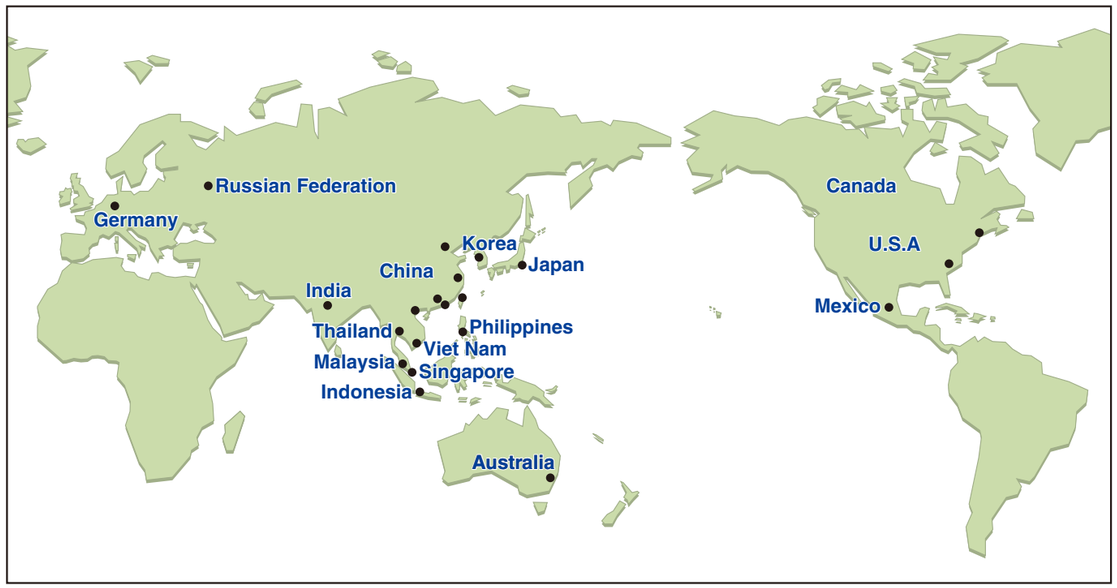



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HITACHI OIL-FREE SCREW COMPRESSOR

HITACHI
Inspire the Next

# OIL FREE SCREW

## SINGLE STAGE / TWO STAGE


Class Zero
ISO 8573-1

■ ISO 8573-1 : 2010
CLASS 0 TÜV Approval

# Energy-Saving, User-Friendly HITACHI High Standard Oil Free Rotary Screw Compressor for Both Environment and Productivity

**'Further Energy-Saving and User-Friendly' is the concept for HITACHI oil free screw compressor, DSP series.**
**Variable speed model achieved further energy saving by constant pressure control, and customer can choose from wide line up.**

- **Environmentally friendly, oil free rotary screw compressor**
- **Easy operation by large LCD monitoring display**
- **Advanced functions and performance by scheduled operation and efficient maintenance**
- **Contribution to cost saving and productivity**


## Ultimate Air Quality

### True Oil-free Air at Class 0 Level

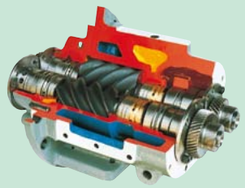
Test and analysis of condensation of oil in the discharge air of Hitachi Oil-free Screw Compressor (DSP) are implemented by third party (TÜV) based on ISO8573-1 standard. By the test result, oil contained in the discharge air of Hitachi DSP is proved and certified as the highest level of quality air "Class 0".

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 Fine Rotor

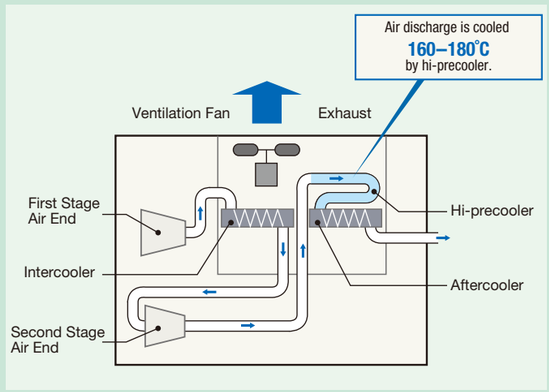
Particular stainless steel, which is superior in corrosion resistance and durability, is applied for rotor with highly accurate grinding. Furthermore, to reduce internal leakage, mirror finished surface enables to keep appropriate clearance, including thermal expansion during operation.

**● High Performance Rotor Profile**

The rotor enlarges significantly due to thermal expansion. Heat expansion of the rotor occurs since it exposes 300˚C discharge air to the single-stage model. (200˚C even for the two-stage model) HITACHI original 3D correction technology is used to keep the most appropriate clearance.

### Hi-precooler System

Hi-precooler system cools down high temperature discharge air down to 180˚C and below before entering aftercooler. This enables aftercooler to be less than the upper temperature limit. HITACHI applied this system to large size, air-cooled model and improved reliability.




## Model List

### ■ DSP Fixed Speed Series

(kW)

| | | Dryer | 15 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 100 | 120 | 132 – 240*1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-stage | Air-cooled | — | ● | ● | | ● | | ● | | | | | |
| | | Built-in | ● | ● | | ● | | ● | | | | | |
| | Water-cooled | — | ● | ● | | ● | ● | ● | | | | | |
| Two-stage | Air-cooled | — | | ● | ● | ● | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ● |
| | | Built-in | | ● | ● | ● | ◉ | ◉ | ◉ | | | | |
| | Water-cooled | — | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | | Built-in | | | | | ◉ | ◉ | ◉ | | | | |

### ■ DSP V-type with Variable Speed Drive

(kW)

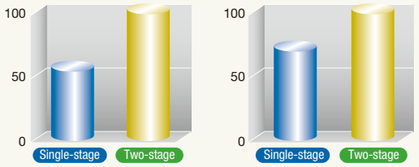
| | | Dryer | 15 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 100 | 120 | 132 – 240*1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-stage | Air-cooled | — | | ● | | ● | | ◉ | | | | | |
| | | Built-in | | ● | | ● | | ◉ | | | | | |
| | Water-cooled | — | | | | ● | | ● | | | | | |
| Two-stage | Air-cooled | — | | | | ● | | ◉ | ◉ | | ◉ | | |
| | | Built-in | | | | ● | | ◉ | ◉ | | | | |
| | Water-cooled | — | | | | | | ◉ | ◉ | | ◉ | | ◉*2 |
| | | Built-in | | | | | | ◉ | ◉ | | | | |

● : V plus ◉ : NEXT Series

*1 132, 145, 160, 200 and 240kW
*2 160 and 240kW

## Single-stage, oil free screw compressor is HITACHI original.

### Cut Down Maintenance and Initial Cost




Comparison of Maintenance Cost (%) (Annual average)

Comparison of Initial Cost (%)

*Example of Hitachi 55kW without dryer model

### Comparison of cost with the same class motor output

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

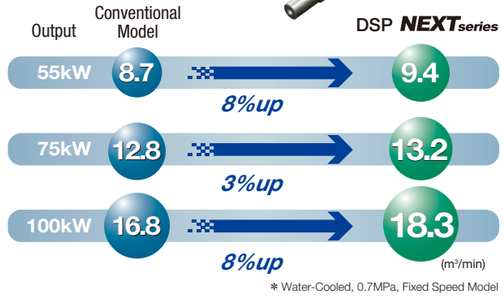
# Thorough Reduction of Loss due to the New Air-End
# Large Air Delivery and Energy-Saving by DSP NEXTseries


*The above picture shows the internal structure of the new NEXTseries DSP-75kW V-type, Water-Cooled model.

## High Capacity

### Equipped with New Air-End

High capacity is realized by newly developed Air-End.



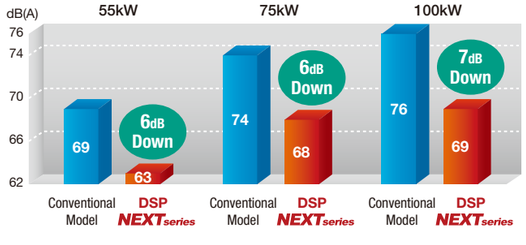

* Water-Cooled, 0.7MPa, Fixed Speed Model

## Low Noise

### Low Noise Design

Low noise achieved by the low-noise rotor profile, adoption of vibration-proof driving system and low-noise structure of suction and exhaust.

■ Air-Cooled, 0.7MPa, Fixed Speed Model




## Line-Up of Variety

### High Discharge Pressure Available

Maximum pressure changes from 0.88MPa to 0.93MPa. A variation of series composition due to high discharge pressure makes possible of various system design of variety.

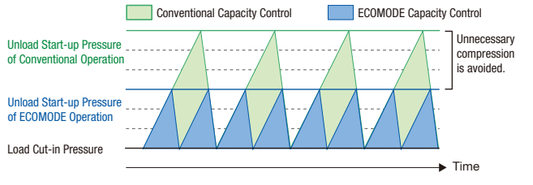
## Pursuit of Energy-Saving

### ECOMODE

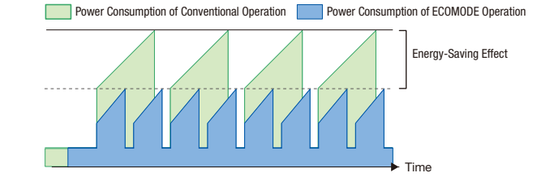
Responding to the load rate of compressor, unnecessary compression is avoided by automatically lowering the unload start-up pressure. Energy-Saving is achieved. Taking 75kW water-cooled, 0.7MPa SPEC, Fixed Speed model as an example, in case of 70% load rate 11.3MWh is saved annually, and in case of 90% load rate 28MWh is saved annually.

(Calculation condition: air receiver tank of 2.26m³ is installed, 8,000h/year operation)

**Pressure**




**Power**



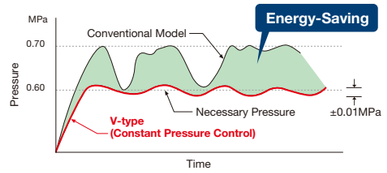



## Energy-Saving due to Variable Speed Drive (V-type)

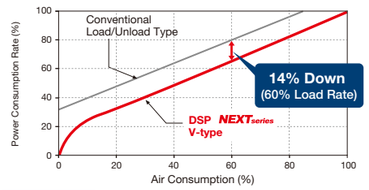
### Enlarged Energy-Saving Effect due to Original Capacity Control

For V-type model, variable speed drive and air capacity control are all originally designed by Hitachi. Control system which enables to control the discharge pressure within ±0.01MPa, not only makes high response to the load possible, but also achieve great effect of Energy-Saving together with outstanding stability.

