VACUUM CHUCKS

Model KVR

VACUUM CHUCK

Vacuum system required additionally

KVR-2D3060

KVR-H1530

An example of fabrication of special type

[Application]

Chucks to hold workpieces by utilizing atmospheric pressure. Nonferrous and nonmagnetic materials can be held and machined. These chucks are suitable for grinding and cutting plastics and grinding aluminum, brass, stainless steel, ceramic and glass.

[Features]

● The suction holes on the chuck work face can be arranged to set an effective holding area according to shapes of workpieces by combined adjustment of thread valves and valves.

● The suction holes have cross grooves to expand the acting area. Thus, fewer thread valves are used to improve the work efficiency.

● The chuck work face is made of iron to allow self-grinding to recover parallelism.

● Since the chuck work face is made of iron, magnetic devices such as workpiece stoppers can be utilized.

● A special suction hole layout adapter can be installed according to workpieces and work procedures.

● These chucks can be mounted on magnetic chucks.

● Since no heat source or moving parts are used inside the chucks, highly precise machining is ensured.

KVR-D (Thread valve type)

● An effective holding area can be set according to shapes of workpieces by combined adjustment of thread valves and valves.

● Since suction grooves of cross shape are provided on the holding face, the number of thread valves has been reduced to enhance the work efficiency.

KVR-H (Small hole type)

● Holes of d4 are provided on the holding face at 8-mm pitches.

<Precautions for use>

The vacuum chuck is of such construction that the inside of the chuck is evacuated by a vacuum pump to reduce the internal pressure and a workpiece is held by atmospheric pressure. Therefore, the holding power is determined by a difference between the internal pressure and atmospheric pressure and the holding area. Due to physical restrictions, a difference in pressure that can be obtained by a pump is about 80 kPa (600 mmHg) in consideration of the upper limit of available evacuation efficiency. Since the same holding power as about 80 kPa (0.8 kgf/cm²) can be obtained, if the holding area of a workpiece is 100 cm², it is held by a holding power of about 800 N (80 kgf). Note, however, that if the holding face of workpieces is rough or distorted, even if slightly, atmospheric pressure leak occurs to decrease the holding power significantly. For such workpieces, some leak preventing measures must be taken. Workpieces could be deformed by heat generated during machining depending on materials and thickness of workpieces. Pay attention to machining methods. In particular, thin stainless steel sheets deform due to machining heat largely and are difficult to hold. If you have questions, please contact us.

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Size</th>
<th>Work Face</th>
<th>Hole Pitch</th>
<th>Mounting Face</th>
<th>Height</th>
<th>Mass</th>
<th>Applicable Vacuum System</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVR-2D1018</td>
<td>100 (3.93) x175 (6.89)</td>
<td>100 (3.93) x175 (6.89)</td>
<td>85 (3.34) x145 (5.70)</td>
<td>96 (3.78) x195 (7.67)</td>
<td>20 (0.78)</td>
<td>70 (2.75)</td>
<td>9kg/19 lb</td>
</tr>
<tr>
<td>KVR-2D1325</td>
<td>125 (4.92) x250 (9.84)</td>
<td>125 (4.92) x250 (9.84)</td>
<td>105 (4.13) x225 (8.85)</td>
<td>121 (4.76) x270 (10.6)</td>
<td>20 (0.78)</td>
<td>70 (2.75)</td>
<td>15kg/33 lb</td>
</tr>
<tr>
<td>KVR-2D1515</td>
<td>150 (5.90) x150 (5.90)</td>
<td>150 (5.90) x150 (5.90)</td>
<td>125 (4.92) x225 (8.85)</td>
<td>146 (5.74) x320 (12.6)</td>
<td>20 (0.78)</td>
<td>70 (2.75)</td>
<td>11kg/24 lb</td>
</tr>
<tr>
<td>KVR-2D1530</td>
<td>150 (5.90) x300 (11.8)</td>
<td>150 (5.90) x300 (11.8)</td>
<td>245 (9.64)</td>
<td>470 (18.5)</td>
<td>53kg/117 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVR-2D1545</td>
<td>150 (5.90) x450 (17.7)</td>
<td>150 (5.90) x450 (17.7)</td>
<td>405 (15.9)</td>
<td>296 (11.6) x620 (24.4)</td>
<td>65kg/144 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVR-2D2035</td>
<td>200 (7.87) x350 (13.7)</td>
<td>200 (7.87) x350 (13.7)</td>
<td>305 (12.0)</td>
<td>196 (7.71) x370 (14.5)</td>
<td>34kg/75 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVR-2D2050</td>
<td>200 (7.87) x500 (19.6)</td>
<td>200 (7.87) x500 (19.6)</td>
<td>465 (18.3)</td>
<td>520 (20.4)</td>
<td>40kg/89 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVR-2D3060</td>
<td>300 (11.8) x600 (23.6)</td>
<td>300 (11.8) x600 (23.6)</td>
<td>545 (21.4)</td>
<td>296 (11.6) x620 (24.4)</td>
<td>65kg/144 lb</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Clamp parts are included.

