FastClamp®

# Fittings & Technical Guide

FastClamp®

# The safe clamping system for circular hollow section tube

Access Technologies Limited was established in 1995 to manufacture access equipment for the Construction Industry. The FastClamp brand followed as a natural progression four years later and has since grown to become one of the premier ranges of slip on tubular fittings available today.

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

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

## FINISHES AVAILABLE

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

## FASTCLAMP SELECTION

FastClamp 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.

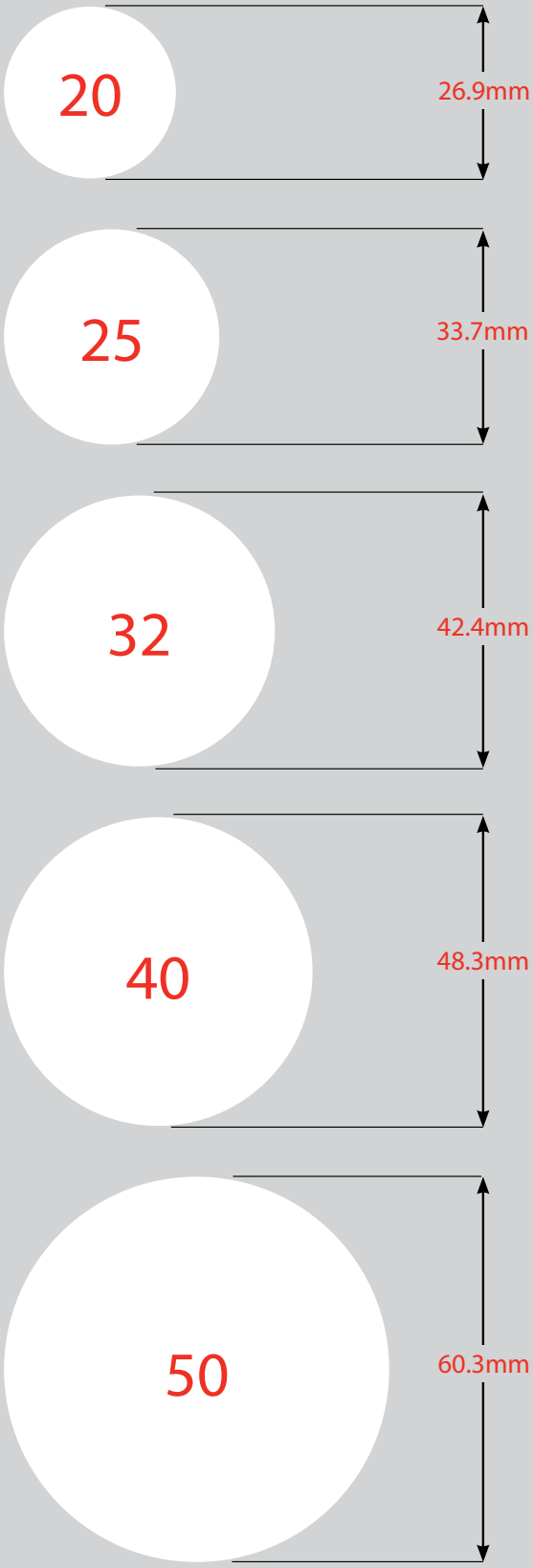
Product codes are constructed as follows:

C = FastClamp
No. = FastClamp type
G = Galvanised
P = Plastic
S = Stainless Steel
No. = Tube size

Example: C00G20 is a FastClamp, type 00, galvanised and suitable for 26.9mm diameter tube.

| Fitting | Tube size ø | 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 Ø should be the first consideration as this is the primary structural component for any FastClamp structure. The application guidelines on the next page will help the design of Racking, General Structures and Handrail.





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# Racking and general structures

Racking and general structures can be constructed using FastClamp 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.*

*For further help in using* FastClamp *please contact our sales office.*

## Horizontal tubes load capacity

Uniformally distributed load in kg using two horizontal tubes

Table 1

| 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)

## Vertical strut load capacity

Vertical load in kg per strut

Table 2

| 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 FastClamp 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

| Design Load | 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 |
|---|---|---|---|---|---|---|
| | Maximum Upright Centres (mm) | | | | | |
| **900 mm high** | | | | | | |
| 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 |
| **1000 mm high** | | | | | | |
| 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 |
| **1100 mm high** | | | | | | |
| 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.

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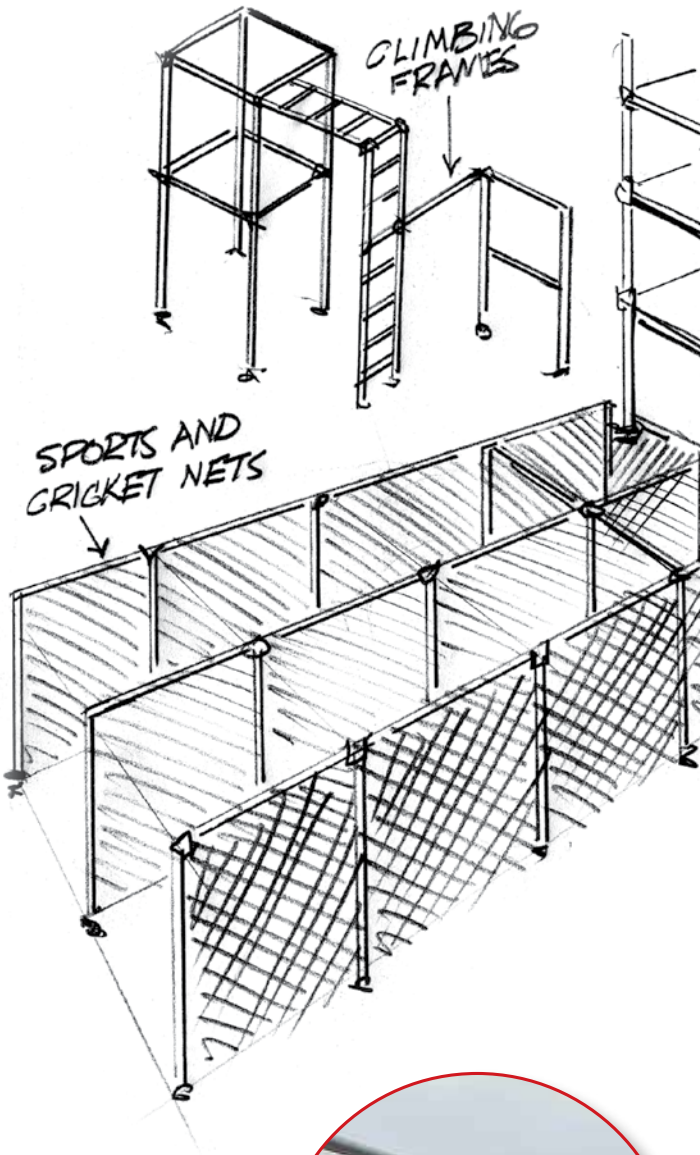
# Applications

FastClamp®is the safe and simple solution to build many different types of lightweight tubular structures, the applications are only limited by imagination and the following is just a small selection of what can be constructed.

- Handrailing
- Guardrailing
- Tyre racks
- Car ports
- Polytunnels
- Fruit cages
- Shopfitting
- Greenhouses
- Barriers
- Disabled ramps
- Sheds
- Roof Edge Protection
- Frames
- Canopies
- Market stalls
- Storage racks
- Work benches
- Exhibition stands
- Cattle pens
- Cricket screens
- Security screens
- Stables
- Climbing frames
- Goalposts

