Anti-vibration Rubber Mounts

HI-MOUNT (leveling mounts)

HI-WEDGE (wedge leveler)

Compo Mount (Anti-Vibration Mount)

Carry Mount

Compo Mount (Vibration Isolation Mount)
Industrial Vibration Solutions

Our experienced knowledge and leading-edge analysis technology provide optimum anti-vibration capabilities. Offering a variety of products is to meet diverse needs for vibration solutions.

Anti-vibration Rubber Mounts
Optimal designs and maximal efficiency

HI-MOUNT (leveling mounts)
Sophisticated anti-vibration mounts with the addition of excellent designs

HI-WEDGE (wedge leveler)
Leveling & damping devices Suitable for Clean room

Compo Mount (Anti-Vibration Mount)
Hybrid vibration isolation mounts

Compo Mount (Vibration Isolation Mount)
Hybrid vibration isolation mounts

Carry Mount
Movable, leveling mounts integrated with vibration isolators
Among Kurashiki Kako’s wide lineup, you are sure to find the product which best satisfies your requirements.

PRECAUTIONS

Procedure of designing the custom-made anti-vibration rubber mounts
Anti-vibration principles and vibration transmissibility

Procedure of anti-vibration design
Test equipment
Document for anti-vibration calculation
KA/KB Circular anti-vibration rubber mounts

Features

1. Simplified structure and low cost
   Simplified structure makes possible easy installation.

2. Space-effective
   Able to support heavy load via high spring constant for the size.

3. Available various mounting arrangements
   Compression direction, shearing direction, inclining direction, etc.

4. Easy available custom-made
   We accept special orders for custom-made rubber hardness spring or elastomer if you place large order.

Typical applications

Pump, Ventilator, Engine, Generator, Motor, Compressor, etc.

<table>
<thead>
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The elastomer is natural rubber and hardness spring 45.

The elastomer of KA-8 and KA-10 is natural rubber and hardness spring 45. The elastomer of KA / KB-80 and KA / KB-100 is natural rubber and hardness spring 62.
Features

1. Simplified structure and low cost
   Simplified structure makes possible easy installation.

2. More space-effective
   Implant nut makes possible more space-effective.

3. Various available mounting arrangements
   Compression direction, shearing direction, inclining direction, etc.

4. Easy available custom-made
   We accept special orders for custom-made rubber hardness spring or elastomer if you place large order.

Typical applications

Pump, Ventilator, Engine, Generator, Motor, Compressor, etc.

RA/RB Circular anti-vibration rubber mounts
implanted one side of nut

RA type

- RB type

The elastomer is natural rubber and hardness spring 45.

The elastomer of RA-8 and RA-10 is natural rubber and hardness spring 45.
Circular anti-vibration rubber mounts rubber hardness spring 45

Features
1. Simplified structure and low cost
Simplified structure makes possible easy installation.

2. Space-effective
Able to support heavy load via high spring constant for the size.

3. Available various mounting arrangements
Compression direction, shearing direction, inclining direction, etc.

4. Fine static and dynamic characteristic enhances the anti-vibration performance.

Typical applications
Pump, Ventilator, Engine, Generator, Motor, Compressor, etc.

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<td>KA-60(45)</td>
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</table>

This type is provided with 2 hexagon nuts and 2 spring washers.

Circular anti-vibration rubber mounts chloroprene rubber

Features
1. Simplified structure and low cost
Simplified structure makes possible easy installation.

2. Space-effective
Able to support heavy load via high spring constant for the size.

3. Available various mounting arrangements
Compression direction, shearing direction, inclining direction, etc.

4. Chloroprene rubber elastomer
Weather-resistant and mild oil-resistant.

Typical applications
Pump, Ventilator, Engine, Generator, Motor, Compressor, etc.

<table>
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<tr>
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<td>KA-60CR</td>
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</table>

This type is provided with 2 hexagon nuts and 2 spring washers.
KA-sus
Circular anti-vibration rubber mounts
SUS parts

Features
1. Rust-resistant
2. Simplified structure
3. Space-effective

Typical applications
Pump, Ventilator, Engine, Generator, Motor, Compressor, etc.

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KA
Large-sized anti-vibration rubber mounts

Features
1. High support load performance
2. High design freedom

Typical applications
Part of the support of large machine, building body or other large load

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KHA
Same height circular anti-vibration rubber mounts

Features
1. Same height specifications make possible easy design and construction if their support loads are different from each other.
2. Same bolt diameter specifications (not applicable to KHA-100) enhance high mounting freedom.
3. Fine static and dynamic characteristic enhances the anti-vibration performance.
4. Simplified structure, low cost and easy installation

Typical applications
- Anti-vibration for floors
- Anti-vibration for machines

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<th>Product number</th>
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<th>D2</th>
<th>L</th>
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<td>61</td>
<td>9</td>
<td>67</td>
<td>82</td>
<td>6.5</td>
</tr>
</tbody>
</table>

This type is provided with 2 hexagon nuts and 2 spring washers. The elastomer is natural rubber and hardness spring 60.
**RK Rectangular anti-vibration rubber mounts**

**Features**

1. Appropriate for building components
   - Studio, Anechoic room, Pipe hanger, etc.
2. Wide range of applications to large load
3. Fine anti-vibration performance against high frequency vibration via large spring constant
4. Available various mounting arrangements
5. Require no stoppers for earthquake protection

**Typical applications**

Pipe hanger, Hoist gear for elevator, Multistory parking garage, Engine, Machine tool, Building body

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**SB Anti-vibration rubber mounts with internal stopper for earthquake protection**

**Features**

1. Require no external stoppers for earthquake protection
   - Able to reduce a parts count and production costs.
2. Simple and compact design
   - Makes possible space-effective.
3. Design lateral seismic factor about 1.5
   - Satisfying earthquake-resistant class A (based on a guide for the earthquake-resistant design and construction of building equipment)
   - An earthquake-resisting capacity depends on the center of gravity and the mounting spacing, of machinery.

**Typical applications**

Transformer, Switchboard, Uninterruptible Power Supply (UPS), Pipe hanger, Air conditioner

Note: Not usable for largely swinging machinery (e.g., engine, compressor, etc.)

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**Calculation formula for seismic performance**

\[
T = m \cdot g \cdot (h + v) - (K_V \cdot S_t) \cdot E_z
\]

- m: Machinery mass (kgf)
- g: Gravitational acceleration (m/s²)
- h: Design vertical seismic factor
- v: Design lateral seismic factor
- k: Cross-section modulus of stopper (cm³)
- S: Section modulus of stopper (cm³)
- E_z: Earthquake stopper

**Stopper specifications**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions mm</th>
<th>Permissible load N (kgf)</th>
<th>Spring constant N/mm (kgf/cm)</th>
<th>Spring constant ratio of Y direction to Z direction</th>
<th>Stopper specifications</th>
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</table>

The elastomer is natural rubber.

This type is provided with 1 hexagon nut and 1 spring washer.

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**Calculation formula for seismic performance**

\[
T = \frac{S_n}{A_s} \cdot \frac{S_h}{n} + \frac{T + h \cdot S_t}{2}
\]

- S_n: Shear force (N)
- A_s: Shear constant of stopper (mm²)
- S_h: Section modulus of stopper (cm³)
- T: Tensile force (N)
- h: Height of stopper (mm)
- Z: Section modulus of stopper (mm²)
- g: Gravitational acceleration (m/s²)

**Criterion formula**

\[
T_{d1} = \frac{S_h}{n} \cdot \frac{T + h \cdot S_t}{2} \quad (Allowable shear stress for temporary loading 15N/mm²)
\]

\[
T_{d2} = \frac{S_h}{n} \cdot \frac{T + h \cdot S_t}{2} \quad (Allowable bending stress for temporary loading 250N/mm²)
\]
Features
1. Appropriate for machinery having big vibration force
2. High lateral direction (Kx) rigidity
3. The spring rate can be changed just by changing the positions.
4. KC-**BP types have a base plate with a rubber pad.

Typical applications
High speed diesel engine, Air compressor, Vibrating sieve, Horizontal basket centrifuge, Vibrating screen, Pump, Machine tool
**M-shaped anti-vibration rubber mounts**

**Features**
1. Smaller vertical spring constant
2. Appropriate for low revolving machinery
3. Space-effective

**Typical applications**
Vibrating screen, Vibrating conveyor, Vibrating sieve, Instrument board, Chiller, Air compressor

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**Saddle-shaped anti-vibration rubber mounts**

**Features**
1. Much smaller spring constant
2. Appropriate for low revolving machinery
3. High longitudinal rigidity
4. Space-effective

**Typical applications**
Vibrating screen, Vibrating conveyor, Air compressor, Ventilator, Lightweight engine, Vacuum pump

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### Table: Support Load

<table>
<thead>
<tr>
<th>Product number</th>
<th>Support load in Z direction N (kgf)</th>
<th>Permissible load N (kgf)</th>
<th>Spring constant in Z direction N/mm (kgf/cm)</th>
<th>Spring constant ratio of Y direction to Z direction</th>
<th>Spring constant ratio of X direction to Z direction</th>
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### Table: KE

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<th>Permissible load N (kgf)</th>
<th>Spring constant in Z direction N/mm (kgf/cm)</th>
<th>Spring constant ratio of Y direction to Z direction</th>
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### Table: Standard Dimensions

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<td>KE-60</td>
<td>250 x 250 x 100</td>
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**Notes:**
- The elastomer is natural rubber and hardness 60.
- The material is natural rubber and hardness 35.
- The material is natural rubber and hardness 50.
- The material is natural rubber and hardness 90.
- The material is natural rubber and hardness 125.

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**Typical applications**
Vibrating screen, Vibrating conveyor, Vibrating sieve, Instrument board, Chiller, Air compressor

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**Features**
1. Smaller vertical spring constant
2. Appropriate for low revolving machinery
3. Space-effective
**KLB**
Low spring constant anti-vibration rubber mounts

**Features**
1. Appropriate for lightweight equipment
2. Low natural frequency
3. Appropriate for precision instruments
4. Easy installation

**Typical applications**
Building equipment: ventilator, pump, air compressor, pipe, etc.
Industrial machinery: engine, generator, switchboard, etc.
Measuring instruments: vibration testing machine, instrument board

**Features**
1. Appropriate for lightweight equipment
2. Low natural frequency
3. Appropriate for precision instruments
4. Easy installation

**Typical applications**
Business machine, Air conditioner, Electronic equipment, Small generator and other lightweight equipment

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**KLB**

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<th>H</th>
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<td>84</td>
<td>60</td>
</tr>
<tr>
<td>KLB-3560</td>
<td>80</td>
<td>50</td>
<td>4.5</td>
<td>4.5</td>
<td>M12</td>
<td>45</td>
<td>45</td>
<td>168</td>
<td>134</td>
<td>100</td>
</tr>
</tbody>
</table>

This type is provided with 1 hexagon nut and 1 spring washer.

