Camloc
Quick-Operating
Fasteners
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The Camloc brand was established in 1937. Since that time our fastening systems have been successfully integrated into numerous applications within many different industries.

Each of our customers will feel the full benefit of our 70 years of fastening experience.

Customer proximity, environmental awareness and quality are the main criteria of our services and products.

Please find additional information about our environmental program under: www.alcoa.com.

Your Alcoa Fastening Systems team

Disclaimer:
Parts listed are subject to technical changes. All dimensions in mm. All information is correct to the best of our knowledge at the time of printing. No liability for disadvantages caused by printing errors or false application.
Advantages of the Camloc 1/4-Turn Fastener

- Safe mechanical quick release fastener systems
- Locking or unlocking by quarter turn
- Long life - high number of operating cycles
- Hand or tool-operated
- Service-friendly, time-saving and cost cutting
- Camloc fasteners are standardised worldwide
- Fastener series for any industrial applications
- Captive-type
- Tolerance compensating
- Vibration-resistant

Components

The 1/4-turn fastener consists of a stud, a retaining washer/retaining ring and a cam receptacle.

Depending upon the strength, fastener size and mounting conditions, the spring component is a part of the stud assembly or the receptacle.

For some fastener series, stud assemblies with clip-in grommets are available which allow easy mounting without retaining washers. This ensures, at the same time, retention of the fastener.
Design Principle

Quarter-turn fasteners connect components under an elastic preload (frictional connection).

Spring components to produce the preload may be part of the stud or receptacle.

Forces: The fasteners transmit the tensile loads specified in the catalogue after overcoming the preload.

Lateral forces are transmitted to the components by friction resulting from the preload of the fastener. Such forces vary with the conditions of the components.

How it Operates

When the stud assembly is rotated, the stud cross pin rides up the cam causing a controlled joint preload to be applied. This action is accomplished by rotating the stud 90°. At this point a positive mechanical stop is reached and the cross pin falls into the locking detent. Excellent resistance to vibration induced loosening is assured.

![Diagram of Stud Assembly and Receptacle](image)

Unlocked

Locked

For general installation instructions please refer to the next page.
Selecting the Fastener

P = panel thickness (stud assembly)

F = frame thickness (receptacle)

G = total thickness, consisting of P + F as well as possible gaskets, paint coats or gaps. This dimension gives the stud length number in the corresponding series tables.

Installation

Stud

For short, spring-loaded stud assemblies, the use of 4P3-1 pliers is recommended.

With Grommet

Retaining washer (slotted)

With retaining washer
Particular Features
Max. tensile strength 670 N.
Plastic washer stud assembly to protect decorative surfaces.
Spring loaded receptacle.

Selection Instructions
2. Select retaining washer or grommet, page B-3.
3. Select stud length number from total thickness G using the formula and table below, insert into stud part number * (e.g. V5S5-*AGV).

Determining the stud length number:

With retaining washer
\[ G = P + F \]

With Grommet
\[ G = P + F + 1.4 \]

Stud Length Table

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Receptacles</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,50 - 0,90</td>
<td>1</td>
</tr>
<tr>
<td>0,90 - 1,30</td>
<td>2</td>
</tr>
<tr>
<td>1,30 - 1,65</td>
<td>3</td>
</tr>
<tr>
<td>1,65 - 2,05</td>
<td>4</td>
</tr>
<tr>
<td>2,05 - 2,40</td>
<td>5</td>
</tr>
<tr>
<td>2,40 - 2,80</td>
<td>6</td>
</tr>
<tr>
<td>2,80 - 3,20</td>
<td>7</td>
</tr>
<tr>
<td>3,20 - 3,55</td>
<td>8</td>
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<td>3,55 - 3,95</td>
<td>9</td>
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<td>3,95 - 4,30</td>
<td>10</td>
</tr>
<tr>
<td>4,30 - 4,70</td>
<td>11</td>
</tr>
<tr>
<td>4,70 - 5,10</td>
<td>12</td>
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<td>5,10 - 5,45</td>
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<tr>
<td>5,45 - 5,85</td>
<td>14</td>
</tr>
<tr>
<td>5,85 - 6,20</td>
<td>15</td>
</tr>
<tr>
<td>6,20 - 6,60</td>
<td>16</td>
</tr>
<tr>
<td>6,60 - 7,00</td>
<td>17</td>
</tr>
<tr>
<td>7,00 - 7,35</td>
<td>18</td>
</tr>
<tr>
<td>7,35 - 7,75</td>
<td>19</td>
</tr>
<tr>
<td>7,75 - 8,15</td>
<td>20</td>
</tr>
<tr>
<td>8,15 - 8,50</td>
<td>21</td>
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</tbody>
</table>

Other lengths on request.  
Preferred dash-lengths
### 5F Series

#### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Head</strong></td>
<td><img src="image1" alt="Slotted Recess Head Diagram" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>120</td>
<td>V5S5- *AGV</td>
</tr>
<tr>
<td></td>
<td><img src="image2" alt="Steel / Zinc-Plated" /></td>
<td>Steel / nickel-plated with plastic washer (PA6)</td>
<td>120</td>
<td>5S27-*</td>
</tr>
</tbody>
</table>

**Cross Recess Head**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Cross Recess Head Diagram" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>120</td>
<td>V5S21- *AGV</td>
</tr>
<tr>
<td><img src="image4" alt="Stainless Steel" /></td>
<td>Stainless steel with stainless steel washer (tensile strength 470 N max.)</td>
<td>230</td>
<td>5S15-*</td>
</tr>
</tbody>
</table>

*S Length no. from Table, page B-1.

*For installation dimensions see page B-3.
### 5F Series

#### Stud Installation Instructions

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Material / Finish</th>
<th>Panel Thickness P</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retaining Washer</strong></td>
<td>Retaining washer</td>
<td>Steel/zinc-plated, CrVI-free, transparent passivated</td>
<td>V5W3-1AG</td>
<td></td>
</tr>
<tr>
<td>Panel Thickness P up to 2,3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* For P up 1,4 : Ø 5,6 for installation without retaining washer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel thickness P over 2,3</td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>5S3-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Snap-In Grommet</strong></td>
<td>Grommet</td>
<td>Plastic (PA6) black</td>
<td>to 1,4</td>
<td>5S72-5-1AA</td>
</tr>
<tr>
<td>Panel thickness P up to 2,9</td>
<td></td>
<td></td>
<td>1,8 - 2,9</td>
<td>5S72-9-1AA</td>
</tr>
<tr>
<td>Panel thickness P over 2,9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grommet**

Panel thickness P up to 2,9

- Ø 6,7
- P max 1,4
- P min 2,9

Panel thickness P over 2,9

- Ø 8,5
- P max 2,0

*Release January 2009*
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 1 Rivet / Screw Mounting</strong></td>
<td></td>
<td>Steel / zinc flake coated</td>
<td>230</td>
<td>V5R2-1AK7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel</td>
<td>230</td>
<td>5R2-3</td>
</tr>
</tbody>
</table>

**Receptacle Installation Instructions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Rivet / Screw Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of Rivet / Screw Mounting](image-url)
**Particular Features**

Max. tensile strength 700 N.
Increased grip range.
Receptacles with external thread for screwing or retaining nut (see page C-3).
Encapsulated design, splash-proof.

**Selection Instructions**

1. Select stud assembly and receptacle, page C-2 and C-3.
2. Select hex nut for receptacle, if necessary, page C-3.
4. Select stud length number from total thickness G using the formula and table below, insert into stud part number * (e.g. 99S10-*A1).

---

**Determining the stud length number:**

![Diagram of stud and receptacle with dimensions](image)

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,5 - 1,5</td>
<td>01</td>
</tr>
<tr>
<td>1,5 - 3,0</td>
<td>03</td>
</tr>
<tr>
<td>3,0 - 4,5</td>
<td>05</td>
</tr>
<tr>
<td>4,5 - 6,0</td>
<td>07</td>
</tr>
<tr>
<td>6,0 - 7,5</td>
<td>09</td>
</tr>
<tr>
<td>7,5 - 9,0</td>
<td>11</td>
</tr>
<tr>
<td>9,0 - 10,5</td>
<td>13</td>
</tr>
<tr>
<td>10,5 - 12,0</td>
<td>15</td>
</tr>
<tr>
<td>12,0 - 13,5</td>
<td>17</td>
</tr>
<tr>
<td>13,5 - 15,0</td>
<td>19</td>
</tr>
</tbody>
</table>

Other lengths on request.

