



GALVANISED **HANDRAIL**

FITTINGS & TECHNICAL GUIDE

# VERSATILE AND DURABLE





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# INTRODUCTION

## THE **SAFE CLAMPING SYSTEM** FOR CIRCULAR HOLLOW SECTION TUBE

Flocon has a range of fittings manufactured from Malleable Iron to BS EN 1562 or Ductile Iron (where noted in the fittings description) to BS EN 1563 .

These fittings are used to construct lightweight tubular steel structures and are manufactured to suit five different tube sizes.

Flocon Handrail fittings require no welding, drilling or special tools, simply use a hexagon key to tighten the special setscrews that embed into the tube. The fittings will support an axial load of up to 900 kg when tightened to a torque of 39Nm.

### FINISHES AVAILABLE

The castings are Hot dip Galvanised to BS EN ISO 1461 as standard. These fittings can also be supplied in a powder coated finish to RAL standard colours, subject to quantity and availability from the coaters.

## SIZING

Flocon fittings are suitable for use with steel tubes to BS EN 10255 with a minimum wall thickness of 3.2mm, however please note that internal fitting types: C01, C06, C65, DDA-02 & DDA-06 are only designed for use with 3.2mm thick tube.

| Fitting | Tube Size $\phi$ | Nominal bore of tube |          |
|---------|------------------|----------------------|----------|
|         |                  | Metric               | Imperial |
| 20      | 26.9mm           | 20                   | 3/4"     |
| 25      | 33.7mm           | 25                   | 1"       |
| 32      | 42.4mm           | 32                   | 1 1/4"   |
| 40      | 48.3mm           | 40                   | 1 1/2"   |
| 50      | 60.3mm           | 50                   | 2"       |

**Important Note:** The Tube Size  $\phi$  should be the first consideration as this is the primary structural component for any handrail structure. The application guidelines on the next page will help the design of Racking, General Structures and Handrail.



## RACKING AND GENERAL STRUCTURES

Racking and general structures can be constructed using Flocon fittings. Care must be taken to ensure that the tube size selected is adequate for the loads anticipated. To help with the selection of the correct tube, table 1 provides the uniformly distributed loads that can be supported between upright posts, assuming that the load is supported by two tubes. These loads are calculated based on the maximum bending moment for the tube.

Table 2 provides the load capacity for single upright posts with various unsupported lengths. These loads are based on the compression strength and buckling loads of the circular hollow section (CHS) tube.

NB. When designing structures care must be taken to ensure that the load on any one grub screw does not exceed 900kg.

**TABLE 1: Horizontal tubes load capacity**

Uniformly distributed load in kg using two horizontal tubes

| SPAN (M) | TUBE Ø       |              |              |              |              |
|----------|--------------|--------------|--------------|--------------|--------------|
|          | 26.9mm x 2.6 | 33.7mm x 3.2 | 42.4mm x 3.2 | 48.3mm x 3.2 | 60.3mm x 3.6 |
| 0.5      | 540          | 1060         | 1750         | 2380         | 4000         |
| 0.6      | 435          | 850          | 1407         | 1870         | 3250         |
| 0.7      | 375          | 730          | 1207         | 1595         | 2760         |
| 0.8      | 330          | 645          | 1063         | 1385         | 2420         |
| 0.9      | 295          | 579          | 946          | 1230         | 2160         |
| 1.0      | 265          | 525          | 850          | 1110         | 1950         |
| 1.1      | 240          | 478          | 770          | 1013         | 1775         |
| 1.2      | 219          | 438          | 705          | 930          | 1625         |
| 1.3      | 202          | 403          | 651          | 858          | 1497         |
| 1.4      | 187          | 373          | 604          | 796          | 1387         |
| 1.5      | 175          | 347          | 564          | 741          | 1290         |
| 1.6      | -            | 325          | 529          | 693          | 1205         |
| 1.7      | -            | 306          | 499          | 650          | 1129         |
| 1.8      | -            | 290          | 472          | 613          | 1061         |
| 1.9      | -            | 277          | 448          | 581          | 999          |
| 2.0      | -            | 268          | 427          | 553          | 987          |
| 2.1      | -            | -            | 408          | 528          | 944          |
| 2.2      | -            | -            | 391          | 505          | 855          |
| 2.3      | -            | -            | 376          | 485          | 818          |
| 2.4      | -            | -            | 362          | 467          | 785          |
| 2.5      | -            | -            | 349          | 450          | 755          |
| 2.6      | -            | -            | -            | 434          | 728          |
| 2.7      | -            | -            | -            | 419          | 703          |
| 2.8      | -            | -            | -            | 405          | 680          |
| 2.9      | -            | -            | -            | -            | 659          |
| 3.0      | -            | -            | -            | -            | 639          |
| 3.1      | -            | -            | -            | -            | 620          |
| 3.2      | -            | -            | -            | -            | 603          |
| 3.3      | -            | -            | -            | -            | 588          |
| 3.4      | -            | -            | -            | -            | 575          |
| 3.5      | -            | -            | -            | -            | 564          |

Grade: BS EN 10255 (ISO 65)

**TABLE 2: Vertical load capacity**

Vertical load in kg per strut

| LENGTH (m) | TUBE Ø       |              |              |              |              |
|------------|--------------|--------------|--------------|--------------|--------------|
|            | 26.9mm x 2.6 | 33.7mm x 3.2 | 42.4mm x 3.2 | 48.3mm x 3.2 | 60.3mm x 3.6 |
| 0.3        | 1720         | 2950         | 4038         | 4783         | 7044         |
| 0.4        | 1435         | 2617         | 3703         | 4446         | 6661         |
| 0.5        | 1150         | 2284         | 3368         | 4109         | 6278         |
| 0.6        | 910          | 1951         | 3033         | 3772         | 5895         |
| 0.7        | 725          | 1618         | 2690         | 3435         | 5512         |
| 0.8        | 590          | 1348         | 2363         | 3098         | 5129         |
| 0.9        | 480          | 1128         | 2028         | 2761         | 4746         |
| 1.0        | -            | 948          | 1752         | 2424         | 4363         |
| 1.1        | -            | 798          | 1524         | 2134         | 3980         |
| 1.2        | -            | -            | 1340         | 1884         | 3597         |
| 1.3        | -            | -            | 1188         | 1668         | 3253         |
| 1.4        | -            | -            | 1066         | 1484         | 2951         |
| 1.5        | -            | -            | -            | 1328         | 2681         |
| 1.6        | -            | -            | -            | -            | 2441         |
| 1.7        | -            | -            | -            | -            | 2226         |
| 1.8        | -            | -            | -            | -            | 2032         |
| 1.9        | -            | -            | -            | -            | 1857         |
| 2.0        | -            | -            | -            | -            | 1697         |

Grade: BS EN 10255 (ISO 65)

### Guardrail

Guardrail is the most common form of structure that is built with these fittings and requires careful consideration to meet required design loadings. Design loads are usually specified, however if unsure BS 6399 and BS 6180 are good reference documents.

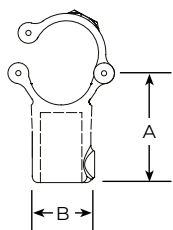
The loading capacity of any guardrail structure is determined principally by the diameter, thickness and frequency of its Uprights. The table below contains our recommendations to safely meet the stated design loads based on the maximum permissible bending moment of the Upright tube.

**TABLE 3**

| LENGTH (m)         | TUBE Ø                       |              |              |              |              |              |
|--------------------|------------------------------|--------------|--------------|--------------|--------------|--------------|
|                    | 33.7 x 3.2mm                 | 42.4 x 3.2mm | 42.4 x 4.0mm | 48.3 x 3.2mm | 48.3 x 4.0mm | 48.3 x 5.0mm |
| Design Load        | Maximum upright centres (mm) |              |              |              |              |              |
| <b>900mm high</b>  |                              |              |              |              |              |              |
| 360 N/m            | 814                          | 1369         | 1595         | 1828         | 2584         | 3052         |
| 740 N/m            | 396                          | 666          | 776          | 889          | 1257         | 2229         |
| 1500 N/m           | 195                          | 329          | 383          | 439          | 620          | 1100         |
| <b>1000mm high</b> |                              |              |              |              |              |              |
| 360 N/m            | 732                          | 1232         | 1435         | 1645         | 2326         | 2930         |
| 740 N/m            | 356                          | 599          | 698          | 800          | 1131         | 2006         |
| 1500 N/m           | 176                          | 296          | 345          | 395          | 558          | 990          |
| <b>1100mm high</b> |                              |              |              |              |              |              |
| 360 N/m            | 666                          | 1120         | 1305         | 1496         | 2114         | 2778         |
| 740 N/m            | 324                          | 545          | 635          | 728          | 1028         | 1824         |
| 1500 N/m           | 160                          | 269          | 313          | 359          | 507          | 900          |

Grade: BS EN 10255 (ISO 65)  
Rails need only be 3.2mm thick and the same diameter as the Upright.

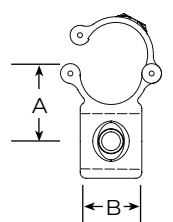
## CA03.101 Add On Short Tee



The Add On short Tee allows existing structures to be added to without the need for any dismantling. Tubes must not be jointed within this fitting.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.101.032.000 | 42.4      | 60 | 55 | 0.60 |
| 16.101.040.000 | 48.3      | 68 | 60 | 0.71 |

## CA40.161 Add On 90° Crossover

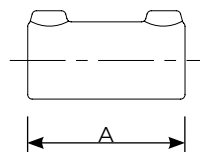


The Add On 90° Crossover allows existing structures to be added to without the need for any dismantling. This fitting is designed to give a 90° offset crossover joint.

Tubes must not be joined within this fitting.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.161.032.000 | 42.4      | 49 | 46 | 0.65 |
| 16.161.040.000 | 48.3      | 55 | 50 | 0.73 |

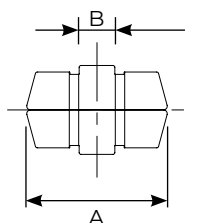
## C00.149 Sleeve Joint



The Sleeve Joint is designed to provide an in-line joint between two tubes of the same diameter.

| Type           | Tube size | A   | Kg   |
|----------------|-----------|-----|------|
| 16.149.020.000 | 26.9      | 76  | 0.33 |
| 16.149.025.000 | 33.7      | 89  | 0.39 |
| 16.149.032.000 | 42.4      | 102 | 0.50 |
| 16.149.040.000 | 48.3      | 100 | 0.55 |
| 16.149.050.000 | 60.3      | 120 | 1.14 |

## C01.150 Expanding Connector



The expanding connector is designed to provide an in line joint between tubes of the same diameter, and a wall thickness of 3.2mm. It fits flush with the tube surface and can be located inside other fittings.

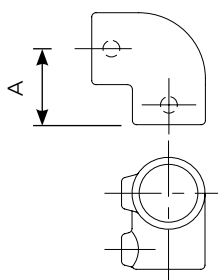


### WARNING!

Inline internal connector for joining two tubes together. Only medium gauge 3.2mm wall thick tube can be used. The 150 should never be used as a load bearing joint. The 150 must be used within 100mm of an upright.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.150.025.000 | 33.7      | 75 | 19 | 0.18 |
| 16.150.032.000 | 42.4      | 75 | 19 | 0.27 |
| 16.150.040.000 | 48.3      | 75 | 19 | 0.35 |

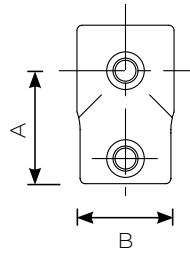
## C02.125 90° Elbow



The 90° Elbow is designed to provide a joint between two tubes at right angles to each other. Often used for railing ends and corners.

