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Products described in this catalog may differ from different countries or regions. Contact your nearest Hitachi representative office for details.

For further information, please contact your nearest sales representative.
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”.

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

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.

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.

Model List

[Table]

- DSP Fixed Speed Series
- DSP V-type with Variable Speed Drive

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

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.

Hi-precooler System

Air discharge is cooled 160–180°C by Hi-precooler.

Cut Down Maintenance and Initial Cost

- V plus
- NEXT Series

Example of Hitachi 55kW without dryer model

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 NEXT series

High Capacity
Equipped with New Air-End
High capacity is realized by newly developed Air-End.

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.

Line-Up of Variety
High Discharge Pressure Available
Maximum pressure changes from 0.98MPa to 0.50MPa. 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 11.9MWh is saved annually, and in case of 90% load rate 28MWh is saved annually. (Calculation condition: air receiver tank of 2.5m³ is installed, 8,000h/year operation, 60% load rate)

About 50% Energy-Saving due to Fixed Speed Operation

Power Consumption of Conventional Operation

Power Consumption of ECOMODE Operation

Pressure

Unload Start-up Pressure of Conventional Operation

Unload Start-up Pressure of ECOMODE Operation

Load Cut-in Pressure of Conventional Operation

Load Cut-in Pressure of ECOMODE Operation

Power

Power Consumption of Conventional Operation

Power Consumption of ECOMODE Operation

Energy-Saving

Energy-Saving due to Conventional Capacity Control

Maximum Pressure

Minimum Pressure

Load Rate

Power Consumption

Energy-Saving

---

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

Significant Energy-Saving Achieved by Variable Speed Drive

---

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

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.

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.

---

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.

---

Japan Regional Award

Power Consumption of ECOMODE Operation

Power Consumption of Conventional Operation

Energy-Saving

Energy-Saving due to Fixed Speed Operation

Energy-Saving due to Conventional Capacity Control

Maximum Pressure

Minimum Pressure

Load Rate

Power Consumption

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**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.

**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.

**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.

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**Specifications**

<table>
<thead>
<tr>
<th>Fixed Speed Series (45/55/75 kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>Cooling Method</strong></td>
</tr>
<tr>
<td><strong>Sound Level (1.5m from front side)</strong></td>
</tr>
</tbody>
</table>

Note:
1. Capacity is converted value at the inlet condition (atmospheric pressure).
2. Sound Level is value at 1.5m from 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. Sound level might be increased by 2dB at PQ WIDEMODE ON.
4. DSP-P might be much worse at 0.4MPa or less of discharge pressure.
5. DSP-P might be 13 degree C at PQ WIDEMODE ON and 0.8MPa of discharge pressure.
6. Capacity of Built-in Dryer model may decrease by up to 3% when drain condensation.
7. Earth leakage circuit breaker is out of scope of supply from Hitachi.

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**Model Nomenclature**

(45/55/75 kW)
High Capacity by Equipping New
NEXTseries Air-End

Energy-Saving (V-type)
Further Energy-Saving is achieved by DSP NEXTseries with Built-in Inverter.

Low Noise and Vibration

Compact Design by Optimized Layout of Components

High Discharge Pressure Available (up to 1.0MPa)

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 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

OIL FREE SCREW TWO STAGE
(132–240kW)

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

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

Notes:
1. Capacity is converted value of its inlet condition (atmospheric pressure).
2. Sound Level is measured at 1.5m far from the motor and 1m high on an ear-protected noise. It may vary in different operating conditions and/or different environment with each of actual field installations.
3. Field connections of motor, base plate and piping etc. are the customer’s responsibility. Refer to Hitachi sales office for details.
4. The rated value is the maximum capacity. (160˚C—180˚C)
5. Pressure is indicated as the gauge pressure.

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

Power Consumption Rate (%)

Further Energy-Saving is achieved by DSP NEXTseries with Built-in Inverter.

High Capacity by Equipping New NEXTseries Air-End

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High Capacity by Equipping New NEXTseries Air-End

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

Specifications

OIL FREE SCREW TWO STAGE
(132–240kW)
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)
  - 2.8
  - 21% UP

- 37kW Single-stage Model (0.69MPa)
  - 3.4

- 41
  - 22% UP

- 5.0

Conventional Model New Model

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.

- PQ WIDEMODE (22kW, 37kW, 55kW, Air-Cooled, Single-Stage Models)
  - Further discharge air capacity and energy-saving effect, comparing with two-stage model (22kW single-stage model).
  - Shorten pressurization time (PQ WIDEMODE)
  - 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.
  - PQ WIDEMODE is set up as ON or OFF, depends on needs.