---

*Preferred dash-lengths*
## Stud Installation Instructions

### Installation Dimensions

<table>
<thead>
<tr>
<th>Panel Thickness P 0,5 - 3,2</th>
<th>Accessories</th>
<th>Materials / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>2600-SW</td>
<td></td>
</tr>
</tbody>
</table>

* For P up to 1,65 m Ø 6,5 for installation without retaining washer

<table>
<thead>
<tr>
<th>Panel Thickness P over 3,2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel Thickness P 0,50 - 4,75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
</tr>
<tr>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
</tr>
<tr>
<td>Stainless steel</td>
</tr>
<tr>
<td>Part No. 99W10-01A1</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Panel Thickness P over 3,2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
</tr>
<tr>
<td>Stainless steel</td>
</tr>
<tr>
<td>Part No. V2600-LW-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel Thickness P 0,50 - 4,75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting tool for Retaining washer</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2600-LW-7</td>
</tr>
<tr>
<td>Part No. T98-1</td>
</tr>
</tbody>
</table>
### 99F Series
Receptacles

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td><img src="image" alt="Open Receptacle" /></td>
<td>Zinc die casting / zinc-plated, CrVI-free, transparent passivated</td>
<td>150</td>
<td>99R10-01A1</td>
</tr>
<tr>
<td>Encapsulated</td>
<td><img src="image" alt="Encapsulated Receptacle" /></td>
<td>Zinc die casting / zinc-plated, CrVI-free, transparent passivated</td>
<td>150</td>
<td>99E10-01</td>
</tr>
</tbody>
</table>

#### Receptacle Installation Instructions

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Materials / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Installation Diagram" /></td>
<td>Retaining nut</td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>99N10-01A1</td>
</tr>
<tr>
<td><img src="image" alt="Installation Diagram" /></td>
<td>Tap</td>
<td>15/32-32UNS-2B</td>
<td>15/32-32UNS-2B</td>
</tr>
</tbody>
</table>
**Particular Features**
Max. tensile strength 900 N.
Plastic washer stud assembly to protect decorative surfaces.
Spring loaded receptacle as snap-in and clip-on design.
Snap-in grommet for quick stud installation without retaining washer.

**Selection Instructions**
1. Select stud assembly and receptacle, page D-2 to D-4 and D-6.
2. Select retaining washer or grommet, page D-5.
3. Select stud length number from total thickness G using the formula and table below, insert into stud part number *(e.g. 50E21-*AGV).*

### Stud Length Table

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No. when using Receptacles Type 1 F= 1,0 - 2,1</th>
<th>Total Thickness G</th>
<th>Stud Length No. when using Receptacles Type 1 F= 2,1 - 3,0</th>
<th>Total Thickness G</th>
<th>Stud Length No. when using Receptacles Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,50 - 1,10</td>
<td>5</td>
<td>0,50 - 1,10</td>
<td>7</td>
<td>2,30 - 2,90</td>
<td>5</td>
</tr>
<tr>
<td>1,10 - 1,70</td>
<td>6</td>
<td>1,10 - 1,70</td>
<td>8</td>
<td>2,90 - 3,50</td>
<td>6</td>
</tr>
<tr>
<td>1,70 - 2,30</td>
<td>7</td>
<td>1,70 - 2,30</td>
<td>9</td>
<td>3,50 - 4,10</td>
<td>7</td>
</tr>
<tr>
<td>2,30 - 2,90</td>
<td>8</td>
<td>2,30 - 2,90</td>
<td>10</td>
<td>4,10 - 4,70</td>
<td>8</td>
</tr>
<tr>
<td>2,90 - 3,50</td>
<td>9</td>
<td>2,90 - 3,50</td>
<td>11</td>
<td>4,70 - 5,30</td>
<td>9</td>
</tr>
<tr>
<td>3,50 - 4,10</td>
<td>10</td>
<td>3,50 - 4,10</td>
<td>12</td>
<td>5,30 - 5,90</td>
<td>10</td>
</tr>
<tr>
<td>4,10 - 4,70</td>
<td>11</td>
<td>4,10 - 4,70</td>
<td>13</td>
<td>5,90 - 6,50</td>
<td>11</td>
</tr>
<tr>
<td>4,70 - 5,30</td>
<td>12</td>
<td>4,70 - 5,30</td>
<td>14</td>
<td>6,50 - 7,10</td>
<td>12</td>
</tr>
<tr>
<td>5,30 - 5,90</td>
<td>13</td>
<td>5,30 - 5,90</td>
<td>15</td>
<td>7,10 - 7,70</td>
<td>13</td>
</tr>
<tr>
<td>5,90 - 6,50</td>
<td>14</td>
<td>5,90 - 6,50</td>
<td>16</td>
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<td>14</td>
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<tr>
<td>6,50 - 7,10</td>
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<td>6,50 - 7,10</td>
<td>17</td>
<td>8,30 - 8,90</td>
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<td>7,10 - 7,70</td>
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<td>7,10 - 7,70</td>
<td>18</td>
<td>8,90 - 9,50</td>
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<td>7,70 - 8,30</td>
<td>17</td>
<td>7,70 - 8,30</td>
<td>19</td>
<td>9,50 - 10,10</td>
<td>17</td>
</tr>
<tr>
<td>8,30 - 8,90</td>
<td>18</td>
<td>8,30 - 8,90</td>
<td>20</td>
<td>10,10 - 10,70</td>
<td>18</td>
</tr>
<tr>
<td>8,90 - 9,50</td>
<td>19</td>
<td>8,90 - 9,50</td>
<td>21</td>
<td>10,70 - 11,30</td>
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</tr>
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<td>9,50 - 10,10</td>
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<td>9,50 - 10,10</td>
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<td>11,30 - 11,90</td>
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<td>10,10 - 10,70</td>
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<td>10,10 - 10,70</td>
<td>23</td>
<td>11,90 - 12,50</td>
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<td>10,70 - 11,30</td>
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<td>10,70 - 11,30</td>
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<td>12,50 - 13,10</td>
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<td>11,30 - 11,90</td>
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<td>13,10 - 13,70</td>
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</tr>
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<td>11,90 - 12,50</td>
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<td>26</td>
<td>13,70 - 14,30</td>
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<td>27</td>
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<td>13,10 - 13,70</td>
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<td>13,10 - 13,70</td>
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<td>13,70 - 14,30</td>
<td>27</td>
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<td>29</td>
<td>15,50 - 16,10</td>
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</tr>
<tr>
<td>14,30 - 14,90</td>
<td>28</td>
<td>14,30 - 14,90</td>
<td>30</td>
<td>16,10 - 16,70</td>
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<td>14,90 - 15,50</td>
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<td>14,90 - 15,50</td>
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<td>15,50 - 16,10</td>
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<td>15,50 - 16,10</td>
<td>32</td>
<td>17,30 - 17,90</td>
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</tbody>
</table>

Other lengths on request. Preferred dash-lengths
### 50F Series

#### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E21-*AGV</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Slotted Recess Head" /></td>
<td>Stainless steel with plastic washer (PA6)</td>
<td>80</td>
<td>50E21-*S</td>
</tr>
<tr>
<td><strong>Cross Recess Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E70-*AGV</td>
</tr>
<tr>
<td><strong>Hex Head Slotted Recess</strong></td>
<td><img src="image" alt="Hex Head Slotted Recess" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E90-*AGV</td>
</tr>
</tbody>
</table>

\[ S = 11,40 + (0,6 \times \text{length no.}) \]

*Length no. from Table, see page D-1.*
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hex Recess Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E60-*AGV</td>
</tr>
<tr>
<td><strong>Fixed Wing Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E21-*WAGV</td>
</tr>
<tr>
<td><strong>Offset Fixed Wing Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E21-*W0AGV</td>
</tr>
</tbody>
</table>

* Length no. from Table, see page D-1.
## 50F Series
### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folding Bail Handle</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic washer (PA6)</td>
<td>80</td>
<td>50E18-*AGV</td>
</tr>
<tr>
<td></td>
<td>S = 11,40 + (0.6 x length no.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Star Formed Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic head and plastic washer (PA6)</td>
<td>- 40 up to + 60</td>
<td>50E80-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel with plastic head and plastic washer (PA6)</td>
<td></td>
<td>50E80-*CP</td>
</tr>
<tr>
<td>Wing Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic head and plastic washer (PA6)</td>
<td>- 40 up to + 60</td>
<td>50E82-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel with plastic head and plastic washer (PA6)</td>
<td></td>
<td>50E82-*CP</td>
</tr>
</tbody>
</table>

* Length no. from Table, see page D-1.
### Snap-In Grommet

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>P</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
<td></td>
<td>Plastic (PA6) / natural colour</td>
<td>Up to 1,60</td>
<td>50S12-0-1AA</td>
</tr>
<tr>
<td></td>
<td>Ø 9.1 + 0.1</td>
<td>Working temperature: -40°C + 120°C</td>
<td>1.70 - 2.80</td>
<td>50S12-1-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.90 - 4.00</td>
<td>50S12-2-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.10 - 5.30</td>
<td>50S12-3-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.40 - 6.65</td>
<td>50S12-4-1AA</td>
</tr>
</tbody>
</table>

### Retaining Washer

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Installation: see page A-6.</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
<td>Ø 9.5</td>
<td>Stainless steel</td>
<td></td>
<td>4002-SW-SS</td>
</tr>
<tr>
<td>Retaining washer</td>
<td>Ø 9.5</td>
<td>Stainless steel</td>
<td>50E2-3BP</td>
<td></td>
</tr>
<tr>
<td>Retaining washer</td>
<td>Ø 9.1</td>
<td>Plastic (PA6) / natural colour</td>
<td>Working temperature: -40°C + 120°C</td>
<td>50W204-01K</td>
</tr>
<tr>
<td></td>
<td>Ø 11.5 + 0.3</td>
<td>ADVANTAGE: Plastic retaining washer to be assembled without tooling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*For P up to 2mm Ø 8 +0.2 for installation without retaining washer*
### 50F Series

#### Receptacles

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Panel Thickness P</th>
<th>Part No.</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 1</strong></td>
<td></td>
<td>Spring steel / zinc-flake coated</td>
<td></td>
<td>170</td>
<td>50E20-1AK7</td>
</tr>
<tr>
<td><strong>Snap-In</strong></td>
<td></td>
<td></td>
<td>F = 1,0 - 2,0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring steel / zinc-flake coated</td>
<td>F = 2,1 - 3,0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. tensile strength 250 N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type 2</strong></td>
<td></td>
<td>Spring steel / zinc-flake coated</td>
<td></td>
<td>170</td>
<td>V50R4-2-1AK7</td>
</tr>
<tr>
<td><strong>Clip-On</strong></td>
<td></td>
<td></td>
<td>F = 0,8 - 5,6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Receptacle Installation Instructions

#### Installation Dimensions

**Snap-In**

**Clip-On**
Particular Features
Max. tensile strength 3,700 N.
Small-size fastener for high tensile load.
Flat receptacle.
High preload.