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.125.020.000 | 26.9      | 40 | 0.24 |
| 16.125.025.000 | 33.7      | 48 | 0.39 |
| 16.125.032.000 | 42.4      | 60 | 0.53 |
| 16.125.040.000 | 48.3      | 67 | 0.68 |
| 16.125.050.000 | 60.3      | 86 | 1.53 |

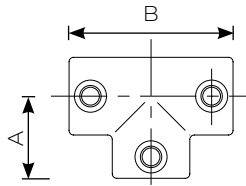
## C03.101 Short Tee



The Short Tee is designed to provide a butt joint between two tubes at right angles to each other. Often used for railing ends and tops. If tubes need to be joined inside the fitting then a C04G type should be used.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.101.020.000 | 26.9      | 40 | 38 | 0.21 |
| 16.101.025.000 | 33.7      | 48 | 45 | 0.35 |
| 16.101.032.000 | 42.4      | 60 | 54 | 0.44 |
| 16.101.040.000 | 48.3      | 67 | 60 | 0.56 |
| 16.101.050.000 | 60.3      | 86 | 71 | 0.76 |

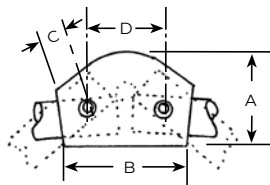
## C04.104 Long Tee



The Long Tee is designed to provide a butt joint between two tubes at right angles to each other. Often used for railing ends and tops. It allows the through tube to be joined inside the fitting. An alternative is the C03G type fitting.

| Type           | Tube size | A  | B   | Kg   |
|----------------|-----------|----|-----|------|
| 16.104.020.000 | 26.9      | 40 | 80  | 0.35 |
| 16.104.025.000 | 33.7      | 48 | 96  | 0.52 |
| 16.104.032.000 | 42.4      | 60 | 122 | 0.77 |
| 16.104.040.000 | 48.3      | 67 | 134 | 0.88 |
| 16.104.050.000 | 60.3      | 86 | 172 | 1.33 |

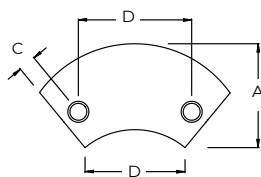
## C05.104 Variable Elbow (15° to 60°)



The Variable Elbow is designed to make joints at an angle of between 15° and 60°.

| Type           | Tube size | A  | B  | C  | D  | Kg   |
|----------------|-----------|----|----|----|----|------|
| 16.104.025.000 | 33.7      | 65 | 60 | 13 | 50 | 0.43 |
| 16.104.032.000 | 42.4      | 80 | 66 | 16 | 55 | 0.66 |
| 16.104.040.000 | 48.3      | 95 | 75 | 17 | 55 | 0.91 |

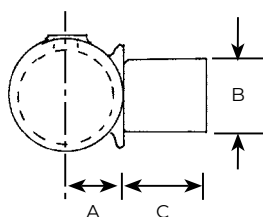
## C05A.124 Variable Elbow (11° to 30°)



The variable elbow is designed to make joints at an angle of between 11° & 30°.

| Type            | Tube size | A  | B  | C  | D   | Kg   |
|-----------------|-----------|----|----|----|-----|------|
| 16.A124.032.000 | 42.4      | 84 | 84 | 16 | 92  | 0.82 |
| 16.A124.040.000 | 48.3      | 94 | 94 | 16 | 102 | 1.01 |

## C06.147 Internal T Joint

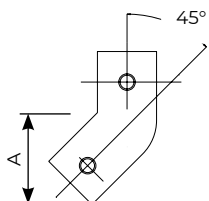


The Internal T joint is designed to provide an angled joint between a tube and a Flocon fitting when used in conjunction with C02G and C03G type fittings. Often used for railing tops and midrails to accommodate a slope as offset railing.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.147.025.000 | 33.7      | 23 | 33 | 34 | 0.33 |
| 16.147.032.000 | 42.4      | 29 | 42 | 40 | 0.54 |
| 16.147.040.000 | 48.3      | 31 | 48 | 44 | 0.68 |

# FIXED FITTINGS

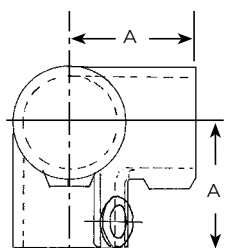
## C07.184 45° Tee



The 45° Tee is used as a bracing and strut component for strengthening structures.

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.184.025.000 | 33.7      | 45 | 0.38 |
| 16.184.032.000 | 42.4      | 54 | 0.63 |
| 16.184.040.000 | 48.3      | 60 | 0.83 |

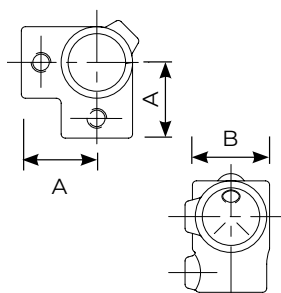
## C20.128 3 Way 90° Elbow



The 3 way 90° Elbow is designed to provide a neat corner for the upper rail of guardrail or frames.

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.128.020.000 | 26.9      | 40 | 0.37 |
| 16.128.025.000 | 33.7      | 48 | 0.51 |
| 16.128.032.000 | 42.4      | 60 | 0.8  |
| 16.128.040.000 | 48.3      | 67 | 0.97 |
| 16.128.050.000 | 60.3      | 84 | 1.82 |

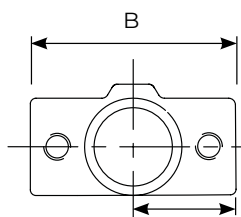
## C21.116 Corner c/w Through Tube



The Corner Complete with through tube is designed to provide a 90° corner for the intermediate rail of guardrail or frames.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.116.020.000 | 26.9      | 40 | 38 | 0.21 |
| 16.116.025.000 | 33.7      | 48 | 45 | 0.39 |
| 16.116.032.000 | 42.4      | 60 | 54 | 0.58 |
| 16.116.040.000 | 48.3      | 67 | 60 | 0.69 |
| 16.116.050.000 | 60.3      | 86 | 71 | 1.1  |

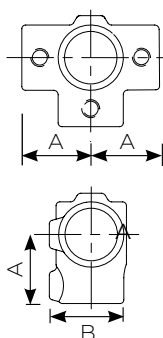
## C22.119 Two Socket Cross



The Two Socket Cross fitting provides the midrail joint for handrail and other structures. It is recommended that the handrail post is continuous through the fitting.

| Type           | Tube size | A  | B   | Kg   |
|----------------|-----------|----|-----|------|
| 16.119.020.000 | 26.9      | 40 | 80  | 0.28 |
| 16.119.025.000 | 33.7      | 48 | 95  | 0.39 |
| 16.119.032.000 | 42.4      | 60 | 120 | 0.57 |
| 16.119.040.000 | 48.3      | 67 | 134 | 0.65 |
| 16.119.050.000 | 60.3      | 86 | 172 | 1.26 |

## C23.176 Side Outlet Tee

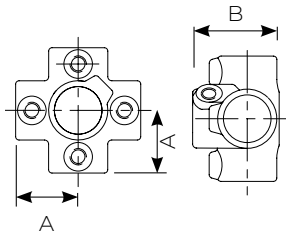


The Side Outlet Tee fitting provides a three way midrail joint for handrail and other structures. It is recommended that the handrail post is continuous through the fitting.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.176.020.000 | 26.9      | 40 | 38 | 0.32 |
| 16.176.025.000 | 33.7      | 48 | 45 | 0.55 |
| 16.176.032.000 | 42.4      | 60 | 54 | 0.83 |
| 16.176.040.000 | 48.3      | 66 | 60 | 0.84 |
| 16.176.050.000 | 60.3      | 86 | 71 | 1.48 |



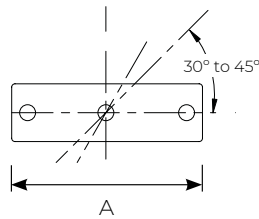
## C24.158 4 Way Cross + Central Tube



The 4 Way Cross fitting provides a four way midrail joint for handrail and other structures. It is recommended that the handrail post is continuous through the fitting. This fitting may also be used for the top rail with the centre post capped with a C65 Plastic Stop End.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.158.020.000 | 26.9      | 41 | 59 | 0.43 |
| 16.158.025.000 | 33.7      | 48 | 65 | 0.75 |
| 16.158.032.000 | 42.4      | 60 | 80 | 1.14 |
| 16.158.040.000 | 48.3      | 67 | 85 | 1.19 |
| 16.158.050.000 | 60.3      | 86 | 90 | 2.12 |

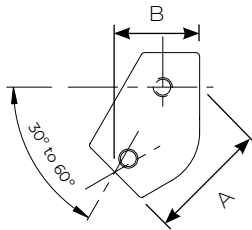
## C28.130 Adjustable 2 Socket Cross (30° to 45°)



The Adjustable 2 Socket Cross fitting will accommodate any rake angle from 30° to 45°. This fitting is not recommended as the top fitting on a guardrail or balustrade system, use the C29 Adjustable Short Tee.

| Type           | Tube size | A   | Kg   |
|----------------|-----------|-----|------|
| 16.130.025.000 | 33.7      | 162 | 0.71 |
| 16.130.032.000 | 42.4      | 190 | 1.12 |
| 16.130.040.000 | 48.3      | 218 | 1.38 |

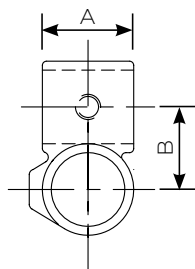
## C29.129 Adjustable Short Tee (30° to 60°)



The Adjustable Short Tee fitting will accommodate any rake angle from 30° to 60°. This fitting is commonly used for the top rail of handrail to accommodate the rake angle on slopes. It can also be used for any Tee Joint to make at an angle of between 30° and 60° for light weight structures.

| Type           | Tube size | A   | B   | Kg   |
|----------------|-----------|-----|-----|------|
| 16.129.025.000 | 33.7      | 74  | 54  | 0.47 |
| 16.129.032.000 | 42.4      | 85  | 63  | 0.63 |
| 16.129.040.000 | 48.3      | 102 | 108 | 0.78 |

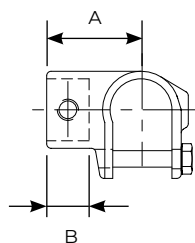
## C40.161 90° Crossover



The 90° Crossover connects two rails at 90° to each other and is often used for the handrailing when continuous standard lengths of tube are used. Please note that tube joints should use the C00 or C01 type fitting, and not the C40 type fitting.

| Type           | Tube size   | A  | B  | Kg   |
|----------------|-------------|----|----|------|
| 16.161.020.000 | 26.9        | 36 | 35 | 0.22 |
| 16.161.025.000 | 33.7        | 40 | 40 | 0.34 |
| 16.161.032.000 | 42.4        | 49 | 49 | 0.41 |
| 16.161.040.000 | 48.3        | 55 | 55 | 0.57 |
| 16.161.050.000 | 60.3        | 61 | 64 | 0.82 |
| 16.161.025.032 | 33.7 / 42.4 | 45 | 45 | 0.46 |
| 16.161.025.040 | 33.7 / 48.3 | 51 | 48 | 0.57 |
| 16.161.032.040 | 42.2 / 48.3 | 51 | 52 | 0.59 |

## C41.135 Clamp on Tee

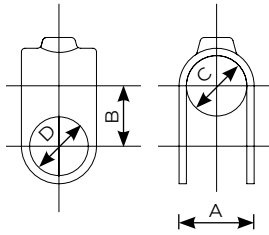


The Clamp on Tee is designed to allow a new tube to be joined to an existing structure. Torque maximum 15Nm. This uses a M10 stainless steel bolt.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.135.020.000 | 26.9      | 50 | 25 | 0.28 |
| 16.135.025.000 | 33.7      | 53 | 25 | 0.45 |
| 16.135.032.000 | 42.4      | 67 | 35 | 0.61 |
| 16.135.040.000 | 48.3      | 77 | 35 | 0.79 |
| 16.135.050.000 | 60.3      | 90 | 45 | 0.97 |

# FIXED FITTINGS

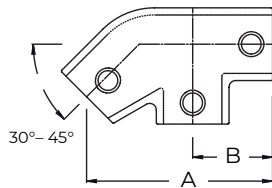
## C42.160 Clamp on Crossover



The Clamp on Crossover is designed to allow a new tube to be joined to an existing structure.

| Type           | Tube size | A  | B  | C  | D  | Kg   |
|----------------|-----------|----|----|----|----|------|
| 16.160.040.000 | 26.9      | 37 | 28 | 27 | 27 | 0.15 |
| 16.160.025.000 | 33.7      | 44 | 34 | 34 | 34 | 0.27 |
| 16.160.032.000 | 42.4      | 53 | 43 | 43 | 43 | 0.47 |
| 16.160.040.000 | 48.3      | 58 | 49 | 49 | 49 | 0.54 |
| 16.160.050.000 | 60.3      | 70 | 62 | 61 | 61 | 0.74 |

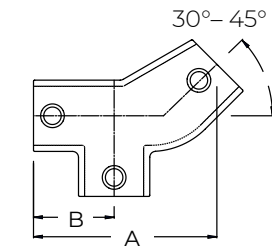
## C041.204 Level to Sloping Down Tee (30° to 45°)



Used to form a Tee on handrails where the rail changes from level to sloping down the stairs. Adjustable between 30° & 45°.

