HITACHI OIL-FREE SCREW COMPRESSOR

HITACHI
Inspire the Next

OIL FREE SCREW

NEXT series SINGLE STAGE (15/22/37/55kW)

Hitachi Original Oil-free Screw Technology – Single-Stage Up to 0.7MPa

*The above picture shows the internal structure of 55kW Air-Cooled model (V-type).

Premium Air Quality

True Oil-free Air at Class 0 Level

Air purity class of the discharge air from Hitachi Oil-free Screw air compressor (DSP) is proved to be the highest level "Class 0" from the test result which was conducted by the renowned TÜV institute, in accordance with ISO8573-1.

Class Zero ISO-8573-1

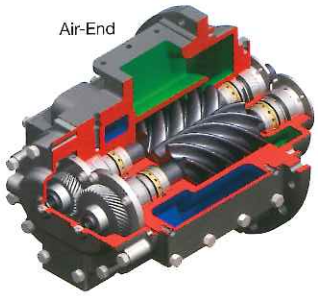
ISO8573-1:2010 CLASS 0 TÜV Certification

TÜV (The Technische Überwachungs Verein), a Germany based international test service provision third-party on aspects of technical safety and quality evaluation, is globally well-reputed on its neutrality and expertise as well as its strictness in testing.

High Performance Air-End

Stainless Steel Rotor

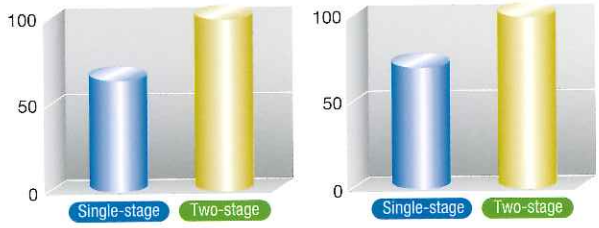
Particular stainless steel, which is superior in corrosion resistance and durability, is applied for rotor with highly accurate grinding.
Furthermore, compensated profile, which is optimized for thermal expansion during operation, enables to keep optimal clearance.



High Performance Coating

Hitachi original coating, which can withstand the high temperature of over 300°C, protects the rotors from a decrease in performance (efficiency, air purity, etc.).

Cut Down Overhaul and Initial Cost



Comparison of Overhaul Cost (%)

Comparison of Initial Cost (%)

*Example of Hitachi 55kW (single-stage) and 45kW (2-stage), without dryer model

Comparison of cost with the same air capacity level

Because there is only one air end for DSP single-stage model, the initial cost is lower than two-stage model.
The overhaul cost, which covers the most of maintenance cost, is about half of two-stage for the same reason.

PQ WIDEMODE (V type)

Air capacity increases accordingly at PQ WIDEMODE ON.

Capacity in PQ WIDEMODE

unit:m³/min

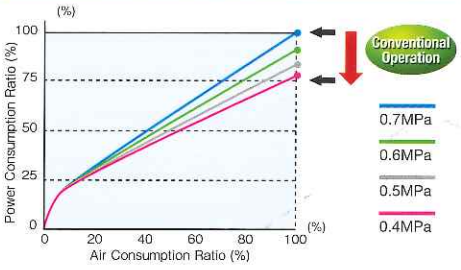
Discharge Pressure MPa / Model	0.4	0.5	0.6	0.7
22kW	4.3	4.0	3.7	3.4
37kW	6.4	6.0	5.5	5.0
55kW	8.2	7.6	7.0	6.4

Note: For dryer built-in model, minimum pressure is 0.5Mpa in the PQ WIDEMODE.