Selection Instructions
1. Select stud assembly and receptacle, page E-2 to E-4 and E-6.
2. Select retaining washer, page E-5.
3. Select stud length number from total thickness G using the formula and table below, insert into stud part number * (e.g. 50E8-*AGV).

Stud Length Table

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,50 - 1,10</td>
<td>2</td>
</tr>
<tr>
<td>1,10 - 1,70</td>
<td>3</td>
</tr>
<tr>
<td>1,70 - 2,30</td>
<td>4</td>
</tr>
<tr>
<td>2,30 - 2,90</td>
<td>5</td>
</tr>
<tr>
<td>2,90 - 3,50</td>
<td>6</td>
</tr>
<tr>
<td>3,50 - 4,10</td>
<td>7</td>
</tr>
<tr>
<td>4,10 - 4,70</td>
<td>8</td>
</tr>
<tr>
<td>4,70 - 5,30</td>
<td>9</td>
</tr>
<tr>
<td>5,30 - 5,90</td>
<td>10</td>
</tr>
<tr>
<td>5,90 - 6,50</td>
<td>11</td>
</tr>
<tr>
<td>6,50 - 7,10</td>
<td>12</td>
</tr>
<tr>
<td>7,10 - 7,70</td>
<td>13</td>
</tr>
<tr>
<td>7,70 - 8,30</td>
<td>14</td>
</tr>
<tr>
<td>8,30 - 8,90</td>
<td>15</td>
</tr>
<tr>
<td>8,90 - 9,50</td>
<td>16</td>
</tr>
<tr>
<td>9,50 - 10,10</td>
<td>17</td>
</tr>
<tr>
<td>10,10 - 10,70</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,70 - 11,30</td>
<td>19</td>
</tr>
<tr>
<td>11,30 - 11,90</td>
<td>20</td>
</tr>
<tr>
<td>11,90 - 12,50</td>
<td>21</td>
</tr>
<tr>
<td>12,50 - 13,10</td>
<td>22</td>
</tr>
<tr>
<td>13,10 - 13,70</td>
<td>23</td>
</tr>
<tr>
<td>13,70 - 14,30</td>
<td>24</td>
</tr>
<tr>
<td>14,30 - 14,90</td>
<td>25</td>
</tr>
<tr>
<td>14,90 - 15,50</td>
<td>26</td>
</tr>
<tr>
<td>15,50 - 16,10</td>
<td>27</td>
</tr>
<tr>
<td>16,10 - 16,70</td>
<td>28</td>
</tr>
<tr>
<td>16,70 - 17,30</td>
<td>29</td>
</tr>
<tr>
<td>17,30 - 17,90</td>
<td>30</td>
</tr>
<tr>
<td>17,90 - 18,50</td>
<td>31</td>
</tr>
<tr>
<td>18,50 - 19,10</td>
<td>32</td>
</tr>
<tr>
<td>19,10 - 19,70</td>
<td>33</td>
</tr>
<tr>
<td>19,70 - 20,30</td>
<td>34</td>
</tr>
<tr>
<td>20,30 - 20,90</td>
<td>35</td>
</tr>
</tbody>
</table>

Other lengths on request.
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted Recess Head</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E8-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel ²⁾</td>
<td></td>
<td>50E8-*S</td>
</tr>
<tr>
<td>Cross Recess Head</td>
<td><img src="image2.png" alt="Diagram" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E71-*AGV</td>
</tr>
<tr>
<td>Hex Head Slotted Recess</td>
<td><img src="image3.png" alt="Diagram" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E91-*AGV</td>
</tr>
</tbody>
</table>

*Length no. from Table, page E-1.
²⁾Max. tensile strength 2.600 N.
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hex Recess Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E61-*AGV</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Hex Recess Head Diagram" /></td>
<td>max. 7.9 when locked</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Wing Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E8-*WAGV</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Fixed Wing Head Diagram" /></td>
<td>max. 16 when screwed</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Offset Fixed Wing Head</strong></td>
<td><img src="image" alt="Offset Fixed Wing Head Diagram" /></td>
<td>max. 16 when locked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Length no. from Table, page E-1.
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folding Bail Handle</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E19-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 38 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 29 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 29 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Star Formed Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic knob</td>
<td>-40 up to +60</td>
<td>50E81-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel 1) with plastic knob</td>
<td>-40 up to +60</td>
<td>50E81-*CP</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 29 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wing Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic knob</td>
<td>-40 up to +60</td>
<td>50E83-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel 1) with plastic knob</td>
<td>-40 up to +60</td>
<td>50E83-*CP</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 29 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Square Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>50E7-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 19 when locked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>max 19 when locked</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Length no. from Table, page E-1.

1) Max. tensile strength 2,600 N.
### 50F Series

**Stud Assemblies Installation Instructions**

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Material / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>4002-SW-SS</td>
<td></td>
</tr>
<tr>
<td>(loose)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>50E2-3BP</td>
<td></td>
</tr>
<tr>
<td>(fixed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retaining washer</td>
<td>Plastic (PA6) /</td>
<td>50W204-01K</td>
<td></td>
</tr>
<tr>
<td>(loose)</td>
<td>natural colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*For P up to 2 mm Ø 6 + 0.2 for installation without retaining washer

**Accessories**
- Retaining washer (loose)
- Retaining washer (fixed)

**Material / Finish**
- Stainless steel
- Plastic (PA6) / natural colour

**Working temperature:**
- \(-40°C + 120°C\)

**ADVANTAGE:**
- Plastic retaining washer to be assembled without tooling.

---

*For P up to 2 mm Ø \(6 + 0.2\) for installation without retaining washer.
## 50F Series
### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rivet- / Screw or Weld Mounting</strong></td>
<td></td>
<td><strong>Rivet / Screw Mounting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>V50R3-1-1AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel</td>
<td>230</td>
<td>V50R3-1-1BP</td>
</tr>
<tr>
<td><strong>Welding</strong></td>
<td></td>
<td><strong>Steel / zinc-plated</strong></td>
<td>230</td>
<td>V50R3-1-2AZ</td>
</tr>
</tbody>
</table>

**Receptacle Installation Instructions**

**Installation Dimensions**

**Rivet- / Screw or Weld Mounting**

![Diagram of Rivet/Screw Mounting](image1)

![Diagram of Welding](image2)
Particular Features
Max. tensile strength 1.330 N.
Small-size fastener for high tensile load.
Wide variety of conventional stud assembly and receptacle designs.
2600 Series: Fillister head; 2700 Series: Flush head.

Selection Instructions
1. Select stud assembly and receptacle, page F-3 up to F-5, F-7 up to F-10.
2. Select stud accessories (retaining washer, gasket), page F-6 and F-7.
3. Select hex nut for receptacle, if necessary, page F-10.
4. Select stud length number from total thickness G using the formula and table on page F-2 insert into stud part number * (e.g. V26S01-*AGV).

Determining the stud length number when using receptacle:

Type 1 + 3*
\[ G = P + F \]

* For Type 3: \( G = 9,9 \) mm min.

Type 2
\[ G = P + F \ (0,75 \text{ min.}) \]

Type 4
\[ G = P + X \ (0,5 \text{ min.}) \]

