Scroll Compressors

Helium-Refrigerating
For Ultra-low Temperature Applications
World's First Scroll Compressors for Ultra-low Temperature Applications Since 1985

Exclusive design for Helium Gas compressor Thanks to long experience and a wealth of know-how.

**FEATURE**

- High Reliability
- Wide Operating Range
- Lower vibration & Noise
- High Efficiency

**HISTORY**

- 1966: Started supply of reciprocating compressors for railway air conditioners.
- 1983: Started production of the world’s first scroll compressor for packaged air conditioners.
- 1985: Started production of the world’s first scroll compressor for ultra-low temperature applications.
- 1999: Started production of the 4.5 & 6HP class (φ160) units.
- 2000: Started production of the 2.5 & 3HP class (φ150) units.
- 2005: Started production of inverter-driven units.
- 2011: Started production of the 7.5 & 10HP class (φ190) units.
HIGH PRESSURE CHAMBER
This structure simplified construction (without the tip-seal and thrust bearing) assures stable operation and long life. The mechanical loss is minimized by these optimized forces thus ensuring improved performance.

OIL INJECTION COOLING SYSTEM
This system maintains discharge gas and motor temperature at low levels, achieving simultaneously high reliability and high efficiency.

OIL INJECTION COOLING SYSTEM

ADVANTAGES

STONGER AGAINST CORONA ELECTRIC DISCHARGE
Since Corona Electric Discharge is easy to occur under Helium gas ambience, Hitachi apply “High Pressure Chamber” structure & exclusive motor. Which is especially suitable for inverter control because higher surge voltage is generated from inverter. Therefore, Hitachi “High Pressure Chamber” structure has advantage on life time of motor and reliability of compressor. (Under patent application)

ADVANTAGE WITH INVERTER CONTROL

Wide Operating Range & Standardization for Compressor Unit
SHP class inverter model (SS00DHV, S501DHV) can cover range of 4-7.5HP class.
* The flow rate is based on the condition show in general data

Down Sizing of Compressor Unit by High Speed Operation

- Compressor Height
  - GA120SHA: 24.7inch(628mm)
  - 550DHV: 19.65inch(499mm)
- Compressor Weight
  - GA120SHA: 154lbs(70kg)
  - 550DHV: 81.4lbs(37kg)

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### GENERAL DATA

#### Motor Type

<table>
<thead>
<tr>
<th>Model</th>
<th>S251AH-38A2</th>
<th>S251AH-10P2UC</th>
<th>S4120DH-64A2UC</th>
<th>S4120DH-64P2UC</th>
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<tr>
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<td>Gas Flow Rate (Nm³/h)</td>
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<td>39.5</td>
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<tr>
<td>Net Weight (kg)</td>
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<td>30</td>
<td>35</td>
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<td>Lbs.</td>
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#### Motor Type

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<tr>
<th>Model</th>
<th>GA120SHA-A1SM5</th>
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<td>CE</td>
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</tbody>
</table>

Notes:
1. The compressor is cooled by injected oil.
2. Net weight includes oil, but oil is not charged at time of shipment. Because of hygroscopic property, it should be charged by customer side.
3. The gas flow rate is converted into values at atmospheric pressure (32°F=0°C). The flow rate is based on the condition shown in the below table.
4. S251AH, S250AH, S403DH, S503DH, S603DH, GA120SHA and GA150SHA are with oil sight glass.
5. cfm values are calculated with below conditions.
   - 50Hz: 2,880rpm
   - 60Hz: 3,470rpm
   - 58Hz: 3,352rpm
6. Available
SCROLL COMPRESSORS FOR ULTRA LOW TEMPERATURE APPLICATIONS

OPERATING RANGE

**S250AH and S251AH**

**S250AH and S251AH**

**S500HV and S501HV**

**S403DH, S503DH and S603DH**

**GA120SHA and GA150SHA**

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**Notes:**

- $\varepsilon$: Compression Ratio
- Absolute Discharge Pressure
- Absolute Suction Pressure

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**SCROLL COMPRESSORS FOR ULTRA LOW TEMPERATURE APPLICATIONS**