● **PQ WIDEMODE is possible to switch between ON and OFF, responding to customers' requirements.**

For Energy-saving

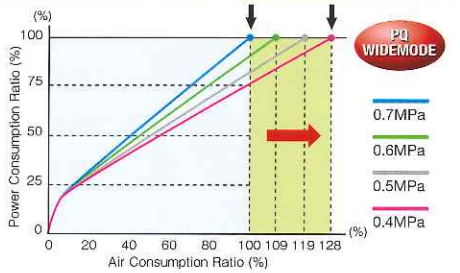
PQ WIDEMODE [OFF]



1. When the operating pressure is reduced from 0.7MPa to 0.6MPa, the Max power consumption is automatically reduced to approx. 92% of 0.7MPa.
2. When the pressure is reduced to 0.5MPa, the power consumption reaches about 85%. When the pressure is reduced to 0.4MPa, the power consumption reaches about 79%.
   If you know your air consumption for sure and wish to achieve Energy-Saving, **PQ WIDEMODE [OFF]** is recommended.

For Maximum Performance of Compressor

PQ WIDEMODE [ON]



1. When the operating pressure is reduced from 0.7MPa to 0.4MPa, the power consumption is reduced to approx. 79%.
2. With the excess power from depressurization, you can increase the air capacity to 128%* of the rated one. At that time, the power consumption reaches 100%.
   If you wish to use maximum performance under rated power consumption, **PQ WIDEMODE [ON]** is recommended.

* In case of 55kW

Environment Response

Oil Mist Remover (OMR) and Auto Drain Valve installed as Standard Equipment

Oil Mist Remover (OMR) and auto drain solenoid valves are equipped as standard. OMR can collect almost all oil fumes from the gear casing and recycle them.
Auto drain solenoid valves for condensate of both inter-cooler and after-cooler minimize air consumption.

Oil Mist Remover

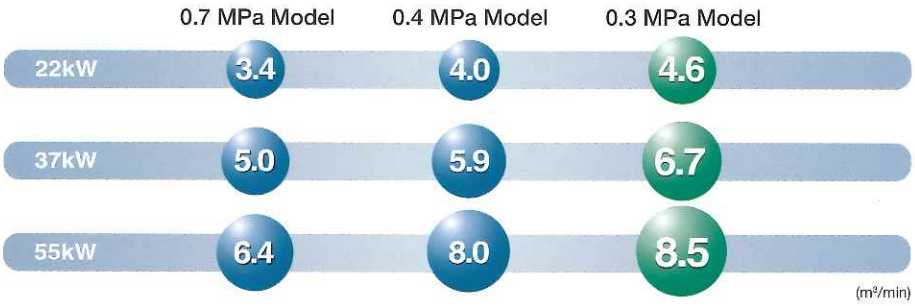
Auto Drain Solenoid Valves for After-cooler

Expanded Line-Up (Low Pressure)

0.3 MPa model is newly added

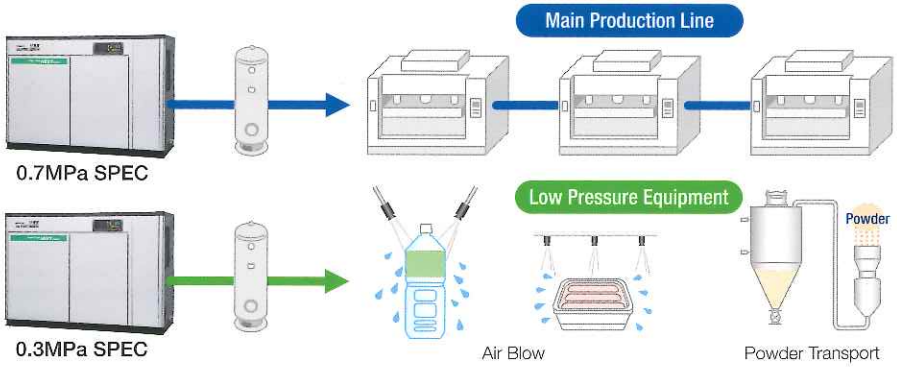
Air capacity is improved by the newly-developed high efficiency air-end.