\( X = 0,5 \text{ min.} \)
## Stud Length Table

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 1 Receptacles</th>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 2 + 4 Receptacles</th>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 3 Receptacles</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,75 - 1,50</td>
<td>1</td>
<td>0,75 - 1,50</td>
<td>2</td>
<td>9,90 - 10,65</td>
<td>1</td>
</tr>
<tr>
<td>1,50 - 2,30</td>
<td>2</td>
<td>1,50 - 2,30</td>
<td>3</td>
<td>10,65 - 11,40</td>
<td>2</td>
</tr>
<tr>
<td>2,30 - 3,05</td>
<td>3</td>
<td>2,30 - 3,05</td>
<td>4</td>
<td>11,40 - 12,20</td>
<td>3</td>
</tr>
<tr>
<td>3,05 - 3,80</td>
<td>4</td>
<td>3,05 - 3,80</td>
<td>5</td>
<td>12,20 - 12,95</td>
<td>4</td>
</tr>
<tr>
<td>3,80 - 4,60</td>
<td>5</td>
<td>3,80 - 4,60</td>
<td>6</td>
<td>12,95 - 13,70</td>
<td>5</td>
</tr>
<tr>
<td>4,60 - 5,35</td>
<td>6</td>
<td>4,60 - 5,35</td>
<td>7</td>
<td>13,70 - 14,50</td>
<td>6</td>
</tr>
<tr>
<td>5,35 - 6,10</td>
<td>7</td>
<td>5,35 - 6,10</td>
<td>8</td>
<td>14,50 - 15,25</td>
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<tr>
<td>6,10 - 6,85</td>
<td>8</td>
<td>6,10 - 6,85</td>
<td>9</td>
<td>15,25 - 16,00</td>
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<tr>
<td>6,85 - 7,60</td>
<td>9</td>
<td>6,85 - 7,60</td>
<td>10</td>
<td>16,00 - 16,75</td>
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<tr>
<td>7,60 - 8,40</td>
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<td>7,60 - 8,40</td>
<td>11</td>
<td>16,75 - 17,50</td>
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<tr>
<td>8,40 - 9,15</td>
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<td>8,40 - 9,15</td>
<td>12</td>
<td>17,50 - 18,30</td>
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<tr>
<td>9,15 - 9,90</td>
<td>12</td>
<td>9,15 - 9,90</td>
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<td>18,30 - 19,05</td>
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<tr>
<td>9,90 - 10,65</td>
<td>13</td>
<td>9,90 - 10,65</td>
<td>14</td>
<td>19,05 - 19,80</td>
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</tr>
<tr>
<td>10,65 - 11,40</td>
<td>14</td>
<td>10,65 - 11,40</td>
<td>15</td>
<td>19,80 - 20,60</td>
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<tr>
<td>11,40 - 12,20</td>
<td>15</td>
<td>11,40 - 12,20</td>
<td>16</td>
<td>20,60 - 21,35</td>
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<td>12,20 - 12,95</td>
<td>16</td>
<td>12,20 - 12,95</td>
<td>17</td>
<td>21,35 - 22,10</td>
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<tr>
<td>12,95 - 13,70</td>
<td>17</td>
<td>12,95 - 13,70</td>
<td>18</td>
<td>22,10 - 22,85</td>
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<tr>
<td>13,70 - 14,50</td>
<td>18</td>
<td>13,70 - 14,50</td>
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<td>22,85 - 23,60</td>
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<td>15,25 - 16,00</td>
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<td>21</td>
<td>24,40 - 25,15</td>
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<tr>
<td>16,00 - 16,75</td>
<td>21</td>
<td>16,00 - 16,75</td>
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<td>25,15 - 25,90</td>
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<tr>
<td>16,75 - 17,50</td>
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<td>16,75 - 17,50</td>
<td>23</td>
<td>25,90 - 26,65</td>
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<tr>
<td>17,50 - 18,30</td>
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<td>17,50 - 18,30</td>
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<tr>
<td>18,30 - 19,05</td>
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<td>18,30 - 19,05</td>
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<tr>
<td>19,05 - 19,80</td>
<td>25</td>
<td>19,05 - 19,80</td>
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<td>28,20 - 28,95</td>
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<tr>
<td>19,80 - 20,60</td>
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<td>19,80 - 20,60</td>
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<td>28,95 - 29,70</td>
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<tr>
<td>20,60 - 21,35</td>
<td>27</td>
<td>20,60 - 21,35</td>
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<td>29,70 - 30,50</td>
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<tr>
<td>21,35 - 22,10</td>
<td>28</td>
<td>21,35 - 22,10</td>
<td>29</td>
<td>30,50 - 31,25</td>
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<tr>
<td>22,10 - 22,85</td>
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<td>22,10 - 22,85</td>
<td>30</td>
<td>31,25 - 32,00</td>
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<td>22,85 - 23,60</td>
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<tr>
<td>23,60 - 24,40</td>
<td>31</td>
<td>23,60 - 24,40</td>
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<td>32,75 - 33,50</td>
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<tr>
<td>24,40 - 25,15</td>
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<td>24,40 - 25,15</td>
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<td>33,50 - 34,30</td>
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<td>25,15 - 25,90</td>
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<td>25,15 - 25,90</td>
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<td>34,30 - 35,05</td>
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<td>25,90 - 26,65</td>
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<td>25,90 - 26,65</td>
<td>35</td>
<td>35,05 - 35,80</td>
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<td>26,65 - 27,40</td>
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<td>26,65 - 27,40</td>
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<td>35,80 - 36,60</td>
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<td>27,40 - 28,20</td>
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<td>27,40 - 28,20</td>
<td>37</td>
<td>36,60 - 37,35</td>
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<tr>
<td>28,20 - 28,95</td>
<td>37</td>
<td>28,20 - 28,95</td>
<td>38</td>
<td>37,35 - 38,10</td>
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<tr>
<td>28,85 - 29,70</td>
<td>38</td>
<td>28,85 - 29,70</td>
<td>39</td>
<td>38,10 - 38,85</td>
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<tr>
<td>29,70 - 30,50</td>
<td>39</td>
<td>29,70 - 30,50</td>
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<td>38,85 - 39,60</td>
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<tr>
<td>30,50 - 31,25</td>
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<td>39,60 - 40,40</td>
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</table>

Other lengths on request.

Preferred dash-lengths
<table>
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<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted Recess Fillister Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>V26S01-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel / chrome-plated</td>
<td>230</td>
<td>26S38-*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel 1)</td>
<td>230</td>
<td>2600-*S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel / nickel-plated</td>
<td>230</td>
<td>26S42-*</td>
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<tr>
<td>Cross Recess Fillister Head (Phillips Gr.2)</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>V26S02-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Steel / nickel-plated</td>
<td>230</td>
<td>26S39-*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel 1)</td>
<td>230</td>
<td>26S51-*</td>
</tr>
<tr>
<td>Knurled Head</td>
<td></td>
<td>Steel / chrome-plated</td>
<td>230</td>
<td>26S34-*</td>
</tr>
<tr>
<td>Fixed Wing Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>V26S04-*AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel 1)</td>
<td>230</td>
<td>2600-*SW</td>
</tr>
</tbody>
</table>

* Length no. from Table, page F-2.

1) Max. Tensile strength 1.000 N.
# 2600 Series

## Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star Formed Head</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic knob (PA6)</td>
<td>-40 up to +60</td>
<td>V26S06- *AGV</td>
</tr>
<tr>
<td>Wing Head</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic knob (PA6)</td>
<td>-40 up to +60</td>
<td>V26S07- *AGV</td>
</tr>
<tr>
<td>Triangular Head</td>
<td><img src="image3.png" alt="Image" /></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated with plastic knob (PA6)</td>
<td>-40 up to +60</td>
<td>V26S08- *AGV</td>
</tr>
</tbody>
</table>

* Note: Not to be used with encapsulated receptacles

* Length no. from Table, page F-2.
### 2700 Series
#### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Flush Head</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>V27S01-*AGV</td>
</tr>
<tr>
<td></td>
<td><img src="image1" alt="Slotted Recess Diagram" /></td>
<td>Stainless steel ¹)</td>
<td>230</td>
<td>2700-*S</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cross Recess Flush Head</strong></th>
<th></th>
<th>Steel / zinc-plated, CrVI-free, transparent passivated</th>
<th>230</th>
<th>V27S02-*AGV</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><img src="image2" alt="Cross Recess Diagram" /></td>
<td></td>
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</tbody>
</table>

* Length no. from Table, page F-2.

¹) Max. Tensile strength 1.000 N.
<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Material / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stud Without Retaining Washer, Retention Type</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><img src="image" alt="Stud Without Retaining Washer, Retention Type" /></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4P3-1 installation pliers, see page F-7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stud Without Retaining Washer, Floating Type</strong></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>2600-SW</td>
</tr>
<tr>
<td><img src="image" alt="Stud Without Retaining Washer, Floating Type" /></td>
<td>Retaining washer</td>
<td>Note: Retaining rings are required for stud length dash numbers “5” and up</td>
<td></td>
</tr>
<tr>
<td>4P3-1 installation pliers, see page F-7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stud With Retaining Washer, Fixed Spring Cup</strong></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>V2600-LW-7</td>
</tr>
<tr>
<td><img src="image" alt="Stud With Retaining Washer, Fixed Spring Cup" /></td>
<td>Retaining washer</td>
<td>Not for chrome-plated parts</td>
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</tr>
<tr>
<td>4P3-1 installation pliers, see page F-7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sealed</strong></td>
<td>Gaskets</td>
<td>Rubber (100°C)</td>
<td>AN6227-B6</td>
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<tr>
<td><img src="image" alt="Sealed" /></td>
<td>Gaskets</td>
<td>Rubber (100°C)</td>
<td>AN6227-B3</td>
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<td>4P3-1 installation pliers, see page F-7.</td>
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<tr>
<td>Installation Dimensions</td>
<td>Accessories</td>
<td>Material / Finish</td>
<td>Part No.</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Stud Without Retaining Washer, Retention Type</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><img src="image1" alt="" /></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>2600-SW</td>
</tr>
<tr>
<td>Installation tool see below</td>
<td>Note: Dash &quot;4&quot; stud and smaller are self-captivating</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stud Without Retaining Washer, Floating Type</strong></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>2600-SW</td>
</tr>
<tr>
<td><img src="image2" alt="" /></td>
<td>Note: Retaining rings are required for stud length dash numbers &quot;5&quot; and up</td>
<td></td>
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</tr>
<tr>
<td>Installation: see page A-6</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Installation tool see below</td>
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<td></td>
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</tr>
<tr>
<td><strong>Stud Without Retaining Washer, Fixed Spring Cup</strong></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>V2600-LW-7</td>
</tr>
<tr>
<td><img src="image3" alt="" /></td>
<td>Steel / nickel-plated</td>
<td></td>
<td>V27W01-1AN</td>
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<tr>
<td>Installation: see page A-6</td>
<td></td>
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<tr>
<td>Installation tool see below</td>
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</tbody>
</table>

* P = 0.5 - 3.2

Additional tools included:
- *P = 0.5 - 3.2
- Stud Installation pliers: 4P3-1
- V2600-LW-7 retaining washer installation tool: T98-1

