Hardware and Fastening Components

Safe Load

<table>
<thead>
<tr>
<th>40 Series Standard with T-slot Nut</th>
<th>40 Series Heavy with T-slot Nut</th>
<th>40 Series Heavy with T-Nut HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,500 N (560 lbs)</td>
<td>5,000 N (1,125 lbs)</td>
<td>8,000 N (1,800 lbs)</td>
</tr>
</tbody>
</table>

Pull Test

Two pieces of 40x40 Heavy profile were assembled to form a tee with a standard fastener and a button head screw. Force was applied until the tee started to separate. The profile failed before the fastener. The profiles were still held together at the end of the test. There were no catastrophic failures. Extra screw length beyond standard 20mm did not significantly change test results.

<table>
<thead>
<tr>
<th>Screw</th>
<th>Engaged Length</th>
<th>Force</th>
<th>Engaged Length</th>
<th>Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8x20</td>
<td>15 mm</td>
<td>24,954</td>
<td>5,609</td>
<td></td>
</tr>
<tr>
<td>M8x25</td>
<td>20 mm</td>
<td>25,354</td>
<td>5,699</td>
<td></td>
</tr>
<tr>
<td>M8x30</td>
<td>25 mm</td>
<td>26,777</td>
<td>6,019</td>
<td></td>
</tr>
</tbody>
</table>
Corner Bracket

1. Connecting three 40x40 quarter round profiles 10-043 using 22-146 and 18-821
2. Connecting three 40x40-45° profiles 10-044 or 11-044 using 22-146 and 18-822
3. Connecting two 40x40-45° profiles 10-044 or 11-044 and a 40x40 bi-slot corner 10-140 using 22-146 and 18-836
4. Connecting three 30x30 quarter round profiles 12-033 using 22-150 and 22-151
5. Connecting three 30x30 bi-slot corner profiles 12-034 using 22-150 and 22-152

**Application**
Corner brackets are used for connecting 40 and 30 series profiles at right angles. Aesthetic solution for construction of display cases, tables, cover hoods, etc. Choice of corner caps allow for various profile combinations. Profile ends must be tapped to accept M8 screw.

**Technical Data**
- Bracket: Die cast zinc
- 22-146 includes three M8x20 BHCS
- 22-150 includes three M8x20 FHCS
- Cap: glass-filled nylon, black

**Description**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corner Bracket 40</td>
<td>1 set</td>
<td>120 g</td>
<td>22-146</td>
</tr>
<tr>
<td>Connector Cap 40, Radius</td>
<td>1 pc</td>
<td>8 g</td>
<td>18-821</td>
</tr>
<tr>
<td>Connector Cap 40, 3x45°</td>
<td>1 pc</td>
<td>9 g</td>
<td>18-822</td>
</tr>
<tr>
<td>Connector Cap 40, 2x45°</td>
<td>1 pc</td>
<td>10 g</td>
<td>18-836</td>
</tr>
<tr>
<td>Corner Bracket 30</td>
<td>1 set</td>
<td>69 g</td>
<td>22-150</td>
</tr>
<tr>
<td>Connector Cap 30, Radius</td>
<td>1 pc</td>
<td>4 g</td>
<td>22-151</td>
</tr>
<tr>
<td>Connector Cap 30, Square</td>
<td>1 pc</td>
<td>7 g</td>
<td>22-152</td>
</tr>
</tbody>
</table>
Corner Connector

**Application**
Suitable for clean room environments. Designed for use with 40 or 28 Series closed slot profiles. Includes access plugs. Profile ends must be tapped to accept M8 screw.

**Technical Data**
- Block 40: Zn cast, powder coat
- Block 28: Al, black anodized
- Plug 40: Low density polyethylene, grey
- Plug 28: acetal (Delrin), black

**Order all hardware separately.**
- 40 series: M8x20 BHCS (24-120-8)
- 28 series: M8x16 FHCS (24-216-8)

**Description**
- 2-Way Corner Connector 40 w/2 plugs
- 3-Way Corner Connector 40 w/3 plugs
- 3-Way Corner Connector 28 w/3 plugs
- Connector Plug 40
- Connector Plug 28

**T-Joint Connector**

**Application**
Suitable for clean room environments. Reduces cavity of profile radius on a T- or Corner connection. Designed for use with 40 Series Standard closed slot profiles.