Trolley Parks

Roof Edge Protection



Fruit Cages

Stables

Guardrailing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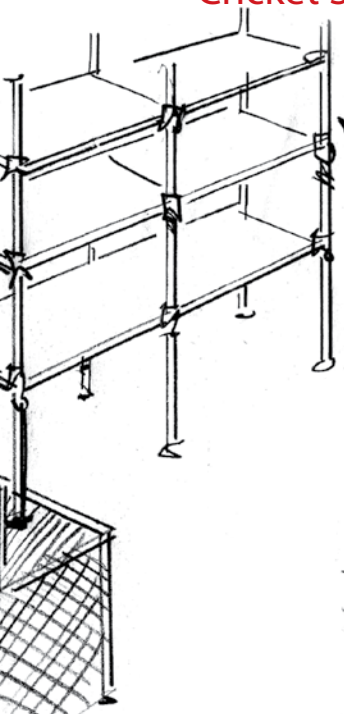
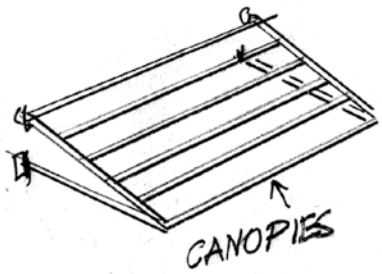
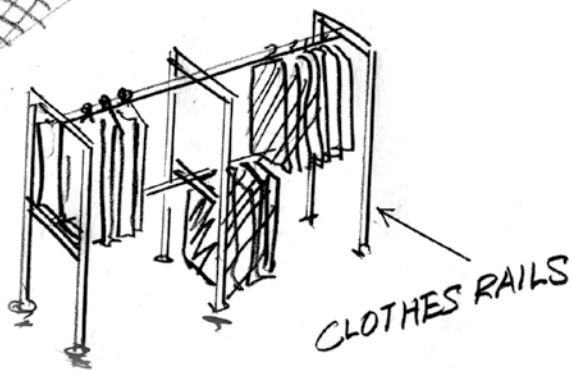
Cricket Screens

Domestic Projects



Railing



Storage Racks

Handrails

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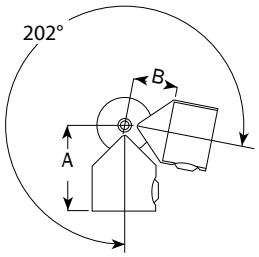
## BC05 Swivel Elbow



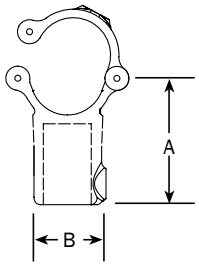

| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| BC05G25 | 33.7 | 60 | 33 | 0.51 |
| BC05G32 | 42.4 | 73 | 36 | 0.81 |
| BC05G40 | 48.3 | 83 | 45 | 1.14 |

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

Caution

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.*

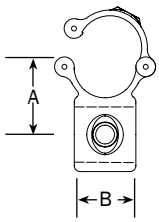
## CA03 Add On Short Tee




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| CA03G32 | 42.4 | 60 | 55 | 0.60 |
| CA03G40 | 48.3 | 68 | 60 | 0.71 |

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.

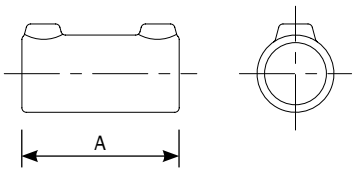
## CA40 Add On 90° Crossover




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| CA40G32 | 42.4 | 49 | 46 | 0.65 |
| CA40G40 | 48.3 | 55 | 50 | 0.73 |

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.

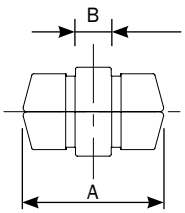
## C00 Sleeve Joint




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C00G20 | 26.9 | 76 | 0.33 |
| C00G25 | 33.7 | 89 | 0.39 |
| C00G32 | 42.4 | 102 | 0.50 |
| C00G40 | 48.3 | 100 | 0.55 |
| C00G50 | 60.3 | 120 | 1.14 |

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

## C01 Expanding Connector



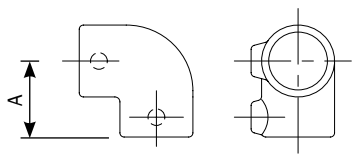

| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C01G25 | 33.7 | 75 | 19 | 0.18 |
| C01G32 | 42.4 | 75 | 19 | 0.27 |
| C01G40 | 48.3 | 75 | 19 | 0.35 |

Caution

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. It must not be used as a load-bearing joint, for such applications use a FastClamp type C00.

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.*

## C02 90° Elbow




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C02G20 | 26.9 | 40 | 0.24 |
| C02G25 | 33.7 | 48 | 0.39 |
| C02G32 | 42.4 | 60 | 0.53 |
| C02G40 | 48.3 | 67 | 0.68 |
| C02G50 | 60.3 | 86 | 1.53 |

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.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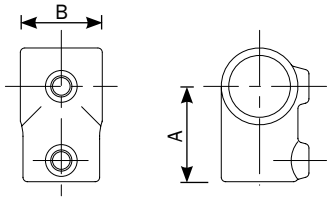
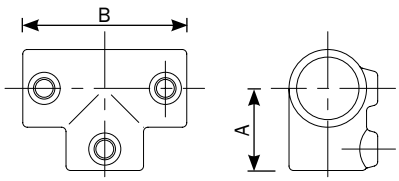
## C03 Short Tee




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C03G20 | 26.9 | 40 | 38 | 0.21 |
| C03G25 | 33.7 | 48 | 45 | 0.35 |
| C03G32 | 42.4 | 60 | 54 | 0.44 |
| C03G40 | 48.3 | 67 | 60 | 0.56 |
| C03G50 | 60.3 | 86 | 71 | 0.76 |

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.

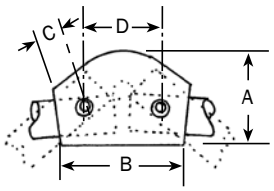
## C04 Long Tee




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C04G20 | 26.9 | 40 | 80 | 0.35 |
| C04G25 | 33.7 | 48 | 96 | 0.52 |
| C04G32 | 42.4 | 60 | 120 | 0.77 |
| C04G40 | 48.3 | 67 | 134 | 0.88 |
| C04G50 | 60.3 | 86 | 172 | 1.33 |

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.

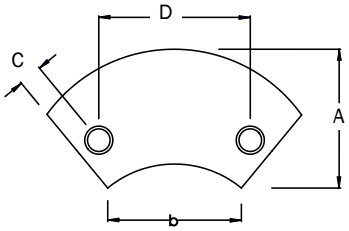
## C05 Variable Elbow (15° to 60°)




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C05G25 | 33.7 | 67 | 50 | 13 | 40 | 0.43 |
| C05G32 | 42.4 | 80 | 66 | 15 | 56 | 0.66 |
| C05G40 | 48.3 | 95 | 75 | 21 | 52 | 0.91 |

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

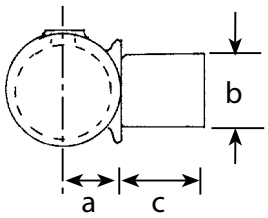
## C05A Variable Elbow (11° to 30°)




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C05AG32 | 42.4 | 72 | 61 | 13 | 75 | 0.82 |
| C05AG40 | 48.3 | 85 | 73 | 19 | 84 | 1.01 |

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

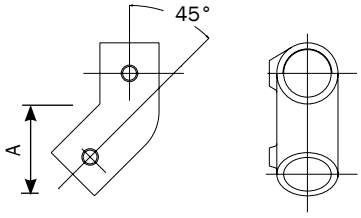
## C06 Internal T Joint




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C06G25 | 33.7 | 23 | 33 | 34 | 0.33 |
| C06G32 | 42.4 | 29 | 42 | 40 | 0.54 |
| C06G40 | 48.3 | 31 | 48 | 44 | 0.68 |

The Internal T joint is designed to provide an angled joint between a tube and a FastClamp 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.

## C07 45° Tee




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C07G25 | 33.7 | 45 | 0.38 |
| C07G32 | 42.4 | 54 | 0.63 |
| C07G40 | 48.3 | 60 | 0.83 |

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

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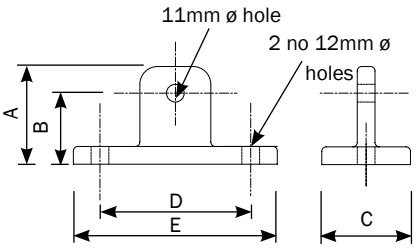
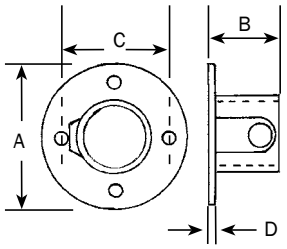
## C10G Swivel Base




| Type | Tube Size | A | B | C | D | E | Kg |
|---|---|---|---|---|---|---|---|
| C10G | N/A | 55 | 40 | 50 | 85 | 115 | 0.51 |

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

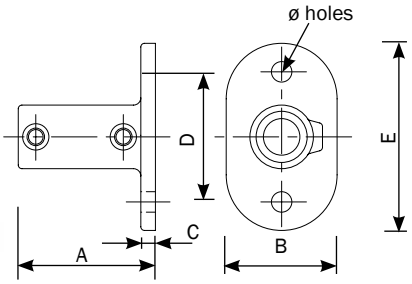
## C11 Wall Flange




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C11G20 | 26.9 | 86 | 42 | 57 | 4 | 9 | 0.35 |
| C11G25 | 33.7 | 89 | 45 | 64 | 6 | 9 | 0.39 |
| C11G32 | 42.4 | 102 | 50 | 76 | 6 | 9 | 0.50 |
| C11G40 | 48.3 | 114 | 57 | 89 | 6 | 9 | 0.65 |
| C11G50 | 60.3 | 127 | 64 | 95 | 6 | 9 | 1.10 |

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.

