# MALLEABLE IRON PIPE CLAMP

**Doc No: DS-158-CLAMP-01-E**

## 1.0 PRODUCT OVERVIEW

Pipe clamps are used to install stair railings, protective fences, display stands, shelves, etc. The application scenarios are residential houses, farms, supermarkets, parks, roads, hospitals, factories, etc. However, due to load bearing restrictions, it cannot be used for building construction scaffolding. The product features flexible installation, convenient disassembly and beautiful appearance.

## 2.0 TECHNICAL INFORMATION

### Material of Products:

ASTM A197

### Surface Treatment:

- ☐ Hot-dip galvanizing
- ☐ Hot-dip galvanizing+ Electroplated zinc
- ☐ Hot-dip galvanizing+ Polyester powder coating
- ☐ Black electric-painting
- ☐ Electroplated cooper
- ☐ Surfaces are available upon request

### Dimensions:

3/8”(DN10)-2”(DN50)

| MECH Pipe Clamp Size | Nominal Bore | Outsider Diameter/mm | Steel Tube Thickness/mm |
|---|---|---|---|
| S | 3/8 | 17.2 | 2.25 |
| T | 1/2 | 21.3 | 2.75 |
| A | 3/4 | 26.9 | 2.75 |
| B | 1 | 33.7 | 3.25 |
| C | 11/4 | 42.4 | 3.50 |
| D | 11/2 | 48.3 | 3.50 |
| E | 2 | 60.3 | 3.75 |

### Material of Matching Products:

EN10241

### Capacity of Loading:

In order to determine the correct choice of fixing for any given application, please

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contact a reputable distributor or manufacturer of fixings .Please note that chemical anchors may need to be specified in order to meet 740N/m and 1500N/m design loads. The strength of any fixed tubular structure is dependent not only on the choice of fittings, tube and any fasteners used, but also the civil structure (eg. concrete slab, wall etc. ) to which it is fixed .

### Guidelines for Construction & Fixing

Please note that the ultimate responsibility for the correct choice of size and type of fittings for any application belongs with the customer. The customer is responsible for ensuring that the construction or structure is sufficiently strong to support the weight of its component parts plus any applied load, and that suitable fixings are used. We strongly recommend that types 132 and 152 are always used where baseplates are required, fitted so that the fixing holes are in line with the applied load. To provide sufficient stability, whole structures must not be made from swivel fittings alone.

## 3.0 APPROVALS

## 4.0 SPECIFICATIONS

| Product Category | Product Name | Product Category | Product Name |
|---|---|---|---|
| Elbow Category | | Flange Category | |
| 123 | Variable Elbow 40°-70° | 131 | Base Flange |
| 124 | Variable Elbow 15°-60° | 132 | Railing Base Flange |
| 125 | 2 Way 90° Elbow | 143 | Handrail Bracket |
| 154 | Elbow 0°-11° | 143W | Handrail Bracket |
| Tee Category | | 144 | Railing Side Support(Vertical) |
| 101 | Short Tee | 145 | Railing Side Support(Horizontal) |
| 104 | Long Tee | 146 | Side Palm fixing |
| 116 | 3 Way Through | 152 | Base Flange 0°-11° |
| 127 | Angle Tee 30°-45° | 198 | Double Sided Fixing Bracket |
| 129 | Adjustable Tee 30°-60° | 199 | Adjustable Fixing Bracket |
| 153 | Short Tee 0°-11° | 240 | Double prosecution flange bracket |
| 155 | Long Tee 0°-11° | 246 | Double side flange bracket |
| 128 | 3 Way 90° Elbow | 247 | Flange With Toeboard Adaptor |
| 253Z | Slope Short Tee 11°-29° | 252 | Angle horizontal flange bracket 11°-29° |
| 255Z | Slope Long Tee 11°-29° | 252Z | Slope Base Flange 11°-29° |
| Multi-way Category | | Cap & Plug Category | |
| 119 | 2 Socket Cross | 133 | Plastic End Cap |

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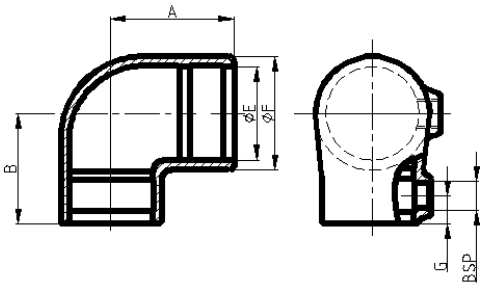
| | | | |
|---|---|---|---|
| 126 | Angle Cross 30°-45° | 184 | Plug |
| 130 | Adjustable Cross 30°-45° | Rotary Joint Category | |
| 156 | 2 Socket Cross 0°-11° | 125H | Variable Elbow |
| 158 | 4 Way Cross | 148 | Short Swivel Tee |
| 176 | Side Outlet Tee | 166 | Joint Bend |
| 185 | Eaves Fitting | 167 | Double Swivel Combination |
| 191 | Ridge Fitting | 168 | 90° Corner Swivel Combination |
| 256Z | Slope Cross Middle Rail 11°-29° | 169 | Swivel Base |
| Joint Category | | 173 | Singe Swivel Combination |
| 149 | Sleeve Joint | Special Category | |
| 150 | Internal Joint | 179 | Locking Collar |
| Crossover Category | | 134 | Ground Socket |
| 135 | Clamp on Tee | 138 | Gate Eye |
| 136 | Add on Tee | 140 | Gate Hinge |
| 137 | Crossover 90° | 147 | Internal Swivel Tee |
| 160 | Clamp on Crossover | 170 | Single Sided Mesh Panel |
| 161 | 90° Crossover | 171 | Double Sided Mesh Panel |
| 165 | Combination Socket | 182 | Hook |
| 201 | Guard Hook | | |

## 4.1 Elbow Category

**4.1.1**2 Way 90° Elbow

Used for the connection of the ends of two perpendicular pipes to each other, often used for horizontal site railing installation.




| TYPE | A | ΦE | φF | G | BSP |
|---|---|---|---|---|---|
| 125A-1 | 41 | 28 | 37 | 11 | 1/4BSPX12.5 |
| 125B-1 | 46 | 35 | 46 | 11 | 1/4BSPX12.5 |
| 125C-1 | 60 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 125D-1 | 68 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 |
| 125DC-1 | 68/60 | 50/44 | 60.5/55 | 14.5 | 3/8BSPX12.7 |
| 125E-1 | 84 | 62 | 73 | 14.5 | 3/8BSPX12.7 |
| 125S-1 | 30 | 18 | 25.5 | 10 | 1/8BSPX10 |
| 125T-1 | 35 | 23 | 31 | 10 | 1/8BSPX10 |

**4.1.2** Elbow 0°-11°

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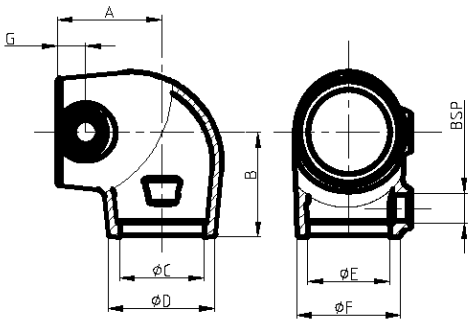
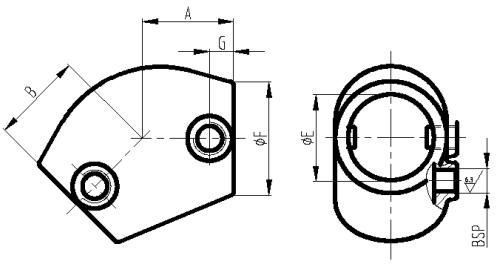
Used for the connection of the ends of two steel pipes, often used for slope installation of 0°-11° inclined site.




| TYPE | A | B | ØC | ØD | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|---|---|
| 154B-1 | 46 | 46 | 36 | 47 | 35 | 46 | 12.5 | 1/4BSPX12.5 |
| 154C-1 | 60 | 60 | 45 | 56 | 44 | 55 | 15 | 3/8BSPX12.7 |
| 154D-1 | 68 | 68 | 51 | 62.5 | 50 | 61 | 16.5 | 3/8BSPX12.7 |

**4.1.3** Variable Elbow 15°-60°

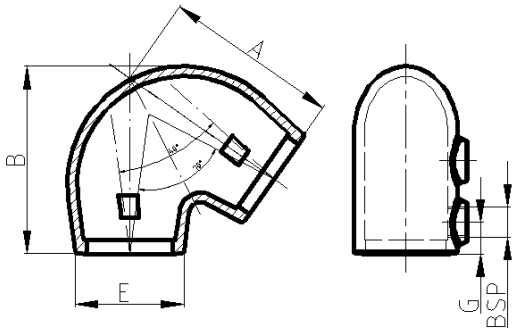
Used for the connection of the ends of two steel pipes, often used in the joint of platform handrails and stair rails.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 124B-1 | 40 | 40 | 46.5 | 36 | 14 | 1/4BSPX12.5 |
| 124C-1 | 47.5 | 47.5 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 124D-1 | 44 | 44 | 50 | 60.5 | 15 | 3/8BSPX12.7 |

**4.1.4** Variable Elbow 40°-70°

Used for the connection of the ends of two steel pipes, often used in the joint of platform handrails and stair rails.

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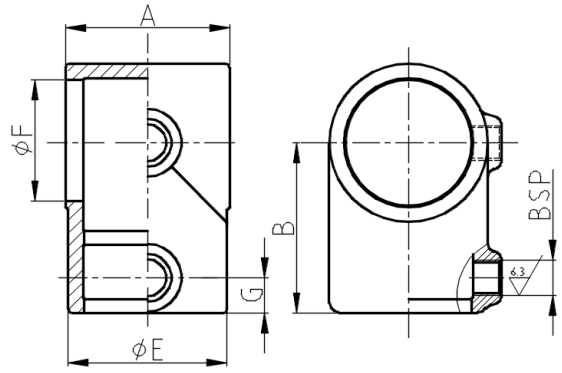
| TYPE | A | B | E | G | BSP |
|---|---|---|---|---|---|
| 123B-1 | 78 | 83.3 | 48 | 14 | 1/4BSPX12.5 |
| 123C-1 | 98 | 102.5 | 57 | 16.5 | 3/8BSPX12.7 |
| 123D-1 | 120 | 134 | 62.5 | 20 | 3/8BSP X12.7 |

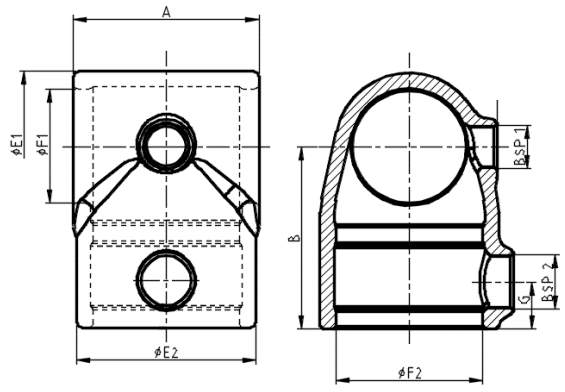
## 4.2 Tee Category

### 4.2.1 Short Tee

Used for the connection of two perpendicular pipes to each other, and is often used for the connection of the main pipe and the intermediate branch pipe. The two steel pipes have the same diameter.




| TYPE | A | B | ϕE | ϕF | G | BSP |
|---|---|---|---|---|---|---|
| 101S-1 | 26 | 30 | 25.5 | 18 | 10 | 1/8BSPX10 |
| 101T-1 | 33 | 35 | 31 | 23 | 10 | 1/8BSPX10 |
| 101A-1 | 39 | 41 | 37 | 28 | 11 | 1/4BSPX12.5 |
| 101B-1 | 48 | 46 | 46 | 35 | 11 | 1/4BSP X12.5 |
| 101C-1 | 57 | 60 | 55 | 44 | 14.5 | 3/8BSPX12.7 |
| 101D-1 | 62.5 | 68 | 60.5 | 50 | 14.5 | 3/8BSP X12.7 |
| 101E-1 | 75 | 84 | 73 | 65 | 14.5 | 3/8BSP X12.7 |




| TYPE | A | B | E1 | E2 | F1 | F2 | G | BSP 1 | BSP 2 |
|---|---|---|---|---|---|---|---|---|---|
| 101BC-1 | 57 | 56 | 46 | 55 | 35 | 45 | 14.5 | 1/4BSPX12.5 | 3/8BSPX12.7 |
| 101CB-1 | 48 | 57 | 55 | 46 | 44 | 35 | 11.5 | 3/8BSPX12.7 | 1/4BSPX12.5 |
| 101CD-1 | 62.5 | 50 | 55 | 60.5 | 44 | 50 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |

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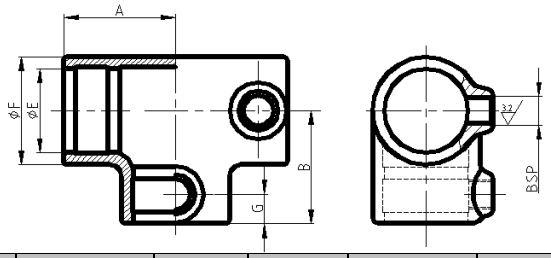
Location:_____ Date:_____ Approved& Date: _____

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 101DB-1 | 50 | 64 | 61 | 46 | 50 | 35 | 11.5 | 3/8BSPX12.7 | 1/4BSPX12.5 |
| 101DC-1 | 57 | 63 | 61 | 55 | 50 | 44 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 101ED-1 | 62.5 | 74 | 73 | 60.5 | 62 | 50 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |

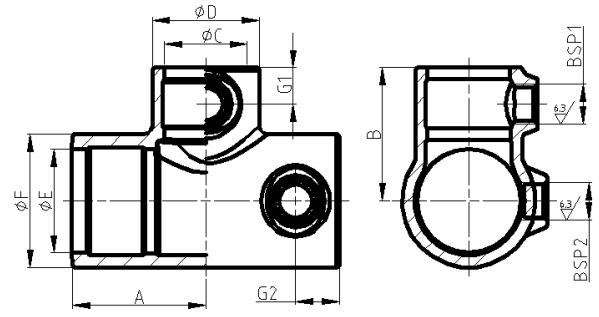
**4.2.2** Long Tee

Used for the connection of two perpendicular pipes to each other, and is often used for the connection of the main pipe and the intermediate branch pipe. The two steel pipes have the same diameter.