**Significant Energy-Saving due to Constant Pressure Control**




**Energy-Saving Achieved by Variable Speed Drive**



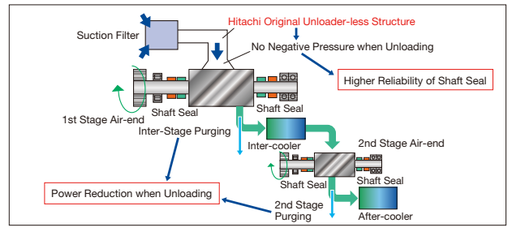

**About 83MWh Annual Energy-Saving**

Calculation condition:
75kW V-type (0.7MPa SPEC),
0.6MPa as necessary pressure,
8,000h/year operation, 60% load rate

### Power Reduction and Reliability Improvement during Unload Operation due to Hitachi Original Unloader-less and Inter-Stage Purge Technology

Patented (JP 3817420)

Significant power reduction and reliability improvement of shaft seal during unload operation are secured due to Hitachi original technology of purging on both inter-stage and 2nd stage.
And, because of unloader-less structure, maintenance of unloader (suction throttle valve) is unnecessary.



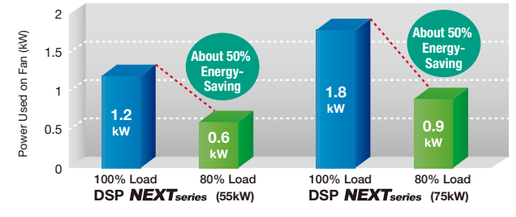

**DCBL Drive System for 55/75kW (JP 3255213 others)**

**Japan Regional Award**

- Cascade Vector Control (in line form) as the DCBL motor control system achieve both significant Energy-Saving and excellent reliability.
- Retry function when minor failure occurs is equipped as standard on DCBL controller. Retry is performed up to 3 times according to the judgment by itself when the motor trips. So it is possible to eliminate the influence to the operation of the compressor from outside disturbance.

## Cooling Fan (45/55/75kW Air Cooled Models)

Newly developed turbo fan is controlled by inverter. Responding to the air delivery change, the rotation speed of cooling fan is automatically lowered to achieve Energy-Saving. At the same time, noise from cooling fan is lowered too.

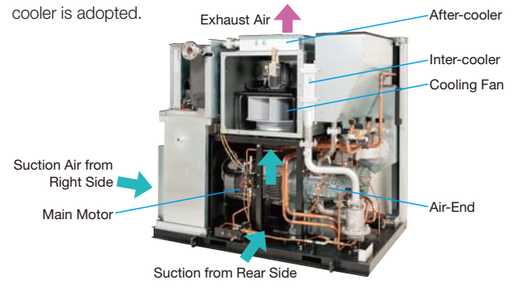



## Standard Response to Ambient Temperature up to 45˚C

Continuous operation under up to 45˚C and long maintenance cycle are possible by adoption of new internal structure which minimizes the internal temperature rise.

**Continuous Operation under Ambient Temperature of up to 45˚C** + **Same as the conventional model (respond up to 40˚C) in maintenance cycle**

- Ventilation Structure of Air Cooled Model
  Compulsory ventilation structure inside the unit due to the wind from cooler is adopted.




## Environment Response

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

Oil Mist Remover (OMR), which recaptures the oil mist from gear case and recycle, is standard equipment.
Also, auto drain valves for inter-cooler and after-cooler are standard equipments to drain intermittently without air loss.

Oil Mist Remover (OMR)

Auto Drain Valves for Inter-cooler/After-cooler (without Built-in Dryer Model ONLY)

## Air Dryer (Built-in Dryer Type)

### Low Pressure Drop Stainless Heat Exchanger

Low pressure drop, stainless heat exchanger is newly developed. Loss due to pressure drop is minimized together with improvement in durability.

### Improvement of Reliability

Compared to the conventional model, the performance when operated in high temperature environment is significantly improved.

## Improvement in Reliability and Maintenance

### Adoption of Totally Enclosed Flange Motor

Reliability is improved due to the adoption of totally enclosed flange motor. Maintenance also becomes easier due to the removal of coupling.

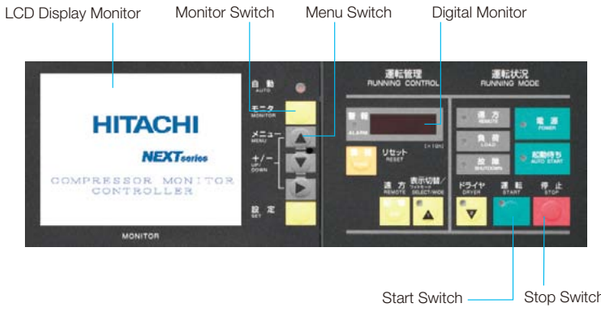
### Improvement in Maintenance

Maintenance-friendly layout is adopted, which makes filter change and cleaning of cooler much easier.

## Versatility of Control Design

### Large LCD Display Monitor with Easy Command Interface

Large LCD display monitor is equipped as standard. Various functions can be easily set by control panel. In case of trouble, the information of status of compressor is displayed so that it is possible to quickly carry out the Troubleshooting.




**Standard Function**

- 3 Languages Available (English, Japanese, Chinese)
- ECOMODE
- Maintenance Time Notification
- Alarm and Trouble History Display
- Schedule Operation
- Operation Data Memory
- Instantaneous Power Interruption (IPI) Restart etc.

**Option**

- Dual Operation
- Multi-Unit Control Operation
- AUTO Operation
- Communication Function

## Specifications

### Variable Speed Drive

| Item・Unit | | Model | DSP-55VAT[R]N | DSP-75VAT[R]N | DSP-100VA5MN / DSP-100VA6MN | | | | DSP-55VWT[R]N | DSP-75VWT[R]N | DSP-100VW5MN / DSP-100VW6MN | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Method | | — | Air-cooled | | | | | | Water-cooled | | | | | |
| Discharge Pressure | | MPa | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 |
| Capacity | | m³/min | 9.3 | 7.7 | 12.6 | 10.9 | 18.0 | 15.4 | 9.5 | 8.0 | 12.9 | 11.4 | 18.3 | 15.6 |
| Capacity @ PQ WIDEMODE ON at 0.6MPa | | m³/min | 9.6 | 9.3 | 13.0 | 12.6 | — | | 9.8 | 9.5 | 13.4 | 13.0 | — | |
| Nominal Output | | kW | 55 | | 75 | | 100 | | 55 | | 75 | | 100 | |
| Motor Type | | — | DCBL Motor | | | | 2-Pole TEFC Flange Motor | | DCBL Motor | | | | 2-Pole TEFC Flange Motor | |
| Intake Air Press. / Temp. | | — | Atmospheric Pressure / 0 – 45℃ [ 5 – 45℃ ] | | | | | | Atmospheric Pressure / 0 – 45℃ [ 5 – 45℃ ] | | | | | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | | | | Cooling Water Temperature + 13 or below | | | | | |
| Discharge Pipe Diameter | | B | 2 (Flange) | | | | | | 2 (Flange) | | | | | |
| Amount of Cooling Water | | L/min | — | | | | | | 90 | 120 | 160 | | | |
| Cooling Water Temperature | | ℃ | | | | | | | 35 or below | | | | | |
| Cooling Water Pipe Diameter | | B | | | | | | | 1・1/4 | | 1・1/2 | | | |
| Starting Type | | — | Soft Start | | | | Inverter | | Soft Start | | | | Inverter | |
| Driving Method | | — | Direct Connection with Motor + Gear Driving | | | | | | Direct Connection with Motor + Gear Driving | | | | | |
| Lubricating Oil Capacity | | L | 25 (Not filled) | | | | 26 (Not filled) | | 15 (Not filled) | | | | 16 (Not filled) | |
| Cooling Fan Motor Output | | kW | 1.5 | | 2.2 | | 1.5 × 2 | | 0.05 × 2 | | | | 0.2 × 2 | |
| [Air Dryer] | P.D.P | ℃ | [ 10 (Under Pressure) ] | | | | — | | [ 10 (Under Pressure) ] | | | | — | |
| | Refrigerator Nominal Output | kW | [ 2.2 ] | | [ 3.0 ] | | | | [ 2.2 ] | | [ 3.0 ] | | | |
| | Refrigerant | — | [ R407C ] | | | | | | [ R407C ] | | | | | |
| Weight | | kg | 1,340 [1,490] | | 1,560 [1,730] | | 2,350 | | 1,320 [1,470] | | 1,410 [1,580] | | 2,200 | |
| Dimensions (W×D×H) | | mm | 2,000×1,300×1,800 | | 2,250×1,300×1,800 | | 2,150×1,520×1,975 | | 2,000×1,300×1,800 | | | | 2,150×1,520×1,825 | |
| Sound Level (1.5m from front side) | | dB(A) | 63 | 65 | 67 | 68 | 69 | 71 | 63 | 65 | 66 | | 67 | 69 |



### Fixed Speed Series (45/55/75 kW)

| Item・Unit | | Model | DSP-45AT[R]5N / DSP-45AT[R]6N | | DSP-55AT[R]5N / DSP-55AT[R]6N | | DSP-75AT[R]5N / DSP-75AT[R]6N | | DSP-45WT[R]5N / DSP-45WT[R]6N | | DSP-55WT[R]5N / DSP-55WT[R]6N | | DSP-75WT[R]5N / DSP-75WT[R]6N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Method | | — | Air-cooled | | | | | | Water-cooled | | | | | |
| Discharge Pressure | | MPa | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 |
| Capacity | | m³/min | 7.4 / 7.8 | 6.2 / 6.5 | 9.2 | 7.2 / 7.7 | 13.0 | 10.5 / 11.1 | 7.5 / 7.9 | 6.4 / 6.7 | 9.4 | 7.4 / 7.9 | 13.2 | 10.7 / 11.3 |
| Nominal Output | | kW | 45 | | 55 | | 75 | | 45 | | 55 | | 75 | |
| Motor Type | | — | 2-Pole TEFC Flange Motor | | | | | | 2-Pole TEFC Flange Motor | | | | | |
| Intake Air Press. / Temp. | | — | Atmospheric Pressure / 0 – 45℃ [ 5 – 45℃ ] | | | | | | Atmospheric Pressure / 0 – 45℃ [ 5 – 45℃ ] | | | | | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | | | | Cooling Water Temperature + 13 or below | | | | | |
| Discharge Pipe Diameter | | B | 2 (Flange) | | | | | | 2 (Flange) | | | | | |
| Amount of Cooling Water | | L/min | — | | | | | | 90 | | | | 120 | |
| Cooling Water Temperature | | ℃ | | | | | | | 35 or below | | | | | |
| Cooling Water Pipe Diameter | | B | | | | | | | 1・1/4 | | | | | |
| Starting Type | | — | Star-Delta (3 contact) | | | | | | Star-Delta (3 contact) | | | | | |
| Driving Method | | — | Direct Connection with Motor + Gear Driving | | | | | | Direct Connection with Motor + Gear Driving | | | | | |
| Lubricating Oil Capacity | | L | 15 (Not filled) | | | | | | 15 (Not filled) | | | | | |
| Cooling Fan Motor Output | | kW | 0.05 × 2 | | | | | | 0.05 × 2 | | | | | |
| [Air Dryer] | P.D.P | ℃ | [ 10 (Under Pressure) ] | | | | | | [ 10 (Under Pressure) ] | | | | | |
| | Refrigerator Nominal Output | kW | [ 2.2 ] | | | | [ 3.0 ] | | [ 2.2 ] | | | | [ 3.0 ] | |
| | Refrigerant | — | [ R407C ] | | | | | | [ R407C ] | | | | | |
| Weight | | kg | 1,480 [1,630] | | | | 1,640 [1,810] | | 1,480 [1,630] | | | | 1,640 [1,810] | |
| Dimensions (W×D×H) | | mm | 2,000×1,300×1,800 | | | | | | 2,000×1,300×1,800 | | | | | |
| Sound Level (1.5m from front side) | | dB(A) | 63 | | 63 | | 65 | 66 | 63 | | 63 | | 65 | 66 |