**Technical Data**
- Zn cast, clear chromate

**Order all hardware separately.**
- Fastening set 20-029 includes one flat plate and one M8x20 BHCS.

**Description**
- T-Joint Connector 40, No Notch
- T-Joint Connector 40, Single Notch
- T-Joint Connector 40, Double Notch
- T-Connector Fastening Set 40

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**Catalog 1816 Hardware**

**IPS INDUSTRIAL PROFILE SYSTEMS**

**Parker Hannifin Corporation**
Industrial Profile Systems Business Unit
Houston, Tx 77066

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**18-826**

**18-827**

**18-829**

**18-823**

**18-824**

**18-825**
Joining Plates 40

Application
Exterior joining plates for fastening 40 series profiles together without servicing.

Technical Data
Al, anodized, 6.4mm (1/4") thick
Hole dia. 9mm

Order all hardware separately.
M8 T-slot nut 40 (20-058, 20-064, 20-081, 20-181, 20-050) and M8x18 BHCS (24-118-8)

Description
Unit | Weight | Part #
--- | --- | ---
Joining Plate 1, 80 | 1 pc | 86 g | 20-108
Corner Joining Plate 40 | 1 pc | 163 g | 20-109
T-Joining Plate 40 | 1 pc | 163 g | 20-110
Joining Plate 2, 40 | 1 pc | 90 g | 20-111
Joining Plate 2, 80 | 1 pc | 188 g | 20-112
Corner Joining Plate 80 | 1 pc | 341 g | 20-113
T-Joining Plate 80 | 1 pc | 341 g | 20-114

Connecting Elements 40

Application
Exterior elements for fastening 40 series profiles together without servicing.

Technical Data
Al, anodized, 4.8mm (3/16") thick

Order all hardware separately.
Fastening Set (20-009) includes one M8 T-slot nut and one M8x16 FHCS

Description
Unit | Weight | Part #
--- | --- | ---
Connecting Element 40, Flat | 1 pc | 40 g | 22-140
Connecting Element 40, 90° | 1 pc | 33 g | 22-141
Fastening Set for Conn. Elements 40 | 1 set | 5 g | 20-009
Joining Plates & Connecting Elements 28 (30)

20-104

20-105

20-106

Application
Exterior elements for fastening 28 series profiles together without servicing. In many applications, 28 series connecting elements can be used for connecting 30 series profiles.

Technical Data
Al, anodized, 3.2mm (1/8") thick

Order all hardware separately.
For attaching 20-104, 20-105, 20-106 to 28 series profile: M8 T-slot nut (20-091, 20-057) and M8x10 BHCS (24-110-8) to 30 series profile: M8 T-slot nut (20-058, 20-091) and M8x12 BHCS (24-112-8)

For attaching 22-143, 22-145 to 28 series profile: M6 T-slot nut (20-090, 20-190, 20-055, 20-172) and M6x10 FHCS (24-212-8) to 30 series profile: M6 T-slot nut (20-056, 20-190, 20-190, 20-175) and M6x12 FHCS (24-212-6)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joining Plate 28-40</td>
<td>1 pc</td>
<td>20 g</td>
<td>20-104</td>
</tr>
<tr>
<td>Corner Joining Plate 28</td>
<td>1 pc</td>
<td>39 g</td>
<td>20-105</td>
</tr>
<tr>
<td>T-Joining Plate 28</td>
<td>1 pc</td>
<td>39 g</td>
<td>20-106</td>
</tr>
<tr>
<td>Connecting Element 28, 90°</td>
<td>1 pc</td>
<td>40 g</td>
<td>22-143</td>
</tr>
<tr>
<td>Connecting Element 28, Flat</td>
<td>1 pc</td>
<td>33 g</td>
<td>22-145</td>
</tr>
</tbody>
</table>

Connecting Elements 20

20-115

20-117

20-118

Application
Exterior elements for fastening 20 series profiles together without servicing.

