Steel Stanchions

### BASE PLATES

**STANDARD & ANGLE MOUNTED from 0° - 14°**

**ANGLE MOUNTED ONLY from 15° - 45°**

- Hole size 17.5mm typical
- All steel 8/5 base plates are 10mm thick
- Ctr hole 25mm
Steel Stanchions

**PA Platform Angle**

**CA Cored Angle**

**WA Welded Angle**

**SAL Side Angle Left**

**SAR Side Angle Right**

**SOAL Side Offset Angle Left**

**SOAR Side Offset Angle Right**

- **α** = Angle Drillings
  - Angle drillings can be made to order with any angle designated between 1° - 45°

**AM Angle Mounted**

**AMW Angle Mounted Welded**

**IGA In Ground Angle**

**‘SO’ TYPE OFFSETS**

<table>
<thead>
<tr>
<th>CHANNELS</th>
<th>UNIVERSAL BEAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>STEEL OFFSET</td>
</tr>
<tr>
<td>150 x 75</td>
<td>110</td>
</tr>
<tr>
<td>180 x 75</td>
<td>110</td>
</tr>
<tr>
<td>200 x 75</td>
<td>110</td>
</tr>
<tr>
<td>230 x 75</td>
<td>110</td>
</tr>
<tr>
<td>250 x 90</td>
<td>130</td>
</tr>
<tr>
<td>300 x 90</td>
<td>130</td>
</tr>
<tr>
<td>380 x 100</td>
<td>130</td>
</tr>
</tbody>
</table>

- **RADIUS R**
  - Steel 100mm - Stainless Steel 100mm
Aluminium Stanchions

46 O.D. x 3.5mm

46 O.D. x 3.5mm

SC Side Conveyor
SC Side Conveyor
SC Side Offset
C Cored
W Welded
IG In Ground

BASE PLATES
STANDARD & ANGLE MOUNTED From 0° - 14°
ANGLE MOUNTED ONLY From 15° - 45°

Hole size 17.5 mm typical.
All Aluminium base plates are 12 mm thick.
Except 'SO' which is 16 mm.
Aluminium Stanchions

**Aluminium Stanchions**

**PA**
Platform Angle

**CA**
Cored Angle

**WA**
Welded Angle

**SAL**
Side Angle Left

**SA**
Side Angle Right

**SOAL**
Side Offset Angle Left

**SOAR**
Side Offset Angle Right

*$\alpha$ = Angle Drillings
Angle drilled stanchions can be made to order
with any angle designated between $1^\circ$ - $45^\circ$

**AM**
Angle Mounted

**AMW**
Angle Mounted Welded

**IGA**
In Ground Angle

46 O.D. x 3.5mm

46 O.D. x 3.5mm

$\alpha$ = stair/ramp angle

‘SO’ TYPE OFFSETS

<table>
<thead>
<tr>
<th>CHANNELS</th>
<th>UNIVERSAL BEAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>aluminium offset</td>
</tr>
<tr>
<td>150 x 75</td>
<td>150</td>
</tr>
<tr>
<td>180 x 75</td>
<td>150</td>
</tr>
<tr>
<td>200 x 75</td>
<td>150</td>
</tr>
<tr>
<td>230 x 75</td>
<td>150</td>
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<tr>
<td>250 x 90</td>
<td>150</td>
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<tr>
<td>300 x 90</td>
<td>150</td>
</tr>
<tr>
<td>380 x 100</td>
<td>165</td>
</tr>
</tbody>
</table>

RADIUS R
Aluminium 140 mm
Kickplate Mounting Brackets

Steel

**DIMENSION ‘D’ FOR VARIOUS STANCHION TYPES**

<table>
<thead>
<tr>
<th>Grating Height mm</th>
<th>NIL</th>
<th>20,25,32</th>
<th>40,45,50</th>
<th>60, 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>P, W, C</td>
<td>D = 60</td>
<td>D = 85</td>
<td>D = 100</td>
<td>D = 120</td>
</tr>
<tr>
<td>S &amp; 50</td>
<td>D = 135</td>
<td>D = 160</td>
<td>D = 180</td>
<td>D = 195</td>
</tr>
</tbody>
</table>