The elastomer is natural rubber.

---

**KP/KQ**
Light equipment anti-vibration rubber mounts

**Features**
1. Appropriate for lightweight equipment
2. High horizontal stability
3. Chloroprene rubber elastomer

**Typical applications**
Business machine, Air conditioner, Electronic equipment, Small generator and other lightweight equipment

---

**KP**

<table>
<thead>
<tr>
<th>Product number</th>
<th>A</th>
<th>B</th>
<th>H</th>
<th>P</th>
<th>D</th>
<th>d</th>
<th>A</th>
<th>P</th>
<th>D</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP-32</td>
<td>42</td>
<td>32</td>
<td>11</td>
<td>13</td>
<td>25</td>
<td>4.5</td>
<td>36</td>
<td>73</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>KP-42</td>
<td>59</td>
<td>42</td>
<td>16</td>
<td>16</td>
<td>35</td>
<td>6.5</td>
<td>48</td>
<td>99</td>
<td>16.6</td>
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<tr>
<td>KP-57</td>
<td>78</td>
<td>57</td>
<td>22</td>
<td>22</td>
<td>50</td>
<td>9</td>
<td>6</td>
<td>14.4</td>
<td>16.6</td>
<td></td>
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<tr>
<td>KP-57</td>
<td>60</td>
<td>38</td>
<td>15</td>
<td>15</td>
<td>50</td>
<td>19</td>
<td>M4</td>
<td>4.8</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>KP-53</td>
<td>84</td>
<td>53</td>
<td>21</td>
<td>21</td>
<td>70</td>
<td>27</td>
<td>M8</td>
<td>6</td>
<td>16.6</td>
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**KQ**

<table>
<thead>
<tr>
<th>Product number</th>
<th>A</th>
<th>B</th>
<th>H</th>
<th>P</th>
<th>D</th>
<th>d</th>
<th>A</th>
<th>P</th>
<th>D</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQ-38</td>
<td>60</td>
<td>38</td>
<td>15</td>
<td>15</td>
<td>50</td>
<td>19</td>
<td>M4</td>
<td>4.8</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>KQ-53</td>
<td>84</td>
<td>53</td>
<td>21</td>
<td>21</td>
<td>70</td>
<td>27</td>
<td>M8</td>
<td>6</td>
<td>16.6</td>
<td></td>
</tr>
</tbody>
</table>

The elastomer is chloroprene rubber and hardness 45.

---

**Product number**

<table>
<thead>
<tr>
<th>Support load in Z direction N (kgf)</th>
<th>Permissible load in Z direction N (kgf)</th>
<th>Spring constant in Z direction N/mm (kgf/cm)</th>
<th>Spring constant ratio of X direction to Z direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLB-3530</td>
<td>140(14)</td>
<td>250 (20)</td>
<td>50 (20)</td>
</tr>
<tr>
<td>KLB-3545</td>
<td>250(20)</td>
<td>500 (50)</td>
<td>100(100)</td>
</tr>
<tr>
<td>KLB-3560</td>
<td>400(41)</td>
<td>800 (80)</td>
<td>160 (160)</td>
</tr>
<tr>
<td>KLB-5030</td>
<td>350(28)</td>
<td>700 (70)</td>
<td>120 (120)</td>
</tr>
<tr>
<td>KLB-5045</td>
<td>400 (50)</td>
<td>980 (100)</td>
<td>170 (170)</td>
</tr>
<tr>
<td>KLB-5060</td>
<td>780 (80)</td>
<td>1650 (160)</td>
<td>270 (270)</td>
</tr>
<tr>
<td>KLB-5060</td>
<td>1500 (120)</td>
<td>2400 (240)</td>
<td>3900 (400)</td>
</tr>
<tr>
<td>KLB-8060</td>
<td>2000 (200)</td>
<td>3900 (400)</td>
<td>4700 (480)</td>
</tr>
</tbody>
</table>

The elastomer is chloroprene rubber and hardness 45.
**Features**

1. Easy installation
2. The serration treatment on the metal plate prevents twisting while installing.
3. Appropriate for lightweight equipment

**Typical applications**

- Control panel, Controller, Small pump, Fan, Motor, Compressor and other lightweight equipment

**Natural frequency**

<table>
<thead>
<tr>
<th>Measured temperature(℃)</th>
<th>CR(Hs=45)</th>
<th>NR(Hs=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light green</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Grey</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Dark grey</td>
<td>27</td>
<td>17</td>
</tr>
</tbody>
</table>

**Deflection volume**

The metal parts material is a correspond to SUS304. KXA type is provided with 2 hexagon nuts and 2 spring washers. KXB type is provided with 1 hexagon nut and 1 spring washer.

**Precautions**

- Do not load the anti-vibration rubber mounts in a way that puts stress on its tensile direction. Please install the anti-vibration rubber mounts horizontally.
- If you use different product number’s anti-vibration rubber mounts simultaneously, please arrange anti-vibration rubber mounts so as to bend evenly as one another.
- Please prevent the anti-vibration rubber mounts from being splashed by oil. Please don’t use the anti-vibration rubber mounts in the water.
**Tie mounts**

**Features**
1. Appropriate for mobile equipment
2. Simplified structure
3. High anti-vibration performance
4. Small size but big spring constant
5. High durability

**Typical applications**
- Construction machinery: engine, cabin, fuel tank, radiator
- Industrial machinery: engine, generator
- Others: fastening of panels etc.

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions mm</th>
<th>Support load in Z direction N(kgf)</th>
<th>Spring constant N/mm kgf/cm</th>
<th>Bolt</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE-38</td>
<td>38 25 15.5 10.5 16.6 17.1 17.1 13.6 1.6 25 Kg 11.1 9</td>
<td>550</td>
<td>600</td>
<td>M10</td>
</tr>
<tr>
<td>RE-52</td>
<td>52 35 20 16.5 33.6 36.6 25.6 21.6 1.8 35 Kg 17.8 14</td>
<td>850</td>
<td>900</td>
<td>M12</td>
</tr>
<tr>
<td>RE-72(35)</td>
<td>72 50 27 17 30.3 33.3 32.3 25.3 2.3 50 Kg 20.8 19</td>
<td>1150</td>
<td>1200</td>
<td>M16</td>
</tr>
<tr>
<td>RE-72(60)</td>
<td>72 50 27 17 30.3 33.3 32.3 25.3 2.3 50 Kg 20.8 19</td>
<td>1150</td>
<td>1200</td>
<td>M16</td>
</tr>
<tr>
<td>RE-98(35)</td>
<td>98 60 31 21 34.8 37.8 37.3 27.3 3.2 60 Kg 22.3 25</td>
<td>1550</td>
<td>1600</td>
<td>M20</td>
</tr>
<tr>
<td>RE-98(60)</td>
<td>98 60 31 21 34.8 37.8 37.3 27.3 3.2 60 Kg 22.3 25</td>
<td>1550</td>
<td>1600</td>
<td>M20</td>
</tr>
<tr>
<td>RE-132</td>
<td>132 80 40 25 41.2 45.2 45.2 39.2 3.2 80 Kg 28.7 25</td>
<td>2050</td>
<td>2100</td>
<td>M25</td>
</tr>
</tbody>
</table>

**Rubber hardness spring**
- Us = 40

**Support load in Z direction N(kgf) Z direction X direction**
- Us = 40

**Spring constant N/mm kgf/cm**
- Us = 40

**Bolt**
- Us = 40

- **Precautions**
  - RE type is a pair of mounts. Please prepare an intermediate steel plate (plate thickness T).
  - The support points are unbalanced load, you must use different product number's anti-vibration rubber mounts simultaneously.
  - RE type can be used on either side of the machine's body and the vibrating body.
  - Please fasten the nut so as not to loosen while operating.
  - You can use the RE type only in a ambient temperature of -30° to 50°C.
  - Please prevent the anti-vibration rubber mounts from being splashed by oil and from being exposed to direct sunlight.
  - Please consult with us if you intend to use the anti-vibration rubber mounts as an engine mount for construction machinery.

The elastomer is natural rubber and hardness spring 45.

The characteristic is the value of a pair of mounts.

The solid lines of the graphs indicate the range of support load.
The broken lines indicate the displacement while overloading and do not ensure the durability.

Please prevent the anti-vibration rubber mounts from being splashed by oil and from being exposed to direct sunlight.

Please consult with us if you intend to use the anti-vibration rubber mounts as an engine mount for construction machinery.
**Features**

1. Same spring constant in all directions
2. High horizontal rigidity
3. A structure which protects the rubber part
4. Easy installation

**Typical applications**

Pump, Ventilator, Engine generator, Generator, Compressor, Machine tool and other industrial machinery

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**KT** Rubber fasteners

**Features**

1. Vibration and shock absorption
2. Labor saving
3. Easy installation
4. High seal performance for liquid or gas

---

**Usage**

The application purposes of the rubber fasteners KT type are to fasten an object and to protect an object against vibration problem. The fastening way is just to insert the KT type into the prepared hole and to tighten the screw. The KT type can fasten itself, it then, requires no locknuts. The plate thickness, the prepared hole’s diameter and the proper tightening torque are described in the table above.

