Nozzles for Special Purposes
### Nozzles for Special Purposes

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M19 Nozzle</strong></td>
<td>G. 1</td>
</tr>
<tr>
<td></td>
<td>M19</td>
</tr>
<tr>
<td><strong>Long Distance Spray Nozzle</strong></td>
<td>G. 2</td>
</tr>
<tr>
<td></td>
<td>MH</td>
</tr>
<tr>
<td><strong>Pipe Inner Wall Washing Nozzle</strong></td>
<td>G. 3</td>
</tr>
<tr>
<td></td>
<td>DNP</td>
</tr>
<tr>
<td><strong>Moya Atomizing Nozzle</strong></td>
<td>G. 4</td>
</tr>
<tr>
<td></td>
<td>KSME</td>
</tr>
<tr>
<td><strong>Water Knife</strong></td>
<td>G. 5</td>
</tr>
<tr>
<td></td>
<td>WK</td>
</tr>
<tr>
<td><strong>Brush Header</strong></td>
<td>G. 6</td>
</tr>
<tr>
<td><strong>Oval Spray Nozzle</strong></td>
<td>G. 7</td>
</tr>
<tr>
<td>□ Separate type</td>
<td>KSE,</td>
</tr>
<tr>
<td>□ Integral type</td>
<td>KSE-H</td>
</tr>
<tr>
<td></td>
<td>KSE-S,</td>
</tr>
<tr>
<td><strong>Liquid Ammonia Spray Nozzle</strong></td>
<td>G. 10</td>
</tr>
<tr>
<td></td>
<td>KSF</td>
</tr>
<tr>
<td><strong>Compact Nozzle</strong></td>
<td>G. 11</td>
</tr>
<tr>
<td>□ Flat pattern type</td>
<td>MINI-KSS</td>
</tr>
<tr>
<td>□ Full-cone pattern type</td>
<td>MINI-KSF</td>
</tr>
<tr>
<td>□ Straight pattern type</td>
<td>MINI-KSJ</td>
</tr>
<tr>
<td><strong>Compact Ball Joint</strong></td>
<td>G. 12</td>
</tr>
<tr>
<td></td>
<td>BJM</td>
</tr>
<tr>
<td><strong>Rotary Jet Nozzle</strong></td>
<td>G. 13</td>
</tr>
<tr>
<td></td>
<td>KTTN</td>
</tr>
</tbody>
</table>

* The symbol “S” in a model code that begins with “KS” represents its material and differs according to the materials.
M19 Nozzle

Features
- Fine droplet.
- No need to inject compressor air.

Applications
- Fountains, plant cultivation, and cooling.
- Theatrical effects.

Materials
- Nozzle body: 303 and 304 Stainless steel
- Filter: Plastics (PE)

Shapes and dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Part name</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nozzle body</td>
<td>Ø17 x 30.5</td>
</tr>
<tr>
<td>2</td>
<td>Filter</td>
<td>Ø17 x 30.5</td>
</tr>
</tbody>
</table>

Weight [g] 16

* NPT thread is also available.

Standard type model number list

<table>
<thead>
<tr>
<th>Nozzle model No.</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [mL/min] at following pressure [MPa]</th>
<th>Spray angle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>M19</td>
<td>0.19</td>
<td>47 67 82 94 106 116 125</td>
<td>Approx. 140°</td>
</tr>
</tbody>
</table>

Application example

Nozzles in non-operation

Nozzles in operation

https://www.everloy-spray-nozzles.com
### Features
- Spraying in a wide area away from nozzle.
- Sprinkling of relatively small water drops at a high flow rate.

### Applications
- Cooling of steel sheets.
- Fire extinguishing.
- Dust prevention and sprinkling of water.
- Spraying of chemicals.