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.204.032.000 | 42.4      | 142 | 60 | 1.02 |
| 16.204.040.000 | 48.3      | 154 | 68 | 1.12 |

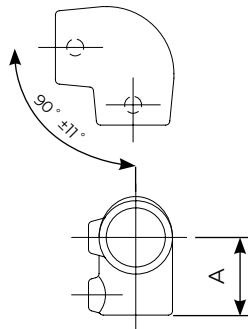
## C042.A204 Level to Sloping Up Tee (30° to 45°)



Used to form a Tee on handrails where the rail changes from level to sloping up the stairs. Adjustable between 30° & 45°.

| Type            | Tube size | A   | B  | Kg   |
|-----------------|-----------|-----|----|------|
| 16.A204.032.000 | 42.4      | 142 | 60 | 1.02 |
| 16.A204.040.000 | 48.3      | 154 | 68 | 1.12 |

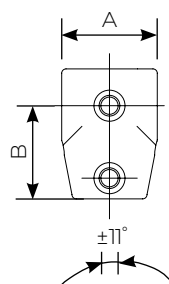
## C50.154 Slope Elbow (0° to 11°)



The Slope Elbow is designed to provide an elbow for use on ramps. The variable angle allows the fitting to accommodate slopes up to 11°.

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.154.032.000 | 42.4      | 60 | 0.81 |
| 16.154.040.000 | 48.3      | 67 | 1.02 |

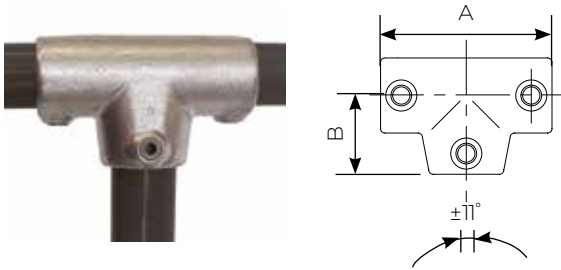
## C51.153 Short Slope Tee (0° to 11°)



The Slope Short Tee is designed to provide a T joint between two tubes for use on ramps. The variable angle allows the fitting to accommodate slopes up to 11°.

| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.153.032.000 | 42.4      | 68 | 60 | 0.57 |
| 16.153.040.000 | 48.3      | 72 | 68 | 0.76 |

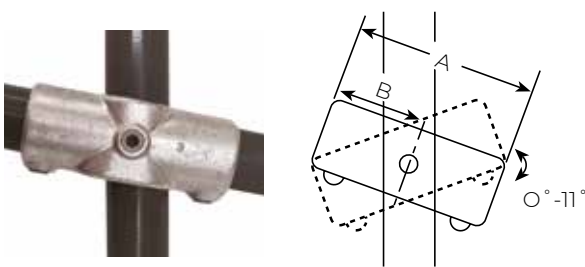
## C52.155 Long Slope Tee (0° to 11°)



The Slope Long Tee is designed to provide a T joint between two tubes for use on ramps. The variable angle allows the fitting to accommodate slopes up to 11°.

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.155.032.000 | 42.2      | 144 | 60 | 1.06 |
| 16.155.040.000 | 48.3      | 158 | 67 | 1.10 |

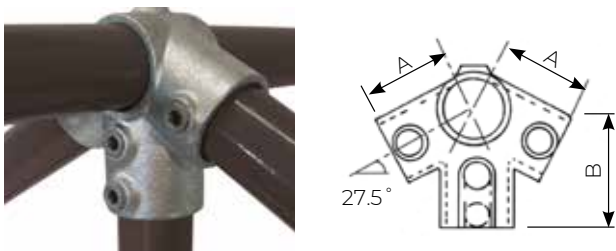
## C54.156 Slope 2 Socket Cross (0° to 11°)



The Slope 2 Socket Cross is designed to provide a joint for the midrail for use on ramps. The variable angle allows the fitting to accommodate slopes up to 11°.

| Type           | Tube size | A   | Kg   |
|----------------|-----------|-----|------|
| 16.156.032.000 | 42.4      | 144 | 0.97 |
| 16.156.040.000 | 48.3      | 158 | 1    |

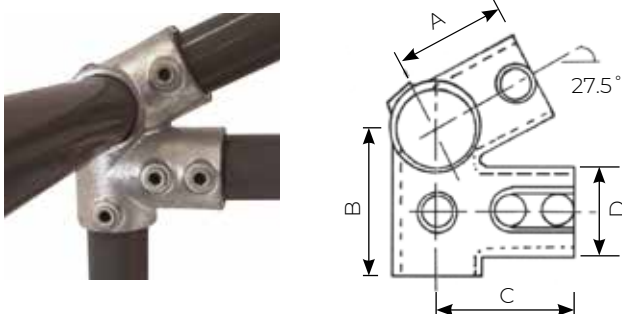
## C55.191 27½° Ridge Fitting



A four way socket fitting used to construct the ridge of a roof structure.

| Type           | Tube size | A  | B  | Kg |
|----------------|-----------|----|----|----|
| 16.191.040.000 | 48.3      | 67 | 89 | 1  |

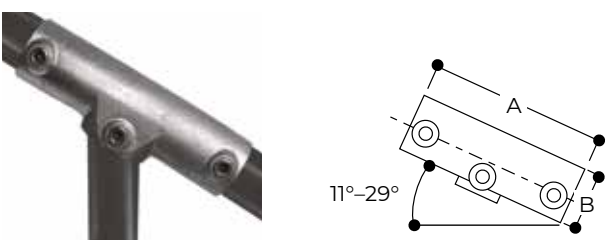
## C56.185 27½° Eaves Fitting



A four way socket fitting used to construct the eaves of a roof structure.

| Type           | Tube size | A  | B  | C  | D  | Kg   |
|----------------|-----------|----|----|----|----|------|
| 16.185.040.000 | 48.3      | 67 | 89 | 83 | 51 | 1.16 |

## C57.177 Three Socket Tee (11° to 30°)

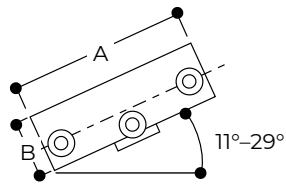


Similar to a type C27, it is used on Safety Railing with slopes between 11°-30° and fixes the top rail to a vertical intermediate upright. Unlike the type C27 these components are ex-stock and do not require machining.

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.177.032.000 | 42.4      | 180 | 35 | 1.16 |
| 16.177.040.000 | 48.3      | 216 | 40 | 1.46 |

# FIXED FITTINGS

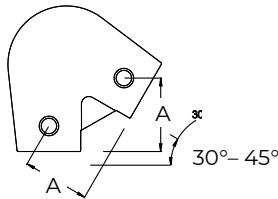
## C58.178 Two Socket Cross (11° to 30°)



Similar to a type C26, it is used on Safety Railing with slopes between 11°-30° and fixes the mid rail to a vertical intermediate upright. Unlike the type C26 these components are ex stock and do not require machining.

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.178.032.000 | 42.4      | 180 | 55 | 0.97 |
| 16.178.040.000 | 48.3      | 216 | 60 | 1.26 |

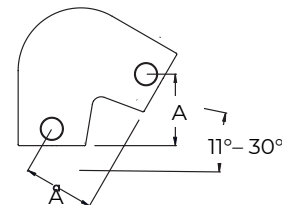
## C72.122 Acute Angle Elbow (30° to 45°)



Used when a junction between a sloping tube and an end post is required i.e. guardrail on staircases between 30° & 45°

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.122.032.000 | 42.4      | 59 | 0.98 |
| 16.122.040.000 | 48.3      | 68 | 1.45 |

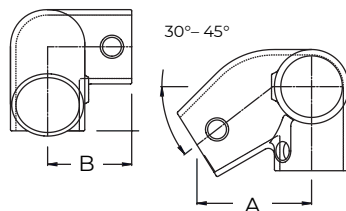
## C72A.A122 Acute Angle Elbow (11° to 30°)



The C72A is used as an alternative to bending, or when a junction between a sloping tube and an end post is required i.e. guardrail on staircases between 11° & 30°

| Type            | Tube size | A  | Kg   |
|-----------------|-----------|----|------|
| 16.A122.032.000 | 42.4      | 58 | 0.94 |
| 16.A122.040.000 | 48.3      | 63 | 1.12 |

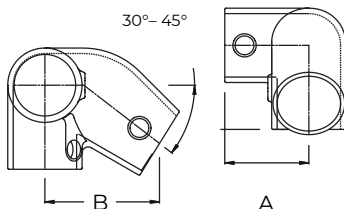
## C201LH.C201 Left Hand Level to sloping down side outlet elbow (30° to 45°)



Used to form a Left Hand Side Outlet Elbow on handrails where the top rail changes from level to sloping down the stairs. Adjustable between 30° & 45°

| Type            | Tube size | A  | B  | Kg   |
|-----------------|-----------|----|----|------|
| 16.C201.LH0.032 | 42.4      | 86 | 60 | 1.08 |
| 16.C201.LH0.040 | 48.3      | 93 | 68 | 1.28 |

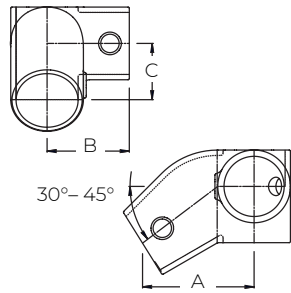
## C201RH.C201 Right Hand Level to sloping down side outlet elbow (30° to 45°)



Used to form a Right Hand Side Outlet Elbow on handrails where the top rail changes from level to sloping down the stairs. Adjustable between 30° & 45°

| Type            | Tube size | A  | B  | Kg   |
|-----------------|-----------|----|----|------|
| 16.C201.RH0.032 | 42.4      | 86 | 60 | 1.08 |
| 16.C201.RH0.040 | 48.3      | 93 | 68 | 1.28 |

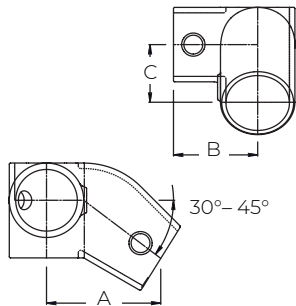
## C211LH.C211 Left Hand Level to sloping down side outlet tee (30° to 45°)



Used to form a Left Hand Side Outlet Tee on handrails where the mid rail changes from level to sloping down the stairs. Adjustable between 30° & 45°

| Type            | Tube size | A  | B  | C  | Kg   |
|-----------------|-----------|----|----|----|------|
| 16.C211.LHO.032 | 42.4      | 86 | 60 | 42 | 0.96 |
| 16.C211.LHO.040 | 48.3      | 92 | 68 | 47 | 1.12 |

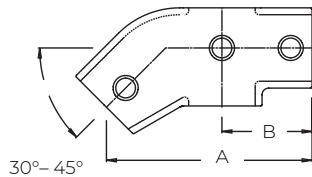
## C211RH.C211 Right Hand Level to sloping down side outlet tee (30° to 45°)



Used to form a Right hand Side Outlet Tee on hand-rails where the mid rail changes from level to sloping down the stairs. Adjustable between 30° & 45°

| Type            | Tube size | A  | B  | C  | Kg   |
|-----------------|-----------|----|----|----|------|
| 16.C211.RHO.032 | 42.4      | 86 | 60 | 42 | 0.92 |
| 16.C211.RHO.040 | 48.3      | 92 | 68 | 47 | 1.12 |

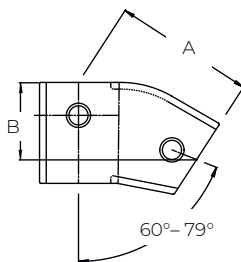
## C221.219 Level to Sloping Down / Up Cross (30° to 45°)



Used to form a cross on handrails where the mid rail changes from either level to sloping down or level to sloping up the stairs. Adjustable between 30° & 45°

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.219.032.000 | 42.4      | 142 | 60 | 0.82 |
| 16.129.040.000 | 48.3      | 154 | 68 | 0.95 |

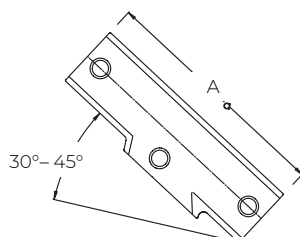
## C229.229 Single Socket Tee (11° to 30°)



The adjustable Short Tee fitting will accommodate any rake angle from 11° to 30°. It can be used for any Tee Joint to make an angle of between 11° & 30°.

| Type           | Tube size | A   | B  | Kg   |
|----------------|-----------|-----|----|------|
| 16.229.032.000 | 42.4      | 99  | 54 | 0.73 |
| 16.229.040.000 | 48.3      | 109 | 59 | 0.86 |

## C245.277 Three Socket Tee (30° to 45°)

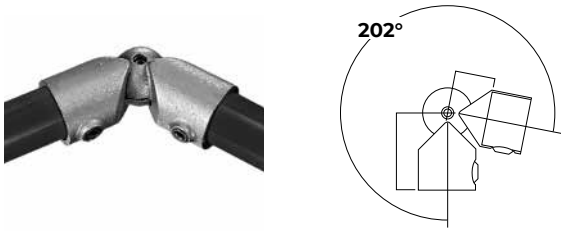


This fitting is used on Safety Railing with slopes between 30° & 45° and fixes the top rail to a vertical intermediate upright

| Type           | Tube size | A   | Kg   |
|----------------|-----------|-----|------|
| 16.277.032.000 | 42.4      | 180 | 0.95 |
| 16.277.040.000 | 48.3      | 216 | 1.22 |

# SWIVEL FITTINGS

## BC05.166 Swivel Elbow



Type BC05 fitting has been designed as a variable angle in-line connection, adjustable through 202°.

