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<td>08-26</td>
</tr>
</tbody>
</table>
PROJECTS

[Images of various construction projects]

www.cfsfixings.com
TYPICAL CHANNEL APPLICATIONS

Curtain wall:
Bracket to top of slab

Curtain wall:
Bracket to face of slab

Curtain Wall

Special channel curtain wall fabrication

Temporary barrier/fence installation

Curtain wall weight brackets with channels

Elevator Shaft

Elevator Shaft

Precast Facade

Stadium Seat Fixings

Mechanical Fixings

Masonry Support System: Fixing brick & stone support angles

TYPICAL CAST-IN CHANNEL ANCHOR VARIATIONS

CFS high quality inserts are designed to provide flexible fixing points for concrete structures. Channels are ideal for use near the edges of concrete where drilling is not possible. They are ideal for use in post-tensioned structures. ‘T’-bolts can be placed in the channels easily and moved to the desired position. Subsequent removal of components is very simple.

CFS stud anchor standard

Filler

Standard anchor centres on long lengths of channel are 250mm. Other centres can be supplied on request. Special anchor types can be provided to suit specific site requirements. All channels intended for casting in contain CFS quick to remove filler.

T-Bolts

Standard
Electroplated, galvanised or stainless steel

Nibbed
Galvanised

Toothed
Galvanised or stainless steel

Locking Plate
Electroplated or stainless steel

Captive Locking Plate
Electroplated, galvanised or stainless steel

T head bolts or locking plates are simply inserted anywhere along the channel and turned through 90° to lock into position. Captive locking plates must be inserted before the channel is cast into concrete.

Cold Rolled or Hot Rolled

In most circumstances, cold rolled sections provide the appropriate solution. Where dynamic loads are an issue or in safety-critical applications, hot rolled channels should be considered. If in doubt, seek advice.

Cold Rolled Cast-in channels

Hot Rolled Cast-in channels

Suitable for dynamic load

Also available:
• Toothed Channels
• High Load Channels
• Special Channels
CAST-IN CHANNEL - COLD ROLLED

Dimensioning and design calculations

This table may be used in simple cases. The values are for tension only, shear only, or compare resultant forces of a tension and shear components with the shear capacities. In cases where there is a longitudinal force along the length of the channel, please see our nibbed bolt and toothed channel products. These values are ultimate capacities and should be compared with the factored design loads.

* Please contact CFS for additional High Load Channels brochure.

Channels 40/223, 50/30, 54/33 available with High Load Captive Locking Plate.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Tension Capacity C25/30</th>
<th>Max Shear Capacity C30/37</th>
<th>Min Shear Capacity C30/37</th>
<th>Slab thickness e</th>
<th>Anchor Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>where c =</td>
<td>Tension Only</td>
<td>where c =</td>
<td>Shear Only</td>
<td>where c =</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>kN</td>
<td>mm</td>
<td>kN</td>
<td>mm</td>
</tr>
<tr>
<td>CFS-28/15</td>
<td>40</td>
<td>5</td>
<td>59</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>CFS-38/17</td>
<td>50</td>
<td>10</td>
<td>92</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>CFS-40/25 or 40/223</td>
<td>50</td>
<td>11.1</td>
<td>100</td>
<td>11.1</td>
<td>50</td>
</tr>
<tr>
<td>CFS-49/30 or 50/30*</td>
<td>75</td>
<td>17.2</td>
<td>141</td>
<td>17.2</td>
<td>75</td>
</tr>
<tr>
<td>CFS-54/33*</td>
<td>100</td>
<td>30.5</td>
<td>250</td>
<td>30.5</td>
<td>100</td>
</tr>
<tr>
<td>CFS-72/49</td>
<td>150</td>
<td>55.6</td>
<td>360</td>
<td>55.6</td>
<td>150</td>
</tr>
</tbody>
</table>

Other lengths are available to order, please consult CFS.
CAST-IN CHANNEL - HOT ROLLED

