

# PM VSD

## Rotary Screw Air Compressors

Installed motor power 5.5 - 250 kW/7.5 - 350 hp

Free air delivery from 0.23 to 56.48 m<sup>3</sup>/min, Pressure 7.5 - 13 bar



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P01

P05



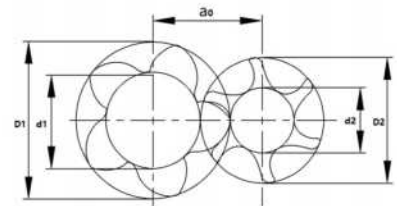
# PM VSD Screw Air Compressor (5.5-75 kW)

## Features and advantages



## 01 Air End Design Analysis

- Profile design patent: ZL201720301123.8
- Design pressure: 5-13 bar
- Volume efficiency:  $\geq 95\%$
- Transmission ratio: 1:1
- Noise level: lower
- Sweden SKF bearing
- Power consumption: ultra-low
- Rotor diameter and center distance: large
- Max. operating temperature: 110 °C continuous running
- Profile design: the third generation  $\alpha$  model asymmetrical 5:6 tooth. Best energy efficiency



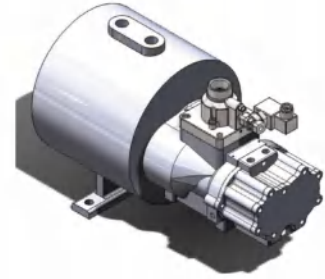
## 02 Control Module

- RS485 communication mode transmission control signal
- Intelligent PID flow adjustment mode
- Closed-loop control, with ideal dynamic characteristics and control accuracy
- Accurately control the torque
- Fast response speed
- Constant pressure control to avoid excess energy loss



## 03 High Efficiency Permanent Magnetic Motor

- Cooling method: oil cooling/air cooling
- No bearing design, 100% transmission efficiency
- UH series magnets, can withstand temperature up to 180 °C
- Up to 5 years durability test, 40,000 hours of durable operation without failure
- Appearance design patent: ZL 201330085626.3
- IP65, F class insulation, B grade temperature rise
- PM motor cooling structure design patent :ZL201320216379.0
- Perfectly linear output torque, low speed still retains high torque output



## 04 Inverter

- High utilization rate, removable panel, switch using, memory function
- Protection: can realize phase loss, phase-to-phase short circuit, short-circuit to ground, over-current, over-voltage, under-voltage, overload, over-heat, motor thermal protection circuit board, reinforced coating, dust and corrosion protection
- Independent cooling design, suspended installation, dust proof, corrosion proof, small heat, powerful overload and unique current limiting technology
- Proprietary and efficient control procedures
- Ultra-wide frequency design, wider control range



## 05 Cooling Fan

- Low noise
- Big capacity
- Maintenance free



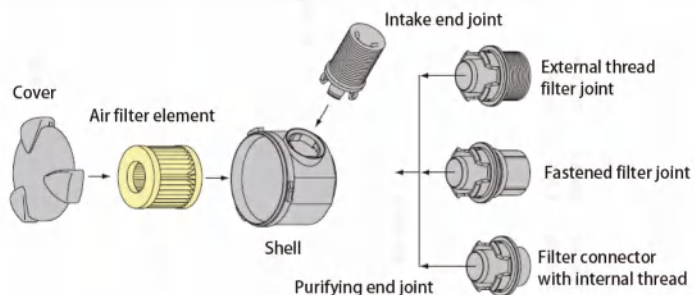
## 06 Air Inlet Valve

- Patent design: ZL201720513212.9
- High vacuum degree: 700mmHg
- Large suction area
- Low load energy consumption in unloaded operation
- Fast check: prevent unloading and shutdown oil injection
- The solenoid valve adopts the Italy ODE brand
- Valve seal adopts fluoro rubber
- Integrated design, failure and low maintenance rate
- Cast aluminum to avoid rust and temperature change



