suciedad (20 micras), fibras de aire Naili son dos veces más eficientes en comparación con los filtros de aire tradicionales.



Sistema sin Refrigeración:
El ventilador de enfriamiento no es independiente: se monta directamente en el motor principal para la eficacia de ahorro de energía en el conjunto completo.

Beneficios de Vane

NAILI SIRVE AL MUNDO

EFICIENCIA #1 (L 2)

Todos los Naili rotary vane compressor son con una relación 1:1 entre la velocidad del motor eléctrico y el girar de compresión. Esto significa una mayor eficiencia energética y mayores beneficios. En comparación con otras tecnologías, los rotary vane compressor, garantizan un sello del aire interno superior, junto con un rendimiento constante y de larga duración.

SEMPLEZ

A simple vista el diseño accesible hace que los trabajos de mantenimiento en el compresor sea simple y directo, los compresores de aire de Naili rotary vane compressor, son limpios y silenciosos y pueden estar ubicados en cualquier lugar de su planta. Se instalan rápidamente y ocupan un espacio mínimo, debido al menor tamaño que otros compresores.

SEGURIDAD / CONFIABILIDAD

El diseño de los Rotary Vane Compressor, son considerado sobre todo la seguridad del usuario y personal del mismo, siendo así, más duraderos, gracias a su acoplamiento directo, la baja velocidad de operación y menos partes móviles, esto garantiza que los Naili rotary vane compressor sean más fiables por más tiempo.

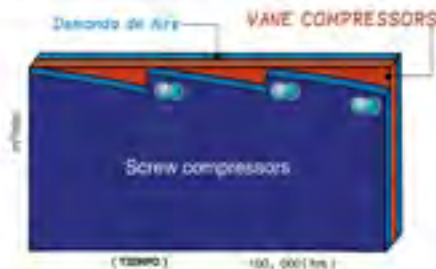
CALIDAD DEL AIRE

Todos los Naili rotary vane compressor tienen un sistema de filtrado eficiente y sobre-dimensionado, lo que garantiza que la calidad del aire comprimido sea adecuado para cualquier uso. Debido al sistema de separación de aceite de múltiples etapas produce un arrastre de lubricante excepcionalmente bajo al mismo tiempo.

BAJO COSTO DE OPERACIÓN / BAJO MANTENIMIENTO

Naili rotary vane compressor, están diseñados para alcanzar los 100,000 horas de vida sin la necesidad de sustituir ningún tipo piezas metálicas.

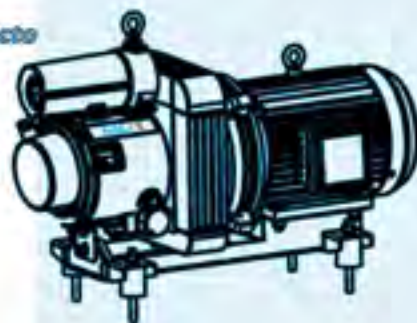
La larga vida del funcionamiento de un compresor Naili está asegurado por el mecanizado en su fabricación de alta calidad, que es la esencia de los rotary vane compressor



05

AZE Clasificación del Producto Series

La serie AZE es un diseño compacto en los rotary vane compressor. Comúnmente utilizado para el suministro de aire comprimido en vehículos tales como autobuses verdes y los autobuses del aeropuerto, etc.



Aplicaciones de la AZE Y AZT:

Sistema de Frenos
Sistema de Suspensión Neumática
Puerta Abierta / Sistema de Cierre
Poder del Pantógrafo
Limpia/Parabrisas etc.

AZE1.5-AZE3.0

PARAMETROS TÉCNICOS

Modelo	AZE1.5	AZE2.1	AZE3.0	
Caudal (l/min)	1733 bar	287-1407	180-200	260-300
Alteza del Motor (mm)	1.5	2.2	3	
Suministro de Energía eléctrica	0.09	0.09	0.09	
Velocidad de rotación (r.p.m.)	1800	1400	1400	
Peso (kg)	4	11	14	
Dimensiones	140 x 110	157 x 111	147 x 111	
Protección Acabado del Motor	IP55	IP55	IP55	

AZT Clasificación del Producto Series

Serie AZT, que es especialmente diseñada para el transporte público como para el ferrocarril y los sistemas de transporte "metro". La unidad dispone de un sistema de aceite, sistema de aspiración, sistema de separación de humedad que la unidad puede funcionar con una eficacia más alta y más fácil de mantener.



AZT5.5-AZT15

PARAMETROS TÉCNICOS

Modelo	AZT5.5	AZT7.5	AZT10	AZT15
Caudal (l/min)	1733 bar	287-1407	180-200	260-300
Alteza del Motor (mm)	5.5	7.5	11	15
Suministro de Energía eléctrica	0.09	0.09	0.09	0.09
Velocidad de rotación (r.p.m.)	1400	1400	1400	1400
Peso (kg)	40	50	70	100
Dimensiones	140 x 110	157 x 111	147 x 111	147 x 111
Protección Acabado del Motor	IP55	IP55	IP55	IP55

Nuestros Clientes:



www.naili.com



Naili proporcionar compresor para el transporte

06

Clasificación del Producto

A Series



El serie A del Nail Rotary Vane Compressor tiene una apariencia simplificada, sin cambiar el air end de compresión de aire, que disminuye el costo de la máquina entera sin comprometer el rendimiento. La estructura de la máquina no cuenta con una caja acústica, lo que hace que sea más fácil de reparar y mantener. Los paneles de control de nuestro compresor de aire son muy fáciles de operar y están disponibles en diferentes idiomas.



A4-A11

PARAMETROS TÉCNICOS

Modelo	A4	A6	A8	A11	
Caudal (litros/min)	8 bar	0.48	0.80	1.28	1.96
	10 bar	0.51	0.77	1.11	1.73
	14 bar	0.48	0.56	0.85	1.31
Potencia del Motor (CV)	-	4.5	5.5	7.5	11
Velocidad de Rotación (r.p.m.)	1400	1440	1440	1440	
Protección Antisaca del Motor	IP50	IP51	IP50	IP50	
Capacidad del Sistema de Aceite (L)	1.5	2.5	3.5	4.5	
El Arrastre de Aceite (bar)	1.1	1.1	1.1	1.1	
Nivel de Sonido (dB(A))	72	75	75	75	

- Diseño Simple
- Alta Fiabilidad
- Eficiencia Energética
- Larga Vida
- Bajo Mantenimiento
- Extremadamente Silencioso



SISTEMA DE AIRE COMPRESIDO

Nueva Tecnología:

Cuando dos o más conjuntos de compresores de aire se combinan, se utiliza un conjunto de equipo de postproceso, se puede elegir la especificación del equipo de proceso posterior en función del consumo de gas real. Si un compresor de aire es la única máquina como copia de seguridad y no se utiliza al mismo tiempo, se debe elegir el equipo de post-procesamiento de acuerdo con la máxima utilizando el flujo.



A15-A22

PARAMETROS TÉCNICOS

Modelo	A15	A18	A22	
Caudal (litros/min)	8 bar	2.12	3.23	4.36
	10 bar	2.22	3.33	4.51
	14 bar	1.85	2.25	3.36
Potencia del Motor (CV)	15	18.5	22	
Velocidad de Rotación (r.p.m.)	1440	1470	1470	
Protección Antisaca del Motor	IP50	IP50	IP50	
Capacidad del Sistema de Aceite (L)	20	20	20	
El Arrastre de Aceite (bar)	1.1	1.1	1.1	
Nivel de Sonido (dB(A))	79	79	79	



A30-A55

PARAMETROS TÉCNICOS

Modelo	A30	A37	A40	A55
Caudal (litros/min)	8 bar	5.85	6.85	8.25
	10 bar	4.55	5.06	7.05
	14 bar	4.64	4.70	5.44
Potencia del Motor (CV)	30	37	30	55
Velocidad de Rotación (r.p.m.)	1470	1475	1475	1480
Protección Antisaca del Motor	IP50	IP50	IP50	IP50
Capacidad del Sistema de Aceite (L)	28	28	28	28
El Arrastre de Aceite (bar)	1.1	1.1	1.1	1.1
Nivel de Sonido (dB(A))	79	79	81	81



NAAIL proporcionar el compresor para la industria del automóvil



NAAIL proporcionar el compresor para la industria de fabricación



NAAIL proporcionar el compresor para la Industria Naval

Controlador de Frecuencia



NAILI cooperado con INVT para una mejora solución a su ahorro de energía!



AB Series

Clasificación del Producto



La serie AB de los rotary vane compressors, cuentan con una cabina insonorizada, que permite a los Naili rotary vane compressors a operar entre 67 dB (A) - 76dB (A). La serie AB cuenta con un sistema de control inteligente, que le permite la supervisión del estado y el sistema de protección, la función de control remoto, fácil operación y es compatible con una interfaz fácil de usar. Este modelo es el más adecuado para aplicaciones que exigen bajo nivel de ruido y es un compresor de aire con relativa mas alta calidad que el resto de nuestros productos.



AB4-AB11

PARÁMETROS TÉCNICOS

Modelo	AB4	AB7	AB11	AB11	
Presión (bar)	8 bar	0.68	0.80	1.39	1.96
Capacidad (l/min)	17 bar	0.52	0.77	1.29	1.71
Presión (bar)	11 bar	0.48	0.56	0.95	1.33
Potencia del Motor (kW)	4.0	5.5	7.5	11	15
Velocidad de Rotación (r.p.m.)	1400	1400	1400	1400	1400
Protección Acosta del Motor	IP55	IP55	IP55	IP55	IP55
Capacidad del Sistema de Acosta (L)	2.5	2.5	3.5	5	5
El Acosta de Acosta (ppm)	1.0	1.0	1.0	1.0	1.0
Nivel de Sonido (dB(A))	67	67	68	68	68



AB15-AB22

PARÁMETROS TÉCNICOS

Modelo	AB15	AB17	AB22	
Presión (bar)	8 bar	2.21	3.09	3.76
Capacidad (l/min)	30 bar	2.21	2.55	3.21
Presión (bar)	11 bar	1.85	2.25	2.56
Potencia del Motor (kW)	15	16.5	22	27
Velocidad de Rotación (r.p.m.)	1400	1470	1470	1470
Protección Acosta del Motor	IP55	IP55	IP55	IP55
Capacidad del Sistema de Acosta (L)	30	30	30	30
El Acosta de Acosta (ppm)	1.0	1.0	1.0	1.0
Nivel de Sonido (dB(A))	72	72	72	72



AB30-AB55

PARÁMETROS TÉCNICOS

Modelo	AB30	AB33	AB40	AB55	
Presión (bar)	8 bar	5.00	5.80	8.75	
Capacidad (l/min)	30 bar	4.91	5.66	8.90	
Presión (bar)	11 bar	3.86	4.70	6.81	7.00
Potencia del Motor (kW)	30	37	45	65	
Velocidad de Rotación (r.p.m.)	1470	1475	1475	1480	
Protección Acosta del Motor	IP55	IP55	IP55	IP55	
Capacidad del Sistema de Acosta (L)	15	15	15	15	
El Acosta de Acosta (ppm)	1.0	1.0	1.0	1.0	
Nivel de Sonido (dB(A))	Ventilador local	76	76	76	76
	Centrifugo	86	88	88	88



▲ NAILI proporcionar el compresor para la Industria Textil



▲ NAILI proporcionar el compresor para la Alimentación y Bebidas



▲ NAILI proporcionar el compresor para la Industria Eléctrica y Electrónica



▲ *NAIFI proporcionar el compresor para la Industria Electrónica*



▲ *NAIFI proporcionar compresor para la Industria Textil*



▲ *MD75: El tipo más popular de vane compressor*

MD Clasificación del Producto Series



El serie MD es una serie doble de diseño del motor de vane compresor, que se utiliza para el suministro de aire comprimido en las industrias más. Serie MD se puede ejecutar en estado de baja carga cuando menos demanda de volumen de aire. De acuerdo a una menor demanda, el compresor puede ajustar el volumen de aire de descarga en cualquier momento con el fin de adaptarse mejor a las pequeñas y medianas industrias.

MD30-MD110

PARÁMETROS TÉCNICOS

	Modelo	MD30	MD50	MD75	MD100	MD110
Caudal(m³/min)	8 bar	3.80	7.00	8.00	15.00	20
	12 bar	4.70	5.50	6.70	11.10	17.00
	15 bar	4.00	4.90	5.80	9.60	14.40
Potencia del Motor(KW)		15 x 2	18.5 x 2	22 x 2	37 x 2	55 x 2
Velocidad de Rotación(r.p.m.)		1480	1470	1470	1470	1480
Rotación Unidad		Derecho	Derecho	Derecho	Derecho	Derecho
El Ángulo de Acción (grm)		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Temperatura Ambiente (°C)		0-45	0-45	0-45	0-45	0-45
Tamaño de Salida del Aire (mm)		DN65	DN65	DN65	DN80	DN85

MD135-MD330

PARÁMETROS TÉCNICOS

	Modelo	MD135	MD165	MD200	MD270	MD330
Caudal(m³/min)	8 bar	24.80	31.10	38.50	49.40	55.90
	12 bar	20.90	27.80	35.50	44.40	50.10
	15 bar	17.60	23.40	28.70	35.80	41.10
Potencia del Motor(KW)		45 x 2	45 x 4	55 x 4	55 x 6	55 x 6
Velocidad de Rotación(r.p.m.)		1475	1475	1480	1480	1480
Rotación Unidad		Derecho	Derecho	Derecho	Derecho	Derecho
El Ángulo de Acción (grm)		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Temperatura Ambiente (°C)		0-45	0-45	0-45	0-45	0-45
Tamaño de Salida del Aire (mm)		DN80	DN80	DN85	DN80	DN85

AH Clasificación del Producto Series



Naifi hidráulico Compresor convierte la energía hidráulica en el aire comprimido. Circuito del compresor es muy compacto. Esto hace que sea excelente y fácil de transportar carga.