Channel Anchor 40/22 Hot rolled Welded I anchor 50/30 Hot rolled Welded I anchor 52/34 Hot rolled Welded I anchor

T-Bolt 40/22 50/30 52/30

h\text{max} \text{ Effective anchoring depth min. bch Width of channel } hch \text{ Height of channel}

Material Hot-dip. galvanised x x x
Stainless steel A2, A4 On Demand On Demand On Demand

Hot Rolled Channel Capacities per bolt where the T-bolts are spaced no closer than the anchors on the back of the channel

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Tension Capacity C25/30</th>
<th>Shear Capacity C30/37</th>
<th>Slab thickness x</th>
<th>Anchor Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>kN</td>
<td>mm</td>
<td>kN</td>
</tr>
<tr>
<td>CFS-40/22</td>
<td>50</td>
<td>11.1</td>
<td>100</td>
<td>11.1</td>
</tr>
<tr>
<td>CFS-50/30</td>
<td>75</td>
<td>17.2</td>
<td>141</td>
<td>17.2</td>
</tr>
<tr>
<td>CFS-52/34</td>
<td>100</td>
<td>30.6</td>
<td>250</td>
<td>30.5</td>
</tr>
</tbody>
</table>

This table may be used in simple cases. The values are for tension only, shear only, or compare resultant forces of a tension and shear components with the shear capacities. These values are ultimate capacities and should be compared with the factored design loads. For more complicated design cases, please consult with CFS who will prepare a calculation for situation.

MODERSONH TOOTED STAINLESS STEEL CHANNEL MZA

Toothed anchor channel 28/15 l=150mm
- Vertical (shear) load: 5,0kN
- Horizontal (pull) load: 5,0kN
- In the direction of the channel: 1,5 kN

Toothed anchor channel 38/17 l=150mm
- Vertical (shear) load: 7,0kN
- Horizontal (pull) load: 7,0kN
- In the direction of the channel: 3,0 kN

Toothed Channel 28/15
- Toothed Channel 28/15 with two anchors and M10 T-Bolts
- CFS- MZA-CE 28/15 - 150 D4
- MHK 28/15 M10 A4-70
- Concrete Strength C 20/25

Toothed Channel 38/17
- Toothed Channel 38/17 with two anchors and M12 T-Bolts
- CFS- MZA-CE 38/17 - 150 D4
- MHK 38/15 M12 A4-70
- Concrete Strength C 20/25

Hot Rolled Channel Capacities per bolt where the T-bolts are spaced no closer than the anchors on the back of the channel

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Tension Capacity C25/30</th>
<th>Shear Capacity C30/37</th>
<th>Slab thickness x</th>
<th>Anchor Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm</td>
<td>kN</td>
<td>mm</td>
<td>kN</td>
</tr>
<tr>
<td>CFS-40/22</td>
<td>50</td>
<td>11.1</td>
<td>100</td>
<td>11.1</td>
</tr>
<tr>
<td>CFS-50/30</td>
<td>75</td>
<td>17.2</td>
<td>141</td>
<td>17.2</td>
</tr>
<tr>
<td>CFS-52/34</td>
<td>100</td>
<td>30.6</td>
<td>250</td>
<td>30.5</td>
</tr>
</tbody>
</table>

This table may be used in simple cases. The values are for tension only, shear only, or compare resultant forces of a tension and shear components with the shear capacities. These values are ultimate capacities and should be compared with the factored design loads. For more complicated design cases, please consult with CFS who will prepare a calculation for situation.

Toothed Channel 38/17
- Toothed Channel 38/17 with two anchors and M12 T-Bolts
- CFS- MZA-CE 38/17 - 150 D4
- MHK 38/15 M12 A4-70
- Concrete Strength C 20/25

Please contact CFS for information specific to your application.
MOSO HIGH LOAD STAINLESS STEEL CAST-IN CHANNELS

- Connection to in-situ concrete
- Connection to precast parts
- Mounting even in winter at temperatures below 0°C
- Can be used at low component thicknesses or relatively low edge distances

Officially approved in Europe, cast in channel MBA-CE is used to mount installation parts in in-situ concrete or as a cast-in part in the precast part.