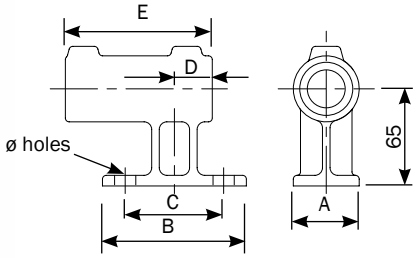
## C12 Railing Base Flange




| Type | Tube Size | A | B | C | D | E | Ø | Kg |
|---|---|---|---|---|---|---|---|---|
| C12G20 | 26.9 | 76 | 65 | 8 | 76 | 114 | 11 | 0.60 |
| C12G25 | 33.7 | 89 | 76 | 9 | 89 | 128 | 14 | 0.91 |
| C12G32 | 42.4 | 89 | 80 | 10 | 102 | 140 | 14 | 1.03 |
| C12G40 | 48.3 | 89 | 89 | 10 | 114 | 152 | 14 | 1.24 |
| C12G50 | 60.3 | 128 | 88 | 9 | 127 | 165 | 18 | 1.89 |

The Railing Base is designed to provide a base for railings and other structures. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.

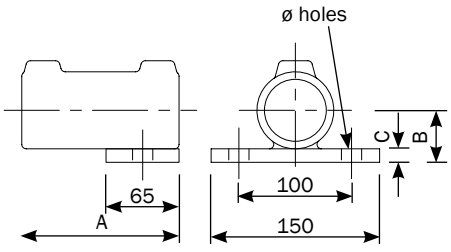
## C13 Railing Vertical Side Support




| Type | Tube Size | A | B | C | D | E | Ø | Kg |
|---|---|---|---|---|---|---|---|---|
| C13G25 | 33.7 | 45 | 96 | 67 | 28 | 104 | 14 | 0.95 |
| C13G32 | 42.4 | 50 | 109 | 78 | 30 | 114 | 14 | 1.20 |
| C13G40 | 48.3 | 60 | 123 | 86 | 34 | 120 | 14 | 1.50 |

The Railing Vertical Side Support is designed to provide a base for railings and other structures that need a side mounted fixing. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.

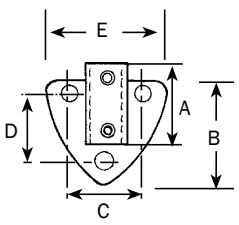
## C14 Railing Horizontal Side Support




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C14G25 | 33.7 | 90 | 30 | 12 | 150 | 18 | 1.08 |
| C14G32 | 42.4 | 90 | 35 | 12 | 150 | 18 | 1.32 |
| C14G40 | 48.3 | 90 | 41 | 15 | 150 | 18 | 1.67 |

The Railing Horizontal Side Support is designed to provide a base for railings and other structures that need a side mounted fixing. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.

## C15 Side Palm Fixing




| Type | Tube Size | A | B | C | D | E | Ø | Kg |
|---|---|---|---|---|---|---|---|---|
| C15G25 | 33.7 | 76 | 89 | 71 | 63 | 97 | 11 | 0.63 |
| C15G32 | 42.4 | 84 | 98 | 82 | 72 | 108 | 11 | 0.80 |
| C15G40 | 48.3 | 92 | 104 | 86 | 78 | 112 | 11 | 0.84 |

The Side Support is designed to provide a base for railings and other structures that need a side mounted fixing. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.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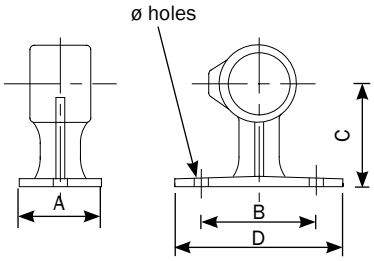
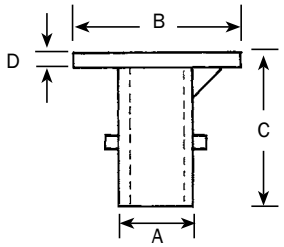
## C16 Handrail Bracket




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C16G20 | 26.9 | 46 | 57 | 54 | 76 | 8 | 0.36 |
| C16G25 | 33.7 | 44 | 63 | 57 | 82 | 11 | 0.46 |
| C16G32 | 42.4 | 44 | 76 | 63 | 102 | 11 | 0.57 |
| C16G40 | 48.3 | 48 | 85 | 67 | 108 | 11 | 0.62 |

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.

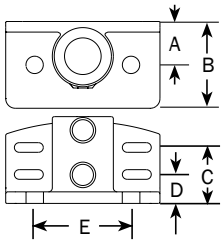
## C17 Ground Support




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C17G25 | 33.7 | 61 | 140 | 130 | 4.5 | 1.42 |
| C17G32 | 42.4 | 61 | 140 | 130 | 4.5 | 1.42 |
| C17G40 | 48.3 | 61 | 140 | 130 | 4.5 | 1.42 |

The Ground Socket is designed to provide a base that can be cast into the ground to support a post. The post is removable. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.

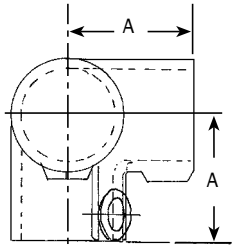
## C18 Base Flange with Integrated Toeboard




| Type | Tube Size | A | B | C | D | E | Ø | Kg |
|---|---|---|---|---|---|---|---|---|
| C18G32 | 42.4 | 45 | 90 | 58 | 30 | 100 | 18 | 2.14 |
| C18G40 | 48.3 | 45 | 90 | 58 | 30 | 100 | 18 | 2.28 |

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. It is recommended that this fitting be used in accordance with FastClamp maximum post centre dimensions, see table 3 on our Technical Page.

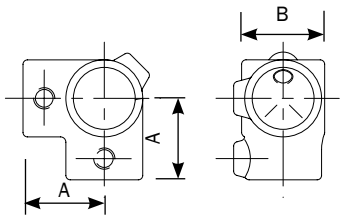
## C20 3 Way 90° Elbow




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C20G20 | 26.9 | 40 | 0.37 |
| C20G25 | 33.7 | 48 | 0.51 |
| C20G32 | 42.4 | 60 | 0.80 |
| C20G40 | 48.3 | 67 | 0.97 |
| C20G50 | 60.3 | 84 | 1.82 |

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

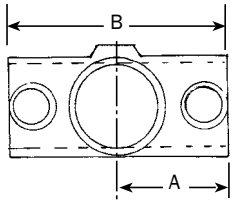
## C21 Corner c/w Through Tube




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C21G20 | 26.9 | 40 | 38 | 0.21 |
| C21G25 | 33.7 | 48 | 45 | 0.39 |
| C21G32 | 42.4 | 60 | 54 | 0.58 |
| C21G40 | 48.3 | 67 | 60 | 0.69 |
| C21G50 | 60.3 | 86 | 71 | 1.10 |

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

## C22 Two Socket Cross




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C22G20 | 26.9 | 40 | 80 | 0.28 |
| C22G25 | 33.7 | 48 | 95 | 0.39 |
| C22G32 | 42.4 | 60 | 120 | 0.57 |
| C22G40 | 48.3 | 67 | 134 | 0.65 |
| C22G50 | 60.3 | 86 | 172 | 1.26 |

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.

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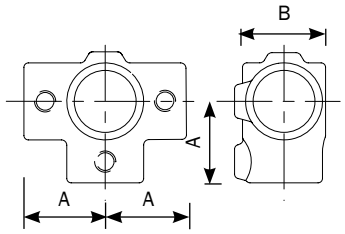
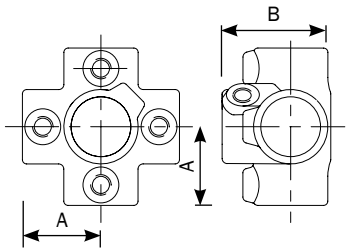
## C23 45° Side Outlet Tee




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C23G20 | 26.9 | 40 | 38 | 0.32 |
| C23G25 | 33.7 | 48 | 45 | 0.55 |
| C23G32 | 42.4 | 60 | 54 | 0.83 |
| C23G40 | 48.3 | 66 | 60 | 0.84 |
| C23G50 | 60.3 | 86 | 71 | 1.48 |

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.