**Instruction images**

- Fastening the rubber fastener to a plate hole
- Fastening the rubber fastener to a blind hole
- Anti-vibration fastening
Foot mounts

Features
1. High anti-vibration and soundproof performance
2. High installation stability
3. Require no anchor bolts

Typical applications
Part feeder, Business machine, Precision instrument, Measuring instrument, Electronic machinery, Instrument board, Optical instrument, Calculator, Hardness tester, Testing equipment and other lightweight equipment

Cushion rubber mounts - Rubber springs

Features
1. Simplified structure and low cost
2. Easy installation
3. Easy processing

Rubber springs (for vibrating machine)

1. Easy installation
2. Large amplitude
3. High disability

Table: Cushion rubber mounts

<table>
<thead>
<tr>
<th>Product number</th>
<th>D</th>
<th>d</th>
<th>H</th>
<th>Support load N (kgf)</th>
<th>Permissible load N (kgf)</th>
<th>Spring constant N/mm (kgf/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KN-20</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>~120 (12)</td>
<td>160 (16)</td>
<td>83 (8.3)</td>
</tr>
<tr>
<td>KN-30</td>
<td>20</td>
<td>15</td>
<td>15</td>
<td>~260 (26)</td>
<td>340 (34)</td>
<td>110 (11)</td>
</tr>
<tr>
<td>KN-40</td>
<td>40</td>
<td>20</td>
<td>18</td>
<td>~490 (49)</td>
<td>740 (74)</td>
<td>190 (19)</td>
</tr>
</tbody>
</table>

Table: Rubber springs

<table>
<thead>
<tr>
<th>Product number</th>
<th>D</th>
<th>d</th>
<th>H</th>
<th>Support load N (kgf)</th>
<th>Permissible load N (kgf)</th>
<th>Spring constant N/mm (kgf/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KK-9536-120</td>
<td>95</td>
<td>36</td>
<td>130</td>
<td>~250 (2.5)</td>
<td>510 (5.1)</td>
<td>400 (40)</td>
</tr>
<tr>
<td>KK-12536-120</td>
<td>125</td>
<td>36</td>
<td>130</td>
<td>~440 (4.4)</td>
<td>880 (8.8)</td>
<td>440 (44)</td>
</tr>
<tr>
<td>KK-16540-120</td>
<td>140</td>
<td>40</td>
<td>120</td>
<td>~580 (5.8)</td>
<td>1120 (11.2)</td>
<td>470 (47)</td>
</tr>
</tbody>
</table>

The elastomer is natural rubber and hardness spring 45.
Features
1. High absorption performance for big impulse force
2. Sound suppression
3. High damping performance
4. Easy installation

- **KI type**
- **RI type**

**High damping rubber type**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions, mm</th>
<th>Maximum stroke, mm</th>
<th>Maximum absorbed energy, J</th>
<th>Permissible impulse force, kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI-25HD</td>
<td>25 29 12 18 18 M B</td>
<td>11</td>
<td>6.81 0.7</td>
<td>2.2 0.30</td>
</tr>
<tr>
<td>RI-30HD</td>
<td>30 31 14 24 20 M B</td>
<td>14</td>
<td>19.1 1.8</td>
<td>3.7 0.38</td>
</tr>
<tr>
<td>RI-40HD</td>
<td>40 36 40 29 25 M B</td>
<td>16</td>
<td>60 6.1</td>
<td>11.8 1.20</td>
</tr>
<tr>
<td>RI-50HD</td>
<td>50 46 50 35 25 M12</td>
<td>21</td>
<td>150 17.1</td>
<td>22.4 1.50</td>
</tr>
</tbody>
</table>

- **Natural rubber type**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions, mm</th>
<th>Maximum stroke, mm</th>
<th>Maximum absorbed energy, J</th>
<th>Permissible impulse force, kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI-26</td>
<td>26 25 14 18 16 M 6</td>
<td>11</td>
<td>6.81 0.7</td>
<td>2.2 0.30</td>
</tr>
<tr>
<td>RI-30</td>
<td>30 31 14 24 20 M 8</td>
<td>14</td>
<td>15 1.5</td>
<td>3.4 0.25</td>
</tr>
<tr>
<td>RI-45</td>
<td>45 36 40 29 25 M 8</td>
<td>16</td>
<td>53 5.4</td>
<td>12.3 0.25</td>
</tr>
<tr>
<td>RI-60</td>
<td>60 46 50 35 25 M12</td>
<td>21</td>
<td>150 17.1</td>
<td>22.4 0.54</td>
</tr>
</tbody>
</table>

- **Selection procedure**
  1. Calculate a collision energy. The collision energy is indicated as the following formula.
  a) Vertical collision (free fall) \[ E = m \times g \times h \]
  b) Oblique collision \[ E = m \times g \times L \times \sin \theta \]
  c) Horizontal collision \[ E = \frac{1}{2} \times m \times u^2 \]

- **Vertical collision (free fall)**
- **Oblique collision**
- **Horizontal collision**

2. Select the stopper so that the calculated collision energy becomes smaller than the maximum absorbed energy.

**Selection chart**

- **Damping characteristic**

If you need high damping performance, please select the high damping type (RI-**HD**).
Features
1. High absorption performance for big impulse force
2. Sound suppression
3. Easy installation

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions (mm)</th>
<th>Maximum stroke (mm)</th>
<th>Maximum absorbed energy (J)</th>
<th>Permissible force (kgf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KJ-50</td>
<td>50 150</td>
<td>12</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>KJ-100</td>
<td>100 200</td>
<td>25</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>KJ-200</td>
<td>200 400</td>
<td>50</td>
<td>50</td>
<td>300</td>
</tr>
</tbody>
</table>

Selection chart

Selection procedure
See Ki type and Ri type.

Rubber springs

Features
1. High anti-vibration performance
2. High load bearing performance
3. High damping performance
4. Sound suppression
5. High durability and chemical resistance
6. Easy installation

Typical applications
Vibrating sieve, Vibrating conveyer, Part feeder

Product number | Standard dimensions (mm) | Permissible load (N) | Spring constant (kgf/cm)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KR-40</td>
<td>40 100</td>
<td>120</td>
<td>84</td>
</tr>
<tr>
<td>KR-60</td>
<td>60 150</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>KR-80</td>
<td>80 200</td>
<td>250</td>
<td>30</td>
</tr>
<tr>
<td>KR-100</td>
<td>100 400</td>
<td>300</td>
<td>25</td>
</tr>
</tbody>
</table>

Precautions
- Please pay attention not to push the spacer with a guide pin while installing.
- The tip of a guide pin for installing should be tapped and chamfered.
- Please consult us if your machine’s frequency is more than 20 Hz or its amplitude is more than 14 mm.
- You can use the KR type only in an ambient temperature of -10°C to 55°C.
- The external expansion rate is around 5% of the external diameter.
- The early settling can occur, but it has no effect on performance.
Features

1. Low natural frequency
2. Stable natural frequency across a wide range of loading
3. High stability
4. They can be layered
5. Easy installation

Typical applications

Compressor, Pump, Blower, Transformer, Lightweight equipment, Business machine, Measuring instrument, Balance, Gymnasium, Judo hall, etc.

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard dimensions mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM-60-2</td>
<td>d</td>
</tr>
<tr>
<td>RM-60-3</td>
<td>60</td>
</tr>
<tr>
<td>RM-80-2</td>
<td>80</td>
</tr>
<tr>
<td>RM-80-3</td>
<td>80</td>
</tr>
<tr>
<td>RM-120-2</td>
<td>120</td>
</tr>
<tr>
<td>RM-120-3</td>
<td>120</td>
</tr>
<tr>
<td>RM-160-2</td>
<td>160</td>
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<tr>
<td>RM-160-3</td>
<td>160</td>
</tr>
<tr>
<td>RM-230-2</td>
<td>230</td>
</tr>
<tr>
<td>RM-230-3</td>
<td>230</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product number</th>
<th>Standard load</th>
<th>Load range N[kgf]</th>
<th>Deflection under standard load mm</th>
<th>Natural frequency Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM-60-2</td>
<td>740</td>
<td>751</td>
<td>250 (25) ~ 980 (100)</td>
<td>10</td>
</tr>
<tr>
<td>RM-60-3</td>
<td>740</td>
<td>751</td>
<td>250 (25) ~ 980 (100)</td>
<td>15</td>
</tr>
<tr>
<td>RM-80-2</td>
<td>1500</td>
<td>1650</td>
<td>490 (50) ~ 2000 (200)</td>
<td>13</td>
</tr>
<tr>
<td>RM-80-3</td>
<td>1500</td>
<td>1650</td>
<td>490 (50) ~ 2000 (200)</td>
<td>20</td>
</tr>
<tr>
<td>RM-120-2</td>
<td>2900</td>
<td>3000</td>
<td>980 (100) ~ 3900 (400)</td>
<td>20</td>
</tr>
<tr>
<td>RM-120-3</td>
<td>2900</td>
<td>3000</td>
<td>980 (100) ~ 3900 (400)</td>
<td>30</td>
</tr>
<tr>
<td>RM-160-2</td>
<td>5900</td>
<td>6000</td>
<td>2000 (200) ~ 7800 (800)</td>
<td>26</td>
</tr>
<tr>
<td>RM-160-3</td>
<td>5900</td>
<td>6000</td>
<td>2000 (200) ~ 7800 (800)</td>
<td>39</td>
</tr>
<tr>
<td>RM-230-2</td>
<td>11800</td>
<td>12000</td>
<td>3900 (400) ~ 15700 (1600)</td>
<td>35</td>
</tr>
<tr>
<td>RM-230-3</td>
<td>11800</td>
<td>12000</td>
<td>3900 (400) ~ 15700 (1600)</td>
<td>53</td>
</tr>
</tbody>
</table>

B type is provided with hexagon nuts and spring washers. The elastomer is natural rubber and hardness spring 50.

The standard number of stages are 2 or 3. The 1N type is impossible to be selected.
Features
1. Appropriate for pipes or ducts
2. Easy installation
3. High anti-vibration performance
4. Satisfied the standard of Ministry of Land, Infrastructure, Transport and Tourism

Typical applications
Heating-cooling combination appliance, Packaged air conditioner, Fan coil unit, Ventilator, Pump, Duct, etc.

<table>
<thead>
<tr>
<th>RF type</th>
<th>KF type</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="RF type" /></td>
<td><img src="image2" alt="KF type" /></td>
</tr>
<tr>
<td><img src="image3" alt="RF type" /></td>
<td><img src="image4" alt="KF type" /></td>
</tr>
</tbody>
</table>

Standard of support interval for pipes

<table>
<thead>
<tr>
<th>Normal diameter (mm)</th>
<th>Pipe mass (kg/m)</th>
<th>Standard B (kg/m)</th>
<th>Support bolt (reference)</th>
<th>Max. support interval (m)</th>
<th>Support load (kN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>1/2</td>
<td>1/8</td>
<td>2</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>20</td>
<td>3/4</td>
<td>2/1</td>
<td>3/8</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>1/4</td>
<td>3/8</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>38</td>
<td>1 1/4</td>
<td>5/8</td>
<td>2</td>
<td>200</td>
<td>104</td>
</tr>
<tr>
<td>50</td>
<td>1 1/2</td>
<td>15</td>
<td>7/8</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>65</td>
<td>2 1/2</td>
<td>25</td>
<td>9/8</td>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>5/8</td>
<td>3</td>
<td>200</td>
<td>221</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>3/8</td>
<td>4</td>
<td>120</td>
<td>620</td>
</tr>
<tr>
<td>125</td>
<td>5</td>
<td>3/8</td>
<td>4</td>
<td>700</td>
<td>1100</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>1 1/8</td>
<td>3/8</td>
<td>1910</td>
<td>1530</td>
</tr>
<tr>
<td>200</td>
<td>8</td>
<td>1/2</td>
<td>4</td>
<td>5200</td>
<td>3600</td>
</tr>
<tr>
<td>250</td>
<td>10</td>
<td>9/8</td>
<td>3</td>
<td>4110</td>
<td>4650</td>
</tr>
<tr>
<td>300</td>
<td>12</td>
<td>5 1/8</td>
<td>5</td>
<td>9500</td>
<td>6170</td>
</tr>
<tr>
<td>350</td>
<td>15</td>
<td>5 1/8</td>
<td>5</td>
<td>7780</td>
<td>7780</td>
</tr>
<tr>
<td>400</td>
<td>18</td>
<td>5 1/8</td>
<td>5</td>
<td>9700</td>
<td>9700</td>
</tr>
<tr>
<td>450</td>
<td>18</td>
<td>5 1/8</td>
<td>5</td>
<td>11800</td>
<td>11800</td>
</tr>
<tr>
<td>500</td>
<td>22</td>
<td>5 1/8</td>
<td>5</td>
<td>14100</td>
<td>14100</td>
</tr>
</tbody>
</table>

NOTE: The above mentioned pipe mass A is the mass per 1 meter steel pipe kept warm and high water level. The above mentioned pipe mass B and C are the total value of pipe and water. Please add the mass of heat insulating material etc. if they add.