AH4L-AH18L

PARÁMETROS TÉCNICOS

	Modelo	AH4L	AH6L	AH12L	AH18L
Caudal(m³/min)	8 bar	8.00	8.00	8.00	8.00
	12 bar	9.70	9.70	9.70	9.70
	15 bar	1.44	1.85	5.55	6.77
Capacidad de Descarga(m³)		42	42	56.1	56.1
Rotacional Velocidad (rpm)	Min.	3000	3000	3000	3000
	Max.	1440	1440	1440	1440
Ángulo	Min.	20	20	35	35
Presión (MPa)	Max.	18	18	25	30

AH4H-AH22L

PARÁMETROS TÉCNICOS

	Modelo	AH4H	AH12H	AH22L	AH22L
Caudal(m³/min)	8 bar	15.00	15.00	15.00	8.00
	12 bar	15.50	17.00	17.00	8.10
	15 bar	1.08	1.55	4.50	1.75
Capacidad de Descarga(m³)		42	42	56.1	56.1
Rotacional Velocidad (rpm)	Min.	3000	3000	3000	3000
	Max.	1440	1440	1440	1440
Ángulo	Min.	20	20	35	35
Presión (MPa)	Max.	18	20	25	33



← *Brasos de grúa*



▲ *NAIFI proporcionar el compresor para la industria minera*



Compresor Hidráulico:

Naifi compresor hidráulico proporciona aire comprimido en cualquier hora. Puede fácilmente sustituir de los antiguos. El aire comprimido puede ser suministrado para herramientas neumáticas y accesorios para la perforación y otras.

Rotary Screw Compressors vs Rotary Vane



Rotary Vane vs Rotary Screw Compressors Cual es la Diferencia?

A pesar de que los rotary vane y rotary screw compressor se desarrollaron en momentos similares y están diseñados para llevar a cabo la misma función, las dos tecnologías difieren grandemente. Continúe leyendo para aprender cómo los dos tipos de compresores se comparan en términos de eficiencia, durabilidad y mantenimiento.

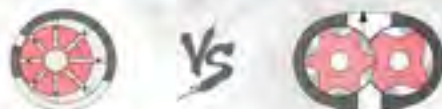


**No consiga screw
Consiga vane.**

No hay duda acerca de que las innovaciones tecnológicas en los Naili rotary vane compressors no puede ser igualada.

Si está buscando la eficiencia suprema y un rendimiento sin igual, el Naili rotary vane compressors es la respuesta y el producto ideal para pequeñas y medianas aplicaciones comerciales.

El diseño avanzado, mayor durabilidad y eficiencia sin precedentes, combinado con la tecnología de vanguardia de rotary vane, Podemos asegurar que las rotary vane son la solución perfecta a sus necesidades.



Qué es un Rotary Vane Compressor?

Un rotary vane compressor es un compresor rotativo volumétrico, que consiste en un rotor (con ranuras longitudinales la cual es la corredera o guía de las blades) giratorio dentro de un estator (o cilindro). El rotor está concéntrico en el estator de modo que cuando se gira sobre su eje, las blades son empujadas contra el estator por la fuerza centrífuga.

Hay un volumen entre las vanes adyacentes, durante la rotación, este volumen pasa de una salida máxima de las vanes, a un valor mínimo, momento en el que el estator se convierte tangencial con el rotor y viceversa. El volumen se incrementa durante la toma de aire y progresivamente disminuye durante la etapa de compresión, hasta que las aberturas de suministro están cubiertas por las vanes.



Qué es un Rotary Screw Compressor?

El screw compressor es un compresor rotativo volumétrica compuesta por dos rotores paralelos con perfiles helicoidales externos (Screws) que permite a los dos rotores girar, uno en el otro, los dos rotores están equipadas en un estator hecho de dos cilindros que se cortan longitudinalmente y en el cual los rotores giran con una distancia mínima crítica.

AIR End Machine Head

Naili fabrica una amplia gama de Rotary Vane Air Ends. Debido a los diseños los integrados y compactos, son ideales para ser utilizados en muchas aplicaciones de OEM y están disponibles como elementos individuales.

Las Air ends de rotary vane compressor de hasta 1.13m³ / min (40 pies cúbicos por minuto) están totalmente integrados con el único requisito de medio de accionamiento. Ejemplo: Un motor eléctrico, motor hidráulico, o un motor de combustión, son potencialmente usados en una amplia variedad de diferentes motores.

Una gama completa de presiones de operación está disponible de 8 bar hasta 13 bar.

Las Air ends de rotary vane compressor son disponibles des 1.1kw hasta 75 KW o 1.5 hp hasta 100 hp



Esto se obtiene con acoplamiento flexible entre el motor y el compresor sin necesidad de otro medio de transmisión, que es sin engranajes o cojinetes de rodillos que necesitan mantenimiento.



Auto toma de aire Regulador:

La toma de aire atmosférico automático es capaz de regular la entrada del aire de la atmosfera al compresor. Esta es de apertura y cierre automático/regulada para controlar el aire de admisión, haciendo que el compresor se autoregule en las diferentes condiciones de trabajo, para asegurarse de que el suministro y presión del aire comprimido sea constante y no sea indispensable el uso de tanque de almacenamiento de aire comprimido.



NAILI Vane Compressors are widely used in transportation, mining, metal smelting, textile, pharmaceutical, petroleum, chemical, cement, food, printing, packaging, shipping, painting, electrical, power transmission, medical and other industries.

OEM Supply



Industry



Textile



Transit

ROTARY VANE COMPRESSOR SOLUTIONS FOR HIGH EFFICIENCY AIR-POWER

NAILI

NAILI Co.,Ltd

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Equipment manufacturing base in
Shijiazhuang City
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NAILI

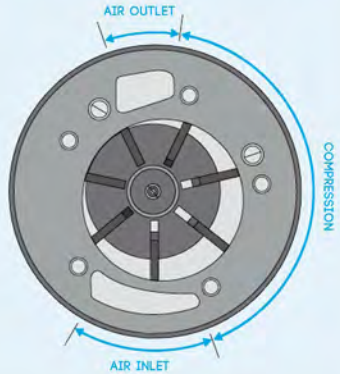
NAILI Co.,Ltd

ROTARY VANE COMPRESSOR SOLUTIONS RELIABLE, ECONOMIC & ADVANCED VANES



www.nailicomp.com

The Principle



The key benefits that rotary vane technology can offer Maximum efficiency of the air compression process, excellent reliability and low running costs;

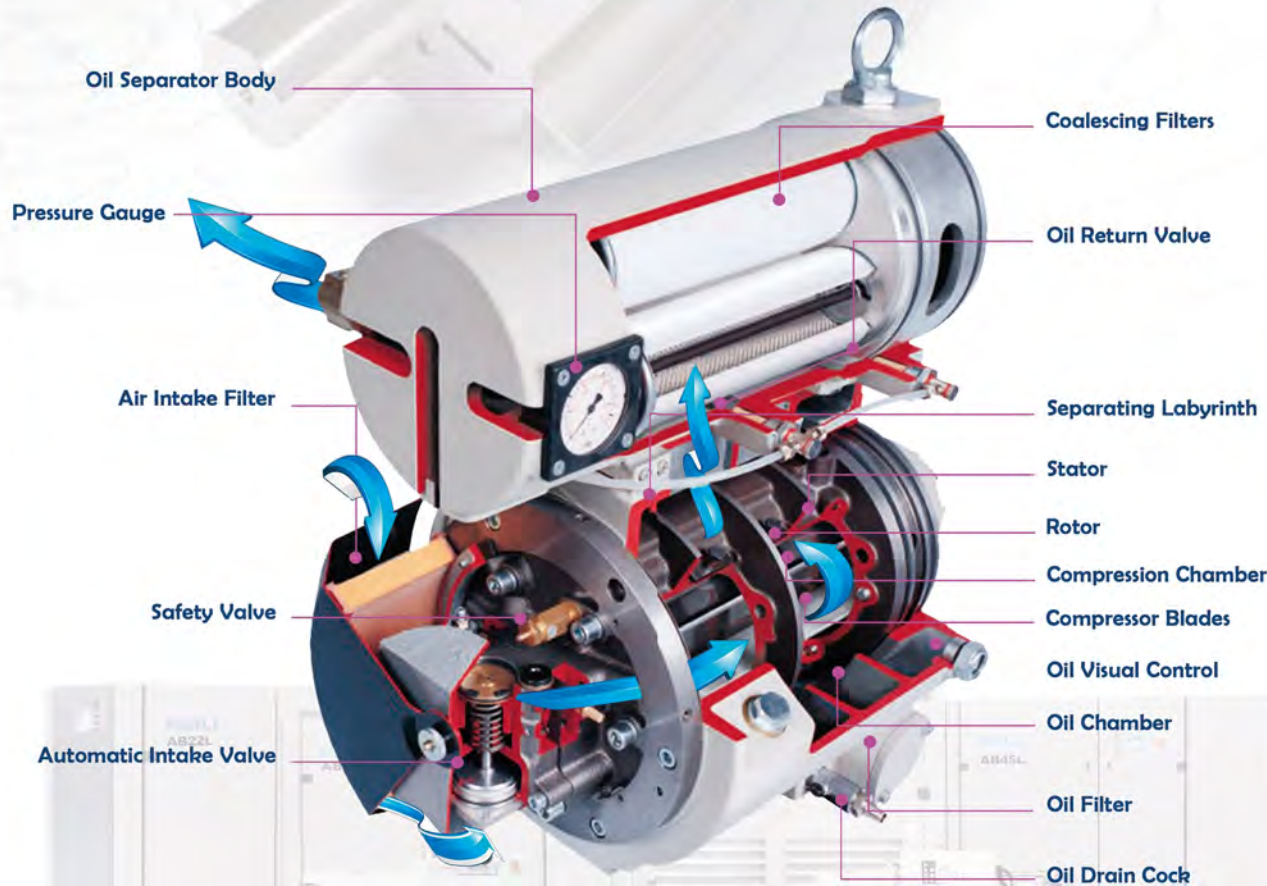
Air is sucked through a filter and then passes through suction valve which regulates air delivery and maintains a constant working pressure. **Thanks to the simple construction:** The rotor rotates eccentrically to the stator and is character set by vertical slots in the rotor in which the blades are placed and are pushed against the stator's wall by centrifugal force. Lubrication and cooling are guaranteed by an efficient injection system which allows perfect hold and a **lower lubricant consumption**. A thin film of oil on the stator's wall avoids direct contact of the metal parts which reduces wear. Compression occurs during rotation with the reduction of volume in the spaces between the rotor blades and the stator. The compressed mixture of air & oil passes through various separating phases leaving purified air **less than 1.5 ppm** (parts per million) of oil to the compressor and is cooled in the radiator; the resulting condensate is eliminated by an electronic condensation drain.



RELIABLE ECONOMIC & ADVANCED VANES

NAILI AIR POWER

www.nailicomp.com



03

Vane's Features

Automatic Flow Rate Control:

As well as the classic "ON/OFF OPERATION" mode, all of the models, applied in from 4kw to 330kw, are fitted with the special modulating proportional intake valve which allows air supply at a constant pressure and even offers the possibility of working without an air storage tank.

Air quality:

The exclusive three stage oil separating system guarantees an oil residue in the air of less than 1.5ppm. The coolers guarantee air temperatures no higher than 5 - 10°C above room temperature.

Direct connection:

A flexible shaft coupling between the motor and compressor removes the need for a transmission belt; it requires less maintenance than gear or ball bearing type assemblies.

Durable:

Whatever you chose which compressor that NAILI made, working life always shall satisfy you basis on mature technology of the Low rotation speed (only 1480rpm), low abrasion and low noise ensure long service life, The main motor drives the compressor and the cooling fan simultaneously. And most important High efficiency Cooling system to make sure working always in reliability.



04

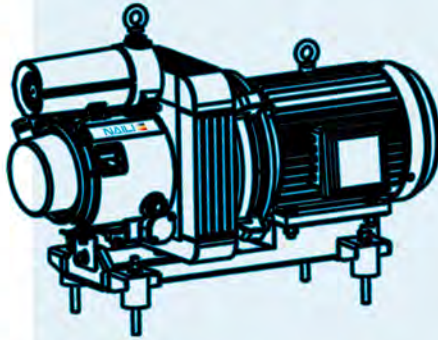
AZE Product Classification Series

The AZE Series is a compact design rotary vane compressor. Commonly used for compressed air supply in vehicles such as green buses and airport shuttle buses etc.

AZE1.5-AZE3.0

TECHNICAL PARAMETERS

Model	AZE1.5	AZE2.2	AZE3.0	
F.A.D (L/min)	7~10 bar	120 - 140	180 - 200	280 - 300
Motor Power (KW)	1.5	2.2	3	
Electric Power Supply	OEM	OEM	OEM	
Rotational Speed (r.p.m)	1390	1410	1410	
Weight (Kg)	16	16	16	
Connection	M22 x 1.5	M22 x 1.5	M22 x 1.5	
Motor Protection Insulation	IP55	IP55	IP55	



Applications of AZE & AZT:

Brake system
Air suspension system
Door open/close system
Pantograph power
Wiper etc.

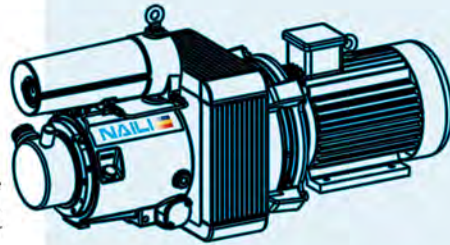
AZT Product Classification Series

AZT series which is a specially designed for public transportation like Railway Train and Metro. The unit has oil system, suction system, separation system. So that unit can work with higher efficiency and easier to be maintained when it is needs.

AZT5.5-AZT15

TECHNICAL PARAMETERS

Model	AZT5.5	AZT7.5	AZT11	AZT15	
F.A.D (L/min)	7~10 bar	745 - 765	1150 - 1195	1650 - 1722	2300 - 2350
Motor Power (KW)	5.5	7.5	11	15	
Electric Power Supply	OEM	OEM	OEM	OEM	
Rotational Speed (r.p.m)	1440	1440	1460	1480	
Weight (Kg)	45	100	130	180	
Connection	Rp1/2	Rp3/4	Rp3/4	Rp3/4	
Motor Protection Insulation	IP55	IP55	IP55	IP55	



▲ NAILI provide compressor for transportation

Our Customers :



www.nailicomp.com



Control Panel:

The Control Panel is practical and easy to operate. The control panel features; auto/continual mode, Chinese/English language option and reserve remote control connector.



Oil Separator:

Our Oil Separator is made of high quality material, it can reduce more oil particles from the compressed air with high-efficiency. The quantity of oil in the compressed air is less than or equal to 1.5ppm.