The difference from 101 is that 104 can be used to connect three steel pipes.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 104A-1 | 41 | 41 | 28 | 37 | 11 | 1/4BSPX12.5 |
| 104B-1 | 46 | 46 | 35 | 46 | 11 | 1/4BSPX12.5 |
| 104C-1 | 60 | 60 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 104D-1 | 68 | 68 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 |
| 104E-1 | 84 | 84 | 62 | 73 | 14.5 | 3/8BSPX12.7 |
| 104S-1 | 30 | 30 | 18 | 25.5 | 10 | 1/8BSPX10 |




| TYPE | A | B | ØC | ØD | ØE | ØF | G1 | G2 | BSP 1 | BSP 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| 104BA-1 | 46 | 46 | 28 | 37 | 35 | 46 | 13 | 15 | 1/4BSPX12.5 | 1/4BSPX12.5 |
| 104BT-1 | 46 | 46 | 23 | 31 | 35 | 46 | 13 | 15 | 1/8BSPX10 | 1/4BSPX12.5 |

4. 2. 3 3 Way Through

Used for the connection of steel pipes at the corners, the vertical steel pipe must be a whole and cannot be used for the connection to the steel pipe. Commonly used for the connection of steel pipes in the middle part.

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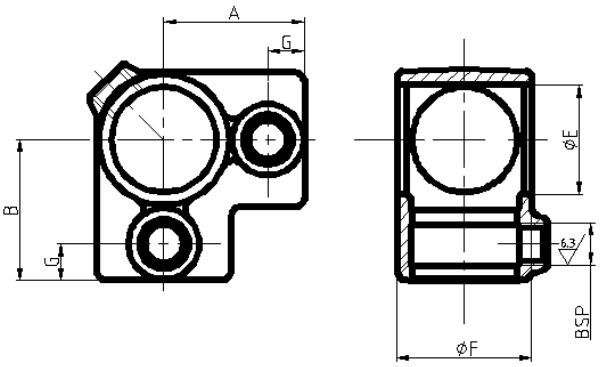
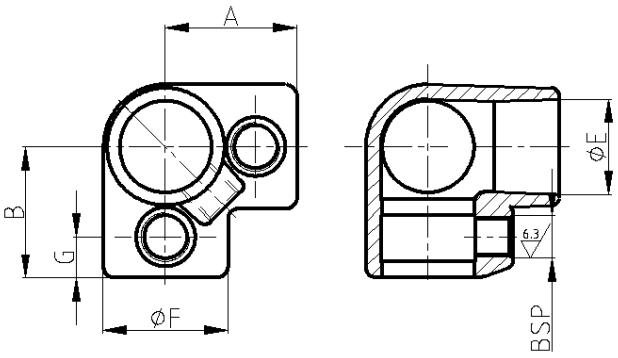



| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 116A-1 | 40 | 40 | 28.5 | 38 | 12.5 | 1/4BSPX12.5 |
| 116B-1 | 48 | 48 | 45.5 | 46 | 11 | 1/4BSPX12.5 |
| 116C-1 | 60 | 60 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 116D-1 | 68 | 68 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 |
| 116E-1 | 86 | 86 | 62 | 73 | 14.5 | 3/8BSPX12.7 |
| 116S-1 | 30 | 30 | 18 | 25.5 | 10 | 1/8BSPX10 |
| 116T-1 | 35 | 35 | 23 | 31 | 10 | 1/8BSPX10 |

4. 2. 4 3 Way 90° Elbow

Used for the connection of steel pipes at the corners, often used for the connection of top or bottom steel pipes.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 128A-1 | 40 | 40 | 28 | 38 | 12.5 | 1/4BSPX12.5 |
| 128B-1 | 48 | 48 | 35 | 46 | 11 | 1/4BSPX12.5 |
| 128C-1 | 60 | 60 | 44 | 55 | 16.5 | 3/8BSPX12.7 |
| 128D-1 | 68 | 68 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |
| 128S-1 | 30 | 30 | 18 | 25.5 | 10 | 1/8BSPX10 |
| 128T-1 | 35 | 35 | 23 | 31 | 10 | 1/8BSPX10 |

4. 2. 5 Short Tee 0°-11°

Used for the connection of the middle section of two steel pipes, and is often used for the installation of the slope guardrail of 0°-11°.

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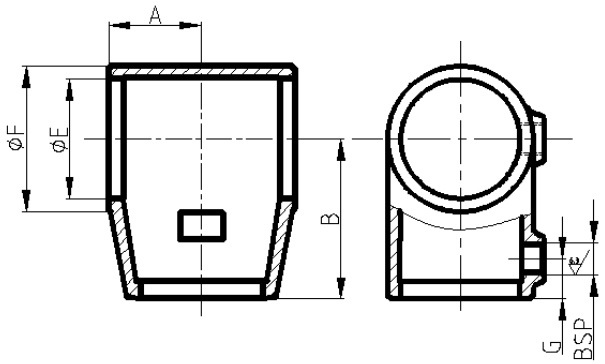
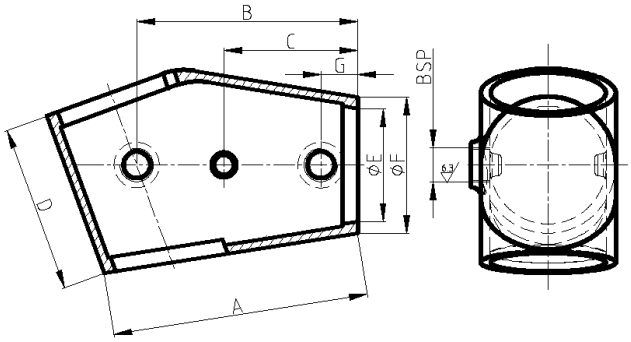



| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 153B-1 | 30 | 46 | 35 | 46 | 12 | 1/4BSPX12.5 |
| 153C-1 | 35 | 60.5 | 44 | 55 | 15 | 3/8BSPX12.7 |
| 153D-1 | 39 | 68 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |

4. 2. 6 Slope Short Tee 11°-29°

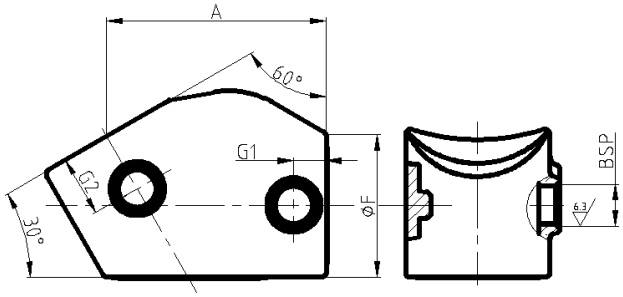
Used for the connection of the middle section of two steel pipes, and is often used for the installation of the slope guardrail of 0°-11°.




| TYPE | A | B | C | D | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|---|---|
| 253ZD-1 | 115 | 102 | 87 | 79 | 50 | 61 | 16 | 3/8BSPX12.7 |

4. 2. 7 Adjustable Tee 30°-60°

Used for the connection of the middle section of two steel pipes, often used for the installation of stair rails of 30°-60°.




| TYPE | A | ØF | G1 | G2 | BSP |
|---|---|---|---|---|---|

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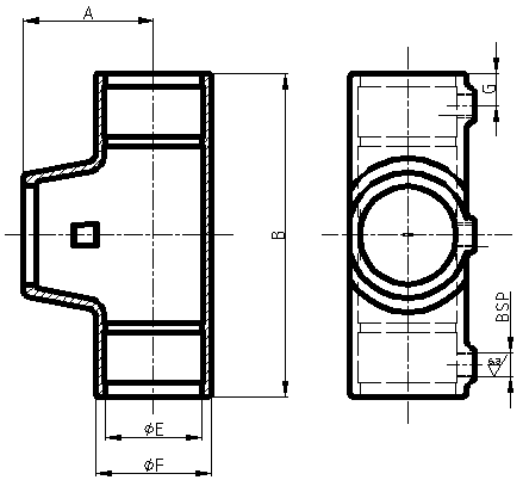
| | | | | | |
|---|---|---|---|---|---|
| 129A-1 | 75 | 39 | 11 | 23 | 1/4BSPX12.5 |
| 129B-1 | 70 | 46 | 12.5 | 20 | 1/4BSPX12.5 |
| 129C-1 | 85 | 56 | 12.5 | 23.5 | 3/8BSPX12.7 |

4. 2. 8 Long Tee 0°-11°

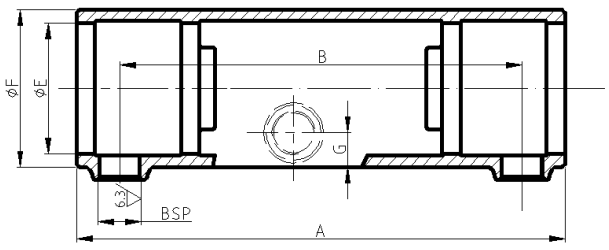
Used for the connection of the middle section of two steel pipes, often used for the installation of the slope guardrail of 0°-11°. The difference from 153 is that 155 can be used for the connection of three steel pipes.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 155B-1 | 46 | 104 | 35 | 46 | 12 | 1/4BSPX12.5 |
| 155C-1 | 60 | 145 | 44 | 55 | 15 | 3/8BSPX12.7 |
| 155D-1 | 68 | 168 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |

4. 2. 9 Slope Long Tee 11°-29°

Used for the connection of the middle section of two steel pipes, often used for 11°-29° stair rail installation.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 255ZD-1 | 187 | 154 | 50 | 60.5 | 13 | 3/8BSPX12.7 |

4. 2. 10 Angle Tee 30°-45°

Used for the connection of the middle section of two steel pipes, often used for the installation of stair rails of 30°-45°.

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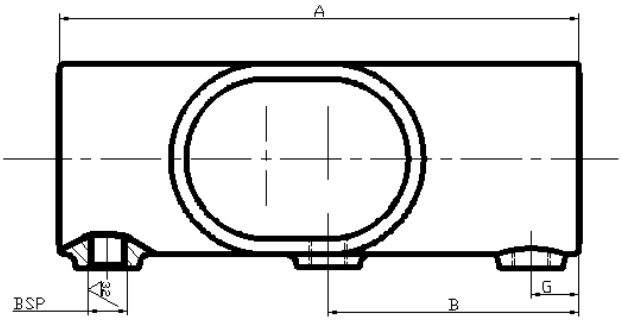
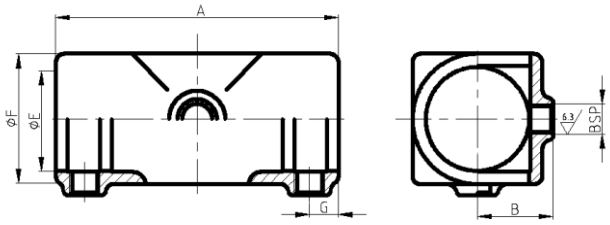



| TYPE | A | B | G | BSP |
|---|---|---|---|---|
| 127B-1 | 119 | 63.5 | 12.5 | 1/4BSPX12.5 |
| 127C-1 | 147 | 70 | 14.5 | 3/8BSPX12.7 |
| 127D-1 | 164.5 | 79 | 15 | 3/8BSPX12.7 |

**4.3 Multi-way Category**

4. 3. 1 2 Socket Cross

Used for the connection of the middle section of two steel pipes, often used for the installation of railings that are perpendicular to each other.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 119A-1 | 80 | 24.5 | 28 | 38 | 12.5 | 1/4BSPX12.5 |
| 119B-1 | 92 | 27.2 | 35 | 46 | 11 | 1/4BSPX12.5 |
| 119C-1 | 120 | 31.7 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 119CD-1 | 122 | 34.7 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 119D-1 | 135 | 34.7 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 |
| 119E-1 | 168 | 40.8 | 62 | 73 | 16.5 | 3/8BSPX12.7 |
| 119T-1 | 70 | 20 | 23 | 31 | 10 | 1/8BSPX10 |

4. 3. 2 Angle Cross 30°-45°

Used for the connection of the middle section of two steel pipes, oftren used for the installation of stair rails of 30°-45°.