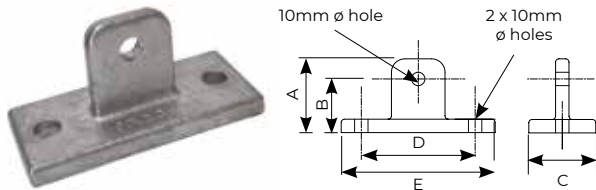
| Type           | Tube size | A  | B  | Kg   |
|----------------|-----------|----|----|------|
| 16.166.025.000 | 33.7      | 60 | 33 | 0.51 |
| 16.166.032.000 | 42.4      | 73 | 36 | 0.81 |
| 16.166.040.000 | 48.3      | 83 | 45 | 1.14 |



### WARNING!

An entire structure should not be constructed from Type BC05 or any other swivel fitting, as these would not provide sufficient stability or rigidity in the structure due to the free rotation of the fitting.

## C10G.169M Swivel Base



Designed to provide a base fixing. It is usually used in conjunction with a C36G type fitting to make a C46G type base swivel combination.

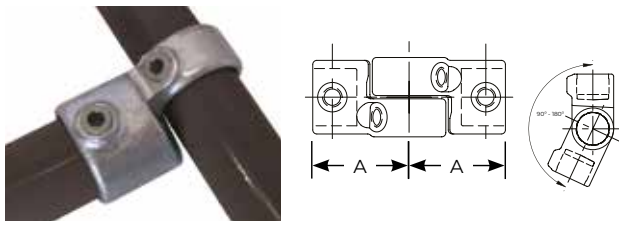
| Type            | A  | B  | C  | D  | E   | Kg   |
|-----------------|----|----|----|----|-----|------|
| 16.169M.000.000 | 50 | 40 | 50 | 81 | 111 | 0.51 |



### WARNING!

This fitting does not provide sufficient rigidity to be used as a railing base without other means of support.

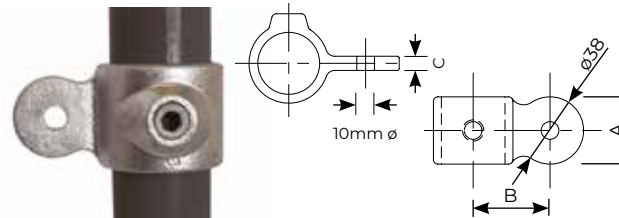
## C25.148 Short Tee Swivel (Normally used in pairs)



Normally used in pairs for corner angles of 90° to 180°. Also used on staircases with C02 & C03 fittings along with a short piece of tube and a C65 Plastic End Cap in landing areas. When ordering please specify the number of fittings required, not the number of pairs.

| Type           | Tube size | A   | Kg   |
|----------------|-----------|-----|------|
| 16.148.020.000 | 26.9      | 65  | 0.31 |
| 16.148.025.000 | 33.7      | 66  | 0.37 |
| 16.148.032.000 | 42.4      | 73  | 0.48 |
| 16.148.040.000 | 48.3      | 81  | 0.49 |
| 16.148.050.000 | 60.3      | 110 | 0.85 |

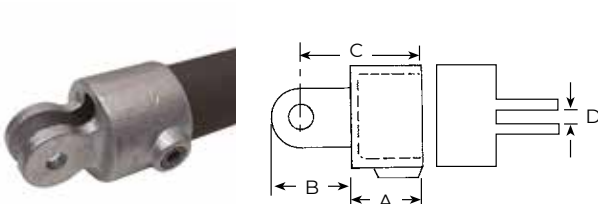
## C35.173M Male Through Swivel



Can be used on its own for use with a shackle and chain or with the C36 female swivel to mount rails at any angle for slopes. It can also be used for attaching flat sheets or boards to a structure and is available assembled with the C36 fittings as a C45 single swivel combination.

| Type            | Tube size | A  | B  | C | Kg   |
|-----------------|-----------|----|----|---|------|
| 16.173M.020.000 | 26.9      | 32 | 38 | 8 | 0.15 |
| 16.173M.025.000 | 33.7      | 32 | 42 | 8 | 0.20 |
| 16.173M.032.000 | 42.4      | 32 | 47 | 8 | 0.21 |
| 16.173M.040.000 | 48.3      | 32 | 50 | 8 | 0.24 |
| 16.173M.050.000 | 60.3      | 48 | 60 | 8 | 0.47 |

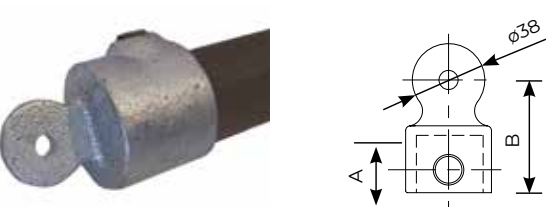
## C36F.173F Female End Swivel



The Female Swivel is designed as part of the swivel combination group of fittings. It can be used with the C10, C35, C37, C38 or C36M male swivel fittings.

| Type            | Tube size | A  | B  | C  | D  | Kg   |
|-----------------|-----------|----|----|----|----|------|
| 16.173F.020.000 | 26.9      | 39 | 35 | 53 | 10 | 0.24 |
| 16.173F.025.000 | 33.7      | 41 | 35 | 60 | 10 | 0.33 |
| 16.173F.032.000 | 42.4      | 44 | 35 | 63 | 10 | 0.38 |
| 16.173F.040.000 | 48.3      | 50 | 35 | 70 | 10 | 0.46 |
| 16.173F.050.000 | 60.3      | 70 | 40 | 95 | 10 | 0.84 |

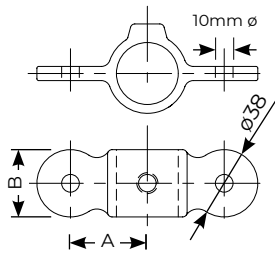
## C36M Male End Swivel



The Male Swivel is designed as part of the swivel combination group of fittings. It can be used with C36F fittings.

| Type            | Tube size | A  | B  | Kg   |
|-----------------|-----------|----|----|------|
| 16.C36M.025.000 | 33.7      | 30 | 60 | 0.28 |
| 16.C36M.032.000 | 42.4      | 40 | 70 | 0.40 |
| 16.C36M.040.000 | 48.3      | 45 | 75 | 0.44 |

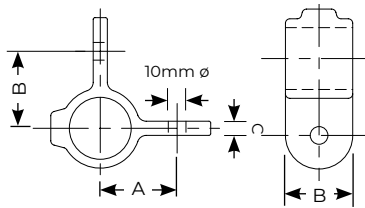
## C37.167M Double Male Swivel



The Double Male Swivel is designed as part of the swivel combination group of fittings. It can be used with two C36 female swivel fittings. The double swivel combination is also available assembled as a type C47 fitting.

| Type            | Tube size | A  | B  | Kg   |
|-----------------|-----------|----|----|------|
| 16.167M.020.000 | 26.9      | 40 | 32 | 0.21 |
| 16.167M.025.000 | 33.7      | 44 | 32 | 0.28 |
| 16.167M.032.000 | 42.4      | 49 | 32 | 0.32 |
| 16.167M.040.000 | 48.3      | 52 | 32 | 0.46 |
| 16.167M.050.000 | 60.3      | 63 | 50 | 0.51 |

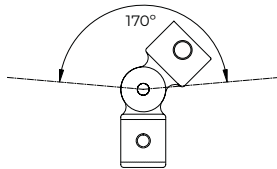
## C38.168M 90° Corner Male Swivel



The 90° Corner Male Swivel is designed as part of the swivel combination group of fittings. It can be used with two C36 female swivel fittings to make a corner combination fitting which is also available assembled as a type C48 type fitting.

| Type            | Tube size | A  | B  | C | Kg   |
|-----------------|-----------|----|----|---|------|
| 16.168M.020.000 | 26.9      | 40 | 39 | 8 | 0.22 |
| 16.168M.025.000 | 33.7      | 44 | 38 | 8 | 0.34 |
| 16.168M.032.000 | 42.4      | 49 | 48 | 8 | 0.39 |
| 16.168M.040.000 | 48.3      | 53 | 48 | 8 | 0.47 |

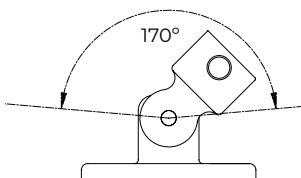
## C45.173 Single Swivel Combination



The Single Swivel Combination is designed to provide an angled tee between two tubes. It can be used to construct sloping handrail and for providing bracing struts to structures.

| Type           | Tube size | Kg   |
|----------------|-----------|------|
| 16.173.020.000 | 26.9      | 0.42 |
| 16.173.025.000 | 33.7      | 0.55 |
| 16.173.032.000 | 42.4      | 0.62 |
| 16.173.040.000 | 48.3      | 0.73 |
| 16.173.050.000 | 60.3      | 1.34 |

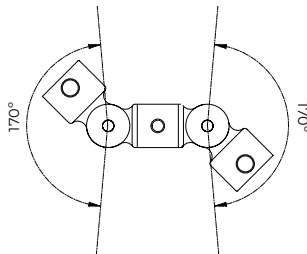
## C46.169 Base Swivel Combination



The Base Swivel Combination is designed to provide an angled wall or floor mounting. This fitting should not be used as a railing base without suitable support.

| Type           | Tube size | Kg   |
|----------------|-----------|------|
| 16.169.020.000 | 26.9      | 0.62 |
| 16.169.025.000 | 33.7      | 0.87 |
| 16.169.032.000 | 42.4      | 0.81 |
| 16.169.040.000 | 48.3      | 0.85 |
| 16.169.050.000 | 60.3      | 0.96 |

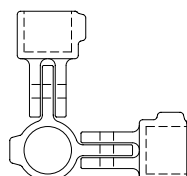
## C47.167 Double Swivel Combination



The Double Swivel Combination is designed to provide an in line angled joint as a post, this is suitable for the mid rail of a sloping handrail or to provide bracing to a structure.

| Type           | Tube size | Kg   |
|----------------|-----------|------|
| 16.167.020.000 | 26.9      | 0.78 |
| 16.167.025.000 | 33.7      | 0.99 |
| 16.167.032.000 | 42.4      | 0.81 |
| 16.167.040.000 | 48.3      | 1.32 |
| 16.167.050.000 | 60.3      | 2.5  |

## C48.168 90° Corner Swivel Combination

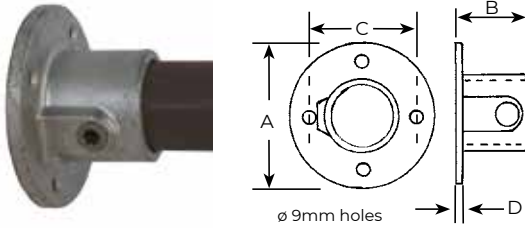


The 90° Corner Swivel Combination is designed to provide an angled joint at a post, this is suitable for the mid rail of sloping handrail or to provide bracing to a structure.

| Type           | Tube size | Kg   |
|----------------|-----------|------|
| 16.168.020.000 | 26.9      | 0.75 |
| 16.168.025.000 | 33.7      | 1.0  |
| 16.168.032.000 | 42.4      | 1.12 |
| 16.168.040.000 | 48.3      | 1.46 |

# FIXINGS & ANCILLARIES

## C11.131 Wall Flange

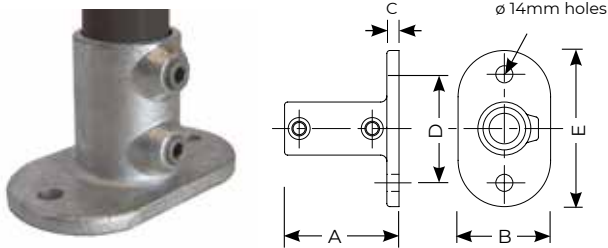


The Wall Flange is designed to provide a positional wall or base fixing.