Air Filter:

Naili high efficient Air Filter separates more dirt particles; NAILI air filters are twice efficient as compared to traditional air filters.



Cooling Fan:

Cooling fan is not independent; it is directly fitted to the main motor for effective energy-saving.

Vane's Benefits

NAILI SERVES THE WORLD

Hi- EFFICIENCY (1:1)

All compressors from NAILI are a 1:1 ratio between the electric motor speed and that of the airen. This means greater energy efficiency and higher performances. Compared to other technologies, rotary vane compressors guarantee a superior internal air seal, together with a consistent and long lasting performance.



SIMPLICITY

In view of accessible design makes maintenance operations simple and straightforward, NAILI's rotary vane air compressors are quiet and can be located almost anywhere. They are quickly installed and take up a limited of space because of smaller than other compressors it is.

SAFETY / RELIABILITY

The considerate design for customer's requests that working always in safer, more durable, Thanks to direct coupling, and low rotational speed and less moving parts to ensure rotary vane air compressors of NAILI remained for more reliable over time.

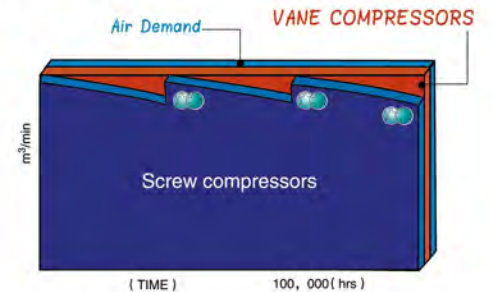
QUALITY OF THE AIR

All NAILI's Vane compressors have a generously filtering system, which guarantees quality compressed air suitable for any use. Because of multi-stage oil separation system produces an exceptionally low lubricant carry-over at one time.

LOW OPERATING COSTS / LOW MAINTENANCE

NAILI rotary vane compressors are designed to reach 100,000 hours life without the need to replace any blades or other metal parts.

The long operating life of a NAILI compressor is assured by high quality machining which is the essence of rotary vane air compressors.



- Simple Design
- High Reliability
- Energy-efficient
- Long Life
- Low Maintenance
- Rotary Vane Technology is extremely quiet

A Series

Product Classification



The A series rotary vane compressor has a simplified appearance without changing the air end which decreases the cost of whole machine without compromising performance. The machine structure is not enclosed which makes it easier to repair and maintain. Our air compressor's control panels are very easy to operate and are available in different languages.



Compressed Air System



A4-A11

TECHNICAL PARAMETERS

Model	A4	A5.5	A7.5	A11
F.A.D (m3/min)	8 bar	0.68	0.90	1.39
	10 bar	0.53	0.77	1.15
	13 bar	0.48	0.56	0.95
Motor Power (KW)	4.0	5.5	7.5	11
Rotational Speed (r.p.m)	1435	1440	1440	1460
Motor Protection Insulation	IP55	IP55	IP55	IP55
Oil System Capacity (L)	2.5	2.5	3.5	3.5
Oil Carryover (ppm)	≤ 3	≤ 3	≤ 3	≤ 3
Sound Level Db (A)	71	71	75	75

New Technology:

When two sets or more air compressors combined, it use one set of post procession equipment, it can chose specification of post procession equipment according to realistic gas consumption. If one air compressor is only as backup machine and does not use at the same time, it should chose post procession equipment according to maximum using flow.



A15-A22

TECHNICAL PARAMETERS

Model	A15	A18.5	A22
F.A.D (m3/min)	8 bar	2.71	3.29
	10 bar	2.21	2.65
	13 bar	1.85	2.25
Motor Power (KW)	15	18.5	22
Rotational Speed (r.p.m)	1460	1470	1470
Motor Protection Insulation	IP55	IP55	IP55
Oil System Capacity (L)	10	10	10
Oil Carryover (ppm)	≤ 3	≤ 3	≤ 3
Sound Level Db (A)	79	79	79



A30-A55

TECHNICAL PARAMETERS

Model	A30	A37	A45	A55
F.A.D (m3/min)	8 bar	5.60	6.80	8.25
	10 bar	4.65	5.66	7.00
	13 bar	3.66	4.70	5.83
Motor Power (KW)	30	37	45	55
Rotational Speed (r.p.m)	1470	1475	1475	1480
Motor Protection Insulation	IP55	IP55	IP55	IP55
Oil System Capacity (L)	19	19	19	19
Oil Carryover (ppm)	≤ 3	≤ 3	≤ 3	≤ 3
Sound Level Db (A)	79	79	81	81



NAILI provide compressor for Auto-mobile Industry



NAILI provide compressor for Fabrication Industry



NAILI provide compressor for Shipbuilding Industry

Frequency Controller



NAILI Cooperated with INVT for better solution to your energy saving!



AB Series

Product Classification



The AB series super silent rotary vane compressors operate between 67dB(A) – 76dB(A). The AB series features an intelligent control system, state monitoring and protection system, remote control function, easy operation and supports a user friendly interface. This model is most suitable for applications which demand noise to be kept to a minimum and it is one relatively high-quality air compressor.



AB4-AB11

TECHNICAL PARAMETERS

Model	AB4	AB5.5	AB7.5	AB11
8 bar	0.68	0.90	1.39	1.96
F.A.D (m3/min)	0.53	0.77	1.15	1.71
10 bar	0.48	0.56	0.95	1.33
13 bar	4.0	5.5	7.5	11
Motor Power (KW)	1435	1440	1440	1460
Rotational Speed (r.p.m)	IP55	IP55	IP55	IP55
Motor Protection Insulation	2.5	2.5	3.5	3.5
Oil System Capacity (L)	≤ 3	≤ 3	≤ 3	≤ 3
Oil Carryover (ppm)	67	67	69	69
Sound Level Db (A)				



AB15-AB22

TECHNICAL PARAMETERS

Model	AB15	AB18.5	AB22
8 bar	2.71	3.29	3.76
F.A.D (m3/min)	2.21	2.65	3.21
10 bar	1.85	2.25	2.56
13 bar	15	18.5	22
Motor Power (KW)	1460	1470	1470
Rotational Speed (r.p.m)	IP55	IP55	IP55
Motor Protection Insulation	10	10	10
Oil System Capacity (L)	≤ 3	≤ 3	≤ 3
Oil Carryover (ppm)	72	72	72
Sound Level Db (A)			



AB30-AB55

TECHNICAL PARAMETERS

Model	AB30	AB37	AB45	AB55
8 bar	5.60	6.80	8.25	-
F.A.D (m3/min)	4.65	5.66	7.00	8.90
10 bar	3.66	4.70	5.83	7.00
13 bar	30	37	45	55
Motor Power (KW)	1470	1475	1475	1480
Rotational Speed (r.p.m)	IP55	IP55	IP55	IP55
Motor Protection Insulation	19	19	19	19
Oil System Capacity (L)	≤ 3	≤ 3	≤ 3	≤ 3
Oil Carryover (ppm)	76	76	76	76
Sound Level Db (A)				
Axil Fan	68	68	68	68
Centrifugal				



▲ NAILI provide compressor for Textile Industry



▲ NAILI provide compressor for Food and Beverage Industry



▲ NAILI provide compressor for Electric and Electronics Industry



▲ NAILI provide compressor for Electronics Industry



▲ NAILI provide compressor for Textile Industry



▲ "MD75" The most popular vane type compressor

MD Product Classification Series



MD series is a double engine design vane type compressor series, used for more compressed air supply in industries. MD series can run in low-load state when less air volume demand. According to less air volume demand compressor can adjust working state at any moment in order to better suit small and medium-sized industries.

MD30-MD110

TECHNICAL PARAMETERS

	Model	MD30	MD37	MD44	MD75	MD110
	8 bar	5.80	7.00	8.00	13.60	20
F.A.D (m3/min)	10 bar	4.96	5.58	6.96	11.32	17.80
	13 bar	4.00	4.92	5.60	9.60	14.40
Motor Power (KW)		15 x 2	18.5 x 2	22 x 2	37 x 2	55 x 2
Rotational Speed (r.p.m)		1460	1470	1470	1475	1480
Drive Method		Direct	Direct	Direct	Direct	Direct
Oil Carryover (ppm)		≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Ambient Temperature (C)		0-45	0-45	0-45	0-45	0-45
Air Outlet Size (RP)		DN65	DN65	DN65	DN65	DN65

MD135-MD330

TECHNICAL PARAMETERS

	Model	MD135	MD180	MD220	MD275	MD330
	8 bar	24.83	33.11	39.58	49.48	59.30
F.A.D (m3/min)	10 bar	20.98	27.80	35.53	44.43	53.31
	13 bar	17.63	23.43	28.72	35.89	43.18
Motor Power (KW)		45 x 3	45 x 4	55 x 4	55 x 5	55 x 6
Rotational Speed (r.p.m)		1475	1475	1480	1480	1480
Drive Method		Direct	Direct	Direct	Direct	Direct
Oil Carryover (ppm)		≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Ambient Temperature (C)		0-45	0-45	0-45	0-45	0-45
Air Outlet Size (RP)		DN65	DN65	DN65	DN65	DN65

AH Product Classification Series



NAILI Hydraulic Compressor converts hydraulic power into compressed air. Compressor circuit is very compact. Compact design makes it excellent and easy to carry load.

AH4L-AH18L

TECHNICAL PARAMETERS

	Model	AH4L	AH7L	AH15L	AH18L
F.A.D (m3/min)	Bar	8.00	8.00	8.00	8.00
	Min.	0.70	1.38	2.70	3.28
	Max.	1.44	2.85	5.55	6.72
Discharge Capacity (ml/r)		42	42	56.1	56.1
Rotational Speed (rpm)	Max.	3000	3000	3000	3000
	Min.	1440	1440	1440	1440
Oil Pressure (mpa)	Max.	20	20	35	35
	Min.	18	18	25	30

AH4H-AH22L

TECHNICAL PARAMETERS

	Model	AH4H	AH11H	AH15H	AH22L
	Bar	10.00	10.00	10.00	8.00
F.A.D (m3/min)	Min.	0.53	1.70	2.20	3.75
	Max.	1.08	3.51	4.53	7.71
Discharge Capacity (ml/r)		42	42	56.1	56.1
Rotational Speed (rpm)	Max.	3000	3000	3000	3000
	Min.	1440	1440	1440	1440
Oil Pressure (mpa)	Max.	20	20	35	35
	Min.	18	20	25	33



← Crane arms



▲ NAILI provide compressor for Mining Industry



Hydraulic Compressor:

NAILI Hydraulic compressor provides compressed air anytime. It can easily take place of the old hydraulic air compressor models. Compressed air can be supplied for pneumatic tools and accessories for drilling and other

Rotary Screw Compressors vs Rotary Vane



Rotary Vane vs Rotary Screw Compressors What's the Difference?

Although rotary vane and rotary screw compressors were developed at similar times and are designed to perform the same function, the two technologies differ greatly. Continue reading to learn how the two types of compressors compare in terms of efficiency, longevity & maintenance.



**Don't get screwed
Get a vane.**

There's no question about it – NAILI's innovative rotary vane compressors can't be matched.

If you're looking for supreme efficiency and unrivaled performance, NAILI's BLADE compressor is the answer and the ideal product for small to medium commercial applications.

Advanced design, enhanced durability and unparalleled efficiency, combined with cutting-edge rotary vane technology, make the BLADE a pioneer in its field. We can assure you that the BLADE is your perfect solution.



What is a Rotary Vane Compressor?

A rotary vane compressor is a volumetric rotary compressor, consisting of a rotor (with longitudinal slots in which the vane slide) rotating within a stator (or cylinder). The rotor is offset in the stator so that when it turns on its axis, the vanes are pushed against the stator by centrifugal force.



There is a volume between the adjacent vanes, during rotation, this volume passes from a maximum value, corresponding with the maximum exit of the vanes, to a minimum value, at which point the stator becomes tangential with the rotor and vice versa. The volume increases during air intake and progressively decreases during the compression stage, until the delivery ports are covered by the vanes.



What is a Rotary Screw Compressor?

The screw compressor is a volumetric rotary compressor composed of two parallel rotors with external helical profiles (screws) which enables the two rotors to engage, one into the other, the two rotors are fitted in a stator made from two cylinders which intersect longitudinally and in which the rotors turn with a critical minimum clearance.

AIR End Machine Head

NAILI manufactures an extensive range of Rotary Vane Air Ends. Due to the integrated, compact design they are ideal to be utilized in many OEM applications and are available as individual items.

Air Ends up to 1.13m³/min (40cfm) come fully integrated with the only requirement being the drive media. Example: an Electric Motor, Hydraulic Motor potentially using a variety of different Engines.

A complete pressure range is available from 8 bar up to 13bar

Air ends available cover 1.1kw (1.5hp) up to 75kw (100hp)



This is obtained with flexible coupling between motor and compressor without any need for belts, it's without gears or roller bearings needing maintenance.



Auto Air Intake Regulator:

The auto air intake regulator will be able to regulate the entrance. It open-close for controlling the intake air, make compressor to regulate itself in different working conditions to make sure constantly supply air and it goes without air tank.



AZE Product Classification Series

AZE series air compressor is the latest international leading sliding vane air compressor developed by NAILI Group. AZE series air compressor is for green city buses, especially designed for the rainy season, high temperature, high humidity in tropic countries, This product can effectively prevent oil emulsion and it has longer working life, Reasonable structure, light weight, stable and reliable operation, low noise, easy installation. It is a new solution for safety and environmental protection of energy-saving air compressor.