### Fixed Speed Series (90/100/120 kW)

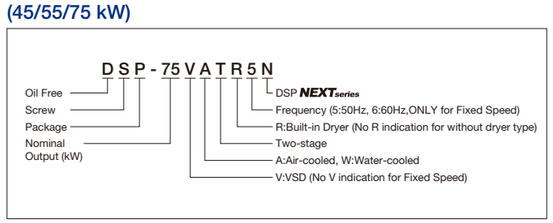
| Item・Unit | | Model | DSP-90A5L(M)N / DSP-90A6L(M)N | | DSP-100A5L(M)N / DSP-100A6L(M)N | | DSP-120A5MN / DSP-120A6MN | | DSP-90W5L(M)N / DSP-90W6L(M)N | | DSP-100W5L(M)N / DSP-100W6L(M)N | | DSP-120W5MN / DSP-120W6MN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Method | | — | Air-cooled | | | | | | Water-cooled | | | | | |
| Discharge Pressure | | MPa | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 | 0.70 | 0.93 |
| Capacity | | m³/min | 16.6 | 13.9 | 18.0 | 15.4 | 20.5 | 17.3 | 16.8 | 14.0 | 18.3 | 15.6 | 21.0 | 17.6 |
| Nominal Output | | kW | 90 | | 100 | | 120 | | 90 | | 100 | | 120 | |
| Motor Type | | — | 2-Pole TEFC Flange Motor | | | | | | 2-Pole TEFC Flange Motor | | | | | |
| Intake Air Press. / Temp. | | — | Atmospheric Pressure / 0 – 45℃ | | | | | | Atmospheric Pressure / 0 – 45℃ | | | | | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | | | | Cooling Water Temperature + 13 or below | | | | | |
| Discharge Pipe Diameter | | B | 2 (Flange) | | | | | | 2 (Flange) | | | | | |
| Amount of Cooling Water | | L/min | — | | | | | | 160 | | | | 180 | |
| Cooling Water Temperature | | ℃ | | | | | | | 35 or below | | | | | |
| Cooling Water Pipe Diameter | | B | | | | | | | 1・1/2 | | | | | |
| Starting Type | | — | Star-Delta (3 contact) | | | | | | Star-Delta (3 contact) | | | | | |
| Driving Method | | — | Direct Connection with Motor + Gear Driving | | | | | | Direct Connection with Motor + Gear Driving | | | | | |
| Lubricating Oil Capacity | | L | 26 (Not filled) | | | | | | 16 (Not filled) | | | | | |
| Cooling Fan Motor Output | | kW | 1.1 × 2 | | | 1.5 × 2 | | | L : 0.2 × 2, M : 0.05 × 3 | | | | 0.05 × 3 | |
| Weight | | kg | 2,250 | | | 2,400 | | | 2,100 | | | | 2,250 | |
| Dimensions (W×D×H) | | mm | 2,150×1,520×1,975 | | | | | | 2,150×1,520×1,825 | | | | | |
| Sound Level (1.5m from front side) | | dB(A) | 68 | 70 | 69 | 71 | 72 | 73 | 66 | 68 | 67 | 69 | 69 | 70 |

NOTE:

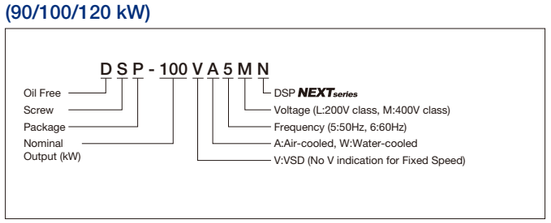
1. Capacity is converted value at its inlet condition (atmospheric pressure).
2. Sound Level is value at 1.5m in front and 1m height in an anechoic room. It may vary in different operating conditions and/or different environment with echo of actual field installations.
   Sound level might be increased by 2dB at PQ WIDEMODE ON.
3. P.D.P is measured at 30 degree C of intake air temperature and rated discharge pressure.
   P.D.P might be much worse at 0.4MPa or less of discharge pressure.
   P.D.P might be 13 degree C at PQ WIDEMODE ON and 0.6MPa of discharge pressure.
4. Capacity of Built-in Dryer model may decrease by up to 3% when drain condensates.
5. Earth leakage circuit breaker is out of scope of supply from Hitachi.
6. DSP NEXTseries compressors are not designed, intended or approved for breathing air applications.
7. Pressures are indicated as the gauge pressure.
8. DSP NEXTseries can not run in excess of 45℃ of ambient temperature. Ventilation and/or air conditions should be considered to maintain the compressor room temperature.
9. For the quality of the cooling water, contact your nearest dealer or Hitachi local representative offices.
10. Install the DSP indoors and avoid flammable and corrosive environment, moisture and dust.
11. Select 3.5-4.5 ton duty fork truck for transportation of DSP-90/100/120 NEXTseries.
12. Hitachi may make improvements and/or changes in the appearance and/or specifications described in this publication at anytime without notice.

### Model Nomenclature

#### (45/55/75 kW)



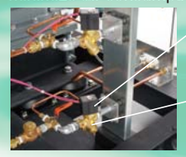

#### (90/100/120 kW)



# Debut of DSP *NEXT series* V-type in Large Class (160/240kW) water-cooled
# Enlarged Line-up of DSP *NEXT series* in 132–240kW Range

**Air Intake Filter**
Dual layout filter element provides higher reliability.

Auto drain solenoid valves for condensate of both intercooler and aftercooler minimize air consumption.

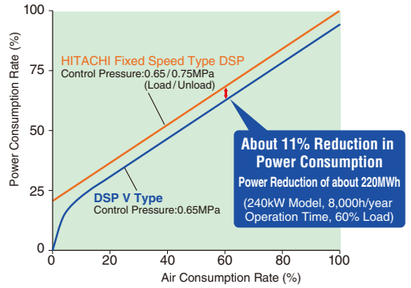


AC/IC Auto Drain Solenoid Valve

Strainer


## *Energy-Saving (V-type)*

Further Energy-Saving is achieved by DSP *NEXT series* with Built-in Inverter.




*Compared to conventional Load/Unload Control Type, lower pressure setting is possible due to the stable pressure control.

## *High Capacity by Equipping New NEXT series Air-End*

## *Low Noise and Vibration*

## *Compact Design by Optimized Layout of Components*

## *High Discharge Pressure Available (up to 1.0MPa)*

## Specifications

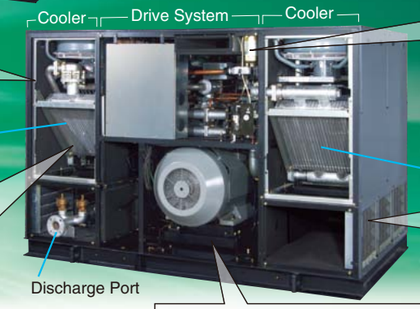
| Item・Unit | Model | DSP-132W5N / DSP-132W6N | | DSP-145W5N / DSP-145W6N | | DSP-160W5N / DSP-160W6N | | DSP-200W5N / DSP-200W6N | | DSP-240W5N / DSP-240W6N | | DSP-160VW5N / DSP-160VW6N | | DSP-240VW5N / DSP-240VW6N | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Method | — | Water-cooled | | | | | | | | | | | | | |
| Control Method | — | Fixed Speed Type | | | | | | | | | | V type (VSD) | | | |
| Discharge Pressure | MPa | 0.75 | 0.93 | 0.75 | 0.93 | 0.75 | 0.93 | 0.75 | 0.93 | 0.75 | 0.93 | 0.75 | 0.93 | 0.75 | 0.93 |
| Capacity | m³/min | 23.4 | 20.7 | 26.0 | 22.2 | 28.5 | 24.8 | 37.0 | 32.2 | 40.5 | 35.0 | 28.5 | 24.8 | 40.5 | 35.0 |
| Nominal Output | kW | 132 | | 145 | | 160 | | 200 | | 240 | | 160 | | 240 | |
| Motor Type | — | 4-Pole TEFC Flange Motor | | | | | | | | | | | | | |
| Intake Air Press. / Temp. | — | Atmospheric Pressure / 0 – 40°C | | | | | | | | | | | | | |
| Discharge Temperature | °C | Cooling Water Temperature + 13 or below | | | | | | | | | | | | | |
| Discharge Pipe Diameter | B | 2 1/2 (Flange) | | | | | | 3 (Flange) | | | | 2 1/2 (Flange) | | 3 (Flange) | |
| Starting Type | — | Star-Delta | | | | | | | | | | Inverter | | | |
| Driving Method | — | Direct Connection with Motor + Gear Driving | | | | | | | | | | | | | |
| Lubricating Oil Capacity | L | 40 (Not filled) | | | | | | 50 (Not filled) | | | | 40 (Not filled) | | 50 (Not filled) | |
| Cooling Fan Motor Output | kW | 0.4 | | | | | | | | | | | | | |
| Weight | kg | 3,800 | | | | | | 4,800 | | | | 4,000 | | 5,100 | |
| Dimensions (W×D×H) | mm | 2,500×1,600×1,925 | | | | | | 2,800×1,800×1,950 | | | | 2,500×1,600×1,925 | | 2,800×1,800×1,950 | |
| Sound Level (1.5m from front side) | dB(A) | 68 | 69 | 69 | 70 | 69 | 70 | 69 | 70 | 70 | 71 | 70 | 70 | 71 | 71 |

NOTE:
1. Capacity is converted value at its inlet condition (atmospheric pressure).
2. Sound Level is value at 1.5m in front and 1m height in an anechoic room. It may vary in different operating conditions and/or different environment with echo of actual field installations.
3. Earth leakage circuit breaker is out of scope of supply from Hitachi.
4. DSP *NEXT series* compressors are not designed, intended or approved for breathing air applications.
5. Pressures are indicated as the gauge pressure.
6. DSP *NEXT series* can not run in excess of 40°C of ambient temperature. Ventilation and/or air conditions should be considered to maintain the compressor room temperature.
7. For the quality of the cooling water, contact your nearest dealer or Hitachi local representative offices.
8. Install the DSP indoors and avoid flammable and corrosive environment, moisture and dust.
9. Hitachi may make improvements and/or changes in the appearance and/or specifications described in this publication at anytime without notice.