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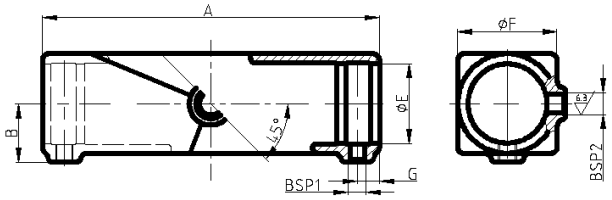
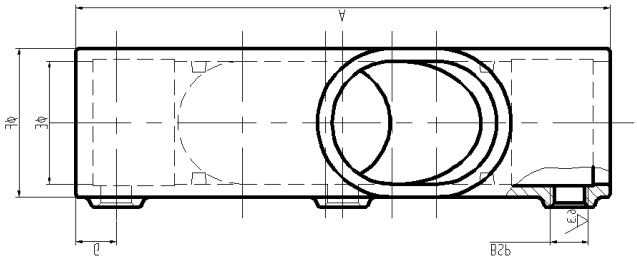



| TYPE | A | B | ØE | ØF | G | BSP 1 | BSP2 |
|---|---|---|---|---|---|---|---|
| 126C-1 | 190 | 31.7 | 44 | 55 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |

4. 3. 3 Adjustable Cross 30°-45°

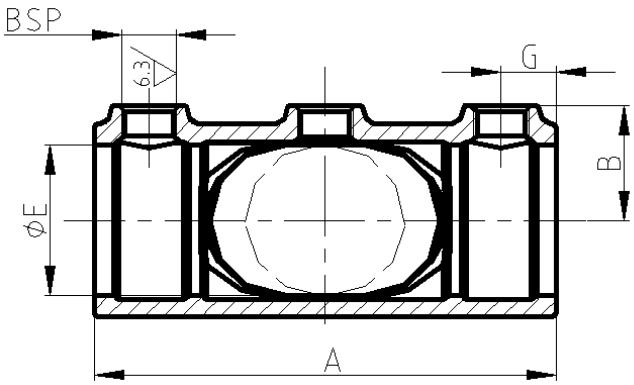
Used for the connection of the middle section of two steel pipes, often used for the installation of stair rails of 30°-45°. The difference with 126 is that the 130 fixed wire plugs are installed in different directions.




| TYPE | A | ØE | ØF | G | BSP |
|---|---|---|---|---|---|
| 130B-1 | 147 | 35 | 46 | 14.5 | 1/4BSPX12.5 |
| 130C-1 | 199 | 44 | 55 | 16.5 | 3/8BSPX12.7 |
| 130D-1 | 217 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |

4. 3. 4 2 Socket Cross 0°-11°

Used for the connection of the middle section of two steel pipes, often used for the installation of 0°-11° inclined guardrail.




| TYPE | A | B | ØE | G | BSP |
|---|---|---|---|---|---|
| 156B-1 | 110 | 27.5 | 35 | 13 | 1/4BSPX12.5 |
| 156C-1 | 140 | 31.3 | 44 | 15 | 3/8BSPX12.7 |
| 156D-1 | 158 | 34.3 | 50 | 16.5 | 3/8BSPX12.7 |

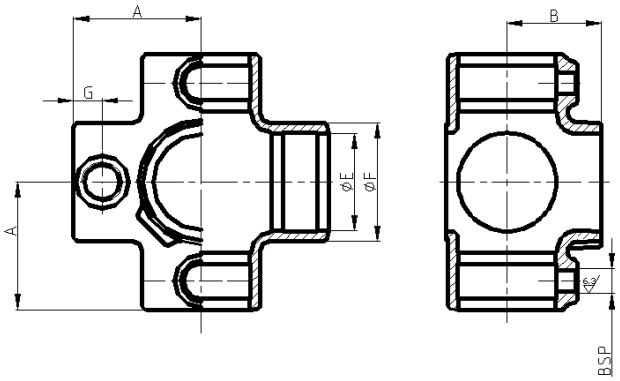
4. 3. 5 4 Way Cross

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

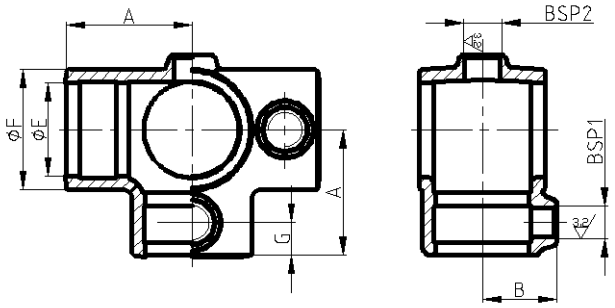
Used for the connection of the middle section of five steel pipes for the installation of guardrails perpendicular to each other.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 158A-1 | 41 | 32 | 28 | 37 | 11 | 1/4BSPX12.5 |
| 158B-1 | 46 | 35 | 35 | 46 | 11 | 1/4BSPX12.5 |
| 158C-1 | 60 | 43.5 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 158D-1 | 68 | 49.5 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 |
| 158E-1 | 84.5 | 62 | 62 | 73 | 14.5 | 3/8BSPX12.7 |
| 158T-1 | 35 | 35 | 23 | 29.5 | 10 | 1/8BSPX10 |

4. 3. 6 Side Outlet Tee

Used for the connection of the middle sections of four steel pipes for the installation of guardrails perpendicular to each other.




| TYPE | A | B | ØE | ØF | G | BSP 1 | BSP 2 |
|---|---|---|---|---|---|---|---|
| 176A-1 | 40 | 24.5 | 28 | 38 | 12.5 | 1/4BSPX12.5 | 1/4BSPX12.5 |
| 176B-1 | 46 | 26.8 | 35 | 46 | 11 | 1/4BSPX12.5 | 1/4BSPX12.5 |
| 176C-1 | 60 | 31.3 | 44 | 55 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 176D-1 | 68 | 34.3 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 176E-1 | 84.5 | 40.3 | 62 | 73 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 176T-1 | 35 | 20 | 23 | 31 | 10 | 1/8BSPX10 | 1/8BSPX10 |

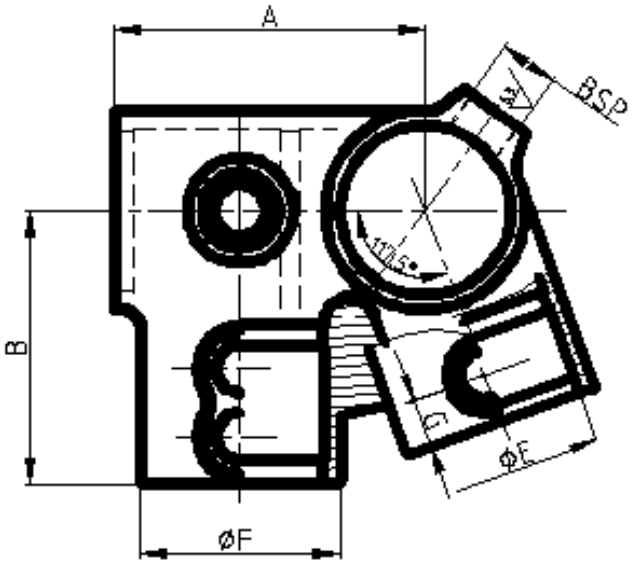
4. 3. 7 Eaves Fitting

Used for steel pipe connections similar to the eaves structure, often used for the installation of small temporary buildings.

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

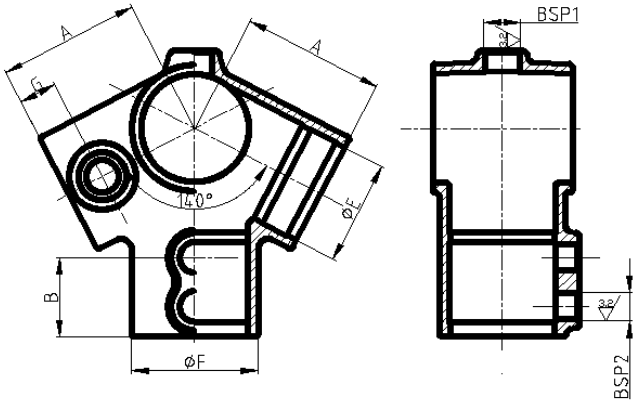
Location:_____ Date:_____ Approved& Date: _____




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 185D-1 | 90 | 84 | 50 | 62 | 14 | 3/8BSPX12.7 |

4. 3. 8 Ridge Fitting

Used for steel pipe connections similar to roof structures, often used for the installation of small temporary buildings.




| TYPE | A | B | ØE | ØF | G | BSP 1 | BSP 2 |
|---|---|---|---|---|---|---|---|
| 191D-1 | 70 | 39.5 | 50 | 60.5 | 14.5 | 3/8BSPX12.7 | 3/8BSPX12.7 |

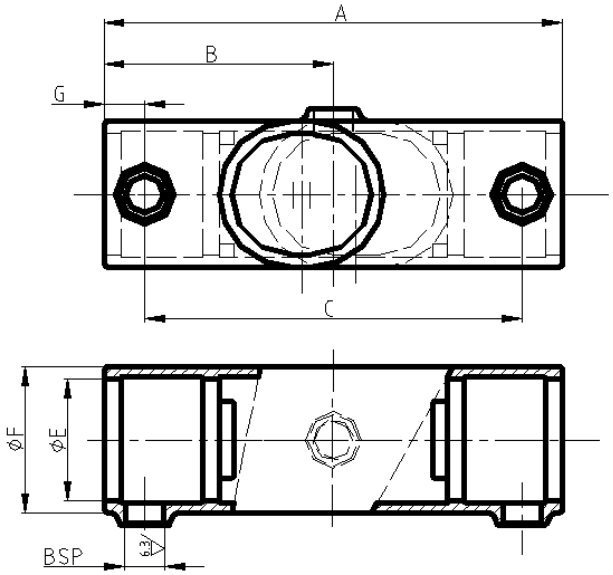
4. 3. 9 Slope Cross Middle Rail 11°-29°

Used for the connection of the middle section of two steel pipes, often used for the installation of 11°-29° inclined guardrails.

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

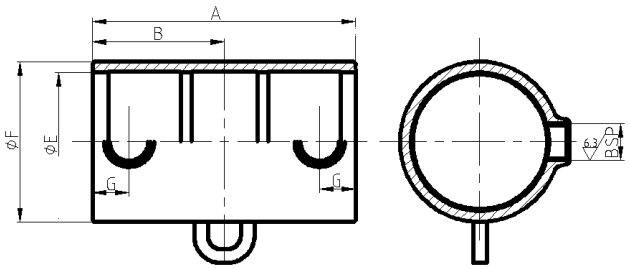



| TYPE | A | B | C | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|---|
| 256Z-D | 187 | 93.5 | 154 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |

**4.4 Joint Category**

4. 4. 1 Sleeve Joint

Used for the connection of two steel pipes, the pipe is wrapped outside the steel pipe and fixed by wire plug.




| TYPE | A | B | ØE | ØF | G | BSP |
|---|---|---|---|---|---|---|
| 149A-1 | 76 | 38 | 28 | 38 | 12.5 | 1/4BSPX12.5 |
| 149B-1 | 89 | 44.5 | 35 | 46 | 12.5 | 1/4BSPX12.5 |
| 149C-1 | 102 | 51 | 44 | 55 | 14.5 | 3/8BSPX12.7 |
| 149D-1 | 102 | 51 | 50 | 60.5 | 16.5 | 3/8BSPX12.7 |
| 149E-1 | 120 | 60 | 62 | 73 | 16.5 | 3/8BSPX12.7 |

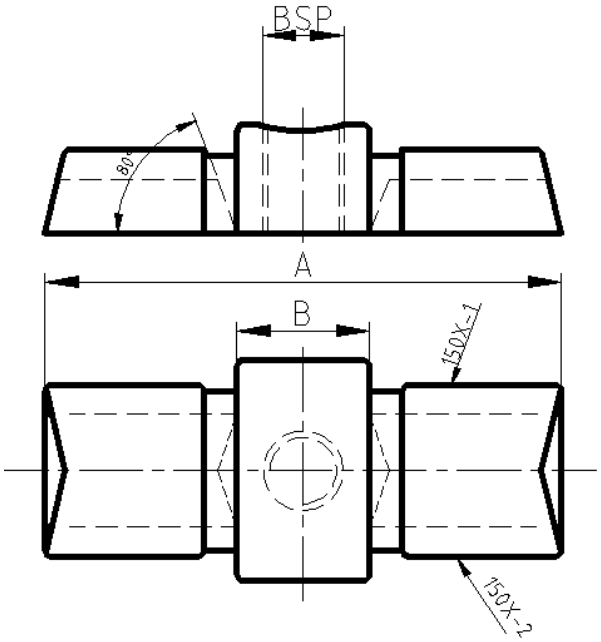
4. 4. 2 Internal Joint

Used for the connection of two steel pipes. The steel pipe is inserted into the inner hole of the steel pipe. After the wire is plugged, the steel pipe is connected by the external supporting force of the pipe.