EASY INSTALL | EASY OPERATION | EASY MAINTENANCE

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AZE1.5H-AZE4H

TECHNICAL PARAMETERS

Model		AZE1.5H	AZE2.2H	AZE3.0H	AZE4.0H
F.A.D (m3/min)	10 bar	0.16	0.22	0.32	0.40
Motor Power (KW)		1.5	2.2	3.0	4.0
Rotational Speed (r.p.m)		1410	1430	1430	1440
Oil Carryover (ppm)		≤2.5	≤2.5	≤2.5	≤2.5
Noisy Db(A)		70	70	70	70
Motor Protection Insulation		IP55	IP55	IP55	IP55
Oil System Capacity (L)		1.3	1.3	1.35	1.35
Connection		M22 x 1.5	M22 x 1.5	M22 x 1.5	M22 x 1.5
Weight (Kg)		48	55	56	61

AZE4L-AZE5HH

TECHNICAL PARAMETERS

Model		AZE4L	AZE4H	AZE5L	AZE5H	AZE5HH
F.A.D (m3/min)	8 bar	0.68	-	1.00	-	-
	10 bar	-	0.60	-	0.85	-
	13 bar	-	(0.48)	-	-	0.53
Motor Power (KW)		4.0	4.0	5.0	5.0	5.0
Rotational Speed (r.p.m)		1435	1435	1440	1440	1440
Oil Carryover (ppm)		≤3.0	≤3.0	<3.0	≤3.0	≤3.0
Noisy Db(A)		71	71	71		71
Motor Protection Insulation		IP55	IP55	IP55	IP55	IP55
Oil System Capacity (L)		2.5	2.5	2.5	2.5	2.5
Connection		Rp1/2	Rp1/2	Rp1/2	Rp1/2	Rp1/2
Weight (Kg)		75	75	85	85	85

AZE7.5L-AZE11H

TECHNICAL PARAMETERS

Model		AZE7.5L	AZE7.5H	AZE7.5HH	AZE11L	AZE11H
F.A.D (m3/min)	8 bar	1.39	-	-	1.96	-
	10 bar	-	1.15	-	-	1.71
	13 bar	-	-	0.95	-	(1.33)
Motor Power (KW)		7.5	7.5	7.5	11.0	11.0
Rotational Speed (r.p.m)		1440	1440	1440	1460	1460
Oil Carryover (ppm)		≤3.0	≤3.0	<3.0	≤3.0	≤3.0
Noisy Db(A)		75	75	75	75	75
Motor Protection Insulation		IP55	IP55	IP55	IP55	IP55
Oil System Capacity (L)		3.5	3.5	3.5	3.5	3.5
Connection		Rp1/2	Rp1/2	Rp1/2	Rp1/2	Rp1/2
Weight (Kg)		103	103	103	115	115



NAILI COMPRESSOR Vane Technology

RELIABLE / ECONOMIC / ADVANCED VANES

SERIES
OEM
 SNOW MAKER - GREEN CITY BUSES - ETC

Function

How it Works

Ambient air is drawn through a filter into the compression chamber consisting of a stator in which an eccentrically arranged rotor revolves at 1,400 rpm. An air intake valve automatically adjusts the incoming air volume to match the compressed air needs of your snow gun at pressure. The rotor has longitudinal slots in which the vanes slide. Zero-wear vanes ride on a thin film of oil and are held against the stator by centrifugal force. The air is compressed through the contraction in volume of each chamber formed by the vanes, the rotor and the stator wall. Sealing, cooling and lubrication are ensured by the oil injected into the chamber.

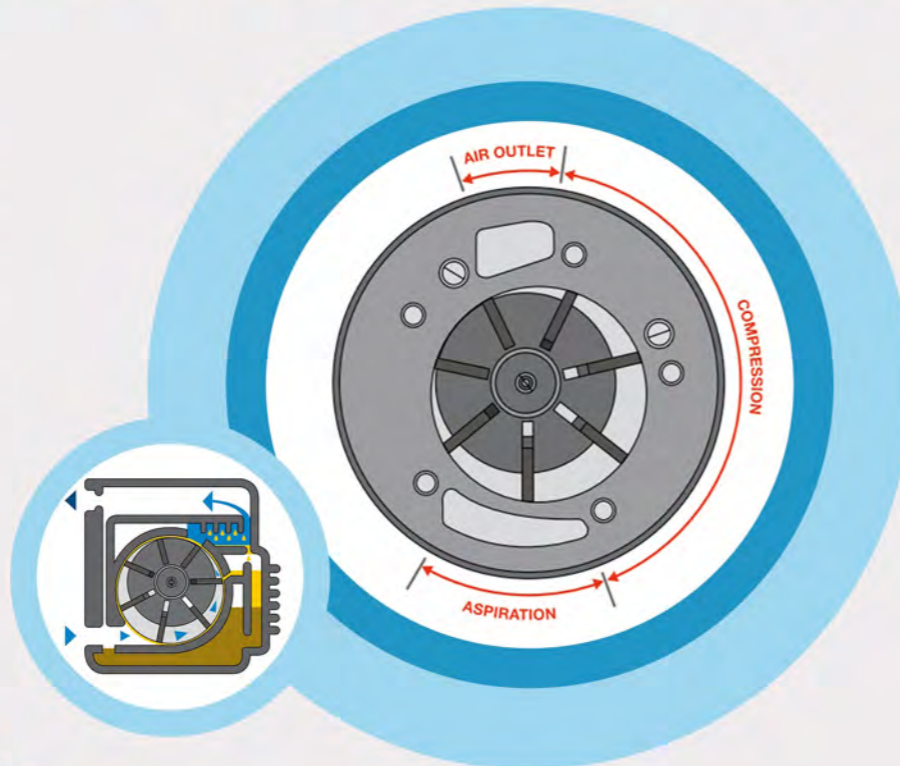


* AIR END SECTIONAL VIEW

Performance

High Compressed Air Quality

A snow-making machine must guarantee an environmentally friendly operation. The compressor, which is an integral part of the machine, must thus produce clean air. NAILI Compressors have an exclusive and efficient oil separating system which occurs in three stages: in the initial stage most of the oil is separated in a labyrinth in the compression chamber; the flow then enters the separator chamber where a mechanical separation takes place through speed reduction and flow deviation; the last phase occurs through the separator element. Only 0.02% of the initial oil arrives to this final stage; this is the reason for which the average life of NAILI's separator element is 10,000 operating hours. Most importantly, this separating system guarantees a maximum oil residue of 3 ppm in NAILI's compressed air.



HIGHER OUTPUT THAN SCREW AIR COMPRESSOR

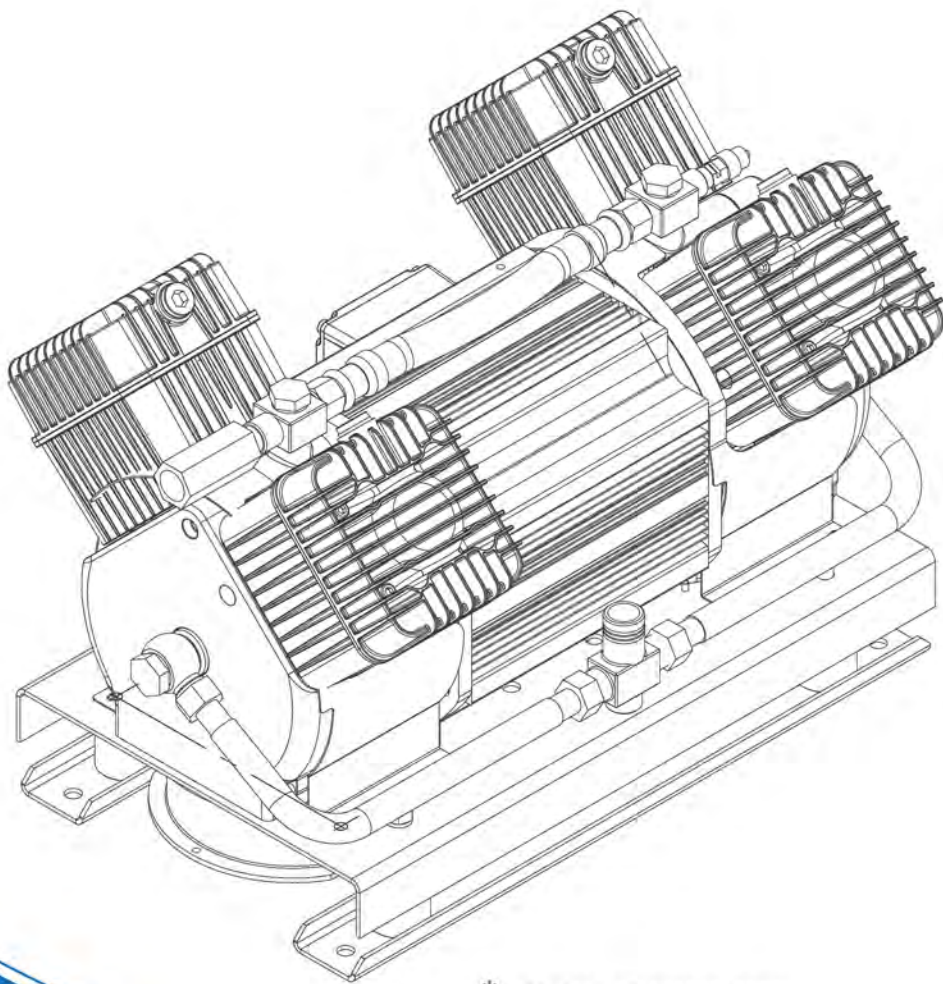
Most industrial engines have a factory option for a rotary compressor designed for intermittent duty applications, but for industries like dust collecting, spray foam applicators, prime assist water pumps, road patching and air arc gouging, a more robust rotary vane compressor is required. NAILI OEM custom rotary vane air compressors are powerful, delivering the m³/min you need at 100% duty cycle and allowing you to get jobs done faster, improving productivity.

SNOW MAKER

From the foot of the Alps to the ends of the earth, Snow-Makers bank on proven NAILI AZE Series rotary vane air compressors when it is time to make snow. Preferred for use on self-powered snow guns due to their readily adaptable compact size, quiet reliable operation, and durable long-life low maintenance design. It's a fact; NAILI is in a class of its own. Want to protect productivity, increase profitability, and lessen your carbon footprint? Own a NAILI.



OIL FREE PISTON COMPRESSOR



* PISTON TECHNOLOGY

HV-SERIES OIL FREE PISTON COMPRESSOR



NAILI Oil-free air compressors range carry a blend of unique features. Exclusively developed to be used in professional applications they grant extreme reliability and an heavy duty continuous operation, freeing the user from costly downtimes and thermal stops. Thanks to the innovative oil-free mechanics, air compressors technology grant up to 5000 hours of operation without any maintenance need. The absence of lubricating oil ease the motor work, hence allowing for low-voltage start ups, well below 0°C. The air compressors with advance technology compressors are developed considering the professional users needs to be on the move, with a compact portable compressor which grants an outstanding power and strong and costant air flow.



NAILI Factory in China.



HV *Product Classification* Series

TECHNICAL PARAMETERS

Model	HV0.85	HV1.1	HV1.5
F.A.D. (m3/min)	0.08	0.13	0.17
Motor Power (Kw)	0.85	1.1	1.5
Rated Pressure (Mpa)	1.0	1.0	1.0
Max. Pressure (Mpa)	1.2	1.2	1.2
Air Outlet Size	M22*1.5	M22*1.5	M22*1.5
Weight (Kg)	32	32	32
Drive Method	Direct	Direct	Direct
Size	L	365	370
	W	369	369
	H	257	257

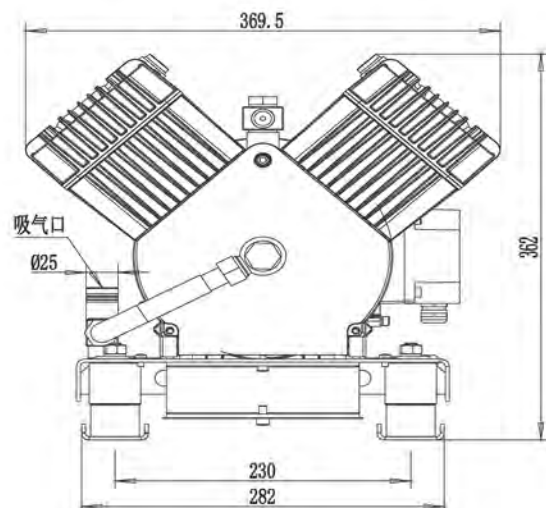
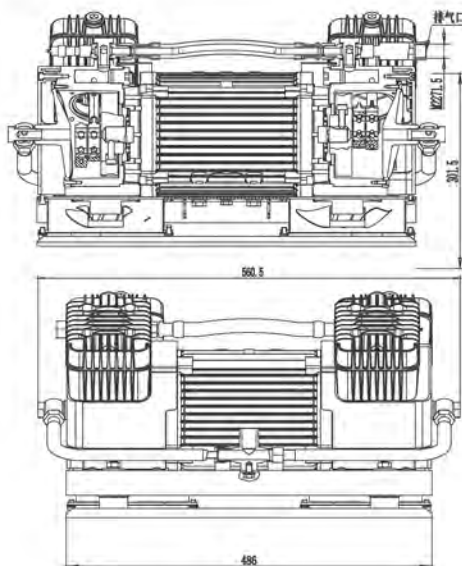


TECHNICAL PARAMETERS

Model	HV2.2	HV3	HV4
F.A.D. (m3/min)	0.25	0.32	0.38
Motor Power (Kw)	2.2	3.0	4.0
Rated Pressure (Mpa)	1.0	1.0	1.0
Max. Pressure (Mpa)	1.2	1.2	1.2
Air Outlet Size	M22*1.5	M22*1.5	M22*1.5
Weight (Kg)	48	48	60
Drive Method	Direct	Direct	Direct
Size	L	560	560
	W	369	369
	H	362	362

LOW NOISE

Noise is reduced to less than **75db**



OIL WATER SEPARATORS

GOLD SERIES

NAILI OIL WATER SEPARATOR SERIES (OWS)

NAILI offers an extensive range of solutions which, by working together in perfect harmony, ensure a compressed air perfectly free from condensate, cost and improved quality product to meet individual customers needs. Advanced patented technologies ensuring the most energy efficient solution.



This is not a normal oil water separator: no decantation tank, no external tank to collect oil ; simple, fast and effective condensate treatment. The unique advanced design and bag material of high quality, assure an extreme level of filtration.

High performance also for new synthetic oils for compressors, that cannot be separated from condensate by traditional ways, such as decantation.

Simplified maintenance and consequent reduction of maintenance costs.

Lower concentrations of oil, less than 10 ppm/l or lower (by a regular replacement of bags).

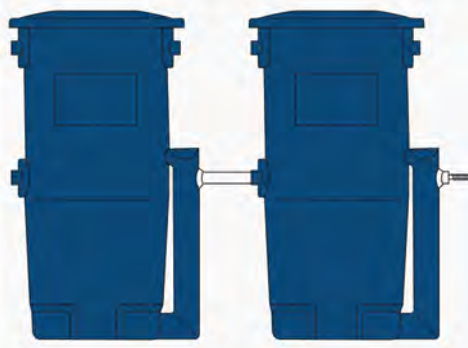
Compact dimensions and easy installation.