Note:
- Items marked with an asterisk (*) are not included in the kit.
- Installation: see page A-6
- Retaining washer
- Installation tool
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>D</th>
<th>°C</th>
<th>Part No.</th>
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<tbody>
<tr>
<td><strong>Type 1 Swage</strong></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>2,6</td>
<td>230</td>
<td>V26R6-1AGV</td>
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<tr>
<td><strong>Type 1 Cast</strong></td>
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<td>Hard bronze / zinc-plated, CrVI-free, transparent passivated</td>
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<td>V212-12-1FGV</td>
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<tr>
<td><strong>Type 1 Narrow Width</strong></td>
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<td>Hard bronze / zinc-plated, CrVI-free, transparent passivated</td>
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<tr>
<td><strong>Type 1 Encapsulated</strong></td>
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<td>Hard bronze / zinc-plated, CrVI-free, transparent passivated</td>
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<td></td>
<td></td>
<td>Capsule: Steel / zinc-plated, CrVI-free, transparent passivated</td>
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<td></td>
<td></td>
<td>Stainless steel</td>
<td>2,5</td>
<td>150</td>
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# 2600/2700 Series Receptacles

<table>
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<td><strong>Type 2</strong></td>
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<td><strong>Side Mounting</strong></td>
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<tr>
<td></td>
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<td>Aluminium / anodized</td>
<td>175</td>
<td><strong>26R1-1</strong></td>
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<td><img src="image1.png" alt="Diagram" /></td>
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<tr>
<td><strong>Type 3</strong></td>
<td></td>
<td><strong>Rivet / Screw or Weld Mounting</strong></td>
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<tr>
<td></td>
<td></td>
<td>Rivet / Screw Mounting</td>
<td>230</td>
<td><strong>V312-12AGV</strong></td>
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<tr>
<td></td>
<td></td>
<td>Steel / zinc-plated, CrVI-free,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>transparent passivated</td>
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<td><img src="image2.png" alt="Diagram" /></td>
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<td></td>
<td>Stainless steel</td>
<td>230</td>
<td><strong>312-12S</strong></td>
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<td><strong>Welding</strong></td>
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<td>Stainless steel</td>
<td>230</td>
<td><strong>312-12WS</strong></td>
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<tr>
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<td>Materials / Finish</td>
<td>°C</td>
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<td>-----------------------------</td>
<td>------------</td>
<td>--------------------------------------------------------</td>
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<tr>
<td><strong>Type 4 Single Hole Mounting</strong></td>
<td><img src="image1" alt="Diagram" /></td>
<td>Zinc die cast / zinc-plated, CrVI-free, clear chromate</td>
<td>150</td>
<td>99R10-01A1</td>
</tr>
<tr>
<td><strong>Type 4 Single Hole Mounting Encapsulated</strong></td>
<td><img src="image2" alt="Diagram" /></td>
<td>Zinc die cast / zinc-plated, CrVI-free, clear chromate Capsule: Stainless steel</td>
<td>150</td>
<td>99E10-01</td>
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</table>
2600/2700 Series
Receptacle Installation Instructions

Installation Dimensions

Type 1 + 3 Receptacles Hole Pattern

Type 2 Receptacles Hole Pattern (Side Mounting)

<table>
<thead>
<tr>
<th>Installation Options Type 4 Receptacle</th>
<th>Accessories</th>
<th>Materials / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining nut</td>
<td>Retaining nut</td>
<td>Steel / zinc-plated, CrVI-free, clear chromate</td>
<td>99N10-01A1</td>
</tr>
<tr>
<td>Fastening torque 3&quot;Nm</td>
<td>Tap</td>
<td></td>
<td>15/32-32UNS-2B</td>
</tr>
</tbody>
</table>
Particular Features
Max. tensile strength 4,700 N.
Small-size fastener for high tensile load.
Wide variety of conventional stud assembly and receptacle design.
Floating receptacles available.

Selection Instructions
2. Select retaining washer, page G-6, for studs from length no. 16.
3. Select stud length number from total thickness G using the formula and the table on page G-2 and G-3 insert into stud part number * (e.g. 4002-*D).

Determining the stud length number when using receptacle:

Type 1 + 2
\[ G = P + F \]

Type 3
\[ G = P + F \text{ (8,9 min.)} \]
### For Using the Following Grommet and Receptacles:

#### Flush Mounting Grommets

- **4002-G-1**
- **4002-H-2**
- **4002-GS**
- **4002-HS**

<table>
<thead>
<tr>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 1 Receptacles</th>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 2 Receptacles</th>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 3 Receptacles</th>
<th>Total Thickness G</th>
<th>Stud Length No. When Using Type 4 Receptacles</th>
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<td>0.50 - 1.30</td>
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<td>4.30 - 5.10</td>
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<td>5.85 - 6.60</td>
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<td>5.85 - 6.60</td>
<td>8</td>
<td>14.20 - 15.00</td>
<td>9</td>
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<tr>
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<td>8.15 - 9.00</td>
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<td>11.95 - 12.70</td>
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<td>18.00 - 18.80</td>
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<td>33.30 - 34.05</td>
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Other lengths on request.

Preferred dash-lengths

Release January 2009
### For Using the Following Grommet and Receptacles:

**Plus Flush Mounting Grommets**

- 4002-N-3
- 4002-O-1
- 4002-NS
- 4002-OS

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<tr>
<th>Type 1 Receptacles</th>
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<th>Type 3 Receptacles</th>
<th>Type 4 Receptacles</th>
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<td><strong>Total Thickness</strong></td>
<td><strong>Stud Length</strong></td>
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<tr>
<td>1.30 - 2.05</td>
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<td>15.00 - 15.75</td>
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**Other lengths on request.**
## 4002 Series
### Stud Assemblies

<table>
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<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Head</strong></td>
<td><img src="image1" alt="Slotted Recess Head Diagram" /></td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>4002-*D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless steel ¹)</td>
<td>290</td>
<td>4002-*S</td>
</tr>
<tr>
<td><strong>Cross Recess Head</strong></td>
<td><img src="image2" alt="Cross Recess Head Diagram" /></td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>40S5-*D</td>
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<tr>
<td><strong>Fixed Wing Head</strong></td>
<td><img src="image3" alt="Fixed Wing Head Diagram" /></td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>4002-*WB</td>
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<tr>
<td></td>
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<td>Stainless steel ¹)</td>
<td>290</td>
<td>4002-*SW</td>
</tr>
<tr>
<td><strong>180° Folding Bail Handle</strong></td>
<td><img src="image4" alt="180° Folding Bail Handle Diagram" /></td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>40S47-*C</td>
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* Length no. from Table, page G-2 and G-3

¹) Max. tensile strength 3,300 N.
## 4002 Series Stud Assemblies

### Style

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<th>°C</th>
<th>Part No.</th>
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<tbody>
<tr>
<td>Hex Recess Head</td>
<td>![Hex Recess Head Diagram]</td>
<td>Steel / zinc-plated, yellow chromate</td>
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<td>40E28-*-1AF</td>
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<tr>
<td>Sealed Slotted Recess Head</td>
<td>![Sealed Slotted Recess Head Diagram]</td>
<td>Steel / zinc-plated, yellow chromate</td>
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### Installation Dimensions

<table>
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<td>![Gasket Diagram]</td>
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### Accessories

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### Materials / Finish

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<tbody>
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<tr>
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<thead>
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### Part No.

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**Release January 2009**
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<th>Part No.</th>
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<td>4002-SW-SS</td>
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## 4002 Series

### Grommets

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<td>0.7 15.8 3 5</td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>4002-N-3</td>
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<td>Stainless steel</td>
<td>230</td>
<td>4002-NS</td>
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<tr>
<td>For Panel Thickness from 1,65 to 2,40</td>
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<td>4002-0-1</td>
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<td></td>
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<td>Stainless steel</td>
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<td>4002-0S</td>
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<tr>
<td>For Panel Thickness from 1,27 to 1,83</td>
<td>1.6 max 22.2 3.15 5</td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>230</td>
<td>4002-N3-B</td>
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<tr>
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<td>Stainless steel</td>
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<tr>
<td>Flush Mounting</td>
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<tr>
<td>For Panel Thickness up to 1,65</td>
<td>15.8 3.25 4.75</td>
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<td>4002-GS</td>
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<tr>
<td>For Panel Thickness from 1,65 to 2,18</td>
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Grommets for thicker panels upon request.

### Installation Dimensions

**Grommet, Plus Flush Mounting**

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<tbody>
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<td>Grommet, Plus Flush Mounting</td>
<td>Snap-on retaining ring</td>
<td>Steel / zinc-plated, yellow chromate</td>
<td>R4G-2</td>
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</table>

T26 installation tool, see page G-6.