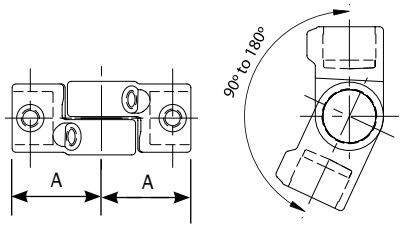
## C24 4 Way Cross + Central Tube




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C24G20 | 26.9 | 41 | 54 | 0.43 |
| C24G25 | 33.7 | 48 | 67 | 0.75 |
| C24G32 | 42.4 | 60 | 78 | 1.14 |
| C24G40 | 48.3 | 67 | 70 | 1.19 |
| C24G50 | 60.3 | 86 | 106 | 2.12 |

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.

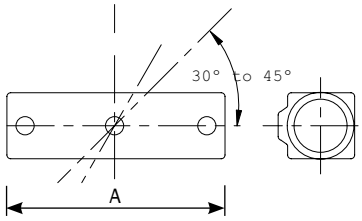
## C25 Short Tee Swivel (Normally used in pairs)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C25G20 | 26.9 | 65 | 0.31 |
| C25G25 | 33.7 | 66 | 0.37 |
| C25G32 | 42.4 | 73 | 0.48 |
| C25G40 | 48.3 | 81 | 0.49 |
| C25G50 | 60.3 | 110 | 0.85 |

Short Tee Swivel fittings are normally used in pairs to facilitate corner angles of 90° to 180°. It is also used on staircases with a C02 and C03 fittings in conjunction 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.

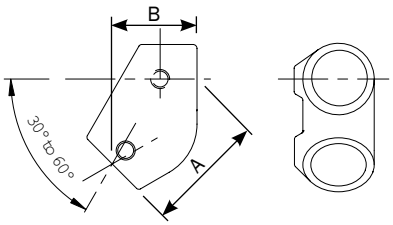
## C28 Adjustable 2 Socket Cross (30° to 45°)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C28G25 | 33.7 | 162 | 0.71 |
| C28G32 | 42.4 | 190 | 1.12 |
| C28G40 | 48.3 | 218 | 1.38 |

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.

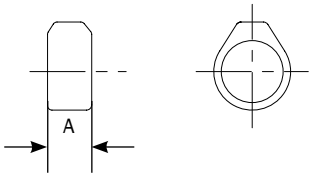
## C29 Adjustable Short Tee (30° to 60°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C29G25 | 33.7 | 74 | 52 | 0.47 |
| C29G32 | 42.4 | 85 | 63 | 0.63 |
| C29G40 | 48.3 | 102 | 72 | 0.78 |

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.

## C30 Collar




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C30G20 | 26.9 | 25 | 0.08 |
| C30G25 | 33.7 | 25 | 0.13 |
| C30G32 | 42.4 | 25 | 0.16 |
| C30G40 | 48.3 | 25 | 0.18 |
| C30G50 | 60.3 | 40 | 0.32 |

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.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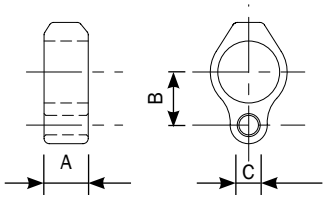
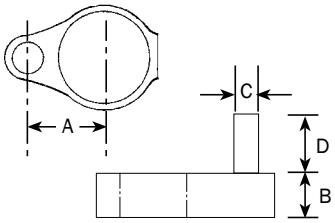
## C31 Gate Eye




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C31G20 | 26.9 | 25 | 30 | 15 | 0.14 |
| C31G25 | 33.7 | 25 | 33 | 15 | 0.19 |
| C31G32 | 42.4 | 25 | 38 | 15 | 0.25 |
| C31G40 | 48.3 | 25 | 41 | 15 | 0.26 |

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.

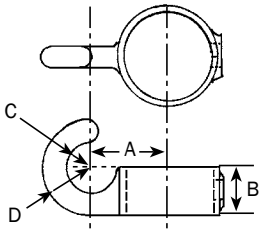
## C32 Gate Hinge




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C32G20 | 26.9 | 30 | 25 | 13 | 38 | 0.21 |
| C32G25 | 33.7 | 30 | 25 | 10 | 25 | 0.27 |
| C32G32 | 42.4 | 34 | 27 | 10 | 27 | 0.30 |
| C32G40 | 48.3 | 37 | 27 | 10 | 27 | 0.32 |

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.

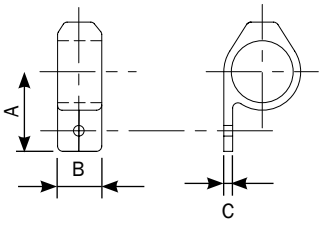
## C33 Hook




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C33G20 | 26.9 | 28 | 25 | 10 | 19 | 0.17 |
| C33G25 | 33.7 | 35 | 25 | 13 | 21 | 0.24 |
| C33G32 | 42.4 | 39 | 25 | 13 | 25 | 0.25 |
| C33G40 | 48.3 | 41 | 25 | 13 | 25 | 0.30 |

The fitting is designed to provide an attachment for chain.

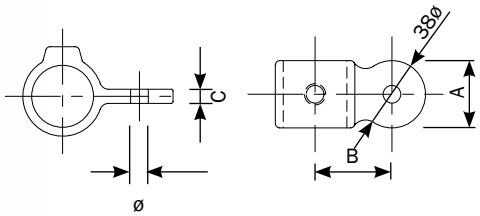
## C34 Fixing Pad




| Type | Tube Size | A | B | C | Ø | Kg |
|---|---|---|---|---|---|---|
| C34G25 | 33.7 | 45 | 25 | 5 | 9 | 0.16 |
| C34G32 | 42.4 | 53 | 40 | 5 | 12 | 0.32 |
| C34G40 | 48.3 | 56 | 40 | 5 | 12 | 0.35 |

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.

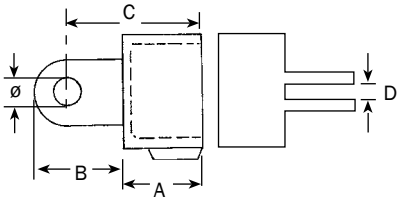
## C35 Male Swivel




| Type | Tube Size | A | B | C | Ø | Kg |
|---|---|---|---|---|---|---|
| C35G20 | 26.9 | 32 | 38 | 8 | 11 | 0.15 |
| C35G25 | 33.7 | 32 | 42 | 8 | 11 | 0.20 |
| C35G32 | 42.4 | 32 | 47 | 8 | 11 | 0.21 |
| C35G40 | 48.3 | 32 | 50 | 8 | 11 | 0.24 |
| C35G50 | 60.3 | 48 | 60 | 8 | 11 | 0.47 |

The Male Swivel can be used on its own for use with a shakle 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.

## C36F Female Swivel




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C36G20F | 26.9 | 39 | 35 | 58 | 10 | 11 | 0.24 |
| C36G25F | 33.7 | 41 | 35 | 60 | 10 | 11 | 0.33 |
| C36G32F | 42.4 | 44 | 35 | 63 | 10 | 11 | 0.38 |
| C36G40F | 48.3 | 50 | 35 | 70 | 10 | 11 | 0.46 |
| C36G50F | 60.3 | 70 | 4095 | | 10 | 11 | 0.84 |

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.

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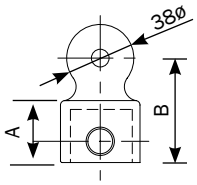
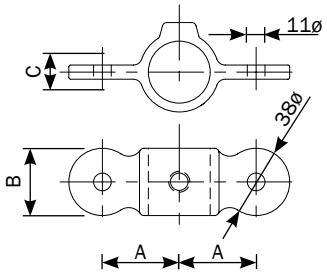
## C36M Male Swivel




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C36G25M | 33.7 | 35 | 60 | 0.28 |
| C36G32M | 42.4 | 45 | 70 | 0.40 |
| C36G40M | 48.3 | 50 | 75 | 0.44 |

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

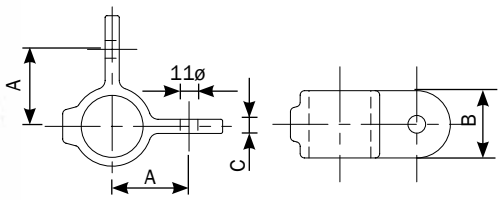
## C37 Double Male Swivel




| Type | Tube Size | A | B | C | Ø | Kg |
|---|---|---|---|---|---|---|
| C37G20 | 26.9 | 40 | 32 | 8 | 11 | 0.21 |
| C37G25 | 33.7 | 44 | 32 | 8 | 11 | 0.28 |
| C37G32 | 42.4 | 49 | 32 | 8 | 11 | 0.32 |
| C37G40 | 48.3 | 52 | 32 | 8 | 11 | 0.46 |
| C37G50 | 60.3 | 63 | 50 | 8 | 11 | 0.51 |

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.