Permissible load (N/kg/m)

<table>
<thead>
<tr>
<th>Product number</th>
<th>RF-KF-30D</th>
<th>RF-KF-100D</th>
<th>RF-KF-120D</th>
<th>RF-KF-150D</th>
<th>RF-KF-180D</th>
<th>RF-KF-200D</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF-KF-30D</td>
<td>6600</td>
<td>13000</td>
<td>12000</td>
<td>11000</td>
<td>10500</td>
<td>10000</td>
</tr>
<tr>
<td>RF-KF-100D</td>
<td>3500</td>
<td>7700</td>
<td>6600</td>
<td>5800</td>
<td>5000</td>
<td>4500</td>
</tr>
<tr>
<td>RF-KF-120D</td>
<td>2500</td>
<td>5000</td>
<td>4000</td>
<td>3000</td>
<td>2500</td>
<td>2000</td>
</tr>
<tr>
<td>RF-KF-150D</td>
<td>1500</td>
<td>3500</td>
<td>2500</td>
<td>2000</td>
<td>1500</td>
<td>1000</td>
</tr>
<tr>
<td>RF-KF-180D</td>
<td>1000</td>
<td>2000</td>
<td>1500</td>
<td>1200</td>
<td>900</td>
<td>700</td>
</tr>
<tr>
<td>RF-KF-200D</td>
<td>600</td>
<td>1500</td>
<td>1050</td>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
</tbody>
</table>

Spring constant (N/mm)

<table>
<thead>
<tr>
<th>Load (N)</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3570</td>
<td>3570</td>
<td>3570</td>
<td>3570</td>
<td>3570</td>
<td>3570</td>
</tr>
<tr>
<td>3000</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>4000</td>
<td>415</td>
<td>415</td>
<td>415</td>
<td>415</td>
<td>415</td>
<td>415</td>
</tr>
<tr>
<td>5000</td>
<td>830</td>
<td>830</td>
<td>830</td>
<td>830</td>
<td>830</td>
<td>830</td>
</tr>
<tr>
<td>6000</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
</tr>
</tbody>
</table>

Support interval (m) and Deflection (mm)

<table>
<thead>
<tr>
<th>Load (N)</th>
<th>Support interval (m)</th>
<th>Deflection (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3570</td>
<td>3570</td>
</tr>
<tr>
<td>3000</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>4000</td>
<td>415</td>
<td>415</td>
</tr>
<tr>
<td>5000</td>
<td>830</td>
<td>830</td>
</tr>
<tr>
<td>6000</td>
<td>1400</td>
<td>1400</td>
</tr>
</tbody>
</table>

NOTE: The above mentioned pipe mass A is the mass per 1 meter steel pipe kept warm and high water level. The above mentioned pipe mass B and C are the total value of pipe and water. Please add the mass of heat insulating material etc. if they add.
### Features

1. Higher anti-vibration performance than rubber pads
2. Convenient options

### Typical applications

Air conditioner, Pipe support and other industrial machinery

### Options

- Plate
  - Rubber bush with metal washer

### Usage

1. The SM-20C to 200C types can be easily slit with utility knives. You can easily, then, put them into an established machine's leg.
2. You must use the SM type with the optional plate in case that your machine's weight is not evenly distributed to the whole surface of the SM type.
3. Please increase the intensity of fitting parts and anchor bolts for more earthquake-resistance.

### Instruction images

#### Double nuts

- Insert anchor bolts with metal washer.
- Rubber bush with metal washer.

#### Plate

- Insert anchor bolts with metal washer.

---

### RHS Kura pads (high performance anti-vibration pads)

#### Features

On the Kura pad's both sides there are four kinds of projections, which increase the area taking pressure according to load increasing. The Kura pads are, then, appropriate for lightweight to heavy load equipment.

#### Selection procedure

1. Select the product number of the Kura pad from those in the selection chart.
2. Decide the load applied to the Kura pad with reference to the selection chart.
3. Calculate the required area of the Kura pad according to your machine weight.
4. Calculate the required area per support load.
5. Decide the size of the Kura pad and add a margin of 1 cm or more around the support point. Put a steel plate 3 mm or more thick between the Kura pads when you pile them up.

#### Selection chart

- Your selecting Kura pad's load (N/mm²) +100% Required area of Kura pad (cm²)

#### Typical applications

- Appropriate for precision instrument and lightweight equipment
- Appropriate for machinery requiring high anti-vibration performance
- Appropriate for machinery requiring anti-vibration performance and stability performance
- Appropriate for heavy machinery requiring high stability performance

#### Standard dimensions

- Standard type
  - RHS-○○N
  - RHS-○○
- Oil-resistant type
  - RHS-○○N×1
  - RHS-○○N×2
- Natural rubber
  - RHS-○○
  - RHS-○○N
- Chloroprene rubber
  - RHS-○○N×1
  - RHS-○○N×2

#### Permissible load

- N{kgf} (kgf/cm²)
  - 0.1~0.3 (1~3)
  - 0.4 (4)
  - 0.2~0.5 (2~5)
  - 0.7 (7)
  - 1.3 (13)

#### Typical applications

- Appropriate for lightweight to heavy load equipment
1. Select the product number of the KHS pad from those in the selection chart.
2. Decide the load applied to the KHS pad with reference to the selection chart.
3. Calculate the required area of the KHS pad according to your machine weight.
4. Calculate the required area per support point.

### KHS High performance anti-vibration pads

#### Features
1. Easy to flex against light load and hard to flex against heavy load
2. Hard to change machine’s level
3. High horizontal stability
4. Long life

#### Selection procedure
1. Select the product number of the KHL pad from those in the selection chart.
2. Decide the load applied to the KHL pad with reference to the selection chart.
3. Calculate the required area of the KHL pad according to your machine weight.
4. Calculate the required area per support point.

### KH/KHL Anti-vibration pads

#### Features
1. Easy installation
2. High soundproof performance
3. Long life
4. Low cost

#### Selection procedure
1. Select the product number of the KH or KHL pad from those in the selection chart.
2. Decide the load applied to the KH or KHL pad with reference to the selection chart.
3. Calculate the required area of the KH or KHL pad according to your machine weight.
4. Calculate the required area per support point.
Precautions

Please be sure to read the following before beginning to install.

1. Rubber materials for KKC’s anti-vibration rubber mounts

   KKC has many kinds of rubber materials for you to choose from. The standard materials are natural rubber and chloroprene rubber. Please refer to the following table for each characteristic.

<table>
<thead>
<tr>
<th>Material</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural rubber (NR)</td>
<td>Durable, low-temperature resistant and high impact resistant</td>
</tr>
<tr>
<td>Chloroprene rubber (CR)</td>
<td>Weather resistant, ozone resistant, mild oil resistant and mild heat resistant</td>
</tr>
<tr>
<td>Acrylonitrile-butadiene rubber (NBR)</td>
<td>Oil resistant, gasoline resistant and heat resistant</td>
</tr>
<tr>
<td>Isobutylene-isoprene rubber (IIR)</td>
<td>High damping performance, weather resistant, electric insulating and water resistant</td>
</tr>
<tr>
<td>Ethylene-propylene rubber (EPDM)</td>
<td>Weather resistant, ozone resistant, chemical resistant and heat resistant</td>
</tr>
</tbody>
</table>

2. Conversion of spring constant

   The material quality of the anti-vibration rubber mounts conforms to JIS K6396. The conversion factors of the spring constant and the permissible load are as mentioned below when JIS-Hs 60 is the benchmark. *JIS is Japanese Industrial Standard. JIS-Hs is JIS hardness spring and nearly equal to Shore.

<table>
<thead>
<tr>
<th>Material</th>
<th>Conversion factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM</td>
<td>0.42</td>
</tr>
<tr>
<td>IIR</td>
<td>0.50</td>
</tr>
<tr>
<td>NBR</td>
<td>0.60</td>
</tr>
<tr>
<td>CR</td>
<td>0.71</td>
</tr>
<tr>
<td>NR</td>
<td>0.86</td>
</tr>
<tr>
<td>IIR</td>
<td>1.00</td>
</tr>
<tr>
<td>IIR</td>
<td>1.21</td>
</tr>
<tr>
<td>IIR</td>
<td>1.43</td>
</tr>
</tbody>
</table>

3. Precautions for using the anti-vibration rubber mounts

   1. The metal plate is likely to bend when the weight it supports is not evenly distributed. Please install the anti-vibration rubber mount so that the weight of both the top and bottom metal plates is evenly distributed.
   2. If your machinery is an unbalanced load, you must arrange the anti-vibration rubber mounts so as to distribute the weight evenly.
   3. You can use an anti-vibration rubber mount made from natural rubber only in an ambient temperature of -30°C to 50°C.
   4. Please pay attention that the anti-vibration rubber mount is not heated if you do welding near it.
   5. Do not load the anti-vibration rubber mount in a way that puts stress on its tensile direction. The load must compress in the proper direction.
   6. Please prevent the anti-vibration rubber mount from being splashed by oil or chemicals, and wipe them if splashed.
   7. Please prevent the anti-vibration rubber mount from being exposed to the elements. (e.g. direct sunlight, a sea breeze, water, seawater, salt, etc.)
   8. The rubber part of the anti-vibration rubber mount is likely to twist when being screwed in. Twisting shortens the life of the rubber. To prevent twisting, please hold the rubber part while screwing it in. A small amount of twisting is acceptable for a properly-functioning mount. (See the right figure.)
   9. Something white can rise to the surface of the rubber part if you store the anti-vibration rubber mount for a long time. It is called a bloom phenomenon. Bloom is a rubber compounding agent rising to a rubber surface and improves the ozone-resistance of rubber, you should not, then, remove it.
   10. You must store the anti-vibration rubber mount properly so as to prevent rubber from deteriorating. Please be aware of the following points.
       i. Storage space: cool and dark place
       ii. Storage period: within 5 years (If over five years, you must check the externals and the rubber elasticity.)
   11. You must conduct a periodic check and confirm whether or not there is any separation between the rubber part and the metal plate, cracking of rubber, corrosion or cracking of the metal parts, etc.