## 07 Moulded Air Filter

- Patent: ZL201720513111.1
- Picolino module system
- Less pressure drop
- Multi-stage seal design
- High-tech, good flexibility, good resilience (polyurethane foam)
- Performance well along with the temperature changes
- Precision fit of filter element size and air filter assembly



## 08 Oil Filter

- Patent: ZL201520816110.5
- Seal material: PTFE
- Working pressure up to 20 bar
- Element material: German resin wood fiber
- Working temperature can withstand 120 °C
- Separation efficiency: 50% impurity separation at 10 µm and 99% impurity separation at 30 µm



## 09 Oil Gas Separator

- Patent: ZL201720512855.1
- Maximum working pressure can reach 20 bar
- Service life: 4,000Hr
- Maximum withstand pressure drop: 1.2 bar
- Efficient separation, oil content less than 3ppm
- External oil separator design, maintenance time is only take 2min



## 10 Stainless Steel Pipe

- Maintenance free
- 100 years service life
- Excellent corrosion resistance
- Excellent mechanical properties, superior wear resistance
- Wide range of use, long service life and low overall cost
- Can work safely for a long time at a temperature of -270°C-400°C. The material properties are quite stable.
- 304 stainless steel has a tensile strength of more than 530 N/mm, which is twice stronger of galvanized pipe, 3-4 times stronger of copper pipe, 8-10 times stronger of PPR pipe, and it has good ductility and toughness



## 11 Oil Gas Tank

- Air line and oil line are separated.
- Excellent separation effect, less than 3ppm of oil content.



# Technical Parameters

Model	Working Pressure		Capacity FAD*		Power		IP Grade	Noise Level**	Dimensions (mm)			Weight (kg)	Air Outlet Pipe Diameter	Driving Mode & Cooling Method	EEI
	(barg)	(psig)	(m <sup>3</sup> /min)	(cfm)	(kW)	(hp)			(L)	(W)	(H)				
DAV-5	7.5	109	0.45-1.00	15.89-35.31	5.5	7.5	IP65	72	900	600	860	315	G3/4"	Direct Driven Air Cooling	EEI1
	8.5	123	0.44-0.95	15.54-33.54											
	10.5	152	0.38-0.76	13.42-26.76											
DAV-7	7.5	109	0.59-1.30	20.83-45.90	7.5	10	IP65	72	900	600	860	315	G3/4"		
	8.5	123	0.58-1.20	20.48-42.37											
	10.5	152	0.51-0.98	18.01-34.60											
DAV-11	7.5	109	0.90-2.16	31.78-76.27	11	15	IP65	72	1050	650	900	410	G3/4"		
	8.5	123	0.89-1.94	31.43-68.50											
	10.5	152	0.81-1.67	28.60-58.97											
	13.0	189	0.68-1.13	24.01-39.90											
DAV-15	7.5	109	1.22-2.73	43.08-96.40	15	20	IP65	75	1100	650	920	453	G1-1/4"		
	8.5	123	1.18-2.48	41.67-87.57											
	10.5	152	1.05-2.24	37.08-79.09											
	13.0	189	0.96-1.80	33.90-63.56											
DAV-18	7.5	109	1.55-3.38	54.73-119.35	18.5	25	IP65	75	1300	800	1050	453	G1-1/4"		
	8.5	123	1.51-3.27	53.32-115.46											
	10.5	152	1.34-2.95	47.32-104.16											
	13.0	189	1.08-2.57	38.13-90.75											
DAV-22	7.5	109	1.82-3.95	64.30-139.47	22	30	IP65	75	1300	800	1050	510	G1-1/4"		
	8.5	123	1.81-3.84	63.93-135.59											
	10.5	152	1.67-3.39	59.10-119.70											
	13.0	189	1.32-3.00	46.46-105.93											
DAV-30	7.5	109	2.63-5.51	92.92-194.56	30	40	IP65	78	1400	900	1200	682	G1-1/2"		
	8.5	123	2.62-5.40	92.55-190.67											
	10.5	152	2.36-5.30	83.26-187.14											
	13.0	189	2.09-3.51	73.78-123.94											
DAV-37	7.5	109	3.44-6.74	121.35-237.99	37	50	IP65	78	1400	900	1200	728	G1-1/2"		
	8.5	123	3.43-6.45	120.98-227.75											
	10.5	152	2.95-5.88	104.07-207.62											
	13.0	189	2.40-4.78	84.74-168.78											
DAV-45	7.5	109	4.01-8.16	141.43-288.13	45	60	IP65	78	1400	900	1200	728	G1-1/2"		
	8.5	123	3.99-8.00	140.87-282.48											
	10.5	152	3.63-6.38	128.05-225.28											
	13.0	189	3.15-5.33	111.13-188.20											
DAV-55	7.5	109	5.14-10.81	181.57-381.70	55	75	IP55	80	1800	1200	1400	1310	G2"		
	8.5	123	5.10-10.30	180.08-363.69											
	10.5	152	4.83-9.44	170.60-333.33											
	13.0	189	3.94-7.67	139.01-270.83											
DAV-75	7.5	109	6.48-13.25	228.96-467.86	75	100	IP55	80	1800	1200	1400	1325	G2"		
	8.5	123	6.44-13.14	227.28-463.97											
	10.5	152	5.71-11.59	201.64-409.24											
	13.0	189	4.68-9.44	165.40-333.33											