KVR-H1018

KVR-H1325

KVR-H1530

KVR-H1550

VACUUM CHUCKS
**Model KVR-AV**  
**AUTO VALVE TYPE VACUUM CHUCK**

An epoch-making vacuum chuck that requires no masking!

Vacuum system required additionally

Patented  
(Technical tie-up with Taiyo Tec Company)

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<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Size</th>
<th>Work Face</th>
<th>Suction Port Pitch</th>
<th>No. of Suction Ports</th>
<th>Mounting Face</th>
<th>Height</th>
<th>Mass</th>
<th>Applicable Vacuum System</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVR-AV1018</td>
<td>100 (3.93) x 175 (6.89)</td>
<td>100 (3.93)</td>
<td>175 (6.89)</td>
<td>57.5 (2.26)</td>
<td>132 (5.20)</td>
<td>72</td>
<td>11.5 (0.45)</td>
<td>195 (7.68)</td>
</tr>
<tr>
<td>KVR-AV1530</td>
<td>150 (5.90) x 300 (11.8)</td>
<td>150 (5.90)</td>
<td>300 (11.8)</td>
<td>96 (3.78)</td>
<td>240 (9.45)</td>
<td>188</td>
<td>20 (0.79)</td>
<td>70 (2.75)</td>
</tr>
<tr>
<td>KVR-AV2040</td>
<td>200 (7.87) x 400 (15.7)</td>
<td>200 (7.87)</td>
<td>400 (15.7)</td>
<td>144 (5.67)</td>
<td>348 (13.7)</td>
<td>388</td>
<td>20 (0.79)</td>
<td>70 (2.75)</td>
</tr>
<tr>
<td>KVR-AV3060</td>
<td>300 (11.8) x 600 (23.6)</td>
<td>300 (11.8)</td>
<td>600 (23.6)</td>
<td>228 (8.97)</td>
<td>540 (21.2)</td>
<td>908</td>
<td>20 (0.79)</td>
<td>70 (2.75)</td>
</tr>
</tbody>
</table>

* KVR-AV1530, KVR-AV2040 and KVR-AV3060 have places where no suction ports are provided partially.  
* Clamp parts are included.

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**Model VPU-E-AV**  
**VACUUM SYSTEM DEDICATED TO AUTO VALVE TYPE VACUUM CHUCK**

Dry/wet operations

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<table>
<thead>
<tr>
<th>Model</th>
<th>Evacuation Volume</th>
<th>Continuous Pressure</th>
<th>Suction Port</th>
<th>Compressed Air</th>
<th>Dimensions</th>
<th>Tank Capacity</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPU-E10-AV</td>
<td>110 N l/min</td>
<td>80 kPA (600 mmHg) or over</td>
<td>3/8</td>
<td>500—600 kPA (5–6 kgf/cm²)</td>
<td>180 Nl/min</td>
<td>φ277 (10.9)</td>
<td>15</td>
</tr>
</tbody>
</table>

* The capacity of a compressor to use must be 2.5 kW or over, φ12 hose, 10 m long, is included as an accessory.

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**Piping of vacuum system**

(Provide compressor)

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(Application)  
Nonferrous and nonmagnetic materials can be held and machined.  
These chucks are suitable for grinding plastics, aluminum, brass, stainless steel, ceramic and glass by machine tools. They can also be used for light duty cutting if workpieces can be held firmly.

(Features)  
- No masking is required to reduce the setup time:  
  Place a workpiece, apply grinding fluid and turn the valve. That is all required. Since the suction holes outside the workpiece are automatically closed, troublesome masking is not required and grinding can be started soon.
- Easy valve cleaning:  
  An original modular design that causes little clogging due to sludge facilitates maintenance to reduce the running cost.  
- Enhanced safety:  
  An original construction is employed that closes the auto valve instantly should a workpiece move during grinding. This design causes no vacuum break and maintains a certain level of holding power.
- Dry operations supported:  
  In dry grinding operations using no vacuum fluid, the chuck can be used with minimum necessary masking only.

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Model **KVR-GV** VACUUM CHUCK WITH BUILT-IN VACUUM SYSTEM

No external vacuum system required! Air consumption reduced significantly!

**Dry operation** (Wet operation not allowed)

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**Model KVR-G** VACUUM CHUCK (GRID SEAL TYPE)

[Application]
Suitable for grinding by vacuum chucking such nonmagnetic workpieces as aluminum alloy, copper alloy, stainless steel and plastics.

[Features]
- Workpieces are vacuum chucked in the area defined by seal rubber string set in the grid grooves, ensuring good sealing and consistent holding power.
- A desired work area can be set by cutting the seal rubber string (d6 × 5 – 20 m included) according to workpieces.
- The suction ports are provided in two places on all models to allow setting two workpieces.
- A vacuum coupler can be connected to the vacuum system. (Vacuum is turned on and off with the valve on the vacuum system.)
- Single stoppers are provided.
- The main unit is made of iron to enable the chuck to be held by an existing magnetic chuck.