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

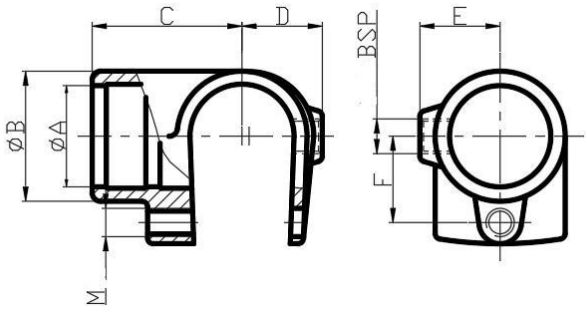



| TYPE | A | B | BSP |
|---|---|---|---|
| 150A-1 | 76 | 22 | 1/4BSPX12.5 |
| 150B-1 | 78 | 20 | 1/4BSPX12.5 |
| 150C-1 | 78 | 20 | 3/8BSPX12.7 |
| 150D-1 | 78 | 20 | 3/8BSPX12.7 |

**4.5 Crossover Category**

4. 5. 1 Clamp on Tee

The fitting provides an open connection that can be incorporated into other frame structures.




| TYPE | ϕA | ϕB | C | D | E | F | BSP | M |
|---|---|---|---|---|---|---|---|---|
| 135A-1 | 28 | 38 | 50 | 24.5 | 24.5 | 25 | 1/4BSPX12.5 | M10 |
| 135B-1 | 35 | 46 | 53 | 27.2 | 27.2 | 30.5 | 1/4BSPX12.5 | M10 |
| 135C-1 | 44 | 55 | 67 | 31.7 | 31.7 | 34 | 3/8BSPX12.7 | M10 |
| 135D-1 | 50 | 60.5 | 77 | 34.7 | 34.7 | 38.5 | 3/8BSPX12.7 | M10 |
| 135E-1 | 62 | 73 | 90.5 | 36.5 | 36.5 | 43 | 3/8BSPX12.7 | M10X20 |

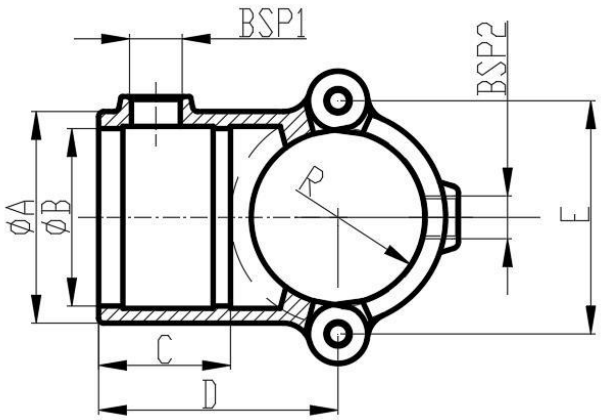
**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

4. 5. 2 Add on Tee

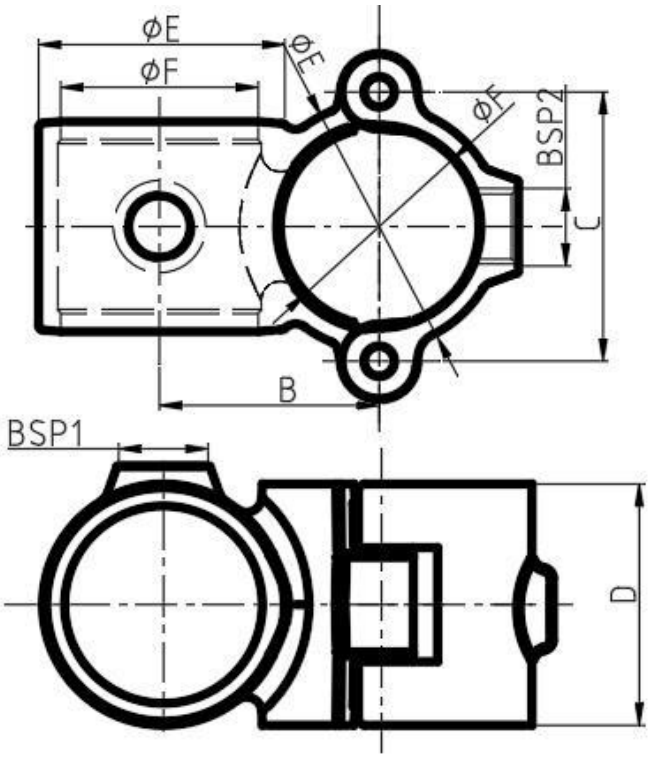
The fitting provides an open connection that can be incorporated into other frame structures. The difference with 135 is that 136 provides a flip-top connection structure instead of a plug-in bolt that can be used in a particular application.




| TYPE | ϕA | ϕB | C | D | E | R | BSP1 | BSP2 |
|---|---|---|---|---|---|---|---|---|
| 136B | 46 | 35 | 23 | 52 | 53.5 | 35 | 1/4BSPX12.5 | 1/4BSPX12.5 |
| 136C | 55 | 44 | 31.7 | 44 | 61.4 | 22.4 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 136D | 60.5 | 50 | 38 | 69 | 67 | 50 | 3/8BSPX12.7 | 3/8BSPX12.7 |

4. 5. 3 Crossover 90°

The fitting provides an open connection that can be incorporated into other frame structures. The difference with 136 is that the direction of the steel pipe is different.




| TYPE | B | C | D | ϕE | ϕF | BSP1 | BSP2 |
|---|---|---|---|---|---|---|---|

**Sign Off:**

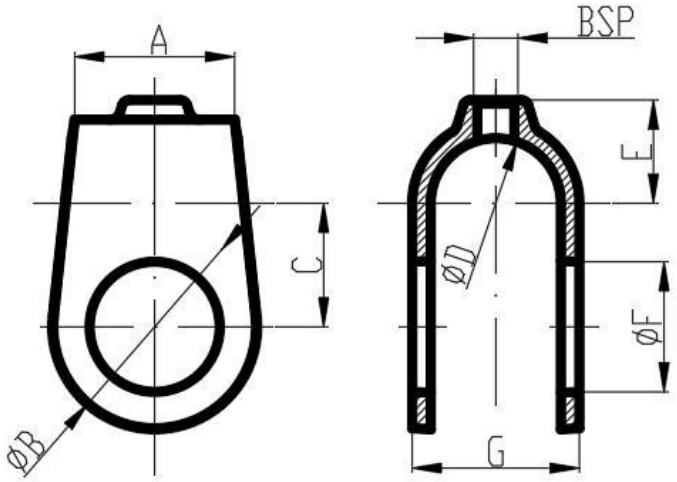
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 137B | 41 | 53.5 | 46 | 46 | 35 | 1/4BSPX12.5 | 1/4BSPX12.5 |
| 137C | 50 | 61.4 | 55 | 55 | 44 | 3/8BSPX12.7 | 3/8BSPX12.7 |
| 137D | 55 | 67 | 60.5 | 60.5 | 50 | 3/8BSPX12.7 | 3/8BSPX12.7 |

4.5.4 Clamp on Crossover

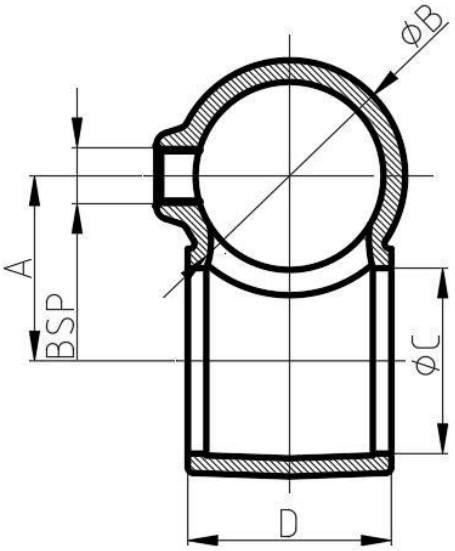
It can provide a 90° connection of two steel pipes. The steel pipe is removable and can be used to expand other structures.




| TYPE | A | ϕB | C | ϕD | E | ϕF | G | BSP |
|---|---|---|---|---|---|---|---|---|
| 160A-1 | 44 | 50 | 27 | 28 | 24.5 | 28 | 41 | 1/4BSPX12.5 |
| 160B-1 | 44 | 56.4 | 34 | 35 | 27.2 | 35 | 46 | 1/4BSPX12.5 |
| 160C-1 | 45 | 64 | 43 | 44 | 31.7 | 44 | 55 | 3/8BSPX12.7 |
| 160D-1 | 50 | 75 | 50 | 50 | 34.7 | 50 | 60.5 | 3/8BSPX12.7 |
| 160E-1 | 80 | 80 | 61 | 62 | 36.5 | 62 | 74 | 3/8BSPX12.7 |

4.5.5 90° Crossover

It can provide 90° connection of two steel pipes. The steel pipe is not removable and cannot be expanded.

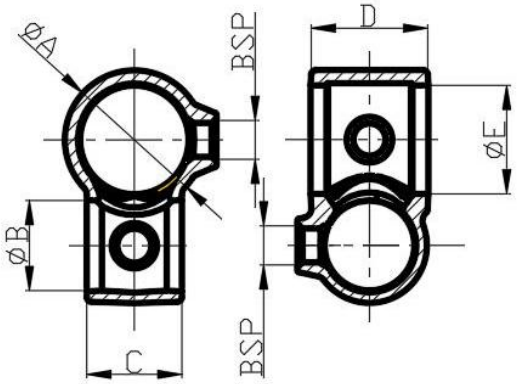



**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

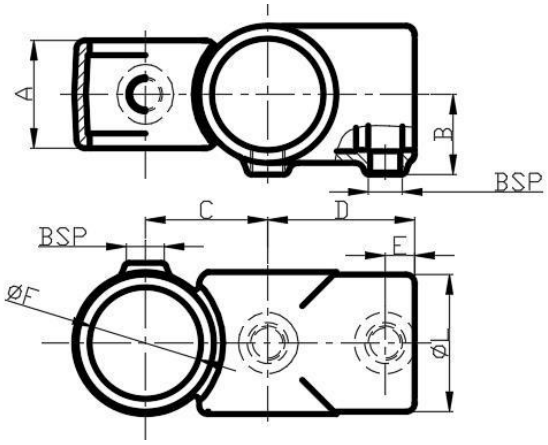
| TYPE | A | ϕB | ϕC | D | BSP |
|---|---|---|---|---|---|
| 161A-1 | 38 | 37 | 28 | 31.5 | 1/4BSPX12.5 |
| 161B-1 | 41 | 46 | 35 | 38.5 | 1/4BSPX12.5 |
| 161C-1 | 50 | 55 | 45.4 | 45 | 3/8BSPX12.7 |
| 161D-1 | 50 | 60.5 | 51.6 | 55 | 3/8BSPX12.7 |
| 161E-1 | 64 | 73 | 63 | 61 | 3/8BSPX12.7 |




| TYPE | ϕA | ϕB | C | D | ϕE | BSP |
|---|---|---|---|---|---|---|
| 161BA-1 | 46 | 28 | 31.5 | 38.5 | 35 | 1/4BSPX12.5 |
| 161CB-1 | 55 | 35 | 38.5 | 46 | 44 | 1/4BSPX12.5 |
| 161DB-1 | 60.5 | 35 | 38.5 | 55 | 50 | 3/8BSPX12.7 |
| 161DC-1 | 60.5 | 44 | 45 | 55 | 50 | 3/8BSPX12.7 |
| 161ED-1 | 73 | 50 | 55 | 61 | 62 | 3/8BSPX12.7 |

4. 5. 6 Combination Socket

It can provide 90° connection of three steel pipes. The steel pipe is not removable and cannot be expanded.




| TYPE | A | B | C | D | E | ϕF | ϕL | BSP |
|---|---|---|---|---|---|---|---|---|
| 165A-1 | 31 | 23.8 | 35 | 40 | 11 | 28.5 | 37 | 1/4BSPX12.5 |
| 165B-1 | 38 | 26.9 | 40 | 46 | 11 | 35 | 46 | 1/4BSPX12.5 |
| 165C-1 | 44 | 31.7 | 50 | 60 | 15 | 35.4 | 55 | 3/8BSPX12.7 |
| 165D-1 | 51 | 34.7 | 56 | 67 | 15 | 53 | 60.5 | 3/8BSPX12.7 |

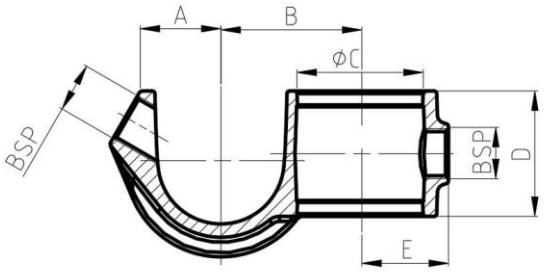
**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

4. 5. 7 Guard Hook

It can provide a 90° connection of two steel pipes. The steel pipe is removable and can be used to expand other structures.