The MBA-CE channel offers a horizontal or a vertical adjustment option depending on the mounting situation. MOSO® hammer-head/hook-head bolts MHK are used as fasteners.

Cast in Channels are made of stainless steels 1.4462 D4 (duplex steel) and more recently, from 1.4062 (lean duplex steel): An approved universal system (Z-21.4-1826) for cost and effective installation concrete fixings.

Span – up to 6000mm

Materials – Stainless Steel Corrosion resistance class (CRC) III/IV

The permissible loads can be calculated with the software MOSOCONstructor (please contact CFS).

- MOSO® MBA Channels are manufactured from, lean duplex steel 1.4362 which is technically superior to the A4/A5 steels. Better corrosion resistance, twice higher yield strength and 18 % more rigid than conventional stainless steel, temperature resistant, higher fatigue strength.
- According to DIBT approval, lower corrosion resistance class shear connectors can be welded to provide more cost-effective solutions.
- Stainless steel bolts are readily available from us. Please contact us with your specific needs.

**Order example:** MBA - CE - 50/31 - 150

<table>
<thead>
<tr>
<th>Profile Type</th>
<th>Profile size</th>
<th>Profile length</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA-CE 28/15 - 150 D4</td>
<td>Tension Only 8.5 kN</td>
<td>Shear Only 5.2 kN</td>
</tr>
<tr>
<td>MBA-CE 38/17 - 150 D4</td>
<td>Tension Only 10.4 kN</td>
<td>Shear Only 6.0 kN</td>
</tr>
<tr>
<td>MBA-CE 40/25 - 150 D4</td>
<td>Tension Only 13.4 kN</td>
<td>Shear Only 8.5 kN</td>
</tr>
<tr>
<td>MBA-CE 50/31 - 150 D4</td>
<td>Tension Only 17 kN</td>
<td>Shear Only 12.0 kN</td>
</tr>
<tr>
<td>MBA-CE 52/34 - 150 D4</td>
<td>Tension Only 33.9 kN</td>
<td>Shear Only 24.5 kN</td>
</tr>
</tbody>
</table>

**Additional dimensions on request**

<table>
<thead>
<tr>
<th>Anchor rail</th>
<th>28/15</th>
<th>30/17</th>
<th>40/25</th>
<th>50/31</th>
<th>52/34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension Only</td>
<td>8.5 kN</td>
<td>10.4 kN</td>
<td>13.4 kN</td>
<td>17 kN</td>
<td>33.9 kN</td>
</tr>
<tr>
<td>Shear Only</td>
<td>5.2 kN</td>
<td>6.0 kN</td>
<td>8.5 kN</td>
<td>12.0 kN</td>
<td>24.5 kN</td>
</tr>
</tbody>
</table>

Please note. T-bolts are available separately.

**Technical data / Measurement table**

<table>
<thead>
<tr>
<th>Profile type</th>
<th>Length [mm]**</th>
<th>MHK</th>
<th>Bolt size**</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA-CE 28/15</td>
<td>28/15 x x x x x x x x x x</td>
<td>M10</td>
<td>M10</td>
</tr>
<tr>
<td>MBA-CE 38/17</td>
<td>38/17 x x x x x x x x x x</td>
<td>M12</td>
<td>M12</td>
</tr>
<tr>
<td>MBA-CE 40/25</td>
<td>40/25 x x x x x x x x x x</td>
<td>M16</td>
<td>M16</td>
</tr>
<tr>
<td>MBA-CE 50/31</td>
<td>50/30 x x x x x x x x x x</td>
<td>M20</td>
<td>M20</td>
</tr>
<tr>
<td>MBA-CE 52/34</td>
<td>52/34 x x x x x x x x x x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional dimensions on request**

Please note.

