Process Durability / Energy-Saving / High Capacity

**SDE Series**

1. **Feature 1**
   - Apply screw type rotor with higher performance against by-product.
   - High corrosion resistance from structural materials and temperature control.

2. **Feature 2**
   - Energy-saving by optimal parameters

3. **Feature 3**
   - Various lineups according to pumping speed.
   - Provide a wide range of process with a variety of settings.

---

**Harsh Process Application Example**

- **Metal-Etch**
  - Al-Etch
  - W-Etch

- **PE-CVD**
  - SiN
  - SiON

- **SA-CVD**
  - TEOS
  - SiN
  - SiO

- **Metal-CVD**
  - WSi
  - HfO
  - AIO

- **LP-CVD**
  - DSC-SiN
  - HCD-SiN

- **ALD**
  - ALD-TiN
  - ALD-SiON
  - ALD-SiO

---

**Lineup by Pumping Speed**

- **SDE90X**
  - 1,300 L/min

- **SDE303X**
  - 5,000 L/min

- **SDE603X**
  - 10,000 L/min

- **SDE120TX**
  - 1,500 L/min

- **SDE1203TX**
  - 20,000 L/min

- **SDE20N12TX**
  - 30,000 L/min

- **SDE200**
  - 3,300 L/min

- **SDE30N20**
  - 50,000 L/min

- **SDE60N20**
  - 100,000 L/min

---

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**Major Products**

<table>
<thead>
<tr>
<th>Spec. / Products</th>
<th>SDE90X</th>
<th>SDE120TX</th>
<th>SDE200</th>
<th>SDE303X</th>
<th>SDE603X</th>
<th>SDE1203TX</th>
<th>SDE20N12TX</th>
<th>SDE30N20</th>
<th>SDE60N20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed [L/min]</td>
<td>1.300</td>
<td>1.500</td>
<td>3.300</td>
<td>5.000</td>
<td>10.000</td>
<td>20.000</td>
<td>30.000</td>
<td>50.000</td>
<td>100.000</td>
</tr>
<tr>
<td>Ultimate pressure [Pa]</td>
<td>1.3</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage (50/60Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption (kW)</td>
<td>1.3</td>
<td>2.8</td>
<td>2.7</td>
<td>1.5</td>
<td>1.6</td>
<td>3.2</td>
<td>3.3</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>Dimensions [mm]</td>
<td>L</td>
<td>690</td>
<td>930</td>
<td>900</td>
<td>1000</td>
<td>1000</td>
<td>1080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>370</td>
<td>400</td>
<td>400</td>
<td>450</td>
<td>450</td>
<td>515</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>501</td>
<td>500</td>
<td>905</td>
<td>1000</td>
<td>950</td>
<td>950</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


* Contact us about international standard compliance. Spec. & name of products are subject to change without prior notice. * Contact us about applicable gas.

**S-P Curve**

![S-P Curve Graph]

* S-P curves vary by combination.

**Option**

- **Dry Pump temperature selection for each process.**
- **Select booster pump / pipe heating specification.**
- **Supplemental choice of foreline & exhaust-line against by-product.**
- **Operational status can be monitored by Centralized Monitoring System (CMS).**
- **The total exhaust system of which equipped with abatement (heater, plasma, or combustion model).**

**Contact**

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© 2019 Kashiyama Industries, Ltd.
Available to large size wafer & FPD
Large capacity available by combination. Larger than 150kL/min also available on demand.

Shorter cycle-time
Large capacity around atm. pressure can achieve high speed pumping best for large L/L chamber.

Major products

<table>
<thead>
<tr>
<th>Spec. / Products</th>
<th>SDL12E50/60</th>
<th>SDL20E60</th>
<th>SDL36E60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed [L/min]</td>
<td>25,000</td>
<td>40,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Ultimate pressure [Pa]</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage (50/60Hz)</td>
<td>3Phase AC200-220V, 380-480V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions [mm] LxWxH</td>
<td>1020×520×1050</td>
<td>1370×850×1295</td>
<td></td>
</tr>
<tr>
<td>Mass [kg]</td>
<td>645</td>
<td>800</td>
<td>920</td>
</tr>
</tbody>
</table>

*1) Without N₂ purge.
* Contact us about international standard compliance. Spec. & name of products are subject to change without prior notice.