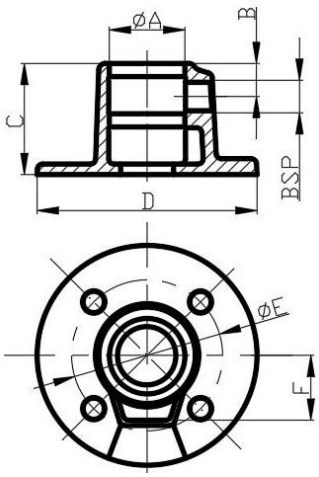



| TYPE | A | B | ϕC | D | E | BSP |
|---|---|---|---|---|---|---|
| 201C-1 | 20 | 50 | 44 | 45 | 31.7 | 3/8BSPX12.7 |
| 201D-1 | 32.3 | 55.3 | 50 | 52 | 34.7 | 3/8BSPX12.7 |

## 4.6Flange Category

4. 6. 1Base Flange

Used to fix the end of the steel pipe on a flat surface.




| TYPE | ϕA | B | C | ϕD | ϕE | F | BSP |
|---|---|---|---|---|---|---|---|
| 131A-1 | 28 | 12.5 | 42 | 83 | 57 | 24.5 | 1/4BSPX12.5 |
| 131B-1 | 35 | 11.5 | 48 | 89 | 65 | 28.4 | 3/8BSPX12.7 |
| 131C-1 | 44 | 13 | 50 | 102 | 76 | 28.3 | 3/8BSPX12.7 |
| 131D-1 | 50 | 13 | 59 | 114 | 88.5 | 36.7 | 3/8BSPX12.7 |
| 131E-1 | 62 | 18 | 64 | 127 | 95 | 41.5 | 3/8BSPX12.7 |
| 131S-1 | 18 | 10 | 32 | 70 | 47 | 17.5 | 1/8BSPX10 |
| 131T-1 | 23 | 10 | 32 | 74 | 55.5 | 20 | 1/8BSPX10 |

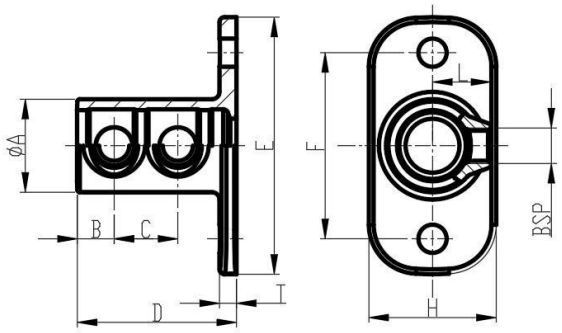
4. 6. 2 Railing Base Flange

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

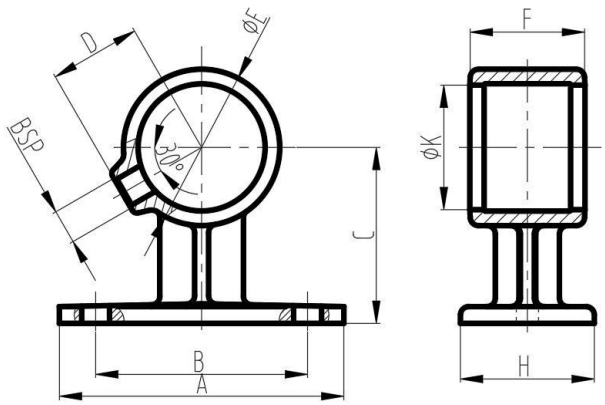
Used to fix the end of the steel pipe on a flat surface. The difference from 131 is that the 132 flange shape and the number of holes are different from those of 131, which is suitable for the installation method different from 131.




| TYPE | Φ A | B | C | D | E | F | H | T | L | BSP |
|---|---|---|---|---|---|---|---|---|---|---|
| 132A-1 | 38 | 15 | 26 | 65 | 105 | 76 | 52 | 7 | 20.3 | 1/4BSPX12.5 |
| 132B-1 | 46 | 15 | 27.5 | 73 | 125 | 89 | 60 | 8 | 27.2 | 1/4BSPX12.5 |
| 132C-1 | 55 | 17.5 | 35 | 88 | 138 | 101 | 70 | 8 | 31.7 | 3/8BSPX12.7 |
| 132D-1 | 60.5 | 18 | 37.5 | 95 | 150 | 114 | 80 | 10 | 34.7 | 3/8BSPX12.7 |
| 132E-1 | 73 | 20 | 40 | 102 | 170 | 127 | 92 | 10 | 40.8 | 3/8BSPX12.7 |
| 132S-1 | 25.5 | 14 | 16 | 50 | 72.5 | 47 | 40 | 6 | 17.5 | 1/8BSPX10 |
| 132SA-1 | 38 | 12 | 24 | 60 | 105 | 76 | 52 | 7 | 20.3 | 1/4BSPX12.5 |
| 132SB-1 | 46 | 14 | 30 | 71 | 127 | 89 | 62 | 8 | 27.2 | 1/4BSPX12.5 |
| 132SC-1 | 55 | 16.5 | 34 | 84 | 139 | 101 | 72 | 8 | 31.7 | 3/8BSPX12.7 |
| 132SD-1 | 60.5 | 16.5 | 34 | 89 | 152 | 114 | 86 | 10 | 34.7 | 3/8BSPX12.7 |
| 132SE-1 | 73 | 16.5 | 49 | 104 | 165 | 127 | 96 | 10 | 40.8 | 3/8BSPX12.7 |

4. 6. 3 Handrail Bracket

Used for the fixing of horizontal steel pipes and is often used for fixing by handrails on the wall.




**Sign Off:**

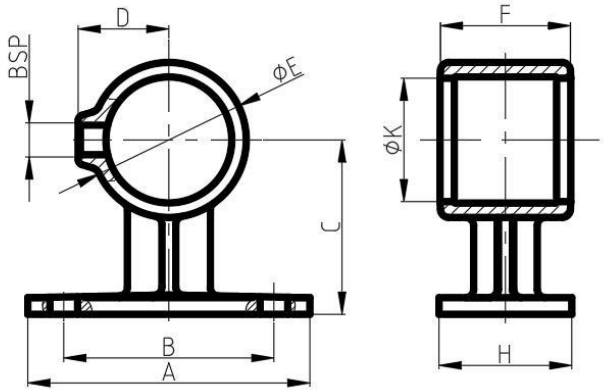
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | C | D | ΦE | F | ΦK | H | BSP |
|---|---|---|---|---|---|---|---|---|---|
| 143A-1 | 76 | 57 | 54 | 23.3 | 37 | 30 | 28 | 44 | 1/4BSPX12.5 |
| 143B-1 | 79.5 | 62 | 57 | 26.8 | 45.5 | 35 | 35 | 44 | 1/4BSPX12.5 |
| 143C-1 | 101 | 82.5 | 62 | 31.3 | 54.5 | 35 | 44 | 44 | 3/8BSPX12.7 |
| 143D-1 | 107 | 82.5 | 70 | 34.3 | 60.5 | 35 | 50 | 50 | 3/8BSPX12.7 |
| 143S-1 | 65 | 47 | 39 | 17.5 | 25.5 | 25 | 18.5 | 32 | 1/8BSPX10 |

4. 6. 4 Handrail Bracket

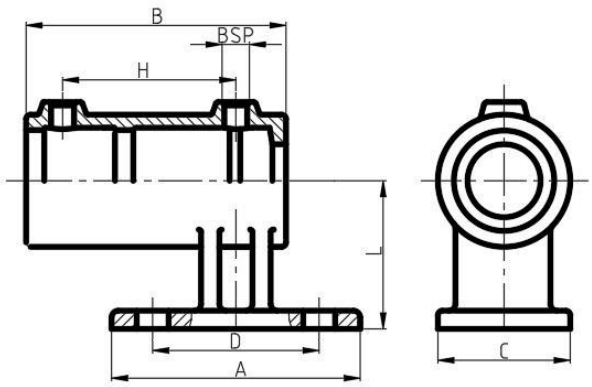
Used for the fixing of horizontal steel pipes and is often used for fixing by handrails on the wall. The difference with 143 is that the 143W fixed plug is horizontally mounted.




| TYPE | A | B | C | D | ΦE | F | ΦK | H | BSP |
|---|---|---|---|---|---|---|---|---|---|
| 143WA-1 | 78 | 57.5 | 55 | 24.5 | 38 | 32.5 | 28 | 44 | 1/4BSPX12.5 |
| 143WB-1 | 82 | 63 | 57 | 27 | 46 | 32 | 35 | 44 | 1/4BSPX12.5 |
| 143WC-1 | 102 | 76 | 63 | 31.7 | 55 | 47 | 44 | 44 | 3/8BSPX12.7 |
| 143WD-1 | 108 | 82.5 | 67 | 34.7 | 60.5 | 47 | 50 | 48 | 3/8BSPX12.7 |

4. 6. 5 Railing Side Support(Vertical)

Used for fixing the end of vertical steel pipe, and the flange plate is in the same direction as the steel pipe.




**Sign Off:**

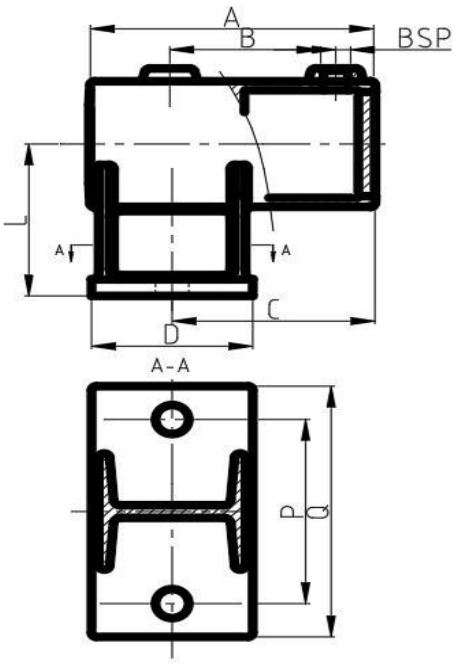
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | C | D | H | L | BSP |
|---|---|---|---|---|---|---|---|
| 144B-1 | 96 | 104 | 46 | 67 | 64 | 65 | 1/4BSPX12.5 |
| 144C-1 | 110 | 112 | 53 | 73 | 69 | 64.5 | 3/8BSPX12.7 |
| 144D-1 | 123 | 120 | 62 | 89 | 84 | 65 | 3/8BSPX12.7 |

4. 6. 7 Railing Side Support(Horizontal)

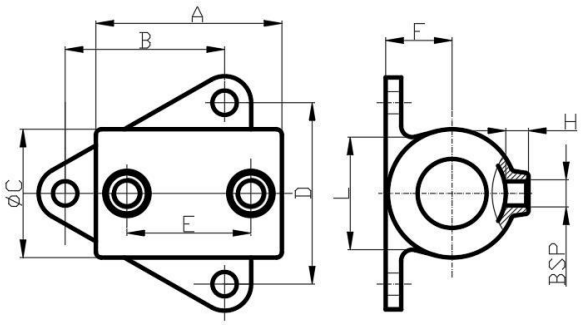
Used for fixing the end of the vertical steel pipe, and the flange plate is perpendicular to the direction of the steel pipe.




| TYPE | A | B | C | D | L | P | Q | BSP |
|---|---|---|---|---|---|---|---|---|
| 145B-1 | 102 | 65 | 79 | 45 | 54 | 67 | 96 | 1/4BSPX12.5 |
| 145C-1 | 111 | 69 | 84 | 53 | 64 | 73 | 110 | 3/8BSPX12.7 |
| 145D-1 | 119 | 75 | 85 | 68 | 73 | 89 | 120 | 3/8BSPX12.7 |

4. 6. 8 Side Palm fixing

Used for fixing the end of the steel pipe, and the flange plate is perpendicular to the direction of the steel pipe.