# Advanced Technology, Top Class of Energy-Saving Achieved
# Large Class of Air-cooled DSP 132–240kW


**Compact Design**
Air/Oil coolers are installed in both sides of drive system.

**Dual-V installation of Coolers**
Quick and Easy access through rear panel for inspection and cleaning.

**Oil Mist Remover as Standard**
Collects oil mist from the gear case and recycles.

**Low Sound Airflow Path**
Newly developed silencer structure airflow path.

**TEFC Motor**
Highly reliable, highly efficient 4-pole TEFC motor.

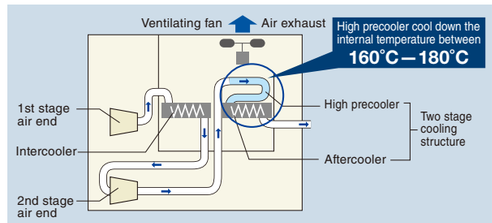
## *High Reliability and Easy Maintenance*

### Totally enclosed flange motor is standard
New totally enclosed flange motor is applied to improve reliability. Motor shaft in direct connection without coupling enables easy maintenance work.

### High precooler system (air cooled models)
High precooler system reduces temperature of extremely hot air to aftercooler and two stage cooling structure improves reliability.

### High Discharge Pressure Available
1.0MPa is available with high reliability.

### Maintenance Friendly
DSP series provides easy accessibility for inspection and maintenance.




## Specifications

| Item・Unit | Model | DSP-132A5 / DSP-132A6 | | DSP-145A5 / DSP-145A6 | | DSP-160A5 / DSP-160A6 | | DSP-200A5 / DSP-200A6 | | DSP-240A5 / DSP-240A6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling Method | — | Air-cooled | | | | | | | | | |
| Discharge Pressure | MPa | 0.75 | 1.0 | 0.75 | 1.0 | 0.75 | 1.0 | 0.75 | 1.0 | 0.75 | 1.0 |
| Capacity | m³/min | 22.5 | 19.0 | 25.0 | 20.0 | 27.5 | 22.5 | 35.5 | 30.0 | 40.0 | 32.5 |
| Nominal Output | kW | 132 | | 145 | | 160 | | 200 | | 240 | |
| Motor Type | — | 4-Pole TEFC Flange Motor | | | | | | | | | |
| Intake Air Press. / Temp. | — | Atmospheric Pressure / 0 – 40°C | | | | | | | | | |
| Discharge Temperature | °C | Ambient Temperature + 15 or below | | | | | | | | | |
| Discharge Pipe Diameter | B | 2 1/2 (Flange) | | | | | | 3 (Flange) | | | |
| Starting Type | — | Star-Delta | | | | | | | | | |
| Driving Method | — | Direct Connection with Motor + Gear Driving | | | | | | | | | |
| Lubricating Oil Capacity | L | 50 (Not filled) | | | | | | 60 (Not filled) | | | |
| Cooling Fan Motor Output | kW | 4.4 (1.1 × 4) | | | | | | 6.0 (1.5 × 4) | | | |
| Weight | kg | 3,900 | | | | 4,000 | | 5,200 | | | |
| Dimensions (W×D×H) | mm | 2,900×1,710×1,925 | | | | | | 3,200×1,890×1,950 | | | |
| Sound Level (1.5m from front side) | dB(A) | 73 | 74 | 74 | 75 | 74 | 75 | 76 | 77 | 77 | 78 |

NOTE:
1. Capacity is converted value at its inlet condition (atmospheric pressure).
2. Sound Level is value at 1.5m in front and 1m height in an anechoic room. It may vary in different operating conditions and/or different environment with echo of actual field installations.
3. Earth leakage circuit breaker is out of scope of supply from Hitachi.
4. DSP series compressors are not designed, intended or approved for breathing air applications.
5. Pressures are indicated as the gauge pressure.
6. DSP series can not run in excess of 40°C of ambient temperature. Ventilation and/or air conditions should be considered to maintain the compressor room temperature.
7. Install the DSP indoors and avoid flammable and corrosive environment, moisture and dust.
8. Hitachi may make improvements and/or changes in the appearance and/or specifications described in this publication at anytime without notice.

# High Performance NEW DSP Series

## Large Air Delivery

Newly-developed high efficiency air end is applied, and discharge air capacity is increased dramatically.

**22kW Single-stage Model (0.69MPa)**


Unit: m³/min

**37kW Single-stage Model (0.69MPa)**

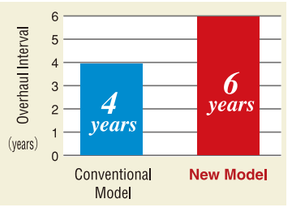

Unit: m³/min

## High Reliability and Easy Maintenance

**Totally-enclosed, fan-cooled (TEFC) motor is equipped as standard feature.**

### Longer Overhaul Interval

Overhaul interval is extended from 4 years to 6 years.

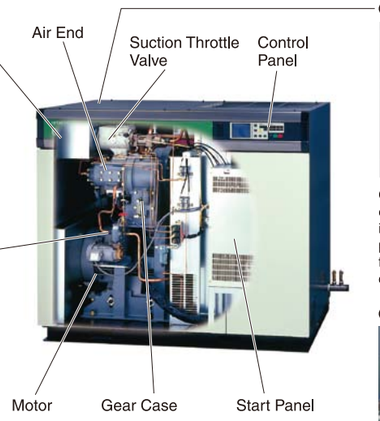



● Suction Filter

Can easily be taken out by removing the left cover.

● Coolant Filter (air-cooled model)

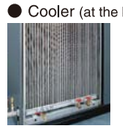
Can be taken out without disconnecting the pipe.




● Oil Mist Remover (option)

Can be built in the package, eliminating the need for installing the gear case vent pipe. All amounts of oil mist from the gear case are collected and reused.

● Cooler (at the back)



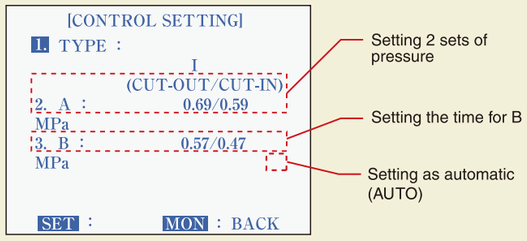
The cooler is installed at the back of the unit and easy to clean.

## Further Energy Saving

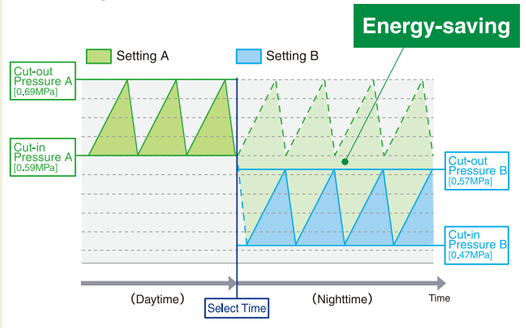
### ● Hitachi Original Pressure Setting

2 sets of pressure setting, **A** and **B**, are available for capacity control. By setting the operation time, it executes capacity control by either **A** or **B**. In addition, **A** and **B** can be switched externally.*

* Additional modification for terminal block is required.




■ **Example**






VARIABLE SPEED CONTROL INVERTER DSP V PLUS

AIR COOLED SINGLE STAGE 22kW / 37kW / 55kW


## PQ WIDEMODE (22kW, 37kW, 55kW, Air-Cooled, Single-Stage Models)

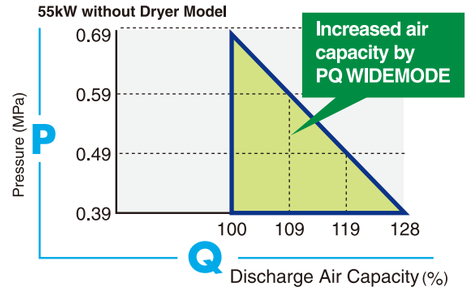
Hitachi inverter controlling system brings about larger capacity under lower pressure or smaller capacity under higher pressure. The available pressure range is between 0.39 and 0.69MPa and air capacity has increased maximum 19–28% compared with conventional models.

### ● Capacity in the PQ WIDEMODE

Unit: m³/min

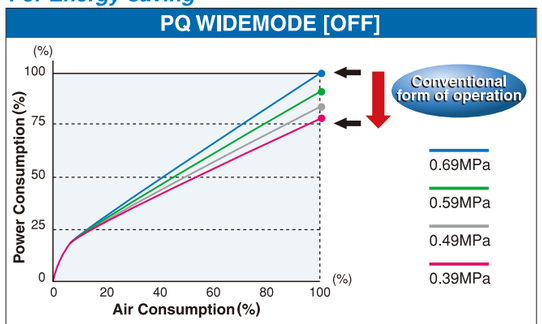
| Model \ Discharge Air Pressure MPa | 0.39 | 0.49 | 0.59 | 0.69 |
|---|---|---|---|---|
| 22kW | 4.3 | 4.0 | 3.7 | 3.4 |
| 37kW | 6.4 | 6.0 | 5.5 | 5.0 |
| 55kW | 8.2 | 7.6 | 7.0 | 6.4 |

Note: Dryer built-in model and 37kW minimum pressure are 0.49MPa in the PQ WIDEMODE.



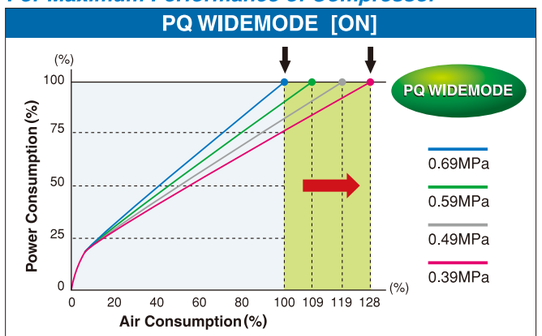

### ● PQ WIDMODE is set up as ON or OFF, depends on needs

*For Energy-saving*




① When the operating pressure is reduced from 0.69MPa to 0.59MPa, the maximum power consumption is automatically reduced to about 92% of 0.69MPa.
② When the pressure is reduced to 0.49MPa, the power consumption reaches about 85%. When the pressure is reduced to 0.39MPa, the power consumption reaches about 79%. If you know your air consumption for sure and wish to reduce the power consumption depressurization, PQ WIDEMODE OFF is recommended.