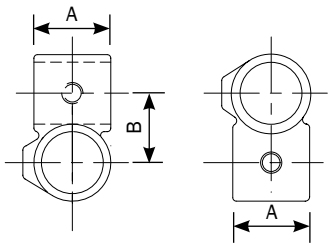
## C38 90° Corner Male Swivel




| Type | Tube Size | A | B | C | Ø | Kg |
|---|---|---|---|---|---|---|
| C38G20 | 26.9 | 40 | 39 | 8 | 11 | 0.22 |
| C38G25 | 33.7 | 44 | 38 | 8 | 11 | 0.34 |
| C38G32 | 42.4 | 49 | 48 | 8 | 11 | 0.39 |
| C38G40 | 48.3 | 53 | 48 | 8 | 11 | 0.47 |

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.

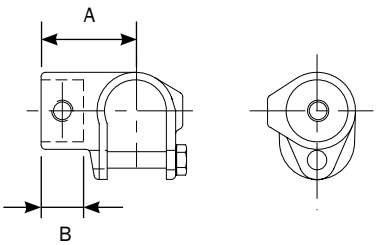
## C40 90° Crossover




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C40G20 | 26.9 | 36 | 35 | 0.22 |
| C40G25 | 33.7 | 40 | 40 | 0.34 |
| C40G32 | 42.4 | 49 | 49 | 0.41 |
| C40G40 | 48.3 | 55 | 55 | 0.57 |
| C40G50 | 60.3 | 61 | 64 | 0.82 |
| C40G25-32 | 33.7 / 42.4 | 45 | 45 | 0.46 |
| C40G25-40 | 33.7 / 48.3 | 53 | 50 | 0.57 |
| C40G32-40 | 42.2 / 48.3 | 51 | 52 | 0.59 |

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.

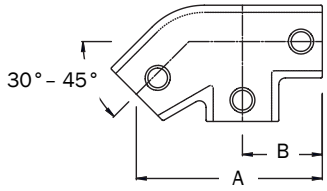
## C41 Clamp on Tee




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C41G20 | 26.9 | 50 | 37 | 0.28 |
| C41G25 | 33.7 | 53 | 37 | 0.45 |
| C41G32 | 42.4 | 67 | 48 | 0.61 |
| C41G40 | 48.3 | 77 | 55 | 0.79 |
| C41G50 | 60.3 | 90 | 62 | 0.97 |

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

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




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C041G32 | 42.4 | 140 | 60 | 1.02 |
| C041G40 | 48.3 | 156 | 68 | 1.12 |

Used to form a Tee on handrails where the rail changes from level to sloping down the stairs. Adjustable between 30° & 45°.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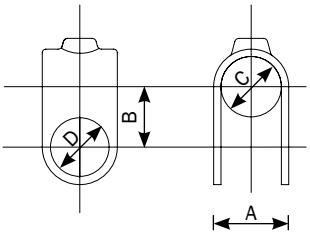
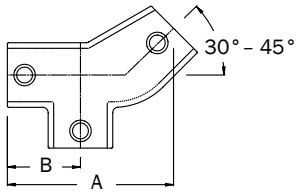
## C42 Clamp on Crossover




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C42G20 | 26.9 | 40 | 28 | 28 | 28 | 0.15 |
| C42G25 | 33.7 | 48 | 34 | 34 | 34 | 0.27 |
| C42G32 | 42.4 | 58 | 43 | 43 | 43 | 0.47 |
| C42G40 | 48.3 | 65 | 49 | 49 | 49 | 0.54 |
| C42G50 | 60.3 | 78 | 62 | 61 | 61 | 0.74 |

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

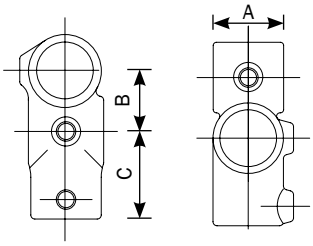
## C042 Level to Sloping Up Tee (30° to 45°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C042G32 | 42.4 | 140 | 60 | 1.02 |
| C042G40 | 48.3 | 155 | 68 | 1.12 |

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

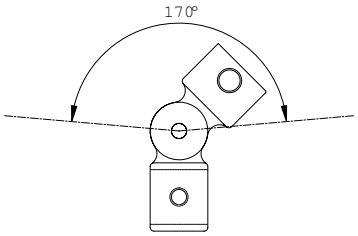
## C43 Combination Socket




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C43G20 | 26.9 | 30 | 35 | 40 | 0.28 |
| C43G25 | 33.7 | 40 | 40 | 48 | 0.49 |
| C43G32 | 42.4 | 45 | 50 | 60 | 0.75 |
| C43G40 | 48.3 | 51 | 56 | 67 | 0.90 |
| C43G50 | 60.3 | | 68 | 86 | 1.72 |

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

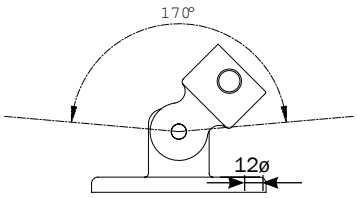
## C45 Single Swivel Combination




| Type | Tube Size | Kg |
|---|---|---|
| C45G20 | 26.9 | 0.42 |
| C45G25 | 33.7 | 0.55 |
| C45G32 | 42.4 | 0.62 |
| C45G40 | 48.3 | 0.73 |
| C45G50 | 60.3 | 1.34 |

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

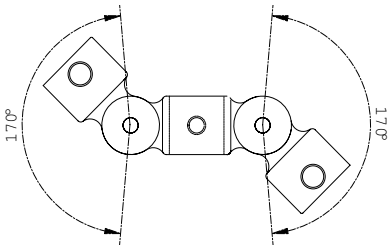
## C46 Base Swivel Combination




| Type | Tube Size | Ø | Kg |
|---|---|---|---|
| C46G20 | 26.9 | 12 | 0.62 |
| C46G25 | 33.7 | 12 | 0.87 |
| C46G32 | 42.4 | 12 | 0.81 |
| C46G40 | 48.3 | 12 | 0.85 |
| C46G50 | 60.3 | 12 | 0.96 |

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.

## C47 Double Swivel Combination




| Type | Tube Size | Kg |
|---|---|---|
| C47G20 | 26.9 | 0.78 |
| C47G25 | 33.7 | 0.99 |
| C47G32 | 42.4 | 0.81 |
| C47G40 | 48.3 | 1.32 |
| C47G50 | 60.3 | 2.50 |

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.

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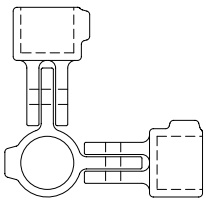
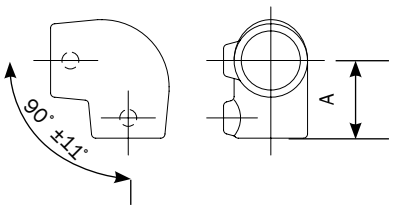
## C48 90° Corner Swivel Combination



| Type | Tube Size | Kg |
|---|---|---|
| C48G20 | 26.9 | 0.75 |
| C48G25 | 33.7 | 1.00 |
| C48G32 | 42.4 | 1.12 |
| C48G40 | 48.3 | 1.46 |

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.

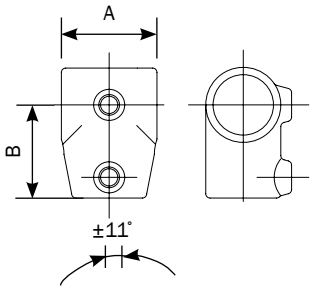
## C50 Slope Elbow (0° to 11°)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C50G32 | 42.4 | 60 | 0.81 |
| C50G40 | 48.3 | 70 | 1.02 |

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°.