4. Customizing the anti-vibration rubber mounts

   Customize the items below available as custom-made product.
   ① Rubber material
   ② Rubber hardness spring
   ③ Metal parts material
   ④ Bolt diameter, bolt length

   Furthermore, we accept your special orders as custom design. See the design procedure of the custom-made anti-vibration rubber mounts.
Anti-vibration principles and vibration transmissibility

The anti-vibration rubber mounts protect your machine and precision instrument against vibration problem. Assuming that the vibration force transferred to the foundation is \( F \) and the vibration force generated from your machine is \( F_o \), the vibration transmissibility \( Tr \) can then, be represented as follows.

\[
Tr = \frac{F}{F_o} = 1 - u^2
\]

\( u \) : Vibration frequency ratio
\( F \) : Vibration force transferred from your machine to the foundation
\( F_o \) : Vibration force generated from your machine
\( F_o \) : Vibration force generated from your machine
\( fn \) : Natural frequency of your machine supported by anti-vibration rubber mounts

The anti-vibration effect can be obtained when \( Tr \) is less than 1, therefore \( u \) is more than \( \sqrt{\frac{1}{2}} \).

The vibration transmissibility depends on the vibration frequency ratio, that is, the ratio of your machine’s vibration frequency and natural frequency.

\[
Tr = \frac{F}{F_o} = 1 - u^2
\]

\( u \) : Vibration frequency ratio
\( F \) : Vibration force transferred from your machine to the foundation
\( F_o \) : Vibration force generated from your machine
\( fn \) : Natural frequency of your machine supported by anti-vibration rubber mounts

The vertical natural frequency depends on the deflection of the anti-vibration rubber mounts supporting your machine’s mass.

\[
f_n \cong 4.98 / (\delta \text{ (Hz)}) \]

\( \delta \) : Deflection of the anti-vibration rubber mounts (cm)

The formula above is illustrated in the chart below.

If the vibration frequency ratio is \( \sqrt{2} \) or less, your machine’s vibration increases. If the vibration frequency ratio is 1, the vibration transmissibility diverges to infinity and the sympathetic vibration is produced by resonance. The anti-vibration rubber mounts have damping effect, which makes resonant peaks small.

\[
Tr = \frac{F}{F_o} = \sqrt{1 + \left( \frac{\tan \delta}{2} \right)^2}
\]

\( F \) : Vibration force transferred from your machine to the foundation
\( F_o \) : Vibration force generated from your machine
\( \tan \delta \) : Loss factor of rubber material (Reference value)

The formula above is illustrated in the Tr-u chart below.

<table>
<thead>
<tr>
<th>Rubber material and hardness spring</th>
<th>Ratio of dynamic spring constant to static spring constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural rubber 45</td>
<td>1.2</td>
</tr>
<tr>
<td>Natural rubber 50</td>
<td>1.3</td>
</tr>
<tr>
<td>Natural rubber 55</td>
<td>1.35</td>
</tr>
<tr>
<td>Natural rubber 60</td>
<td>1.4</td>
</tr>
<tr>
<td>Natural rubber 65</td>
<td>1.5</td>
</tr>
</tbody>
</table>

As is evident in the chart, when the vibration transmissibility (Tr) is 1.0 (100%), the anti-vibration effect is 0% and the vibration frequency ratio (u) is \( \sqrt{2} \) (1.414).

Anti-vibration effect can be obtained when Tr is less than 1, therefore u is more than \( \sqrt{2} \). Generally, sufficient anti-vibration effect can be obtained when u is 2 to 4.

The vibration transmissibility considers the damping effect, which makes resonant peaks small.

The resonant peaks are inversely proportional to the anti-vibration rubber mount’s damping volume. On the other hand, the damping volume influences the ratio of dynamic spring constant to static spring constant and the rubber’s durability.

The damping volume is represented by the loss factor (\( \tan \delta \)) of rubber material, and the vibration transmissibility considering the damping volume is represented as the formula 5 below.

\[
fn \cong 4.98 / (\delta \text{ (Hz)}) \]

\( \delta \) : Deflection of the anti-vibration rubber mounts (cm)

\[
Tr = \frac{F}{F_o} = \sqrt{1 + \left( \frac{\tan \delta}{2} \right)^2}
\]

\( F \) : Vibration force transferred from your machine to the foundation
\( F_o \) : Vibration force generated from your machine
\( \tan \delta \) : Loss factor of rubber material (Reference value)
**Procedure of anti-vibration design**

### Design specifications

- **Deciding the arrangement of the anti-vibration rubber mounts**
  - The arrangement of the anti-vibration rubber mounts must be decided so that the static loads at each support point are nearly equal. In the case of general industrial machinery, the positions of the anchor bolts are used as those of the support points. In case that the load is unevenly distributed, it is necessary to rethink the positions of the support points.

- **Calculating the natural frequency and the spring constant**
  - Calculate the natural frequency and the spring constant according to the above-mentioned “Principles of vibration proof and transmissibility.”

- **Selecting the anti-vibration rubber mounts**
  - Select the appropriate anti-vibration rubber mounts in consideration of the spring constant, permissible load, permissible deflection, forcible power’s direction, etc.

- **Calculating the load of each support point**

### Desired vibration transmissibility

- **YES**
- **NO**

### Selection example

#### Selection procedure of anti-vibration rubber mounts based on the support load (Explanation of support load and permissible load)

When you select the anti-vibration rubber mounts based on the support load, you must consider the anti-vibration performance and the durability of the anti-vibration rubber mounts.

If your machine has low vibration force or is a small unbalance load, you can select the anti-vibration rubber mounts so that the total value of the static load and the dynamic load is the permissible load or less.

If your machine has high vibration force, you must consider its dynamic load. When you cannot lessen its dynamic load exactly, you should select the anti-vibration rubber mounts so that the static load is the support load or less.
Testing equipment

We have advanced testing equipment to develop excellent products meeting the needs of market. The products which you can find in this catalogue are manufactured with these testing equipment.

- Testing machine for dynamic spring constant (KC meter)
- Testing machine for static spring constant
- Vibration and endurance testing machine
- Triaxial endurance testing machine

Table for the conversion of conventional units to SI units

<table>
<thead>
<tr>
<th>Factor</th>
<th>Conventional units</th>
<th>SI units</th>
<th>Conversion of conventional units to SI units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force, load</td>
<td>kgf</td>
<td>N</td>
<td>1kgf = 9.80665N (≈10N)</td>
</tr>
<tr>
<td></td>
<td>tonf</td>
<td>kN</td>
<td>1tonf = 9.80665kN (≈10kN)</td>
</tr>
<tr>
<td>Spring constant</td>
<td>kgf/cm</td>
<td>N/mm</td>
<td>1kgf/cm = 9.80665 × 10⁹ N/mm (≈11N/mm²)</td>
</tr>
<tr>
<td>Energy</td>
<td>kgf · m</td>
<td>J</td>
<td>1kgf · m = 9.80665J (≈10J)</td>
</tr>
<tr>
<td>Load, stress</td>
<td>kgf/cm²</td>
<td>N/mm²</td>
<td>1kgf/cm² = 9.80665 × 10⁹ N/mm² (≈0.1N/mm³)</td>
</tr>
<tr>
<td>Torque, moment</td>
<td>kgf · m</td>
<td>N · m</td>
<td>1kgf · m = 9.80665N·m (≈10N·m)</td>
</tr>
</tbody>
</table>

Anti-vibration calculation

- Your machine's specification
- Anti-vibration product's specification
- Displacement calculation
- Anti-vibration calculation
- Notes

*The formula of support load at each support point does not apply to an unbalanced machine. (g ≈ 9.8m/s²)
*The above-mentioned vibration transmissibility is the calculated value for vibration generated due to the unbalance of the machine's rotating part.
*The above-mentioned value is calculated only in vertical direction. This is allowable if the anti-vibration rubber mounts are arranged so as to distribute the weight evenly and the machine's rotating part has no extreme unbalance.
The HI-MOUNT series is suppression and shock-free environment by simply placing the HI-MOUNT on the floor.

A compact body has a high anti-vibration performance and reliability.

High anti-vibration performance proved by a test data

<table>
<thead>
<tr>
<th>M</th>
<th>LM</th>
<th>MY</th>
<th>LMY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vibration measured graph

<table>
<thead>
<tr>
<th>Without HI-MOUNT</th>
<th>With HI-MOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Special rubber does not easily mark or tarnish the floor.

(An example from Kurashiki Kako’s test method)
It is possible choose the better one between two rubber types, depending on your machine’s design.

**HDR makes possible high vibration damping performance.**

~HDR: High Damping Rubber~

---

**Special compounded rubber is Oil-resistant and extremely durable.**

---

**Performance comparison**

<table>
<thead>
<tr>
<th></th>
<th>M-LM</th>
<th>MY-LMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>k</td>
<td>k</td>
<td>k</td>
</tr>
</tbody>
</table>

---

**Vibration time measured graph**

**Favorable**

- The relative amount of crack initiation life

**Deterioration**

- The relative amount of volume change

**Oil resistance**

- HI-MOUNT
- Nitrile rubber
- Natural rubber

---

**Adjustable Leveling**

Especially the handle type is easy to adjust.

---

**Adjustable to floor slope**

(within the angles of plus/minus 3 degrees)
Appropriate in case that you want to keep balance anti-vibration performance and stability.

![Diagram of HI-MOUNT M Series](image)

### Specifications

- Anti-vibration rubber: chloroprene rubber
- Bolt: SS400 bright chromate coating
- Bearing curved plate
- Leveling bolt

### Housing
- Spark silver metallic (melamine baking finish)
- SPCC
- SPHC, SS400

### Anti-vibration rubber
- Medium performance
- High performance

### Bolt length
- Semi-standard
- Appended the rice mark “※”

### M series' support load and natural frequency

#### Selection chart

1. Find your machine in the following table and check the HI-MOUNT type.
2. Calculate the support load per one mount.
3. Check the intersection points of the support load horizontal line and the HI-MOUNT type oblique line.
4. If you cannot find the intersection point, change the arrangement or number of the HI-MOUNT or select another type.

#### Selection example

- **Machine type**: Injection
- **HI-MOUNT type**: Select the H type in the following table.
- **Support load**: According to the graph, M-10H is appropriate.

### Machine tools

- Lathe, Shaper, Milling machine, Honing machine, Grinder, Industrial machinery, Metalworking machinery, Semiconductor manufacturing / inspection equipment, Business equipment, Packaging machine, Transfer machine, Shining, Bender, etc.