Twin Solution, the only separator that can work by this particular combination with two or more separators.

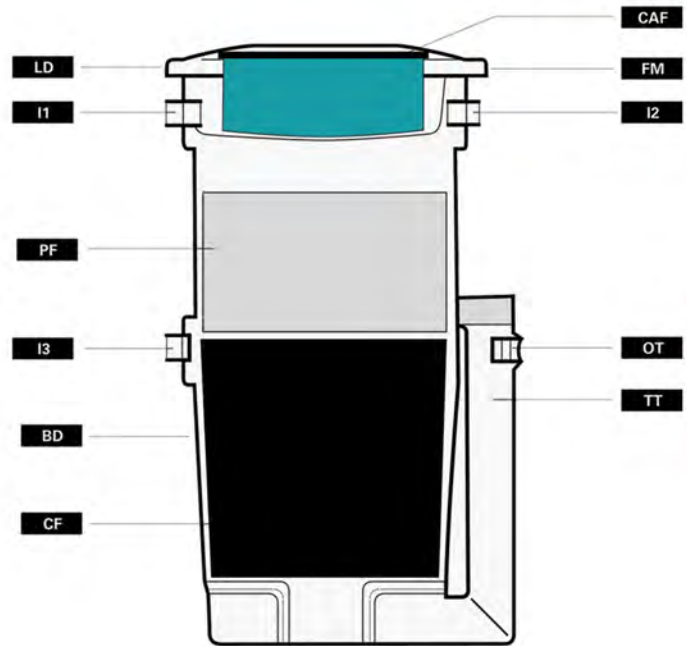
NAILI OIL WATER SEPARATOR SERIES (OWS)



7 out of 10 people use NAAIR product in their factories.



Twin System

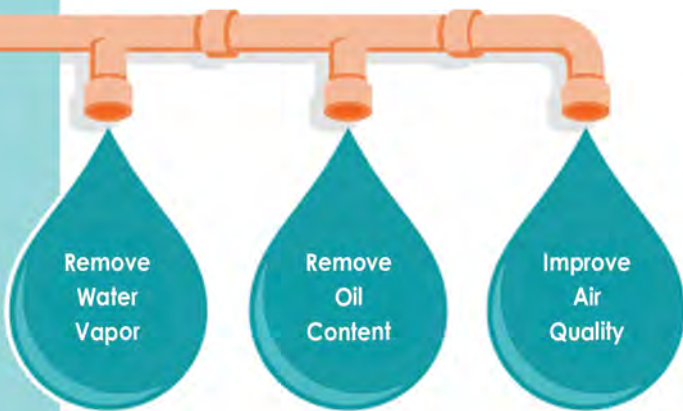


Condensate is introduced in separator through depressurisation chamber of lid (LD).

Then condensate goes down in the separator tank (BD) through the hole of lid (LD).

Prefilter bag (PF) and activated carbon bag (CF) purify condensate from oil and solid particles.

After the process, condensate can be drained in sewers or can be treated in compliance with National laws.



Model	Compressor		Flow - Rate			Connection	Dimension	Weight	
	HP		m3/h	l/min	scfm			BSP-F	HxD [mm]
OWS.00170.00.00	10 / 25		170	2.830	100	1/2"	460 x 200	5	11
OWS.00510.00.00	30 / 60		510	8.500	300	1/2"	600 x 280	11	24
OWS.01275.00.00	80 / 150		1.275	21.250	750	3/4"	930 x 430	29	64
OWS.02550.00.00	150 / 270		2.550	42.000	1.500	3/4"	930 x 430 (x2)	58	128
OWS.00170.K0.00			170	2.830	100				
OWS.00510.K0.00			510	8.500	300				
OWS.01275.K0.00			1.275	21.250	750				
OWS.02550.K0.00			2.550	42.000	1.500				

• Notes: for special requirements please contact our technical department

ROTARY VANE AIR COMPRESSOR

Maintenance Periodic Table



NAILI

NAILI Co.,Ltd

ITEM	Every 50 Hours	Every 200 Hours	Every 500 Hours	Every 1000 Hours	Every 2000 Hours	Every 4000 Hours	Every 8000 Hours
Fastening Wire Terminals							
Check Oil Level							
Clean Cooler							
Clean Air Filter Core							
Tighten Oil & Gas Joints							
Clean Oil Return Filter							
Clean Oil Filter							
Running Oil Change (500 hours)							
Cleaning Thermostat Valve							
Check & Tighten Connection							
Clean Unloading Valve							
Greasing Motor							
Replace Air Filter							
Replace Oil Filter							
Clean Cooler							
Replace Special Lubricating Oil							
Replace Oil Return Filter							
Change Oil Separator Filter							
Change Elastic Coupling							

1- Clean the machine daily and keep the surface clean & tidy.

2- Make daily necessary records for air compressor operations.

3- Use original spare parts and lubricants, according to given user manual.

4- Dusty environment shorten the maintenance time.

5- After the first run of 500 hours, the oil must be replaced.

ROTARY VANE AIR COMPRESSOR

Operating Instruction of Rotary Vane Air Compressor

NAILI

NAILI Co.,Ltd

Inspection before start up:

01. Clean the surface of the machine.
02. Make sure the temperature of the air station is not below -1°C . Don't start up if the temperature below -1°C .
03. Check every pipe and turn on/off the valves, make sure the cooling water outlet system is smooth.
04. Check the oil level by means of the indicator and top up if necessary.
05. Solve the problem if the indicator light-on.
06. Maintenance operations should be prepared in time before maintenance cycle. NAILI lubricate oil and spare parts must be used for vane compressors.
07. Manually run the machine before normal running to make sure it run smoothly.
08. Read the <User Manual> from time to time, to be familiar with all matters relating to the normal operation and maintenance.

Start-up Process:

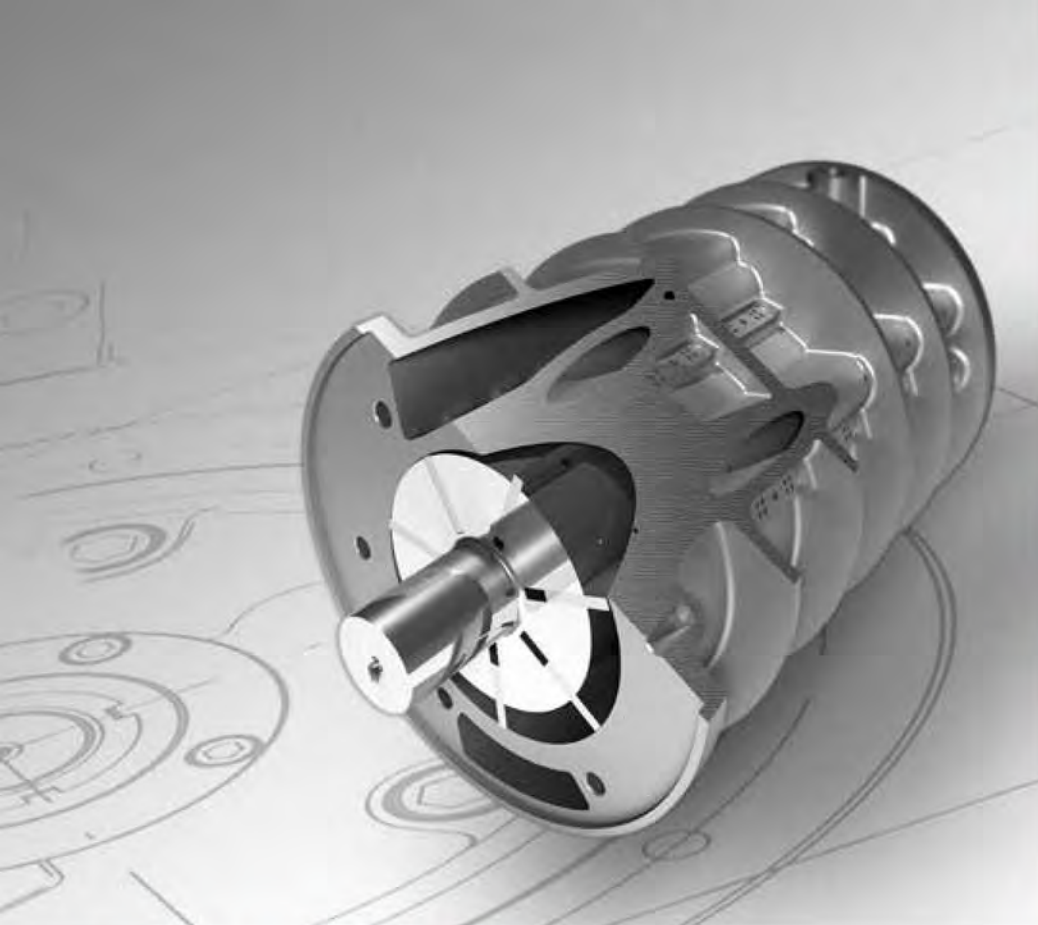
01. Check whether the current exist unresolved faults and exclude.
02. Make sure the parameters set up (upper pressure limit, lower pressure limit).
03. Close the air tank outlet valve.
04. After confirming the air compressor steering correct, Press the start button to start the air compressor.
05. When the pressure in the air tank reaches the set upper pressure limit, Check whether the air compressor has unloaded.
06. Connect the power of Cooled air dryer.
07. Three minutes later, open the air tank outlet valve, post-processing equipments and related valves.
08. Check the leakage at the air points, and need to repair and check before using.

Shutdown process:

- Making sure the air stopped supply at the entrance and relevant Valves closed.
Disconnect the power supply at cooled Air dryer.
Close valve at the entrance of Air tank.
Press the Stop bottom of Air compressor.
To release the compressed air in air tank to 2bar indicated on pressure gauge after compressor completely stopped.
Open the blow gun to release the compressed air in post processor and tubes, close the valve.
Open the exhausted valve at air tank to make cooled water out by inner pressure, close valve after they exhausted completely.
Off the input air switch and breaker of compressor and post process equipments.

Maintenance:

- Making sure compressor is shut down.
Making sure compressed air station has no inner pressure.
Making sure the temperature of all the parts inside of compressor as normal as surrounding.
Close the valve at entrance of compressor.
Disconnect the air switch and breaker in cabinet of compressor.
Maintaining according to "periodically maintaining form".
Check the sealing at the part of discharged.
Check all of the wire connection.
Check the oil level (full or not).
Operating after 30mins to stop the compressor and check the oil level after maintaining.



NAILI 

NAILI Co.,Ltd.

AIR COMPRESSORS

THE REAL ECONOMIC AND ENVIRONMENTAL IMPACT OF USING
THE CURRENT INDUSTRY STANDARD LIFE CYCLE COST ANALYSIS

THE ORIGINAL ROTARY VANE

ABSTRACT

Today's commonly accepted method of calculating Life Cycle Cost (LCC) for industrial Air Compressors is challenged due to the fact that assuming constant compressor efficiencies through the life of the compressor is incorrect. It is shown how, in a screw compressor, very small interlobe and axial clearance difference results in important performance losses and how these changes are well within the acceptable wear of the bearings used in the same compressors. It is also shown how in the Naili Rotary Vane Compressor, there is a short running-in period, lasting roughly 1000 hrs, in which improvements of up to 5% in performance have been measured both in house and by the third party tester TL PRO. Malaysia. With this data in hand, more realistic Life Cycle Cost calculations for Screw and Vane compressors are presented, highlighting how relying on Zero Hour CAGI verified performance sheets can be misleading for the end user. In the example provided, over a 10-year period with compressor overhaul, identical Zero Hour Specific Energy Compressor could end up having a difference in LCC of €168,000. It also demonstrates that adopting Zero Hour performance as a full life indicator of performance, when drafting new compressor industry legislations aimed at curbing the current global warming crisis, will put the expected energy consumption reduction targets at risk in this industry.

LIFE CYCLE COST AND INDUSTRIAL COMPRESSED AIR

Throughout industrial manufacturing, LCC is a well-recognised method to simulate the full cost of ownership for capital equipment. The calculation of the LCC for an industrial machine will vary from industry to industry, and in the Air Compressor Industry it is typically calculated by taking into consideration three major factors.

Capital Equipment Expenditure (Capex) – What is the cost of acquiring the equipment? If the LCC exercise is being run to compare two Air Compressors from competing brands, this will include only the compressor cost (as in this example). If the LCC exercise is being run to calculate full return on investment then installation and ancillary costs will also be taken into account here.

Ordinary Maintenance Costs – What is the cost of maintaining the equipment? The manufacturer declared costs of maintaining the equipment regularly with the use of consumables, including the labour cost involved in the maintenance.

Energetic Consumption Costs – What is the cost of running the equipment? A simulation of how much the Air Compressor will cost to run. This depends first and foremost on the performance of the compressor and is typically measured by the number of kW needed to compress 1 m³/min of air. This is known as the compressor's Specific Energy. The Specific Energy can then be multiplied by the Free Air Delivery, the Operating Hours and the local cost of electricity, to have a complete cost of running the compressor.

Whilst Capex is fixed, both Maintenance costs and running costs will vary depending on a couple of factors, such as yearly running hours and local energy costs. LCC simulations become more common the larger the installed power of the compressor, and the larger the installed power, the longer the running hours in a year.