Stainless Steel & Aluminium

**DIMENSION ‘D’ FOR VARIOUS STANCHION TYPES**

<table>
<thead>
<tr>
<th>Grating Height mm</th>
<th>NIL</th>
<th>20,25,32</th>
<th>40,45,50</th>
<th>60, 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>P, W, C</td>
<td>D = 40</td>
<td>D = 65</td>
<td>D = 80</td>
<td>D = 100</td>
</tr>
<tr>
<td>S &amp; 50</td>
<td>D = 115</td>
<td>D = 140</td>
<td>D = 160</td>
<td>D = 175</td>
</tr>
</tbody>
</table>

**DETAIL B**

**KICKPLATE MOUNTING BRACKET**

**KICKPLATE MOUNTING BRACKET NOTES**

1. Kickplate mounting brackets are optional and must be specified when ordering.
2. Kickplate mounting brackets are mounted on the right hand side of the stanchion when viewed from the walking surface, unless DLSO.
3. The slot in the bracket allows for 7mm up/down adjustment of the kickplate.
4. Standard kickplate is 100 x 6 flat but other sizes are available.

**Steel**

**S. Steel & Aluminium**

P, S Stanchion

SO Stanchion
Closures Bends & Slip Joints

**Closures & Bends**

**Horizontal Closure Bends (HCB)**

- Standard pipe:
  - Steel Handrail: 32NB med/32 SCH10
  - Steel Kneerail: 25NB med/25 SCH10
- Standard radius: 140mm Centre line
- Alum: 46 O.D. x 3.5mm

**Angle Closure Bends (ACB)**

- Standard pipe:
  - Steel Handrail: 32NB med/32 SCH10
  - Steel Kneerail: 25NB med/25 SCH10
- Standard radius: 140mm Centre line
- Angle a value from 90° - 180°
- Alum: 46 O.D. x 3.5mm
- Standard Leg:
  - 300mm x 300mm
- Non Standard Leg:
  - L1 x L2 < 6500

**Rail Bends (RB)**

- Standard pipe:
  - Steel Handrail: 32NB med/32 SCH10
  - Steel Kneerail: 25NB med/25 SCH10
- Standard radius: 140mm Centre line
- Angle a value from 0° - 20°
- Alum: 46 O.D. x 3.5mm
- Standard Leg:
  - 2000 max
- Non Standard Leg:
  - As per ‘typical’ drawings below.

**Slip Joints**

<table>
<thead>
<tr>
<th>Slip Joint</th>
<th>Rail Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ20G</td>
<td>20NB Rail</td>
</tr>
<tr>
<td>SJ25J</td>
<td>25NB Rail</td>
</tr>
<tr>
<td>SJ32G</td>
<td>32NB Rail</td>
</tr>
<tr>
<td>SJ40G</td>
<td>40NB Rail</td>
</tr>
<tr>
<td>ST46A</td>
<td>4600 Rail</td>
</tr>
</tbody>
</table>

Slip joints are used when joining the top or knee rail to another piece of pipe; for example:
- when the expansion joint is required,
- when joining rails without using a butt weld.

The slip joint can be fixed by welding or using pins.
Gates

**GATES - STEEL**
Webforge Monowills gates are self-closing and are designed to be attached to Monowills stanchions.
The direction or swing is critical to obtain a correctly functioning gate.
Webforge gates can be supplied with kickplate if required, or to suit the flatbar or structural styles at the top of a ladder.
Single gates should not exceed 1200 mm; the most popular size is 800 mm.
Gates with kickplate should not exceed 1000mm maximum per gate.