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01 FEATURE
Roots dry pump achieved smallest energy consumption & footprint in the category.

02 FEATURE
Applicable for various tools.

03 FEATURE
Over 20,000 units shipment record and ultra long-term operation record.

Power Consumption 0.35kW  Extremally Small Footprint

**Major Products**

<table>
<thead>
<tr>
<th>Spec. / Products</th>
<th>MU100X</th>
<th>MU180X</th>
<th>MU300X</th>
<th>MU600X</th>
<th>MU1218X</th>
<th>MU20N18X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed [L/min]</td>
<td>1,660</td>
<td>3,000</td>
<td>5,000</td>
<td>10,000</td>
<td>20,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Ultimate pressure [Pa]</td>
<td>1.5</td>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage (50/60Hz)</td>
<td></td>
<td>3Phase AC200-220V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption [kW]</td>
<td>0.35</td>
<td>0.5</td>
<td>0.55</td>
<td>0.6</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Dimensions [mm] (LxWxH)</td>
<td>450x230x275</td>
<td>550x280x299</td>
<td>450x230x252</td>
<td>530x230x520</td>
<td>870x380x751</td>
<td>1000x450x950</td>
</tr>
<tr>
<td>Mass [kg]</td>
<td>60</td>
<td>95</td>
<td>100</td>
<td>120</td>
<td>270</td>
<td>410</td>
</tr>
</tbody>
</table>

* Contact us about large capacity pumps.
* Contact us about international standard compliance. Spec. & name of products are subject to change without prior notice.

**S-P Curve**

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---

-2 Remarkable Solutions-

**MU-X Series**

- Over 20,000 units shipment record and ultra long-term operation record.
- Applicable for various tools.
- Power consumption 0.35kW and extremely small footprint.
- "More than" Low Power -

MU-P/H Series

High Temp., More Purge

Process Durability

Smallest Power Consumption for Process by roots

Power Consumption 0.7kW

01 FEATURE

Roots dry pump good in process durability and low power consumption.

02 FEATURE

Applicable to wide range of process from light to medium duty. *1

03 FEATURE

Hot N₂ purge available to enhance process durability. [MU-H Series]

Major Products

<table>
<thead>
<tr>
<th>Spec./Products</th>
<th>MU100P/H</th>
<th>MU180P/H</th>
<th>MU300P/H</th>
<th>MU600P/H</th>
<th>MU1218P/H</th>
<th>MU20N18P/H</th>
<th>MU30N18P/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed [L/min]*₂</td>
<td>1.660</td>
<td>3.000</td>
<td>5.000</td>
<td>10,000</td>
<td>20,000</td>
<td>30,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Ultimate pressure [Pa]*₂</td>
<td>3.0</td>
<td>5.0</td>
<td></td>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage (50/60 Hz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3Phase AC200-220V*₃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption [kW]*₄</td>
<td>0.7</td>
<td>1.0</td>
<td>0.9</td>
<td>0.95</td>
<td>1.4</td>
<td>1.5</td>
<td>1.6</td>
</tr>
<tr>
<td>Dimensions [mm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>630×350×360</td>
<td>630×350×520</td>
<td>870×380×751</td>
</tr>
<tr>
<td>Mass [kg]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70</td>
<td>130</td>
<td>110</td>
</tr>
</tbody>
</table>

*1 Contact us about application beforehand.
*2 Without N₂ purge. *3 Contact us for other voltage options.
*4 Approx. value at ultimate pressure, -0.2kW with Hot N₂ purge. *5 Package size.
* Contact us about international standard compliance. Spec. & name of products are subject to change without prior notice. * Contact us about large capacity pumps.

S-P Curve

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Contact
Handy & Air Cooled Dry Pump

NeoDry Series

01 FEATURE

Maintenance cycle; Once in 3 years!
(Approx. when Air/N₂ is used)

02 FEATURE

No Tip-seal replacement, No Performance deterioration, No Particles!

03 FEATURE

No Oil smoke, No chamber contamination!