As an example that we will be using throughout this paper, let's consider an industry standard:

INSTALLATION PARAMETERS	DATA	UNITS
Compressor FAD	15	m ³ /min
Specific Energy	6,0	kW/m ³ /min
Acquisition Cost	50.000	€
Maintenance Cost	4.000	€/Yr
Operating Hours	8000	hrs/Yr
Energy Cost	0,2	€/kWh

Table 1 – Example of a medium sized Air Compressor installation parameters for LCC simulation

In this example the LCC for the 5-year life of the compressor is calculated in the following way:

LCC COST CENTER	METHOD	COST	% COST
Capex	Cost of acquiring the equipment	€ 50.000	6%
Maintenance @5yrs	Yearly maintenance cost x5	€ 20.000	3%
Energy Costs	Spec. En. per total hours per FAD per energy cost	€ 720.000	91%
	Total LCC	€ 790.00	100%

Table 2 – Typical LCC of a medium sized Air Compressor installation

EXAMPLE COMPRESSOR LCC

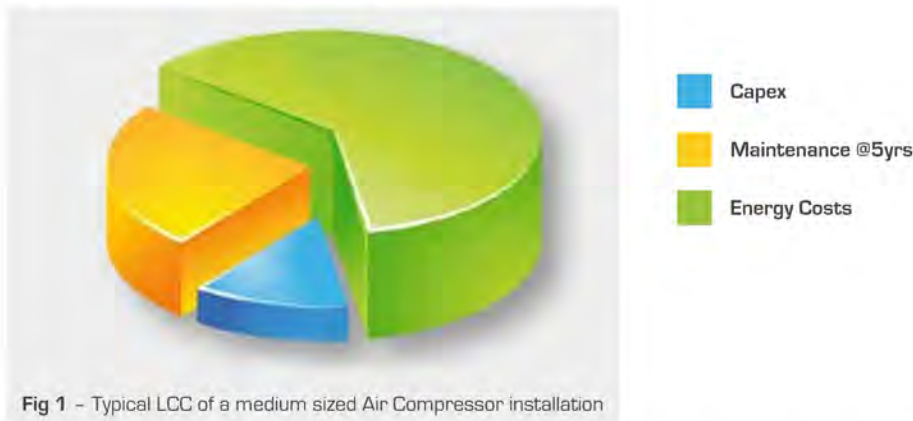


Fig 1 – Typical LCC of a medium sized Air Compressor installation

In this example the cost of running the compressor far outweighs the sum of the Capex and Maintenance costs, and makes up more than 90% of the overall LCC of this installation. The importance of the Specific Energy of a compressor has taken centre stage over the last decades due to these very high running costs. For this reason, many manufacturers have invested their R&D budgets to continually improve the performance of their products. Although the race to reduce the power consumption of air compressors has been typically driven by commercial aspects, nowadays, manufacturers of air compressors also have to face the fact that their products can directly affect the environment by means of their energy efficiency, and they must be held accountable for these performances.

AIR COMPRESSORS AND GLOBAL WARMING

Today, it is a widely accepted fact that global warming is currently the greatest threat to our Planet and the continued existence of Humanity. One independent study performed by the Intergovernmental Panel on Climate Change confirms that at the present greenhouse gas emission rate, a warming exceeding 4°C of the average global temperature by the end of the century is going to be unavoidable [1]. To the layman, this may not sound like much, until one considers that experts unanimously agree that a 2°C temperature increase is the limit to avoid irreversible damage to climate systems and to prevent the global socio-economic models from collapsing. On the 12th of December 2015, 195 nations approved a landmark climate accord in Paris, committing to addressing, with aggressive measures, the global warming crisis. Although the Paris Agreement is certainly a historic one, it will not, on its own, solve global warming. The best case scenario is that it will cut global greenhouse gas emissions by about half of what is necessary to avoid an increase in global temperatures of 2°C [2].

A major contributor to the greenhouse gas emissions scenario, and therefore the global warming emergency, is global electricity consumption. A detailed representation of the electricity consumption by sector is shown in [Fig 2].

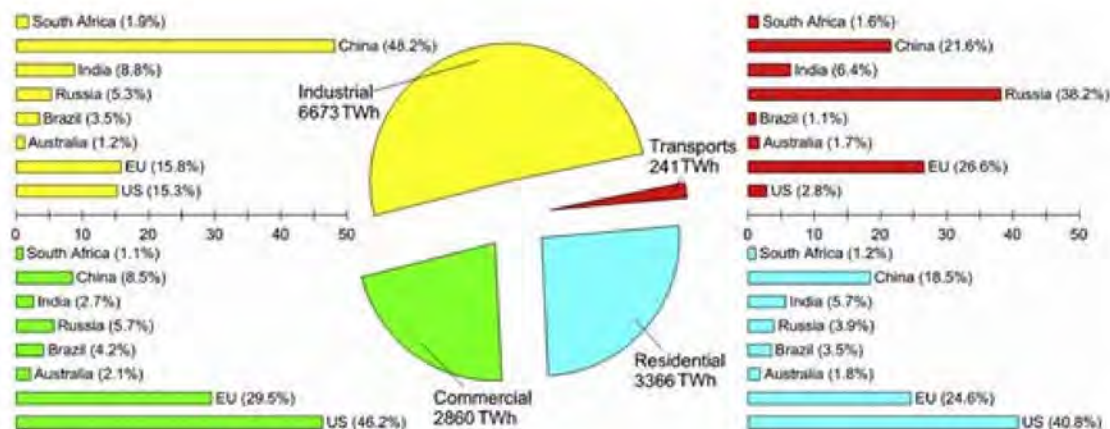


Fig. 2 – Electricity by sectors [year: 2013] [3]

The industrial sector accounts for more than 50% of the global electricity consumption and of this, up to 20% [i.e. 1335 TWh/y] is due to air compression and delivery to final uses [4]. Considering that the current global Rotary Air Compressor market is estimated to be worth USD 16 Billion and is expected to grow at a CAGR of 3.6% over the next 7 years, it is clear why energy saving or energy recovery in industrial Compressed Air Systems is considered an important issue when developing a plan to reduce greenhouse gas emissions and curb global temperature rises.

This subject has become of great importance since the Ecodesign Directive 2009/125/EC, having identified the product group “Compressors driven by electric motors” as a priority group in the first iteration of the Ecodesign Working Plan (period 2009-2011), required the European Commission to present a study on Air Compressors and possible measures to improve their impact on the environment [Lot 31]. The study is on-going and will most probably result in new legislation removing a large swathe of air compressors with poor Specific Energies from the global markets.

Although most of the major players in the industry have been successful in significantly reducing their Specific Energy over the last few decades, the typical calculation and comparison method that is used today as an industry standard to simulate lifetime energy consumption (and therefore Life Cycle Cost) of an industrial air compressor is intrinsically flawed, and this will be the focus of this article.

TYPICAL COMPRESSOR LIFE CYCLE COST EVALUATION

Currently a potential client, who is interested in buying an industrial air compressor, will typically ask the manufacturer for the compressor's technical data sheet to estimate the Life Cycle Cost of his investment over the next 5-10 year period. In the USA, the Compressed Air and Gases Institute (CAGI) has set up a consumer friendly portal from which one can download technical data sheets regarding air compressors of various global manufacturers. Any data published on the CAGI website has been independently verified and approved by a third party tester, TL PRO, Malaysia, which will have tested the compressor under the current guidelines regulating air compressor performance evaluation defined in the International Standard ISO 1217.

As there tends to be scepticism around much of the published performance data of many global compressor manufacturers, the CAGI Datasheets have become recognised as the most precise and impartial way to calculate Life Cycle Costs in the industry, and in doing this CAGI has provided a valuable tool to protect end users.

Using the same principles as shown in Table 1 and extending the example to compare two Air Compressors with slightly different Capex and Maintenance costs but identical CAGI verified Specific Energies, would result in the following LCC simulations:

Installation Parameters	Data	Units
Compressor FAD	15	m ³ /min
Operating hours	8000	hrs/Yr
Energy cost	0,2	€/kWh

Compressor 1			Compressor 2		
Specific energy - CAGI	6,0	kW/m ³ /min	Specific energy - CAGI	6,0	kW/m ³ /min
Acquisition cost	50.000	€	Acquisition cost	55.000	€
Maintenance cost	4.000	€/Yr	Maintenance cost	4.800	€/Yr

LCC Cost center	Cost
Capex	€ 50.000
Maintenance @5yrs	€ 20.000
Energy costs	€ 720.000
Total LCC	€ 790.000

LCC Cost center	Cost
Capex	€ 55.000
Maintenance @5yrs	€ 24.000
Energy costs	€ 720.000
Total LCC	€ 799.000

Table 3 – Using typical LCC Simulation on two Compressors with identical CAGI verified Specific Energies but different Capex and Maintenance Costs.

In the above example, Compressor 2 costs 10% more in Capex and 20% more in Maintenance Costs than Compressor 1, but at identical CAGI verified Specific Energies, the resulting difference in LCC is only € 9,000 out of total of € 790,000 or 1,1%. The potential end user now believes that he has all the necessary data to make an informed decision on which Compressor to buy and install in his plant. Unfortunately this method relies on one key assumption that is fundamentally incorrect and can therefore result in potentially misleading end users in their decision making process.

The assumption is the following:

Air Compressor Specific Energy is constant over time.

This assumption cannot be applied either to Screw Compressors or Vane Compressors, for two very different reasons.

SCREW COMPRESSOR

To understand why the above assumption does not apply to screw compressors one has to examine the engineering principle. Rotary screw compressor design consists of a pair of meshing helical lobed rotors. The rotor shafts are supported by roller and thrust bearings and generally one rotor drives the other by means of the helical profiles.

During rotation the screw profiles uncover an intake orifice at one end of the stator, through which the air enters and fills the volume between the profiles. On the opposite side the profiles penetrate each other, thereby reducing the volume, which compresses the air until the delivery ports are uncovered. Lubricant is injected to seal, lubricate and cool the compressed air. The lubricant is subsequently removed in the reclaiming tank followed by a final coalescing element. The compressor is started and stopped through the system pressure switch set to the maximum and minimum settings [Fig 3], [Fig 4].

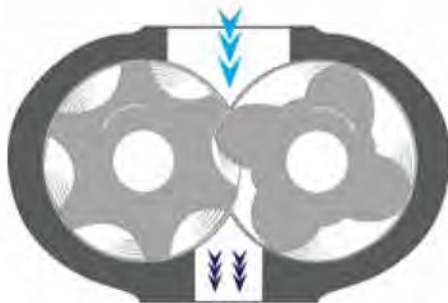


Fig. 3 - The rotors are fitted in a stator made from two cylinders that intersect longitudinally and in which the rotors turn with a minimum clearance.



Fig. 4 - The intake and outlet ports are set at opposite ends of the compressor in the axial direction, giving rise to an unbalanced pressure profile along the compressor length

LEAKAGE PATHS AND CLEARANCES

To understand the important key role of clearances in a Screw compressor one must first have a clear picture of all the possible leakage paths. A cross section of a typical screw compressor, in which the leakage flow paths through the clearances are indicated, is shown in [Fig 5].

Of great importance for machine performance are both the clearance gap between the rotors [interlobe clearance], and the end clearance on the high pressure side [axial clearance]. These leakage paths are connecting the high and low pressure working chambers, therefore the potential leakage is very high. The remaining leakage paths shown in [Fig 5], involve smaller pressure differentials, and therefore are of lesser importance. The size of the radial and interlobe clearances is determined by the size and tolerances of the main compressor parts. The axial clearance is, however, set during the machine assembly [5].

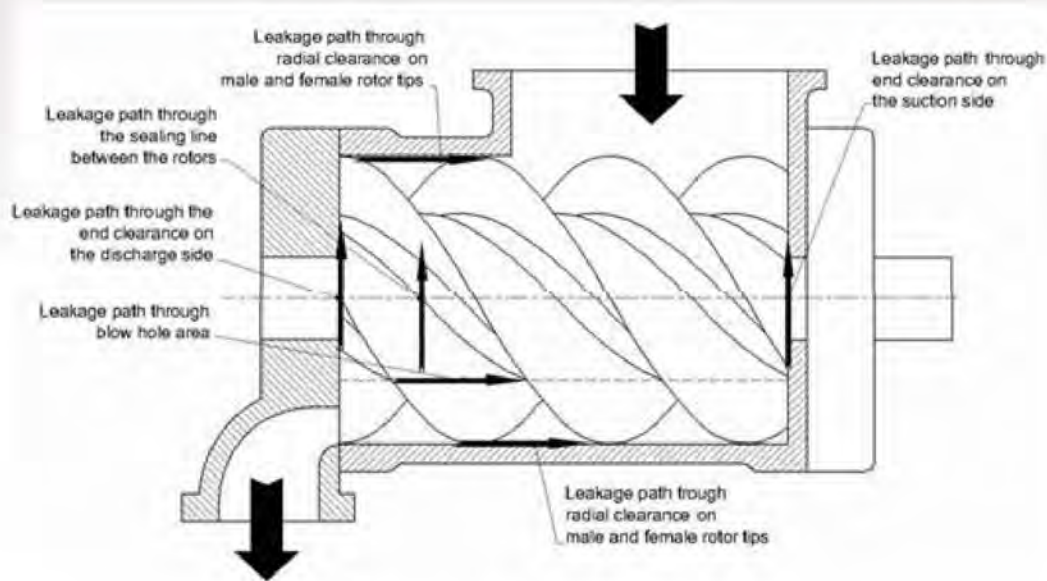


Fig. 5 - Leakage pathways in a screw compressor

Therefore, since the performance of screw compressors is highly affected by leakage, any modifications of the clearances within them must have an important effect on their efficiency [6].

INTERLOBE CLEARANCE AND ITS EFFECT ON SCREW COMPRESSOR PERFORMANCE

Today modern rotor machining centres have been shown to maintain extreme tolerances of up to $3\mu\text{m}$. This means that, as far as rotor production alone is concerned, clearances between the rotors can be as small as $12\mu\text{m}$ [7] (as a frame of reference the average width of a human hair is $70\mu\text{m}$).

Although this allows the reduction of the interlobe clearance and, as a consequence, improves the volumetric efficiency of the compressor, the clearances are now so small and actually comparable to the rolling element bearing clearances that they can in fact interfere in the reliable and efficient performance of the compressors.

The effect of clearance size and distribution has been studied thoroughly, highlighting the importance of these very small clearances. **It was shown that displacing the discharge bearings by only $50\mu\text{m}$ resulted in an important change in the specific energy of the compressor being examined of 2.5% (@1500rpm and 9 bar discharge pressure) [6]. It was also shown that increasing interlobe clearance by 31.5%, for example from $15\mu\text{m}$ to $20\mu\text{m}$, led to a measured loss of volumetric flow of 1.7% [8].**

AXIAL CLEARANCE AND ITS EFFECT ON SCREW COMPRESSOR PERFORMANCE

Whilst the dimensions of the radial and interlobe clearances are determined by the size and tolerances of the main compressor parts and by the positioning of these relative to the roller bearing clearances, the axial clearance is set during the machine assembly.

Due to its geometry, the pressurised air in a screw compressor produces an axial thrust making the rotors reduce the side clearance at the intake side and increase the clearance at the delivery side, where sealing is most critical. The manufacturers take this into account and offset their low pressure and high pressure axial clearances accordingly. These values may vary depending on size and manufacturer but can be considered in the 25µm to 50µm High Pressure discharge clearance, to 100µm to 150µm, low pressure suction clearance.