#### High stability performance

- If you use different-sized HI-MOUNTs simultaneously, please select HI-MOUNTs which have the same natural frequency as one another.

#### Standard performance

- Please consult with us concerning this selection.

#### High anti-vibration performance

- If your machine's vibration frequency is less than 2 times the checked natural frequency, you must choose another type.

### M series selection guide

1. **Selection guide based on machine type and support load (See the following table.)**
2. **Selection guide based on anti-vibration performance against stationary vibration**

#### M series selection chart

<table>
<thead>
<tr>
<th>H type</th>
<th>B type</th>
<th>A type</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-19H</td>
<td>M-14H</td>
<td>M-10H</td>
</tr>
<tr>
<td>M-19B</td>
<td>M-14B</td>
<td>M-10B</td>
</tr>
<tr>
<td>M-19A</td>
<td>M-14A</td>
<td>M-10A</td>
</tr>
</tbody>
</table>

### M series selection guide

1. **Selection guide based on machine type and support load (See the following table.)**
2. **Selection guide based on anti-vibration performance against stationary vibration**

#### Selection example

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#### High stability performance

- If you use different-sized HI-MOUNTs simultaneously, please select HI-MOUNTs which have the same natural frequency as one another.

#### Standard performance

- Please consult with us concerning this selection.

#### High anti-vibration performance

- If your machine's vibration frequency is less than 2 times the checked natural frequency, you must choose another type.
**LM series selection guide**

1. Calculate your machine's vibration frequency.
2. Calculate the support load per one mount.
3. Check the intersection points of the support load horizontal line and the HI-MOUNT type oblique line.
4. Draw a vertical line from beneath each intersection point, and check the natural frequency.
5. Select the best type among high stability type, standard type and high anti-vibration type according to your machine's requirement.

*If your machine's vibration frequency is more than twice the checked natural frequency, that HI-MOUNT performs best. But if your machine's vibration frequency is less than 2 times the checked natural frequency, you must choose another type.*

**LM series support load and natural frequency**

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Minimum load N</th>
<th>Maximum load N</th>
<th>Spring constant N/mm</th>
<th>W (kg)</th>
<th>TH (mm)</th>
<th>Attachment load constant (kgf)</th>
<th>Bolt length</th>
<th>Bolt type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM-11</td>
<td>1400</td>
<td>2800</td>
<td>3700</td>
<td>110</td>
<td>47</td>
<td>+15 M12</td>
<td>85</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>~45</td>
<td>200</td>
<td>230</td>
</tr>
<tr>
<td>LM-13</td>
<td>2800</td>
<td>6000</td>
<td>7400</td>
<td>130</td>
<td>51</td>
<td>+22 M16</td>
<td>110</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>~65</td>
<td>200</td>
<td>231</td>
</tr>
<tr>
<td>LM-16</td>
<td>8000</td>
<td>12000</td>
<td>14700</td>
<td>160</td>
<td>65</td>
<td>+24 M16</td>
<td>110</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>~55</td>
<td>200</td>
<td>241</td>
</tr>
<tr>
<td>LM-20</td>
<td>12000</td>
<td>18000</td>
<td>23000</td>
<td>200</td>
<td>76</td>
<td>+27 M20</td>
<td>130</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>~55</td>
<td>220</td>
<td>267</td>
</tr>
</tbody>
</table>
**Specifications**

- Anti-vibration rubber: High damping rubber
- Bearing plate: SPHC, SS400
- Housing: SPCC yellow (melamine baking finish)
- Bolt: SS400 bright chromate coating

Adjust in 50% or under of maximum adjustment in case of placing at slope (within the angles of plus/minus 3 degrees).

*(Not applicable to MY-19. Adjust after jacking up.)*

**Attaching portion**

<table>
<thead>
<tr>
<th>Bed thickness (H)</th>
<th>TH</th>
<th>φD1</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>MY-10B</td>
<td>3150</td>
<td>6300</td>
<td>4600</td>
</tr>
<tr>
<td>MY-14B</td>
<td>6300</td>
<td>12500</td>
<td>9200</td>
</tr>
<tr>
<td>MY-19B</td>
<td>12500</td>
<td>25000</td>
<td>18300</td>
</tr>
</tbody>
</table>

Appropriate cases

- High damping performance: Standard performance
- High stability performance: Selection chart

**Bolt length appended the rice mark “※” is semi-standard.**

---

**MY series’ support load and natural frequency**

<table>
<thead>
<tr>
<th>B type</th>
<th>Minimum load N</th>
<th>Maximum load N</th>
<th>Spring constant N/mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>MY-10B</td>
<td>3150</td>
<td>6300</td>
<td>4600</td>
</tr>
<tr>
<td>MY-14B</td>
<td>6300</td>
<td>12500</td>
<td>9200</td>
</tr>
<tr>
<td>MY-19B</td>
<td>12500</td>
<td>25000</td>
<td>18300</td>
</tr>
</tbody>
</table>

**Selection chart (machine’s vibration frequency, natural frequency, transmissibility)**

- If you use different-sized HI-MOUNTs simultaneously, please select HI-MOUNTs which have the same natural frequency as one another.
- In case of selecting based on natural frequency, please calculate your machine’s vertical vibration frequency.
**LMY series selection guide**

Selection guide based on anti-vibration performance and support load

1. Calculate your machine’s vibration frequency.
2. Calculate the support load per one mount.
3. Check the intersection points of the support load horizontal line and the HI-MOUNT type oblique line.
4. Draw a vertical line from beneath each intersection point, and check each natural frequency.
5. Select the best type among high stability type, standard type and high anti-vibration type according to your machine’s requirement.

※ If your machine’s vibration frequency is more than twice the checked natural frequency, that HI-MOUNT performs best.
But if your machine’s vibration frequency is less than \( \frac{1}{2} \) times the checked natural frequency, you must choose another type.

### LMY series’ support load and natural frequency

#### Handle type

<table>
<thead>
<tr>
<th>Handle type</th>
<th>Minimum load (N)</th>
<th>Maximum load (N)</th>
<th>Spring constant (N/mm)</th>
<th>W (Hz)</th>
<th>(Δ)</th>
<th>L</th>
<th>TH</th>
<th>Attachable bed thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMY-11</td>
<td>1400</td>
<td>2800</td>
<td>3700</td>
<td>110</td>
<td>47</td>
<td>85</td>
<td>115</td>
<td>~45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>230</td>
<td>~160</td>
</tr>
<tr>
<td>LMY-13</td>
<td>2800</td>
<td>6000</td>
<td>7400</td>
<td>130</td>
<td>51</td>
<td>110</td>
<td>141</td>
<td>~85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>231</td>
<td>~153</td>
</tr>
<tr>
<td>LMY-16</td>
<td>6200</td>
<td>12000</td>
<td>14700</td>
<td>160</td>
<td>85</td>
<td>110</td>
<td>151</td>
<td>~55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>241</td>
<td>~145</td>
</tr>
<tr>
<td>LMY-20</td>
<td>12000</td>
<td>18000</td>
<td>23000</td>
<td>200</td>
<td>76</td>
<td>130</td>
<td>177</td>
<td>~65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>220</td>
<td>267</td>
<td>~155</td>
</tr>
</tbody>
</table>

**NOTE**

- In order to select based on natural frequency, please calculate your machine’s vertical vibration frequency.
- In order to maximize stability performance, please lighten the support load. In order to maximize anti-vibration performance, please weight the support load.
- In order to maximize anti-vibration performance, please select each HI-MOUNT type according to each support load.
- If you need a mount capable of absorbing impulse force from a machine such as a sheet metal press etc., please use a B type from the M series.

### Selection chart (machine’s vibration frequency, natural frequency, transmissibility)
The SPRING HI-MOUNT series was developed as a leveling mount for press machines. The special arrangement of coned disk springs enables the SPRING HI-MOUNT series to have a high anti-vibration performance for the shock of press machines. In addition, your machine mounts directly on the SPRING HI-MOUNT without any need for further installation work. This allows you to install our product at a lower cost.

### Compact leveling mounts for press machines with a high anti-vibration performance, an easy setting and a high cost effectiveness.

The SPRING HI-MOUNT series was developed as a leveling mount for press machines. The special arrangement of coned disk springs enables the SPRING HI-MOUNT series to have a high anti-vibration performance for the shock of press machines. In addition, your machine mounts directly on the SPRING HI-MOUNT without any need for further installation work. This allows you to install our product at a lower cost.

**Specifications**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Minimum load N</th>
<th>Maximum load N</th>
<th>#D</th>
<th>#D0</th>
<th>(H)</th>
<th>d</th>
<th>Bolt length L</th>
<th>TH</th>
<th>Attachable bed thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSD-04</td>
<td>2900</td>
<td>5900</td>
<td>150</td>
<td>112</td>
<td>65</td>
<td>+15</td>
<td>M20</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>KSD-08</td>
<td>5900</td>
<td></td>
<td>150</td>
<td>112</td>
<td>65</td>
<td>+15</td>
<td>M20</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>KSD-12</td>
<td>8900</td>
<td></td>
<td>150</td>
<td>112</td>
<td>65</td>
<td>+15</td>
<td>M20</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>KSD-20</td>
<td>14700</td>
<td></td>
<td>150</td>
<td>112</td>
<td>73</td>
<td>+10</td>
<td>M20</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>KSD-30</td>
<td>23500</td>
<td></td>
<td>150</td>
<td>112</td>
<td>78</td>
<td>+7</td>
<td>M20</td>
<td>120</td>
<td>195</td>
</tr>
</tbody>
</table>

In case of installation that requires a mounting hole of \#30 or larger, please insert a flat washer with slides 50 or larger between the press machine and the KSD housing.

### Typical applications

Appropriate for a wide variety of industrial machinery.

- **Metalworking machinery**: Press machine (except for large press machine), Shirring, Bender, etc.
- **Machine tools**: Milling machine, Grinder, Broaching machine, Slotter, etc.
- **Industrial machinery**: Injection molding machine, Roller, Crusher, Printing press, Food processing machinery, Wire rod mill, etc.