**Gate Types**
- Spring Loaded
- Self Closing
- Padlock Option
- Combine with any stanchion
- Bracket variations for welding to columns
- Double Gate
- Kickplate Optional

**Important**
When ordering self closing gates, it is essential to nominate the swing direction, and type of stanchion.
*viewed from walking surface

**Note:** Compliance with AS1657 requires minimum width of 600 mm.

**Gates**

**BALUSTRADE STANCHIONS**

<table>
<thead>
<tr>
<th>STEEL</th>
<th>32 NB med 32 Sch10 2.8wt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STEEL**
- 32 NB med
- 32 Sch10
- 2.8wt

**S/S**
- Stainless Steel

**PA Ball**
- Platform Angle

**P Ball**
- Platform

**IG Ball**
- In Ground

**Dimensions**
- 1200 Maximum
- Channels, RHS or STILES

**Note:**
- Not available in Aluminium

**Horizontal Closure Bends (HCB)**
- Rail Bends (RB)
  - Standard Leg:
  - Steel Handrail: 32NB med/32 SCH10
  - Aluminium: 46 O.D. x 3.5mm

**Angle Closure Bends (ACB)**
- Rail Bends (ACB)
  - Standard Leg:
  - Steel Handrail: 32NB med/32 SCH10
  - Aluminium: 46 O.D. x 3.5mm

**Rail Bends**
- SJ40G - suits 40NB Rail
- SJ25J - suits 25NB Rail

**Important**
- Angle drilled stanchions can be made to order with any angle designated between 1° - 45°.

**Slip joints**
- Are used when joining the top of a ladder.

**Webforge gates**
- Can be supplied with kickplate if required.
- Functioning gate.

**2.8wt**
- 2.8 weight

**32NB. med**
- 32NB. medium

**32 Sch10**
- 32 Schedule 10

**20° - 45° Stairs**
- 0° - 20° Ramps

**Double Gate**
- Required kickplate

**Spring Loaded**
- Self Closing
- Padlock Option
- Combine with any stanchion
- Bracket variations for welding to columns
- Double Gate
- Kickplate Optional

**Note:** Compliance with AS1657 requires minimum width of 600 mm.

**Kickplate Mounting Bracket**
- Sizes are available.

**KICKPLATE MOUNTING BRACKET NOTES**
- The slot in the bracket allows for 7mm on the right hand side of the stanchion when must be specified when ordering.