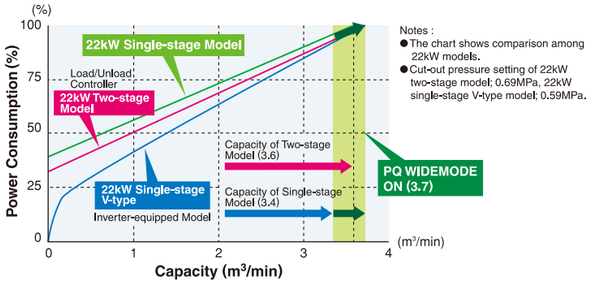
*For Maximum Performance of Compressor*




① Reducing the operating pressure from 0.69MPa to 0.39MPa, the power consumption is decreased about 79% of 0.69MPa.
② With the excess power from depressurization, you can increase the air flow to 128% of the rating. At that time, the power consumption reaches 100%. If you wish to use maximum performance, PQ WIDEMODE ON is recommended.

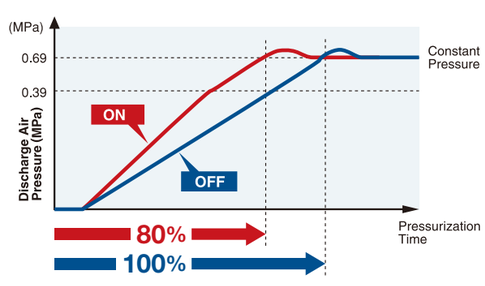
## Further Discharge Air Capacity and Energy-Saving Effect, Comparing with Two-Stage Model (22kW Single-Stage Model)

The maintenance cost for single-stage model low.
PQ WIDEMODE offers competitive discharge air capacity with two-stage model.




## Shorten Pressurization Time (PQ WIDEMODE)

Pressurization time is shortened by maximum air capacity operation. For example, when 55kW model rises pressure in air receiver from the ambient pressure to 0.69MPa, it can shorten maximum of 20 % more than conventional model.



# Specifications New DSP Fixed Speed Series

## Single-Stage

### Air-cooled

| Item・Unit \ Model | | | Without Dryer Model | | | | | | | | Dryer Built-in Model | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DSP-15A5II | | DSP-22A5II | | DSP-37A5III | | DSP-55A5II | | DSP-15AR5II | DSP-22AR5II | DSP-37AR5III | DSP-55AR5II |
| | | | DSP-15A6II | | DSP-22A6II | | DSP-37A6III | | DSP-55A6II | | DSP-15AR6II | DSP-22AR6II | DSP-37AR6III | DSP-55AR6II |
| Discharge Pressure | | MPa | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | | | |
| Discharge Air Delivery | | m³/min | 2.0 | 2.5 | 3.4 | 4.0 | 5.0 | 5.9 | 6.4 | 8.0 | 2.0 | 3.4 | 5.0 | 6.4 |
| Motor Nominal Output | | kW | 15 | | 22 | | 37 | | 55 | | 15 | 22 | 37 | 55 |
| Suction Pressure / Temperature | | ℃ | Atmospheric Pressure / 0 – 40 | | | | | | | | Atmospheric Pressure / 5 – 40 | | | |
| Discharge Temperature | | ℃ | Atmospheric Temperature + 15 or below | | | | | | | | | | | |
| Discharge Pipe Diameter | | — | R1 | | | | R1 1/2 | | | | R1 | | R1 1/2 | |
| Starter Method | | — | Full Voltage Start | | Star-Delta (3 contact) | | | | | | Full Voltage Start | Star-Delta (3 contact) | | |
| Driving Method | | — | V-Belt + Gear-Driven | | | | | | | | | | | |
| Cooling Fan Motor Nominal Output | | kW | 0.75 | | | | | | 0.9 | | 0.75 | | | 0.9 |
| Coolant Pump Motor Nominal Output | | kW[50/60Hz] | 0.2 / 0.3 | | | | | | | | | | | |
| Lubricating Oil Amount | | L | 12 (Not filled in) | | | | 18 (Not filled in) | | | | 12 (Not filled in) | | 18 (Not filled in) | |
| Air Dryer | P.D.P. | ℃ | — | | | | | | | | 10 (Under Pressure) | | | |
| | Refrigerator Nominal Output | kW | | | | | | | | | 0.5 | 1.1 | | |
| | Refrigerant | — | | | | | | | | | R407C | | | |
| | Fan Motor Output | W | | | | | | | | | 25 | | 25 × 2 | 120 |
| Weight | | kg | 750 | | 800 | | 1,020 | | 1,240 | | 780 | 830 | 1,170 | 1,390 |
| Dimensions (W×D×H) | | mm | 1,400×970×1,400 | | | | 1,780×980×1,500 | | | | 1,400×970×1,400 | | 2,180×980×1,500 | |
| Sound Level (1.5m from front side) | | dB(A) | 62 | 63 | 63 | 64 | 66 | 68 | 68 | 70 | 62 | 63 | 66 | 68 |

### Water-cooled

| Item・Unit \ Model | | | Without Dryer Model | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DSP-15W5I | | DSP-22W5I | | DSP-37W5III | | DSP-45W5III | | DSP-55W5III | |
| | | | DSP-15W6I | | DSP-22W6I | | DSP-37W6III | | DSP-45W6III | | DSP-55W6III | |
| Discharge Pressure | | MPa | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | 0.39 | 0.69 | 0.39 |
| Discharge Air Delivery | | m³/min | 2.0 | 2.5 | 3.4 | 4.0 | 4.2 | 5.9 | 5.0 | 6.8 | 6.4 | 8.0 |
| Motor Nominal Output | | kW | 15 | | 22 | | 37 | | 45 | | 55 | |
| Suction Pressure / Temperature | | ℃ | Atmospheric Pressure / 0 – 40 | | | | | | | | | |
| Discharge Temperature | | ℃ | Cooling Water Temperature + 13 or below | | | | | | | | | |
| Discharge Pipe Diameter | | — | R1 | | | | R1 1/2 | | | | | |
| Amount of Cooling Water | | L/min | 50 | | 50 | | 60 | | 80 | | 80 | |
| Cooling Water Temperature | | ℃ | 32 or below | | | | | | | | | |
| Cooling Water Pipe Temperature | | — | R3/4 | | | | R1 | | | | | |
| Starter Method | | — | Full Voltage Start | | Star-Delta (3 contact) | | | | | | | |
| Driving Method | | — | V-Belt + Gear-Driven | | | | | | | | | |
| Cooling Fan Motor Nominal Output | | kW | 0.1 | | | | | | | | | |
| Lubricating Oil Amount | | L | 10 (Not filled in) | | | | 14 (Not filled in) | | | | | |
| Weight | | kg | 690 | | 760 | | 970 | | 1,190 | | 1,190 | |
| Dimensions (W×D×H) | | mm | 1,400×970×1,400 | | | | 1,520×980×1,500 | | | | | |
| Sound Level (1.5m from front side) | | dB(A) | 62 | 63 | 63 | 64 | 64 | 66 | 64 | 66 | 64 | 66 |

## Two-Stage

### Air-cooled

| Item・Unit \ Model | | | Without Dryer Model | | | | | | Dryer Built-in Model | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DSP-22AT5I | | DSP-30AT5I | | DSP-37AT5I | | DSP-22ATR5I | | DSP-30ATR5I | | DSP-37ATR5I | |
| | | | DSP-22AT6I | | DSP-30AT6I | | DSP-37AT6I | | DSP-22ATR6I | | DSP-30ATR6I | | DSP-37ATR6I | |
| Discharge Pressure | | MPa | 0.69 | 0.88 | 0.69 | 0.88 | 0.69 | 0.88 | 0.69 | 0.88 | 0.69 | 0.88 | 0.69 | 0.88 |
| Discharge Air Delivery | | m³/min | 3.6 | 3.1 | 4.6 | 3.9 | 5.3 | 4.6 | 3.6 | 3.1 | 4.6 | 3.9 | 5.3 | 4.6 |
| Motor Nominal Output | | kW | 22 | | 30 | | 37 | | 22 | | 30 | | 37 | |
| Suction Pressure / Temperature | | ℃ | Atmospheric Pressure / 0 – 40 | | | | | | Atmospheric Pressure / 5 – 40 | | | | | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | | | | | | | | | |
| Discharge Pipe Diameter | | — | R 1 1/2 | | | | | | | | | | | |
| Starter Method | | — | Star-Delta (3 contact) | | | | | | | | | | | |
| Driving Method | | — | V-Belt + Gear-Driven | | | | | | | | | | | |
| Cooling Fan Motor Nominal Output | | kW | 0.75 | | | | | | | | | | | |
| Lubricating Oil Capacity | | L | 18 (Not filled) | | | | | | | | | | | |
| Air Dryer | P.D.P. | ℃ | — | | | | | | 10 (Under Pressure) | | | | | |
| | Refrigerator Nominal Output | kW | | | | | | | 1.1 | | | | | |
| | Refrigerant | — | | | | | | | R407C | | | | | |
| | Fan Motor Output | W | | | | | | | 25 × 2 | | | | | |
| Weight | | kg | 1,050 | | 1,150 | | | | 1,200 | | 1,300 | | | |
| Dimensions (W×D×H) | | mm | 1,780×980×1,500 | | | | | | 2,180×980×1,500 | | | | | |
| Sound Level (1.5m from front side) | | dB(A) | 64 | | 66 | | 67 | | 64 | | 66 | | 67 | |