### Materials
- 303 Stainless steel
- Brass

### Shapes and dimensions

- **MH**

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Model</th>
<th>Model number</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>1</td>
<td>MH</td>
<td>02-10</td>
<td>1.0</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03-10</td>
<td>1.4</td>
<td>17.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03-20</td>
<td>1.4</td>
<td>34.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>04-10</td>
<td>1.7</td>
<td>23.1</td>
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<td></td>
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<td>05-10</td>
<td>2.0</td>
<td>28.9</td>
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<td>40.4</td>
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<td></td>
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<td>08-10</td>
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<td>46.2</td>
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<td>10-10</td>
<td>3.0</td>
<td>57.7</td>
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<td>12-10</td>
<td>3.3</td>
<td>69.3</td>
</tr>
</tbody>
</table>

* NPT thread is also available.

---

**EVERLOY**

https://www.everloy-spray-nozzles.com
Pipe Inner Wall Washing Nozzle

**Features**
- Water curtain of uniform spraying on inner surfaces of pipes.

**Applications**
- Washing of inner walls of pipes and headers.

**Materials**
- 303 Stainless steel

### Shapes and dimensions

#### DNP···B, Backward spraying type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension (mm)</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛ DNP···B</td>
<td>17 40</td>
<td>R ⅛</td>
<td>50</td>
</tr>
<tr>
<td>⅜ DNP···B</td>
<td>20 43</td>
<td>R ⅛</td>
<td>85</td>
</tr>
<tr>
<td>½ DNP···B</td>
<td>25 50</td>
<td>R ⅛</td>
<td>150</td>
</tr>
<tr>
<td>¾ DNP···B</td>
<td>30 55</td>
<td>R ⅛</td>
<td>230</td>
</tr>
</tbody>
</table>

#### DNP···F, Forward spraying type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension (mm)</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛ DNP···F</td>
<td>17 40</td>
<td>R ⅛</td>
<td>50</td>
</tr>
<tr>
<td>⅜ DNP···F</td>
<td>20 43</td>
<td>R ⅛</td>
<td>85</td>
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<tr>
<td>½ DNP···F</td>
<td>25 50</td>
<td>R ⅛</td>
<td>150</td>
</tr>
<tr>
<td>¾ DNP···F</td>
<td>30 55</td>
<td>R ⅛</td>
<td>230</td>
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</table>

* NPT thread is also available.

#### Model and Model Number representing

- **1/4** Thread size
- **DNP**
- **Model number**
- **1.0120**
- **B** - Backward spraying
- **F** - Forward spraying

### Standard type model number list

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Model</th>
<th>Model number</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
<th>Spray angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛</td>
<td>DNP</td>
<td>10120</td>
<td>0.30</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>⅛</td>
<td>DNP</td>
<td>10150</td>
<td>0.30</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>⅜</td>
<td>DNP</td>
<td>15120</td>
<td>0.45</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>⅜</td>
<td>DNP</td>
<td>15150</td>
<td>0.45</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>½</td>
<td>DNP</td>
<td>25120</td>
<td>1.0</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>½</td>
<td>DNP</td>
<td>25150</td>
<td>1.0</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>¾</td>
<td>DNP</td>
<td>35120</td>
<td>1.3</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
<tr>
<td>¾</td>
<td>DNP</td>
<td>35150</td>
<td>1.3</td>
<td>25.6 31.6 36.5 40.8 43.5 47.4 54.8 61.2 61.2 120° 150°</td>
<td></td>
</tr>
</tbody>
</table>

[https://www.everloy-spray-nozzles.com](https://www.everloy-spray-nozzles.com)
Moya Atomizing Nozzle

**Features**
- Fine droplet.
- No need to inject air.
- A check valve inside prevents dripping from nozzle.
- A small filter inside minimizes clogging.