Capacity Comparison



Applications

In case that the pressure requirement is higher than blower but lower than standard compressor SPEC, low pressure SPEC DSP can be your solution.



Energy Saving from Various Combinations V-type based Systems

Proposal for Energy-Saving

Three proposal systems responding to various requirements
Combination V-type with fixed speed type achieves

Energy saving operation without external controller

V-M Combination System

Energy saving operation by one V-type and maximum two fixed speed type

Energy saving operation with external controller

Single-V System

Energy saving operation by one V-type and more than one fixed speed type with multi-unit controller.

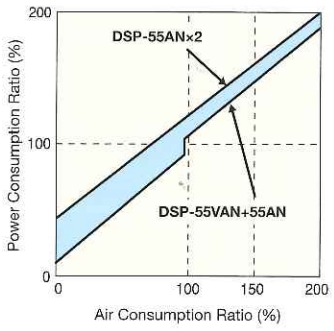
Energy saving operation by more than one V-type with multi-unit controller

Multi-V System

Energy saving operation and averaging V-type operating hour

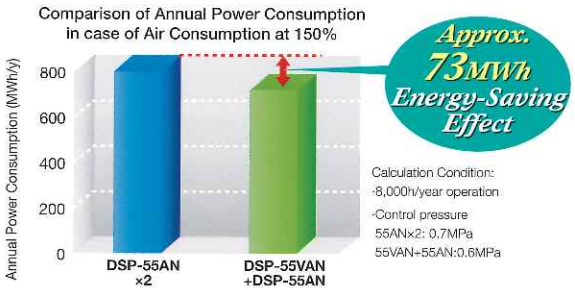
■ Basic Example of V-M Combination System

(55kW × 2 units)

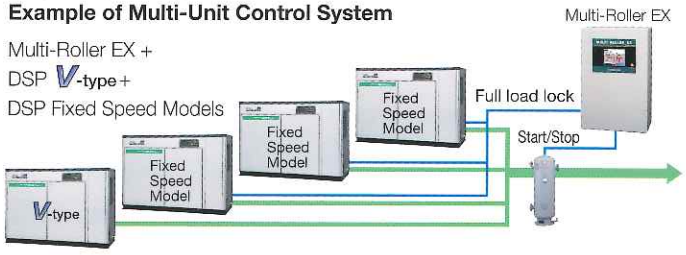


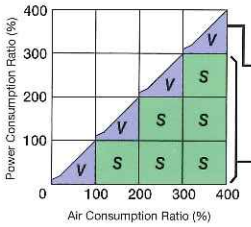
Following Energy-Saving effect can be achieved due to the *V-M Combination*

Energy-Saving of 73MWh/y can be achieved in case of air consumption at 150%.



■ Single-V (Multi-V) Example of Multi-Unit Control System





Explanation

V-type
Always running, follow the fluctuation of air consumption

Fixed speed type or V-type
Full load or stop

*S indicates Fixed Speed Type.

⚠ Safety Precautions

■ **Application**

- The compressor described in this catalog utilizes only air as a gas. Never use any gases other than air. This could result in a fire hazard or damage to the equipment.
- Hitachi Compressors are not designed, intended or approved for Breathing Air Applications. Hitachi assumes no responsibility or liability for compressors used in breathing air applications.

■ **Installation**

- Install these compressors indoor. Environments susceptible to moisture such as precipitation or vapors should be avoided — this could result in fire hazard, electric shock, rusting, or shortened life of parts.
- There should be no explosives, flammable gas (acetylene, propane, etc.), organic solvent, explosive powder, or flame used near the compressor — it may cause fire hazard.
- Avoid using the compressor at a place where there is corrosive gas such as ammonia, acid, salt sulfurous acid gas, etc. — this could result in rusting, shortened life, or damage to the equipment.

■ **Usage**

- Before use, be sure to read the instruction manual thoroughly for correct use of the compressor.
- Do not modify the compressor or its components — this could result in damage or malfunction.