*ONUS® hammerhead/hook-head bolts MHK are used as fasteners.

Materials – Stainless Steel Corrosion resistance class (CRC) III/IV

Please contact us with your specific needs.

According to DIBT approval, lower corrosion resistance class shear connectors can be welded to provide more cost-effective solutions.

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**Additional dimensions on request**

Please note.

*ONUS® hammerhead/hook-head bolts MHK are used as fasteners.

Materials – Stainless Steel Corrosion resistance class (CRC) III/IV

Please contact us with your specific needs.

According to DIBT approval, lower corrosion resistance class shear connectors can be welded to provide more cost-effective solutions.

**Additional dimensions on request**

Please note.
T-BOLTS

CFS T-bolts are drop forged, and specifically designed to be used with the appropriate channel section. All mild steel T-bolts are supplied electroplated finish as a standard grade 8.8. They are also available grade 8.8 hot dip spun galvanised to BS-1971 to provide a minimum of 43 microns thickness. Finishes available in spun galvanised, stainless steel A4, A2 on request.

<table>
<thead>
<tr>
<th>Type</th>
<th>T Bolt 28/15</th>
<th>T Bolt 38/17</th>
<th>T Bolt 40/22</th>
<th>T Bolt 50/30</th>
<th>T Bolt 72/48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot dip galvanised or electroplated *</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Grade</td>
<td>8.8 standard</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Stainless steel A4</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Grade</td>
<td>A4 standard</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>A2 on request</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Diameter</td>
<td>M10</td>
<td>M12, M16</td>
<td>M12, M16</td>
<td>M16, M20</td>
<td>M20, M24</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>30, 50</td>
<td>50, 80</td>
<td>50, 60, 80, 100*</td>
<td>50, 60, 80, 100</td>
<td>50, 60, 80, 100</td>
</tr>
</tbody>
</table>

*Electro zinc galvanised available on request. More sizes available available on request.

Determining Required Bolt Length

Where forces exist along the length of the channel, there are two alternative solutions, nibbed T-Bolts alongside our hot-rolled channels, or toothed channels. If in doubt, please send your conditions to CFS for advice.

Toothed T-bolts - Stainless Steel and galvanised
Nibbed T-bolts - galvanised

These bolts must be used with hot rolled channels, hot dipped galvanized. All bolts grade 8.8

<table>
<thead>
<tr>
<th>Channel</th>
<th>Nibbed</th>
<th>T-Bolt</th>
<th>Torque Nm</th>
<th>Longitudinal Design Capacity kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS-40/22</td>
<td>TBN 40-22</td>
<td>M16</td>
<td>120</td>
<td>4.1</td>
</tr>
<tr>
<td>CFS-50/30</td>
<td>TBN 50-30</td>
<td>M16</td>
<td>150</td>
<td>10.0</td>
</tr>
<tr>
<td>CFS-52/34</td>
<td>TBN 52-34</td>
<td>M20</td>
<td>360</td>
<td>11.8</td>
</tr>
</tbody>
</table>

A steel-to-steel contact is required between channel and attachment. A calibrated torque wrench must be used.
CFS CAPTIVE LOCKING PLATES

The economic fixing method for Channel Inserts

The main benefits are:

• Channels are supplied ready for casting in, complete with captive locking plates
• Quick to install
• Economical, particularly for larger diameters and longer projections

Captive Nut | Indicative Load Capacities
---|---
40/25 Channel c/w M12 Captive Plate | 8kN Tensile: 10kN Shear
49/30 Channel c/w M16 Captive Plate | 12.5kN Tensile: 15kN Shear
54/33 Channel c/w M20 Captive Plate | 25kN Tensile: 25kN Shear

CFS UNI CHANNEL 41/21 CAST-IN INSERT

Size: 41 x 21 x 2.5mm

The main benefits are:

• Concrete inserts are available in standard lengths of 3 metres which are supplied complete with polystyrene infill and end caps in place.
• Non-standard lengths can be supplied in increments of 200mm. Dedicated lengths to suit your requirements can also be produced.
• Finish pre-galvanised or hot dip galvanised. If site installation requires the concrete insert to be cut and end caps must be reinserted at each end.

