1. Variation of Natural Rubber Bearing

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Outer Diameter (mm)</th>
<th>Thickness (mm)</th>
<th>Yield Force (kN)</th>
<th>Ultimate Deformation (mm)</th>
<th>Stiffness (kN/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSUD40-600-4.5</td>
<td>600</td>
<td>4.5</td>
<td>464</td>
<td>16,600</td>
<td>27.9</td>
</tr>
<tr>
<td>NSUD45-800-5.7</td>
<td>800</td>
<td>5.7</td>
<td>850</td>
<td>19,200</td>
<td>31.7</td>
</tr>
<tr>
<td>NSUD50-800-6.0</td>
<td>800</td>
<td>6.0</td>
<td>800</td>
<td>19,200</td>
<td>31.7</td>
</tr>
<tr>
<td>NSUD55-800-6.8</td>
<td>800</td>
<td>6.8</td>
<td>1,060</td>
<td>21,500</td>
<td>35.8</td>
</tr>
<tr>
<td>NSUD60-900-7.5</td>
<td>900</td>
<td>7.5</td>
<td>1,150</td>
<td>24,000</td>
<td>39.9</td>
</tr>
<tr>
<td>NSUD70-1000-8.3</td>
<td>1,000</td>
<td>8.3</td>
<td>1,340</td>
<td>30,000</td>
<td>47.9</td>
</tr>
</tbody>
</table>

2. Applicable Combination of Natural Rubber Bearing and NS-UTM

<table>
<thead>
<tr>
<th>Damper Type</th>
<th>Number of U-elements</th>
<th>Diameter</th>
<th>Thickness</th>
<th>Yield Force</th>
<th>Ultimate Deformation</th>
<th>Stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS-U</td>
<td>8</td>
<td>1000</td>
<td>7.5</td>
<td>1,770</td>
<td>27.2</td>
<td>1,000</td>
</tr>
<tr>
<td>NS-U</td>
<td>6</td>
<td>1200</td>
<td>9.0</td>
<td>2,130</td>
<td>31.7</td>
<td>1,000</td>
</tr>
</tbody>
</table>

3. Variation of NS-UTM

<table>
<thead>
<tr>
<th>Damper Type</th>
<th>Number of U-elements</th>
<th>Diameter</th>
<th>Thickness</th>
<th>Yield Force</th>
<th>Ultimate Deformation</th>
<th>Stiffness</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS-U</td>
<td>6</td>
<td>850</td>
<td>6.5</td>
<td>1,400</td>
<td>23.7</td>
<td>650</td>
</tr>
<tr>
<td>NS-U</td>
<td>8</td>
<td>1000</td>
<td>7.5</td>
<td>1,770</td>
<td>27.2</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Examples of NS-UTM Applications

- **Lineup of NS-UTM with Natural Rubber Bearing**
- **Characteristics**
- **U-shaped Steel Damper**
- **NS-U™ with natural rubber bearing**
- **Contact**
U-elements are made specially tuned steel and fabricated at designated plants. They have stable hysteretic behavior, excellent fatigue property, less sensitivity.

High Quality
NS-UTM has a various sizes, damper element numbers, and combinations. It allows dampers to fit in any structures.

Plenty of Choice
NS-UTM offers an economical option to give large damping force.

Non Directional Effect
NS-UTM has almost same hysteresis for any direction.

Economic Efficiency
NS-UTM with natural rubber bearing

What’s Seismic Isolated Structure?

Features
Conventional Structure
Seismic Isolated Structure
Primary frame itself has to resist seismic force. Structures adopting seismic isolation devices enable to reduce earthquake energy input into superstructure.

Seismic energy input
Seismic energy input

Horizontal vibration during earthquake

After huge earthquake

Comparison in dynamic load test

Dynamic loading test simulated great earthquake

NS-UTM with natural rubber bearing (NSUD 45 × 4)

NS-UTM with natural rubber bearing (NSUD 45 × 4-R44-800-6.0 × 26)

Fatigue Characteristics

Definition of shear deformation ratio:

Shear deformation ratio

Definition of shear deformation ratio:

Fatigue Characteristics

Shear deformation ratio

Shear deformation ratio

Dynamic loading test simulated great earthquake

Static loading test

Fatigue Characteristics

Fatigue Characteristics

Dynamic loading test simulated great earthquake

Static loading test

Fatigue Characteristics

Fatigue Characteristics

Dynamic loading test simulated great earthquake

Static loading test

Fatigue Characteristics

Fatigue Characteristics

Dynamic loading test simulated great earthquake

Static loading test

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Dynamic loading test simulated great earthquake

Static loading test

Fatigue Characteristics

Fatigue Characteristics

Performance Data