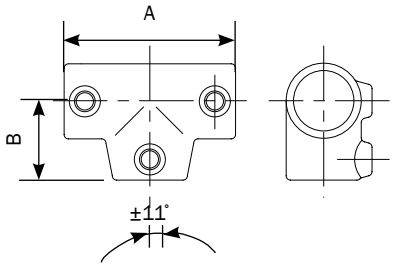
## C51 Short Slope Tee (0° to 11°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C51G32 | 42.4 | 68 | 60 | 0.57 |
| C51G40 | 48.3 | 75 | 68 | 0.76 |

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°.

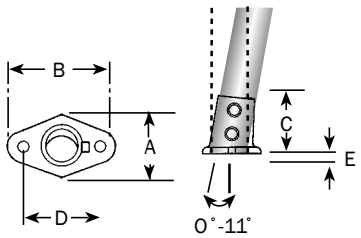
## C52 Long Slope Tee (0° to 11°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C52G32 | 42.2 | 144 | 60 | 1.06 |
| C52G40 | 48.3 | 158 | 67 | 1.10 |

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°.

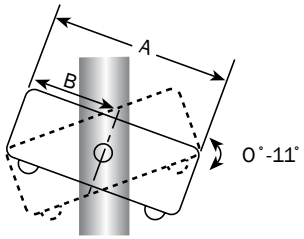
## C53 Slope Base (0° to 11°)




| Type | Tube Size | A | B | C | D | E | Ø | Kg |
|---|---|---|---|---|---|---|---|---|
| C53G32 | 42.2 | 91 | 140 | 89 | 102 | 10 | 14 | 0.90 |
| C53G40 | 48.3 | 96 | 152 | 89 | 114 | 10 | 14 | 1.40 |

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°.

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




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C54G32 | 42.4 | 144 | 72 | 0.97 |
| C54G40 | 48.3 | 158 | 79 | 1.00 |

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°.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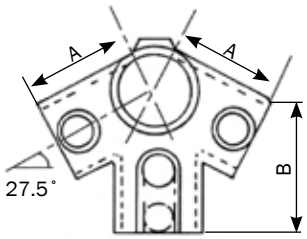
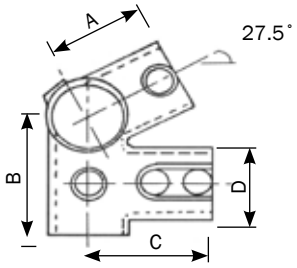
## C55 27½° Ridge Fitting




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C55G40 | 48.3 | 67 | 89 | 1.00 |

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

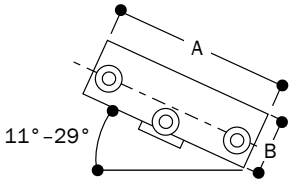
## C56 27½° Eaves Fitting




| Type | Tube Size | A | B | C | D | Kg |
|---|---|---|---|---|---|---|
| C56G40 | 48.3 | 67 | 89 | 83 | 46 | 1.16 |

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

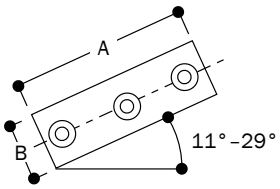
## C57 Three Socket Tee (11° to 30°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C57G32 | 42.4 | 180 | 62 | 1.16 |
| C57G40 | 48.3 | 216 | 70 | 1.46 |

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.

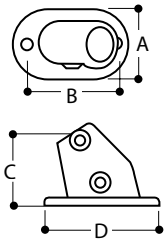
## C58 Two Socket Cross (11° to 30°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C58G32 | 42.4 | 180 | 62 | 0.97 |
| C58G40 | 48.3 | 216 | 70 | 1.26 |

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.

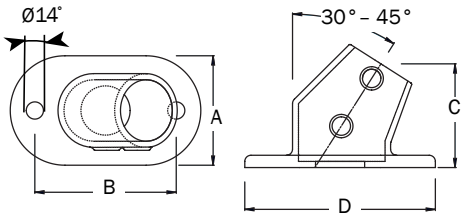
## C59 Angle Base Flange (11° to 30°)




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C59G32 | 42.4 | 76 | 114 | 79 | 146 | 14 | 1.27 |
| C59G40 | 48.3 | 89 | 124 | 90 | 164 | 14 | 1.42 |

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 Ø indicates the diameter of the fixing hole.

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




| Type | Tube Size | A | B | C | D | Ø | Kg |
|---|---|---|---|---|---|---|---|
| C59AG32 | 42.4 | 76 | 106 | 81 | 138 | 14 | 1.17 |
| C59AG40 | 48.3 | 89 | 115 | 85 | 155 | 14 | 1.53 |

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

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## C60 Spare Screws

| Type | Tube Size |
|---|---|
| C60S25 | 26.9, 33.7 & 42.4 |
| C60S32/40 | 48.3 & 60.3 |

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.

## C61 Allen Keys

| Type | Tube Size |
|---|---|
| C61S25 | 26.9, 33.7 & 42.4 |
| C61S32/40 | 48.3 & 60.3 |

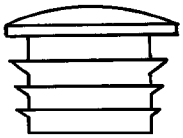
Allen keys are available in two sizes, the first is suitable for the 20 and 25nb fitting and the other for the 32, 40 and 50nb fittings.

## C62R Ratchet Keys

| Type | Tube Size |
|---|---|
| C62R | ALL SIZES |

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

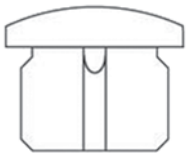
## C65P Plastic End Cap



| Type | Tube Size | Kg |
|---|---|---|
| C65P20 | 26.9 | 0.008 |
| C65P25 | 33.7 | 0.010 |
| C65P32 | 42.4 | 0.010 |
| C65P40 | 48.3 | 0.016 |
| C65P50 | 60.3 | 0.024 |

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

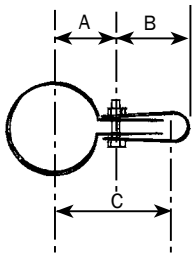
## C65G Metal End Cap



| Type | Tube Size | Kg |
|---|---|---|
| C65G20 | 26.9 | 0.05 |
| C65G25 | 33.7 | 0.10 |
| C65G32 | 42.4 | 0.12 |
| C65G40 | 48.3 | 0.17 |
| C65G50 | 60.3 | 0.29 |

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.

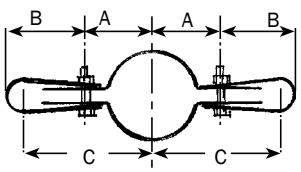
## C66 Single Mesh Clip




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C66G20 | 26.9 | 24 | 33 | 48 | 0.06 |
| C66G25 | 33.7 | 27 | 33 | 52 | 0.07 |
| C66G32 | 42.4 | 32 | 33 | 56 | 0.08 |
| C66G40 | 48.3 | 34 | 33 | 59 | 0.09 |
| C66G50 | 60.3 | 40 | 33 | 64 | 0.09 |

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.

## C67 Double Mesh Clip




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C67G20 | 26.9 | 24 | 33 | 48 | 0.09 |
| C67G25 | 33.7 | 27 | 33 | 52 | 0.12 |
| C67G32 | 42.4 | 32 | 33 | 56 | 0.13 |
| C67G40 | 48.3 | 34 | 33 | 59 | 0.13 |
| C67G50 | 60.3 | 40 | 33 | 64 | 0.14 |

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.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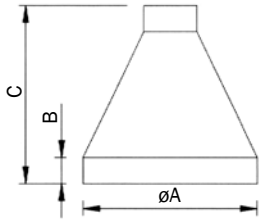
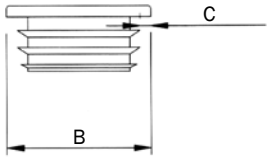
## C68 Weather Cowl




| Type | Tube Size | A | B | H | Kg |
|---|---|---|---|---|---|
| C68G25 | 33.7 | 143 | 25 | 125 | 0.28 |
| C68G32 | 42.4 | 154 | 25 | 150 | 0.33 |
| C68G40 | 48.3 | 167 | 25 | 155 | 0.38 |

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

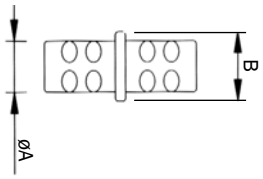
## C69 Square Plastic End Cap




| Type | Tube Size | B | C | Kg |
|---|---|---|---|---|
| C69P40X40 | 40x40SHS | 40 | 3.2 | 0.01 |
| C69P50X50 | 50X50SHS | 50 | 3.2 | 0.01 |
| C69P70X70 | 70X70SHS | 70 | 3.2 | 0.02 |