Recommended loadings

<table>
<thead>
<tr>
<th>UNI Channel 41/21</th>
<th>Safe working load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point load (250mm centres)</td>
<td>5.5kN</td>
</tr>
<tr>
<td>Continuous load (per 1000mm)</td>
<td>22kN</td>
</tr>
</tbody>
</table>

Assumed concrete strength 35N/mm
CFS PLAIN BACK CHANNELS

Plain back channels are useful in non-concrete applications for example, welded to steel sections.

All load bearing are calculated as elastic-plastic values according to DIN 18800; these are approximate values and can be used for EC3.

Partial safety coefficient \( \gamma_f = 1.4 \), deflection \( \text{max} l/150 \). Calculate the design values as \( F_R, d = 1.4 \times F \).

For other sizes, please consult CFS.

GLASS FACADE APPLICATIONS WITH CHANNELS

Curtain wall weight bracket fixed to concrete structure with cast-in channels

Cast-in channels are available to suit a wide range of load requirements. Hot dip galvanised and stainless steel finishes are available. Compatible T-bolts in electroplated, spun galvanised or stainless steel can be provided. Cast in channels are ideal for fixing curtain wall mullions to top or soffit of concrete slabs. Vertical loads can be accommodated by the use of toothed channel.

Weight bracket fabrication

CFS can produce curtain wall weight brackets in mild steel, painted, galvanised or stainless steel. Laser profiling is used where appropriate to ensure a high degree of accuracy.

Design

CFS can assist in the design of bespoke brackets to suit your application.

GLASS FACADE ACCESSORIES - WEIGHT BRACKETS

Typical weight bracket

Fixing Curtain Wall Mullions

Max. point load

Bending load capacity at span \( L \) (single span element)

Corresponding Bolt

\( F_{z0} \) [kN] \( \text{L}_{\text{max}} \) [cm] \( F_{z0} \times 2 \) [kN] \( q_{\text{flex}} \) [kN/m] Type

<table>
<thead>
<tr>
<th>( F_z ) [kN]</th>
<th>( \text{L}_{\text{max}} )</th>
<th>0.50</th>
<th>1.00</th>
<th>1.50</th>
<th>0.50</th>
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</table>

All load bearing are calculated as elastic-plastic values according to DIN 18800; these are approximate values and can be used for EC3.
FIXED TO STEEL STRUCTURE WITH WELDED ON STEEL CHANNELS

Plain back channels are available for welding or bolting to structural steelwork. The maximum length of channels available is 3.0m length up to 3.0 meters can be cut to suit your requirements.

CFS can provide ‘Blind Bolt’ fixings. They are ideal for situations where you may be connecting to an enclosed steel section or those which have difficult access. Available electroplated or stainless steel.

FIXED TO STEEL STRUCTURE WITH BLIND BOLTS

CFS is a main distributor for Fischer fixings. We have worked in close association with Fischer to ensure optimum solutions for all your applications. We have rapid to use, drill through fixings that do not require removal of the brackets to be fixed.

**FIXED TO CONCRETE STRUCTURE WITH FISCHER DRILL FIXINGS**

CFS has undertaken a considerable amount of R&D together with Fischer to provide the best solution.

**FBN reference for lower load applications.**

Bolt FBN II zinc-plated steel

**FAZ and FHB reference for higher load applications.**

Anchor bolt FAZ II, stainless steel and zinc plated

FHB II-A S (standard) zinc-plated steel

RGM Resin Anchors for difficult substrates, such as block work.