See “Model KETV: ELECTROMAGNETIC CHUCK WITH VACUUM CHUCK” on page 11.
VACUUM CHUCKS

Model VPU VACUUM SYSTEM

Dry/wet operations

Dry operation
(Wet operation not allowed)

Examples of application of vacuum chucks and vacuum systems

<table>
<thead>
<tr>
<th>Pump</th>
<th>Chuck</th>
<th>VPU-E10</th>
<th>VPU-E20</th>
<th>VPU-D20</th>
</tr>
</thead>
<tbody>
<tr>
<td>1018</td>
<td>1325</td>
<td>1515</td>
<td>1530</td>
<td>1545</td>
</tr>
<tr>
<td>2035</td>
<td>2050</td>
<td>3060</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Piping of vacuum system

Vacuum system (VPU-E)

Operating valve

Vacuum chuck

Ejector type VPU-E

[Application]
A vacuum system dedicated to the vacuum chucks. The chuck side is evacuated continuously in order to effectively maintain atmospheric pressure on the workpiece on the chuck work face. Note that this system must not be modified to a pressure container.

[Features]
- A vacuum evacuation system, filter, vacuum tank and vacuum gage are incorporated neatly.
- Suction and evacuation operations to mount and demount workpieces can be done quickly and easily with the attached special operating handle.
- A difference in pressure over 80 kPa (600 mmHg) can be obtained continuously.

Dry pump type VPU-D

A vacuum system to reduce pressure by jetting air at high pressure (principle of the spray gun). This is recommended where an air line by use of a compressor is installed. This type can be used for both wet and dry machining operations. However, the use of a lubricant in the air line must be avoided.

Other types

If the physical contact with the bottom face of workpieces is poor, a large amount of air leaks, requiring a large evacuation amount. In such a case, a blower type is required for dry operations and a water-sealed vacuum pump is required for wet operations depending on work conditions. Please contact us.

Ejector type VPU-E

<table>
<thead>
<tr>
<th>Model</th>
<th>Evacuation Volume</th>
<th>Continuous Pressure Difference</th>
<th>Suction Port</th>
<th>Pressure</th>
<th>Compressed Air</th>
<th>Dimensions</th>
<th>Tank Capacity</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPU-E10</td>
<td>11DN l/min</td>
<td>80 kPa (600 mmHg) or over.</td>
<td>3/8</td>
<td>500 - 600 kPa</td>
<td>(5 - 6 kg/cm²)</td>
<td>1/4</td>
<td>φ 280 (11.0)</td>
<td>425 (16.7)</td>
</tr>
<tr>
<td>VPU-E20</td>
<td>22DN l/min</td>
<td>80 kPa (600 mmHg) or over.</td>
<td>3/8</td>
<td>360N l/min</td>
<td></td>
<td>3/8</td>
<td>φ 330 (12.9)</td>
<td>600 (23.6)</td>
</tr>
</tbody>
</table>

The capacity of a compressor to use must be 2.5 kW or over for VPU-E10 and 4.5 kW or over for VPU-E20. (1) Operating valve and (2) φ 12 hose 10 m and (3) power cable 5 m are included as accessories.

Dry pump type VPU-D (for dry operations)

<table>
<thead>
<tr>
<th>Model</th>
<th>Evacuation Volume</th>
<th>Continuous Pressure Difference</th>
<th>Suction Port</th>
<th>Power Source</th>
<th>Dimensions</th>
<th>Tank Capacity</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPU-D20</td>
<td>220 - 260N l/min (50 - 60Hz)</td>
<td>80 kPa (600 mmHg) or over.</td>
<td>3/8</td>
<td>3-phase 200 VAC, 0.4 kW</td>
<td></td>
<td></td>
<td>320 (12.6)</td>
</tr>
</tbody>
</table>

(1) Operating valve, (2) φ 12 hose 10 m and (3) power cable 5 m are included as accessories.

Model VPU-EG VACUUM SYSTEM

Light weight and compact. Satisfactory functions!

[Application]
A vacuum system dedicated to the grid seal type vacuum chucks.

[Features]
- The vacuum tank has been eliminated to make a very compact size compared with the conventional model (VPU-E10). This system can be handled easily.
- A function to check the vacuum status is incorporated.
- This is for dry operation.
- Auxiliary functions in consideration of operating status and safety are incorporated. (Vacuum adjustment, interlock with the machine via vacuum check output signals, etc.)

Model VPU-OV OPERATION BLOCK WITH VACUUM GAGE

[Application]
An option to facilitate the use of vacuum chucks.

[Features]
- The operating valve and the vacuum gage have been integrated to enable it to check the state of workpiece holding near the chuck.
- By changing the location of the blank cap, a position to mount the vacuum gage can be selected from three places.