# Specifications New DSP V-type with Variable Speed Drive

## Single-Stage

| Item・Unit \ Model | | | Without Dryer Model | | | Dryer Built-in Model | | | Without Dryer Model | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DSP-22VA5I | DSP-37VA5II | DSP-55VA5I | DSP-22VAR5I | DSP-37VAR5II | DSP-55VAR5I | DSP-37VW | DSP-55VW |
| | | | DSP-22VA6I | DSP-37VA6II | DSP-55VA6I | DSP-22VAR6I | DSP-37VAR6II | DSP-55VAR6I | | |
| Cooling Method | | — | Air-Cooled | | | | | | Water-Cooled | |
| Rated | Discharge Pressure | MPa | 0.69 | | | | | | 0.69 | |
| | Discharge Air Delivery | m³/min | 3.4 | 5.0 | 6.4 | 3.4 | 5.0 | 6.4 | 4.2 | 6.4 |
| In PQ WIDEMODE | Discharge Pressure | MPa | 0.39 | | | 0.49 | | | — | |
| | Discharge Air Delivery | m³/min | 4.3 | 6.4 | 8.2 | 4.0 | 6.0 | 7.6 | | |
| Operating Range of PQ WIDEMODE | | MPa | 0.39–0.69 | | | 0.49–0.69 | | | | |
| Motor Nominal Output | | kW | 22 | 37 | 55 | 22 | 37 | 55 | 37 | 55 |
| Motor Type | | — | 4-pole TEFC Motor | | | | | | 4-pole TEFC Motor | |
| Suction Pressure / Temperature | | ℃ | Atmospheric Pressure / 0 – 40 | | | Atmospheric Pressure / 5 – 40 | | | Atmospheric Pressure / 0 – 40 | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | | | | Cooling Water Temperature + 13 or below | |
| Discharge Pipe Diameter | | — | R 1 | R 1 1/2 | | R 1 | R 1 1/2 | | R 1 1/2 | |
| Starter Method | | — | Inverter | | | | | | Inverter | |
| Driving Method | | — | Inverter Control + Purge Control | | | | | | Inverter Control + Purge Control | |
| Cooling Fan Motor Nominal Output | | kW | 0.75 | | 0.9 | 0.75 | | 0.9 | 0.2 | |
| Lubricating Oil Filling Amount | | L | 12 (Not filled) | 18 (Not filled) | | 12 (Not filled) | 18 (Not filled) | | 14 (Not filled) | |
| Coolant Pump Motor Nominal Output | | kW[50/60Hz] | 0.2 / 0.3 | | | | | | — | |
| Amount of Cooling Water | | L/min | — | | | | | | 60 | 80 |
| Cooling Water Temperature | | ℃ | | | | | | | 32 or below | |
| Cooling Water Pipe Diameter | | — | | | | | | | R 1 | |
| Air Dryer | P.D.P. | ℃ | — | | | 10 (Under Pressure) | | | — | |
| | Refrigerator Nominal Output | kW | | | | 1.1 | | | | |
| | Refrigerant | — | | | | R407C | | | | |
| | Fan Motor Output | W | | | | 25 | 120 | | | |
| Weight | | kg | 850 | 1,080 | 1,180 | 880 | 1,230 | 1,330 | 1,050 | 1,150 |
| Dimensions (W×D×H) | | mm | 1,650×970×1,400 | 1,780×980×1,500 | | 1,650×970×1,400 | 2,180×980×1,500 | | 1,780×980×1,500 | |
| Sound Level (1.5m from front side) | | dB(A) | 63 | 66 | 68 | 63 | 66 | 68 | 64 | |

## Two-Stage

| Item・Unit \ Model | | | Without Dryer Model | | Dryer Built-in Model | |
|---|---|---|---|---|---|---|
| | | | DSP-37VAT5 | | DSP-37VATR5 | |
| | | | DSP-37VAT6 | | DSP-37VATR6 | |
| Cooling Method | | — | Air-Cooled | | | |
| Discharge Pressure | | MPa | 0.69 | 0.88 | 0.69 | 0.88 |
| Discharge Air Delivery | | m³/min | 5.3 | 4.6 | 5.3 | 4.6 |
| Motor Nominal Output | | kW | 37 | | | |
| Motor Type | | — | 4-pole TEFC Motor | | | |
| Suction Pressure / Temperature | | ℃ | Atmospheric Pressure / 0 – 40 | | Atmospheric Pressure / 5 – 40 | |
| Discharge Temperature | | ℃ | Ambient Temperature + 15 or below | | | |
| Discharge Pipe Diameter | | — | R 1 1/2 | | | |
| Starter Method | | — | Inverter | | | |
| Driving Method | | — | Inverter Control + Purge Control | | | |
| Cooling Fan Motor Nominal Output | | kW | 0.75 | | | |
| Lubricating Oil Filling Amount | | L | 18 (Not filled) | | | |
| Air Dryer | P.D.P. | ℃ | — | | 10 (Under Pressure) | |
| | Refrigerator Nominal Output | kW | | | 1.1 | |
| | Refrigerant | — | | | R407C | |
| | Fan Motor Output | W | | | 25 × 2 | |
| Weight | | kg | 1,200 | | 1,350 | |
| Dimensions (W×D×H) | | mm | 1,780×980×1,500 | | 2,180×980×1,500 | |
| Sound Level (1.5m from front side) | | dB(A) | 67 | | 67 | |

NOTE:

1. Capacity shows the flow rate converted in suction condition at rated discharge pressure.
2. Noise Level is the value under the condition of full load running and auto-drain valves closed in an anechoic room.
   It may vary in different operating conditions and/or different environments with echo of actual field installations.
   Noise level might be increased by 3dB when PQ WIDEMODE is ON.
3. P.D.P. is measured at 30 degree C of intake air temperature and rated discharge pressure.
   P.D.P. might be worse at 0.4MPa or less of discharge pressure.
   P.D.P. might be 13 degree C at PQ WIDEMODE ON and 0.6MPa of discharge pressure.
4. Free Air Delivery of Built-in Dryer model may decrease by up to 3% when drain condensates.
5. Earth leakage circuit breaker is out of scope of supply from Hitachi.
6. DSP series compressors are not designed, intended or approved for breathing air applications.
7. Pressures are indicated as the gauge pressure.
8. New DSP series cannot run in excess of 40℃ of ambient temperature. Ventilation and/or air conditions should be considered to maintain the compressor room temperature.
9. For the quality of the cooling water, contact your nearest dealer or Hitachi local representative offices.
10. Install the DSP indoors and avoid flammable and corrosive environment, moisture and dust.
11. Motor output is nominal output.
12. Hitachi may make improvements and/or changes in the appearance and/or specifications described in this publication at anytime without notice.

# Optional Specifications

## COSMOS Ⅱ (COmpressor Status MOnitoring System)

Web monitoring system shows real time status of compressors via office computer with high speed interface(100BASE-T).

### Features

**1 Labor saving**

A COSMOS Ⅱ module can set and monitor operating conditions of maximum four (4) DSP units, which saves costs of daily checking and facility workers.

**2 Monitoring energy saving**

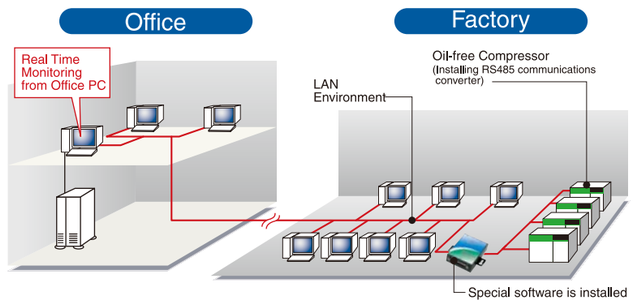
A COSMOS Ⅱ module can monitor the history of compressor load from data of load factor, amperage, mean-load and other operating data.

**3 Immediate failure notice**

Operating conditions can be monitored visually by animations and bar charts. In an emergency, the operating data and shutdown history are conveyed immediately to make necessary maintenance quicker.

**4 Easy installation**

RS485 Multi Drop cable system is applied. In addition, connecting to existing LAN cable makes wiring constraction easy and economical. When the optional database software is introduced, additional functions such as trend generation will be available to enhance the monitoring capability.




### Specifications (model: COS-200)

| | |
|---|---|
| Interface | RS485 (D-SUB 25-pin connector) - LAN (10/100BASE-T) |
| Transmission Speed | 9600bps |
| Communication System | Full duplex |
| Synchronization System | Start-stop synchronous |
| Isolation | None |
| Compressor | DSP with control board ver. VO.Z.Z. or higher |
| No. of Compressors Monitored | 4 (monitoring timing with multi-monitor: 10 s) |
| Transfer Format | Start bit: 1, data bit: 7, parity: even, stop bit: 1 |
| Dimensions and Weight | 90 × 64 × 23mm, 200g |
| Operating Environment | Temperature: 0–40˚C, humidity: 30–80% |
| Power Supply | 100-240VAC (AC adapter:12V, 0.9A) |
| LAN Protocol | TCP/IP |
| RS485 Cable Length | 250 m, max. |
| Connector | D-SUB 25-pin Female (RS485), RJ-45 (10/100BASE-T) |

* Compressor requires converts for communications. Other applicable models will be lined up sequentially.
* This system is only for COSMOS Ⅱ body, and user shall do wiring separately.
* For existing compressors already installed, please contact Hitachi authorized distributors.
* The PC should be a DOS/V machine with Windows®98,XP,NT and 2000 and browser (IE6.0 or higher).
* It always uploads data in a short time. However, due to facility condition, semantics may slow down.

● "Windows" is a registered trademark of Microsoft Corporation.

## Dual Operation

Dual operation is available only by wiring.

**Communication between 2 compressors allows operation mode switching by pressure and failure judgement.**

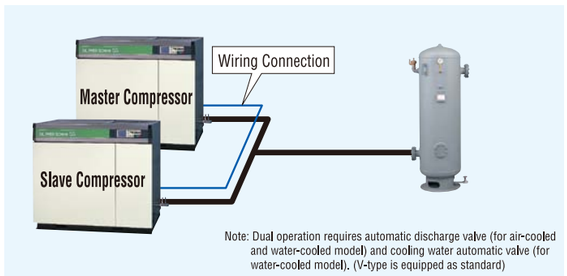
- ☐ Alternate Operation Function
- ☐ Pressure Back-up Function
- ☐ Failure Back-up Function

● **Operation Setting**

[MULTI-U SETTING]

| | | |
|---|---|---|
| 1. | MODE : | DUAL |
| 2. | SELECT : | SLAVE |
| 3. | DUAL TIME : | 8.0h |
| 4. | SWITCH METHOD : | OVERLAP |
| 5. | SWICHOVER : | 15s |
| 6. | BUCKUP : | 0.05 MPa |
| 7. | UNLOAD : | 0.02 MPa |

SET : STORE MON : BACK




Note: Dual operation requires automatic discharge valve (for air-cooled and water-cooled model) and cooling water automatic valve (for water-cooled model). (V-type is equipped as standard)

## Other Options

### Automatic Restart Function

It restarts the oparation automatically when it is instantaneously shut down. (Time for instantaneous power interruption is between 1 to 5 seconds.)

### Auto Operation Function

Compressor can shut down automatically at low loading. (V-type is equipped as standard.)