Threaded rod RG M A4/C stainless steel A4 or highly corrosion-resistant steel
SPECIAL CHANNEL FABRICATIONS FOR FACADES

SPECIAL CHANNEL FABRICATIONS FOR FACADES

CAST-IN CHAINLON FOR METAL DECK FLOORS

CFS ski channels are designed to be used in the top surface of metal deck floors. Ski channel assemblies allow channel inserts to be easily positioned so that they are flush with the surface of the concrete and maintain a correct edge distance from the decking edge trim.

Ski channel assemblies are fabricated to suit your particular project requirements. We manufacture to suit your slab depth and decking type and edge condition details. CFS will be pleased to advise of the most economical assembly for you.

Reinforcement requirements
Standard mesh and 10mm dia. bar 450mm long with 4 No. 10mm dia. bobs (300/80).

CFS Ski channel for edge fix on the metal decking floors
Channels are designed for each individual project. Please complete the diagram below to help us understand your requirements.

<table>
<thead>
<tr>
<th>Channel Type 350mm</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>52/30</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>52/34</td>
<td>mm</td>
<td>mm</td>
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</table>
Met stop data, reinforcement
Loading data for lightweight concrete of minimum 25 N/mm² strength reinforced as detailed on previous page.

Met stop data, reinforcement
Quoted loads are after the application of a safety factor of 3:1. * 'Preferred cantilever' = 25 mm.

Reinforcement requirements to achieve full loading in lightweight concrete, strength 25 N/mm².

Standard mesh plus 10mm diameter longitudinal bar with 10mm diameter bobs (300/80) at 300mm centres for long lengths 150mm centres for short.

CFS Met stop can be provided to suit your site requirements at short notice. We manufacture to suit your site dimensions.

MET STOP METAL DECK FLOOR FIXINGS

Edge trim for permanent formwork
CFS Met stop provides the complete solution for fixing to metal deck floors. Comprising a cast-in channel contained within a metal edge trim.

CFS Met stop is manufactured to suit your particular project conditions. Met-stop edge trim is produced from pre-galvanized sheet with either hot-dip galvanized or stainless steel channel inserts.

Typical installation showing Met stop shot fired or tek-screwed down to the steel frame. Restraint straps are provided to give additional restraint to the upper edge.

Fix restraint straps, tying vertical legback to the metal decking.

CFS lift blocks are the ideal solution for installing inserts into block or brick lift shaft walls. Time consuming casting of pad-stones on site within assemblies can be produced.

Fix restraint straps, tying vertical legback to the metal decking.

BUILT WITHIN A LIFT SHAFT WALL.

CFS Lift blocks are the ideal solution for installing inserts into block...

INTRODUCTION
CFS lift blocks are the ideal solution for installing inserts into block or brick lift shaft walls. Time consuming casting of pad-stones on site within assemblies can be produced.

Fix restraint straps, tying vertical legback to the metal decking.

BUILT WITHIN A LIFT SHAFT WALL.
EDGE TRIM FOR PERMANENT FORMWORK

Cast-in metal edge trim to suit your project requirements. Accurately produced to provide permanent formwork. Available with a galvanised protective coating in varying heights to suit your dedicated details. Corner chafers can be incorporated as well as cast-in channel inserts.

ADDITIONAL OPTIONS FOR EDGE TRIM

Supplied with anchoring lugs for casting-in to concrete and also tie back straps to provide rigidity to the vertical edge.
CHANNELS - MATERIAL, STANDARDS

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<td>Material S235JR (RSt 37-2) Material No. 1.0038, 1.0044 DIN EN 10025 hot dip galvanised - DIN EN ISO 1461, zinc coating ≥ 50 µm</td>
<td>Hot Dip Galvanized</td>
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<td>DIN EN ISO 10684, DIN EN ISO 898-1 DIN EN ISO 4034 zinc coating ≥ 40 µm</td>
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Locking Plate
Electroplated

www.cfsfixings.com
08 26