- Overhaul interval is extended from 4 years to 6 years.

- 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 other A or B. In addition, A and B can be switched externally.*

Further Energy Saving

- 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.

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.

Note: Discharge Air capacity by PQ WIDEMODE is compared with the conventional one.
## Specifications

### New DSP Fixed Speed Series

#### Single-Stage

<table>
<thead>
<tr>
<th>Item / Unit</th>
<th>Without Dryer Model</th>
<th>Dryer Built-in Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP-15AR5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Nominal Output kW</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>Speed</td>
<td>113 x 71 x 110</td>
<td>113 x 71 x 110</td>
</tr>
<tr>
<td>Noise</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Inverter Control Method</td>
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<td>—</td>
</tr>
<tr>
<td>Cooling Water Temperature °C</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Amount of Cooling Water</td>
<td>1,780×980×1,500</td>
<td>1,780×980×1,500</td>
</tr>
<tr>
<td>Sound Level (5 cm from front side) dB(A)</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Rated Discharge Pressure MPa</td>
<td>0.69</td>
<td>0.69</td>
</tr>
<tr>
<td>Discharge Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Air Delivery m³/min</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Suction Pressure / Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Pipe Diameter mm</td>
<td>1,800×1,500</td>
<td>1,800×1,500</td>
</tr>
<tr>
<td>Lubricating Oil Filling Amount kg</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cooling Fan Motor Nominal Output kW</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Weight kg</td>
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### Water-cooled

<table>
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<tr>
<td>DSP-22AR5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Nominal Output kW</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Speed</td>
<td>113 x 71 x 110</td>
<td>113 x 71 x 110</td>
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<td>Noise</td>
<td>62</td>
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<tr>
<td>Motor Nominal Output kW</td>
<td>0.75</td>
<td>0.75</td>
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<td>Speed</td>
<td>113 x 71 x 110</td>
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### New DSP V-type with Variable Speed Drive

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<tbody>
<tr>
<td>DSP-15VAR5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Nominal Output kW</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>Speed</td>
<td>113 x 71 x 110</td>
<td>113 x 71 x 110</td>
</tr>
<tr>
<td>Noise</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Inverter Control Method</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cooling Water Temperature °C</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Amount of Cooling Water</td>
<td>1,780×980×1,500</td>
<td>1,780×980×1,500</td>
</tr>
<tr>
<td>Sound Level (5 cm from front side) dB(A)</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Rated Discharge Pressure MPa</td>
<td>0.69</td>
<td>0.69</td>
</tr>
<tr>
<td>Discharge Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Air Delivery m³/min</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Suction Pressure / Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Pipe Diameter mm</td>
<td>1,800×1,500</td>
<td>1,800×1,500</td>
</tr>
<tr>
<td>Lubricating Oil Filling Amount kg</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cooling Fan Motor Nominal Output kW</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Weight kg</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

### Two-Stage

<table>
<thead>
<tr>
<th>Item / Unit</th>
<th>Without Dryer Model</th>
<th>Dryer Built-in Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP-37VAT6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Nominal Output kW</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Speed</td>
<td>113 x 71 x 110</td>
<td>113 x 110</td>
</tr>
<tr>
<td>Noise</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Inverter Control Method</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cooling Water Temperature °C</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Amount of Cooling Water</td>
<td>1,780×980×1,500</td>
<td>1,780×980×1,500</td>
</tr>
<tr>
<td>Sound Level (5 cm from front side) dB(A)</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Rated Discharge Pressure MPa</td>
<td>0.69</td>
<td>0.69</td>
</tr>
<tr>
<td>Discharge Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Air Delivery m³/min</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Suction Pressure / Temperature °C</td>
<td>Atmospheric Pressure / 0 − 40</td>
<td>Atmospheric Pressure / 0 − 40</td>
</tr>
<tr>
<td>Discharge Pipe Diameter mm</td>
<td>1,800×1,500</td>
<td>1,800×1,500</td>
</tr>
<tr>
<td>Lubricating Oil Filling Amount kg</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cooling Fan Motor Nominal Output kW</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Weight kg</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