**Grommet, Flush Mounting**

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<th>Accessories</th>
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<td>Snap-on retaining ring</td>
<td>Steel / zinc-plated, yellow chromate</td>
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T26 installation tool, see page G-6.
<table>
<thead>
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<th>Part No.</th>
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<td><strong>Type 1</strong></td>
<td></td>
<td>Hard bronze / zinc-plated, yellow chromate</td>
<td>230</td>
<td><strong>214-16G</strong></td>
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<tr>
<td>Cast</td>
<td></td>
<td>Stainless steel</td>
<td>230</td>
<td><strong>214-16S</strong></td>
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<td>Cast Narrow Width</td>
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<td>Hard bronze / zinc-plated, yellow chromate</td>
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<td></td>
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<td><img src="image6.png" alt="Image" /></td>
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<td>Stainless steel</td>
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<td><strong>40R17-1</strong></td>
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<td>Swage</td>
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<td>Materials / Finish</td>
<td>°C</td>
<td>Part No.</td>
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<tr>
<td><strong>Type 2</strong></td>
<td></td>
<td>Hard bronze / zinc-plated, yellow chromate</td>
<td>230</td>
<td><strong>244-16G</strong></td>
</tr>
<tr>
<td><strong>Float up to 0,75 mm</strong>*</td>
<td></td>
<td>Cage: Steel / zinc-plated, yellow chromate</td>
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<td></td>
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<tr>
<td><strong>(Cast Receptacle)</strong></td>
<td></td>
<td>Stainless steel</td>
<td>230</td>
<td><strong>244-16S</strong></td>
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<tr>
<td><strong>Type 2</strong></td>
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<td>Hard bronze / zinc-plated, yellow chromate</td>
<td>230</td>
<td><strong>244-16GC</strong></td>
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<tr>
<td><strong>Float up to 0,75 mm</strong>*</td>
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<td>Capsule: Steel / zinc-plated, yellow chromate</td>
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<td><strong>Encapsulated</strong></td>
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<td><strong>(Swage Receptacle)</strong></td>
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<tr>
<td><strong>Type 3</strong></td>
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<td>Hard bronze / zinc-plated, CrVI-free chromate</td>
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<td><strong>Flat</strong></td>
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<tr>
<td><strong>Rivet / Screw or Weld Mounting</strong></td>
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<td>Stainless steel</td>
<td>230</td>
<td><strong>V50R3-1-1BP</strong></td>
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<td><strong>Welding</strong></td>
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<td><strong>V50R3-1-2AZ</strong></td>
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<tr>
<td><strong>Steel / zinc-plated, CrVI-free</strong></td>
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<tr>
<td><em>1,6 mm float upon request.</em>*</td>
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<td></td>
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</tr>
</tbody>
</table>
## Installation Dimensions

Type 1, 2 and 3
Receptacles Hole Pattern

![Diagram of Installation Dimensions](image-url)
**Particular Features**
Max. tensile strength 10,000 N.
Fastener for maximum tensile strength and preload.
Preferred applications:
Commercial vehicles, coaches, agricultural machinery, chemical engineering, heating systems etc.

1. Select stud assembly and receptacle, pages H-2, H-3 and H-5.
2. Sealed: Also select rubber gasket and buffer plate, page H-4.
4. Select stud length number from total thickness G using the formula and table below, insert into stud part number *(e.g. 991S01-*AGV).*

**Determining the stud length number when using:**

### Rivet, Screw and Weld Mounting Receptacle

\[ G = P + F \]

### Sealed Stud Assemblies

\[ G = P + F + 3 \]

#### Clip-On Receptacle

\[ G = P + F \]

\[ P_{\text{min.}} = 4 \]

\[ F = 1.5 - 3.5 \]

---

#### Stud Length Table

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>0.90 - 1.65</td>
<td>1</td>
<td>13.85 - 14.60</td>
<td>18</td>
<td>26.80 - 27.55</td>
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<tr>
<td>2.40 - 3.15</td>
<td>3</td>
<td>15.35 - 16.15</td>
<td>20</td>
<td>28.30 - 29.10</td>
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<tr>
<td>3.15 - 3.95</td>
<td>4</td>
<td>16.15 - 16.90</td>
<td>21</td>
<td>29.10 - 29.85</td>
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<td>3.95 - 4.70</td>
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<td>16.90 - 17.65</td>
<td>22</td>
<td>29.85 - 30.60</td>
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<tr>
<td>4.70 - 5.45</td>
<td>6</td>
<td>17.65 - 18.40</td>
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<td>30.60 - 31.35</td>
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<tr>
<td>5.45 - 6.20</td>
<td>7</td>
<td>18.40 - 19.20</td>
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<td>31.35 - 32.15</td>
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<tr>
<td>6.20 - 7.00</td>
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<td>19.20 - 19.95</td>
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<td>32.15 - 32.90</td>
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<tr>
<td>7.00 - 7.75</td>
<td>9</td>
<td>19.95 - 20.70</td>
<td>26</td>
<td>32.90 - 33.65</td>
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<tr>
<td>7.75 - 8.50</td>
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<td>20.70 - 21.45</td>
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<td>33.65 - 34.40</td>
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<tr>
<td>8.50 - 9.25</td>
<td>11</td>
<td>21.45 - 22.25</td>
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<td>34.40 - 35.20</td>
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<tr>
<td>9.25 - 10.05</td>
<td>12</td>
<td>22.25 - 23.00</td>
<td>29</td>
<td>35.20 - 35.95</td>
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<tr>
<td>10.05 - 10.80</td>
<td>13</td>
<td>23.00 - 23.75</td>
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<td>35.95 - 36.70</td>
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<tr>
<td>10.80 - 11.55</td>
<td>14</td>
<td>23.75 - 24.50</td>
<td>31</td>
<td>36.70 - 37.45</td>
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<tr>
<td>11.55 - 12.30</td>
<td>15</td>
<td>24.50 - 25.25</td>
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<td>37.45 - 38.25</td>
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<td>12.30 - 13.10</td>
<td>16</td>
<td>25.25 - 26.05</td>
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<td>38.25 - 39.00</td>
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<tr>
<td>13.10 - 13.85</td>
<td>17</td>
<td>26.05 - 26.80</td>
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</table>

Other lengths on request.

---

Preferred dash-lengths

---

Alcoa Fastening Systems

Release January 2009
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex Head Slotted Recess</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>991S01-*-1AGV</td>
</tr>
<tr>
<td>Fixed Wing Head</td>
<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
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<td>991S02-*-1AGV</td>
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<tr>
<td>Offset Fixed Wing Head</td>
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<td>991S03-*-1AGV</td>
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<tr>
<td>180° Folding Wing Head</td>
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<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
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<td>991S05-*-1AGV</td>
</tr>
</tbody>
</table>

* Length no. from Table, see page H-1.  
1) Max. tensile strength 7.000 N.
<table>
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<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
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</thead>
<tbody>
<tr>
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<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
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<td>991S30-*AGV</td>
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<tr>
<td></td>
<td>[Diagram]</td>
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<tr>
<td>Folding Bail Handle</td>
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<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>230</td>
<td>991S2991-*AGV</td>
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<td></td>
<td>[Diagram]</td>
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* Length no. from Table, see page H-1.
## 991F Series
### Stud Installation Instructions

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Material / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Retaining washer</td>
<td>Stainless steel</td>
<td>991W04-1BP</td>
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<tr>
<td></td>
<td>Slotted retaining washer</td>
<td>Stainless steel</td>
<td>991W02-1BP</td>
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### Sealed Stud Assemblies

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<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Material / Finish</th>
<th>Part No.</th>
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<tbody>
<tr>
<td></td>
<td>Buffer plate</td>
<td>Stainless steel</td>
<td>991W03-1BP</td>
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<tr>
<td></td>
<td>Rubber gasket</td>
<td>NBR black (100°C max.)</td>
<td>991S17-1K</td>
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</table>
# 991F Series Receptacles

### Style

<table>
<thead>
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<th>Mounting Ø</th>
<th>°C</th>
<th>Part No.</th>
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<tr>
<td><strong>Rivet / Screw Mounting</strong></td>
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<td><strong>Rivet / Screw Mounting</strong></td>
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<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
<td>3,3</td>
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<tr>
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<td></td>
<td>Steel / zinc-plated, CrVI-free, transparent passivated</td>
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<td>Stainless steel</td>
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<td>230</td>
<td>991R2-1BP</td>
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<td></td>
<td></td>
<td>Stainless steel</td>
<td>4,1</td>
<td>230</td>
<td>991R2-3BP</td>
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<tr>
<td></td>
<td></td>
<td>Welding Steel / zinc-plated</td>
<td>-</td>
<td>230</td>
<td>991R2-2AZ</td>
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<tr>
<td><strong>Clip-On</strong></td>
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<td>Steel / zinc-plated, zinc flake coated</td>
<td>230</td>
<td></td>
<td>991R6-1AK7</td>
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<tr>
<td></td>
<td></td>
<td>Frame thickness t= 1,5mm - 3,5mm</td>
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</tbody>
</table>

### Receptacle Installation Instructions

#### Installation Dimensions

<table>
<thead>
<tr>
<th>Rivet / Screw or Welding Mounting</th>
<th>Clip-On</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="" /></td>
<td><img src="image2.png" alt="" /></td>
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</tbody>
</table>

Release January 2009
Particular Features
Max. tensile strength 300 N.
Same hole shape for panel and frame.
Fastener as slotted recess or knurled head version.
Fastener position indication by stud slot.
Retention type.
Vibration resistant.
Grip ranges from 2.0 mm to 4.6 mm.
Unlock and lock by a quarter turn.
Particularly for applications in electro-technical and electronic equipment.
For quick installation without tools.

Part no. example
Knurled head for 3.3 mm to 4.6 mm grip range.