Specifications

■ Air-Cooled, Fixed Speed Model (15–55kW)

[ ]: indicates model with Dryer integrated

Item・Unit			Model	DSP-15A[R]5N DSP-15A[R]6N		DSP-22A[R]5N DSP-22A[R]6N		DSP-37A[R]5N DSP-37A[R]6N		DSP-55A[R]5N DSP-55A[R]6N	
Discharge Pressure		MPa		0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4
Discharge Air Capacity		m³/min		2.0	2.5	3.4	4.0	5.0	5.9	6.4	8.0
Nominal Motor Output		kW		15		22		37		55	
Motor Type		–		4-Pole TEFC Motor							
Intake Air Pressure/Temperature		℃		Atmospheric Pressure/0–40 [5–40]							
Discharge Temperature		℃		Ambient Temperature +15 or below							
Discharge Air Pipe Connection		B		Rc1		Rc1-1/2					
Starting Method		–		Full Voltage Start		Star-Delta (3 contact)					
Driving Method		–		V-Belt+Gear-Driven							
Oil Quantity		L		12 (Not filled)				18 (Not filled)			
Cooling Fan Motor Output		kW		0.4		0.75				0.9	
Coolant Pump Motor Output (50/60Hz)		kW		0.2/0.3							
[Dryer]	P.D.P	℃		[10 (Under Pressure)]	–	[10 (Under Pressure)]	–	[10 (Under Pressure)]	–	[10 (Under Pressure)]	–
	Refrigerator Nominal Output	kW		[0.5]	–	[1.1]	–	[1.1]	–	[1.1]	–
	Refrigerant	–		[R407C]	–	[R407C]	–	[R407C]	–	[R407C]	–
Weight		kg		750 [780]		800 [860]		1,020 [1,170]		1,240 [1,390]	
Dimensions (W×D×H)		mm		1,400×970×1,400				1,830×980×1,580 [2,230×980×1,580]			
Sound Level (1.5m from front)		dB(A)		62	63	63	64	66	68	68	70

■ Air-Cooled, V-type Model (22–55kW)

[ ]: indicates model with Dryer integrated

Item・Unit			Model	DSP-22VA[R]5N DSP-22VA[R]6N		DSP-37VA[R]5N DSP-37VA[R]6N		DSP-55VA[R]5N DSP-55VA[R]6N	
Discharge Pressure		MPa		0.7	0.3	0.7	0.3	0.7	0.3
Discharge Air Capacity		m³/min		3.4	4.6	5.0	6.7	6.4	8.5
PQ WIDEMODE	Discharge Pressure	MPa		0.6	–	0.6	–	0.6	–
	Discharge Air Capacity	m³/min		3.7	–	5.5	–	7.0	–
	Discharge Pressure	MPa		0.4 [0.5]	–	0.4 [0.5]	–	0.4 [0.5]	–
	Discharge Air Capacity	m³/min		4.3 [4.0]	–	6.4 [6.0]	–	8.2 [7.6]	–
PQ WIDEMODE Range		MPa		0.4–0.7 [0.5–0.7]	–	0.4–0.7 [0.5–0.7]	–	0.4–0.7 [0.5–0.7]	–
Nominal Motor Output		kW		22		37		55	
Motor Type		–		4-Pole TEFC Motor					
Intake Air Pressure/Temperature		℃		Atmospheric Pressure/0–40 [5–40]					
Discharge Temperature		℃		Ambient Temperature +15 or below					
Discharge Air Pipe Connection		B		Rc1-1/2					
Starting Method		–		Inverter					
Driving Method		–		V-Belt+Gear-Driven					
Oil Quantity		L		12 (Not filled)		18 (Not filled)			
Cooling Fan Motor Output		kW		0.75				0.9	
Coolant Pump Motor Output (50/60Hz)		kW		0.2/0.3					
[Dryer]	P.D.P	℃		[10 (Under Pressure)]	–	[10 (Under Pressure)]	–	[10 (Under Pressure)]	–
	Refrigerator Nominal Output	kW		[1.1]	–	[1.1]	–	[1.1]	–
	Refrigerant	–		[R407C]	–	[R407C]	–	[R407C]	–
Weight		kg		850 [910]		1,080 [1,230]		1,180 [1,330]	
Dimensions (W×D×H)		mm		1,650×970×1,400		1,830×980×1,580 [2,230×980×1,580]			
Sound Level (1.5m from front)		dB(A)		63	64	66	68	68	70