It is not recommended to use this fitting as a structural railing base.

| Type           | Tube size | A   | B  | C  | D | Kg   |
|----------------|-----------|-----|----|----|---|------|
| 16.131.020.000 | 26.9      | 86  | 42 | 57 | 4 | 0.35 |
| 16.131.025.000 | 33.7      | 89  | 45 | 64 | 6 | 0.39 |
| 16.131.032.000 | 42.4      | 102 | 50 | 76 | 6 | 0.5  |
| 16.131.040.000 | 48.3      | 114 | 57 | 89 | 6 | 0.65 |
| 16.131.050.000 | 60.3      | 127 | 64 | 95 | 6 | 1.1  |

## C12.132 Railing Base Flange



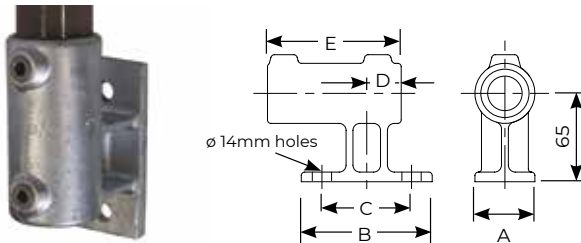
The Railing Base is designed to provide a base for railings and other structures.

Recommended this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.

| Type           | Tube size | A   | B   | C  | D   | E   | Kg   |
|----------------|-----------|-----|-----|----|-----|-----|------|
| 16.132.020.000 | 26.9      | 76  | 65  | 8  | 76  | 114 | 0.60 |
| 16.132.025.000 | 33.7      | 89  | 76  | 9  | 89  | 128 | 0.91 |
| 16.132.032.000 | 42.4      | 89  | 80  | 10 | 102 | 140 | 1.03 |
| 16.132.040.000 | 48.3      | 89  | 89  | 10 | 114 | 152 | 1.24 |
| 16.132.050.000 | 60.3*     | 128 | 128 | 9  | 127 | 165 | 1.89 |

\* Has  $\varnothing$  18mm holes

## C13.144 Railing Vertical Side Support

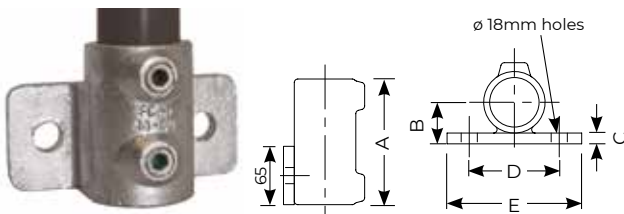


Designed to provide a base for railings and other structures that need a side mounted fixing.

| Type           | Tube size | A  | B   | C  | D  | E   | Kg   |
|----------------|-----------|----|-----|----|----|-----|------|
| 16.144.025.000 | 33.7      | 45 | 96  | 67 | 28 | 104 | 0.6  |
| 16.144.032.000 | 42.4      | 50 | 109 | 78 | 30 | 114 | 0.91 |
| 16.144.040.000 | 48.3      | 60 | 123 | 86 | 34 | 120 | 1.03 |

Recommended this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.

## C14.145 Railing Horizontal Side Support

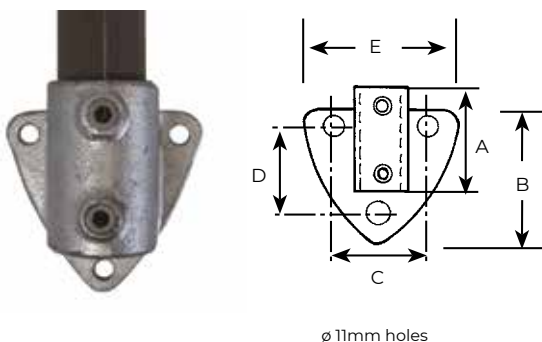


Designed to provide a base for railings and other structures that need a side mounted fixing.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.145.025.000 | 33.7      | 90 | 30 | 12 | 1.08 |
| 16.145.032.000 | 42.4      | 90 | 35 | 12 | 1.32 |
| 16.145.040.000 | 48.3      | 90 | 41 | 15 | 1.67 |

Recommended this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.

## C15.146 Side Palm Fixing



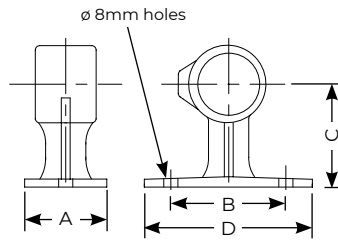
Designed to provide a base for railings and other structures that need a side mounted fixing.

| Type           | Tube size | A  | B   | C  | D  | E   | Kg   |
|----------------|-----------|----|-----|----|----|-----|------|
| 16.146.025.000 | 33.7      | 76 | 89  | 71 | 63 | 97  | 0.63 |
| 16.146.032.000 | 42.4      | 84 | 98  | 82 | 72 | 108 | 0.80 |
| 16.146.040.000 | 48.3      | 92 | 104 | 86 | 78 | 112 | 0.84 |

Recommended this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.



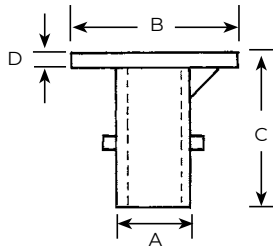
## C16.143 Handrail Bracket



The Handrail Bracket is designed to secure handrail tube to a wall. It can also be used on top of walls as a fixing for a low rail.

| Type           | Tube size | A  | B  | C  | D   | Kg   |
|----------------|-----------|----|----|----|-----|------|
| 16.143.020.000 | 26.9      | 44 | 57 | 55 | 78  | 0.36 |
| 16.143.025.000 | 33.7      | 44 | 63 | 57 | 82  | 0.46 |
| 16.143.032.000 | 42.4      | 44 | 76 | 63 | 102 | 0.57 |
| 16.143.040.000 | 48.3      | 48 | 85 | 67 | 108 | 0.62 |

## C17.134 Ground Support

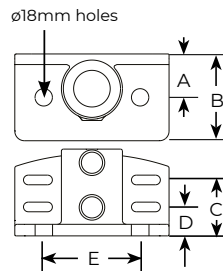


The Ground Socket is designed to provide a base that can be cast into the ground to support a post. The post is removable.

| Type           | Tube size | A  | B   | C   | D   | Kg   |
|----------------|-----------|----|-----|-----|-----|------|
| 16.134.025.000 | 33.7      | 60 | 140 | 130 | 4.5 | 1.42 |
| 16.134.032.000 | 42.4      | 60 | 140 | 130 | 4.5 | 1.42 |
| 16.134.040.000 | 48.3      | 60 | 140 | 130 | 4.5 | 1.42 |

Recommend this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.

## C18.142 Base Flange with Integrated Toeboard

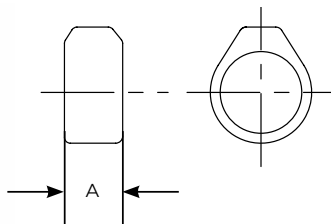


The Base Flange with Integrated Toeboard is ideal for guardrailing and balustrading applications where the addition of a toeboard is required. The side plates have slotted holes to allow for a degree of sideways movement for ease of installation.

| Type           | Tube size | A  | B  | C  | D  | E   | Kg   |
|----------------|-----------|----|----|----|----|-----|------|
| 16.142.032.000 | 42.4      | 45 | 90 | 58 | 30 | 100 | 2.14 |
| 16.142.040.000 | 48.3      | 45 | 90 | 58 | 30 | 100 | 2.28 |

Recommend this fitting be used in accordance with Flocon maximum post centre dimensions, see table 3 on Page 5.

## C30.176 Collar

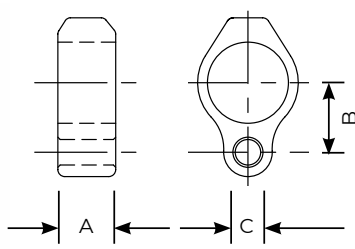


The Collar fitting can be used to support the C03 fitting when the latter is used as a hinge. It can also be used to increase the load capacity of another fitting when used together.

The C30 can be used as a stop for a sliding tube.

| Type           | Tube size | A  | Kg   |
|----------------|-----------|----|------|
| 16.176.020.000 | 26.9      | 22 | 0.08 |
| 16.176.025.000 | 33.7      | 25 | 0.13 |
| 16.176.032.000 | 42.4      | 25 | 0.16 |
| 16.176.040.000 | 48.3      | 25 | 0.18 |
| 16.176.050.000 | 60.3      | 40 | 0.32 |

## C31.138 Gate Eye

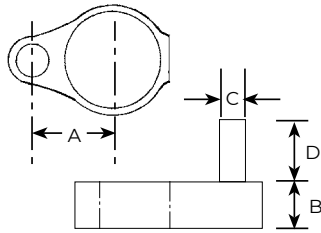


This fitting is designed as a gate eye for light weight gates. If a heavy gate is being used we recommend that C03 and C30 type fittings are used to support the gate.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.138.020.000 | 26.9      | 25 | 30 | 15 | 0.14 |
| 16.138.025.000 | 33.7      | 25 | 33 | 15 | 0.19 |
| 16.138.032.000 | 42.4      | 25 | 38 | 15 | 0.25 |
| 16.138.040.000 | 48.3      | 25 | 41 | 15 | 0.26 |

# FIXINGS & ANCILLARIES

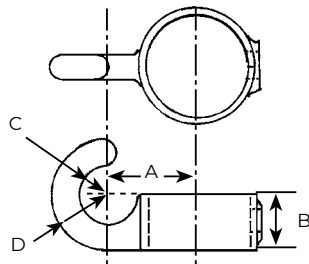
## C32.140 Gate Hinge



This fitting is designed as a gate hinge for light weight gates. If a heavy gate is being used we recommend that C03 and C30 type fittings are used to support the gate.

| Type           | Tube size | A  | B  | C  | D  | Kg   |
|----------------|-----------|----|----|----|----|------|
| 16.140.020.000 | 26.9      | 30 | 25 | 13 | 38 | 0.21 |
| 16.140.025.000 | 33.7      | 33 | 25 | 13 | 38 | 0.27 |
| 16.140.032.000 | 42.4      | 38 | 25 | 13 | 38 | 0.3  |
| 16.140.040.000 | 48.3      | 41 | 25 | 13 | 38 | 0.32 |

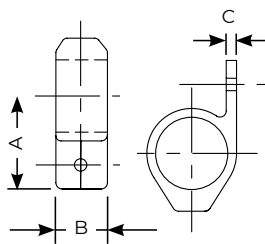
## C33.182 Hook



The fitting is designed to provide an attachment for chains.

| Type           | Tube size | A  | B  | C  | D  | Kg   |
|----------------|-----------|----|----|----|----|------|
| 16.182.020.000 | 26.9      | 32 | 25 | 10 | 25 | 0.17 |
| 16.182.025.000 | 33.7      | 34 | 25 | 13 | 21 | 0.24 |
| 16.182.032.000 | 42.4      | 39 | 25 | 13 | 25 | 0.25 |
| 16.182.040.000 | 48.3      | 41 | 25 | 13 | 25 | 0.3  |

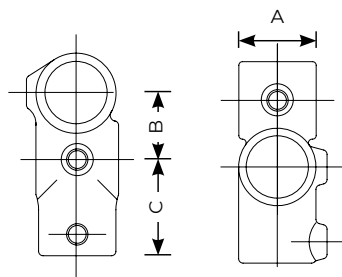
## C34.199 Fixing Pad



The fitting is designed to provide an attachment for flat sheets or board. It may also be used as a gate stop. An alternative fitting for the attachment of boards is the C35 type.

| Type           | Tube size | A  | B  | C | φ  | Kg   |
|----------------|-----------|----|----|---|----|------|
| 16.199.025.000 | 33.7      | 45 | 25 | 5 | 6  | 0.16 |
| 16.199.032.000 | 42.4      | 53 | 40 | 5 | 11 | 0.32 |
| 16.199.040.000 | 48.3      | 56 | 40 | 5 | 11 | 0.35 |