**Sign Off:**

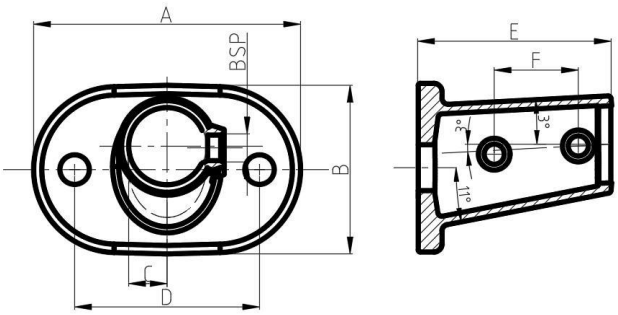
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | ΦC | D | E | F | H | L | BSP |
|---|---|---|---|---|---|---|---|---|---|
| 146B-1 | 76 | 63 | 46 | 71 | 48 | 24 | 9.3 | 34 | 1/4BSPX12.5 |
| 146C-1 | 83 | 72 | 55 | 82 | 48 | 28 | 9.3 | 42 | 3/8BSPX12.7 |
| 146D-1 | 89 | 78 | 60.5 | 86 | 50 | 31 | 9.3 | 48 | 3/8BSPX12.7 |

4. 6. 9 Base Flange 0°-11°

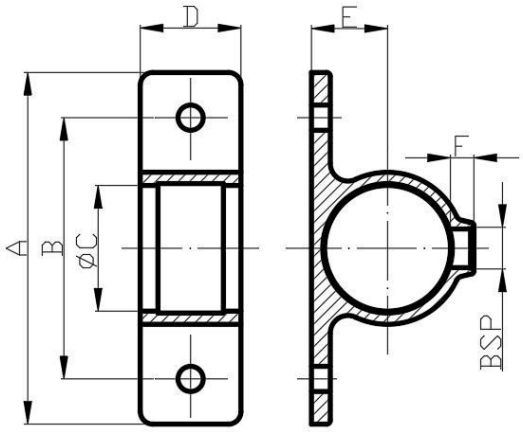
Used for fixing the end of steel pipe. The installation plane has a slope of 0°-11°. After installation, the steel pipe can ensure vertical upward.




| TYPE | A | B | C | D | E | F | BSP |
|---|---|---|---|---|---|---|---|
| 152B-1 | 127 | 80 | 17.5 | 88 | 90 | 40 | 1/4BSPX12.5 |
| 152C-1 | 140 | 90 | 20.3 | 101 | 98 | 45 | 3/8BSPX12.7 |
| 152D-1 | 153 | 96 | 27.2 | 113 | 99 | 45 | 3/8BSPX12.7 |

4. 6. 10 Double Sided Fixing Bracket

Used in the middle of steel pipes and is often used to connect fixed steel boards, plastic boards, etc. with steel pipes.




| TYPE | A | B | ΦC | D | E | F | BSP |
|---|---|---|---|---|---|---|---|
| 198A-1 | 128 | 94 | 28 | 35 | 19 | 9.3 | 1/4BSPX12.5 |
| 198B-1 | 120 | 86 | 35 | 30 | 23 | 9.3 | 1/4BSPX12.5 |
| 198C-1 | 130 | 95 | 44 | 33 | 27.5 | 9.3 | 3/8BSPX12.7 |
| 198D-1 | 140 | 104 | 50 | 35 | 30.3 | 9.3 | 3/8BSPX12.7 |

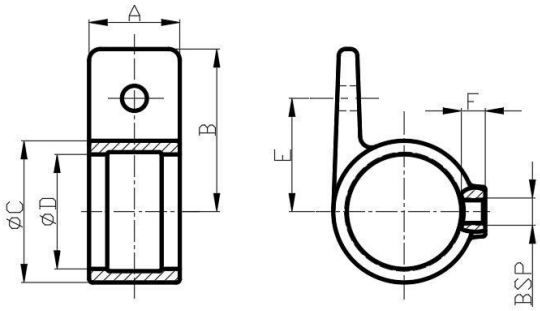
**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

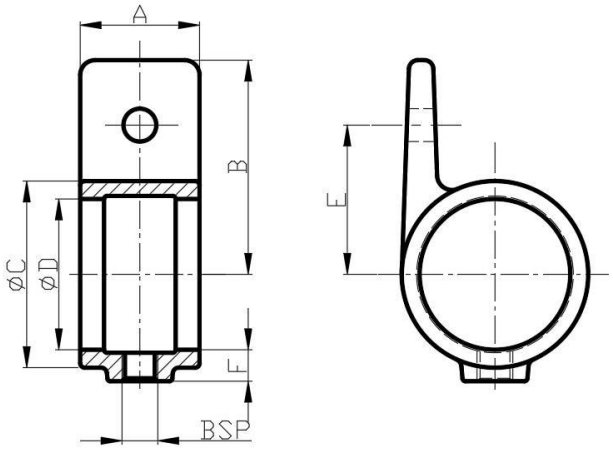
Location:_____ Date:_____ Approved& Date: _____

4. 6. 11 Adjustable Fixing Bracket

Used in the middle of steel pipes and is often used to connect fixed steel boards, plastic boards, etc. with steel pipes. The difference with 198 is that 199 has only a single hole.



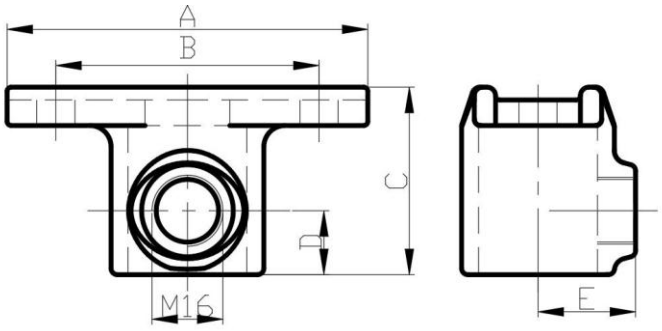

| TYPE | A | B | ΦC | D | E | F | BSP |
|---|---|---|---|---|---|---|---|
| 199A-1 | 35 | 64 | 37 | 28 | 47 | 9.3 | 1/4BSPX12.5 |




| TYPE | A | B | ΦC | D | E | F | BSP |
|---|---|---|---|---|---|---|---|
| 199B-1 | 30 | 60 | 46 | 35 | 43 | 9.3 | 1/4BSPX12.5 |
| 199C-1 | 33 | 65 | 55 | 44 | 47.5 | 9.3 | 3/8BSPX12.7 |
| 199D-1 | 35 | 70 | 60.5 | 50 | 52 | 9.3 | 3/8BSPX12.7 |

4. 6. 12 Double prosecution flange bracket

The same way of using 132.




**Sign Off:**

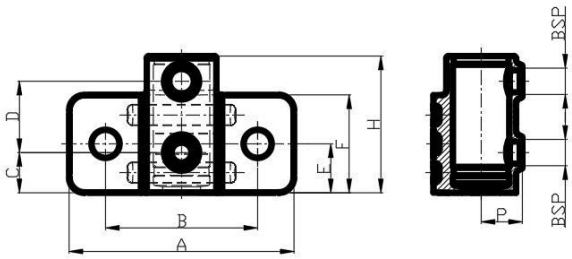
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | C | D | E |
|---|---|---|---|---|---|
| 20X85 | 85 | 62 | 44 | 15 | 24 |
| 20X110 | 110 | 85 | 44 | 15 | 24 |
| 20X185 | 165 | 140 | 44 | 15 | 24 |

4. 6. 13 Double side flange bracket

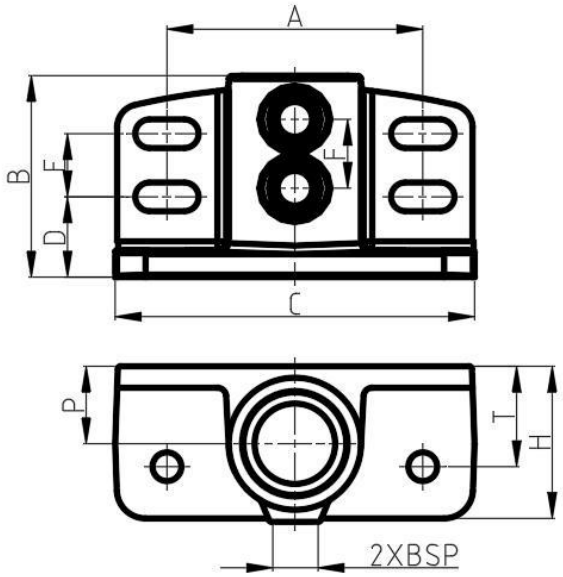
The same way of using 146, and the difference between 146 and 246 is that the 246 flange is triangular.




| TYPE | A | B | C | D | E | F | H | P | BSP |
|---|---|---|---|---|---|---|---|---|---|
| 246B-1 | 148 | 100.5 | 26.5 | 47 | 32 | 64 | 90 | 27.2 | 1/4BSPX12.5 |
| 246C-1 | 148 | 100.5 | 26.5 | 47 | 32 | 64 | 90 | 31.7 | 3/8BSPX12.7 |
| 246D-1 | 145 | 102 | 22.5 | 50 | 37.5 | 75 | 90 | 34.7 | 3/8BSPX12.7 |

4. 6. 14 Flange With Toeboard Adaptor

Fixed the end of the steel pipe and often used in a fixed case where the two sides of the step are perpendicular to each other.




| TYPE | A | B | C | D | E | F | H | P | T | BSP |
|---|---|---|---|---|---|---|---|---|---|---|
| 247B-1 | 89 | 71 | 125 | 28 | 22 | 24 | 53 | 27 | 35 | 1/4BSPX12.5 |
| 247C-1 | 100 | 90 | 162 | 30 | 28 | 45 | 91 | 33 | 41 | 3/8BSPX12.7 |
| 247D-1 | 100 | 90 | 162 | 30 | 28 | 45 | 91 | 33 | 41 | 3/8BSPX12.7 |

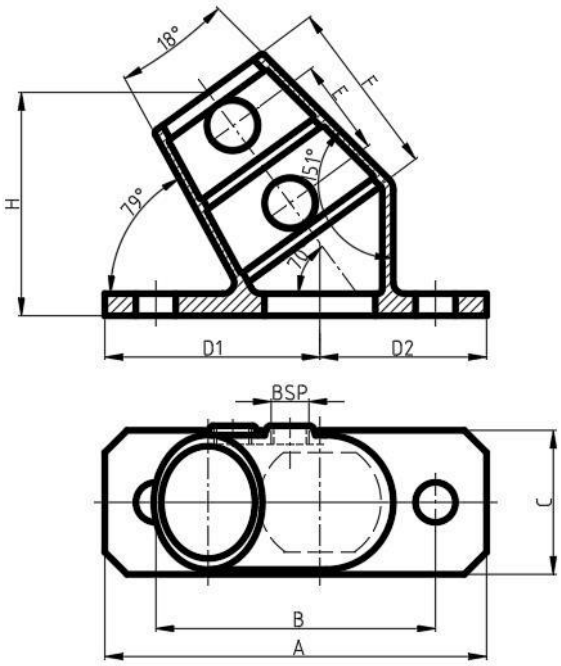
**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

4.6.15 Angle horizontal flange bracket 11°-29°

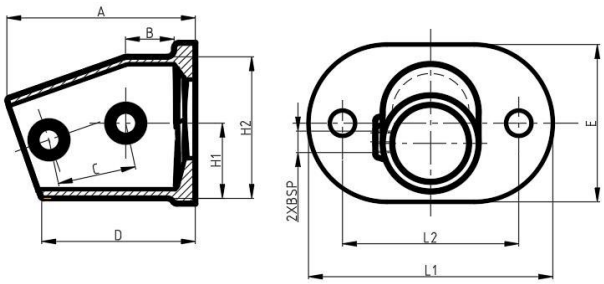
Used to fix the end of the steel pipe on the inclined surface, and the angle of the inclined surface is between 11° and 20°, which can ensure that the installed steel pipe is perpendicular to the inclined surface.




| TYPE | A | B | C | D1 | D2 | E | F | H | BSP |
|---|---|---|---|---|---|---|---|---|---|
| 252D-1 | 172 | 126 | 65 | 89 | 83 | 43 | 80 | 101 | 3/8BSPX12.7 |