**Applications**
- Cooling, humidification, etc.

**Materials**
- Nozzle body: 303 and 304 Stainless steel
- Filter: Plastics (PE)

**Shapes and dimensions**

**Model and Model Number representing**

- **KSME**

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Model number</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [mL/min] at following pressure [MPa]</th>
<th>Spray angle at 6 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>KSME 0.3</td>
<td>0.15</td>
<td>21 30 38 45 50</td>
<td>80°</td>
</tr>
<tr>
<td></td>
<td>KSME 0.6</td>
<td>0.20</td>
<td>42 60 76 90 100</td>
<td>90°</td>
</tr>
</tbody>
</table>

- Operating pressure of the check valve: Approx. 1 MPa
- NPT thread is also available.

**Performance data**

**Particle size and velocity**

Nozzle model number 1/4 KSME 0.3 A CV

<table>
<thead>
<tr>
<th>Spray distance [mm]</th>
<th>Pressure [MPa]</th>
<th>Flow rate [mL/min]</th>
<th>Sauter mean diameter [μm]</th>
<th>Mean particle velocity [m/s]</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>6</td>
<td>50</td>
<td>11.6</td>
<td>8.3</td>
</tr>
<tr>
<td>300</td>
<td>6</td>
<td>50</td>
<td>19.4</td>
<td>5.2</td>
</tr>
</tbody>
</table>

https://www.everloy-spray-nozzles.com
### Features
- Continuous laminar water flow.
- Water pressure is available from 2 kPa to 10 kPa.
- From 100 mm to 3000 mm slit length is available.
- Ultra-thin slit ranging from 0.15 mm to 0.3 mm.

### Applications
- Displacement washing of glass substrates and the like, coating of chemicals, washing, and rinsing.

### Materials
- 304 Stainless steel
- Aluminum
- Titanium
- Plastics (H-PVC)

### Shapes and dimensions

#### Material
<table>
<thead>
<tr>
<th>Material</th>
<th>Dimension w [mm]</th>
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<tbody>
<tr>
<td>Metals</td>
<td>20</td>
</tr>
<tr>
<td>Plastics</td>
<td>22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Silt length L [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>9.0</td>
</tr>
<tr>
<td>2000</td>
<td>17.9</td>
</tr>
<tr>
<td>2500</td>
<td>22.3</td>
</tr>
</tbody>
</table>

*Slit length is to be specified by the customer.*
*NPT thread is also available.*

#### Model and Model Number representing

```
WK - 0 0 0 L
```

<table>
<thead>
<tr>
<th>Model</th>
<th>Slit length L [mm]</th>
<th>Slit aperture t [mm]</th>
<th>Flow rate [L/min] at following pressure [kPa]</th>
<th>Spray width [mm] at following pressure [kPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>WK</td>
<td>1000</td>
<td>0.15</td>
<td>14.2</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.20</td>
<td>18.9</td>
<td>25.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.30</td>
<td>28.3</td>
<td>38.3</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>0.15</td>
<td>28.3</td>
<td>38.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.20</td>
<td>37.8</td>
<td>51.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.30</td>
<td>56.7</td>
<td>76.7</td>
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<tr>
<td></td>
<td>2500</td>
<td>0.15</td>
<td>35.4</td>
<td>47.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.20</td>
<td>47.2</td>
<td>63.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.30</td>
<td>70.8</td>
<td>95.8</td>
</tr>
</tbody>
</table>

*The flow rates in the above list are for reference only, as flow rates vary depending on the set point values for piping.*
*The values of spray width are those at the point 25 mm beneath the nozzle.*
Brush Header

Features
- Continuous operation is possible in cleaning without spraying
- Up to 60° is available as spray angle.

Applications
- Washing of galvanized sheets for steel-making.
- Shower pipe for paper-making.

Materials
- Header: 304 Stainless steel
- Brush: Plastics (PP) or Stainless steel

Shapes and dimensions

Support parts, etc. can be ordered separately.

Ordering specifications

Please be selected and informed as follows.