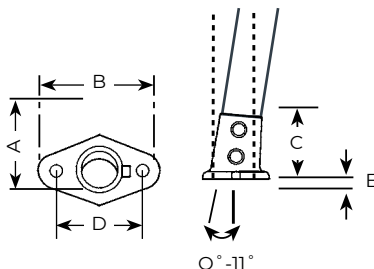
## C43.165 Combination Socket



The Combination Socket is designed for racking and similar systems to allow a crossover to be combined with a cross tie.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.165.020.000 | 26.9      | 31 | 35 | 40 | 0.28 |
| 16.165.025.000 | 33.7      | 42 | 40 | 48 | 0.49 |
| 16.165.032.000 | 42.4      | 54 | 50 | 60 | 0.75 |
| 16.165.040.000 | 48.3      | 60 | 56 | 67 | 0.9  |
| 16.165.050.000 | 60.3      | 72 | 68 | 86 | 1.72 |

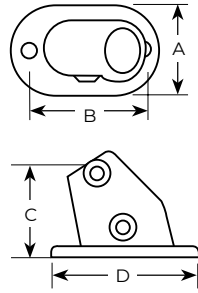
## C53.152 Slope Base (0° to 11°)



The Slope Base is designed to provide a base for use on ramps. The variable angle allows the fitting to accommodate slopes up to 11°.

| Type           | Tube size | A  | B   | C  | D   | E  | Kg  |
|----------------|-----------|----|-----|----|-----|----|-----|
| 16.152.032.000 | 42.2      | 91 | 140 | 79 | 102 | 10 | 0.9 |
| 16.152.040.000 | 48.3      | 96 | 152 | 80 | 114 | 10 | 1.4 |

## C59.151 Angle Base Flange (11° to 30°)

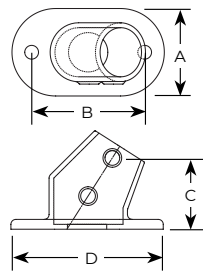


Similar to a type C53, it is used to set the upright at an angle between 11°–30°. This fitting should only be subjected to light loads which cannot be positioned at 90° to the applied load.

For greater loads or other tube sizes a type C12 flange should be used with the upright bent to the required angle  $\phi$  indicates the diameter of the fixing hole.

| Type           | Tube size | A  | B   | C  | D   | $\phi$ | Kg   |
|----------------|-----------|----|-----|----|-----|--------|------|
| 16.151.032.000 | 42.4      | 76 | 114 | 85 | 146 | 14     | 1.27 |
| 16.151.040.000 | 48.3      | 89 | 124 | 95 | 164 | 14     | 1.42 |

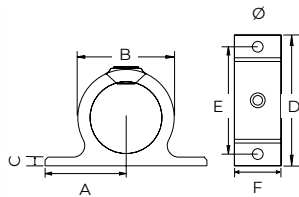
## C59A.A151 Angle Base Flange (30° to 45°)



Similar to a type C59, it is used to set the upright at an angle between 30° & 45°. This fitting should only be subjected to light loads which cannot be positioned at 90° to the applied load. For greater load use a type C12

| Type            | Tube size | A  | B   | C  | D   | Kg   |
|-----------------|-----------|----|-----|----|-----|------|
| 16.A151.032.000 | 42.4      | 76 | 106 | 81 | 138 | 1.17 |
| 16.A151.040.000 | 48.3      | 89 | 115 | 85 | 155 | 1.53 |

## C200.200 Double Sided Fixing Bracket



The Type C200 is used as an attachment point for flat sheets or boards and comes supplied with a drilled hole.

| Type            | Tube size | A  | B    | C | D   | E  | F  | $\phi$ | Kg   |
|-----------------|-----------|----|------|---|-----|----|----|--------|------|
| 16.C200.025.000 | 33.7      | 45 | 45   | 5 | 90  | 70 | 25 | 6.5    | 0.18 |
| 16.C200.032.000 | 42.4      | 53 | 55   | 6 | 106 | 86 | 40 | 11.5   | 0.38 |
| 16.C200.040.000 | 48.3      | 56 | 66.7 | 6 | 112 | 92 | 40 | 11.5   | 0.59 |



# FIXINGS & ANCILLARIES

## C60 Spare Screws



Spare Screws come in two sizes, 1/4" ISO 228 for the 20 and 25nb range and 3/8" ISO 228 for the 32, 40 and 50 ranges.

| Type           | Tube size         |
|----------------|-------------------|
| 16.ALL.SCR.001 | 26.9, 33.7 & 42.4 |
| 16.ALL.SCR.002 | 48.3 & 60.3       |

## C61 Allen Keys



Allen keys are available in two sizes, the first is suitable for the 20 and 25nb fitting and the other for the 32, 40 and 50nb fittings.

| Type           | Tube size         |
|----------------|-------------------|
| 16.KEY.020.025 | 26.9, 33.7 & 42.4 |
| 16.KEY.032.040 | 48.3 & 60.3       |

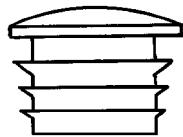
## C62R Ratchet Keys



The Ratchet driver and dual keys are available to speed assembly. The Ratchet driver will allow tightening to the correct torque.

| Type           | Tube size |
|----------------|-----------|
| 16.PIP.RATCHET | ALL SIZES |

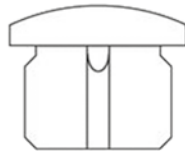
## C65P.133 Plastic End Cap



Plastic End Caps are available for finishing plain end tubes. Available in grey plastic they will fit medium and heavy gauge tube.

| Type           | Tube size | Kg    |
|----------------|-----------|-------|
| 16.133.020.000 | 26.9      | 0.008 |
| 16.133.025.000 | 33.7      | 0.010 |
| 16.133.032.000 | 42.4      | 0.010 |
| 16.133.040.000 | 48.3      | 0.016 |
| 16.133.050.000 | 60.3      | 0.024 |

## C65G.136 Metal End Cap

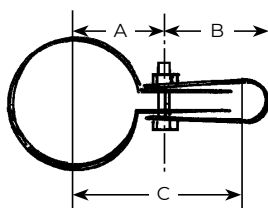


This metal plug is hard to remove once it has been driven in.

Note this metal insert can only be used in conjunction with tube with a wall thickness of 3.2mm. There is an alternative plastic version - C65P

| Type           | Tube size | Kg   |
|----------------|-----------|------|
| 16.136.020.000 | 26.9      | 0.05 |
| 16.136.025.000 | 33.7      | 0.10 |
| 16.136.032.000 | 42.4      | 0.12 |
| 16.136.040.000 | 48.3      | 0.17 |
| 16.136.050.000 | 60.3      | 0.29 |

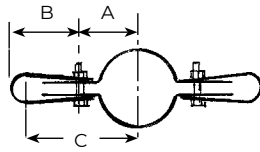
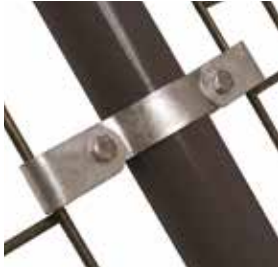
## C66.170 Single Mesh Clip



The Single Mesh Clip is designed to provide a fixing for standard mesh panels. It is recommended that the clips are spaced at a maximum of 450mm apart.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.170.020.000 | 26.9      | 27 | 26 | 58 | 0.06 |
| 16.170.025.000 | 33.7      | 30 | 26 | 61 | 0.07 |
| 16.170.032.000 | 42.4      | 33 | 26 | 64 | 0.08 |
| 16.170.040.000 | 48.3      | 38 | 26 | 68 | 0.09 |
| 16.170.050.000 | 60.3      | 44 | 26 | 75 | 0.09 |

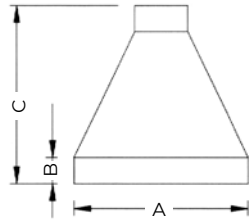
## C67.171 Double Mesh Clip



The Double Mesh Clip is designed to provide a fixing for standard mesh panels. It is recommended that the clips are spaced at a maximum of 450mm apart.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.171.020.000 | 26.9      | 27 | 26 | 58 | 0.09 |
| 16.171.025.000 | 33.7      | 30 | 26 | 61 | 0.12 |
| 16.171.032.000 | 42.4      | 33 | 26 | 64 | 0.13 |
| 16.171.040.000 | 48.3      | 38 | 26 | 68 | 0.13 |
| 16.171.050.000 | 60.3      | 44 | 26 | 75 | 0.14 |

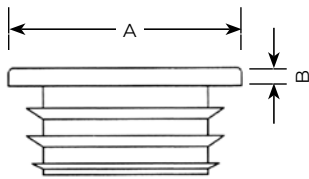
## C68.192 Weather Cowl



The Weather Cowl is designed to cover the Railing base and provides a weather proof seal when used with a suitable flexible sealant.

| Type           | Tube size | A   | B  | C   | Kg   |
|----------------|-----------|-----|----|-----|------|
| 16.192.025.000 | 33.7      | 140 | 25 | 125 | 0.28 |
| 16.192.032.000 | 42.4      | 150 | 25 | 150 | 0.33 |
| 16.192.040.000 | 48.3      | 166 | 25 | 150 | 0.38 |

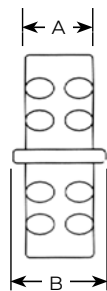
## C69 Square Plastic End Cup



The Plastic End Caps are available for finishing plain end square tubes. Available in grey plastic they will fit medium and heavy tube gauges.

| Type           | Tube size | A  | B   | Kg   |
|----------------|-----------|----|-----|------|
| 16.C69.040.040 | 40X40SHS  | 40 | 3.2 | 0.01 |
| 16.C69.050.050 | 50x50SHS  | 50 | 3.2 | 0.01 |
| 16.C69.070.070 | 70x70SHS  | 70 | 3.2 | 0.02 |

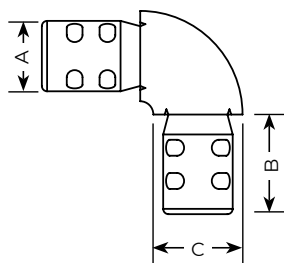
## C70 Crimp Straight



Straight Crimp Joints provide a permanent in-line connection for 33.7mm diameter x 3.2mm thick tube, a crimping tool is necessary.

| Type           | Tube size | A       | B  | Kg  |
|----------------|-----------|---------|----|-----|
| 16.C70.025.000 | 33.7      | (Ø)26.0 | 34 | 0.3 |

## C71 Crimp Elbow



Crimp Elbow provides a permanent 90° connection for 33.7mm diameter x 3.2mm thick tube, a crimping tool is necessary.

| Type           | Tube size | A  | B  | C  | Kg   |
|----------------|-----------|----|----|----|------|
| 16.C71.025.000 | 33.7      | 26 | 38 | 34 | 0.47 |

## HANDRAILING FOR THE DISABLED

Under the terms of the Equality Act 2010 (previously the Disability Discrimination Act), reasonable adjustments need to be made to public and commercial buildings to overcome physical barriers which prevent disabled access. The Building Regulations recommend an outside diameter tube size for installations of between 40mm-45mm.

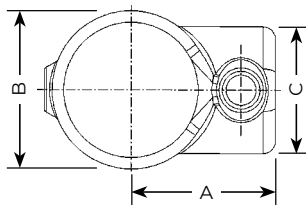
The DDA range has been designed to meet these requirements by providing a non-discriminatory handrail solution that complies with the Equality Act and Part 'M' of the Building Regulations.

The range allows construction of a smooth, continuous handrail of 42.4mm diameter.

DDA fittings are supplied hot dip galvanised as standard, but can be supplied in a powder coated finish to RAL standard colours (subject to quantity and availability from the coaters).

In cold temperatures, a powder coated finish will give the impression of being warmer to the touch.

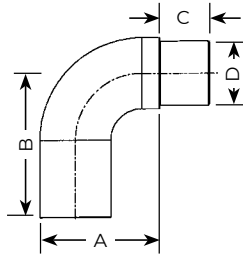
### DDA-01 Upright Connector



| Type           | A  | B  | C  | Kg   |
|----------------|----|----|----|------|
| 16.DDA.001.CON | 55 | 60 | 50 | 0.38 |

Connector for attaching the DDA04 intermediate bracket or the DDA02 handrail connector to the 48.3mm o/d upright.