**Steel**
- 20mm GRATING
- 40 typ.

**40 typ.**
- Typical

**54 mm**
- 54 millimeter

**D = 120**
- Diameter 120

**D = 150**
- Diameter 150

**D = 180**
- Diameter 180

**D = 195**
- Diameter 195

**D = 225**
- Diameter 225

**D = 250**
- Diameter 250

**D = 275**
- Diameter 275

**D = 300**
- Diameter 300

**D = 325**
- Diameter 325

**D = 350**
- Diameter 350

**D = 375**
- Diameter 375

**D = 400**
- Diameter 400

**D = 425**
- Diameter 425

**D = 450**
- Diameter 450

**D = 475**
- Diameter 475

**D = 500**
- Diameter 500

**D = 525**
- Diameter 525

**D = 550**
- Diameter 550

**D = 575**
- Diameter 575

**D = 600**
- Diameter 600

**D = 625**
- Diameter 625

**D = 650**
- Diameter 650

**D = 675**
- Diameter 675

**D = 700**
- Diameter 700

**D = 725**
- Diameter 725

**D = 750**
- Diameter 750

**D = 775**
- Diameter 775

**D = 800**
- Diameter 800

**D = 825**
- Diameter 825

**D = 850**
- Diameter 850

**D = 875**
- Diameter 875

**D = 900**
- Diameter 900

**D = 925**
- Diameter 925

**D = 950**
- Diameter 950

**D = 975**
- Diameter 975

**D = 1000**
- Diameter 1000

**D = 1025**
- Diameter 1025

**D = 1050**
- Diameter 1050

**D = 1075**
- Diameter 1075

**D = 1100**
- Diameter 1100

**D = 1125**
- Diameter 1125

**D = 1150**
- Diameter 1150

**D = 1175**
- Diameter 1175

**D = 1200**
- Diameter 1200

**D = 1225**
- Diameter 1225

**D = 1250**
- Diameter 1250

**D = 1275**
- Diameter 1275

**D = 1300**
- Diameter 1300

**D = 1325**
- Diameter 1325

**D = 1350**
- Diameter 1350

**D = 1375**
- Diameter 1375

**D = 1400**
- Diameter 1400

**D = 1425**
- Diameter 1425

**D = 1450**
- Diameter 1450

**D = 1475**
- Diameter 1475

**D = 1500**
- Diameter 1500

**D = 1525**
- Diameter 1525

**D = 1550**
- Diameter 1550

**D = 1575**
- Diameter 1575

**D = 1600**
- Diameter 1600

**D = 1625**
- Diameter 1625

**D = 1650**
- Diameter 1650

**D = 1675**
- Diameter 1675

**D = 1700**
- Diameter 1700

**D = 1725**
- Diameter 1725

**D = 1750**
- Diameter 1750

**D = 1775**
- Diameter 1775

**D = 1800**
- Diameter 1800

**D = 1825**
- Diameter 1825

**D = 1850**
- Diameter 1850

**D = 1875**
- Diameter 1875

**D = 1900**
- Diameter 1900

**D = 1925**
- Diameter 1925

**D = 1950**
- Diameter 1950

**D = 1975**
- Diameter 1975

**D = 2000**
- Diameter 2000

**D = 2025**
- Diameter 2025

**D = 2050**
- Diameter 2050

**D = 2075**
- Diameter 2075

**D = 2100**
- Diameter 2100

**D = 2125**
- Diameter 2125

**D = 2150**
- Diameter 2150

**D = 2175**
- Diameter 2175

**D = 2200**
- Diameter 2200

**D = 2225**
- Diameter 2225

**D = 2250**
- Diameter 2250

**D = 2275**
- Diameter 2275

**D = 2300**
- Diameter 2300

**D = 2325**
- Diameter 2325

**D = 2350**
- Diameter 2350

**D = 2375**
- Diameter 2375

**D = 2400**
- Diameter 2400

**D = 2425**
- Diameter 2425

**D = 2450**
- Diameter 2450

**D = 2475**
- Diameter 2475

**D = 2500**
- Diameter 2500

**D = 2525**
- Diameter 2525

**D = 2550**
- Diameter 2550

**D = 2575**
- Diameter 2575

**D = 2600**
- Diameter 2600

**D = 2625**
- Diameter 2625
### Balustrades

**Balustrade Barrier**

Balustrades do not meet AS1657 requirements

**Notes:**

- To meet the requirements of AS1170 Table 3.3 C3 the stanchion spacing should not exceed 1.75m for the P units and 1.6m for S units.
- To meet the requirements of AS1428 a disability rail balustrade must be used with the attached handrail as shown.
- Balustrade barrier should not be more than 6.5m in length per panel.
- Avoid large right angle panels where the leg length exceed 2.5m for shipping and packing reasons. All balustrade must have fully sealed welded joints.

*Not available in Aluminium*

### BAL-1 Standard

32NB top / bottom rails
12mm diameter rods.

*S/S 32Sch10 top/bottom rail*

### AS1428 disability Balustrade with handrail.

**BAL-10**

Disability barrier

As for BAL-1, with the addition of extra railing to comply with requirements of AS1428:1 for disability access.

Additional rail may be applied to other balustrade types by suffix “D”

### Special balustrade

Balustrade can be manufactured with different infill, eg. Expanded Metal, Woven Wire, Perforated Metal etc.