■ Water-Cooled Model (37/55kW)

[ ]: indicates model with Dryer integrated

Item・Unit			Model	Fixed Speed Model				V type			
				DSP-37W5N DSP-37W6N		DSP-55W5N DSP-55W6N		DSP-37VWN		DSP-55VWN	
Discharge Pressure		MPa		0.7	0.4	0.7	0.4	0.7	0.3	0.7	0.3
Discharge Air Capacity		m³/min		5.0	5.9	6.4	8.0	5.0	6.7	6.4	8.5
PQ WIDEMODE	Discharge Pressure	MPa		–	–	–	–	0.6	–	0.6	–
	Discharge Air Capacity	m³/min		–	–	–	–	5.5	–	7.0	–
	Discharge Pressure	MPa		–	–	–	–	0.4	–	0.4	–
	Discharge Air Capacity	m³/min		–	–	–	–	6.4	–	8.2	–
PQ WIDEMODE Range		MPa		–	–	–	–	0.4–0.7	–	0.4–0.7	–
Nominal Motor Output		kW		37		55		37		55	
Motor Type		–		4-Pole TEFC Motor				4-Pole TEFC Motor			
Intake Air Pressure/Temperature		℃		Atmospheric Pressure/0–40				Atmospheric Pressure/0–40			
Discharge Temperature		℃		Cooling Water Temperature +13 or below				Cooling Water Temperature +13 or below			
Discharge Air Pipe Connection		B		Rc1-1/2				Rc1-1/2			
Starting Method		–		Star-Delta (3 contact)				Inverter			
Driving Method		–		V-Belt+Gear-Driven				V-Belt+Gear-Driven			
Oil Quantity		L		14 (Not filled)				14 (Not filled)			
Cooling Fan Motor Output		kW		0.1				0.2			
Cooling Water Flow Rate		L/min		80				80			
Cooling Water Temperature		℃		32 or below				32 or below			
Cooling Water Pipe Connection		B		Rc1				Rc1			
Weight		kg		970		1,190		1,050		1,150	
Dimensions (W×D×H)		mm		1,830×980×1,580				1,830×980×1,580			
Sound Level (1.5m from front)		dB(A)		64	66	64	66	64	66	64	66

NOTE:
1. Capacity is measured according to ISO 1217, Third Edition, Annex C.
2. Sound Levels is the value at 1.5m in front and 1m height in an anechoic room.
   It varies in different operating conditions and/or different environment with echo of actual field installations.
   For V-type models, sound level is increased by 2dB at PQ WIDEMODE ON.
3. P.D.P is measured at 30℃ of intake air temperature and rated discharge pressure.
   P.D.P is much worse at 0.4MPa or less of discharge pressure.
   P.D.P rises 3℃ at PQ WIDEMODE ON and 0.6MPa of discharge pressure.
4. Air Capacity of Built-in Dryer model decreases by up to 3% when drain condensates.
5. Discharge air temperature with Dust Proof option or Simple Package Filter option is ambient temperature + 18℃ or below.
6. Earth leakage circuit breaker is NOT equipped within. Prepare it in advance.
7. Pressure is indicated as the gauge pressure.
8. Dimensions do NOT include protruding objects such as piping.
9. Specifications and/or appearances are subject to change without notice.