### DDA-02 Handrail Upright

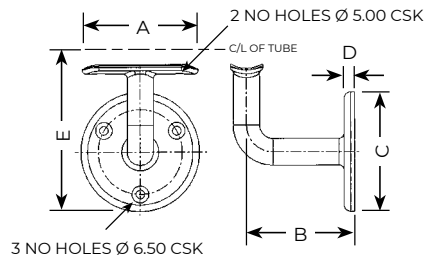


| Type           | A  | B  | C  | D  | Kg   |
|----------------|----|----|----|----|------|
| 16.DDA.002.RAI | 51 | 86 | 30 | 38 | 0.48 |

Connector (made from Ductile Iron) for attaching the end of the 42.4mm o/d handrail tube at 90° to the 48.3mm o/d upright.

This bracket is used in conjunction with DDA01 and DDA07.

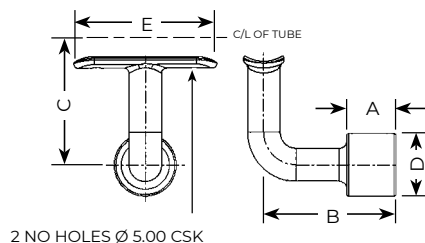
### DDA-03 Wall Bracket



| Type           | A  | B  | C  | D | E  | Kg   |
|----------------|----|----|----|---|----|------|
| 16.DDA.003.WBR | 88 | 82 | 90 | 8 | 84 | 0.62 |

Bracket (made from Ductile Iron) for supporting the 42.4mm o/d handrail tube to a wall. The 42.4mm o/d tube is fixed to the DDA03 using either 2 x self tapping screws or 2 x pop rivets.

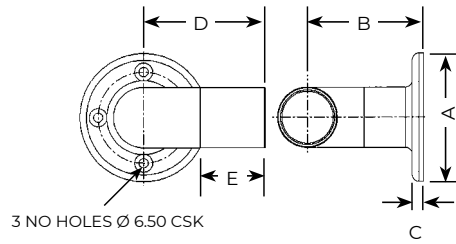
### DDA-04 Intermediate Bracket



| Type           | A  | B  | C  | D  | E  | Kg   |
|----------------|----|----|----|----|----|------|
| 16.DDA.004.INB | 30 | 81 | 84 | 38 | 88 | 0.44 |

Bracket (made from Ductile Iron) for supporting the top or middle rail tube at an upright in conjunction with a DDA01. The 42.4mm o/d tube is fixed to the DDA04 using either 2 x self tapping screws or 2 x pop rivets.

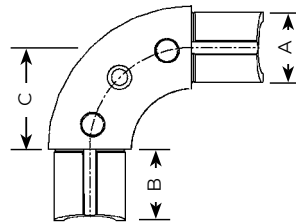
## DDA-05 End Return



| Type           | A  | B  | C | D  | E  | Kg   |
|----------------|----|----|---|----|----|------|
| 16.DDA.005.END | 90 | 82 | 8 | 86 | 46 | 0.64 |

Bracket (made from Ductile Iron) for terminating the 42.4mm o/d handrail tube back to a wall. This bracket is used in conjunction with a DDA07.

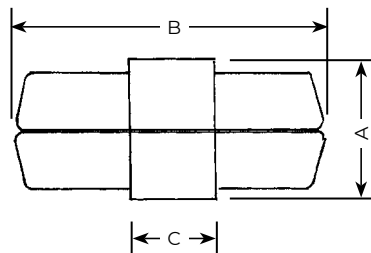
## DDA-06 90° Bend



| Type           | A    | B  | C  | Kg   |
|----------------|------|----|----|------|
| 16.DDA.006.BEN | 33.7 | 35 | 50 | 0.93 |

Expanding elbow (made from Ductile Iron) for creating a smooth 90° bend in the 42.4mm o/d tube.

## DDA-07 Internal Connector



| Type          | A    | B  | C  | Kg   |
|---------------|------|----|----|------|
| 16.DDA.07.CON | 42.4 | 75 | 19 | 0.35 |

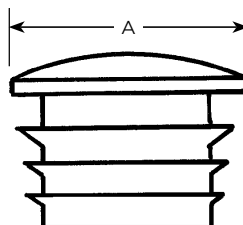
Expanding internal connector for joining sections of 42.4mm o/d tube, or other DDA fittings as and when required.



### WARNING!

Inline internal connector for joining two tubes together. Only medium gauge 3.2mm wall thick tube can be used. The DDA07 should never be used as a load bearing joint. The DDA07 must be used within 100mm of an upright.

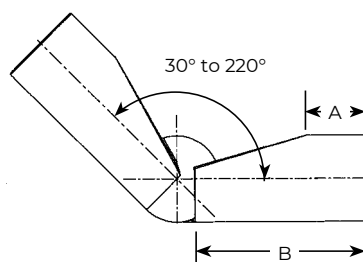
## DDA-08 End Cap (Plastic)



| Type          | A    | Kg    |
|---------------|------|-------|
| 16.DDA.08.CAP | 48.3 | 0.016 |

48.3mm o/d plastic end cap for inserting into the open tube on the top of the upright. For a permanent fix, a suitable adhesive should be used.

## DDA-09 Adjustable Bend



| Type          | A  | B  | Kg   |
|---------------|----|----|------|
| 16.DDA.09.ADB | 31 | 86 | 0.61 |

Fitting (made from Ductile Iron) for creating an adjustable bend between the horizontal and the vertical.

## ROOF EDGE PROTECTION

Defender Roof Edge Protection systems operate on a counterbalance principle using curved PVC counterweights as the main component. A galvanised malleable iron foot with a protective rubber base supports the handrail post; this includes an integral toeplate facility which is a fundamental requirement if there is no perimeter edge upstand.

All systems feature 1100 mm tall factory preassembled uprights that include open cradle fittings allowing the handrail tube to be quickly dropped into place instead of the time consuming process of the tube being fed through several fittings as required with other systems, speeding up assembly and saving cost.



### ECONOMY SYSTEM

A simple and cost effective way of protecting roof edges.



### STANDARD SYSTEM

Shorter length counterweight tubes, enables installation in restricted roof areas.



### PLUS SYSTEM

Aesthetically pleasing, curved uprights with 3 rails for added security.

## Benefits of Defender Roof Edge Protection

- System is effectively maintenance free with hot dip galvanised fittings and tube to BS EN ISO 1461
- Recycled PVC counterweights
- For use on asphalt, coated steel sheeted, concrete or mineral felt roofs
- Rapid installation, no special tools or specialised labour required
- No on site welding or bending required
- Base fitting allows option of installing uprights up to 11° from vertical
- Bolt on toeplate available to comply with HSG 33.

Our systems are freestanding, with no requirement for fixings or drilling and subsequently no repair to the roof membrane.

Suitable for flat roofs up to 3° pitch.

The systems can be configured to satisfy the requirements of BS EN 13374 Class A.





## SELF CLOSING SAFETY GATES



Flocon supplies a range of self-closing industrial safety gates. Gates are suitable for external and internal applications, and can be retro-fitted to existing structures.

The gates are spring loaded to automatically close behind the user, to provide a safe environment and overcome the problem of human error. Industrial safety gates provide a safe access to demarcated areas within factories, warehouses and loading bays.

Our industrial safety gates are compliant with the requirements of EN 13374 and EN 14122. The gates have been extensively tested to ensure their durability and reliability.

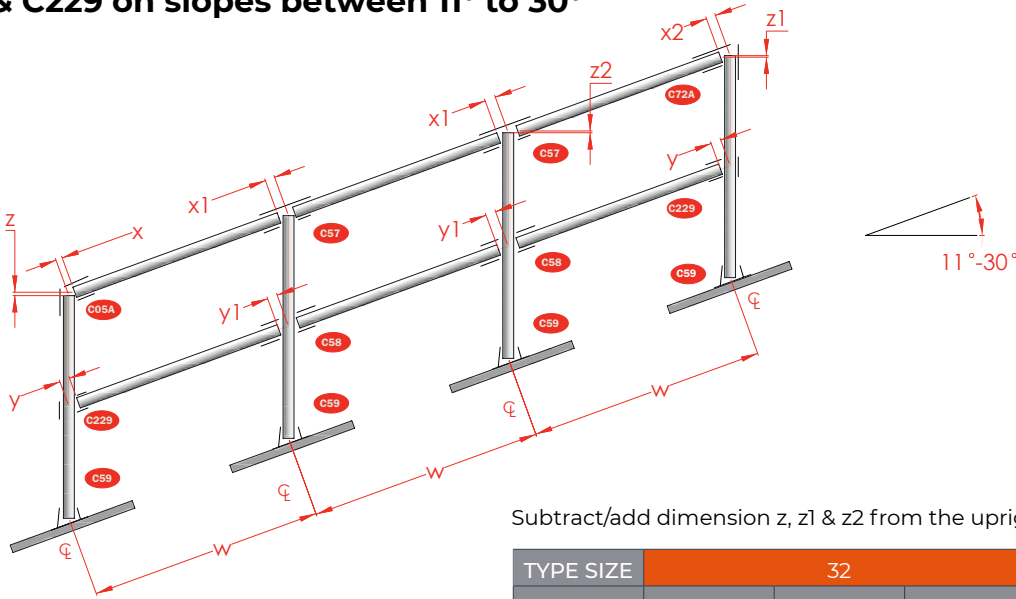
Flocon self-closing safety gates are supplied 1m wide and 2 x 0.9m wide for larger openings. The gates are available either hot dipped galvanised or powder coated in safety yellow and can be easily trimmed to size on-site.

- Single and double width gates
- Easy to assemble
- Performance tested for trouble free operation
- Fully adjustable for varying widths

| Type     | Description  |
|----------|--|
| RE00T40  | RE00T40 - EN - 14122 Defender Vertical Toe-Board Upright |
| RE11P40  | Defender Roof Edge Counterweight assembly                |
| RE11P40S | Short Defender C/B Assembly                              |
| RE12P40  | Defender Roof Edge Run End Weight assembly               |
| SGEUCV2  | Single Gate - Galvanised                                 |
| SGEUPC2  | Single Gate - Powder Coated Galvanised                   |
| SGEUUP   | Upgrade Kit  |

# SIZING CHARTS

## How to calculate correct tube cutting length using types C05A, C57, C58, C59A, C72A & C229 on slopes between 11° to 30°



Subtract/add dimension z, z1 & z2 from the upright height

| TYPE SIZE | 32  |     |    | 40  |     |    |
|-----------|-----|-----|----|-----|-----|----|
|           | z   | z1  | z2 | z   | z1  | z2 |
| 11°       | -10 | -28 | +7 | -20 | -34 | +6 |
| 15°       | -11 | -25 | +7 | -25 | -29 | +6 |
| 20°       | -13 | -34 | +7 | -21 | -39 | +6 |
| 25°       | -15 | -43 | +7 | -22 | -50 | +6 |
| 30°       | -18 | -53 | +7 | -4  | -61 | +6 |

x Dimensions to be added/subtracted from upright height

Subtract dimension x, x1, x2, y or y1 from upright centres (w). Please note the upright centres must be measured on the slope

| TYPE SIZE | 32  |     |     |     |     | 40  |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           | x   | x1  | x2  | y   | y1  | x   | x1  | x2  | y   | y1  |
| 11°       | -25 | -26 | -35 | -52 | -26 | -26 | -29 | -35 | -51 | -29 |
| 15°       | -21 | -28 | -46 | -53 | -58 | -22 | -31 | -47 | -52 | -31 |
| 20°       | -16 | -30 | -48 | -55 | -30 | -20 | -34 | -50 | -54 | -34 |
| 25°       | -15 | -33 | -52 | -59 | -33 | -14 | -38 | -54 | -57 | -38 |
| 30°       | -8  | -37 | -57 | -64 | -42 | -29 | -42 | -60 | -62 | -42 |

## How to calculate correct tube cutting length using types C041, C042, C12 & C221 on slopes between 30° to 45°

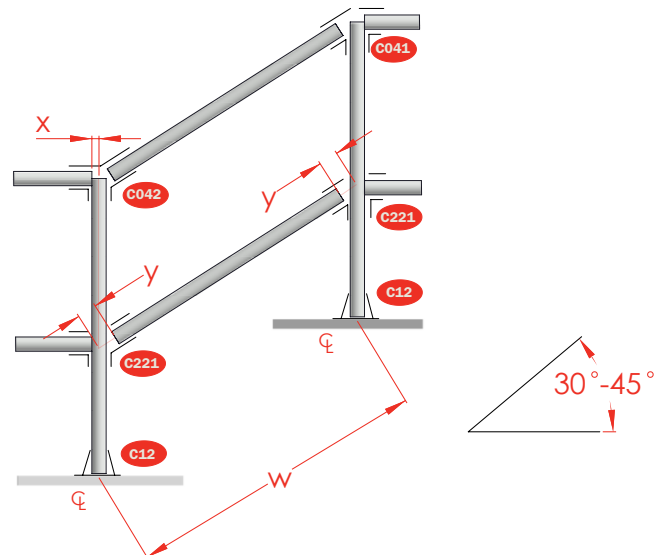
Subtract dimension x to determine rail size on level

| TYPE SIZE | 32  | 40  |
|-----------|-----|-----|
|           | x   | x   |
| 35-45°    | -21 | -24 |