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

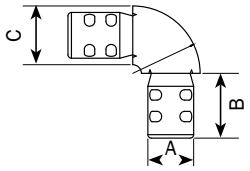
## C70 Crimp Straight




| Type | Tube Size | AØ | B | Kg |
|---|---|---|---|---|
| C70G25 | 33.7 | 27 | 34 | 0.30 |

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

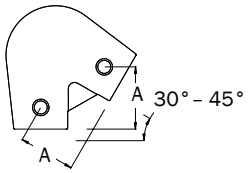
## C71 Crimp Elbow




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C71G25 | 33.7 | 27 | 38 | 34 | 0.47 |

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

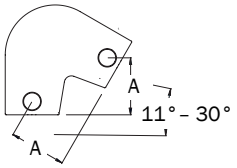
## C72 Acute Angle Elbow (30° to 45°)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C72G32 | 42.4 | 57 | 0.98 |
| C72G40 | 48.3 | 70 | 1.45 |

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

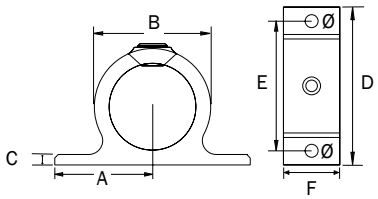
## C72A Acute Angle Elbow (11° to 30°)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C72AG32 | 42.4 | 62 | 0.94 |
| C72AG40 | 48.3 | 64 | 1.12 |

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°

## C200 Double Sided Fixing Bracket




| Type | Tube Size | A | B | C | D | E | F | Ø | Kg |
|---|---|---|---|---|---|---|---|---|---|
| C200G25 | 33.7 | 45 | 45 | 5 | 90 | 70 | 25 | 6.5 | 0.18 |
| C200G32 | 42.4 | 53 | 55 | 6 | 106 | 86 | 40 | 11.5 | 0.38 |
| C200G40 | 48.3 | 56 | 61 | 6 | 112 | 92 | 40 | 11.5 | 0.59 |

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

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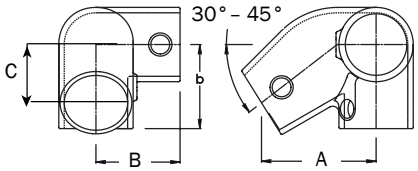
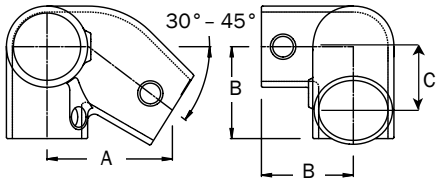
## C201LH Left hand Level to Sloping Down Side Outlet Elbow (30° to 45°)




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C201LHG32 | 42.4 | 86 | 60 | 42 | 1.08 |
| C201LHG40 | 48.3 | 93 | 68 | 47 | 1.28 |

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°

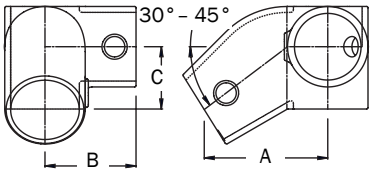
## C201RH Right hand Level to Sloping Down Side Outlet Elbow (30° to 45°)




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C201RHG32 | 42.4 | 86 | 60 | 42 | 1.08 |
| C201RHG40 | 48.3 | 93 | 68 | 47 | 1.28 |

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°

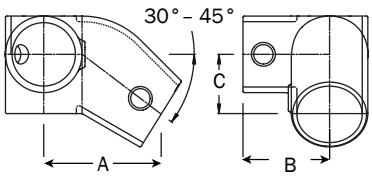
## C211LH Left hand Level to Sloping Down Side Outlet Tee (30° to 45°)




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C211LHG32 | 42.4 | 86 | 60 | 44 | 0.96 |
| C211LHG40 | 48.3 | 93 | 68 | 48 | 1.12 |

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

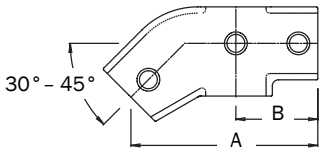
## C211RH Right hand Level to Sloping Down Side Outlet Tee (30° to 45°)




| Type | Tube Size | A | B | C | Kg |
|---|---|---|---|---|---|
| C211RHG32 | 42.4 | 86 | 60 | 44 | 0.96 |
| C211RHG40 | 48.3 | 93 | 68 | 48 | 1.12 |

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

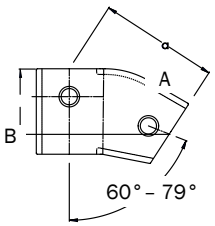
## C221 Level to Sloping Down / Up Cross (30° to 45°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C221G32 | 42.4 | 138 | 60 | 0.82 |
| C221G40 | 48.3 | 155 | 68 | 0.95 |

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°.

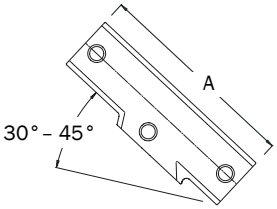
## C229 Single Socket Tee (11° to 30°)




| Type | Tube Size | A | B | Kg |
|---|---|---|---|---|
| C229G32 | 42.4 | 99 | 54 | 0.73 |
| C229G40 | 48.3 | 109 | 59 | 0.86 |

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°.

## C245 Three Socket Tee (30° to 45°)




| Type | Tube Size | A | Kg |
|---|---|---|---|
| C245G32 | 42.4 | 180 | 0.95 |
| C245G40 | 48.3 | 216 | 1.22 |

This fitting is used on Safety Railing with slopes be-tween 30° & 45° and fixes the top rail to a vertical intermediate upright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# 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.

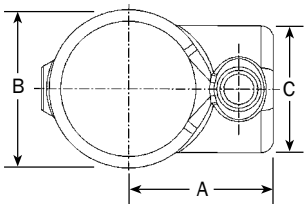
Our DDA range has been designed to meet these requirements by providing a non-discriminatory handrail solution that complies with the Equality Act and Part 'M' of the Building Regulations. The range allows construction of a smooth continuous handrail of 42.4mm diameter.

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.

## The **DDA** Range

Designed to satisfy the requirements of Part 'M' of the Building Regulations 2004

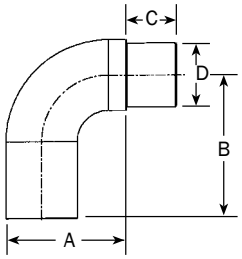
## DDA01 Upright Connector




| Type | A | B | C | Kg |
|---|---|---|---|---|
| DDA01 | 55 | 60 | 50 | 0.38 |

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

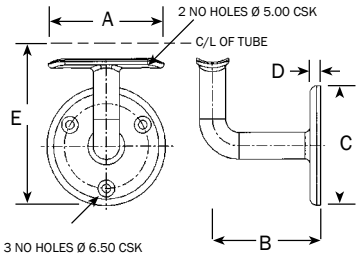
## DDA02 Handrail Connector




| Type | A | B | C | D | Kg |
|---|---|---|---|---|---|
| DDA02 | 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.

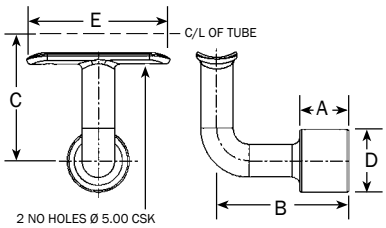
## DDA03 Wall Bracket




| Type | A | B | C | D | E | Kg |
|---|---|---|---|---|---|---|
| DDA03 | 88 | 82 | 90 | 8 | 129 | 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.

## DDA04 Intermediate Bracket




| Type | A | B | C | D | E | Kg |
|---|---|---|---|---|---|---|
| DDA04 | 30 | 51 | 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.

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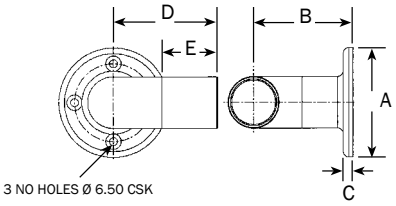
# The DDA Range

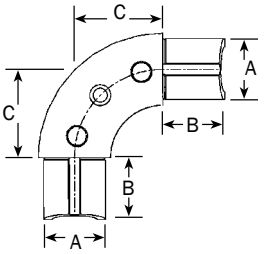
## DDA05 End Return




| Type | A | B | C | D | E | Kg |
|---|---|---|---|---|---|---|
| DDA05 | 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.