### Notes
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.
3. It may vary in different operating conditions and/or environments with echo of actual field installations.
4. Noise level might be increased by 3dB when the IPD B/MODE is ON.
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. Note: DSP series cannot run in excess of 90°C 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, consult your nearest dealer or Hitachi local representative office.
10. Install the DSP indoors and avoid flammable and corrosive environment, moisture and dust.
**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 four or (6) 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**
   - Real-time Multi-Display cable system is applied. In addition, connecting to existing LAN cable makes existing capacity 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)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Viscosity Grade</td>
<td>VSD</td>
</tr>
<tr>
<td>Color Phase</td>
<td>Colorless and Transparent</td>
</tr>
<tr>
<td>Density @15˚C</td>
<td>0.84 kg/L</td>
</tr>
<tr>
<td>Viscosity @40˚C</td>
<td>0.20 mm²/s</td>
</tr>
<tr>
<td>Flash Point</td>
<td>200 ˚C</td>
</tr>
<tr>
<td>Pour Point</td>
<td>-50 ˚C</td>
</tr>
<tr>
<td>Content</td>
<td>8,000 operating hours or 1 year which comes earlier</td>
</tr>
<tr>
<td>Exchange Cycle</td>
<td>Flushing running operation with the exclusive flushing use oil (new oil 20L can) for 30 minutes × twice then re-fill with new oil</td>
</tr>
<tr>
<td>Package</td>
<td>Plastic Container Tank</td>
</tr>
<tr>
<td>Weight</td>
<td>About 18</td>
</tr>
</tbody>
</table>

**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**
- **More Energy-Saving is demanded based on multi-unit control**
- **Further Energy-Saving effect and leveling operation hours are demanded**

**V-M Combination System**

- **New Energy-Saving operation achieved by the combination of V-type and Fixed Speed type model**
- **Easy Energy-Saving is possible by multi-unit control with Single-V type unit**
- **Energy-Saving and leveling operation hours are achieved by all V-type units.**

**V-M Combination System**

- **Easy Energy-Saving by 2 or 3 units**
- **More Energy-Saving is demanded based on multi-unit control**
- **Further Energy-Saving effect and leveling operation hours are demanded**

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

<table>
<thead>
<tr>
<th>V-type 75kW</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100% of DSP-75VATN</td>
<td>1,200 MWh</td>
<td>1,500 MWh</td>
<td></td>
</tr>
<tr>
<td>DSP-75ATN ×2</td>
<td>1,000 MWh</td>
<td>1,200 MWh</td>
<td></td>
</tr>
<tr>
<td>DSP-75VATN +75ATN</td>
<td>1,100 MWh</td>
<td>1,300 MWh</td>
<td></td>
</tr>
</tbody>
</table>

**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”

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

**Features**

- Hazard Analysis on Critical Control Point
- Food and Drug Administration
- National Sanitation Foundation International

**Specifications**

- **ISO Viscosity Grade:** VSD
- **Color Phase:** Colorless and Transparent
- **Density @15˚C:** 0.84 kg/L
- **Viscosity @40˚C:** 0.20 mm²/s
- **Flash Point:** 200 ˚C
- **Pour Point:** -50 ˚C
- **Content:** 8,000 operating hours or 1 year which comes earlier
- **Exchange Cycle:** Flushing running operation with the exclusive flushing use oil (new oil 20L can) for 30 minutes × twice then re-fill with new oil
- **Package:** Plastic Container Tank
- **Weight:** About 18 kg
Auxiliary Equipment to Enhance Air Quality

**Oil Free Screw Compressed Air System**

![Diagram of oil-free screw compressor system]

**Hitachi Air Dryer**

**Standard Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>HDR-15A</th>
<th>HDR-20A</th>
<th>HDR-37A</th>
<th>HDR-55A</th>
<th>HDR-55ATRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor Power</td>
<td>kW</td>
<td>1.5</td>
<td>2.2</td>
<td>3.7</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Motor Power</td>
<td>kW</td>
<td>1.5</td>
<td>2.2</td>
<td>3.7</td>
<td>5.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Pressure</td>
<td>MPa</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>°C</td>
<td>-20 to 75</td>
<td>-20 to 75</td>
<td>-20 to 75</td>
<td>-20 to 75</td>
<td>-20 to 75</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>%</td>
<td>15 to 85</td>
<td>15 to 85</td>
<td>15 to 85</td>
<td>15 to 85</td>
<td>15 to 85</td>
</tr>
<tr>
<td>• Oil-free Screw</td>
<td></td>
<td>Hitachi</td>
<td>Hitachi</td>
<td>Hitachi</td>
<td>Hitachi</td>
<td>Hitachi</td>
</tr>
<tr>
<td>• Flange</td>
<td></td>
<td>Rc 2</td>
<td>Rc 2</td>
<td>Rc 2</td>
<td>Rc 2</td>
<td>Rc 2</td>
</tr>
</tbody>
</table>