**BAL-SP**

- Your choice of infill
- Your choice of stanchion type
One Ball Stanchions
(Note these do not meet AS1428 or A1657 requirements.)
One ball stanchions are available with all the various stanchions configurations. These spheres are drilled for 32NB pipe UON.
The type of stanchion and the overall height have to be nominated. There are three handrail stanchion configurations as shown below:
(Note these do not meet AS1428 handrail requirements due to the sphere.)

Drilled one side only
All stanchions can be provided in the drilled one side only; (DOSO) configuration. The conventions used are as shown and are nominated when viewed from the walking surface.

Multi Ball Stanchions
(Note these do not meet A1657 requirements.)
Multi ball stanchions are available with all the various stanchions configurations. The drilling size to suit required rail pipe sizes and the spacing between spheres have to be nominated. Minimum sphere centres is 250mm. The type of stanchion and the overall height have to be nominated.

Preferred Drilling Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Steel &amp; Stainless steel</th>
<th>Aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toprail sphere</td>
<td>45mm</td>
<td>48mm</td>
</tr>
<tr>
<td>Kneerail sphere</td>
<td>36mm</td>
<td>48mm</td>
</tr>
<tr>
<td>Balustrade lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sphere</td>
<td>45mm</td>
<td>N/A</td>
</tr>
</tbody>
</table>

S Special Stanchion
The S special stanchion is available in the S, SAL, SAR and SC configurations. Please contact your Webforge branch.
Jumbo Steel

TOLERANCES

Stanchions tolerances
- Height: +/- 2.0 mm in 1 metre
- Angle drilling: +/- 1.5 degrees
- Base plate alignment: +/- 1 mm
- Vertical alignment: +/- L/100
- Sphere drilling: 2 - 4 oversize

CLOSURES & BENDS

Horizontal Closure Bends
Standard Pipe
65NB med

Angle Closure Bends (ACB)
Standard Pipe
65NB med
Available with α value from 1° - 45°

JUMBO RAIL BENDS (RB)

Standard pipe:
65NB 3.6 WT

Standard Leg:
400mm x 400mm
Non-standard Leg:
L1 + L2 = < 6500

WEBFORGE
A valmont COMPANY
JUMBO BALUSTRADE

JUMBO BALUSTRADE WITH DISABILITY HANDRAIL

JUMBO PANEL

Showing Horizontal Closure
Bend and End Caps

Jumbo stanchions Type JP.
Handrail and kneerail 76.1mm O.D.
Installation Details

Technical Details

Base Plate Fixings
Base plates for Standard monowills stanchions require 2-M-16 bolts. (17.5 holes.)
Base plates for Jumbo stanchions require 4-M-16 bolts. (20 holes.)
When fixing into concrete, chemical anchors are required rather than expansion anchors.
Shims placed below the baseplate are acceptable for levelling the stanchion.

Rail fixings
All rails should preferably be jointed within the stanchion sphere.
Where this is done then the slip joint can be omitted if the pipe is welded to the sphere. Where that is not possible the joint should occur in the outer quarters of the span between stanchions with a slip joint.
Slip joints can be kept in position for steel stanchions with
- Welding
- Taper pins
- Screws

Sphere fixings
Rails should be fixed to spheres at least every 3m. by welding.

Closure bend fixings
Closure bends are welded to the top sphere and to the knee rail. The kneerail connection is either welded, pinned or screwed as the closure fits over the kneerail.

Expansion joints
In long runs of railings expansion joints are required. Expansion joints should be in the outside quarters of the span. Expansion joints are made by fixing one side of a slip joint and allowing the other side to be free.

Kickplate
Kickplate can be welded or bolted to the kickplate mounting bracket.

Stanchion spacings
Stanchions are spaced at nominally 2m or as specified.