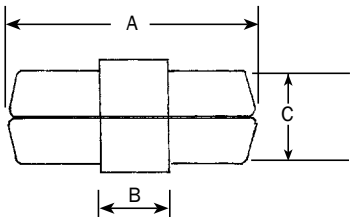
## DDA06 90° Bend




| Type | A | B | C | Kg |
|---|---|---|---|---|
| DDA06 | 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.

## DDA07 Expanding Connector

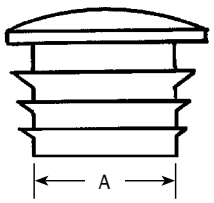



| Type | A | B | C | Kg |
|---|---|---|---|---|
| DDA07 | 75 | 19 | 42.4 | 0.35 |

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.*

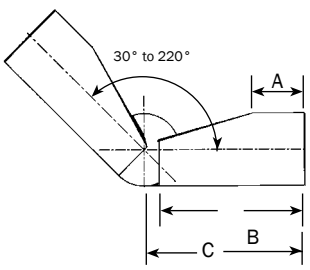
## DDA08 Plastic End Cap




| Type | A | Kg |
|---|---|---|
| DDA08 | 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.

## DDA09 Adjustable Bend




| Type | A | B | C | Kg |
|---|---|---|---|---|
| DDA09 | 31 | 84 | 91 | 0.61 |

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

For more information on Defender Roof Edge Protection please contact our Sales Office on 01384 632385.

## 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.

FastClamp fittings are used in construction of Defender Roof Edge Protection systems. 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

FastClamp® supplies a range of self-closing industrial safety gates. Our 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. FastClamp® industrial safety gates provide a safe access to demarcated areas within factories, warehouses and loading bays.

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

FastClamp® 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

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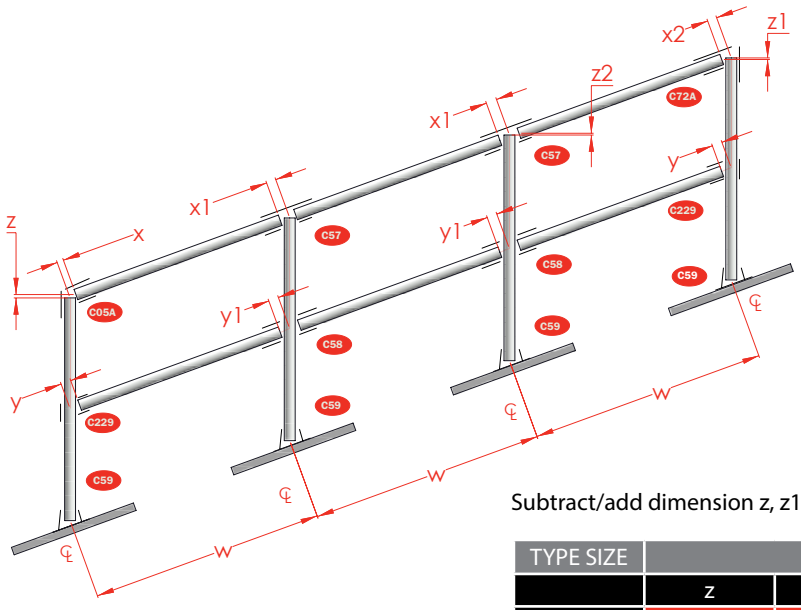
## How to calculate correct tube cutting length using types C05A, C57, C58, C59A, C72A & C229 on slopes between 11° to 30°




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 form 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°

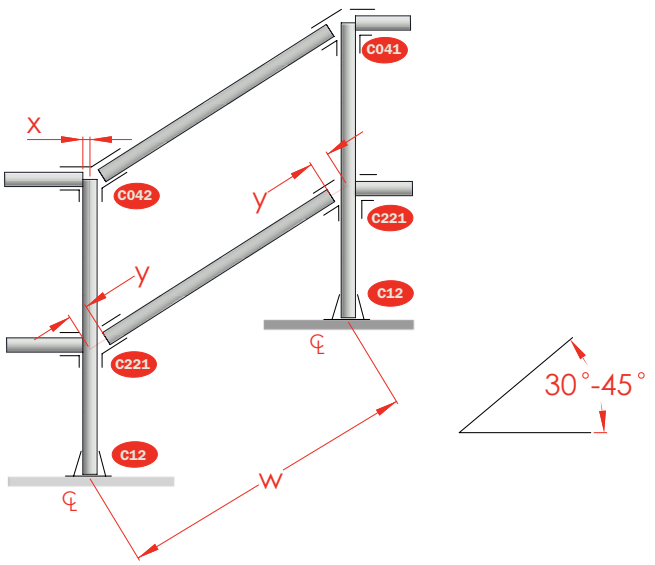
Subtract dimension x to determine rail size on level

| 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 |





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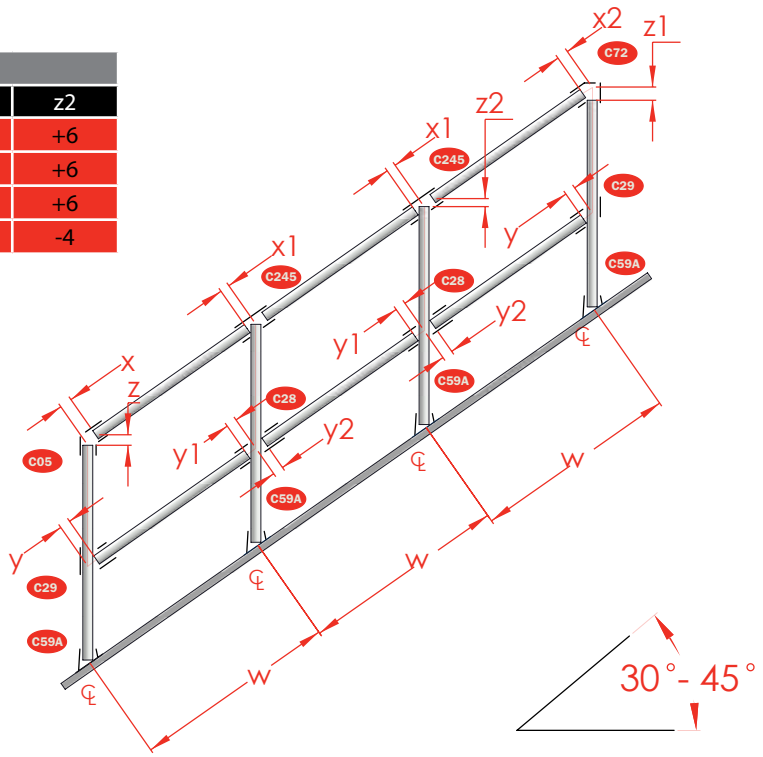
## How to calculate correct tube cutting length using types C05, C245, C28, C59A, C72 & C29 on slopes between 30° to 45°

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 |



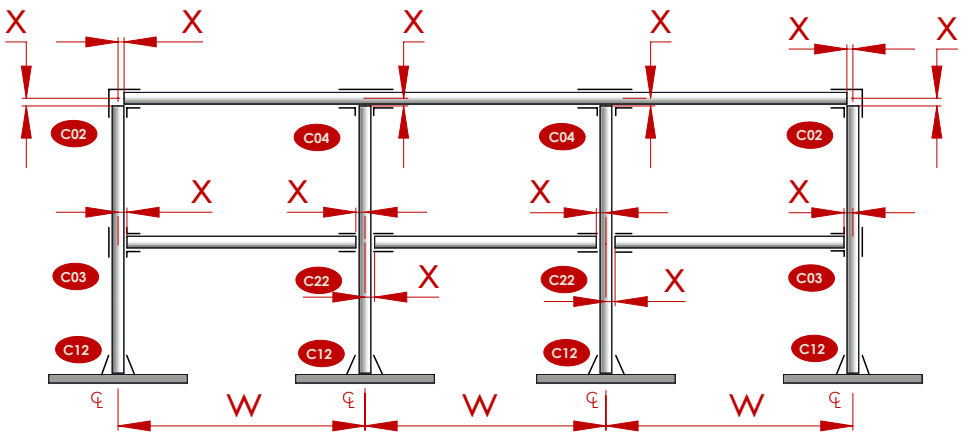

Subtract dimension x, x1,x2,y or y1 form upright centres (w). Please note the upright centres must be measured on the slope

| 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 ℄ to ℄

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

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