The side thrust is borne by thrust bearings, preventing the rotors from touching the surface of the end cover. Correct sealing is therefore achieved due to the quality and resistance of the thrust bearings.

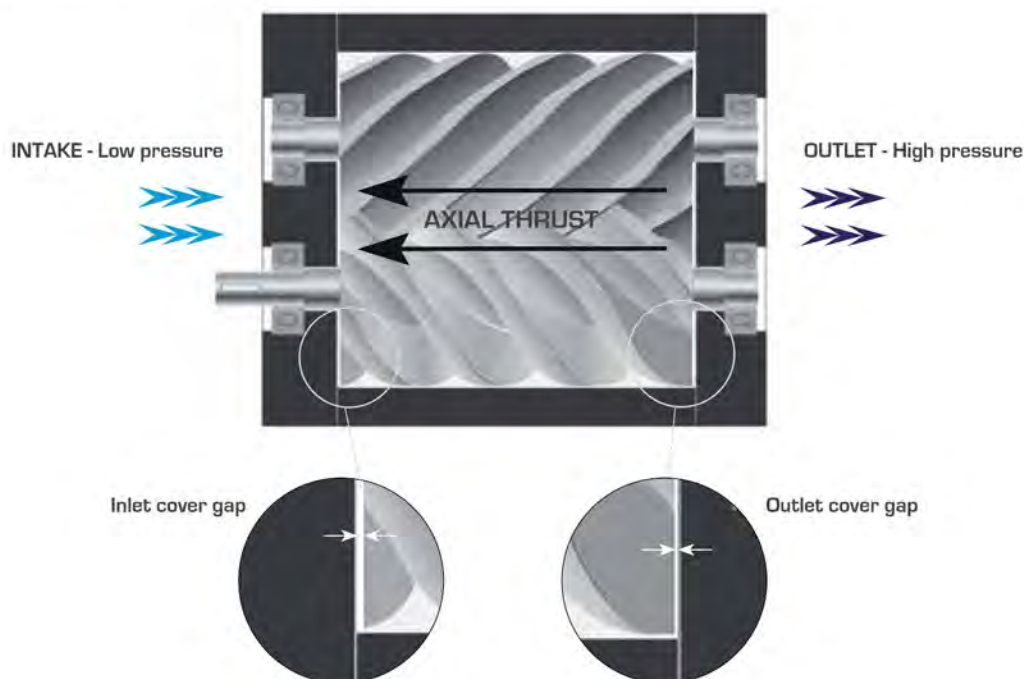


Fig. 6 - The pressurised air produces axial thrust, which reduces the clearance at the intake side and increases the clearance at the delivery side where sealing is most critical

In an oil-free screw compressor a fluctuation of 35µm on the discharge end clearance gave rise to a 22% increase in specific energy [5]. In the case of an oil-flooded screw compressor one expects the resulting effect on the specific energy to be less significant but it is nonetheless obvious there is a very strong correlation between these clearance values and the overall compressor performance.

SCREW COMPRESSOR AT ZERO HOUR

Off the manufacturing assembly line the Screw compressor interlobe and axial clearances will be precise and within the manufacturers guidelines to allow the specified compressor performance: this is clear from the fact that, at Zero Hours, there are a few major Screw compressor manufacturers whose CAGI-verified data is among the best on the market.

But what happens to these important clearances when the Screw Compressor starts running?

It is a well-known fact that both roller bearings and thrust bearings are subject to wear, and their wear rate is subject to both speed and load [9], and although manufacturers may decide to use different types and sizes of bearing, they will all advise a full air-end overhaul at a specific number of hours. This overhaul consists of substituting all major rolling and thrust elements, returning the compressor to a "safe" running condition, and avoiding any catastrophic air-end failure. Most manufacturers advise a major overhaul between 40 and 50 thousand hours of operation.

To put this bearing wear into context: in the axial direction it is acceptable to consider a 50 μ m wear on a thrust bearing as a point of no return, with catastrophic failure occurring at any point between 50 μ m and 200 μ m.

In the radial direction, bearing wear anywhere above the original manufacturers rotor clearance (12 μ m -25 μ m) will lead to catastrophic failure. In both of these cases it has been shown that the change in these clearances leads to very significant losses in performance, therefore is it essential to understand that Screw compressor performance cannot be considered constant in time.

Although, interestingly, it is hard to find academic literature that studies this phenomenon, the real-world scenarios in which energy audit companies measure flow and power drawn on old, pre-overhaul, screw compressors are many and well documented. In one case [10] out of 27 refrigeration screw compressors tested of varying ages up to 10 years old, the average performance degradation level measured was 30%, with the worst compressors performing at 55% degradation level.

Obviously one can only assume that these are extreme cases and bearing choices in today's Screw compressors have improved drastically. **Nonetheless, it is impossible to claim that there is no performance degradation in a screw compressor due to the basic nature of bearings and of the engineering principles involved in Screw Compressors.**

ROTARY VANE COMPRESSOR PRINCIPLE

Also when considering the Rotary Vane compressors, the Zero Hour Specific Energy does not remain constant over time. Once again to explain this one has to examine the engineering principles.

The assembly consists of a single offset rotor rotating within a cylindrical stator. The compression element is sealed with two end covers that house two white metal bushings. The rotor has machined longitudinal slots, into which fit free sliding blades or vanes. The rotor is generally directly driven usually between 1000 and 1500 rpm (50Hz) causing the blades to make sealed contact with the stator wall thereby forming compression pockets. Air is drawn in, along the length of the stator at the point of greatest volume, becomes trapped in the pocket and the volume reduced (pressure increased) through one rotation. At the point of smallest volume air is discharged from the compression element (maximum pressure setting). Internally generated air pressure is used as the lubricant pump.

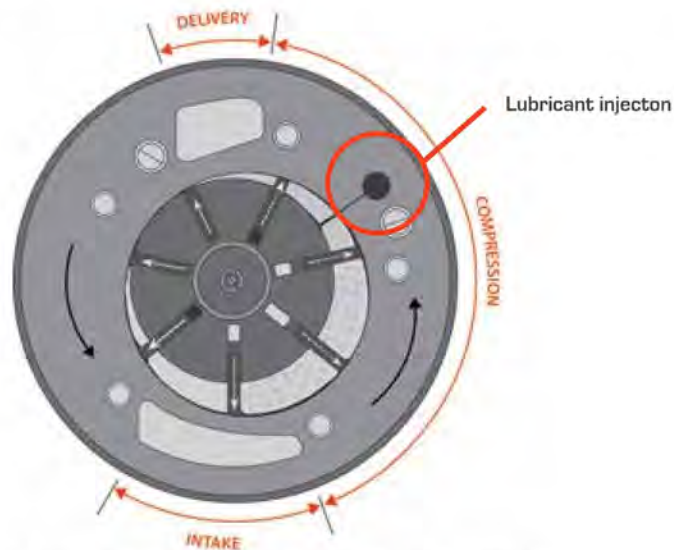


Fig. 7 - The lubricant injected into the stator lubricates the moving parts and absorbs the heat of compression. All operational clearances (ends of rotor and blade tips) are completely sealed with the lubricant preventing high to low pressure leakage

LEAKAGE PATHS AND CLEARANCES

In vane compressors the vanes are always in contact with the lubricant film on the internal surface of the stator. This keeps the two metal surfaces apart and seals between adjacent cells. A lubricant wedge exists at the leading edge of the sliding vane. The precisely machined vane tip radius, adhesion of lubricant to the sliding element and the supporting surface (the stator) increases the lubricant pressure and creates a hydrodynamic lubrication film between the two surfaces. The viscosity increase that occurs in the lubricant, when extremely high pressure is applied, allows the lubricant to avoid being squeezed out from in between the surfaces, maintaining a constant film in time. The lubricant also behaves as a perfect seal [Fig 8].

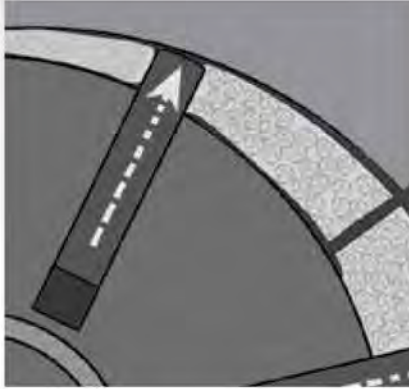


Fig. 8 - The vanes move freely in the rotor slots and always seal against the stator wall. Performance does not deteriorate even after many tens of thousands of operating hours

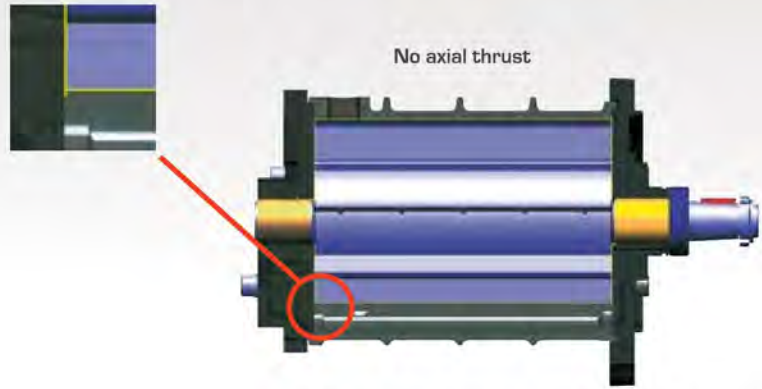


Fig. 9 - There is no axial thrust in a rotary vane compressor. The rotor is free to move axially and is kept equally spaced from the end covers by means of the lubricant, which is injected under pressure. The injected lubricant prevents the air from escaping along the side planes

Another potential leakage path is via the compressor end covers. The vane compressor has no axial thrust pushing the rotor against either end cover. It is, therefore, unnecessary to control its axial position by means of thrust bearings. The axial clearance is set during the machine assembly. As the rotor is free to move axially, it is kept equally spaced from both the end covers by means of the lubricant which is injected, under pressure, through dedicated injection ports in the end covers, thus preventing contact and providing efficient sealing [Fig 9].

As there are no wearing roller and thrust bearings inside a Rotary Vane compressor, the manufacturing set clearances are constant throughout the lifetime of the compressor. The benefit is two-fold, first there will never be any loss in volumetric efficiency over time, and second the compressor will never require an overhaul to substitute the worn bearings allowing Naili to extend their compression unit (airend) warranty to 10 years with unlimited hours.

Having shown that volumetric efficiency does not change over time, why then is the aforementioned assumption incorrect also for Rotary Vane compressors?

BLADE POLISHING AND THE FIRST 1000 HOURS

From the moment you turn on a rotary vane compressor to about the 1000-hour mark, the blades undergo a polishing process on their sides. Although Naili finishes the blade sides to a very precise tolerance, the first 1000 hours of running allow a complete and unique polishing between the slot and the blade sides. In tribological terms, the polishing removes the asperities on both contacting surfaces, and since these are made of complementary materials this initiates a microscopic material transfer that will last for the full lifetime of the compressor.

This is not to be confused with wear, in which one of the two rubbing surfaces loses material at a constant rate whilst the other is not affected, as this would result in catastrophic failure after very few running hours. **Instead, the special materials used in the manufacturing of the Naili Rotary Vane compressor ensure that the original blades never need to be substituted and last well over the 10-year warranty mark.**

This polishing effect has a significant positive impact on the power lost to friction and, consequentially, on the power drawn from the compressor. This effect had been known to operators in the rotary vane industry for many years but it had not been independently and scientifically tested...until now!

In 2016, Naili ran two parallel, long-term, tests. The first on a "50Hz Naili - AB75" model in the recently completed, state of the art R&D testing facility in Naili HQ, and a second on a "50Hz Naili - AB55" at "TL PRO." HQ in Malaysia. "TL PRO." is the same institute that runs all the compressor verification tests for CAGI in the USA.

In both cases, compressor performance was taken at Zero Hours and data was then collected every 100hrs of operation. The results were outstanding to say the least. In both cases a significant and measurable decrease in power drawn at a constant Free Air Delivery was achieved, resulting in significant improvements in Specific Energy level.

Model	Frequency	Tester	Specific Energy Change
Naili - AB75	50 Hz	Naili R&D	-5%
Naili - AB55	60 Hz	TL PRO.	-4%

Table 4 – Two separate long tests performed under controlled conditions, proving Specific Energy improvement over time for Naili Rotary Vane Compressors

Therefore it is clear that, when considering a Rotary Vane Compressor, the CAGI verified Zero Hour Specific Energy is not to be mistaken for the Lifetime Specific Energy.

NEW LIFECYCLE COST ANALYSIS

With the data discussed above one can proceed to paint a more realistic scenario when simulating a compressor Life Cycle Cost.

Returning to the Example examined earlier, although the Vane Compressor and the Screw Compressor have identical CAGI Zero Hour Specific Energy, we can now proceed to include the performance deterioration for the screw and the performance improvement for the Vane in the LCC calculations.

It is important to underline that different Screw Compressor manufacturers choose to use a variety of different bearings in their machines. For this reason one cannot arbitrarily choose one deterioration rate for all Screw Compressors. **On the other hand it has been shown, through scientific research, that all it takes is bearing wear equivalent to one fourteenth of the width of a human hair [5µm] to lose nearly 2% in volumetric performance in a Screw Compressor.** Therefore we will run the New LCC calculations with -2%, -5% and -10% screw performance deterioration over the 5-year lifetime of the compressor (before the required overhaul) in an attempt to encompass most Screw Compressor manufacturers bearing choices.

Considering identical Capex and Maintenance costs, and selecting two 75kW compressors of identical CAGI data sheet Zero Hours Specific Energy, one could represent the specific energy over time in the following manner.