\*)FAD in accordance with ISO 1217:2009, Annex C: Absolute intake pressure 1 bar (a), cooling and air intake temperature 20 °C

\*\*) Noise level as per ISO 2151 and the basic standard ISO 9614-2, operation at maximum operating pressure and maximum speed; tolerance: ±3 dB(A)

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# PM VSD Two-stage Screw Air Compressor (55-250 kW)

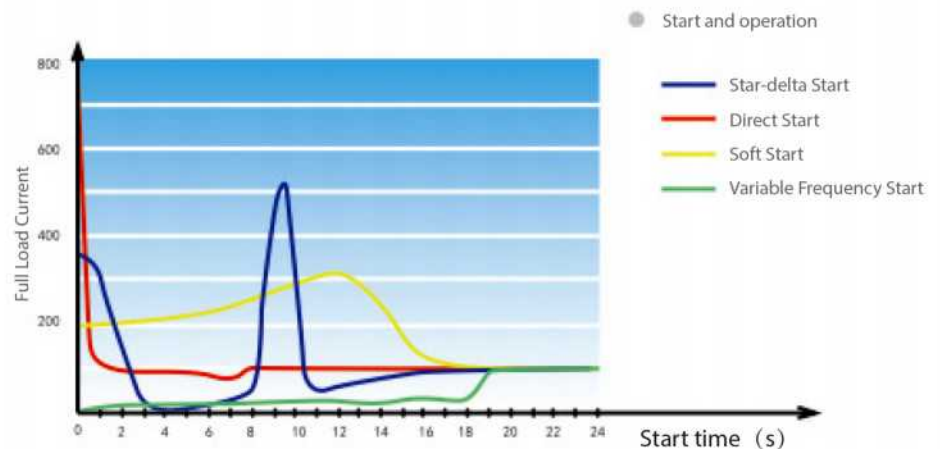
## Features and advantages



## 01 Features Of Permanent Magnet Variable Frequency Air Compressor

- Ultra-low temperature rise design, which allows the compressor running at ultra-low frequency for a long time.
- Closed-loop vector control system for faster control and more precise speed control.
- The compressor unit can still operate efficiently when the frequency is reduced by more than 50%.
- The pressure is stable and the pressure fluctuation is accurately controlled within 0.1 bar.

The figure shows a comparison of several starting methods. It can be seen that the frequency converter is slowly accelerated to start, the starting is more stable, and the current peak is completely avoided.