Technical Data
Al, anodized, 3.2mm (1/8") thick
Hole dia. 5.5mm

Order all hardware separately.
M5 T-slot nut 20 (20-045, 20-085) and M5x8 BHCS (24-108-5)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting Angle 20</td>
<td>1 pc</td>
<td>5 g</td>
<td>20-115</td>
</tr>
<tr>
<td>Connecting Angle 20, Double</td>
<td>1 pc</td>
<td>11 g</td>
<td>20-116</td>
</tr>
<tr>
<td>Connecting Plate 20, 1</td>
<td>1 pc</td>
<td>7 g</td>
<td>20-117</td>
</tr>
<tr>
<td>Connecting Plate 20, 2</td>
<td>1 pc</td>
<td>11 g</td>
<td>20-118</td>
</tr>
</tbody>
</table>
Mounting Plate for 40x16 Profile

Application
Designed for mounting 40x16 profile at 90° angle to any 40 series profile.

Technical Data
Al, clear anodized

Order all hardware separately
M8x16 SHCS (24-316-8), M8 T-slot nut 40 (20-058), two M6x16 FHCS (24-216-6)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Plate for 40x16 Profile</td>
<td>1 pc</td>
<td>19 g</td>
<td>22-139</td>
</tr>
</tbody>
</table>

Gusset Bracket

Application
Gusset used to attach profiles at 90° angles. Can also be used as additional bracing at joints. 20-101 is used for 28 and 30 series profiles, 20-102, 20-103 for 40 series.

Technical Data
Al, clear anodized

Order all hardware separately
40 series: M8x20 BHCS (24-120-8), M8 T-slot nut 40 (20-058, 20-050, 20-081 or 20-064)
30 series: M6x16 BHCS (24-116-6), M6 T-slot nut 30 (20-056, 20-090 or 20-190)
28 series: M6x16 BHCS (24-116-6), M6 T-slot nut 28 (20-055, 20-090 or 20-190)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gusset Bracket 80x28</td>
<td>1 pc</td>
<td>.11 kg</td>
<td>20-101</td>
</tr>
<tr>
<td>Gusset Bracket 80x40</td>
<td>1 pc</td>
<td>.14 kg</td>
<td>20-102</td>
</tr>
<tr>
<td>Gusset Bracket 80x80</td>
<td>1 pc</td>
<td>.31 kg</td>
<td>20-103</td>
</tr>
</tbody>
</table>
Corner Element

Fastening Set for Corner Element 1 or 3 (without cross piece and Fastening set 20-015)

Different configurations for mounting Corner Element 1

Different configurations for mounting Corner Element 2

Application
Designed for attaching profiles at 45°. Ideal for trusses and bracing.

Technical Data
Al, clear anodized

Order all hardware separately.

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corner Element 1, 40</td>
<td>1 pc</td>
<td>71 g</td>
<td>21-035</td>
</tr>
<tr>
<td>Corner Element 1, 80</td>
<td>1 pc</td>
<td>45 g</td>
<td>21-036</td>
</tr>
<tr>
<td>Corner Element 2, 40</td>
<td>1 pc</td>
<td>67 g</td>
<td>21-037</td>
</tr>
<tr>
<td>Corner Element 2, 80</td>
<td>1 pc</td>
<td>133 g</td>
<td>21-038</td>
</tr>
<tr>
<td>Corner Element 3, 40</td>
<td>1 pc</td>
<td>73 g</td>
<td>21-135</td>
</tr>
<tr>
<td>Corner Element 3, 80</td>
<td>1 pc</td>
<td>150 g</td>
<td>21-136</td>
</tr>
<tr>
<td>End Cap 40x40-45°</td>
<td>1 pc</td>
<td>6 g</td>
<td>18-820</td>
</tr>
</tbody>
</table>
**Clamp Block**

**Application**
Cost effective solution for simple frame, guarding and other applications that do not require high accuracy. Not recommended for linear applications. Must be used in pairs to accomplish proper clamping of 40 series profile.

**Technical Data**
Al, clear anodized

**Order all hardware separately**
M8 T-slot nut HD (20-064) and M8x30 BHCS (24-130-8)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamp Block 1</td>
<td>1 pc</td>
<td>.03 kg</td>
<td>20-018-1</td>
</tr>
<tr>
<td>Clamp Block 2</td>
<td>1 pc</td>
<td>.09 kg</td>
<td>20-018-2</td>
</tr>
<tr>
<td>Clamp Block 4</td>
<td>1 pc</td>
<td>.17 kg</td>
<td>20-018-4</td>
</tr>
</tbody>
</table>

**Gusset Member**

**Application**
Gussets for use as extra bracing on tool booms or any other application. Custom gussets (profile type, length, angle) are available.