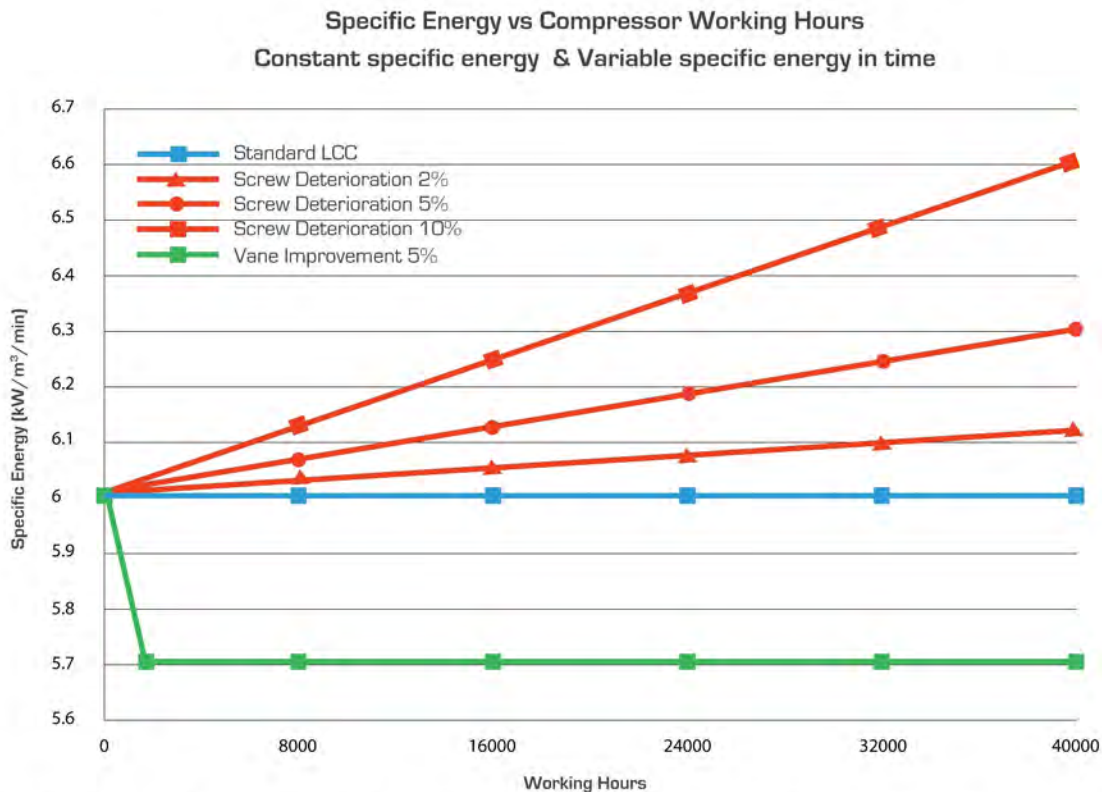


Fig. 10 – Changes in Specific energy over Compressor Working hours for various screw performance degradations over 5 years

Applying the New LCC considerations to the sample compressor installation from Table 1, the following results are obtained:

	Vane New LCC	Vane Standard LCC	Screw Standard LCC	Screw New LCC -2%	Screw New LCC -5%	Screw New LCC -10%
	Improvement +5% @1000 hrs	Constant Spec. En. in time	Constant Spec. En. in time	Deterioration -2% @4000 hrs	Deterioration -5% @4000 hrs	Deterioration -10% @4000 hrs
Capex	€ 50.000	€ 50.000	€ 50.000	€ 50.000	€ 50.000	€ 50.000
Maintenance @5yrs	€ 20.000	€ 20.000	€ 20.000	€ 20.000	€ 20.000	€ 20.000
Energy costs	€ 684.450	€ 720.000	€ 720.000	€ 727.258	€ 738.00	€ 756.000
Total LCC	€ 754.450	€ 790.000	€ 790.000	€ 797.258	€ 808.000	€ 826.000
Difference on Vane New LCC	€ -	€ 35.550,00	€ 35.550,00	€ 42.807,83	€ 53.550,07	€ 71.550,06

Table 5 - 5 year Life Cycle Cost comparison between the Standard calculations, with Constant Specific Energy and the New calculations with Variable specific Energy

Standard LCC vs New LCC

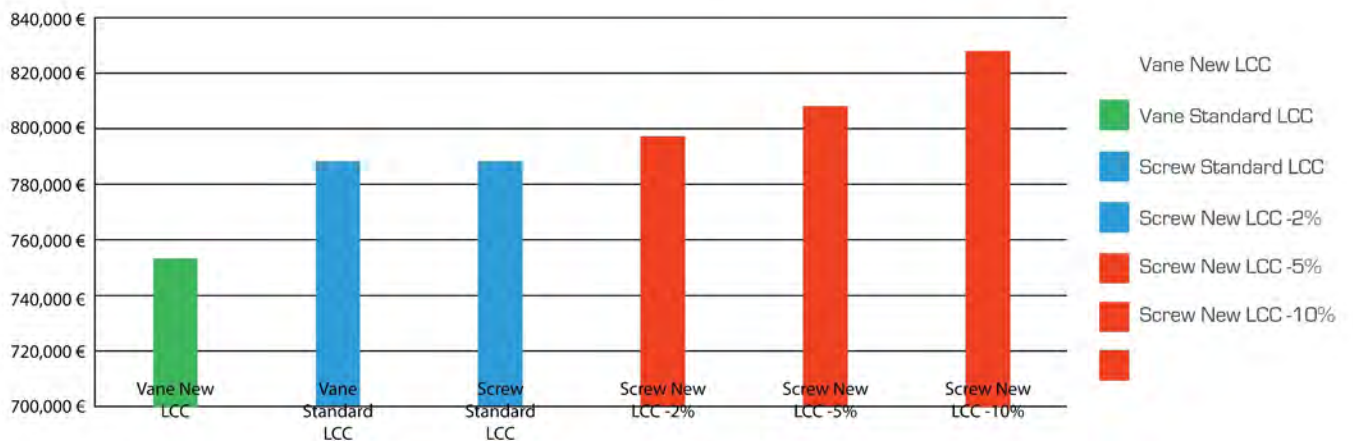


Fig. 11 - Graphical representation of data in Table 5

Extending the LCC calculation to a 10-year period, one has to consider the costs of the Screw Compressor complete overhaul to return the air end to its original condition and avoid bearing failure. In this example the industry standard cost of the original manufacturer overhaul of 50% of Capex is used. **For the Rotary Vane there is no overhaul cost over the lifetime of the compressor and this is evident by the 10 year air end warranty that Naili applies to its compressors.** In this example the overhaul cost for the Vane compressor is equivalent to zero.

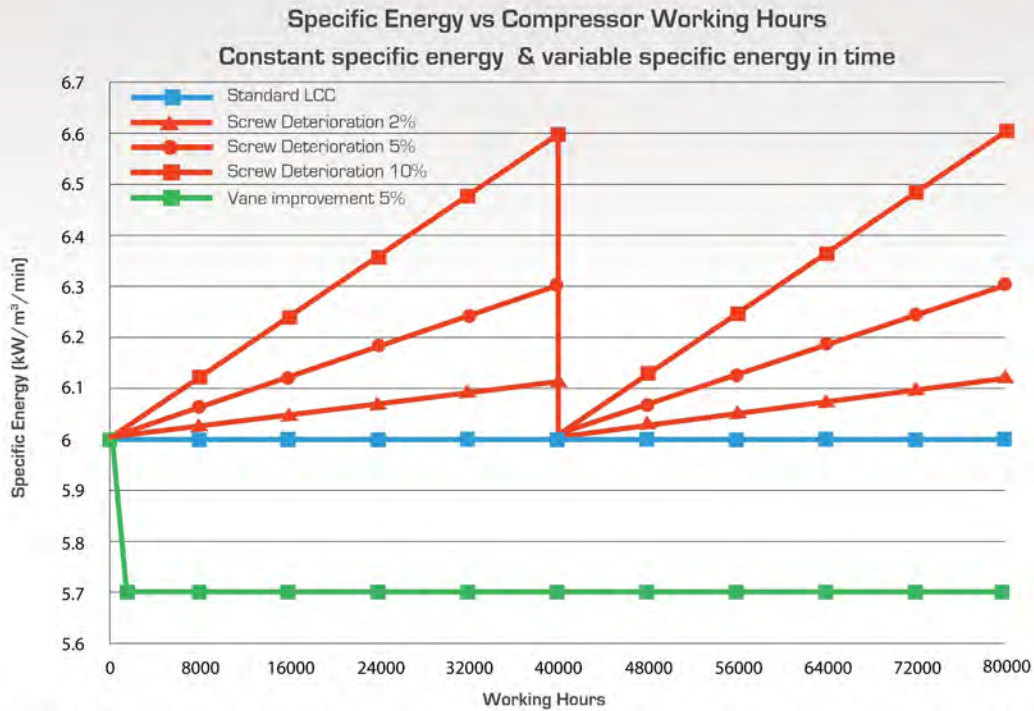


Fig. 12 - Changes in Specific energy over Compressor Working hours for various screw performance degradations over ten years with Compressor Overhaul at 40k hrs

	Vane New LCC Improvement +5%@1000hrs	Vane Standard LCC Constant Spec. En. in time	Screw Standard LCC Constant Spec. En. in time	Screw New LCC -2% Deterioration -2%@4000hrs	Screw New LCC -5% Deterioration -5%@4000hrs	Screw New LCC -10% Deterioration -10%@4000hrs
Capex	€ 50.000	€ 50.000	€ 50.000	€ 50.000	€ 50.000	€ 50.000
Maintenance @10yrs	€ 40.000	€ 40.000	€ 40.000	€ 40.000	€ 40.000	€ 40.000
40k hr Overhaul	€ -	€ -	€ 25.000	€ 25.000	€ 25.000	€ 25.000
Energy costs	€ 1.368.450	€ 1.440.000	€ 1.440.000	€ 1.454.516	€ 1.476.000	€ 1.512.000
Total LCC	€ 1.458.450	€ 1.530.000	€ 1.555.000	€ 1.569.516	€ 1.591.000	€ 1.627.000
Difference on vane new LCC	€ -	€ 71.550,00	€ 96.550,00	€ 111.065,66	€ 132.550,14	€ 168.550,12

Table 6 - 10 year Life Cycle Cost comparison between the Standard calculations, with Constant Specific Energy and the New calculations with Variable specific Energy.

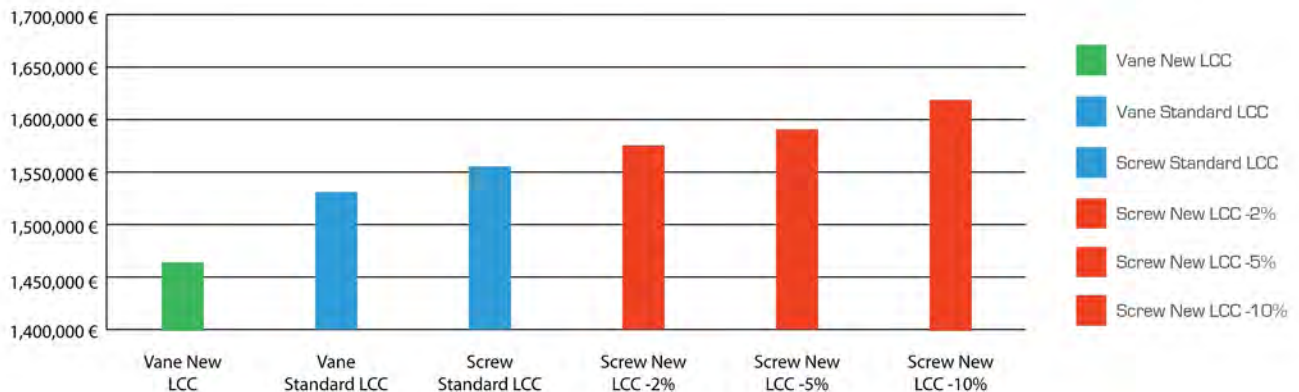


Fig. 13 - Graphical representation of data in Table 5

CONCLUSION

The New Life Cycle Costing method proposed takes into consideration both the improvement in the performance of the Rotary Vane compressor, and the loss of performance of the Screw Compressor over time. It is evident that there is an important difference in energy cost simulations when applying the New LCC method, as opposed to the industry recognised standard LCC method. **In the case of a 10% Screw performance degradation, over a ten-year period with overhaul, the client could spend €168,000 or 12% more (over 3 times the original Capex cost) by selecting a Screw over a Vane even though these have identical CAGI verified Zero Hours Compressor Performances.** This issue has to be addressed, especially in view of the fact that Zero Hour Compressor Performance data is now being used to draft new legislation to help curb the current global warming crisis. If such important information is not considered, the beneficial effect expected on lowering the energy consumed by Industrial Air Compression by the new legislation is at serious risk of not being reached.

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Rotary Vane vs. Rotary Screw Compressors

What's the Difference?

Although rotary vane and rotary screw compressors were developed at similar times and are designed to perform the same function, the two technologies differ greatly. Continue reading to learn how the two types of compressors compare in terms of efficiency, longevity & maintenance.

What is a Rotary Vane Compressor?

A rotary vane compressor is a volumetric rotary compressor, consisting of a rotor (with longitudinal slots in which the vanes slide) rotating within a stator (or cylinder). The rotor is offset in the stator so that when it turns on its axis, the vanes are pushed against the stator by centrifugal force.



Compression



Intake

What is a Rotary Screw Compressor?

The screw compressor is a volumetric rotary compressor composed of two parallel rotors with external helical profiles (screws) which enables the two rotors to engage, one into the other. The two rotors are fitted in a stator made from two cylinders which intersect longitudinally and in which the rotors turn with a critical minimum clearance.



VS

There is a volume between the adjacent vanes. During rotation, this volume passes from a maximum value, corresponding with the maximum exit of the vanes, to a minimum value, at which point the stator becomes tangential with the rotor and vice versa. The volume increases during air intake and progressively decreases during the compression stage, until the delivery ports are covered by the vanes.

How Do They Match Up?

Rotary Vane



Rotary vane compressors are volumetrically more efficient because they have minimal internal air leakage. The vanes move freely in their slots, but are always in contact with the internal surface of the stator, so the air seal is near-perfect.

The design of Naili's vane compressors ensures the correct operating temperature is quickly and effectively reached, thereby extending operating life by preventing condensation from forming in the system.

Rotary Screw



System Design

Many design qualities of a rotary screw compressor are detrimental to its operating efficiency and service life. Roller or taper bearings are required in a screw compressor because the rotors must operate at high speeds with high axial accuracy and minimal clearances between the rotors, housing and end plates. If the two screws touch or make contact with the stator, the compressor will seize. Additionally, oil is used to seal, cool and compress the air which results in blow-hole losses and declining efficiencies outside of the ideal speed range.