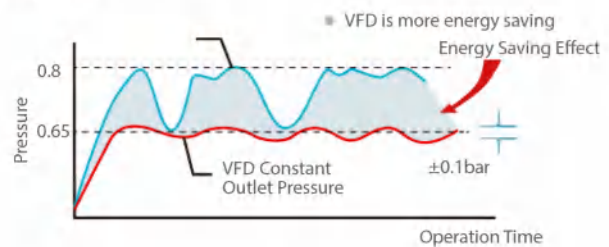


## 02 Air End

- More stable, no mechanical transmission failure: high-efficiency permanent magnet synchronous motor and screw male rotor adopt embedded-integrated shaft direct connection structure, no gear transmission, completely eliminate gear pitting or broken teeth; Two independent permanent magnet motors are integrated directly drive two air ends, no coupling failures.
- More energy efficient, the air end is always running at energy-saving speed.
- More efficient and efficient permanent magnet motor + no transmission efficiency loss.
- More comfortable, low running noise, eliminating three sources of noise: no-click bearing noise, no gear meshing noise, no coupling drive noise.
- More compact: The permanent magnet motor is small in size and the integrated structure saves space.

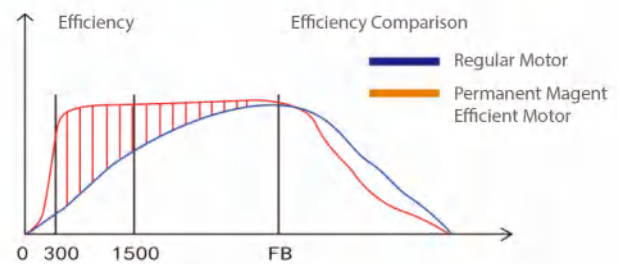


- Under the set frequency conversion pressure, the unit will automatically adjust to keep the output pressure within  $\pm 0.1$  bar, reducing unnecessary waste (the power consumption increases by 7% for every 1 bar of pressure increase)



## 03 Advantages of Permanent Magnet Motors Compared to General Asynchronous Motors

- High efficiency: Eliminates excitation system losses and improves efficiency.
- It is still efficient under low load conditions: the energy efficiency of a permanent magnet motor is more than 9% higher than that of a conventional asynchronous motor at full load operation, and its energy efficiency remains unchanged as the speed decreases.
- Large overdrive torque: The ratio of the maximum starting torque of the permanent magnet synchronous motor to the rated torque can be more than 3 times, while the general asynchronous motor is only 1.6 times.
- The control is more stable: the corresponding time of the permanent magnet motor is  $< 50$ ms, and the gas production can be adjusted in a large range in an instant, so that the gas pressure is truly stable.



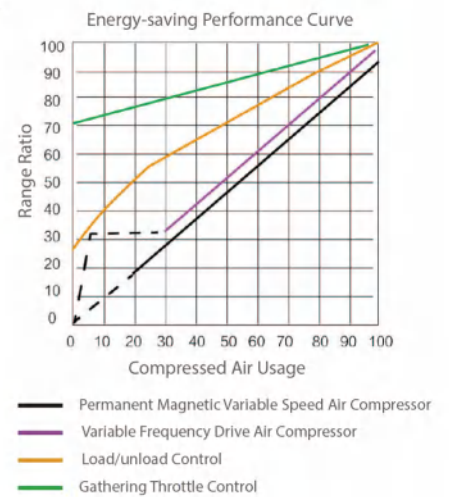
## 04 Stainless Steel Piping Design

- The piping arrangement is simple and beautiful. Stainless steel piping design to effectively prevent rust in the pipeline, and avoid safety accidents caused by leakage of the pipeline.



## 05 More Advanced Technology. More Powerful Inverter

- The standard equipment is equipped with a high-frequency reactor to reduce the high frequency generated by the inverter.
- The soft start of the inverter reduces the peak current at startup, resulting in a smooth start and greatly reduced power costs.
- Forced cooling of the inverter to prevent high temperature shutdown in Summer.
- Standard equipment dust screen, circuit board surface coating treatment, high efficiency and durability against dirt, dust, moisture.
- The special design of the heat dissipation area of the inverter ensures stable operation of the inverter under high temperature environment.
- No idling occurs under any load conditions to achieve the desired power saving effect.
- Quickly track changes in pressure, control pressure fluctuations within  $\pm 0.1$  bar, and optimize the use of the power to accurately provide the right amount of air as needed.