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>A</th>
<th>Grip Range G</th>
<th>Part No.</th>
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</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Head</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stud, spiral pin: Steel / zinc-plated, CrVI-free, clear chromate</td>
<td>12.3, 14.8</td>
<td>2.0 - 3.2</td>
<td>V936S05-3-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.3 - 4.6</td>
<td>V936S05-4-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compression spring: Stainless steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Casing: Zinc die casting / zinc-plated, CrVI-free, clear chromate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Knurled Head</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stud, Casing: Zinc die casting / zinc-plated, CrVI-free, clear chromate</td>
<td>26.4, 28.9</td>
<td>2.0 - 3.2</td>
<td>V936S11-3-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.3 - 4.6</td>
<td>V936S11-4-1AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compression spring: Stainless steel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spiral pin: Steel / zinc-plated, CrVI-free, clear chromate</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### Installation Instructions

**Hole Shape in Panel P**

- Diagram of hole shape with dimensions: 2.8±0.1, 6.5±0.2, 13.6±0.2.

---

**Installing the fastener**

- Diagram showing installation process.

---

**The slot indicates the position of the fastener**

- Diagram showing unlocked and locked positions.

---

**Fastener retaining in panel**

- Diagram showing fastener retention in panel.

---

**Hole Shape in Panel F**

- Diagram of hole shape with dimensions: 2.8±0.1, 9.5±0.2, 13.6±0.2.
**Particular Features**
This fastener mounts panels in electrical switch cabinets (e.g. 19"-equipment) to modular bars.

**Selection Instructions**
The dimensions of the front panel and the modular bar as well as the colour determine the final design of the fastener.

To enable us to offer you the custom-tailored fastener, we need your drawings with the dimensions and tolerances of:
1. the front panel
2. the shape of the modular bar
3. the colour, if necessary
   In addition, please send us samples of your modular bar and front panel.

**Part no. example**
One-piece fastener

713 S* - *AE

- Materials / Finish
- Colour (as requested by the customer)
- Head style and design (as requested by the customer)
- Series
**713F Series**

**Modular Bar Fasteners**

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted Recess Head</td>
<td></td>
<td>Spring cup: Plastic (POM) Stud: Steel / nickel-plated</td>
<td>-25 up to +90</td>
<td>713S*- *AE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring: Steel / zinc-plated, CrVI-free, clear chromate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Casement fastener: Zinc die casting / zinc-plated, CrVI-free, clear chromate</td>
<td></td>
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</tr>
<tr>
<td>Knurled Head</td>
<td></td>
<td>Spring cup: Plastic (POM) Stud: Steel / nickel-plated</td>
<td>-25 up to +90</td>
<td>713S*- *AE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring: Steel / zinc-plated, CrVI-free, clear chromate</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Casement fastener: Zinc die casting / zinc-plated, CrVI-free, clear chromate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Design and colour as requested by the customer.

Due to the various front panel thickness, hole shapes and modular bar shapes, it is not possible to offer one standard design. We will individually issue the final part number only after determining the front panel and modular bar dimensions and the colour.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Fastener Position</th>
</tr>
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<tbody>
<tr>
<td>Installing the Fastener</td>
<td>Unlocked</td>
</tr>
<tr>
<td></td>
<td>Locked</td>
</tr>
<tr>
<td><strong>Stud</strong></td>
<td><strong>Spring</strong></td>
</tr>
<tr>
<td><strong>Spring cup</strong></td>
<td><strong>Casement fastener</strong></td>
</tr>
</tbody>
</table>

1. Insert fastener with spring cup into hole.
2. Push stud until snap-in hooks lock in.

To lock push stud and turn 90°C.

The slot indicates the position of the fastener.
Particular Features
Max. tensile strength 1.330 N.
Quick opening and closing by a finger push.
Easy installation by single hole mounting.

Selection Instructions
3. Select stud length number from Panel thickness P using the table below, insert into stud part number * (e.g. 15S1-*1AD).

<table>
<thead>
<tr>
<th>Panel Thickness</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7 - 2.3</td>
<td>1</td>
</tr>
<tr>
<td>2.3 - 3.8</td>
<td>3</td>
</tr>
<tr>
<td>3.8 - 5.3</td>
<td>5</td>
</tr>
<tr>
<td>5.3 - 6.9</td>
<td>7</td>
</tr>
<tr>
<td>6.9 - 8.4</td>
<td>9</td>
</tr>
<tr>
<td>8.4 - 9.9</td>
<td>11</td>
</tr>
<tr>
<td>9.9 - 11.4</td>
<td>13</td>
</tr>
<tr>
<td>11.4 - 13.0</td>
<td>15</td>
</tr>
</tbody>
</table>

Other lengths on request. Preferred dash-lengths
### Stud Installation Instructions

#### Installation Dimensions

<table>
<thead>
<tr>
<th>Panel thickness up to 4,8</th>
<th>Panel thickness up to 4,8</th>
<th>Retaining washer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 8,2 ±0,1</td>
<td>Ø 8,2 ±0,1</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>4,8 max</td>
<td></td>
<td>15S1-1CJ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retaining washer</td>
</tr>
</tbody>
</table>

#### Accessories

<table>
<thead>
<tr>
<th>Retaining washer</th>
<th>Installation Tool for 15S11-1CJ retaining washer</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T107-1</td>
</tr>
</tbody>
</table>
# 15F Series Receptacle

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Diagram" /></td>
<td>Zinc die casting / zinc-plated CrVI-free, transparent passivated</td>
<td>150</td>
<td>V15R13-1-1AB</td>
</tr>
</tbody>
</table>

## Receptacle Installation Instructions

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
<th>Accessories</th>
<th>Materials / Finish</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2.png" alt="Diagram" /></td>
<td>Hex Nut</td>
<td>Steel / zinc-plated CrVI-free, transparent passivated</td>
<td>V15R14-1-1AB</td>
</tr>
</tbody>
</table>
715F Series

Particular Features
Max. tensile strength 700 N.
Easy and economic clip-in installation for stud and receptacle.
Also suitable for automatic installation.
Opening by 1/4 turn - closing by a finger push.
Due to their small size, particularly suited for use in electrical engineering / electronics.

Selection Instructions
1. Select stud assembly according to panel thickness P, page L-2 and spring clip according to
frame thickness F, page L-3.
2. Select stud length number form panel thickness G using the table below, insert into stud part
number * (e.g. 715S12-*1BP).

Part no. example
Stud, slotted recess head

715 S12 -07 -3BP

Stud Length Table

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0,50 - 1,25</td>
<td>5</td>
<td>5</td>
<td>6,50 - 7,25</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>1,25 - 2,00</td>
<td>6</td>
<td>6</td>
<td>7,25 - 8,00</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>2,00 - 2,75</td>
<td>7</td>
<td>7</td>
<td>8,00 - 8,75</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>2,75 - 3,50</td>
<td>8</td>
<td>8</td>
<td>8,75 - 9,50</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>3,50 - 4,25</td>
<td>9</td>
<td>9</td>
<td>9,50 - 10,25</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>4,25 - 5,00</td>
<td>10</td>
<td>10</td>
<td>10,25 - 11,00</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td>5,00 - 5,75</td>
<td>11</td>
<td>-</td>
<td>11,00 - 11,75</td>
<td>19</td>
<td>-</td>
</tr>
<tr>
<td>5,75 - 6,50</td>
<td>12</td>
<td>-</td>
<td>11,75 - 12,50</td>
<td>20</td>
<td>-</td>
</tr>
</tbody>
</table>

Other lengths on request.

Preferred dash-lengths
## 715F Series
### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Panel Thickness P</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted Recess Head</td>
<td><img src="image1" alt="Image" /></td>
<td>Stainless steel Spring cup: Plastic (POM) / black</td>
<td>0,5 - 1,0</td>
<td>-40 up to +100</td>
<td>715S12- *-1BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,0 - 1,5</td>
<td></td>
<td>715S12- *-2BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,5 - 2,0</td>
<td></td>
<td>715S12- *-3BP</td>
</tr>
<tr>
<td>Knurled Head</td>
<td><img src="image2" alt="Image" /></td>
<td>Stainless steel Spring cup: Plastic (POM) / black</td>
<td>0,5 - 1,0</td>
<td>-40 up to +100</td>
<td>715S13- *-1BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,0 - 1,5</td>
<td></td>
<td>715S13- *-2BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,5 - 2,0</td>
<td></td>
<td>715S13- *-3BP</td>
</tr>
</tbody>
</table>

### Stud Installation Instructions

#### Installation Dimensions

<table>
<thead>
<tr>
<th>Panel up to 2 mm</th>
<th><img src="image3" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel over 2 mm</td>
<td><img src="image4" alt="Image" /></td>
</tr>
</tbody>
</table>
## 715F Series Receptacle

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Frame Thickness $F$</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptacle</td>
<td></td>
<td>Stainless steel</td>
<td>0,5 - 1,0</td>
<td>-40 up to +100</td>
<td>715R02-1BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,0 - 1,5</td>
<td>(See stud assembly)</td>
<td>715R02-2BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,5 - 2,0</td>
<td></td>
<td>715R02-3BP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,0 - 2,5</td>
<td></td>
<td>715R02-4BP</td>
</tr>
</tbody>
</table>

### Installation Instructions

#### Installation Dimensions

![Installation Diagram]
Particular Features
Max. tensile strength 1.400 N.
Easy and economic clip-in installation for stud and receptacle.
Also suitable for automatic installation.
Opening by 1/4 turn - closing by a finger push.

Selection Instructions
1. Select stud assembly according to panel thickness P, page M-2 and spring clip according to frame thickness F, page M-3.
2. Select stud length number from panel thickness P using table below, insert into stud part number * (e.g. 716S12-*1BP).