04 FEATURE

Hassle free to replace rotary/scroll pumps!

05 FEATURE

Condensation-prone gas, like water vapor or solvent, available!

06 FEATURE

By virtue of inverter, frequency does not affect to performance!

07 FEATURE

Low noise, low vibration!

Mechanism

Two multi-stage root-rotors rotate without contact, compressing gas for exhaust.

No oil in pumping room: Dry pumping with "Clean exhaust"

"Gas ballast port" (optional) can take gas to reduce partial pressure of condensation-prone gas, and prevent it from condensation inside.

No cooling water: "Air cooled"

Roots rotors rotate without contact arising no particle. "No performance deterioration and long life"

Internal Structure of NeoDry Series except NeoDry7E
## Major Products

<table>
<thead>
<tr>
<th>Spec. / Products</th>
<th>NeoDry 7E</th>
<th>NeoDry 15E</th>
<th>NeoDry 30E</th>
<th>NeoDry 36E</th>
<th>NeoDry 60E</th>
<th>NeoDry 300E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed [L/min]</td>
<td>110</td>
<td>250</td>
<td>500</td>
<td>600</td>
<td>1,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Ultimate pressure [Pa] (Without gas ballast)</td>
<td>5.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Supply voltage (50/60Hz) (^1)</td>
<td>Single Phase, AC100 ~ 120V</td>
<td>Single Phase, AC100 ~ 120V</td>
<td>Single Phase, AC200 ~ 240V</td>
<td>Single Phase, AC200 ~ 240V</td>
<td>Single Phase, AC240 ~ 240V</td>
<td>Single Phase, AC240 ~ 240V</td>
</tr>
<tr>
<td>Gas ballast mechanism</td>
<td>Standard accessory</td>
<td>Optional (N(_2) available)</td>
<td>Standard accessory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max allowable moisture [g/h] (With gas ballast)</td>
<td>120</td>
<td>250</td>
<td>350</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise [dB(A)] (Inlet closed)</td>
<td>(\leq 58)</td>
<td>(\leq 58)</td>
<td>(\leq 60)</td>
<td>(\leq 72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration [μm-p] (Inlet closed)</td>
<td>(\leq 8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass [kg]</td>
<td>19</td>
<td>23</td>
<td>25</td>
<td>54</td>
<td>56</td>
<td>125</td>
</tr>
<tr>
<td>Inlet size</td>
<td>NW25</td>
<td>NW25</td>
<td>NW20</td>
<td>NW30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outlet size</td>
<td>NW25</td>
<td>NW25</td>
<td>NW20</td>
<td>NW30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions [mm] L×W×H (^2)</td>
<td>360×196×219</td>
<td>385×210×250</td>
<td>410×210×250</td>
<td>475×298×275</td>
<td>530×315×275</td>
<td>574×304×575</td>
</tr>
</tbody>
</table>

\(^1\) Contact us for other voltage options. \(^2\) Package size.

Contact us about International standard compliance. Spec. & name of products are subject to change without prior notice. Contact us about applicable gas.

## Application

- Vacuum Drying
- Vacuum Filling
- Accelerator
- Backing pump for Turbo
- Electrode Drying
- Suction Conveyance
- Mass Spectrograph
- Vapor Pumping
- Vacuum Degassing
- Vapor Deposition
- Centrifuge
- Solvent Pumping
- Vacuum Molding
- Gas Displacement
- Freeze Dryer
- He Pumping
- Vacuum Packing
- Electron Microscope
- Evaporator
- Plasma Cleaning etc.

## Our Customers

- Hokkaido Univ.
- Nagoya Univ.
- J-PARC
- Tohoku Univ.
- Kyoto Univ.
- SACLAC
- Institute for Molecular Science
- Gunma Univ.
- Osaka Univ.
- SPring-8
- National Institute for Materials Science
- Tsukuba Univ.
- Okayama Univ.
- Japan Atomic Energy Agency
- Nara Institute of Science and Technology
- Tokyo Univ.
- Hiroshima Univ.
- National Institute of Radiological Sciences
- Shinshu Univ.
- Kyushu Univ.

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---

### S-P Curve

![S-P Curve](image)

* S-P curves vary by combination.