## 06 Oil Filter

- The imported brand is used to reliably filter the dirt particles in the lubricating oil to ensure the smoothness and lubrication of the oil system at 0.1 micron.



## 07 Air Filter Assemblage

- The imported brand is used to reliably remove dirt from the air. The dust particles in the air are controlled below 0.3 microns and the filtration accuracy is as high as 99.99%.





# Technical Parameters

Model	Working Pressure		Capacity FAD*		Power		IP Grade	Noise Level**	Dimensions (mm)			Weight (kg)	Air Outlet Pipe Diameter	Driving Mode & Cooling Method	EEI
	(barg)	(psig)	(m <sup>3</sup> /min)	(cfm)	(kW)	(hp)			(L)	(W)	(H)				
DAV-55 II	7	102	6.46-12.93	228-456	55	75	IP54	75	1900	1500	1600	1510	DN50	Direct Driven Air Cooling	EEI1
	8	116	6.32-12.63	223-446											
	10	145	5.83-11.66	206-412											
DAV-75 II	7	102	7.99-15.98	282-564	75	100	IP54	75	1900	1500	1600	1710	DN50		
	8	116	7.89-15.79	279-558											
	10	145	7.12-14.24	251-503											
DAV-90 II	7	102	10.81-21.62	382-763	90	120	IP54	78	2650	1700	1850	2550	DN80		
	8	116	10.18-20.36	359-719											
	9	131	9.92-19.83	350-700											
	10	145	9.41-18.81	332-664											
DAV-110 II	7	102	12.52-25.04	442-884	110	150	IP54	78	2650	1700	1850	2650	DN80		
	8	116	12.07-24.14	426-852											
	9	131	11.47-22.93	405-810											
	10	145	11.09-22.19	392-784											
DAV-132 II	7	102	15.15-30.29	535-1070	132	175	IP54	78	2650	1700	1850	3120	DN80		
	8	116	14.53-29.06	513-1026											
	9	131	13.50-26.99	477-953											
	10	145	12.09-24.18	427-854											
DAV-160 II	7	102	18.45-36.91	652-1303	160	215	IP54	80	3000	1950	2000	3210	DN100		
	8	116	17.63-35.26	623-1245											
	9	131	16.47-32.94	582-1163											
	10	145	15.72-31.44	555-1110											
DAV-185 II	7	102	21.05-42.11	743-1487	185	250	IP54	80	3500	2200	2300	4250	DN100		
	8	116	19.79-39.58	699-1398											
	9	131	18.74-37.47	662-1323											
	10	145	17.89-35.79	632-1264											
DAV-200 II	7	102	22.25-44.49	786-1571	200	270	IP54	85	3500	2200	2300	5050	DN100		
	8	116	21.31-42.61	752-1505											
	9	131	19.30-38.60	681-1363											
	10	145	17.85-35.71	630-1261											
DAV-220 II	7	102	24.14-48.28	852-1705	220	300	IP54	85	3500	2200	2300	5410	DN125		
	8	116	23.91-47.82	844-1689											
	9	131	22.90-45.79	808-1617											
	10	145	20.42-40.83	721-1442											
DAV-250 II	7	102	28.24-56.48	997-1994	250	350	IP54	85	3500	2200	2300	5520	DN125		
	8	116	26.54-53.08	937-1874											
	9	131	25.44-50.89	898-1979											
	10	145	23.00-46.00	812-1624											

\*)FAD in accordance with ISO 1217:2009, Annex C: Absolute intake pressure 1 bar (a), cooling and air intake temperature 20 °C

\*\*) Noise level as per ISO 2151 and the basic standard ISO 9614-2, operation at maximum operating pressure and maximum speed; tolerance: ±3 dB(A)

**Specifications are subject to change without notice.**



PJDNR202207-08 Specifications are subject to change without prior notice.  
Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.



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