- Pipe size: 40A, 50A (JIS standard)
- Maximum flow rate per pipe: 400 L/min (pipe size: 40A)
  600 L/min (pipe size: 50A)
- Maximum header length: 4 m
- Maximum flow rate per nozzle: 30 L/min (at 0.3 MPa)
- Spray angle of each nozzle: 0°, 30°, 45°, 60°
- Minimum nozzle pitch: 60 mm

*We can design and manufacture brush headers according to your operating conditions.
(Nozzle flow rates, angles, nozzle pitches, etc.)
### Oval Spray Nozzle

#### Features
- Relatively small droplet.
- Wide spray area.

#### Applications
- Cooling of steel sheets, rollers, and hot coils.
- Secondary cooling in continuous casting processes.
- Various washing purposes.

#### Materials
- 303 Stainless steel
- Brass

### Shapes and dimensions

#### KSE, Separate type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension [mm]</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼ KSE</td>
<td>21 45</td>
<td>R ¼</td>
<td>55</td>
</tr>
<tr>
<td>¾ KSE</td>
<td>21 45</td>
<td>R ¾</td>
<td>85</td>
</tr>
<tr>
<td>½ KSE</td>
<td>29 60</td>
<td>R ½</td>
<td>205</td>
</tr>
<tr>
<td>⅓ KSE</td>
<td>32 68</td>
<td>R ⅓</td>
<td>285</td>
</tr>
</tbody>
</table>

#### KSE···H, Separate type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension [mm]</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼ KSE-H</td>
<td>21 45</td>
<td>Rc ¼</td>
<td>55</td>
</tr>
<tr>
<td>¾ KSE-H</td>
<td>21 45</td>
<td>Rc ¾</td>
<td>85</td>
</tr>
<tr>
<td>½ KSE-H</td>
<td>29 60</td>
<td>Rc ½</td>
<td>205</td>
</tr>
<tr>
<td>⅓ KSE-H</td>
<td>32 68</td>
<td>Rc ⅓</td>
<td>285</td>
</tr>
</tbody>
</table>

#### KSE···S, Integral type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension [mm]</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛ KSE-S</td>
<td>14 28</td>
<td>R ⅛</td>
<td>22</td>
</tr>
<tr>
<td>¼ KSE-S</td>
<td>17 35</td>
<td>R ¼</td>
<td>55</td>
</tr>
<tr>
<td>½ KSE-S</td>
<td>22 45</td>
<td>R ½</td>
<td>90</td>
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<tr>
<td>¾ KSE-S</td>
<td>27 54</td>
<td>R ¾</td>
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</tr>
<tr>
<td>1 KSE-S</td>
<td>35 65</td>
<td>R 1</td>
<td>350</td>
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</tbody>
</table>

#### KSE···HS, Integral type

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimension [mm]</th>
<th>Connecting thread</th>
<th>Weight [g]</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛ KSE-HS</td>
<td>17 38</td>
<td>Rc ⅛</td>
<td>50</td>
</tr>
<tr>
<td>¼ KSE-HS</td>
<td>21 45</td>
<td>Rc ¼</td>
<td>80</td>
</tr>
<tr>
<td>½ KSE-HS</td>
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<td>210</td>
</tr>
<tr>
<td>¾ KSE-HS</td>
<td>32 60</td>
<td>Rc ¾</td>
<td>220</td>
</tr>
<tr>
<td>1 KSE-HS</td>
<td>41 75</td>
<td>Rc 1</td>
<td>440</td>
</tr>
</tbody>
</table>

* NPT thread is also available.

### Model and Model Number representing

- **Thread size**: ⅛
- **Material**: S - Stainless steel, B - Brass
- **Model number**
  - K: Water flow distribution
  - U: Uniform distribution
  - 0, 4, 9, 0: No symbol - Normal distribution

---

**EVERLOY**

https://www.everloy-spray-nozzles.com
<table>
<thead>
<tr>
<th>Standard type model number list</th>
<th>Model availability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thread size</strong></td>
<td><strong>Model</strong></td>
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<tr>
<td></td>
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</tr>
<tr>
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Performance data

**Characteristic curves**

Nozzle model number: 3/8 KBE 0590 HU

- Widthwise spray angle curve
- Thicknesswise spray angle curve
- Flow rate curve