**Hitachi Filter**

**Standard Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>DSP-145A</th>
<th>DSP-22A</th>
<th>DSP-30AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Generation</td>
<td>MJ/h</td>
<td>14.5</td>
<td>22.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Approx. Temp. Rise</td>
<td>°C</td>
<td>180</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Compressor Air</td>
<td>m³/min</td>
<td>1,500</td>
<td>2,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Compressed Air</td>
<td>m³/min</td>
<td>1,500</td>
<td>2,000</td>
<td>3,000</td>
</tr>
</tbody>
</table>

**Multi Unit Controller (MULTI ROLLER EX)**

**Standard Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>MRM-45(6)</th>
<th>MRM-16A</th>
<th>MRM-37(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td></td>
<td>Singlephase 110V (General)</td>
<td>Singlephase 110V (General)</td>
<td>Singlephase 110V (General)</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td>Remote Monitoring System</td>
<td>Remote Monitoring System</td>
<td>Remote Monitoring System</td>
</tr>
<tr>
<td>Discharge Pressure</td>
<td>MPa</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Contact</td>
<td></td>
<td>Operation Knob, Shutoff</td>
<td>Operation Knob, Shutoff</td>
<td>Operation Knob, Shutoff</td>
</tr>
<tr>
<td>External</td>
<td></td>
<td>Start, Stop, External Formed Start, Flue Valves</td>
<td>Start, Stop, External Formed Start, Flue Valves</td>
<td>Start, Stop, External Formed Start, Flue Valves</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>Start, Stop, Load, PID Command</td>
<td>Start, Stop, Load, PID Command</td>
<td>Start, Stop, Load, PID Command</td>
</tr>
<tr>
<td>Exhausts (W/Dcm²)</td>
<td></td>
<td>400/200/300</td>
<td>500/200/300</td>
<td>500/200/300</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>18</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

---

**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 should be larger than the recommended fan capacity 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 on the bottom of this page.) Installing the ventilating fan as high as possible on the wall.

2. Ventilation with Exhaust Duct and Ventilating Fan (Figure C)

   - If the pressure loss is larger than 20Pa (2mmHg), install ventilating fan which capacity is larger than recommended fan capacity in the below table. (Keep in mind the temperature rise for selecting the fan.) In this case, set up hood and set up a radiating device to avoid excessive heat generation. Avoid to ventilate the dryer exhaust, set up suitable fan which capacity is larger than recommended fan capacity in the below table.

---

**Ventilation Data**

- **Air-cooled (Without Built-in Dryer)**
  - 15~55kW (Single-stage and Two-stage)
  - 60~125kW (Two-stage)
  - 150~250kW (Two-stage)
  - 320~400kW (Two-stage)
  - 520~600kW (Two-stage)
  - 850~950kW (Two-stage)

---

**Options, Precautions**

- **Removal of Condensed Water**

---

**Caution:**

Failure to install an appropriately sized receiver tank may cause the oil-free compressor to frequently load/unload. This may shorten the mechanical life of the compressor.
**Ventilation Data**

**Water-cooled (Without Built-in Dryer)**

15—75kW (Single-stage and Two-stage)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Model</th>
<th>Heat Generation</th>
<th>Recommended Fan Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DSP-15W</td>
<td>8 (1,900)</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-22W</td>
<td>12 (2,800)</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-37W</td>
<td>18 (4,300)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-45W</td>
<td>22 (5,300)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-55WTN</td>
<td>27 (6,400)</td>
<td>75</td>
</tr>
</tbody>
</table>

**Water-cooled (With Built-in Dryer)**

15—75kW (Single-stage and Two-stage)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Model</th>
<th>Heat Generation</th>
<th>Recommended Fan Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DSP-15W</td>
<td>8 (1,900)</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-22W</td>
<td>12 (2,800)</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-37W</td>
<td>18 (4,300)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-45W</td>
<td>22 (5,300)</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSP-55WTN</td>
<td>27 (6,400)</td>
<td>75</td>
</tr>
</tbody>
</table>

**Recommended Power Transformer Capacity**

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

<table>
<thead>
<tr>
<th>Model (kW)</th>
<th>My Capacity of Transformer (kVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>90</td>
</tr>
<tr>
<td>22</td>
<td>150</td>
</tr>
<tr>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>37</td>
<td>200</td>
</tr>
<tr>
<td>46</td>
<td>230</td>
</tr>
<tr>
<td>55</td>
<td>240</td>
</tr>
<tr>
<td>75</td>
<td>260</td>
</tr>
<tr>
<td>90</td>
<td>280</td>
</tr>
<tr>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>150</td>
<td>320</td>
</tr>
<tr>
<td>180</td>
<td>340</td>
</tr>
</tbody>
</table>

**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 the 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 place where there is corrosive gas such as ammonia, acid, salt sulfuric 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.