Aluminium

Typical joins in rails at Spheres

Typical weld joint detail for a pipe join typ for top and knee rails

Typical expansion joint detail using a 150mm slip joint typ for top and knee rails

Aluminium
Installation Details

End caps
Monowills can be terminated with end caps. This method is sometimes used when the handrail terminates at a wall or solid object. This is instead of an end closure. End caps are pressed onto the open pipe and must be placed once the pipe is through the stanchion spheres.

DOSO Stanchion
DOSO stands for drilled one side only and these stanchions are usually used against a wall or solid object or at a gate or ladder access point, replacing an end closure. Handrail should be installed working away from the DOSO stanchion.

Corner posts (PC)
A corner post stanchion can be used at 90 degree changes of direction instead of a 90 degree bend. Handrail should be installed working away from the corner stanchion. The handrail connection to the Corner post stanchion must be welded.

Kickplate
Kickplate can be attached to the stanchions or be part of the flooring material. If a kickplate is required then the stanchions usually come with kickplate mounting brackets which are predrilled angles welded to the stanchion. Kickplate can be attached using M12 bolts in which case it needs to be drilled or it can be welded on site. The weld can be done on three sides of the angle or within the holes of the angle bracket.

In Ground Stanchions (IG, IGA)
In ground stanchions are supplied with an extra length leg to allow for casting into a footing. Footing sizes are as specified by the civil engineer.

Curved rails
Curved handrails are rolled to the radius specified. Curved rails should be erected as for straight runs but in some instances the stanchions will need to be placed loose on the rail before it is placed in position.

Balustrades
Balustrades are supplied in sections approximately 2m long. The end of one section fits into the stanchion on the next section. It is suggested that two sections are first erected as per Section 1 after which each section can be fitted.

The baseplates of balustrades need to be lifted over the fixing bolts. It is important the fixings are correctly spaced and extend sufficiently to protrude through the baseplate once fitted. Balustrades are joined as for rails.

Gates
Gates are manufactured with a swing direction. The gate stanchions are DOSO. Gate springs can be tensioned by turning the spring in the coil direction. Usually 2 to 3 turns are required.

Steel

![Steel Diagram]

- **End caps**: Monowills can be terminated with end caps. This method is sometimes used when the handrail terminates at a wall or solid object. This is instead of an end closure. End caps are pressed onto the open pipe and must be placed once the pipe is through the stanchion spheres.

- **DOSO Stanchion**: DOSO stands for drilled one side only and these stanchions are usually used against a wall or solid object or at a gate or ladder access point, replacing an end closure. Handrail should be installed working away from the DOSO stanchion.

- **Corner posts (PC)**: A corner post stanchion can be used at 90 degree changes of direction instead of a 90 degree bend. Handrail should be installed working away from the corner stanchion. The handrail connection to the Corner post stanchion must be welded.

- **Kickplate**: Kickplate can be attached to the stanchions or be part of the flooring material. If a kickplate is required then the stanchions usually come with kickplate mounting brackets which are predrilled angles welded to the stanchion. Kickplate can be attached using M12 bolts in which case it needs to be drilled or it can be welded on site. The weld can be done on three sides of the angle or within the holes of the angle bracket.

- **In Ground Stanchions (IG, IGA)**: In ground stanchions are supplied with an extra length leg to allow for casting into a footing. Footing sizes are as specified by the civil engineer.

- **Curved rails**: Curved handrails are rolled to the radius specified. Curved rails should be erected as for straight runs but in some instances the stanchions will need to be placed loose on the rail before it is placed in position.

- **Balustrades**: Balustrades are supplied in sections approximately 2m long. The end of one section fits into the stanchion on the next section. It is suggested that two sections are first erected as per Section 1 after which each section can be fitted.

- **Gates**: Gates are manufactured with a swing direction. The gate stanchions are DOSO. Gate springs can be tensioned by turning the spring in the coil direction. Usually 2 to 3 turns are required.

- **Steel Diagram**: Various steel diagrams illustrating different components and details relevant to the installation of steel structures.