4.6.16 Slope Base Flange 11°-29°

Used to fix the end of the steel pipe on the inclined surface, and the angle of the inclined surface is between 11° and 20°, which can ensure that the installed steel pipe is perpendicular to the inclined surface. The difference between 252 is that the angle of the bottom flange is perpendicular to 252Z.




| TYPE | A | B | C | D | H1 | H2 | L1 | L2 | E | BSP |
|---|---|---|---|---|---|---|---|---|---|---|
| 252ZD-1 | 109 | 30 | 45 | 90 | 43 | 82 | 165 | 127 | 92 | 3/8BSPX12.7 |

4.7 Cap & Plug Category

4.7.1 Plastic End Cap

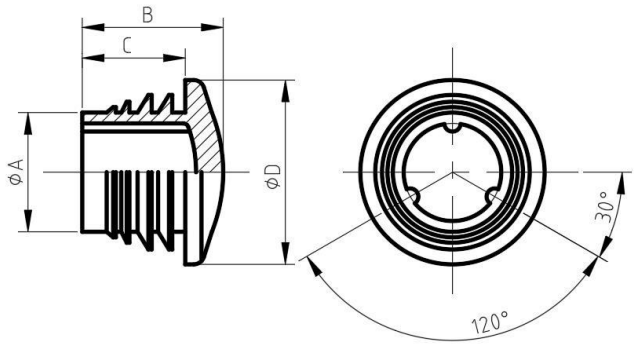
Used at the end of the steel pipe to block the inner hole of the steel pipe, which

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

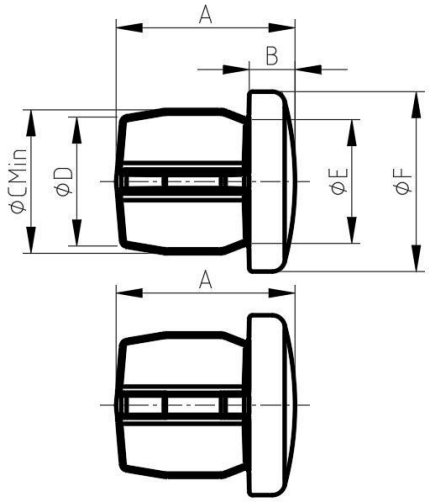
plays a role in the appearance and protection of the steel pipe. Material PVC plastic.




| TYPE | Φ A | B | C | Φ D |
|---|---|---|---|---|
| 133-B | 22 | 26 | 19 | 34 |
| 133-C | 31 | 30 | 23 | 42.5 |
| 133-D | 34.5 | 31 | 23 | 48 |
| 133-E | 46 | 26 | 19 | 60 |

4. 7. 2 Plug

Used at the end of the steel pipe to block the inner hole of the steel pipe, which plays a role in the appearance and protection of the steel pipe. Material is malleable iron.




| TYPE | A | B | Φ CMin | ΦD | Φ E | Φ F |
|---|---|---|---|---|---|---|
| 184-A | 27.5 | 9 | 21.5 | 19.8 | 21 | 27.6 |
| 184-B | 26.5 | 4.7 | 27.8 | 24.6 | 20 | 35 |
| 184-C | 29.4 | 6.6 | 36 | 33.6 | 29.5 | 43 |
| 184-D | 28 | 6 | 42.8 | 37.6 | 36 | 49 |
| 184-E | 38 | 7.5 | 55 | 49 | 47.5 | 61 |

**Sign Off:**

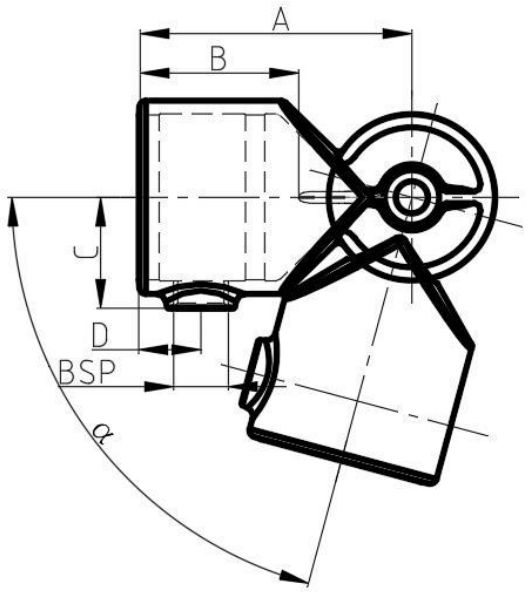
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

4. 8 Rotary Joint Category

4. 8. 1 Variable Elbow

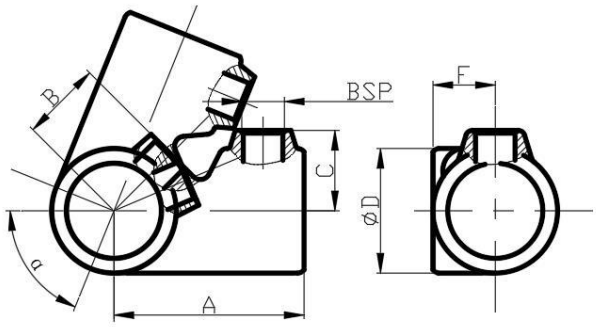
Used for the end connection of steel pipes, the connection angle can be adjusted, and the connection is at the end of the system.




| TYPE | A | B | C | D | α | BSP |
|---|---|---|---|---|---|---|
| 125HB-1 | 62 | 32 | 27.2 | 12.5 | 75° -285° | 1/4BSPX12.5 |
| 125HC-1 | 75 | 40 | 31.7 | 14.5 | 75° -285° | 3/8BSPX12.7 |
| 125HD-1 | 85 | 49 | 34.7 | 19.2 | 75° -285° | 3/8BSPX12.7 |

4. 8. 2 Short Swivel Tee

Used for the end connection of steel pipes, the connection angle can be adjusted, and the connection is in the middle of the system.




| TYPE | A | B | C | ΦD | F | α | BSP |
|---|---|---|---|---|---|---|---|
| 148A-1 | 58 | 24.5 | 24.5 | 38 | 19 | 68° -292° | 1/4BSPX12.5 |
| 148B-1 | 58 | 27.2 | 27.2 | 46 | 23 | 68° -292° | 1/4BSPX12.5 |

**Sign Off:**

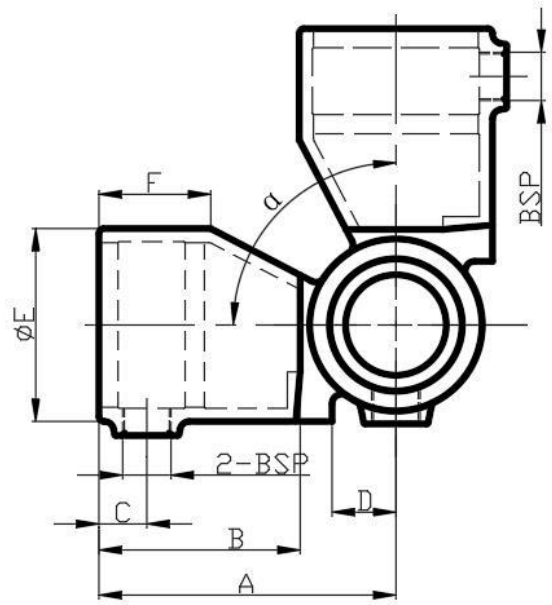
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 148C-1 | 73 | 31.7 | 31.7 | 55 | 27.5 | 68° -292° | 3/8BSPX12.7 |
| 148D-1 | 81 | 34.7 | 34.7 | 60.5 | 30.25 | 68° -292° | 3/8BSPX12.7 |
| 148E-1 | 110 | | | 73 | | 68° -292° | 3/8BSPX12.7 |

4. 8. 3 Joint Bend

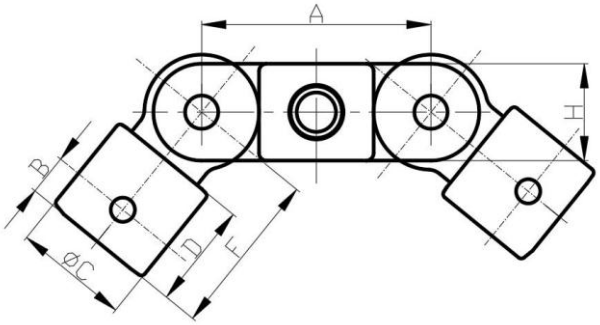
Used for the end connection of steel pipes, the connection angle can be adjusted, and the connection is at the end of the system. The difference with the 125H is that the angle of 166 cannot be fixed, and the angle of 125H can be adjusted and fixed.




| TYPE | A | B | C | D | ΦE | F | α | BSP |
|---|---|---|---|---|---|---|---|---|
| 166-B | 78 | 54 | 13 | 17 | 46 | 30 | 55° -305° | 1/4BSPX12.5 |
| 166-C | 88 | 60 | 15 | 20 | 55 | 35 | 55° -305° | 3/8BSPX12.7 |
| 166-D | 93 | 63 | 15 | 20 | 60.5 | 35 | 55° -305° | 3/8BSPX12.7 |
| 166-E | 110 | 74 | 20 | 25 | 73 | 44.8 | 55° -305° | 3/8BSPX12.7 |

4. 8. 4 Double Swivel Combination

Used for the steel pipe installation with adjustable angle.




**Sign Off:**

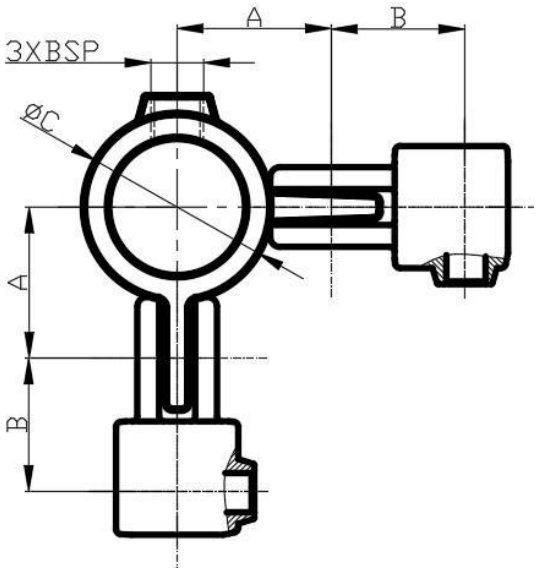
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | ΦC | D | F | H | BSP |
|---|---|---|---|---|---|---|---|
| 167-A | 76 | 14.5 | 37 | 38 | 61 | 32 | 1/4BSPX12.5 |
| 167-B | 86 | 14.5 | 46 | 38 | 61 | 40 | 1/4BSPX12.5 |
| 167-C | 95 | 16.5 | 55 | 46 | 69 | 45 | 3/8BSPX12.7 |
| 167-D | 100 | 16.5 | 60.5 | 55 | 77 | 36 | 3/8BSPX12.7 |
| 167-E | 124 | 16.5 | 73 | 63 | 90.5 | 54 | 3/8BSPX12.7 |

4. 8. 5 90° Corner Swivel Combination

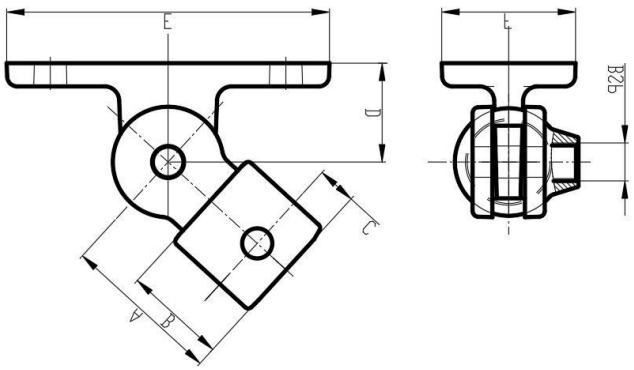
Used for the steel pipe installation with adjustable angle.




| TYPE | A | B | ΦC | BSP |
|---|---|---|---|---|
| 168-A | 38 | 58.5 | 37 | 1/4BSPX12.5 |
| 167-B | 43.5 | 61 | 46 | 1/4BSPX12.5 |
| 167-C | 47 | 69 | 55 | 3/8BSPX12.7 |
| 167-D | 53 | 77 | 60.5 | 3/8BSPX12.7 |

4. 8. 6 Swivel Base

Used for the steel pipe installation with adjustable angle.