**Flow distribution**

Nozzle model number: 3/8 KBE 0590 HU
Spray distance: 300 mm

Flow density vs. Distance from nozzle center [mm]

- Pressure: 1.0 MPa
- Pressure: 0.7 MPa
- Pressure: 0.5 MPa
- Pressure: 0.3 MPa
- Pressure: 0.1 MPa

**Oval Spray Nozzle**

https://www.everloy-spray-nozzles.com
Liquid Ammonia Spray Nozzle

Features
- Large spray angle at low liquid pressure and small spray angle at high liquid pressure.

Applications
- Catalytic NOx reduction.

Materials
- Stainless steel
- Carbon steel

Shapes and dimensions
- KSF, Straight type
- KSF, Elbow type

<table>
<thead>
<tr>
<th>No.</th>
<th>Part name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nozzle body</td>
</tr>
<tr>
<td>2</td>
<td>Flange</td>
</tr>
<tr>
<td>3</td>
<td>Flange</td>
</tr>
</tbody>
</table>

Performance mechanism

At low liquid pressure
The spray angle is wider, which is effective in cooling the CO gas.

At high liquid pressure
The spray angle is narrower and the spray is faster, which improves draft effect into the dry main pipe smoothly.
**Compact Nozzle**

### Features and Applications
- Specially compact designed.
- Compact nozzles can fit in small spaces of machines.

### Material
- Nozzle tip: 303 Stainless steel
- Packing: Plastics (PTFE)

### Maximum service pressure
- 0.7 MPa

#### Shapes and dimensions

- **MINI-KSS, Flat pattern type**
- **MINI-KSJ, Straight pattern type**
- **MINI-KSF, Full-cone pattern type**
- **Packing**

#### Model and Model Number representing

<table>
<thead>
<tr>
<th>Model number</th>
<th>Spray pattern</th>
<th>Model number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINI-KSS</td>
<td>S - Flat</td>
<td>00740</td>
</tr>
<tr>
<td>MINI-KSJ</td>
<td>J - Straight</td>
<td>00760</td>
</tr>
<tr>
<td>MINI-KSF</td>
<td>F - Full-cone</td>
<td>00780</td>
</tr>
</tbody>
</table>

#### Standard type model number list (flat pattern type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
<th>Spray angle at following pressure [MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min. orifice diameter [mm]</td>
<td>0.1</td>
</tr>
<tr>
<td>KSS</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>00740</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>00760</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>00780</td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>0140</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>0160</td>
<td></td>
<td>0.7</td>
</tr>
<tr>
<td>0180</td>
<td></td>
<td>0.6</td>
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<tr>
<td>01540</td>
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<td>0.9</td>
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<td>01560</td>
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<td>0.7</td>
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<tr>
<td>01580</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>0240</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>0260</td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>0280</td>
<td></td>
<td>0.7</td>
</tr>
</tbody>
</table>
### Standard type model number list (straight pattern type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Model number</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
<th>Spray angle at following pressure [°]</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSJ</td>
<td>0.5</td>
<td>0.5</td>
<td>0.11 0.16 0.19 0.22 0.24 0.26 0.28</td>
<td>50° 60° 70° 80° 90° 100° 110°</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>1.0</td>
<td>0.43 0.61 0.75 0.87 0.97 1.06 1.15</td>
<td>50° 60° 70° 80° 90° 100° 110°</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>1.5</td>
<td>0.98 1.38 1.69 1.95 2.2 2.4 2.6</td>
<td>50° 60° 70° 80° 90° 100° 110°</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>2.0</td>
<td>1.73 2.4 3.0 3.5 3.9 4.2 4.6</td>
<td>50° 60° 70° 80° 90° 100° 110°</td>
</tr>
</tbody>
</table>