## HITACHI FOOD GRADE DSP OIL (Option)

### HITACHI FOOD GRADE DSP OIL – HITACHI Genuine Lubricant for Machine Used in Food Industry

**Full Compliance with the International Hygiene Control Method for Food Safety "HACCP"*1**

To cope with the increasing demand for "Food Safety", HITACHI newly developed HITACHI FOOD GRADE DSP OIL, HITACHI genuine lubricant for HITACHI Oil-free Screw Compressor DSP used in food industry, fully complied with "HACCP"*1


### Features

- **The FOOD GRADE DSP OIL complies with the international hygiene control method for food safety "HACCP"*1**
- **The FOOD GRADE DSP OIL consists of only prescript substances by the U.S. FDA*2**
- **The FOOD GRADE DSP OIL is approved and registered as H1 grade*4 by the U.S. NSF International*3.**
- **The FOOD GRADE DSP OIL has doubled long life compared with the conventional mineral oils*5.**

*1 Hazard Analysis Critical Control Point
*2 Food and Drug Administration
*3 National Sanitation Foundation International
*4 The oil which can be used in places where the oil can make occasional contact with foods.
The materials must be prescript substances regulated in the U.S. Food and Drug Law: FDA21 CFR178.3570.
*5 Compared with the conventional mineral oil, longer life by adoption of chemosynthetic based lubricant.
(Exchange cycle: 8,000 operating hours or 1 year which comes earlier.)

### Specifications

| Item | | Unit | Content |
|---|---|---|---|
| ISO Viscosity Grade | | — | 46 |
| Color Phase | | — | Colorless and Transparent |
| Density | @15˚C | kg/L | 0.84 |
| Viscosity | @40˚C | mm²/s | 47 |
| Flash Point | | ˚C | 200 |
| Pour Point | | ˚C | −50 |
| Content | | L | 20 |
| Exchange Cycle | | — | 8,000 operating hours or 1 year which comes earlier |
| Retrofit | | — | Flushing running operation with the exclusive flushing use oil (new oil 20L can) for 30 minutes × twice then refill with new oil |
| Package | | — | Plastic Container Tank |
| Weight | | kg | About 18 |

Note:
1. Compliance Standard/Law: NSF H1 approval No. 138329 and FDA21 CFR178.3570
2. For retrofitting from conventional mineral oil to HITACHI FOOD GRADE DSP OIL, contact your nearest HITACHI authorized distributor/dealer.

## Proposal for Energy-Saving

**Various Energy-Saving operations are possible based on different combinations of V-type model (VSD) and Fixed Speed type model.**

**Easy Energy-Saving operation by 2 or 3 units**

### *V-M Combination* System

New Energy-Saving operation achieved by the combination of V-type and Fixed Speed type model

**More Energy-Saving is demanded based on multi-unit control**

### Multi-Unit Control with *Single-V type* unit

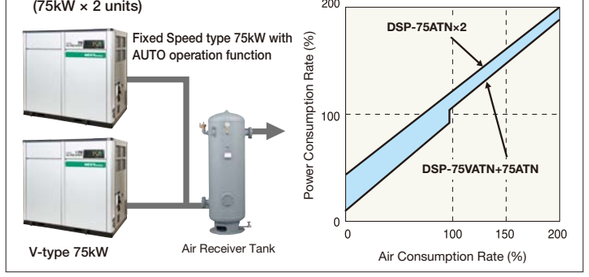
Easy Energy-Saving is possible by multi-unit control with Single V-type unit

**Further Energy-Saving effect and leveling operation hours are demanded**

### Multi-Unit Control with *Multi-V type* units

Energy-Saving and leveling operation hours are achieved by all V-type units.

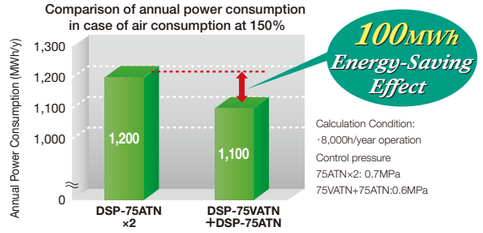
■ Basic Example of V-M Combination System
(75kW × 2 units)




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

Energy-Saving of 100MWh can be achieved in case of air consumption at 150%.

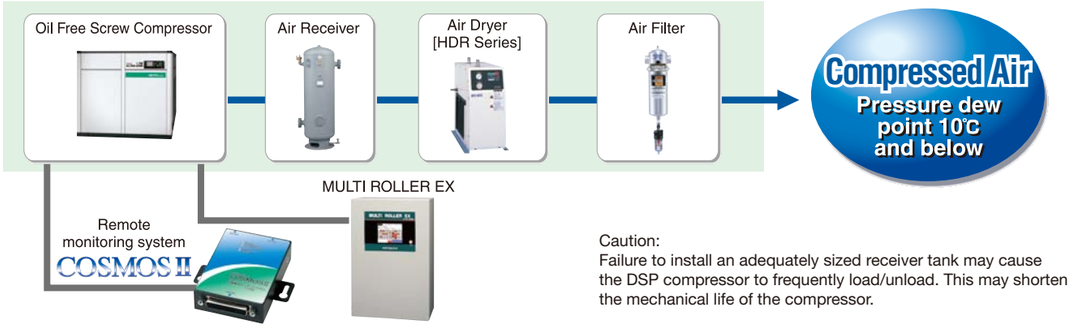
Comparison of annual power consumption in case of air consumption at 150%




Calculation Condition:
·8,000h/year operation
Control pressure
75ATN×2: 0.7MPa
75VATN+75ATN:0.6MPa

# Auxiliary Equipment to Enhance Air Quality

## Oil Free Screw Compressed Air System




Caution:
Failure to install an adequately sized receiver tank may cause the DSP compressor to frequently load/unload. This may shorten the mechanical life of the compressor.

## Hitachi Air Dryer

### Standard Specification

| Item / Model | Unit | HDR-15AX | HDR-22AX | HDR-37AX | HDR-55AX | HDR-75AX | HDR-100AX |
|---|---|---|---|---|---|---|---|
| Applicable Compressor | kW | 15 | 22 | 37 | 55 | 75 | 100 |
| Capacity (Note 1) 50/60Hz | $m^3$/min | 2.5/2.9 | 4.0/4.3 | 6.8/7.4 | 10.8/11.3 | 15.0/15.7 | 19.0/20.0 |
| Max. Inlet Pressure of Compressed Air | MPa | 0.97 | | | | | |
| Max. Inlet Temperature of Compressed Air | ˚C | 80 | | | | | |
| Ambient Temperature | ˚C | 5–40 | | | | | |
| P.D.P. | ˚C | 10 Under Pressure | | | | | |
| Rated Output of Refrigerator | kW | 0.5 | 1.1 | | 2.2 | 3.0 | 3.75 |
| Cooling Method of Condenser | — | Air Cooled | | | | | |
| Refrigerant Control Device | — | Capillary Tube | | | | | |
| Capacity Control Device | — | Hot Gas Bypass Valve | | | | | |
| Refrigerant Used | — | R407C | | | | | |
| Finish Color | — | Ivory (Munsell No. 5Y8.5/1) | | | | | |
| Pipe Conection | — | Rc 1 | Rc 1 1/2 | | | Rc 2 | Rc 2 1/2 |
| Dimensions (WxDxH) | mm | 303x603x720 | 356x513x1,067 | 356x513x1,247 | 356x903x1,247 | 356x903x1,489 | 406x1,400x1,385 |
| Weight | kg | 46 | 74 | 87 | 135 | 170 | 280 |
| Accessories | — | Auto Drain Trap / Drain Valve | | | | | |

**Notes:**
1. The capacity values listed above were measured at an ambient temperature of 30˚C, inlet temperature of 45˚C, inlet pressure of 0.7MPa, dew point of 10˚C under pressure.
2. The initial pressure losses of the dryers are less than or equal to 0.03MPa.
3. Contact our service outlet if you want to use the dryer in corrosive gas environment.

## Hitachi Filter

### Standard Specification

| Item / Model | | Unit | HAF-7.5BX | HAF-11BX | HAF-15BX | HAF-22B | HAF-37B | HAF-55B | HAF-75B | HAF-100B | HAF-125B | HAF-160B | HAF-200B | HAF-240B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Use Conditions Air Condition | Capacity (converted to the ambient pressure) | $m^3$/min | 1.2 | 1.8 | 2.4 | 3.9 | 6.6 | 10.6 | 13.8 | 20 | 27.6 | 32 | 40 | 50 |
| | Inlet Air Temperature | ˚C | 30 | | | | | | | | | | | |
| | Inlet Air Pressure | MPa | 0.69 | | | | | | | | | | | |
| | Usable Fluid | — | Compressed Air | | | | | | | | | | | |
| | Max. Pressure | MPa | 1.57 | | | 0.97 | | | | | | | | |
| | Inlet Air Temperature Range | ˚C | 5–60 | | | | | | | | | | | |
| | Ambient Temperature Range | ˚C | 2–60 | | | | | | | | | | | |
| Filtration Rating | | µm | 1 | | | | | | | | | | | |
| Filtration Efficiency | | % | 99.999 | | | | | | | | | | | |
| Pressure Drop | Initial | MPa | 0.005 or Lower | | | | | | | | | | | |
| | Terminal(to replace element) | MPa | 0.07 | | | | | | | | | | | |
| Connecting Pipe Diameter | | B(A) | Rc3/4 | Rc1 | | | Rc11/2 | | Rc2 | | 21/2 (Flange) | 3 (Flange) | | 4 (Flange) |
| Dimensions (Diameter x Length) | | mm | 92x237 | 130x290.5 | | 160x509 | 170x591 | 170x699 | 173x792 | 173x949 | 590x1,512 | 590x1,512 | | 640x1,735 |
| Weight | | kg | 1 | 2 | 2.1 | 3 | 3.3 | 3.7 | 4.3 | 6 | 57 | 61 | | 73 |

## Multi Unit Controller (MULTI ROLLER EX)

### Standard Specification

| Item / Model | | MR26-4E | MR26-8E | MR26-12E |
|---|---|---|---|---|
| Power Supply | | Single-phase AC100/200V (Common) | | |
| Frequency | | 50/60Hz(Common) | | |
| Controlled Units | | 4 | 8 | 12 |
| Input | Discharge Pressure | 0 to 1 MPa (Digital Display) | | |
| | Control | Operation Answer, Shutdown | | |
| | External | Start, Stop, External Forced Start-up, Flow Volume | | |
| Output | Control | Start, Stop, Load, PID Command | | |
| | External | Start, Shutdown, Auto | | |
| Dimensions (WxDxH) | | 400×200×600 | 500×200×900 | 500×200×1,200 |
| Weight | | 19kg | 32kg | 37kg |



# Beware of Ventilation in The Compressor Room

**DSP cannot be used in the closed room.**
**Install DSP in a facility that can ventilate the heat from DSP.**

### (1) Whole Ventilation (Figure A)

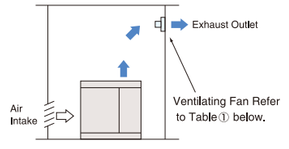
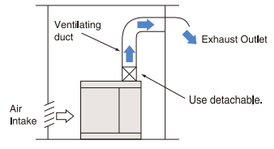
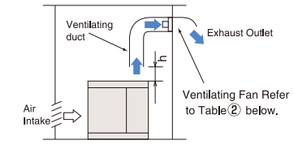
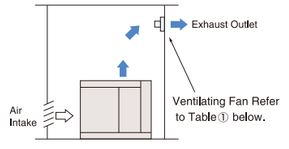
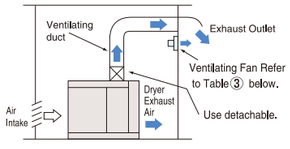
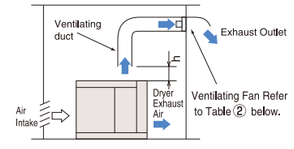
When the whole compressor room is ventilated, the ventilating fan capacity shall be larger than **recommended fan capacity** ① in the below table. (This value is calculated under the condition when the room temperature rise is 5˚C or below. Other than this temperature rise range, the calculating formula for required capacity is specified at the bottom of this page.) Install the ventilating fan as high as possible on the wall.