### SPRING HI-MOUNT series’ support load and natural frequency

<table>
<thead>
<tr>
<th>Support load (N)</th>
<th>Natural frequency (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000</td>
<td>14</td>
</tr>
<tr>
<td>10000</td>
<td>12</td>
</tr>
<tr>
<td>15000</td>
<td>10</td>
</tr>
<tr>
<td>20000</td>
<td>8</td>
</tr>
<tr>
<td>25000</td>
<td></td>
</tr>
<tr>
<td>30000</td>
<td></td>
</tr>
<tr>
<td>35000</td>
<td></td>
</tr>
<tr>
<td>40000</td>
<td></td>
</tr>
</tbody>
</table>

**Specifications**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Permissible load N</th>
<th>#D</th>
<th>(H)</th>
<th>Height adjustment d</th>
<th>Bolt length L</th>
<th>TH</th>
<th>Attachable bed thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM-215</td>
<td>54000</td>
<td>216</td>
<td>74</td>
<td>+20</td>
<td>M30</td>
<td>150</td>
<td>201</td>
</tr>
<tr>
<td>HM-240</td>
<td>74000</td>
<td>242</td>
<td>74</td>
<td>+20</td>
<td>M30</td>
<td>150</td>
<td>201</td>
</tr>
</tbody>
</table>

### Installation

1. Place the SPRING HI-MOUNT under the bolt hole of your machine.
2. Insert the leveling bolt into the screw hole of SPRING HI-MOUNT from the upper side and screw it in until it comes to rest on the bearing block.
3. Adjust the height by screwing the leveling bolt in.
4. Tighten the nut.

Rein base can be tarnished by the SPRING HI-MOUNT. If you find this unacceptable, please select another HI-MOUNT series.

**LARGE SIZED HI-MOUNT**

The LARGE SIZED HI-MOUNT series was developed as a leveling mount for large press machines.

**Specifications**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Permissible load N</th>
<th>#D</th>
<th>(H)</th>
<th>Height adjustment d</th>
<th>Bolt length L</th>
<th>TH</th>
<th>Attachable bed thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM-240</td>
<td>74000</td>
<td>242</td>
<td>74</td>
<td>+20</td>
<td>M30</td>
<td>150</td>
<td>201</td>
</tr>
</tbody>
</table>

### Typical applications

- **Metalworking machinery**: Press machine (except for large press machine), Shirring, Bender, etc.
- **Machine tools**: Milling machine, Grinder, Broaching machine, Slotter, etc.
- **Industrial machinery**: Injection molding machine, Roller, Crusher, Printing press, Food processing machinery, Wire rod mill, etc.

**LARGE SIZED HI-MOUNT**

The LARGE SIZED HI-MOUNT series was developed as a leveling mount for large press machines.
Clean room-compatible wedge levelers for precise instruments with leveling function & vibration damping function

**HW**
- **STABILIZE TYPE**
- **STANDARD TYPE**
- Maximum support load: 34~100kN
- Clean room-compatible
- HDR pad (High Damping Rubber)
- 

**HWM**
- **STABILIZE TYPE**
- **STANDARD TYPE**
- Maximum load capacity: 16~70kN
- Clean room-compatible
- HDR pad (High Damping Rubber)
- 

### Specifications

<table>
<thead>
<tr>
<th>Pad type</th>
<th>STANDARD</th>
<th>STABILIZE</th>
<th>Clean room-compatible type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Product number</td>
<td>Maximum load capacity (kN)</td>
<td>Product number</td>
</tr>
<tr>
<td></td>
<td>HW-P1317</td>
<td>34</td>
<td>HW-SP1317</td>
</tr>
<tr>
<td></td>
<td>HW-P1717</td>
<td>45</td>
<td>HW-SP1717</td>
</tr>
<tr>
<td>Clean room-compatible</td>
<td>HW-C1317</td>
<td>80</td>
<td>HW-SC1317</td>
</tr>
</tbody>
</table>

Our HI-WEDGE series results in high rigidity and suppresses the resonance in low frequency region via our signature wedge mechanism.
**Features**

**Wedge mechanism**
Gentle inclining wedge structure makes installation easier and less strenuous.

**HDR (High Damping Rubber)**
Our newly-developed high damping rubber (HDR) dampens a machine’s self-generated vibration, enables oil-resistance, and will not mark or damage flooring.

**Bolt hole for stabilizing the machine**
Enables you to stabilize your machine.

**Installation example**
The combination of a bolt hole for stabilizing the machine and a through hole for anchoring results in high stability.

**Leveling bolt**
A structure to make a bolt head keep a certain position while adjusting leveling results in easy and safe adjusting.

**Typical applications**
- FPD manufacturing equipment
- Semiconductor manufacturing equipment
- Precision metalworking machinery
- Large-sized machinery for clean room
- Large-sized precision measuring instrument

**Installation example**
Machine’s leg

**Stabilizer**
Adjustable to floor slope within the angles of plus / minus 3 degrees

**Maximum height**
**Standard height**
**Minimum height**

<table>
<thead>
<tr>
<th></th>
<th>HW series</th>
<th>HWM series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Machine</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Horizontal floor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inclined floor with the angles of 3 degrees</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bolt hole for stabilizing the machine**
(M16)

**Example with an anchor**

**Example of stabilizing the machine**

**Nut and washer**
Bed thickness
Hole depth
Bolt length

Requires a margin of 30 mm or more of space behind the HI-WEDGE.

Requires a margin of 35 mm or more of space behind the HI-WEDGE.

Gentle inclining wedge structure makes installation easier and less strenuous.

A structure to make a bolt head keep a certain position while adjusting leveling results in easy and safe adjusting.

Our newly-developed high damping rubber (HDR) dampens a machine’s self-generated vibration, enables oil-resistance, and will not mark or damage flooring.

Adjustable to floor slope within the angles of plus / minus 3 degrees

FPD manufacturing equipment
Semiconductor manufacturing equipment
Precision metalworking machinery
Large-sized machinery for clean room
Large-sized precision measuring instrument
###HW###

**Outside dimensions**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Product outside dimension (mm)</th>
<th>Maximum support load (kN)</th>
<th>Product mass (kg)</th>
<th>Surface treatment and base treatment</th>
<th>Standard height (mm)</th>
<th>Height adjustment (mm)</th>
<th>Inclination adjustment</th>
<th>Leveling accuracy/(mm / 1 rotation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW-P1317</td>
<td>130 x 170</td>
<td>34</td>
<td>6.8</td>
<td>Body: baking finish</td>
<td>60</td>
<td>76</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-P1717</td>
<td>170 x 170</td>
<td>46</td>
<td>9.2</td>
<td>Body: baking finish</td>
<td>80</td>
<td>100</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-SP1317</td>
<td>130 x 170</td>
<td>34</td>
<td>8.0</td>
<td>Special high hardness damping pad</td>
<td>50</td>
<td>65</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-SP1717</td>
<td>170 x 170</td>
<td>45</td>
<td>10.5</td>
<td>Special high hardness damping pad</td>
<td>70</td>
<td>90</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-C1317</td>
<td>130 x 170</td>
<td>80</td>
<td>6.7</td>
<td>Leveling bolt: Electropolishing</td>
<td>64</td>
<td>80</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-C1717</td>
<td>170 x 170</td>
<td>100</td>
<td>9.1</td>
<td>Leveling bolt: Electropolishing</td>
<td>80</td>
<td>100</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-SC1317</td>
<td>130 x 170</td>
<td>80</td>
<td>7.9</td>
<td>Highly stable fluorochemical grease</td>
<td>60</td>
<td>76</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HW-SC1717</td>
<td>170 x 170</td>
<td>100</td>
<td>10.4</td>
<td>Highly stable fluorochemical grease</td>
<td>80</td>
<td>100</td>
<td>±6</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Specific details**

- **Leveling bolt:** Electropolishing
- **Body:** Baking finish
- **Surface treatment and base treatment:** Special high hardness damping pad
- **Height adjustment:** ±6 mm
- **Inclination adjustment:** ±3°
- **Leveling accuracy:** (mm / 1 rotation) 0.3

---

###HWM###

**Outside dimensions**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Product outside dimension (mm)</th>
<th>Maximum support load (kN)</th>
<th>Product mass (kg)</th>
<th>Surface treatment and base treatment</th>
<th>Standard height (mm)</th>
<th>Height adjustment (mm)</th>
<th>Inclination adjustment</th>
<th>Leveling accuracy/(mm / 1 rotation)</th>
</tr>
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<tbody>
<tr>
<td>HWM-P1314</td>
<td>130 x 170</td>
<td>34</td>
<td>6.8</td>
<td>Body: baking finish</td>
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<td>76</td>
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<tr>
<td>HWM-P1714</td>
<td>170 x 170</td>
<td>46</td>
<td>9.2</td>
<td>Body: baking finish</td>
<td>80</td>
<td>100</td>
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<tr>
<td>HWM-SP1314</td>
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<td>HWM-C1314</td>
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<td>6.7</td>
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<td>100</td>
<td>9.1</td>
<td>Leveling bolt: Electropolishing</td>
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<td>100</td>
<td>±6</td>
<td>0.3</td>
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<tr>
<td>HWM-SC1314</td>
<td>130 x 170</td>
<td>80</td>
<td>7.9</td>
<td>Highly stable fluorochemical grease</td>
<td>60</td>
<td>76</td>
<td>±6</td>
<td>0.3</td>
</tr>
<tr>
<td>HWM-SC1714</td>
<td>170 x 170</td>
<td>100</td>
<td>10.4</td>
<td>Highly stable fluorochemical grease</td>
<td>80</td>
<td>100</td>
<td>±6</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Specific details**

- **Leveling bolt:** Electropolishing
- **Body:** Baking finish
- **Surface treatment and base treatment:** Special high hardness damping pad
- **Height adjustment:** ±6 mm
- **Inclination adjustment:** ±3°
- **Leveling accuracy:** (mm / 1 rotation) 0.3
The bed frames and the installation floor of the machine which mounts on the HI-WEDGE require sufficient rigidity.

Necessary tools for the HW type: monkey wrench, wrench for 24 width across flat or socket wrench.

Necessary tools for the HWM type: monkey wrench, wrench for 22 width across flat (wrench for 12 hexagon socket width across flat) or socket wrench.

In case of big support load, please have accordingly a long handle wrench ready.

When adjusting leveling, use the wedge mechanism to achieve the correct position for mounting. Please leave the necessary margin of space behind the HI-WEDGE.

Please pay sufficient regard to safety while installing.

Please read a manual before installing.
Compo mount is the progressive hybrid typed anti-vibration mount in defined design, that composite with the coil spring and the original damping material [HANENDE HDR*2].

*2 「HANENDE」 The name that given the high damping material and sum of products line, that origin of Kurashiki Kako.
HDR : High Damping Rubber

- Easy to use
- No air lines required
- No maintenance

Applications
- General machinery, Equipment
  (Note: Please avoid attaching directly to machines that generate large impact vibration)
- Floating access floor structure
  Sports gym, Machinery installation access floor, Studio floor

Features
- General machinery, Equipment
- Easy to use
- No air lines required
- No maintenance

Applications
- General machinery, Equipment
  (Note: Please avoid attaching directly to machines that generate large impact vibration)
- Floating access floor structure
  Sports gym, Machinery installation access floor, Studio floor

Excellent vibration isolation performance
- Achieved excellent natural frequency performance in vertical and horizontal axes, by optimized design.
  Transmissibility Performance example KSC-200 4 units / Payload 800kg

The damping performance make to control vibrations.
- Damping mechanism make lower resonance ratio and restore stability of vibration more quickly without effect for its anti-vibration performance.