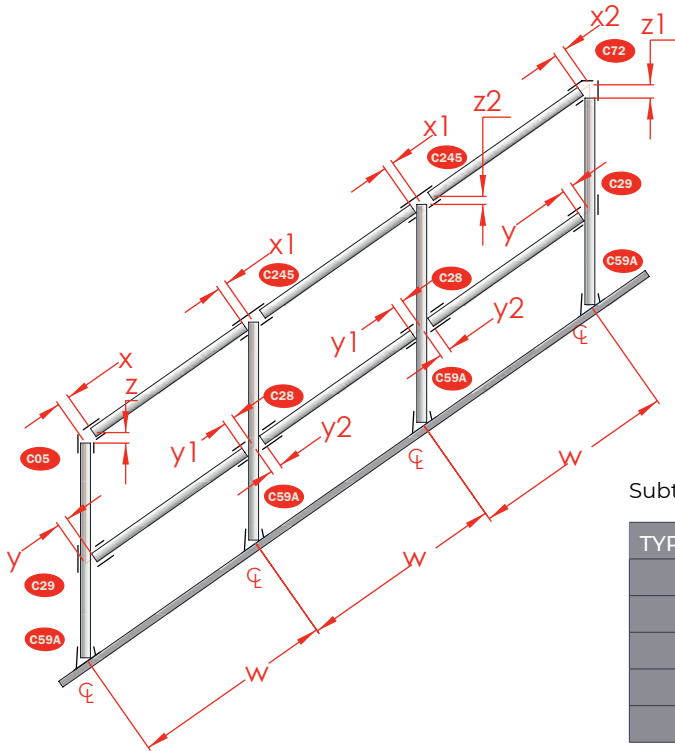
y Dimensions to be subtracted from upright centres

Please note upright centres must be measured on the slope

| TYPE SIZE | 32  | 40  |
|-----------|-----|-----|
|           | y   | y   |
| 30°       | -47 | -57 |
| 35°       | -52 | -62 |
| 40°       | -59 | -69 |
| 35°       | -68 | -79 |



## How to calculate correct tube cutting length using types C05, C245, C28, C59A, C72 & C29 on slopes between 30° to 45°



Subtract/add dimension z, z1 & z2 from the upright height

| TYPE SIZE | 32  |     |    | 40  |     |    |
|-----------|-----|-----|----|-----|-----|----|
|           | z   | z1  | z2 | z   | z1  | z2 |
| 30°       | -17 | -48 | +5 | -27 | -47 | +6 |
| 35°       | -16 | -59 | +5 | -21 | -53 | +6 |
| 40°       | -8  | -69 | +5 | -14 | -68 | +6 |
| 55°       | -2  | -80 | +5 | -5  | -79 | -4 |

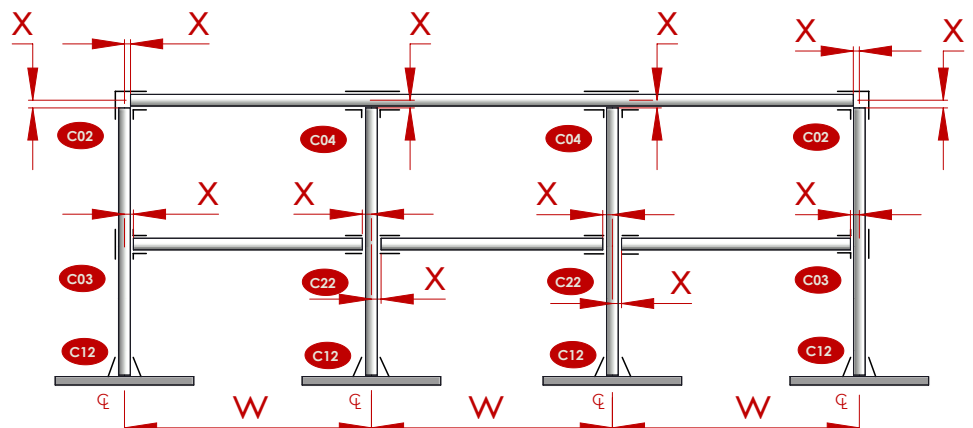
Subtract dimension x, x1, x2, y or y1 from upright centres (w). Please note the upright centres must be measured on the slope

| TYPE SIZE | 32  |     |     |     |     | 40  |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           | x   | x1  | x2  | y   | y1  | x   | x1  | x2  | y   | y1  |
| 30°       | -20 | -39 | -55 | -37 | -49 | -17 | -42 | -48 | -43 | -64 |
| 35°       | -16 | -44 | -61 | -40 | -50 | -18 | -46 | -60 | -47 | -64 |
| 40°       | -20 | -47 | -71 | -45 | -51 | -21 | -52 | -65 | -52 | -64 |
| 45°       | -26 | -50 | -85 | -51 | -51 | -26 | -58 | -60 | -59 | -64 |

## How to calculate correct tube cutting length for straight and level handrails

W = Distance between uprights  
 $\phi$  to  $\phi$

| SIZE |     |
|------|-----|
| 32   | 40  |
| x    | x   |
| -22  | -25 |



# BALL STANDARDS



## BALL STANDARDS

Flocon offers Ball Standards in both finished and semi-finished formats together with handrail return bends.

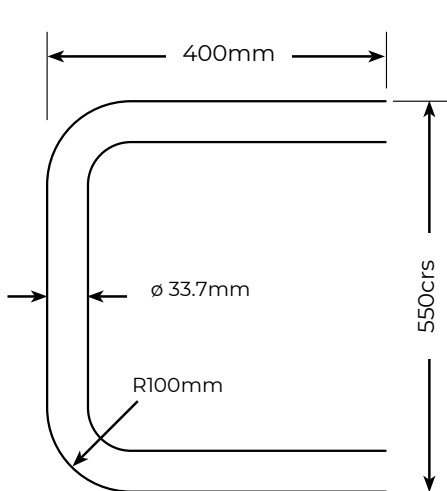
Hot dip galvanised finished standards are constructed from 42.4mm diameter tube complete with balls, suitable for 33.7mm diameter handrailing.

Balls are drilled & tapped, and fitted with stainless steel M8 socket setscrews.

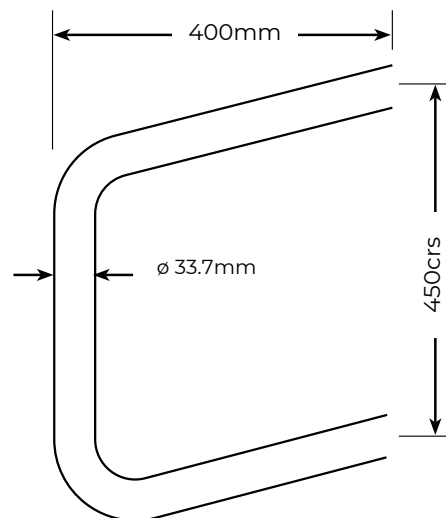
Base plates are complete with 18mm diameter holes to suit M16 fixing bolts.

- Self colour sticks from stock
- Sticks hot dip galvanised ready
- Types 62, 64, 65, 68, 69 & 115 bases for Sticks
- Hot dip galvanised standards from stock
- 38° and 42° staircase standards from stock
- Standards complete with stainless steel setscrew in each ball
- Other diameters and formats available, please send details for quote

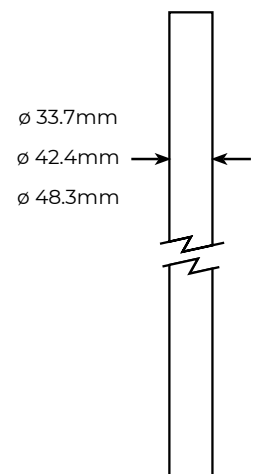
## HANDRAILING & RETURN BENDS



**Platform Return Bends**  
33.7mm diameter from stock

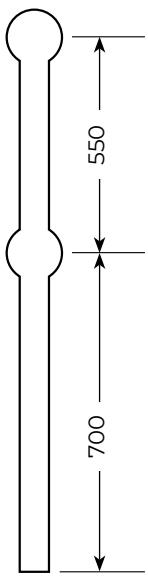


**Stair Return Bends**  
33.7mm diameter from stock

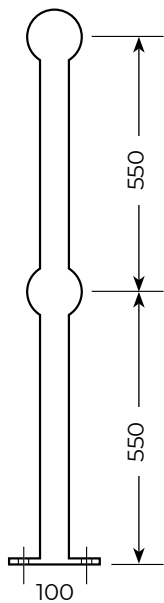


**Stair Return Bends**  
33.7, 42.4 and 48.3mm  
handrail tube from stock

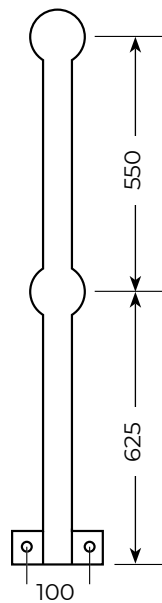
# BALL STANDARDS



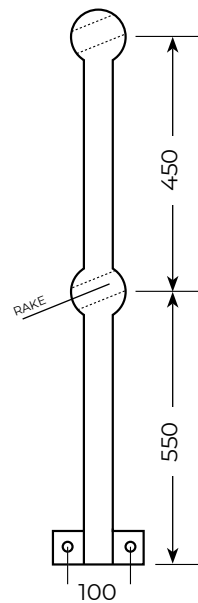
**STICK**



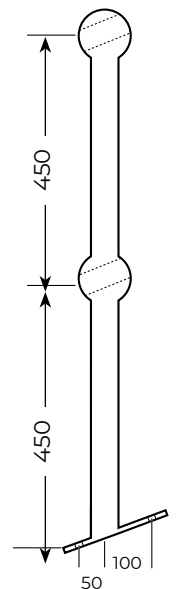
**PLATFORM FLAT**



**PLATFORM HSP**



**RAKING HSP**



**RAKING FLAT**

## FITTINGS FOR USE WITH BALL STANDARDS



**C00** Sleeve Joint



**C02** 90° Elbow



**C41** Clamp on Tee



**C11** Wall Flange



**C12** Railing Flange



**C13** Vertical Railing Base



**C14** Horizontal Railing Base



**C15** Side Palm



**C18** Railing Flange (Toeboard adaptor)



**C20** Horizontal Railing Support

# ABOUT FLOCON



**Flocon is one of South Wales' leading distributors of products and supplies that are essential to the pipeline industry.**

With hundreds of customers scattered the length and breadth of the country, we support all types of industry sectors from; utilities suppliers, manufacturing companies, hospitals, food processing plants, breweries, power stations, steelworks and many more.

We endeavour to provide a high-level service and attention to detail at every aspect of our business, ensuring that all our customers' needs and requirements are fulfilled to the best possible standard.

Our approach is based on a one-to-one bespoke service, delivering excellent value for money to all companies and organisations that trade with us, large and small.

## WHAT WE OFFER

- **Excellent technical advice:** Over 150 years of pipeline industry experience
- **Site visits:** Should you need to meet with our team and discuss a project on a 1-2-1 level, we're able to meet you on site at a time that's convenient for you
- **High quality products from leading industry suppliers:** From George Fischer to Spirax Sarco, Pegler Yorkshire to Albion
- **Pre and Post-sales support:** Customer service excellence at the heart of everything we do
- **Specialist sourcing solutions:** Our sourcing services means we can offer a comprehensive supply of all valves, pipes fittings and associated products to meet a customers' project needs
- **Fast delivery times:** Same day, overnight and Saturday deliveries





FOR MORE INFORMATION ABOUT FLOCON HANDRAIL SYSTEMS OR ANY OTHER FLOCON PRODUCTS AND SERVICES, CONTACT US ON:

01443 841 666 | [Sales@flocon.co.uk](mailto:Sales@flocon.co.uk) | [flocon.co.uk](http://flocon.co.uk)

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