**Sign Off:**

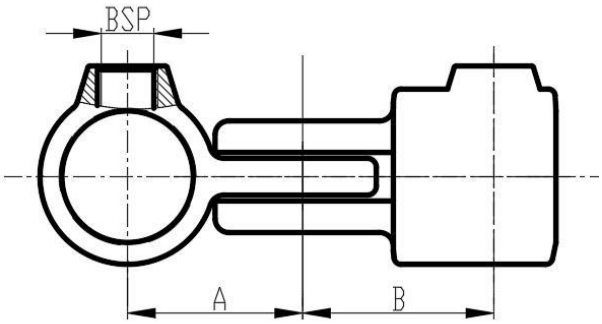
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | C | D | E | F | BSP |
|---|---|---|---|---|---|---|---|
| 169-A | 61 | 38 | 14.5 | 40 | 111 | 46 | 1/4BSPX12.5 |
| 169-B | 61 | 38 | 14.5 | 32 | 112 | 52 | 1/4BSPX12.5 |
| 169-C | 69 | 46 | 16.5 | 32 | 112 | 52 | 3/8BSPX12.7 |
| 169-D | 77 | 55 | 16.5 | 32 | 112 | 52 | 3/8BSPX12.7 |
| 169-E | 95 | 73 | 16.5 | 32 | 112 | 52 | 3/8BSPX12.7 |

4.8.7 Singe Swivel Combination

Used for the steel pipe installation with adjustable angle.

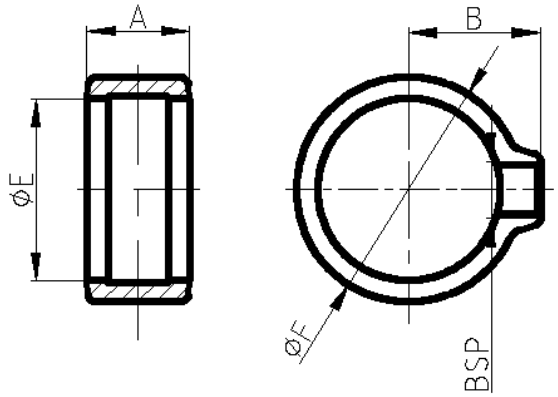



| TYPE | A | B | C | D | BSP |
|---|---|---|---|---|---|
| 173-A | 38 | 58.5 | | | 1/4BSPX12.5 |
| 173-B | 43.5 | 61 | | | 1/4BSPX12.5 |
| 173-C | 47 | 69 | | | 3/8BSPX12.7 |
| 173-D | 53 | 77 | | | 3/8BSPX12.7 |
| 173-E | 62 | 90.5 | | | 3/8BSPX12.7 |

4.9 Special Category

4.9.1 Locking Collar

If the frame system is not loaded enough, the locking ring can be fixed at the lower end of the pipe to support the load increase.




**Sign Off:**

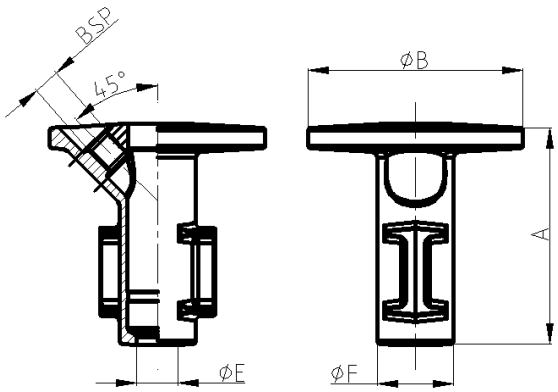
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | ØE | ØF | BSP |
|---|---|---|---|---|---|
| 179A-1 | 22 | 24.5 | 28 | 38 | 1/4BSPX12.5 |
| 179B-1 | 25 | 27.2 | 35 | 46 | 1/4BSPX12.5 |
| 179C-1 | 25 | 31.7 | 44 | 55 | 3/8BSPX12.7 |
| 179D-1 | 32 | 34.7 | 50 | 60.5 | 3/8BSPX12.7 |
| 179E-1 | 25 | 41 | 32 | 73 | 3/8BSPX12.7 |

4. 9. 2 Ground Socket

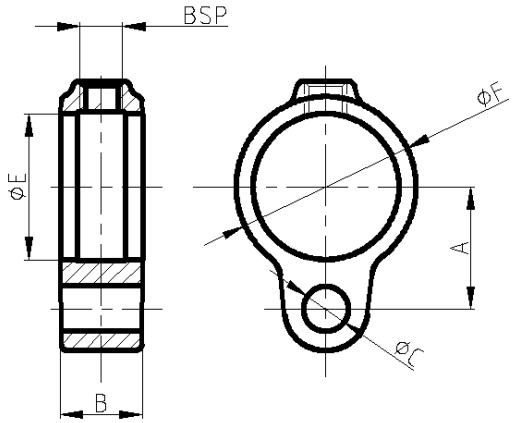
The clamp is buried underground.




| TYPE | A | B | øE | øF | BSP |
|---|---|---|---|---|---|
| 134A-1 | 105 | 105 | 20 | 37 | 1/4BSPX12.5 |
| 134B-1 | 123 | 127 | 25 | 50 | 1/4BSPX12.5 |
| 134C-1 | 135 | 139 | 36.5 | 63 | 3/8BSPX12.7 |
| 134D-1 | 135 | 139 | 38 | 67 | 3/8BSPX12.7 |

4. 9. 3 Gate Eye

Combine with 140 to become a hinge.




| TYPE | A | B | øC | øE | øF | BSP |
|---|---|---|---|---|---|---|
| 138A-1 | 30 | 25 | 14 | 28 | 37 | 1/4BSPX12.5 |
| 138B-1 | 33 | 25 | 14 | 35 | 45.5 | 1/4BSPX12.5 |
| 138C-1 | 38 | 25 | 14 | 44 | 54.5 | 3/8BSPX12.7 |
| 138D-1 | 41 | 25 | 14 | 50 | 60.5 | 3/8BSPX12.7 |

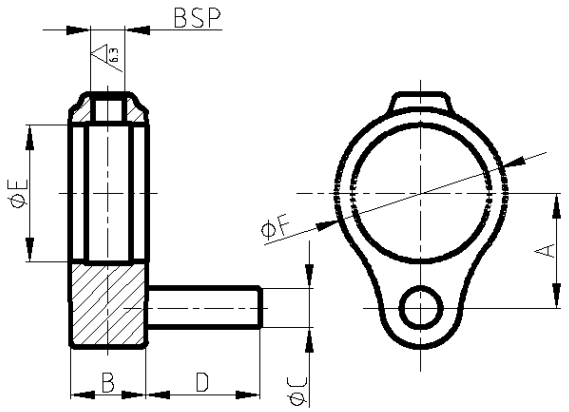
**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

4. 9. 4 Gate Hinge

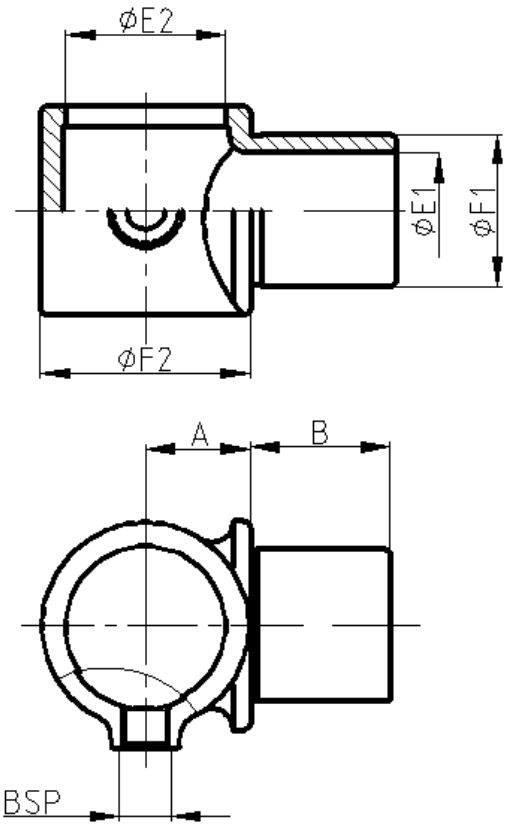
Combine with 138 to become a hinge.




| TYPE | A | B | øC | D | øE | øF | BSP |
|---|---|---|---|---|---|---|---|
| 140A-1 | 30 | 25 | 13 | 38 | 28 | 38 | 1/4BSPX12.5 |
| 140B-1 | 33 | 25 | 13 | 38 | 35 | 46 | 1/4BSPX12.5 |
| 140C-1 | 38 | 25 | 12 | 38 | 44 | 55 | 3/8BSPX12.7 |
| 140D-1 | 41 | 25 | 12 | 38 | 50 | 60.5 | 3/8BSPX12.7 |

4. 9. 5 Internal Swivel Tee

Used to expand the frame structure, the horizontal pipe and the inner diameter of the steel pipe inserted into the corresponding caliber. The inserted steel pipe can be used at multiple angles.




**Sign Off:**

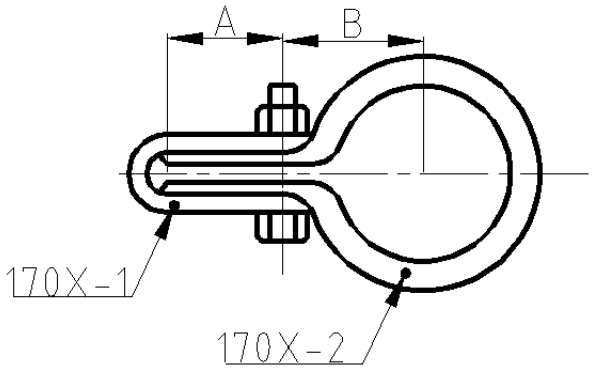
Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

| TYPE | A | B | ⌀E1 | ⌀F1 | ⌀E2 | ⌀F2 | BSP |
|---|---|---|---|---|---|---|---|
| 147B-1 | 23 | 29 | 24 | 34 | 35 | 46 | 1/4BSPX12.5 |
| 147C-1 | 26 | 37 | 32 | 42 | 44 | 55 | 3/8BSPX12.7 |
| 147D-1 | 30 | 42 | 38 | 48 | 50 | 60.5 | 3/8BSPX12.7 |

4. 9. 6 Single Sided Mesh Panel

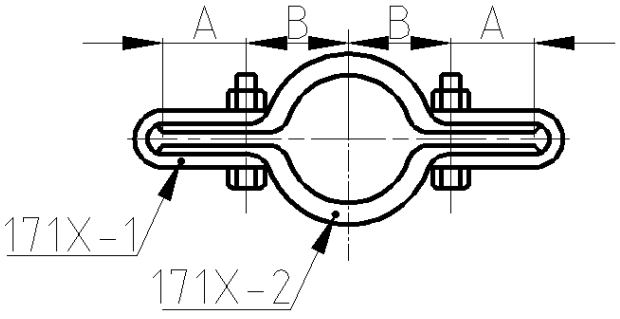
Used for fixing wire mesh.




| TYPE | A | B |
|---|---|---|
| 170A-1 | 22 | 25 |
| 170B-1 | 25 | 28 |
| 170C-1 | 25 | 33 |
| 170D-1 | 25 | 35 |
| 170E-1 | 25 | 40 |

4. 9. 7 Double Sided Mesh Panel

Used for fixing wire mesh.




| TYPE | A | B |
|---|---|---|
| 171A-1 | 22 | 25 |
| 171B-1 | 25 | 28 |
| 171C-1 | 25 | 33 |
| 171D-1 | 25 | 35 |
| 171E-1 | 25 | 40 |

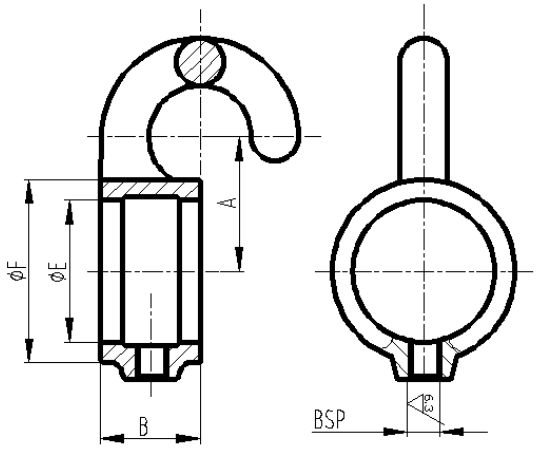
4. 9. 8 Hook

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____

Used for hanging accessories such as chains, ropes, etc.




| TYPE | A | B | øE | øF | BSP |
|---|---|---|---|---|---|
| 182A-1 | 32 | 25 | 28 | 38 | 1/4BSPX12.5 |
| 182B-1 | 34 | 25 | 35 | 46 | 1/4BSPX12.5 |
| 182C-1 | 39 | 25 | 44 | 55 | 3/8BSPX12.7 |
| 182D-1 | 41 | 25 | 50 | 60.5 | 3/8BSPX12.7 |

## 5.0 REFERENCE MATERIALS

**Approved certification for Malleable Iron Pipe Clamps**

**Sign Off:**

Owner:_____ Contractor:_____ Engineer: _____

Location:_____ Date:_____ Approved& Date: _____