Part no. example
Stud, slotted recess head

716 S12 -03 -2BP

Stud Length Table

<table>
<thead>
<tr>
<th>Panel Thickness P</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,0 - 2,0</td>
<td>2</td>
</tr>
<tr>
<td>2,0 - 3,0</td>
<td>3</td>
</tr>
<tr>
<td>3,0 - 4,0</td>
<td>4</td>
</tr>
<tr>
<td>4,0 - 5,0</td>
<td>5</td>
</tr>
<tr>
<td>5,0 - 6,0</td>
<td>6</td>
</tr>
<tr>
<td>6,0 - 7,0</td>
<td>7</td>
</tr>
<tr>
<td>7,0 - 8,0</td>
<td>8</td>
</tr>
<tr>
<td>8,0 - 9,0</td>
<td>9</td>
</tr>
<tr>
<td>9,0 - 10,0</td>
<td>10</td>
</tr>
</tbody>
</table>

Other lengths on request.
### 716F Series
#### Stud Assemblies

**Stud Installation Instructions**

**Installation Dimensions**

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Frame Thickness F</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted Recess Head</td>
<td><img src="image1" alt="Slotted Recess Head Diagram" /></td>
<td>Stainless steel Spring cup: Plastic (POM)/black</td>
<td>0.5 - 1.0, 1.0 - 1.5, 1.5 - 2.0, 2.0 - 2.5, 2.5 - 3.0</td>
<td>-40 up to +100</td>
<td>716S12-<em>-1BP, 716S12-</em>-2BP, 716S12-<em>-3BP, 716S12-</em>-4BP, 716S12-*-5BP</td>
</tr>
<tr>
<td>Knurled Head</td>
<td><img src="image2" alt="Knurled Head Diagram" /></td>
<td>Stainless steel Spring cup: Plastic (POM)/black</td>
<td>0.5 - 1.0, 1.0 - 1.5, 1.5 - 2.0, 2.0 - 2.5, 2.5 - 3.0</td>
<td>-40 up to +100</td>
<td>716S13-<em>-1BP, 716S13-</em>-2BP, 716S13-<em>-3BP, 716S13-</em>-4BP, 716S13-*-5BP</td>
</tr>
</tbody>
</table>

* Length no. from Table, page M-1.
### 716F Series
#### Receptacle

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Frame Thickness F °C</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Clip</td>
<td></td>
<td>Stainless steel</td>
<td>1,0 - 1,5</td>
<td>-40 up to +100</td>
<td>720R01-1B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,5 - 2,0</td>
<td></td>
<td>720R01-2B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,0 - 2,5</td>
<td>(See stud assembly)</td>
<td>720R01-3B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,5 - 3,0</td>
<td></td>
<td>720R01-4B</td>
</tr>
</tbody>
</table>

### Installation Instructions

<table>
<thead>
<tr>
<th>Installation Dimensions</th>
</tr>
</thead>
</table>

### Installation Dimensions

![Diagram of installation dimensions](image-url)
Particular Features
Max. tensile strength 3,000 N.
Robust design - high strength.
Stud assembly with protective, compensating and retaining washers.
Rivet and screw mounting spring clip.
Opening by 1/4 turn - closing by a finger push.

Selection Instructions
1. Select stud assembly and spring clip, page N-2 and N-3.
3. Select stud length number from grip range G using the table below, insert into stud part number *
   (e.g. 717S01-*-1AGV).

Part no. example
Spring clip, rivet / screw mounting

717 S01 -2 -1AF

Stud Length Table

<table>
<thead>
<tr>
<th>Griprange G</th>
<th>Stud Length No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,0 - 3,0</td>
<td>1</td>
</tr>
<tr>
<td>3,0 - 5,0</td>
<td>2</td>
</tr>
<tr>
<td>5,0 - 7,0</td>
<td>3</td>
</tr>
<tr>
<td>7,0 - 9,0</td>
<td>4</td>
</tr>
<tr>
<td>9,0 - 11,0</td>
<td>5</td>
</tr>
<tr>
<td>11,0 - 13,0</td>
<td>6</td>
</tr>
</tbody>
</table>

Other lengths on request.

Preferred dash-lengths
### 717F Series

#### Stud Assemblies

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slotted Recess Head</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td>Steel/ zinc-plated CrVI-free, transparent passivated</td>
<td>-40 up to +100</td>
<td>717S01-*-1AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 20.5 * (2 x length no.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Knurled Head</strong></td>
<td><img src="image2.png" alt="Image" /></td>
<td>Steel/ zinc-plated CrVI-free, transparent passivated</td>
<td>-40 up to +100</td>
<td>717S01-*-2AGV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = 20.5 * (2 x length no.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Length no. from Table, see page N-1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stud Installation Instructions**

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protective washer</strong></td>
<td><img src="image3.png" alt="Image" /></td>
<td>Plastic (PA6) / natural colour</td>
<td>-40 up to +100</td>
<td>717W02-1K</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Compensating washer</strong></td>
<td><img src="image4.png" alt="Image" /></td>
<td>Plastic (PU-foam) / anthracite</td>
<td>-40 up to +100</td>
<td>717W03-1K</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Retaining washer</strong></td>
<td><img src="image5.png" alt="Image" /></td>
<td>Plastic (PA6) / natural colour</td>
<td>-40 up to +100</td>
<td>717W01-1K</td>
</tr>
</tbody>
</table>

* Release January 2009
### 717F Series
#### Receptacle

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivet / Screw Mounting</td>
<td></td>
<td>Steel / zinc flake coated</td>
<td>-40 up to 100</td>
<td>717R01-1AK7</td>
</tr>
</tbody>
</table>

![Image of Rivet / Screw Mounting Receptacle](image)

### Installation Instructions

**Installation Dimensions**

![Diagram of Installation Dimensions](image)
**Particular Features**
Max. tensile strength 1,200 N.
Easy and economic installation by snap-in spring clip.
Easy installation of stud and washer without tool.
Tool or hand operated.
Tool operated with combination recess.
Opening by 1/4 turn - closing by a finger push.
Wide grip range.

**Selection Instructions**
1. Select stud assembly according to panel thickness P, page O-2 and spring clip according to frame thickness F, page O-4.
2. Select Compensating washer and Retaining washer, page O-3.
3. Select stud length number from panel thickness P using the formula and table below, insert into stud part number * (e.g. 720S01-*B).

**Part no. example**
Stud, slot-cross recess

<table>
<thead>
<tr>
<th>Panel Thickness P</th>
<th>Slot-Cross Recess Length No.</th>
<th>Wing Head Stud Length No.</th>
<th>Dimension L +0,1/-0,2</th>
<th>Dimension (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,00 - 4,00</td>
<td>1</td>
<td>1</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>4,00 - 7,00</td>
<td>2</td>
<td>2</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>7,00 - 10,00</td>
<td>3</td>
<td>3</td>
<td>22</td>
<td>27</td>
</tr>
</tbody>
</table>

*Preferred dash-lengths*
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot-Cross Recess Head</td>
<td></td>
<td>Stainless steel</td>
<td>-20 up to +70</td>
<td>720S01-*B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washer: PA6 natural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wing Head</td>
<td></td>
<td>Stainless steel</td>
<td>-20 up to +70</td>
<td>720S02-*B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knob: PA6 black</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washer: PA6 natural</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Length no. from Table, see page O-1.

**Stud Installation Instructions**
<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation Washer</td>
<td></td>
<td>PU - Elastomer yellow</td>
<td>-20 up to +70</td>
<td>720W01-2K</td>
</tr>
<tr>
<td>Retaining Washer</td>
<td></td>
<td>Polyamid natural</td>
<td>-20 up to +70</td>
<td>50E15-1K</td>
</tr>
</tbody>
</table>

### Mounting Instructions

- **Polyamid natural**
- **Polyamid natural**
# PT10 Series Receptacle

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>Frame Thickness F</th>
<th>°C</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Clip</td>
<td></td>
<td>Stainless steel</td>
<td>1,0 - 1,5, 1,5 - 2,0, 2,0 - 2,5, 2,5 - 3,0</td>
<td>-40 up to +150</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20 x 1, 12,5 x 1, 10,6 x 0,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Please note the restrictions caused to stud assemblies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720R01-1B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720R01-2B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720R01-3B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>720R01-4B</td>
</tr>
</tbody>
</table>

## Installation Instructions

**Installation Dimensions**

![Installation Diagram](image-url)
**V964L Series**

**Particular Features**
Wide grip range (total thickness G up to 15 mm).
Universally applicable.
Easy installation by single-hole mounting.
Either tool-operated (slotted recess head) or hand-operated (fixed wing head).
Clockwise locking.

**Part no. example**
Pawl Latches, slotted recess head, with limit washer.

---

**V964L 01 -1 -2AG**

**Variant**
Head style (slotted recess)

**Style**

**Series**

---

<table>
<thead>
<tr>
<th>Style</th>
<th>Dimensions</th>
<th>Materials / Finish</th>
<th>°C</th>
<th>Part No.</th>
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Release January 2009
Installation Dimensions

Locked

Unlocked

G (15 max)

F (15 min.)

Ø 8,2

P

12,7
Particular Features
Two wide grip ranges from 1,0 mm to 18,8 mm to choose from - continuously adjustable.
Two different head styles available.
Easy single hole mounting - low installation cost.
Clockwise locking.
Counterclockwise locking fasteners upon request.

Part no. example
Pawl Latches, filister head.
Grip range 1,0 mm - 12,2 mm.

V965L 23 -1 R1AG

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<th>Materials / Finish</th>
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**Pawl Latches Installation Instructions**

**Instruction Dimensions**

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