Damping time wave spectrum
- Vertical axis 5.8Hz 13.7dB
- Horizontal axis 4.6Hz 23.3dB

**Features**

- Easy to use
- No air lines required
- No maintenance

**Applications**

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  (Note: Please avoid attaching directly to machines that generate large impact vibration)
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  Sports gym, Machinery installation access floor, Studio floor

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- Floating access floor structure
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**Damping time wave spectrum**

- Vertical axis 5.8Hz 13.7dB
- Horizontal axis 4.6Hz 23.3dB

---

**Specifications and Performance**

<table>
<thead>
<tr>
<th>Product number</th>
<th>Static spring constant</th>
<th>Payload (N)</th>
<th>Performance</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSC-100</td>
<td>70</td>
<td>7</td>
<td>780~980</td>
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<tr>
<td>KSC-150</td>
<td>105</td>
<td>11</td>
<td>980~1470</td>
<td></td>
</tr>
<tr>
<td>KSC-200</td>
<td>140</td>
<td>14</td>
<td>1470~1960</td>
<td></td>
</tr>
<tr>
<td>KSC-300</td>
<td>210</td>
<td>21</td>
<td>1960~2940</td>
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<tr>
<td>KSC-400</td>
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<td>29</td>
<td>2940~3920</td>
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<td>KSC-560</td>
<td>390</td>
<td>40</td>
<td>3920~5490</td>
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<tr>
<td>KSC-100L</td>
<td>70</td>
<td>7</td>
<td>780~980</td>
<td></td>
</tr>
<tr>
<td>KSC-150L</td>
<td>105</td>
<td>11</td>
<td>980~1470</td>
<td></td>
</tr>
<tr>
<td>KSC-200L</td>
<td>140</td>
<td>14</td>
<td>1470~1960</td>
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</tr>
<tr>
<td>KSC-300L</td>
<td>210</td>
<td>21</td>
<td>1960~2940</td>
<td></td>
</tr>
</tbody>
</table>

**Names of parts**

- Case
- Cover
- Base plate
- Rubber sheet

---

**Applications**

- General machinery, Equipment
  (Note: Please avoid attaching directly to machines that generate large impact vibration)
- Floating access floor structure
  Sports gym, Machinery installation access floor, Studio floor

**Features**

- Easy to use
- No air lines required
- No maintenance

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  (Note: Please avoid attaching directly to machines that generate large impact vibration)
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**Damping time wave spectrum**

- Vertical axis 5.8Hz 13.7dB
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<td>KSC-200</td>
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<td>14</td>
<td>1470~1960</td>
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<td>105</td>
<td>11</td>
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<td>140</td>
<td>14</td>
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<td>KSC-300L</td>
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<td>21</td>
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</tr>
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**Names of parts**

- Case
- Cover
- Base plate
- Rubber sheet

---

**Applications**

- General machinery, Equipment
  (Note: Please avoid attaching directly to machines that generate large impact vibration)
- Floating access floor structure
  Sports gym, Machinery installation access floor, Studio floor

**Features**

- Easy to use
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<td>KSC-400</td>
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<td>390</td>
<td>40</td>
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<tr>
<td>KSC-100L</td>
<td>70</td>
<td>7</td>
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<tr>
<td>KSC-150L</td>
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<td>11</td>
<td>980~1470</td>
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</tr>
<tr>
<td>KSC-200L</td>
<td>140</td>
<td>14</td>
<td>1470~1960</td>
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<tr>
<td>KSC-300L</td>
<td>210</td>
<td>21</td>
<td>1960~2940</td>
<td></td>
</tr>
</tbody>
</table>

**Names of parts**

- Case
- Cover
- Base plate
- Rubber sheet
Compo mount is the progressive hybrid typed anti-vibration mount, that composite with the coil spring and the original damping material [SHDR*1].

Features

- Easy to use
- No air lines required
- No maintenance

RoHS

Attention to use

- The Damping control system is built in the original damping material [SHDR].
- The Compo Mount has effective working tack time that will be stored quickly its horizontal vibrations, caused by set on the side surface of the Linear motion stage.

Options

Adjustable dampers

The Damping control system is built in the original damping material [SHDR].

The Compo Mount has effective working tack time that will be stored quickly its horizontal vibrations, caused by set on the side surface of the Linear motion stage.

Specifications

- Easy to use
- No air lines required
- No maintenance

RoHS

Attention to use

The temperature dependence of damping materials

- Please attention to use in 23±3℃ temperature environment, in order to get full performance of the Compo Mount vibration isolator.
- Please to work slowly and silently, when set the machinery on the Compo Mount vibration isolator.

Specifications

- Please attention falling shock.

Features

- Easy to use
- No air lines required
- No maintenance

RoHS

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- Please attention to use in 23±3℃ temperature environment, in order to get full performance of the Compo Mount vibration isolator.
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Features

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RoHS

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Specifications

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Features

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RoHS

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The temperature dependence of damping materials

- Please attention to use in 23±3℃ temperature environment, in order to get full performance of the Compo Mount vibration isolator.
- Please to work slowly and silently, when set the machinery on the Compo Mount vibration isolator.

Specifications

- Please attention falling shock.
CARRY MOUNT Series are mounts that integrate the following three functions:

Vibration-proof, Relocatability, and Levelability.

Features

1. Compact Design
   A caster for relocation or a ball for relocation and a vibration-proof rubber mount have been combined into one compact product.

2. Relocation And Fixing Are Possible.
   You can relocate and fix equipment. It is very convenient for maintaining different relocation or when a fixed position is needed.

3. Excellent Stability
   Since both the Caster Standard Type and Ball Type have vibration-proof rubber mounts with large installation surfaces, they provide equipment with excellent stability. Furthermore, since the rubber mount of the Caster S Type is located at the center when installed, the structure will not shake, providing excellent stability.

4. Lightweight And Versatility
   As for the Caster Standard Type, there are two options for the body material: steel or stainless, both of which are light and strong. The stainless-steel type will provide you with a wide range of applications due to its water proof and chemical proof nature of the metal. Since this type uses a structure that does not accumulate water, it can be used for food-related applications.

5. Easy Level Adjustment
   You can adjust the level easily and accurately by merely turning the leveling bolt. If necessary, the handle for the Ball Type can be used.

6. Low Cost
   Low cost has been achieved due to the compact design. Especially, the Caster S Type is designed for further cost-cutting in the manufacturing process, such as structural design features.

Notes

[1] In the case of the Ball Type, the front wheel is designed for the installation of a handle and may be different from the illustration.
[2] The illustrations are examples for explaining the installation method and the adjustment, and the equipment may look different.

Specification Table

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Maximum Load in Common Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-60</td>
<td>590N</td>
</tr>
<tr>
<td>CM-60SUS</td>
<td></td>
</tr>
<tr>
<td>CM-100</td>
<td>980N</td>
</tr>
<tr>
<td>CM-100SUS</td>
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<tr>
<td>CM-200C</td>
<td>2000N</td>
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</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Plate</td>
<td>Steel (Electrogalvanized steel) (Steel ball)</td>
</tr>
<tr>
<td>Frame</td>
<td>Stainless-steel Made Products (Stainless steel)</td>
</tr>
<tr>
<td>Wheel</td>
<td>6 Nylon</td>
</tr>
<tr>
<td>Vibration-proof rubber mount</td>
<td>Oil resistant rubber</td>
</tr>
<tr>
<td>Leveling bolt</td>
<td>Stainless-steel Made Products (Stainless steel)</td>
</tr>
</tbody>
</table>

Handling Method

Mounting
In order to install the vibration-absorbing mount, first, prepare bolts and nuts of appropriate length considering the mounting thickness of the equipment. Then, insert a screwdriver into the adjustment hole of the leveling bolt and turning it in a clockwise direction causes the vibration-proof rubber mount to rise, allowing relocation of the equipment.

Relocation
Inserting a screwdriver into the adjustment hole of the leveling bolt and turning it in a clockwise direction causes the vibration-proof rubber mount to rise, allowing relocation of the equipment.

Installation
In a counter clockwise direction causes the wheel to go up, fixing the equipment.

Level Adjustment
Adjustable range is 15mm for the CM-60 and CM-60SUS, 17mm for the CM-100 and CM-100SUS and 20mm for the CM-200C.
**CASTER S type**

**Steel-Made Products**

### Specification Table

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Maximum Load in Common Use</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-60S</td>
<td>590N</td>
<td>1 Mounting Plate</td>
<td>Steel (Electrogalvanized steel) (Steel ball)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Frame</td>
<td>Steel (Electrogalvanized steel)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Wheel</td>
<td>Nylon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Rubber Mount</td>
<td>Oil resistant rubber</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Lock nut</td>
<td>Steel (Electrogalvanized steel)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 Leveling bolt</td>
<td>Steel (Electrogalvanized steel)</td>
</tr>
<tr>
<td>CM-100S</td>
<td>980N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Handling Method

**Relocation**

In order to install, first, prepare bolts and nuts of appropriate length considering the mounting thickness of the equipment.

**Installation**

Tightening the lock nut and turning the leveling bolt in a counterclockwise direction causes the rubber mount to rise, allowing relocation of the equipment. (Tighten the lock nut when relocating or the rubber mount may go down.)

Turning the leveling bolt in a clockwise direction causes the wheel to go up, fixing the equipment. After leveling, tighten the lock nut.

Adjustable range is 16mm for the CM-60S and 15mm for the CM-100S.

### BALL type

**Cast Iron-Made Products**

### Specification Table

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Maximum Load in Common Use</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-200</td>
<td>58 70 100 80 44 M12 67 92 7.5 12</td>
<td>1 Handle</td>
<td>Cast iron (Baked-on finish)</td>
</tr>
<tr>
<td>CM-600</td>
<td>65 79 140 120 54 M16 72 102 7.5 14</td>
<td>2 Housing</td>
<td>Cast iron (Baked-on finish)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Relocation ball</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Vibration-proof rubber mount</td>
<td>Oil resistant rubber</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 Mounting bolt</td>
<td>Steel (Electrogalvanized steel)</td>
</tr>
</tbody>
</table>

### Handling Method

**Relocation**

Set a CARRY MOUNT under the bolt hole of the equipment to absorb vibration. Insert a bolt from the upper side and tighten it until it stops. (The mounting holes on the equipment do not require threads.)

Turning the handle in a clockwise direction causes the vibration-proof rubber mount to go up, allowing relocation of the equipment. (Please refer to the Notes.)

**Installation**

Turning the handle in a counterclockwise direction lowers the vibration-proof rubber mount, fixing the equipment to the location.

Adjustable range is 12mm for the CM-200 and 14mm for the CM-600.