### (2) Ventilation with Exhaust Duct (Figure B)

- If the pressure loss is within **20Pa {2mmAq}**, ventilating fan in the duct is not required. In this case, install the removal duct on the compressor exhaust port and set it up as removable for maintenance. Also, to ventilate dryer exhaust, set up suitable fan which capacity is larger than **recommended fan capacity** ③ in the below table.

### (3) Ventilation with Exhaust Duct and Ventilating Fan (Figure C)

- If the pressure loss is **larger than 20Pa {2mmAq}**, install ventilating fan which capacity is larger than **recommended fan capacity** ② in the below table. (Keep in mind the temperature rise for selecting the fan.) In this case, set up hood on the duct inlet port and make sure to take a distance **h**, which is longer than duct diameter.
- Do not use the duct installed ventilating fan for dryer exhaust. It may cause freezing the dryer aftercooler by enforced exhaust.

| | Fig. A | Fig. B | Fig. C |
|---|---|---|---|
| Dryer excluded |   |   |   |
| Dryer built-in |   |   |   |

## Ventilation Data

### Air-cooled (Without Built-in Dryer)

#### 15—55kW (Single-stage and Two-stage)

| Item・Unit / Model | | DSP-15AII | DSP-22AII / DSP-22VAI | DSP-37AIII / DSP-37VAII | DSP-55AII / DSP-55VAI | DSP-22ATI | DSP-30ATI | DSP-37ATI / DSP-37VAT |
|---|---|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 77 | 117 | 166 | 225 | 118 | 145 | 158 |
| | (kcal/h) | (18,400) | (28,000) | (39,600) | (53,800) | (28,100) | (34,600) | (37,800) |
| Air Exhaust (air compressor) | $m^3$/min | 65 | | 100 | 120 | | 100 | |
| Approx. Temp. Rise (exhaust air) | ˚C | 18 | 27 | 25 | 28 | 18 | 22 | 23 |
| Maximum Pressure Loss (exhaust duct) | Pa (mmAq) | 20 (2) | | | | | | |
| Recommended Fan Capacity ① | $m^3$/min | 204 | 311 | 440 | 600 | 310 | 380 | 410 |
| Recommended Fan Capacity ② | $m^3$/min | 86 | 95 | 130 | 150 | | 130 | |

#### 45—120kW (Two-stage)

| Item・Unit / Model | | DSP-45ATN | DSP-55ATN / DSP-55VATN | DSP-75ATN / DSP-75VATN | DSP-90AN | DSP-100AN | DSP-120AN | DSP-100VAN |
|---|---|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 198 | 246 | 333 | 387 | 430 | 498 | 440 |
| | (kcal/h) | (47,300) | (58,700) | (79,700) | (92,500) | (102,800) | (118,900) | (105,000) |
| Air Exhaust (air compressor) | $m^3$/min | 150 | | 200 | 250 | | 270 | |
| Approx. Temp. Rise (exhaust air) | ˚C | 20 | 25 | 25 | 24 | 26 | 28 | 25 |
| Maximum Pressure Loss (exhaust duct) | Pa (mmAq) | 20 (2) | | | | | | |
| Recommended Fan Capacity ① | $m^3$/min | 530 | 650 | 890 | 1,030 | 1,140 | 1,320 | 1,170 |
| Recommended Fan Capacity ② | $m^3$/min | 180 | | 230 | 280 | | 300 | |

#### 132—240kW (Two-stage)

| Item・Unit / Model | | DSP-132A | DSP-145A | DSP-160A | DSP-200A | DSP-240A |
|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 522 | 566 | 636 | 830 | 948 |
| | (kcal/h) | (125,000) | (135,000) | (152,000) | (198,000) | (226,000) |
| Air Exhaust (air compressor) | $m^3$/min | 400 〈200×2〉 | | 440 〈220×2〉 | 500 〈250×2〉 | |
| Approx. Temp. Rise (exhaust air) | ˚C | 20 | 21 | 22 | 25 | 29 |
| Maximum Pressure Loss (exhaust duct) | Pa (mmAq) | 20 (2) | | | | |
| Recommended Fan Capacity ① | $m^3$/min | 1,400 | 1,500 | 1,700 | 2,200 | 2,500 |
| Recommended Fan Capacity ② | $m^3$/min | 480 〈240×2〉 | | 520 〈260×2〉 | 600 〈300×2〉 | |

### Air-cooled (With Built-in Dryer)

#### 15—75kW (Single-stage and Two-stage)

| Item・Unit / Model | | DSP-15ARII | DSP-22ARII / DSP-22VARI | DSP-37ARIII / DSP-37VARII | DSP-55ARII / DSP-55VARI | DSP-22ATRI | DSP-30ATRI | DSP-37ATRI / DSP-37VATR | DSP-45ATRN | DSP-55ATRN / DSP-55VATRN | DSP-75ATRN / DSP-75VATRN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 84 | 127 | 177 | 238 | 129 | 157 | 171 | 223 | 271 | 379 |
| | (kcal/h) | (20,100) | (30,400) | (42,200) | (57,000) | (30,600) | (37,400) | (40,800) | (53,300) | (64,700) | (90,700) |
| Air Exhaust (air compressor) | $m^3$/min | 65 | | 100 | 120 | 100 | | | 150 | | 200 |
| Air Exhaust (air dryer) | $m^3$/min | 18 | 20 | 30 | | | | | 60 | | 70 |
| Approx. Temp. Rise (exhaust air) | ˚C | 18 | 27 | 25 | 28 | 18 | 22 | 23 | 20 | 25 | |
| Maximum Pressure Loss (exhaust duct) | Pa (mmAq) | 20 (2) | | | | | | | | | |
| Recommended Fan Capacity ① | $m^3$/min | 223 | 338 | 470 | 630 | 340 | 420 | 450 | 600 | 720 | 1,020 |
| Recommended Fan Capacity ② | $m^3$/min | 106 | 122 | 140 | 160 | | 162 | 166 | 250 | | 360 |
| Recommended Fan Capacity ③ | $m^3$/min | 20 | 27 | 30 | 36 | 30 | 32 | 36 | 70 | | 130 |

## Ventilation Data

### ■Water-cooled (Without Built-in Dryer)

**15—75kW (Single-stage and Two-stage)**

| Item・Unit \ Model | | DSP-15WI | DSP-22WI | DSP-37WⅢ / DSP-37VW | DSP-45WⅢ | DSP-55WⅢ / DSP-55VW | DSP-45WTN | DSP-55WTN / DSP-55VWTN | DSP-75WTN / DSP-75VWTN |
|---|---|---|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 8 | 12 | 15 | 18 | 22 | 27 | 28 | 37 |
| | (kcal/h) | (1,900) | (2,800) | (3,600) | (4,300) | (5,300) | (6,400) | (6,800) | (8,800) |
| Recommended Fan Capacity ① | $m^3$/min | 21 | 31 | 40 | 50 | 60 | 75 | 80 | 100 |

**90—240kW (Two-stage)**

| Item・Unit \ Model | | DSP-90WN | DSP-100WN / DSP-100VWN | DSP-120WN | DSP-132WN | DSP-145WN | DSP-160WN / DSP-160VWN | DSP-200WN | DSP-240WN / DSP-240VWN |
|---|---|---|---|---|---|---|---|---|---|
| Heat Generation | MJ/h | 44 | 49 | 56 | 57 | 60 | 67 | 90 | 98 |
| | (kcal/h) | (10,400) | (11,600) | (13,400) | (13,400) | (14,400) | (16,000) | (21,500) | (23,500) |
| Recommended Fan Capacity ① | $m^3$/min | 120 | 130 | 150 | | 160 | 180 | 240 | 260 |

### ■Water-cooled (With Built-in Dryer)

**15—75kW (Single-stage and Two-stage)**

| Item・Unit \ Model | | DSP-45WTRN | DSP-55WTRN / DSP-55VWTRN | DSP-75WTRN / DSP-75VWTRN |
|---|---|---|---|---|
| Heat Generation | MJ/h | 52 | 53 | 83 |
| | (kcal/h) | (12,300) | (12,700) | (19,800) |
| Recommended Fan Capacity ① | $m^3$/min | 140 | 145 | 230 |

### ●Required Ventilation Capacity

$$Q=\frac{n\times H}{0.00126\times \triangle T\times 60}$$

Q：Required ventilation capacity $m^3$/min
H：Heat generation per unit MJ/h
n：The number of installed units
△T：Tolerable temperature rise ˚C
(The highest tolerable temperature of the compressor − annually highest ambient temperature)

## *Required Power Transformer Capacity*

Select an appropriate power transformer to secure required power source for a compressor.

| Model (kW) | Min. Capacity of Transformer (kVA) |
|---|---|
| 15 | 30 |
| 22 | 50 |
| 30 | 75 |
| 37 | |
| 45 | 100 |
| 55 | |
| 75 | 150 |
| 90 | 200 |
| 100 | |
| 120 | 250 |

| Model (kW) | Min. Capacity of Transformer (kVA) |
|---|---|
| 132 | 350 |
| 145 | |
| 160 | |
| 200 | 500 |
| 240 | |

**Note:**
The capacity of transformer changes dependent on the specs of power cable.

## ⚠ Safety Precautions

■ **Regarding compressor application**
- The compressor described in this catalog utilizes only air as a gas. Absolutely avoid using it for compression of a gas other than air — this could result in a fire hazard or damage to the equipment.
- Never use compressed air for human breathing.

■ **Regarding installation site**
- Install this compressor indoors. Avoid using it at a place susceptible to moisture such as precipitation or vapors — this could result in a fire hazard, electric shock, rusting or shortened life of parts.
- There should be no explosive or flammable gas(acetylene, propane, etc.), organic solvent, explosive powder or flame used near the compressor — otherwise there is a fire hazard.
- Avoid using the compressor at a palace 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.

■ **Regarding usage**
- Before use, be sure to read the instruction manual thoroughly for correct use of the compressor.
- Absolutely avoid modifying the compressor or its components—this could result in damage or malfunction.



MEMO