**Technical Data**
Profile 40x40 Standard or 28x28 Bi-Slot Midframe

**Order all hardware separately**
40 series: M8x20 BHCS (24-120-8), M8 T-slot nut (20-058, 20-081 or 20-064) 28 series: M6x14 BHCS (24-114-6), M6 T-slot nut 28 (20-055, 20-090)

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gusset 40, 300mm</td>
<td>1 pc</td>
<td>.55 kg</td>
<td>21-060-1</td>
</tr>
<tr>
<td>Gusset 40, 431mm</td>
<td>1 pc</td>
<td>.79 kg</td>
<td>21-060-2</td>
</tr>
<tr>
<td>Gusset 40, 600mm</td>
<td>1 pc</td>
<td>1.10 kg</td>
<td>21-060-3</td>
</tr>
<tr>
<td>Gusset 28, 254mm</td>
<td>1 pc</td>
<td>.19 kg</td>
<td>21-062-1</td>
</tr>
</tbody>
</table>
Gusset Bracket 45

Application
External element for attaching 45 series profiles at right angle. Can also be used as additional bracing at joints. No machining of profile is required. T-slot alignment tabs on the back of bracket provide easy positioning. If required they can be easily removed with a screw driver.

Technical Data
Al, cast

Order all hardware separately. M8x25 T-Bolt 45 with hex flange nut (17-425-8), one per hole.

Description
- Gusset Bracket 42x42
- Gusset Bracket 78x34
- Gusset Bracket 88x88
- Gusset Bracket 88x39

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gusset Bracket 42x42</td>
<td>1 pc</td>
<td>51 g</td>
<td>17-101</td>
</tr>
<tr>
<td>Gusset Bracket 78x34</td>
<td>1 pc</td>
<td>89 g</td>
<td>17-102</td>
</tr>
<tr>
<td>Gusset Bracket 88x88</td>
<td>1 pc</td>
<td>330 g</td>
<td>17-103</td>
</tr>
<tr>
<td>Gusset Bracket 88x39</td>
<td>1 pc</td>
<td>155 g</td>
<td>17-104</td>
</tr>
</tbody>
</table>
### Connection Link 45

**Application**
Fastening element for easy and rigid connection of 45 Series profile and other parts.

**Technical Data**
St, zinc plated
Includes four M8x12 SHCS, four M8 fender washers.

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Link 45</td>
<td>1 set</td>
<td>181 g</td>
</tr>
</tbody>
</table>

### Floating Pivot Joint

**Application**
For easy attachment of gusset members at various angles.

**Technical Data**
Al, clear anodized
Order all hardware separately.
M8x25 T-Bolt 45 w/ hex flange nut (17-425-8), one per hole

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floating Pivot Joint</td>
<td>1 pc</td>
<td>236 g</td>
</tr>
</tbody>
</table>

### Base Plate

**Application**
Bolts to the end or side of profiles for mounting of leveling feet or eyebolts. (See page 79 for M12 Knuckle Foot).

**Technical Data**
St, zinc plated

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Plate 45x90, M12</td>
<td>1 pc</td>
<td>408 g</td>
</tr>
</tbody>
</table>
### Connection Screw

**Application**
Used for right angle connection of 45 series profiles.

**Technical Data**
St, zinc plated
Recommended torque 35Nm

**Description**
Connection Screw M12x30

<table>
<thead>
<tr>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc</td>
<td>g</td>
<td>17-130-12</td>
</tr>
</tbody>
</table>

### T-Slot Connector 45

**Application**
Allows concealed right angle connection of 45 series profiles. No machining of profile is required. Inside connector (17-023) allows easy adjustability. Outside connector (17-024) leaves inner T-slots unobstructed for panel installation. Cross member profile can be positioned at any location. Connector must be inserted from end face of profile. Requires using 4mm hexagon wrench.

**Technical Data**
Brass, die cast, plated
Includes two M8x12 set screws

**Description**
T-Slot Connector 45, Inside
T-Slot Connector 45, Outside

<table>
<thead>
<tr>
<th>Unit</th>
<th>Weight</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 set</td>
<td>50 g</td>
<td>17-023</td>
</tr>
<tr>
<td>1 set</td>
<td>52 g</td>
<td>17-024</td>
</tr>
</tbody>
</table>