*Flow rates are just for reference as they depend on orifice diameter.*

### Standard type model number list (full-cone pattern type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Model number</th>
<th>Min. orifice diameter [mm]</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
<th>Spray angle at following pressure [°]</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSF</td>
<td>00860</td>
<td>0.5</td>
<td>0.50 0.67 0.80 1.00 1.15 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>00890</td>
<td>0.5</td>
<td>0.50 0.67 0.80 1.00 1.15 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0160</td>
<td>0.5</td>
<td>0.62 0.84 1.00 1.25 1.44 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0190</td>
<td>0.5</td>
<td>0.62 0.84 1.00 1.25 1.44 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01560</td>
<td>0.5</td>
<td>0.94 1.26 1.50 1.87 2.2 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01590</td>
<td>0.5</td>
<td>0.94 1.26 1.50 1.87 2.2 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0260</td>
<td>0.5</td>
<td>1.25 1.68 2.0 2.5 2.9 51° 60° 70°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0290</td>
<td>0.5</td>
<td>1.25 1.68 2.0 2.5 2.9 51° 60° 70°</td>
<td></td>
</tr>
</tbody>
</table>

### Compact Ball Joint

#### Features and Applications
- Specially compact designed.
- The ball can be fixed in a desired position by loosening or tightening the cap.

#### Materials
- Body : 303 Stainless steel
- Packing : Plastics (PTFE)

#### Maximum service pressure
- 0.7 MPa

### Shapes and dimensions

**BJM 5**

![Diagram of BJM 5](image)

**BJM 5F**

![Diagram of BJM 5F](image)

**Packing**

![Diagram of Packing](image)

*Packing for assembly is attached.*
Rotary Jet Nozzle

Features
- By pumping the washing solution, the nozzle rotating body rotates and injects it around the entire circumference.
- PTFE which is excellent in both chemical and corrosion resistance and corrosion resistance is adopted as the material of the nozzle, and it corresponds also to acid/alkali cleaning.

Applications
- Washing the inner wall of the tank.
- Washing of inner walls of various filling machines.

Materials
- Plastics (PTFE)

Shapes and dimensions

- **Model and Model Number representing**
  - 1/2
  - KTTN
  - 50 – 360
  - Model number

- **Standard type model number list**

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Model</th>
<th>Model number</th>
<th>Flow rate [L/min] at following pressure [MPa]</th>
<th>Effective washing dia. [m]</th>
<th>Spray pattern</th>
<th>Heatproof temp. [°C]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
<td>0.15</td>
<td>0.2</td>
<td>0.25</td>
</tr>
<tr>
<td>1/2</td>
<td>KTTN</td>
<td>30 – 360</td>
<td>17.3</td>
<td>21.2</td>
<td>24.5</td>
<td>27.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 – 360</td>
<td>28.9</td>
<td>35.4</td>
<td>40.8</td>
<td>45.6</td>
</tr>
<tr>
<td>3/4</td>
<td>KTTN</td>
<td>70 – 360</td>
<td>40.4</td>
<td>49.5</td>
<td>57.2</td>
<td>63.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120 – 360</td>
<td>69.3</td>
<td>84.9</td>
<td>98.0</td>
<td>109.5</td>
</tr>
</tbody>
</table>

*Recommended working pressure: 0.15 MPa to 0.3 MPa

*Product shape and dimensions are subject to change without notice.
### Performance data

#### Spray patterns

<table>
<thead>
<tr>
<th>360°</th>
<th>180° Upward</th>
<th>180° Downward</th>
<th>270° Downward</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Standard type" /></td>
<td><img src="image2" alt="180° Upward" /></td>
<td><img src="image3" alt="180° Downward" /></td>
<td><img src="image4" alt="270° Downward" /></td>
</tr>
</tbody>
</table>

Please contact us for any design support as well as standard type.

#### Effective washing diameter

Horizontal straight line flying distance at spray pressure of 0.2 MPa  
(The effective washing diameter does not guarantee cleaning.)

![Effective washing diameter](image5)

#### Installation

**Installation example of pipe and flange**

![Installation example of pipe and flange](image6)